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Dr. Andrew A. Toole
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U.S. Patent and Trademark Office
PO Box 1450
Alexandria, Virginia 22313-1450

Dear Dr. Toole:

The following comments are intended to supplement the record for the PTO's upcoming "SUCCESS Act" report, and may be enlarged and extended in the future as time and circumstances permit. Courtesy copies of two cited references are attached.

In the SUCCESS Act, Congress directed the PTO to submit to it a report on the results of a study that provides legislative recommendations for how to increase the number of women, minorities, and veterans who apply for and obtain patents. I am also aware that the PTO's point of contact for SUCCESS Act reporting is the Office of Chief Economist, whose regulatory mission it is to promote understanding on (1) the nature, role, and impact of IP on innovation, entrepreneurship, and economic performance, (2) the economic implications of domestic and international laws and policies regarding IP, and (3) the economic aspects of USPTO initiatives.

My comments are addressed to two socio-economic disadvantages that lie well within the scope of the SUCCESS Act mandate: lack of access to capital and structural discrimination. I am the micro-entity inventor in USPTO Serial #13/026,246, a specification disclosing "A System for Wireless Cybermedia Services," and a person of African American descent. The specification in #13/026,246 represents the culmination of a prior career in mass media law which included employment in the federal government by the Federal Communications Commission, in the broadcast and cable industries, and in academia. I am currently in the process of supplementing it with additional applications using divisional or continuation-in-part-procedures, and will likely seek a Patent Cooperation Treaty designation in due course. I have personal knowledge of the types of difficulties that entrepreneurs face in both areas in both areas, and believe that it aids the discharge of the PTO statutory mandate to make reference to these issues in the report.

Lack of Access To Capital

The major obstacle to intellectual property development and patent prosecution is the same for patent applicants as it is on other fields of commerce: lack of access to capital. At the public hearing on May 8th, Jeff Hardin, a business owner and independent inventor software-related patents who currently serves on the board of advisors for the Inventor Rights Coalition, testified that venture capital funding has dropped from being 20.95% of total funding in 2004 to a mere 3.22% in 2017 in strategic sectors where patent protections are key, according to a report

from the Alliance for U.S. Startups & Inventors for Jobs. Hardin was correct to point out that lack of access to capital is a burden that hinders small business applicants in general, and a recent report published by the U.S. Small Business Administration, entitled "Access to Capital among Young Firms, Minority-owned Firms, Women-owned Firms, and High-tech Firms," April 2013, documents the extent to which minority and women owned firms suffer from this advantage in the field of Information and communications technology in which I am a participant.

My own experience with patent prosecution attests to the fact that lack of access to capital impairs the opportunity of an independent inventor to prosecute patent protection, the ability to develop prototypes that reduce a specification to practice, and ultimately, the ability to successfully commercialize the invention in the event a patent application is allowed. Because the PTO lacks jurisdiction to provide applicants with financing, the key to overcoming this barrier, in my opinion, is interagency cooperation with other federal agencies whose mandate implicates the anti-discrimination objectives of the Success Act, and have authority to provide funding. For example, the SBA as a general source financing, and in the case of communications-related technology and services, the FCC is both a source of financing and of spectrum licenses for wireless services. In the past, the FCC has had interagency agreements with another Commerce Department agency the National Telecommunications and Information Administration, but as far as I am aware, none with the PTO. Nonetheless a statutory predicate exists for such cooperation. See e.g. 47 U.S.C. 309(j)(6)(G) (allowances for "awarding licenses to those persons who make significant contributions to the development of a new telecommunications service or technology").

Past Structural Discrimination

The legislative mandate for the Success Act invites reference to another type of structural obstacle that has historically impaired equality of access to commerce in intellectual property, namely, the vestiges of past governmental discrimination on the basis of race and gender. One commentary on this subject notes that African American applied for and received patents during the early 19th century, but that after the Supreme Court's decision in the Dred Scott case, that the U.S. Attorney General issued an opinion, titled "Invention of a Slave," which concluded that a slave owner could not patent a machine invented by his slave, because neither the slave owner nor his slave could take the required patent oath. See generally, Brian L. Frye, *Invention of A Slave*, Syracuse Law Review Vol. 68:181 (2018) (citing *Invention of a Slave,* 9 Op. Att'y Gen. 171, 171-72 (1858)). As stated in the commentary, the antebellum laws were construed to mean that a slave owner could not swear to be the inventor in the case of an invention by an slaved inventor, and an enslaved inventor could not take an oath at all. On authority of the Dred Scott case, the Patent Office denied at least two patent applications filed by slave owners, as well as one filed by a free African-American inventor, to comply with the understanding of the prevailing law that African-Americans were aliens with no rights that the federal courts were bound to respect.

It is a matter of public record that de jure and de facto governmental discrimination on the basis of race persisted well after the ratification of the 13th Amendment and the enactment of statutes that implemented it in 42 U.S.C. 1981. Section 1981 provides that "All persons within the jurisdiction of the United States shall have the same right in every State and Territory to make and enforce contracts, to sue, be parties, give evidence, and to the full and equal benefit of all laws and proceedings for the security of persons and property as is enjoyed by white citizens, and shall be subject to like punishment, pains, penalties, taxes, licenses, and exactions of every kind, and to no other." In view of the 1858 Attorney General opinion, it is reasonable to construe the text referring to "the full and equal benefit of all laws and proceedings for the security of persons and property," including the benefit of "contracts" and "licenses … of every kind," as a direct manifestation of legislative intent that safeguards for equal rights under the laws of the United States both can and should be construed to encompass the law of patents. Apparently, Section 1981 provides the only available direct remedy for governmental and nongovernment discrimination in the field of patent law.

More recently, the legislative history of the America Invents Act records the offering of an amendment by Rep. Sheila Jackson Lee of Texas in which the congresswoman squarely reaffirmed the necessity for the enforcement of equal rights under the patent laws: "My amendment speaks … to the vast population of startups and small businesses that are impacted by this legislation. … This sense of Congress will put us on notice that we need to be careful that we allow at least the opportunity for [] investors, and that we continue to look at the bill to ensure that it responds to this opportunity. … [M]y amendment also reinforces that we do not wish to engage in any undue taking of property… Small businesses should be as comfortable with going to the Patent Office as our large businesses. … We must always be mindful of the importance of ensuring that small companies have the same opportunities to innovate and have their inventions patented and that the laws will continue to protect their valuable intellectual property." An overzealous approach to the "patent troll" narrative, and inattention to the nation's history of discrimination on the basis of race, are especially troubling when viewed from the perspective that Rep. Lee described, since both threaten to engender stereotypes that are as formidable today as those that led to patent application rejections in the ante-bellum period.

Recommendations

In the spirit of the SUCCESS Act, there are three measures that I would strongly recommend that the PTO and the Congress to consider.

The PTO and the Congress should consider liberalizing the existing fee waiver provisions for small entities and micro-entities. Fee waiver relief lies squarely with the PTO's existing statutory jurisdiction under the America Invents Act. Considering the PTO's SUCCESS Act mandate, the PTO has good cause to revisit rules that provide for a broad approach to refunds for the excess payment of fees, but inexplicably provide for a much narrower approach in the case of micro-entities. For the same reasons that the Congress took steps to provide for the inclusion of

the micro-entity classification, disparate treatment of micro entity refund eligibility in comparison to small entities is constitutionally suspect, flies in the face of the text of the America Invents Act, and should not be allowed.

I would also strongly encourage the PTO and the Congress to revisit the existing provisions under the PTO's rules in 37 C.F.R. 1.102 governing the "advancement of examinations" and "petitions to make special," as a measure to improve diversity in the field of intellectual property development. See, MPEP 708.02. Section 1.102 provides the following in pertinent part:

> (a) Applications will not be advanced out of turn for examination or for further action except as provided by this part, or upon order of the Director to expedite the business of the Office, or upon filing of a request under paragraph (b) or (e) of this section or upon filing a petition or request under paragraph (c) or (d) of this section with a showing which, in the opinion of the Director, will justify so advancing it.
>
> (b) Applications wherein the inventions are deemed of peculiar importance to some branch of the public service and the head of some department of the Government requests immediate action for that reason, may be advanced for examination.
>
> (c) A petition to make an application special may be filed without a fee if the basis for the petition is:
>
> (1) The applicant's age or health; or
>
> (2) That the invention will materially:
>
> (i) Enhance the quality of the environment;
>
> (ii) Contribute to the development or conservation of energy resources; or
>
> (iii) Contribute to countering terrorism.
>
> (d) A petition to make an application special on grounds other than those referred to in paragraph (c) of this section must be accompanied by the fee set forth in § 1.17(h).

From the perspective of SUCCESS Act policy goals, contemporaneous barriers to patent prosecution that stem from demonstrable governmental or non-governmental in the past are at least as compelling as disadvantages associated with an applicant's age or health, as factors that might be deemed to warrant the grant of a petition to make special. In this regard, it comports with the purposes of the Success Act to consider an amendment to the PTO's rules to allow an applicant in one of the protected classes to show that an advancement of the examination process will contribute to the eradication of an existing barrier or socio-economic barrier to intellectual property development which involves discrimination on the basis of race, gender or veteran status. By amending the existing rules on "petitions to make special" to grant a new category of

standing under 37 C.F.R. 1.102 founded on an anti-discrimination rationale, the prospects are good that the rule would survive scrutiny existing standards of review that call for an inquiry into whether a governmental measure pertaining to access to designated public forum is narrowly tailored to further a compelling governmental objective. See e.g., *Matal v. Tam*, 137 S. Ct. 1744 (2017).

Lastly, I strongly recommend that the PTO explore ways to cooperate with other federal agencies that are interested in measures to promote significant contributions to the development of new technologies, and there are strong justifications for doing so. Quite simply, as the antebellum record shows, technological innovations that promote U.S. competitiveness are discoverable without regard to a person's racial or gender identity and small or micro-entity status. Yet, governmental and nongovernmental discrimination are an unfortunate fact of U.S. history for vulnerable communities that have persisted well into the 21st century, as indicated most recently by findings in the above-cited SBA report. Measures that reduce transaction costs associated with socio-economic disadvantage inure to the benefit of society at large by reducing opportunity costs that thwart economic development and global competitiveness.

In the final analysis, it is not unreasonable to expect that the PTO's rules both can and should provide a robust mechanism design, not only for greater diversity in patent prosecution, but for encouraging cooperation between large scale and small scale patent applicants in their common fields of interest in general. In this context, there is simply no place for narratives that give undue weight to concerns about patent trolls at the expense of patent diversity. To allow that outcome undermines the policy goals that the SUCCESS Act was enacted to achieve.

Sincerely,

/s/

Rowland J. Martin, J.D.

Attachments

Access to Capital among Young Firms, Minority-owned Firms, Women-owned Firms, and High-tech Firms

by

Alicia Robb, Marin Consulting, LLC
San Rafael, CA

for

Under contract no. SBAHQ-11-M-0203

Release Date: April 2013

Executive Summary

This report examines access to capital by young and small businesses. The purpose of the investigation is to gain a better understanding of access to capital by young firms and how the recent economic and financial crisis has affected their access to financial capital, especially among firms owned by women and minorities and firms that are high tech in nature. In light of the key role in small business finance played by financial institutions, this study pays disproportionate attention to access to bank loans. Although these issues are important, research has traditionally been limited by a lack of appropriate data. A primary obstacle has been the absence of representative samples of small businesses that contain detailed descriptions of their access to financing. The primary source of data on this question, the Federal Reserve Survey of Small Business Finances, was discontinued in 2003, and is thus unavailable for studying the effects of the financial crisis on small businesses.

A second obstacle has been the tendency of researchers to analyze data on cross sections of small businesses of varying ages and sizes at a single point in time. While the findings from these snapshots have been valuable to scholars and policymakers, they have also been limited. Because they are static, these snapshots do not capture the ways in which small business financing unfolds over the life cycle of the firm and changes over time. This study attempts to overcome these obstacles by examining the effects of the changing financial environment generally and the economic crisis specifically, on access to capital by small businesses over the 2004 through 2010 period, controlling for business and owner characteristics. Analyses of small-firm capital access are based upon firm subsets drawn from the Kauffman Firm Survey.

Key findings of this study include the fact that firms owned by African Americans and Latinos utilize a different mix of equity and debt capital, relative to firms owned by nonminorities. Relying disproportionately upon owner equity investments and employing relatively less debt from outside sources (primarily banks), the average firm in these minority business subgroups operates

with substantially less capital overall – both at startup and in subsequent years – relative to their nonminority counterparts. Women-owned businesses exhibit some similar disparities in capital structure, relative to male-owned firms, in the sense of operating with much less capital, on average, and a somewhat different mix of debt and equity capital. Their reliance upon outside equity capital is particularly low. The initial disparities in the levels of startup capital by business owner race, ethnicity, and gender do not disappear in the subsequent years following startup.

The information asymmetry inherent with new and young firms is exacerbated in high technology industries due to the lack of tangible assets and their reliance on knowledge assets, as well as technical and market uncertainty. The information asymmetries associated with new firms in general, and high tech firms specifically, make traditional bank lenders less likely to lend to these firms. This report also examines financing patters of high tech firms.

This study will help government officials document significant racial and gender disparities in capital access, differences in lending patterns between high tech and non-high tech firms, and credit market conditions during the financial crisis. These results will help policymakers in developing policies to ensure optimal access to debt and equity capital among all small businesses, including during times of financial stress.

Background

Access to capital for small businesses is one of the biggest policy issues in the United States today. This work has important implications for policy and policymakers at all levels. In particular, given the role of young firms and entrepreneurs in job creation and economic growth, policymakers need to ensure that entrepreneurs and creditworthy firms are able to secure adequate financial resources for growth and success. Ensuring that these firms have adequate access to financial capital enables them to continue to drive innovation, growth, and job creation in the U.S. economy.

The economics and finance literatures provide strong evidence that sufficient starting capital is a binding constraint for new firms. Entry into entrepreneurship increases with sudden increases in personal wealth, e.g. via bequest (Cagetti and De Nardi (2006)) or external change in taxation rate (Nanda (2008)), and with increased access to bank financing through deregulation and loosening of branching restrictions (Black and Strahan (2002)). Likewise, the absence of funds inhibits entry. For example, Evans and Jovanovic (1989) find that borrowing capacity limits entrepreneurial entry; using the National Longitudinal Survey they estimate that new entrepreneurs are limited by the size of their initial assets in starting a new business. So inequalities in personal wealth could translate into disparities in business creation and ownership.

We certainly see disparities in business ownership by race, ethnicity, and gender. The most recent statistics available from the Census Bureau come from the 2007 Survey of Business Owners (SBO). These data showed that women-owned firms made up 28.7 percent of the 27.1 million businesses in the United States, while minorities owned 21.3 percent of businesses. Clearly women and minorities are underrepresented in business ownership in this country, compared with white men. As the minority population continues to rise, it is more important than ever that these prospective business owners have the resources they need to launch successful firms. Financial capital is one such resource and previous research shows that much of the financial capital used to

start businesses comes from the owners themselves.

Yet estimates from the U.S. Census Bureau indicate that half of all Hispanic families have less than $13,375 in wealth, and half of all African-American families less than $8,650 (Table1). Wealth levels among non-minorities are much higher. African-American wealth levels are just 8 percent of non-minority wealth levels, and Hispanic wealth levels are just 12 percent of non-minority wealth levels. Only Asians have wealth levels similar to those of non-Hispanic Whites. Low levels of wealth and liquidity constraints can create substantial barriers to entry for would-be entrepreneurs because the owner's wealth can be invested directly in the business, used as collateral to obtain business loans, or used to acquire other businesses. Investors frequently require a substantial level of an owner's investment of his/her own capital as an incentive.

Table 1

Median Household Net Worth by Ethnicity/Race, 2004

	Median Net Worth	As a % of Non-minority
Total	$ 79,800	
Non-minority	$ 113,822	100%
Asian or Pac. Islander	$ 107,690	94.6%
Hispanic	$ 13,375	11.8%
African-American	$ 8,650	7.6%

Source: U.S. Census Bureau, Housing and Household Economic Statistics Division (2011).

Previous studies find that relatively low levels of wealth among Hispanics and African Americans contribute to these groups having lower business creation rates relative to their representation in the U.S. population. Fairlie (2006) found that differences in asset levels are the largest single factor explaining racial disparities in business creation rates. He found that lower levels of assets among African Americans account for more than 15 percent of the difference between the rates of business creation among Whites and Blacks. Fairlie (2006) also found that

differences in asset levels represented a major hindrance for business creation among Hispanics, while Fairlie and Woodruff (2009) studied the causes of low rates of business formation among Mexican-Americans in particular. An important factor that explains one-quarter of the business entry rate gap between Mexican-Americans and non-Hispanic Whites is asset levels.

Less research has focused on the related question of whether low levels of personal wealth and liquidity constraints also limit the ability of minority entrepreneurs to raise adequate levels of startup capital. Fairlie and Robb (2008) found that undercapitalized businesses had lower sales, profits, and employment, and were more likely to fail than businesses receiving optimal levels of startup capital. The common use of personal commitments to obtain business loans suggests that wealthier entrepreneurs may be able to negotiate better credit terms and obtain larger loans for their new businesses, possibly leading to more successful firms (Astebro and Berhardt (2003)). Cavalluzzo and Wolken (2005) also found that personal wealth, primarily through home ownership, decreases the probability of loan denials among existing business owners. If personal wealth is important for existing business owners in acquiring business loans then it may be even more important for entrepreneurs in acquiring startup loans.

Previous research indicates that the level of startup capital is a strong predictor of business success. (Bates (1997); Fairlie and Robb (2008)). Asian firms are found to have higher startup capital levels and resulting business outcomes (Fairlie and Robb (2008). As noted, their wealth levels are also on par with Whites. Therefore, I will focus on Blacks, Hispanics, and other non-Asians as one group, and compare them with Whites. I will also look at men and women separately.

Much of the recent research on the issue of discrimination in business lending uses data from various years of the Survey of Small Business Finances (SSBF). The main finding from this literature is that MBEs experience higher loan denial probabilities and pay higher interest rates than White-owned businesses even after controlling for differences in creditworthiness, and other

factors.[1] Cavalluzzo and Wolken (2005) found that while greater personal wealth is associated with a lower probability of denial, even after controlling for personal wealth, there remained a large difference in denial rates across demographic groups. African Americans, Hispanics, and Asians were all more likely to be denied credit, compared with Whites, even after controlling for a number of owner and firm characteristics, including credit history, credit score, and wealth. They also found that Hispanics and African Americans were more likely to pay higher interest rates on the loans they obtained. Using the 2003 SSBF, Blanchflower (2007) also found Asian-Americans, Hispanics and African Americans were more likely than Whites to be denied credit, even after controlling for creditworthiness and other factors.

Banks have historically provided new firms with crucial growth capital, and have played a substantial role in new firm formation and business expansion both in the United States and internationally (Ayyagari, Demirguc-Kunt and Maksimovic (2010); Beck, Demirgüç-Kunt and Maksimovic (2008); Kerr and Nanda (2009)); Robb and Robinson (2012)). Black and Strahan (2002) show that deregulation of interstate banking and loosening of branching restrictions fostered increased entrepreneurial activity.

In times of financial distress, however, bank lending may be curtailed, with decreased lending potentially reflecting a "flight to quality" (Caballero and Krishnamurthy, 2008). Such effects have been pronounced in the wake of events such as the failure of Lehman Brothers in 2008 (Ivashina and Scharfstein, 2010), and more generally, in response to recessions (Gertler and Gilchrist, 1994; Holmstrom and Tirole, 1997)). Moreover, the flight to quality is seen as having a

[1] Lloyd Blanchard, John Yinger and Bo Zhao,"Do Credit Market Barriers Exist for Minority and Women Entrepreneurs?," Syracuse University Working Paper (2004). Blanchflower, Levine and Zimmerman. Cavalluzzo, Cavalluzzo, and Wolken. Cavalluzzo and Wolken. Susan Coleman,"The Borrowing Experience of Black and Hispanic-Owned Small Firms: Evidence from the 1998 Survey of Small Business Finances," *The Academy of Entrepreneurship Journal 8*, (2002): 1-20. Susan Coleman, "Borrowing Patterns for Small Firms: A Comparison by Race and Ethnicity." *The Journal of Entrepreneurial Finance & Business Ventures* 7, (2003): 87-108. United States Small Business Administration, Office of Advocacy, *Availability of Financing to Small Firms using the Survey of Small Business Finances*, K. Mitchell and D.K. Pearce, (2004).

greater effect on firms more subject to agency problems and information opacity (Gertler and Gilchrist, 1994).

If banks do indeed avoid making riskier loans in times of financial crisis, then it stands to reason that firms that are *inherently* more risky—such as young firms and firms in industries characterized by greater technical or market uncertainty—might be most affected by such events. One important question that the literature has not addressed is how the lending response in a financial crisis affects the youngest firms in general, and in particular, whether there might be a disproportionate impact on the riskiest of these firms (e.g., those in high technology industries). I will investigate the financing constraints of high tech firms specifically, in addition to firms owned by women and minorities.

In previous work using the KFS data, Winston Smith (2011) provided evidence that banks increase lending to high technology firms as information asymmetry and inherent uncertainty surrounding the firm are lessened. While high tech firms account for a relatively small percent of the full population of firms, they are disproportionately likely to contribute to economic growth through employment, revenue, assets, and innovations. Hence, access to sufficient financial capital for these firms is paramount to our economic recovery.

Data and Univariate Statistics

In this study, I examine the financing patterns of young firms during their early years of existence. The data are from the Kauffman Firm Survey, a nationally representative cohort of businesses that began operations in 2004, which are followed over the 2004 to 2010 period. One item of note is that these data represent a cohort of firms that began in 2004; the data are not representative of all startups or all businesses in the United States. New businesses were defined as

having done one or more of the following activities in 2004 and not prior: (1) state unemployment insurance (UI) payments; (2) Federal Insurance Contributions Act (FICA) tax payments made for the first time in the targeted year for the classification of a new business; (3) filing for legal business status (sole proprietorship, general partnership, limited partnership, C corporation, subchapter S corporation, and limited liability company); (4) acquisition of an Employer Identification Number (EIN); and/or (5) use of an Internal Revenue Service Schedule C or C-EZ as part of the owner's income tax return. The sampling frame for the KFS was the Dun & Bradstreet (D&B) database and restricted to businesses (or enterprises) reported by D&B as having started in 2004. This database is a compilation of data from various sources, including credit bureaus and state offices that register new firms, as well as companies (e.g., credit card and shipping companies) that are likely to be used by all businesses.

The survey questionnaire covered a variety of topics, including business characteristics, strategy and innovation, business structure and benefits, financing, and demographics of the business owners. The KFS currently contains data on the baseline (calendar year 2004) and six follow up years (2005-2010). The method used for assigning owner demographics at the firm level was to define a primary owner. For firms with multiple owners (35 percent of the sample), the primary owner was designated by the largest equity share. In cases in which two or more owners had equal shares, hours worked and a series of other variables were used to create a rank ordering in order to define a primary owner. (For more information on this methodology, see Robb et al. 2009).

A public-use dataset is available for download from the Kauffman Foundation's web site and a more detailed confidential dataset is available to researchers through a secure, remote access data enclave provided by the National Opinion Research Center (NORC). For more details about how to access these data, please see www.kauffman.org/kfs. This report uses the confidential microdata.

While 2004, the year in which the KFS firms started, was pretty average in most respects, the KFS firms faced an economic crisis in their early years of operation that was anything but average. This crisis began affecting firms in 2008, but the impact of the crisis continued over the period 2008-2010. When asked to report if they applied and obtained loans or lines of credit and the reasons why these applications were not filed or were denied, access to credit seemed to be an issue for many firms. Unfortunately, the Kauffman Firm Survey only began asking questions about new loan applications, fear of denial, and loan application outcomes beginning in 2007. So there is only one year of data on these questions in the pre-crisis period. Because of this, I focus on the years 2007-2010 in the subsequent analysis. Thus, the firms analyzed are KFS businesses that began operations in 2004 and survived through 2007. I do show all seven years of data for financing patterns that are available.

As shown in Table 2, the 2007 means of various firm and owner characteristics of the sample are presented. The first column contains those owned by Whites, while the second column contains firms owned by owners that are Black/Hispanic/Other, not including Asians. The next two columns are female-owned and male-owned firms, respectively. The final column contains firms that are considered to be high tech or technology based firms.

Female-owned firms were slightly less likely to have high credit scores, compared with men. Blacks and Hispanics were much less likely than Whites to own firms with high credit scores with only 7 percent of minority-owned firms having a high credit score, compared with nearly double that for Whites (13.7 percent). High tech firms were the group with the highest proportion of firms with high credit scores (15.9 percent). This influences capital access, which will be discussed in the next section.

Table 2

Firm and Owner Characteristics of Kauffman Firm Survey Businesses					
Firm Characteristics	White	Black/ Hispanic	Female	Male	High Tech
High Credit Score	13.7%	7.2%	12.1%	13.6%	15.9%
Medium Credit Score	56.1%	52.8%	55.0%	55.2%	62.7%
Low Credit Score	30.1%	39.5%	32.6%	31.1%	21.1%
Incorporated	57.1%	51.1%	47.1%	60.9%	71.5%
Intellectual Property	19.9%	19.8%	18.7%	20.6%	37.5%
Product Offerings	51.2%	52.1%	50.7%	51.1%	52.0%
Team Ownership	31.6%	26.8%	29.4%	32.1%	37.1%
Home Based	50.9%	51.6%	51.7%	49.5%	51.6%
Owner Characteristics					
Net Wealth of $250K+ (2008)	45.4%	20.6%	41.1%	42.2%	52.4%
Ave Hours Worked (week)	42.7	43.5	40.1	44.3	44.3
Prev.Years of Industry Experience	12.8	11.6	9.5	13.7	16.1
Owner Age	45.8	42.8	45.1	45.3	44.9
Some College	36.3%	43.2%	40.8%	34.6%	22.6%
College Degree	32.7%	27.7%	29.4%	33.5%	34.5%
Graduate Degree+	18.2%	15.7%	19.7%	18.3%	36.9%
Previous Startup Experience	44.3%	38.1%	37.0%	45.8%	46.1%
Industry					
Manufacturing	5.6%	9.0%	6.1%	6.2%	10.4%
Wholesale	4.9%	6.3%	5.5%	5.0%	0.0%
Retail	14.0%	12.9%	16.8%	12.4%	0.0%
Transportation and Warehousing	2.6%	4.9%	2.3%	3.0%	0.0%
Finance, Insurance, Real Estate	14.0%	14.6%	12.5%	14.8%	13.4%
Professional Services	19.4%	17.9%	16.9%	20.2%	76.2%
Admin and Support, Health Care	12.7%	13.4%	16.8%	11.6%	0.0%
Arts, Entertain., & Recreation	4.8%	1.4%	4.5%	4.4%	0.0%
Other Services	11.2%	8.0%	13.4%	9.4%	0.0%
Sample size (surviving until atleast 2007)	2,086	326	637	1,900	357

There are quite a few differences across the race and gender groups in terms of firm and owner characteristics. Most notably, women-owned firms are less likely to be incorporated, compared with firms owned by men. Minorities follow a similar pattern, much lower, compared

with Whites. High tech firms are the most likely to be incorporated, to have intellectual property, and to have team ownership.

Women owners tend to have fewer years of industry experience, as well as startup experience, compared with men. Blacks and Hispanics have slightly lower average industry experience and education, and much less startup experience, compared with Whites. In addition, only about 20 percent of minorities have wealth levels of $250,000 or more, compared with more than 45 percent of Whites. Again, high tech firms had the highest shares of high net worth individuals, the highest education levels, and the highest levels of industry and startup experience.

Credit market experience also differs across racial and gender groups (Table 3). Women, Blacks, and Hispanics were less likely to apply for new loans than their male and White counterparts. High tech firms had the highest rate of new loan applications in 2007 (17 percent). Women were slightly more likely than men to say that they didn't apply for credit when they needed it at some point during the year because they feared their loan application would be denied. Black- and Hispanic owners were nearly three times as likely to have this fear, compared with White owners. Nearly one third of Black- and Hispanic owners stated they had this fear in 2007, and the percentage was even higher in the years of the financial crisis.

In terms of the outcomes of loan applications, we also see different patterns. Black- and Hispanic owned firms were much less likely to have their loans approved. Females had lower approval rates than men, except for 2007. We see the approval rates drop in the years of the financial crisis. High tech firms had initially much lower rates of approval for loan applications, but had higher than average rates of approval in subsequent years.

Table 3

Credit Market Experiences (2007-2010)						
2007	All	White	Black/ Hispanic	Female	Male	High Tech
New Loan Application	12.3%	12.9%	9.4%	9.9%	13.0%	17.0%
Did not Apply for Fear	15.7%	13.2%	31.3%	16.9%	15.3%	15.2%
Always Approved	70.9%	75.8%	31.5%	74.2%	70.1%	49.6%
2008	All	White	Black/ Hispanic	Female	Male	High Tech
New Loan Application	11.2%	11.0%	7.7%	8.1%	12.0%	11.1%
Did not Apply for Fear	18.9%	14.7%	39.3%	21.4%	17.0%	20.7%
Always Approved	61.9%	68.9%	29.7%	60.4%	65.2%	70.5%
2009	All	White	Black/ Hispanic	Female	Male	High Tech
New Loan Application	12.3%	12.1%	12.3%	10.6%	12.7%	16.4%
Did not Apply for Fear	21.4%	18.1%	40.0%	23.9%	20.2%	18.9%
Always Approved	60.6%	64.7%	32.7%	52.8%	62.9%	63.8%
2010	All	White	Black/ Hispanic	Female	Male	High Tech
New Loan Application	11.1%	11.0%	7.3%	8.0%	12.0%	10.5%
Did not Apply for Fear	19.2%	15.2%	38.8%	21.1%	17.8%	21.1%
Always Approved	60.7%	67.4%	28.2%	59.5%	63.2%	71.1%
Source: KFS Microdata						

Of course, these are univariate statistics and they do not control for differences in business quality, industry, managerial quality, etc. We will investigate this more fully in a multivariate framework. But first, let's take a look at the financing patterns of these businesses at startup and over time.

I follow the classification scheme from Robb and Robinson (2012) that distinguishes funding sources in terms of both their security type (debt vs. equity) and their source (personal accounts of the business owner(s) vs. friends and family vs. arm's length formal financial channels). This two-way classification scheme allows one to separate the issue of risk-bearing from that of

liquidity provision. For example, if an entrepreneur uses a home equity line of credit from a bank to finance a startup, the entrepreneur is bearing the risk of failure through a levered equity stake in the business, but the bank is providing liquidity to the business through a debt instrument to the entrepreneur. Because many startups are sole proprietorships, and many that are not are financed with personal guarantees and personal wealth as collateral, distinguishing risk-bearing from liquidity provision is important for understanding how startups are financed. The distinction between risk-bearing and liquidity provision is a direct consequence of the bank's ability to contractually sidestep limited liability through the use of the owner's personal assets as a guarantee.

Most theoretical treatments of capital structure explicitly or implicitly assume that limited liability implies that a borrower cannot claim more than the value of the business in question. However, empirical research on small business lending has shown that personal guarantees and personal collateral must often be posted to secure financing for startups (Moon 2009; Avery, Bostic, and Samalyk 1998; Mann 1998). This means that limited liability constraints can be contractually circumvented in the borrower/lender agreement with a bank by requiring the borrower to pledge personal assets that may exceed the value of the business if it fails. The fact that limited liability constraints can be circumvented in small business lending relationships implies that there is a critical distinction between liquidity provision and risk bearing in financing relationships.

The logic above suggests that a natural way to classify financing decisions is first to distinguish between type of security (i.e., equity vs. debt) and then also to distinguish capital according to its source (i.e., formal vs. informal). The justification for this stems from the fact that different providers of capital may have access to different enforcement technologies. For example, informal lenders, such as friends and family, may have little ability to seize collateral, and therefore the expected return to debt for them is low; this may lead them to prefer equity over debt.

Capital can be provided either by owners, insiders, or outsiders. The KFS is careful to distinguish owner equity from cash that a business owner obtained through, say, a home equity line, which in this classification scheme would be a source of outside debt, since it was provided through a formal contract with a lending institution. Informal financing channels include debt or equity from family members and personal affiliates of the firm, whereas formal financing channels include debt accessed through formal credit markets (banks, credit cards, and lines of credit) as well as venture capital and angel financing.

Thus, I group together personal debt on the business owner's household balance sheet with business bank loans, and I place these under the ``outside debt'' category. For much of the sample the distinction between personal and business debt is meaningless because the business is structured as a sole proprietorship. For the businesses organized as corporations and partnerships, no information is available about which firms relied on personal guarantees and the use of personal assets as collateral, but the work of Moon (2009), Avery, Bostic, and Samalyk (1998), Mann (1998), and others suggests that these channels are important. The primary distinction is not whether the debt is a claim on the business owner's household or business assets, but rather whether the debt was issued by an institution or by friends and family.

Table 4 describes the levels of financial capital invested in the startup year and for each year of observation. Just to be clear, in the years 2007-2010, these are new financial injections at each year in time. The levels of startup capital differ significantly across the groups. Blacks and Hispanics start their firms with about half the capital that Whites use. Women follow a similar pattern, starting their firms with a little over half of what men invest. These are large differences that persist over time; in fact, the disparities actually widened in some subsequent years.

High tech firms started with the highest levels of financial capital and were the most reliant on outsider equity (venture capital, angel investment, etc.). This pattern continued in the later years

as well. These firms invested the most financial capital and were the most reliant on outsider equity. They were less reliant on outsider debt, compared with firms on average, which is some evidence for banks preferring to fund less informationally opaque borrowers, especially during times of financial stress. This is consistent with findings from Robb and Seamans (2012) and Robb and Winston-Smith (2012).

Table 4

Financial Capital Investments (2004, 2007-2010)						
2004	All	White	Black/ Hispanic	Female	Male	High Tech
Owner Equity	$ 33,061	$ 33,099	$ 24,777	$24,556	$ 36,807	$ 29,667
Insider Equity	$ 2,055	$ 1,881	$ 1,049	$ 2,043	$ 1,880	$ 2,983
Outsider Equity	$ 15,509	$ 17,292	$ 1,070	$ 1,272	$ 22,293	$ 46,749
Owner Debt	$ 4,618	$ 5,131	$ 2,521	$ 3,650	$ 5,101	$ 6,367
Insider Debt	$ 6,437	$ 6,265	$ 4,362	$ 5,577	$ 6,975	$ 3,524
Outsider Debt	$ 50,031	$ 53,809	$ 24,907	$36,400	$ 57,110	$ 28,133
Total Financial Capital	$111,712	$117,477	$ 58,687	$73,500	$130,166	$ 117,424
2007						
Owner Equity	$ 10,280	$ 9,874	$ 6,758	$ 8,699	$ 10,801	$ 28,075
Insider Equity	$ 580	$ 532	$ 1,107	$ 271	$ 733	$ 2,688
Outsider Equity	$ 8,531	$ 9,814	$ 4,260	$ 2,205	$ 11,534	$ 23,575
Owner Debt	$ 4,219	$ 4,697	$ 2,314	$ 5,929	$ 3,602	$ 6,228
Insider Debt	$ 4,967	$ 6,014	$ 1,715	$ 1,294	$ 6,708	$ 3,500
Outsider Debt	$ 53,315	$ 57,411	$ 17,404	$34,695	$ 56,974	$ 36,226
Total Financial Capital	$ 81,892	$ 88,342	$ 33,557	$53,092	$ 90,352	$ 100,292
2008						
Owner Equity	$ 10,749	$ 9,683	$ 5,802	$ 6,499	$ 11,026	$ 29,307
Insider Equity	$ 549	$ 431	$ 1,519	$ 324	$ 668	$ 3,298
Outsider Equity	$ 5,591	$ 5,515	$ 5,874	$ 1,113	$ 7,592	$ 44,423
Owner Debt	$ 4,411	$ 4,180	$ 6,289	$ 4,255	$ 4,608	$ 6,934
Insider Debt	$ 3,354	$ 3,119	$ 2,851	$ 2,995	$ 3,123	$ 8,166
Outsider Debt	$ 47,525	$ 44,642	$ 19,329	$32,105	$ 46,742	$ 40,341
Total Financial Capital	$ 72,180	$ 67,571	$ 41,664	$47,291	$ 73,758	$ 132,471
2009						
Owner Equity	$ 8,416	$ 7,893	$ 6,102	$ 3,244	$ 9,908	$ 17,926
Insider Equity	$ 799	$ 358	$ 73	$ 113	$ 1,063	$ 93
Outsider Equity	$ 5,448	$ 5,681	$ 626	$ 1,690	$ 7,270	$ 37,244
Owner Debt	$ 2,850	$ 3,083	$ 1,916	$ 3,320	$ 2,705	$ 3,076
Insider Debt	$ 5,891	$ 5,447	$ 4,692	$ 2,706	$ 7,289	$ 10,466
Outsider Debt	$ 50,029	$ 50,000	$ 19,806	$14,992	$ 64,729	$ 49,293
Total Financial Capital	$ 73,432	$ 72,463	$ 33,214	$26,064	$ 92,964	$ 118,099
2010						
Owner Equity	$ 6,586	$ 6,214	$ 4,145	$ 4,855	$ 6,668	$ 5,616
Insider Equity	$ 1,467	$ 1,457	$ 155	$ 62	$ 1,696	$ 458
Outsider Equity	$ 10,338	$ 7,701	$ 2,265	$ 1,131	$ 9,382	$ 14,569
Owner Debt	$ 2,942	$ 3,068	$ 2,084	$ 3,072	$ 2,916	$ 1,380
Insider Debt	$ 5,893	$ 5,968	$ 2,878	$ 5,198	$ 6,085	$ 7,193
Outsider Debt	$ 45,633	$ 43,525	$ 20,153	$23,899	$ 46,503	$ 32,104
Total Financial Capital	$ 72,859	$ 67,934	$ 31,681	$38,217	$ 73,249	$ 61,321

In terms of the relative importance of the various sources of financing, we also see large differences by race and gender here. As shown in Table 5, Blacks and Hispanics were relatively more reliant than Whites on owner financing, and the same held true for subsequent financial injections. For women, however, the large disparity seems to be driven primarily by the lack of external equity, although women were slightly more reliant on owner financing than were men. High tech firms were most reliant on outsider equity and less reliant on the other sources, both at startup and in subsequent years.

Table 5

Distribution of Financial Capital Investments (2004, 2007-2010)						
2004	All	White	Black/ Hispanic	Female	Male	High Tech
Owner Equity	29.6%	28.2%	42.2%	33.4%	28.3%	25.3%
Insider Equity	1.8%	1.6%	1.8%	2.8%	1.4%	2.5%
Outsider Equity	13.9%	14.7%	1.8%	1.7%	17.1%	39.8%
Owner Debt	4.1%	4.4%	4.3%	5.0%	3.9%	5.4%
Insider Debt	5.8%	5.3%	7.4%	7.6%	5.4%	3.0%
Outsider Debt	44.8%	45.8%	42.4%	49.5%	43.9%	24.0%
Total Financial Capital	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2007						
Owner Equity	12.6%	11.2%	20.1%	16.4%	12.0%	28.0%
Insider Equity	0.7%	0.6%	3.3%	0.5%	0.8%	2.7%
Outsider Equity	10.4%	11.1%	12.7%	4.2%	12.8%	23.5%
Owner Debt	5.2%	5.3%	6.9%	11.2%	4.0%	6.2%
Insider Debt	6.1%	6.8%	5.1%	2.4%	7.4%	3.5%
Outsider Debt	65.1%	65.0%	51.9%	65.3%	63.1%	36.1%
Total Financial Capital	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2008						
Owner Equity	14.9%	14.3%	13.9%	13.7%	14.9%	22.1%
Insider Equity	0.8%	0.6%	3.6%	0.7%	0.9%	2.5%
Outsider Equity	7.7%	8.2%	14.1%	2.4%	10.3%	33.5%
Owner Debt	6.1%	6.2%	15.1%	9.0%	6.2%	5.2%
Insider Debt	4.6%	4.6%	6.8%	6.3%	4.2%	6.2%
Outsider Debt	65.8%	66.1%	46.4%	67.9%	63.4%	30.5%
Total Financial Capital	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2009						
Owner Equity	11.5%	10.9%	18.4%	12.4%	10.7%	15.2%
Insider Equity	1.1%	0.5%	0.2%	0.4%	1.1%	0.1%
Outsider Equity	7.4%	7.8%	1.9%	6.5%	7.8%	31.5%
Owner Debt	3.9%	4.3%	5.8%	12.7%	2.9%	2.6%
Insider Debt	8.0%	7.5%	14.1%	10.4%	7.8%	8.9%
Outsider Debt	68.1%	69.0%	59.6%	57.5%	69.6%	41.7%
Total Financial Capital	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2010						
Owner Equity	9.0%	9.1%	13.1%	12.7%	9.1%	9.2%
Insider Equity	2.0%	2.1%	0.5%	0.2%	2.3%	0.7%
Outsider Equity	14.2%	11.3%	7.2%	3.0%	12.8%	23.8%
Owner Debt	4.0%	4.5%	6.6%	8.0%	4.0%	2.3%
Insider Debt	8.1%	8.8%	9.1%	13.6%	8.3%	11.7%
Outsider Debt	62.6%	64.1%	63.6%	62.5%	63.5%	52.4%
Total Financial Capital	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Multivariate Analysis

When looking at loan applications, application outcomes, fear of denial, and lending patterns, it is necessary to use a multivariate framework, as these actions are related to a number of factors. The models used here draw on standard assumptions in the banking literature (Gorton and Winton, 2003). The decision to apply for a bank loan in year *t* is modelled as a function of growth prospects and degree of credit/liquidity constraint as well as control variables for industry, firm size, and owner characteristics (Chava and Purnanandam, 2011; Edelstein, 1975). The role of information asymmetry in mediating the loan application and approval process is also examined by using two proxies for information asymmetry. Particularly for a new firm, having a credit rating inherently reduces the information asymmetry between loan applicant and lender (Gorton and Winton, 2003). I use the Dun & Bradstreet credit score to define those in the top 20 percent of the credit score distribution as being highly creditworthy and then the next set of about 50 percent of firms designated as having medium creditworthiness. These are included as predictors of applying for a loan as well as the loan application outcome. The credit score provides significant information to the lender about the creditworthiness of the applicant, thereby reducing the information asymmetry.

I also follow a previous study that looks at the role of intellectual property in bank lending decisions (Winston Smith, 2011) and use a dummy variable to reflect a firm's use of intellectual property in terms of patents, trademarks, and copyrights. Finally, I include controls for firm and owner characteristics that have been shown in the previous literature to affect the likelihood of bank borrowing. Firm characteristics include credit score, a dummy for high tech, legal form of ownership, offering a product (vs. a service), and team ownership. Owner characteristics include race, ethnicity, gender, and age. I also include measures of the owner's human capital, including education, years of prior industry experience, and prior startup experience. Industry is controlled for

at the two-digit NAICS level, but not presented in the tables because of space constraints. Each year is run separately.

Loan app= $\alpha + \beta$(firm characteristics) + Ω(owner characteristics) + industry controls + ε (1)

Fear= $\alpha + \beta$(firm characteristics) + Ω(owner characteristics) + industry controls + ε (2)

Approval= $\alpha + \beta$(firm characteristics) + Ω(owner characteristics) + industry controls + ε (3)

Thus, to summarize, the empirical approach used in this report is to estimate separate maximum likelihood logistic regressions on the probability of applying for a loan, the probability of not applying for a loan when credit is needed for fear of having the loan application denied, and the probability of receiving a loan. Please see the appendix for variable definitions.

The first result that stands out is that the coefficient on the minority dummy (which includes Blacks, Hispanics, and business owners of other races (other than Asian)) is negative in all years and statistically significant in 2007 and 2008. This means that this group is less likely to apply for new loans, compared with their White counterparts. It appears that women were no more or less likely to apply for new loans than men, controlling for other factors. High tech firms were more likely to apply for loans than non-high tech firms in 2007-2009, but the difference was statistically significant only in 2007 and 2009.

In terms of important firm and owner characteristics, firms that were incorporated and firms with teams and owners with higher education levels were more likely to apply for new credit. Having intellectual property did not seem to play any role in loan applications. Being home based was associated with a lower likelihood of applying for a loan.

Table 6: New Loan Application(s)				
VARIABLES	2007	2008	2009	2010
Black/ Hispanic	-0.419*	-0.763***	-0.102	-0.482
	(0.242)	(0.281)	(0.267)	(0.315)
Asian	-0.731	-0.470	-0.585	0.431
	(0.464)	(0.498)	(0.439)	(0.400)
Female	-0.141	-0.0114	0.0866	-0.245
	(0.205)	(0.220)	(0.208)	(0.240)
High Tech	0.482*	0.327	0.507*	-0.0570
	(0.248)	(0.277)	(0.278)	(0.319)
High Credit Score	0.222	0.454*	0.320	0.870***
	(0.261)	(0.262)	(0.275)	(0.310)
Medium Credit Score	0.154	0.155	-0.0151	0.356
	(0.195)	(0.204)	(0.218)	(0.244)
Incorporated	0.580***	0.533***	0.902***	0.721***
	(0.191)	(0.204)	(0.225)	(0.243)
Intellectual Property	0.0140	0.0605	0.172	0.318
	(0.197)	(0.200)	(0.198)	(0.226)
Product Offering(s)	0.265	0.243	-0.105	-0.0108
	(0.191)	(0.187)	(0.205)	(0.219)
Home Based	-0.395**	-0.317*	-0.553***	-0.474**
	(0.164)	(0.183)	(0.191)	(0.208)
Hours Worked	0.00895***	0.00517	0.00581	0.00120
	(0.00346)	(0.00355)	(0.00405)	(0.00405)
Industry Experience	0.00721	0.0142	-0.00925	0.0120
	(0.00882)	(0.00920)	(0.00915)	(0.00969)
Age	0.0129	-0.0695	-0.0524	0.0369
	(0.0499)	(0.0522)	(0.0535)	(0.0622)
Team Ownership	0.216	0.602***	0.387**	0.100
	(0.174)	(0.173)	(0.187)	(0.204)
Age Squared	-0.000333	0.000477	0.000664	-0.000612
	(0.000520)	(0.000544)	(0.000558)	(0.000656)
Some College	0.589*	0.637**	0.242	-0.249
	(0.323)	(0.316)	(0.357)	(0.339)
College Degree	0.822**	0.700**	0.575	-0.0412
	(0.323)	(0.328)	(0.365)	(0.352)
Graduate Degree+	0.793**	0.658*	0.720*	0.162
	(0.340)	(0.359)	(0.392)	(0.381)
Startup Experience	0.0964	0.154	-0.110	-0.100
	(0.164)	(0.167)	(0.178)	(0.199)
Constant	-2.969**	-1.370	-1.781	-2.882*
	(1.227)	(1.270)	(1.316)	(1.535)
Observations	2,724	2,434	2,168	1,959
Excluded dummies: White, High School Degree or Less, Low Credit Score				
Standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				
2-digit NAICS industry controls included in regressions. Coefficients not shown.				

Perhaps more interesting is the next set of regressions. In this logistic model, the dependent variable is equal to one if the owner did not apply for credit at some point when he/she needed it for fear of having the loan application denied. This is the same wording of the question that was used in the various Surveys of Small Business Finances. In terms of credit constraints, we see clear evidence in the results from this model using the more recent Kauffman Firm Survey. In all four years, the coefficient on the minority dummy was positive and statistically significant, indicating that this group was more likely to fear having a loan denied than was their White counterpart group, even after controlling for other factors, such as creditworthiness, industry, legal form, etc. This is perhaps the clearest recent evidence of continued borrowing constraints for Black and Hispanic business owners in the United States. Women were also more likely than men to have this fear during the economic crisis. Although the coefficient was positive in all four years, there was no statistically significant difference in the pre-crisis year of 2007 for women. There was no difference between high tech and non-high tech firms in any of the years.

However, being creditworthy, as indicated by a high credit score, was associated with lower incidences of fearing a loan application would be denied. Interestingly, the main human capital variable that factored in was previous startup experience, which was actually positively associated with the fear. A possible interpretation of this result is that previous startup experience may have resulted in business closure or failure, which is not captured in the survey but is likely known to banks. Logically, having started a business that failed in the past might lead to lower likelihood of new loan approvals and a greater fear of being denied.

Table 7: Did Not Apply for Credit When Needed for Fear of Having Loan Application Denied

VARIABLES	2007	2008	2009	2010
Black/ Hispanic	0.966***	1.101***	0.977***	1.123***
	(0.176)	(0.171)	(0.182)	(0.184)
Asian	-0.229	0.320	0.439	0.519*
	(0.366)	(0.338)	(0.310)	(0.315)
Female	0.237	0.316**	0.345**	0.346**
	(0.165)	(0.161)	(0.164)	(0.168)
High Tech	-0.163	0.240	-0.0313	0.253
	(0.254)	(0.240)	(0.239)	(0.233)
High Credit Score	-0.839***	-0.611**	-0.413	-0.295
	(0.272)	(0.257)	(0.256)	(0.261)
Medium Credit Score	-0.193	-0.123	-0.0523	-0.197
	(0.157)	(0.158)	(0.162)	(0.168)
Incorporated	0.206	0.296*	0.319*	0.390**
	(0.157)	(0.156)	(0.163)	(0.176)
Intellectual Property	-0.0275	0.0228	0.126	-0.0430
	(0.183)	(0.181)	(0.170)	(0.185)
Product Offering(s)	0.106	0.203	0.0986	-0.0263
	(0.170)	(0.162)	(0.160)	(0.168)
Home Based	-0.179	-0.0380	-0.0992	-0.182
	(0.150)	(0.149)	(0.151)	(0.159)
Hours Worked	0.0166***	0.0114***	0.0154***	0.00889***
	(0.00340)	(0.00303)	(0.00316)	(0.00317)
Industry Experience	-0.00434	-0.00245	-0.0174**	-0.0101
	(0.00808)	(0.00800)	(0.00759)	(0.00809)
Age	-0.0632	-0.0309	-0.00806	0.113**
	(0.0462)	(0.0467)	(0.0479)	(0.0560)
Team Ownership	-0.203	-0.538***	-0.229	-0.280
	(0.171)	(0.174)	(0.167)	(0.179)
Age Squared	0.000472	0.000152	1.64e-05	-0.00135**
	(0.000506)	(0.000508)	(0.000517)	(0.000616)
Some College	0.0969	0.264	-0.0138	0.264
	(0.240)	(0.242)	(0.240)	(0.253)
College Degree	-0.299	-0.101	-0.287	-0.0882
	(0.256)	(0.257)	(0.255)	(0.270)
Graduate Degree+	-0.218	0.0778	-0.224	-0.236
	(0.290)	(0.297)	(0.281)	(0.298)
Startup Experience	0.341**	0.251*	0.201	0.372**
	(0.145)	(0.146)	(0.144)	(0.150)
Constant	-0.538	-1.287	-1.456	-4.135***
	(1.099)	(1.111)	(1.129)	(1.328)
Observations	2,725	2,436	2,168	1,956

Excluded dummies: White, High School Degree or Less, Low Credit Score

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

2-digit NAICS industry controls included in regressions. Coefficients not shown.

In terms of loan application outcomes, there is also strong evidence of credit constraints among Black- and Hispanic-owned businesses. Even after controlling for other factors, such as credit score, legal form, etc., the minority group made up of Black and Hispanic business owners was significantly less likely to have their loan applications approved, compared with their White counterparts. In fact, the magnitude increased dramatically over the period and through the crisis. Asians were not statistically different from Whites. Females were less likely to be approved in three of the four years, but the difference was statistically significant only in 2008. As expected, having a high credit score was positively correlated with having the loan application approved in three of the four years and was highly significant in 2008. The coefficient on high tech was negative in three of the four years, but it was never statistically significant in any of the years. The other results were mixed, but having intellectual property was negatively correlated with loan application approval in three of the four years, but was never statistically significant. Previous industry experience was positively associated with approval, but statistically significant only in one of the four years. Startup experience did factor in again in this model, being negatively associated with loan approvals in three of the four years and statistically significant in two of those three years.

Table 8: Loan Application(s) Always Approved				
VARIABLES	2007	2008	2009	2010
Black/ Hispanic	-1.403***	-1.669***	-1.923***	-2.799***
	(0.501)	(0.614)	(0.547)	(0.827)
Asian	1.063	-0.657	-0.640	-1.566**
	(0.932)	(0.820)	(0.871)	(0.689)
Female	-0.208	-1.117***	-0.253	0.0201
	(0.460)	(0.430)	(0.427)	(0.562)
High Tech	-0.895	-0.544	-0.209	0.206
	(0.591)	(0.549)	(0.598)	(0.906)
High Credit Score	0.702	1.834***	0.126	-0.209
	(0.614)	(0.611)	(0.556)	(0.656)
Medium Credit Score	-0.270	0.316	-0.550	0.635
	(0.405)	(0.431)	(0.450)	(0.544)
Incorporated	-0.429	-0.0319	0.140	-0.828
	(0.485)	(0.496)	(0.428)	(0.536)
Intellectual Property	-0.346	-0.403	-0.724*	0.0512
	(0.404)	(0.503)	(0.418)	(0.527)
Product Offering(s)	-0.0433	-0.107	-0.327	0.168
	(0.383)	(0.440)	(0.432)	(0.516)
Home Based	-0.103	0.605	-0.778*	-0.918*
	(0.427)	(0.427)	(0.401)	(0.487)
Hours Worked	-0.00893	-0.0160	0.00171	-0.00441
	(0.00865)	(0.00988)	(0.00764)	(0.00995)
Industry Experience	4.80e-05	0.0121	0.0282	0.0567**
	(0.0213)	(0.0210)	(0.0191)	(0.0276)
Age	0.0422	0.144	0.123	-0.182
	(0.149)	(0.145)	(0.149)	(0.238)
Team Ownership	-0.0356	0.148	0.0723	0.151
	(0.410)	(0.418)	(0.364)	(0.451)
Age Squared	2.45e-05	-0.000883	-0.00124	0.00240
	(0.00166)	(0.00161)	(0.00160)	(0.00285)
Some College	1.066	1.237*	0.490	0.296
	(0.683)	(0.659)	(0.712)	(0.730)
College Degree	1.089	0.650	-0.274	-0.0985
	(0.739)	(0.609)	(0.709)	(0.690)
Graduate Degree+	1.043	-0.133	0.199	0.292
	(0.859)	(0.683)	(0.685)	(0.809)
Startup Experience	-0.540	-0.793**	0.167	-1.123**
	(0.397)	(0.387)	(0.362)	(0.512)
Constant	-0.201	-3.587	-2.796	4.527
	(3.268)	(3.195)	(3.497)	(5.072)
Observations	676	568	415	208
Excluded dummies: White, High School Degree or Less, Low Credit Score				
Standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				
2-digit NAICS industry controls included in regressions. Coefficients not shown.				

The results from the model on not applying for credit when needed for fear of denial as well as the model on loan approval provide evidence that Black- and Hispanic-owned businesses face greater credit constraints at startup and on an ongoing basis than do their White and Asian counterparts. The last two sets of regressions look at the levels of financial capital and the ratio of outsider debt to total financing.

In terms of the levels of financial capital injected at each year, the results indicate that even when controlling for other factors, including credit score, we still generally find Blacks, Hispanics, and women using lower levels of financial capital at startup, but that these differences do not continue over time conditional on survival to that period. The coefficient on the minority dummy was negative and statistically significant in the startup year, but not in the years 2007-2010. The coefficient on female was generally negative, but statistically significant only in two of the four follow-up years. High tech firms were generally more likely to have higher levels of financial capital invested, but the difference was statistically significant only in two of the six years. Having a high credit score was positive and statistically significant at startup, but not for follow-up years. Being incorporated and having intellectual property were generally positively associated with higher levels of financial capital investments, as were average hours worked and offering a product (as compared with service offerings). Being home based was negatively associated with higher levels of financial capital.

So the evidence suggests that, after controlling for credit quality, industry, and other owner and firm characteristics, the racial and gender differences in levels of financial capital are generally not statistically significant in subsequent years with only a couple of exceptions. By the time we collected owner wealth in the dataset, it didn't appear to change our findings in terms of levels of financial capital invested.

Table 9: Log of Total Financial Capital Invested

VARIABLES	2004	2007	2008	2009	2009 w/ wealth	2010
High Wealth ($250K+)					0.0447	
					(0.297)	
Black/ Hispanic	-0.362**	0.0327	-0.182	-0.137	-0.0706	0.0779
	(0.162)	(0.341)	(0.356)	(0.388)	(0.417)	(0.373)
Asian	0.373	0.0292	0.194	0.444	0.348	0.414
	(0.265)	(0.634)	(0.656)	(0.645)	(0.691)	(0.646)
Female	-0.103	-0.520*	-0.216	-0.506*	-0.268	-0.0191
	(0.135)	(0.273)	(0.275)	(0.290)	(0.310)	(0.301)
High Tech	0.823***	0.465	0.785*	0.583	0.291	0.699
	(0.230)	(0.432)	(0.418)	(0.447)	(0.481)	(0.458)
High Credit Score	0.556***	0.216	0.0483	0.0459	-0.0729	0.145
	(0.138)	(0.264)	(0.274)	(0.290)	(0.308)	(0.296)
Medium Credit Score	-0.298	-0.161	-0.164	-0.0935	-0.0621	0.180
	(0.213)	(0.410)	(0.422)	(0.420)	(0.443)	(0.413)
Incorporated	0.753***	0.411	0.657**	1.050***	1.062***	0.866***
	(0.137)	(0.278)	(0.270)	(0.286)	(0.308)	(0.297)
Intellectual Property	0.0976	0.525*	0.502*	0.420	0.243	0.432
	(0.151)	(0.293)	(0.298)	(0.309)	(0.337)	(0.331)
Product Offering(s)	0.434***	0.990***	0.738***	0.859***	0.901***	0.597**
	(0.143)	(0.274)	(0.277)	(0.291)	(0.310)	(0.297)
Home Based	-0.820***	-0.389	-0.676**	-0.797***	-0.770***	-0.488*
	(0.137)	(0.253)	(0.265)	(0.278)	(0.298)	(0.283)
Hours Worked	0.0349***	0.0307***	0.0255***	0.0202***	0.0213***	0.0219***
	(0.00283)	(0.00520)	(0.00533)	(0.00566)	(0.00604)	(0.00571)
Industry Experience	-0.0316***	-0.00182	-0.00366	-0.00657	-0.0112	-0.00754
	(0.00670)	(0.0126)	(0.0126)	(0.0131)	(0.0140)	(0.0138)
Age	0.0550	-0.0732	-0.124*	0.0279	0.0585	0.0198
	(0.0365)	(0.0717)	(0.0736)	(0.0817)	(0.0879)	(0.0849)
Team Ownership	0.529***	0.425	0.0804	0.612**	0.411	0.487
	(0.146)	(0.299)	(0.292)	(0.311)	(0.337)	(0.323)
Age Squared	-0.000393	0.000810	0.00131*	-0.000179	-0.000469	2.83e-05
	(0.000398)	(0.000753)	(0.000775)	(0.000859)	(0.000925)	(0.000905)
Some College	-0.0136	0.207	0.151	0.771*	0.654	0.374
	(0.187)	(0.407)	(0.408)	(0.433)	(0.463)	(0.439)
College Degree	-0.111	0.135	0.0680	0.978**	0.899*	-0.122
	(0.207)	(0.427)	(0.430)	(0.448)	(0.482)	(0.463)
Graduate Degree+	0.108	0.372	-0.350	0.872*	0.761	-0.648
	(0.230)	(0.468)	(0.481)	(0.498)	(0.540)	(0.510)
Startup Experience	0.0398	0.549**	0.444*	0.0219	0.0885	0.429
	(0.125)	(0.240)	(0.246)	(0.260)	(0.277)	(0.271)
Constant	5.173***	6.297***	8.496***	2.949	2.355	2.445
	(0.884)	(1.776)	(1.816)	(2.014)	(2.163)	(2.053)
Observations	3,744	2,406	2,295	2,114	1,883	1,959
R-squared	0.173	0.088	0.074	0.087	0.074	0.065

Excluded dummies: White, High School Degree or Less, Low Credit Score

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

2-digit NAICS industry controls included in regressions. Coefficients not shown.

In terms of the ratio of outsider debt to total financing, we continue to see racial and gender differences. Blacks and Hispanics have much lower ratios of outsider debt, so they are relying less on formal financing channels such as bank financing, even after controlling for other factors, most notably creditworthiness and wealth levels. There were not statistically significant differences for female ownership, compared with male ownership, although the coefficient was negative in all of the years. As we saw in the univariate statistics, women used much lower levels of financial capital, but weren't very different from men in terms of the share of the financing that came from outside debt financing. Thus, it's not too surprising that there were no significant differences after controlling for other factors.

Interestingly, high tech firms were actually more reliant on outsider debt, controlling for other factors. This was the case at startup and in subsequent years. High credit score mattered in the early years, but not so much in the latter years. Incorporated firms were more reliant on outsider debt, as were older owners that worked more hours. Home-based firms and firms with product offerings were less reliant on outsider debt. Other owner variables such as education and startup experience didn't play any role in the ratio of outsider debt to total financial capital invested. Firms with intellectual property were less reliant on outsider debt, again consistent with findings from Robb and Seamans (2012) and Robb and Winston-Smith (2012), who found that more complex and informationally opaque firms relied more on equity financing than debt financing.

These findings were also robust to including controls for growth expectations (available only in 2008) and additional controls for firm size, employment growth, and revenue growth.

Table 10: Ratio of Outsider Debt to Total Financial Capital Invested

VARIABLES	2004	2007	2008	2009	2009 w/ wealth	2010	2010 w/ wealth
High Wealth ($250K+)					0.0835***		0.137***
					(0.0309)		(0.0340)
Black/ Hispanic	-0.0622***	-0.100***	-0.117***	-0.122***	-0.127***	-0.136***	-0.110**
	(0.0151)	(0.0349)	(0.0347)	(0.0401)	(0.0426)	(0.0433)	(0.0448)
Asian	-0.00494	-0.00429	0.0832	-0.0884	-0.0823	-0.112	-0.0881
	(0.0337)	(0.0673)	(0.0703)	(0.0677)	(0.0703)	(0.0695)	(0.0696)
Female	-0.00543	-0.0331	-0.0219	-0.0453	-0.0501	-0.0376	-0.0563
	(0.0145)	(0.0307)	(0.0294)	(0.0327)	(0.0346)	(0.0351)	(0.0361)
High Tech	0.0695***	0.158***	0.109**	0.168***	0.138***	0.107**	0.117**
	(0.0233)	(0.0433)	(0.0427)	(0.0460)	(0.0498)	(0.0501)	(0.0527)
High Credit Score	0.0350***	0.0497*	0.0298	0.0382	0.0234	0.0279	0.0193
	(0.0136)	(0.0291)	(0.0291)	(0.0319)	(0.0333)	(0.0353)	(0.0370)
Medium Credit Score	-0.0550***	-0.0225	-0.0213	-0.00531	-0.00829	0.00171	0.000747
	(0.0185)	(0.0420)	(0.0422)	(0.0482)	(0.0504)	(0.0512)	(0.0546)
Incorporated	0.0452***	0.128***	0.143***	0.127***	0.113***	0.108***	0.0909**
	(0.0142)	(0.0300)	(0.0296)	(0.0317)	(0.0335)	(0.0350)	(0.0370)
Intellectual Property	-0.0198	-0.102***	-0.0597*	-0.0708**	-0.0938**	-0.0484	-0.0903**
	(0.0151)	(0.0307)	(0.0310)	(0.0340)	(0.0366)	(0.0363)	(0.0381)
Product Offering(s)	0.0239*	-0.0485*	-0.0468*	0.0207	0.00437	-0.0782**	-0.100***
	(0.0144)	(0.0293)	(0.0283)	(0.0310)	(0.0335)	(0.0332)	(0.0349)
Home Based	-0.0413***	-0.0392	-0.0442	-0.0144	-0.0298	-0.0815**	-0.0861**
	(0.0134)	(0.0269)	(0.0273)	(0.0293)	(0.0311)	(0.0337)	(0.0353)
Hours Worked	0.000593**	0.000921*	0.00115**	0.00106*	0.00165***	0.000441	0.000785
	(0.000268)	(0.000554)	(0.000553)	(0.000594)	(0.000628)	(0.000666)	(0.000701)
Industry Experience	-0.00105	-0.00256*	0.000732	-0.00103	-0.00196	0.000402	-0.000848
	(0.000684)	(0.00131)	(0.00133)	(0.00143)	(0.00147)	(0.00158)	(0.00161)
Age	0.00640*	0.0159**	0.0131*	0.0284***	0.0298***	0.0104	0.0111
	(0.00353)	(0.00720)	(0.00784)	(0.00818)	(0.00889)	(0.00959)	(0.0103)
Team Ownership	0.0167	-0.0157	0.0636**	0.0475	0.0320	0.0154	0.0152
	(0.0148)	(0.0308)	(0.0306)	(0.0319)	(0.0340)	(0.0347)	(0.0372)
Age Squared	-5.80e-05	-0.000167**	-0.000152*	-0.000338***	-0.000361***	-0.000161	-0.000181*
	(3.77e-05)	(7.41e-05)	(8.30e-05)	(8.47e-05)	(9.19e-05)	(0.000101)	(0.000109)
Some College	-0.00529	0.0585	0.0769*	-0.0182	-0.0138	-0.0231	-0.0362
	(0.0200)	(0.0396)	(0.0410)	(0.0508)	(0.0536)	(0.0543)	(0.0577)
College Degree	-0.0175	0.0338	0.0965**	-0.0316	-0.0518	0.00263	-0.0217
	(0.0215)	(0.0415)	(0.0425)	(0.0520)	(0.0552)	(0.0552)	(0.0590)
Graduate Degree+	0.00620	0.0147	0.0457	-0.0277	-0.0439	0.0220	-0.0153
	(0.0243)	(0.0459)	(0.0486)	(0.0558)	(0.0594)	(0.0598)	(0.0644)
Startup Experience	0.00681	0.00857	-0.0383	0.00995	0.0113	0.0113	0.0366
	(0.0130)	(0.0261)	(0.0261)	(0.0285)	(0.0301)	(0.0309)	(0.0321)
Constant	-0.00233	0.0943	0.0874	-0.133	-0.131	0.364	0.409
	(0.0850)	(0.181)	(0.190)	(0.202)	(0.223)	(0.242)	(0.259)
Observations	3,363	1,628	1,540	1,305	1,166	1,115	967
R-squared	0.054	0.091	0.122	0.120	0.137	0.097	0.143

Excluded dummies: White, High School Degree or Less, Low Credit Scor

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

2-digit NAICS industry controls included in regressions. Coefficients not shown.

CONCLUSION

Key findings of this study include the fact that firms owned by African Americans and Hispanics utilize a different mix of equity and debt capital, relative to firms owned by nonminorities. Relying disproportionately upon owner equity investments and employing relatively less debt from outside sources (primarily banks), the mean firm in these minority business subgroups operates with substantially less capital overall – both at startup and in subsequent years – relative to their nonminority counterparts. Women-owned businesses exhibit some similar disparities in capital structure, relative to male-owned firms, in the sense of operating with much less capital, on average, and a somewhat different mix of debt and equity capital. Their reliance upon outside equity capital is particularly low. The initial disparities in the levels of startup capital by gender do not disappear in the subsequent years following startup, but are generally explained in most years by differences in other firm characteristics.

The multivariate findings indicate that among new and young firms, women were no more or less likely to apply for new loans than men. However, minorities were less likely than their White counterparts to apply for new loans when their firms were in the early years of operation. The analysis also suggests that minority owners who did not apply for new loans were significantly more likely than their White counterparts to avoid applying for loans when needed because they were afraid that their loan applications would be declined by lenders. This is even after controlling for credit quality and a host of owner and firm characteristics. Women were also more likely than similar men not to apply for credit when it was needed for fear of having their loan application denied during the years of the economic crisis.

The analysis showed that women and minority business owners' fears of being declined for a loan were not necessarily unwarranted. In particular, in terms of loan application outcomes, even after controlling for such factors as industry, credit score, legal form, and human capital, minority

owners of young firms were significantly less likely to have their loan applications approved than were similar White business owners. Similarly, in 2008, women owners of new businesses were significantly less likely than men with similar credit profiles and legal forms of organization to be approved for loans. More generally, the results suggest that in the initial year of startup, Black- and Hispanic-owned businesses faced greater credit constraints than did their White and Asian counterparts. Similarly, women-owned businesses faced greater credit constraints than did similar startups owned by men during the years of the financial crisis.

In terms of the levels of financial capital, however, the evidence suggests that, after controlling for credit quality, industry, and other owner and firm characteristics, racial differences were generally not statistically significant, while in two of the years of observation, women used lower levels of financial capital. Finally, the results suggested that Blacks and Hispanics relied less than Whites on formal financing channels such as bank financing, even after controlling for creditworthiness and wealth levels. However, women-owned startups were not significantly different from those owned by men in terms of the share of their financing that came from outside debt financing.

As expected, high tech firms generally had higher levels of financial capital than their non-high tech counterparts. Surprisingly, however, they were actually more reliant on formal debt financing than were similar firms that were not high tech in nature. This was true both at startup and in subsequent years before and during the recent financial crisis. Having intellectual property however, was negatively associated with greater reliance on formal debt financing. This may indicate that the kinds of high tech firms that rely on patents, trademarks, and copyrights to protect their intellectual property are more informationally opaque and therefore less attractive as borrowers for bank financing, rather than just high tech firms more generally. Indeed, in three of

the four years the coefficient on intellectual property was negative in the equation for loan approvals and in two of those years the difference was statistically significant.

While this study is limited in that it is focused on one cohort of firms that began operations in 2004, it documents significant racial and gender disparities in capital access, as well as differences in financing patterns by high tech and non-high tech firms. It is hoped that these findings will help policymakers in developing policies to ensure optimal access to debt and equity capital among all small businesses, especially during tough economic times and among those that have been disadvantaged historically in financial markets.

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Appendix:Variable Definitions	
High Wealth ($250K+)	Net wealth of $250,000 or more in 2008
Minority	Primary owner is black, Hispanic, or non-Asian other race
Asian	Primary owner is Asian
Female	Primary owner is female
High Tech	Technology based firm
High Credit Score	Credit score in the 71-100th percentile
Medium Credit Score	Credit score in the 31-70th percentile
Incorporated	Firm is incorporated as a C, S, or limited liability corporation
Intellectual Property	Firm has one or more patents, trademarks, and/or copyrights
Product Offering(s)	Firm offers a product (versus a service, could offer both)
Home Based	Firm is based in the owner's home
Hours Worked	Average hours worked in a week by primary owner
Industry Experience	Previous years of industry experience
Age	Primary owner age
Team Ownership	Firm has two or more owners
Age Squared	Primary owner age squared
Some College	Primary owner has some college
College Degree	Primary owner has a college degree
Graduate Degree+	Primary owner has a graduate degree
Startup Experience	Primary owner has previous startup experience

INVENTION OF A SLAVE

Brian L. Frye†

CONTENTS

INTRODUCTION

On June 10, 1858, the Attorney General issued an opinion titled *Invention of a Slave*,[1] concluding that a slave owner could not patent a machine invented by his slave, because neither the slave owner nor his slave could take the required patent oath.[2] The slave owner could not swear to

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1. Invention of a Slave, 9 Op. Att'y Gen. 171, 171–72 (1858).
2. *Id.*

be the inventor, and the slave could not take an oath at all.[3] The Patent Office denied at least two patent applications filed by slave owners, one of which was filed by Senator Jefferson Davis of Mississippi,[4] who later became the President of the Confederate States of America.[5] But it also denied at least one patent application filed by a free African-American inventor,[6] because African-Americans could not be citizens of the United States under *Dred Scott*.[7]

Slave owners objected to the Attorney General's opinion,[8] arguing that they were entitled to own all of the fruits of the labor of their slaves, whether physical or mental.[9] Abolitionists objected to its application by the Patent Office,[10] arguing that free African-Americans were citizens of the United States, entitled to patent their inventions.[11] Slave owners unsuccessfully tried to amend the Patent Act to enable slave owners to patent the inventions of their slaves,[12] which the Patent Act of the Confederate States of America explicitly permitted.[13] By contrast, abolitionists successfully convinced the Attorney General to issue an opinion concluding that free African-Americans were citizens of the United States, entitled to patent their inventions, among other things.[14]

Today, the Attorney General's opinion in *Invention of a Slave* is forgotten for the best reason: it was abrogated by the Reconstruction Amendments.[15] Nevertheless, it illuminates peculiar contradictions in the ideology of slavery and its application. Slave owners justified slavery by denying the humanity and creativity of African-Americans, but still wanted to claim ownership of valuable inventions created by their slaves.

3. H.E. Baker, *The Negro as an Inventor*, *in* TWENTIETH CENTURY NEGRO LITERATURE 400 (Daniel Wallace Culp ed., 1902).

4. *Id.*

5. *Id.*

6. CONG. GLOBE, 37th Cong., 2d. Sess. 89 (1861).

7. *Id.*; *see* Scott v. Sandford (*Dred Scott*), 60 U.S. 393, 452 (1857).

8. *See, e.g.*, Letter from Oscar J. E. Stuart to John A. Quitman, Senator, Miss. (Aug. 29, 1857), *in* Dorothy Cowser Yancy, *The Stuart Double Plow and Double Scraper: The Invention of a Slave*, 69 J. NEGRO HIST. 48, 49 (1984).

9. *Id.*

10. *See, e.g.*, Congressman Philemon Bliss, Speech in The House of Representatives (Jan. 7, 1858), *in* NAT'L ERA, Feb. 8, 1858, at 23.

11. *See id.*

12. *See, e.g.*, Letter from Oscar J. E. Stuart to Jacob Thompson, Sec'y of the Interior (June 16, 1858) (on file with the National Archives).

13. Act of May 21, 1861, ch. 46, Pub. Laws, Provisional Cong., 2d Sess., *reprinted in* THE STATUTES AT LARGE OF THE PROVISIONAL GOVERNMENT OF THE CONFEDERATE STATES OF AMERICA 1, 148 (James M. Matthews ed. 1864) [hereinafter PROVISIONAL STATUTES AT LARGE].

14. Citizenship, 10 Op. Att'y Gen. 382 (1862).

15. *See* U.S. CONST. amend. XIV, cl. 1.

They rationalized that contradiction by claiming that slaves were more creative than free African-Americans, implicitly characterizing slavery as humanitarian. By contrast, the Attorney General and the Patent Office relied on the ideology of slavery to prevent slave owners from patenting inventions created by their slaves, but ironically also prevented free African-Americans from patenting their inventions.

I. ANTEBELLUM REQUIREMENTS FOR PATENTABILITY

The antebellum Patent Act was amended and rewritten several times. After 1793, it included a "Patent Oath," which eventually required patent applicants to swear to be the "original" inventor of the claimed invention and to their country of citizenship.[16] This oath effectively precluded slave owners from patenting the inventions of their slaves.[17] And after *Dred Scott*,[18] it also arguably precluded free African-Americans from patenting their own inventions.

The first United States patent law was the Patent Act of 1790, which provided

> [t]hat upon the petition of any person or persons to the Secretary of State, the Secretary . . . of war, and the Attorney General . . . setting forth, that he, she, or they, hath or have invented or discovered any useful art, manufacture, engine, machine, or device, or any improvement therein not before known or used, and praying that a patent may be granted therefor,[19]

any two of those officials could agree to grant a patent with a term of fourteen years, to be certified by the Attorney General and signed by the President.[20] If a patent issued, the grantee was required to submit a written description of the invention or discovery, as well as a drawing or model, if possible.[21]

The Patent Act of 1793 repealed and replaced the 1790 Act.[22] Among other things, it limited patents to "citizens of the United States," and authorized the Secretary of State to review patent applications and

16. Patent Act of 1793, ch. 11, 1 Stat. 318, 321; Patent Act of 1800, ch. 25, 2 Stat. 37, 38; Patent Act of 1836, ch. 357, 5 Stat. 117, 119.

17. *See* ch. 11, 1 Stat. at 319 (citing Morris v. Huntington, 17 F. Cas. 818, 820 (C.C.D.N.Y. 1824) (No. 9831)).

18. Scott v. Sandford (*Dred Scott*), 60 U.S. 393, 452 (1857).

19. Patent Act of 1790, ch. 7, 1 Stat. 109, 109; Press Release, U.S. Patent and Trademark Office, The U.S. Patent System Celebrates 212 Years (Apr. 9, 2002), https://www.uspto.gov/about-us/news-updates/us-patent-system-celebrates-212-years.

20. Ch. 7, 1 Stat. at 109–10.

21. *Id.* at 110.

22. *Id.* at 109; ch. 11, 1 Stat. at 318.

issue patents.[23] It also provided

> That every inventor, before he can receive a patent, shall swear or affirm, that he does verily believe, that he is the true inventor or discoverer of the art, machine, or improvement, for which he solicits a patent, which oath or affirmation may be made before any person authorized to administer oaths.[24]

The Patent Act of 1800 amended the Patent Act of 1793,[25] primarily in order to enable noncitizens to obtain patents.[26]

The Patent Act of 1836 repealed and replaced the 1793 Act.[27] It established a Patent Office in the Department of State,[28] authorized the President to appoint a Commissioner of Patents, with the advice and consent of the Senate,[29] and authorized the Commissioner of Patents to grant patents.[30] It also retained the requirement that a patent applicant swear to be the original inventor or discoverer of the patent claim[31]:

> The applicant shall also make oath or affirmation that he does verily believe that he is the original and first inventor or discoverer of the art, machine, composition, or improvement, for which he solicits a patent, and that he does not know or believe that the same was ever before known or used; and also of what country he is a citizen; which oath or affirmation may be made before any person authorized by law to administer oaths.[32]

On March 3, 1849, Congress created the Home Department,[33] which was soon renamed the Interior Department.[34] The Patent Office became part of the Interior Department, which moved into the Patent Office building.[35]

23. *See* ch. 11, 1 Stat. at 318–21.
24. *Id.* at 321.
25. *See id.* at 318; *see also* Patent Act of 1800, ch. 25, 2 Stat. 37, 37–38.
26. *See* ch. 25, 2 Stat. at 37–38.
27. *See* ch. 11, 1 Stat. at 318; *see also* Patent Act of 1836, ch. 357, 5 Stat. 117, 117.
28. Ch. 357, 5 Stat. at 117.
29. *Id.* at 117–18.
30. *Id.*
31. *See id.* at 119; *see also* ch. 11, 1 Stat. at 321.
32. Ch. 357, 5 Stat. at 119.
33. Act of Mar. 3, 1849, ch. 108, 9 Stat. 395, 395 (codified at 43 U.S.C. § 1451 (2012)); *see History of the Interior*, U.S. DEP'T INTERIOR, http://www.doi.gov/whoweare/history (last visited Oct. 26, 2017).
34. *History of the Interior*, *supra* note 33.
35. *See id.*

II. ANTEBELLUM AFRICAN-AMERICAN PATENTS

Many free antebellum African-American inventors patented their inventions.[36] The first known African-American inventor to receive a patent was Thomas Jennings, who patented a method of "dry scouring" clothing in 1821.[37] Robert Benjamin Lewis patented a "machine for dressing flax and hemp" in 1824, "a new and useful machine for the picking of oakum and hair" in 1836, a "feather renovator" in 1840, and "a brush for whitewashing" in 1841.[38] Henry Blair patented a "Seed-Planter" in 1834 and a "Cotton-Planter" in 1836.[39] Norbert Rillieux patented a method of refining sugar in 1843, and an improved method of refining sugar in 1846.[40] Joseph Hawkins patented "an improved gridiron" in 1845.[41] Unfortunately, many of these patents were lost in the Patent Office Fire of 1836.[42]

The Patent Office did not require patent applicants to disclose their race, so it typically did not know whether patent owners were African-Americans.[43] However, the Patent Office Digest of 1840 noted that patent owner Henry Blair was "colored" without further comment.[44] The Patent Office did not disclose the race of any other patent owners, and it is unclear how it became aware of Blair's race.[45] However, the Patent Office's

36. *See* Henry E. Baker, *The Negro in the Field of Invention*, J. NEGRO HIST. 22–23 (1917).

37. *See* HENRY L. ELLSWORTH, COMM'R OF PATENTS, A DIGEST OF PATENTS, ISSUED BY THE UNITED STATES, FROM 1790 TO JANUARY 1, 1839, at 89, 550 (1840) [hereinafter DIGEST OF PATENTS]; U.S. Patent No. 3306X (issued Mar. 3, 1821).

38. DIGEST OF PATENTS, *supra* note 37, at 95, 112, 562; U.S. Patent No. 3808X (issued Jan. 28, 1824); U.S. Patent No. 9771X (issued June 25, 1836); U.S. Patent No. 1655 (issued June 27, 1840); U.S. Patent No. 1992 (issued Feb. 23, 1841).

39. DIGEST OF PATENTS, *supra* note 37, at 31–32, 468; U.S. Patent No. 8447X (filed Oct. 14, 1834); U.S. Patent No. 15 (issued Aug. 31, 1836).

40. U.S. Patent No. 3237 (issued Aug. 26, 1843); U.S. Patent No. 4879 (issued Dec. 10, 1846).

41. U.S. Patent No. 3973 (issued Mar. 26, 1845).

42. KENNETH W. DOBYNS, THE PATENT OFFICE PONY: A HISTORY OF THE EARLY PATENT OFFICE 107–11 (1997). On December 15, 1836, a fire destroyed almost all of the records of the Patent Office. *Id.* In an effort to restore the records of the Patent Office, Congress passed the Act of March 3, 1837, which appropriated $100,000. Ch. 33, 5 Stat. 163, 176 (1837). The Patent Office asked all patentees to send their patents for copying, as well as all courts in possession of certified copies of patents. DOBYNS, *supra* note 42, at 109. Of the more than 10,000 patents that had issued, 2,845 were eventually restored, in whole or in part. *Id.* at 111. The Patent Office also introduced a numbering system, beginning with patent number 1, issued in July 1836. *Id.* Patents issued before that date were also numbered in the "X" series. *Id.* In 1840, the Patent Office published a digest, listing all patents issued from 1790 to 1838. *See* DIGEST OF PATENTS, *supra* note 37 at xi.

43. *The Negro in the Field of Invention*, *supra* note 36, at 23.

44. DIGEST OF PATENTS, *supra* note 37, at 31, 468.

45. *The Negro in the Field of Invention*, *supra* note 36, at 23.

explicit recognition of Blair's race proves that free African-Americans could patent their inventions and discoveries, at least in the 1830s.[46]

Of course, many free African-American inventors did not patent their inventions and discoveries.[47] Obtaining a patent was difficult and expensive.[48] Some inventors could not afford to patent their inventions or could not obtain legal assistance.[49] Some inventions were not worth patenting.[50] And some patent applications were rejected, possibly based on racial discrimination.[51] Accordingly, some patent applicants concealed their race from the Patent Office, in order to avoid potential discrimination.[52] And others used their white partners as proxies, for the same reason.[53] As a consequence, it is impossible to identify with certainty all of

46. *See* DIGEST OF PATENTS, *supra* note 37, at 31, 468; *see also The Negro in the Field of Invention*, *supra* note 36, at 23.

47. *See The Negro as an Inventor*, *supra* note 3, at 401; *see also The Negro in the Field of Invention*, *supra* note 36, at 35–36.

48. *See The Negro in the Field of Invention*, *supra* note 36, at 35–36.

49. *Id.*

50. *See generally* John F. Duffy, *Inventing Invention: A Case Study of Legal Innovation*, 86 Tex. L. Rev. 1 (2007) (discussing the requirements for obtaining a patent and denying patents to those inventions deemed trivial).

51. *See, e.g.*, FRANK A. ROLLIN, LIFE AND PUBLIC SERVICES OF MARTIN R. DELANY 77–78 (1969). For example, in 1851, Martin R. Delany tried and failed to patent an invention "for the ascending and descending of a locomotive on an inclined plane, without the aid of a stationary engine." *Id.* at 77. It is unclear why Delany's patent application was rejected, but he suspected racial discrimination. *Id.* at 77–78; *see* WILLIAM J. SIMMONS, MEN OF MARK EMINENT, PROGRESSIVE AND RISING 1007–12 (1887).

52. *See, e.g.*, *Henry Boyd—Former Slave and Cincinnati Entrepreneur*, DIGGING CIN. HIST. (Feb. 6, 2014), http://diggingcincinnati.blogspot.com/2014/02/henry-boyd-former-slave-and-cincinnati.html.

53. *Id.* For example, George Porter of Cincinnati, Ohio patented a "bedstead fastening" in 1833. U.S. Patent No. 7911X (issued Dec. 30, 1833); DIGEST OF PATENTS, *supra* note 37, at 392. The "wood screw and swelled rail" bedstead fastening was actually invented by Henry Boyd, a free African-American, who owned a successful bedstead factory in Cincinnati. *Henry Boyd—Former Slave and Cincinnati Entrepreneur*, *supra* note 52 ("With the money from this job and others, Henry went on to create his own furniture shop, which stood at the corner of Broadway and Eighth Streets. His bedsteads were the feature of the business and in 1833, his invention was patented by George Porter, since African-Americans at the time were unable to legally secure patents themselves. His creative design, called "wood screw and swelled rail" allowed the frame to remain tightly assembled without the use of iron bolts."); *see* CHARLES CIST, SKETCHES AND STATISTICS OF CINCINNATI IN 1851, at 204 (1851); MARTIN ROBISON DELANY, THE CONDITION, ELEVATION, EMIGRATION, AND DESTINY OF THE COLORED PEOPLE OF THE UNITED STATES 98 (1852) ("Henry Boyd, is also a man of great energy of character, the proprietor of an extensive Bedstead manufactory, with a large capital invested, giving constant employment to eighteen or twenty-five men, black and white. Some of the finest and handsomest articles of the bedstead in the city, are at the establishment of Mr. Boyd. He fills orders from all parts of the West and South, his orders

the free antebellum African-American inventors, or even patent owners.[54]

III. INVENTION OF A SLAVE

But there were also many enslaved antebellum African-American inventors who could not patent their inventions, or own property of any kind.[55] Some slave owners probably surreptitiously patented the inventions of their slaves.[56] At least apocryphally, Eli Whitney's cotton gin was actually invented by a slave named Sam.[57] Likewise, Cyrus McCormack's mechanical reaper is often attributed to a slave named Jo Anderson.[58]

Many inventions created by enslaved African-American inventors

from the South being very heavy. He is the patentee, or holds the right of the Patent Bedsteads, and like Mr. Wilcox, there are hundreds who deal with Mr. Boyd at a distance, who do not know that he is a colored man.").

54. *See, e.g.*, *The Negro in the Field of Invention*, *supra* note 36, at 23 (discussing the lack of documentation of the Patent Office for patents received by African-Americans). The first African-American Patent Examiner was Henry E. Baker, who joined the Patent Office in 1877. *See The Negro as an Inventor*, *supra* note 3, at 399–402. Baker soon began to assemble a list of patents obtained by African-American inventors, and presented exhibits of those inventions in the 1880s and 1890s. *Id.* at 401. On January 26, 1900, Commissioner of Patents C.H. Duell circulated a letter to the patent bar and the press, asking for any information about African-American patent owners, for an exhibit at the Paris Exposition of 1900. *Id.* at 402. The responses identified more than four hundred patents issued to African-American inventors. *Id.*

55. PATRICIA CARTER SLUBY, THE INVENTIVE SPIRIT OF AFRICAN AMERICANS: PATENTED INGENUITY 30 (2004).

56. *See id.*

57. *See* PORTIA P. JAMES, THE REAL MCCOY: AFRICAN-AMERICAN INVENTION AND INNOVATION, 1619-1930, at 55 (1989). Whitney's cotton gin used hooks to pull cotton fibers through a wire mesh and separate them from the cotton seed. *See* Eli Whitney, Cotton Gin, U.S. Patent No. 72X (issued Mar. 14, 1794). While the attribution of the cotton gin to a slave is unsubstantiated, slaves had previously used combs of their own devising to separate cotton fibers from cotton seeds. JAMES, *supra* note 57, at 55. Some have attributed the cotton gin to Catharine Littlefield Greene, Whitney's employer and benefactor, but this is also unsubstantiated. *See, e.g.*, Matilda J. Gage, *Woman as Inventor*, 136 N. AM. REV. 478, 482–83 (1883).

58. CYRUS MCCORMICK, THE CENTURY OF THE REAPER 11 (1931). McCormick's reaper was drawn by one or more horses, and cut grain on one side of the team. *See* C. H. McCormick, Reaper, U.S. Patent No. 8277X (issued June 21, 1834). McCormick's grandson acknowledged Anderson's contribution to the development of the McCormick reaper:

> Most of all, the name of his Negro helper, Jo Anderson, deserves honor as the man who worked beside him in the building on the reaper. Jo Anderson was a slave, a general farm laborer and a friend. Cyrus never spared his own fine physique by day or by night; and the Negro toiled with him up to the hour of the test and after. It is pleasant to know that in later times, when old Jo's productive days were over, Cyrus or his son provided for his declining years.

MCCORMICK, *supra* note 58, at 11.

were never patented.[59] At the turn of the nineteenth century, a Kentucky slave invented the hemp brake.[60] In about 1800, a Massachusetts slave named Ebar invented a method of making brooms out of corn stalks.[61] In about 1825, an Alabama slave named Hezekiah invented a machine for cleaning cotton.[62] In 1831, a Charleston, South Carolina slave named Anthony Weston invented an improvement on a threshing machine invented by W.T. Catto, which his owner, Benjamin F. Hunt, successfully commercialized.[63] And in 1839, a North Carolina slave named Stephen Slade invented a method of curing tobacco that enabled the creation of the modern cigarette.[64]

At least two slave owners applied for patents for inventions created by their slaves.[65] Both applications were ultimately denied, because no one could take the required patent oath.[66] The slave owners could not take the oath, because they were not the inventors, and the slaves could not take an oath at all.[67]

59. *See* JAMES, *supra* note 57, at 53 ("Many other slaves, lost to history, invented labor-saving devices and innovative techniques.").

60. *See* CHARLES H. WESLEY, NEGRO LABOR IN THE UNITED STATES, 1850-1925, at 20–21 (1927); James L. Allen, *Mrs. Stowe's 'Uncle Tom' at Home in Kentucky*, CENTURY MAG., 1887, at 851, 860 ("There shall be special training for special aptitude. One shall be made a blacksmith, a second a carpenter, a third a cobbler of shoes. In all the general industries of the farm, education shall not be lacking. It is claimed that a Kentucky negro invented the hemp-brake."); Booker T. Washington, *The Negro's Part in Southern Development*, 35 AM. ACAD. POL. & SOC. SCI. 124, 126 (1910) ("There are traditions of a number of inventions made by slaves at different times. Among these, I recall the 'Hemp Brake,' a machine by which the fiber is separated by beating from the hemp stalk.").

61. Mary Schons, *African-American Inventors I*, NAT'L GEOGRAPHIC, (Jan. 21, 2011), https://www.nationalgeographic.org/news/african-american-inventors-18th-century/.

62. JAMES, *supra* note 57, at 53.

63. J. A. ROGERS, AFRICA'S GIFT TO AMERICA 227 (Civil War Centennial ed., 1961).

64. *See* ALLAN M. BRANDT, THE CIGARETTE CENTURY 24 (2007) ("Flue-curing [a process accidentally invented by Stephen, a slave in Caswell County in 1839] turned tobacco a bright 'lemon yellow' color. Many commented on the mildness of this tobacco and its particular suitability for cigarettes. But what they could not have known is that this process also subtly changed the chemistry of the leaf to make it slightly acidic rather than alkaline . . . . Smokers soon found they could take cigarette smoke deep into their lungs, rather than holding the smoke principally in their mouths as they did with pipes and cigars. In this way—as we now know—nicotine absorbs rapidly into the bloodstream; some seven seconds later, it reaches the brain. Nicotine addiction was born . . . . This physiological process would create a mass industry and a consequent epidemic of tobacco-related diseases."); *Danville Notes*, RICHMOND DISPATCH, Mar. 22, 1886, at 4 ("Stephen Slade, (colored) of Caswell County, the first man to discover the art of making bright tobacco, is in the city today. He is now sixty-five years old and in good health.").

65. *The Negro as an Inventor*, *supra* note 3, at 400.

66. *Id.*

67. *See* Invention of a Slave, *supra* note 1.

A. Ned's "Double Plow and Scraper"

In the late 1850s, a slave named Ned invented a "double plow and scraper," which enabled a farmer to plow and scrape both sides of a row of cotton simultaneously, among other things, depending on the configuration of its plow and scraper blades.[68] Ned belonged to Oscar J.E. Stuart, a lawyer and planter from Holmesville, Mississippi, and Stuart hoped to patent Ned's promising invention.[69]

In 1857, Stuart wrote to Secretary of the Interior Jacob Thompson, asking whether and how he could patent Ned's invention.[70] Stuart described the invention, attributed it to his slave, observed that the language of the Patent Act prevented slave owners from patenting the inventions of their slaves, and complained that it would violate "equal protection" if slave owners could not patent the inventions of their slaves.[71]

> Hon Jacob Thompson
> Secretary of the Interior
>
> . . . .
>
> I wish to be informed if the Master of a slave, can procure a patent, for a useful invention discovered by his slave. If he can will an affidavit as to the facts, to the best of his knowledge and belief, be sufficient (the applicant, complying with the other requisites of the law,) to authorise the issuance of the patents. (I can swear that it is a new invention so far as I known and believe, and that it was constructed under my notice, the plan of it is, that of the slave.) As a legal conclusion the master is the owner of the fruits of the labor of the slave both intellectual, and manual; But from the phraseology of the law, if the letter thereof is to govern. The applicant would have to swear to the fact of the invention, that the same was the contrivance of his <u>own</u> brain. And further the question may arise, as to whether the invention should be, on the part, of one of the political, and not one of the servile race. If this view of the case is adopted, the value of the invention of a slave to his master is excluded, and the equal protection and benefit of government to all Citizens (in the case given) <u>is subverted</u>. A negro smith belonging to the Estate of my deceased wife, has invented a double Cotton Scraper, in front of which is attached two ploughs, to run in the spaces between the ridges. The ploughs are attached to an Iron cross bar (an inch and a half bar) with a shaft in the center, which is inserted in the beam of the plough.

68. *See* JOHN HEBRON MOORE, AGRICULTURE IN ANTE-BELLUM MISSISSIPPI 187–88 (1958).

69. *Id.*

70. Letter from Oscar J. E. Stuart to Jacob Thompson, Sec'y of the Interior (Aug. 25, 1857) (on file with the National Archives); *see* DOBYNS, *supra* note 42, at 152.

71. *See* DOBYNS, *supra* note 42, at 152; Letter from Stuart to Thompson (Aug. 1857), *supra* note 70.

> The ploughs to be divided from each other from eight to thirty six inches, so as to correspond with the size of the scraper the size of the ridge, and the width of the middles. Or spaces between the ridges. The scraper is partly divided in front. The division space from 3 to 4 inches to correspond with the manner in which the cotton is planted in the drill. The ploughs are supported by stays connected with the beam, a short distance behind the blevin, and a stay from the centre of the beam, to the shaft, where it is welded to the cross bar. And as many more stays may be added as any character of soil may require. A large scraper, ploughs, and stock, will weigh on or about sixty pounds. And with it, one hand and two horses can do the work of four hands, four horses and two single scrapers, and two ploughs. If I can procure a patent, I will file a petition with an affidavit setting forth specially the circumstances of the invention, and forward on the other necessary proofs and a model. If there is any particular form of petition adopted in the Patent Office, I shall be pleased to receive the necessary blanks.
>
> Please let me hear from you upon this subject.
>
> Respectfully,
>
> . . . .
>
> Oscar J.E. Stuart
>
> P.S. Our planters who have seen the model are highly pleased with it, as a great labor saving machine[.][72]

A few days later, Stuart wrote to Senator John A. Quitman of Mississippi, asking the same question, and making the same complaint.[73] He explained that he had asked Secretary Thompson the same question, because he was worried that the new Commissioner of Patents might be a northerner opposed to slavery.[74] And he closed by asking Quitman whether the Patent Act could be amended to permit slave owners to patent the inventions of their slaves.[75]

> Sen John A. Quitman
>
> . . . .
>
> I presume upon your Spirits of civility, in addressing this letter to you, with the view of obtaining Some information, which may perhaps be in your power to give, upon a Subject, in which as the Executor of the will of my deceased wife, I have a personal interest—I wish to know if there

72. Letter from Stuart to Thompson (Aug. 1857), *supra* note 70.
73. Letter from Stuart to Quitman, *supra* note 8, at 48–49.
74. *See id.* at 49.
75. *Id.* at 50.

is any precedent, for the grants of letters of patent to the master, for a valuable discovery, made and constructed by his Slave, If there is none, do you think a patent could be granted under the present law in Such a case, upon the masters making affidavit, as in other cases, varies so far to assert, the discovery to be that of the slave instead of himself—I have before me Gordon[']s Digest of Laws of the United States Printed in 1837, and I have no means of learning the Subsequent legislation of Congress (if any) upon the Subject of patents—By the provisions of the law before me, the applicant must Swear that he is the original discoverer of the invention for which he Seeks a Patent—I presume that no one could rationally doubt, that in legal contemplation, the master has the same right to the fruits of the labor of the intilect of his slave, that he has to those of his hands—But the question is can he under the patent laws, obtain a right to the exclusive Construction for a term of years of a useful invention the fruits of the intilect of his slave—It maybe argued that the Patent laws were passed to encourage inventions of a useful character on the Part of the Political to the exclusion of the Serville race, who by reason of their general Stupidity, are considered without the range both of the letter, the Spirit of the Law—If this view of the case is adopted it certainly overrides, and Subverts, that Principle of equality, between Citizens of the Country, which is the conner Stone of our Political edifice—Such a construction would result in an unjust discrimination in the Protection due to Property from the government—

The general government in various ways, especially in the execution laws, recognizes the Property of the owner in its slaves and the fruits of their manual labor—Any construction of a Statute however technically correct, according to the rules of ordinary legal construction which is subversive of the right of any Citizen to an equality of Protection to his Person, and Property, must be abandoned, unless the Primordial Principles of government itself may be abandoned to Sustain rules of construction, which however correct in their general application as leading to the truth, are not universally So—

I have written to the Hon Jacob Thompson upon this Subject, and Submitted the question to him—My reason for doing So, instead of writing to the Commissioner of Patents, was that I did not know, whether the Commissioner of Patents is (I believe there has been a resignation or removal in that Office) from the free, or Slave States, and believing that the Bureau of the Com. belongs to the department, of the Interior—I concluded to Submit the matter at once to the head of the department, with a Proper Suggestion in favor of the legal Propriety of the issuance of the Patent, who as a Southern man would be exempt from all the Prejudices, which might cloud the understanding of a man from a different latitude—I have exhibited the model of the invention to many of our best planters, who consider it as Supplying as a labor Saving machine, a desideratum among Cotton Planters—The invention is a double

> Cotton Scraper, and two ploughs on the Same beam, made in Such a manner as to Scrape both Sides of the Cotton ridge at the same time, and plough out the middles or Spaces between the ridges, So as to leave the ridge ready for the hoes. A Scraper, and Plough thus Constructed, (a large one drawn by two horses), would do the work of two Scrapers two Ploughs and four horses,—The Scraper can be used by one hand. The Ploughs go out laterally from the beam and are Seperated from each other Say from 8 or 10 to 36 inches, so as to Correspond with the Size of the Scraper and Size of the ridge—They are placed in advance of the Scraper Attached to an Iron Cross bar (an inch & a half bar) and Supported in their position by stays the Cross bar is attached to the beam by a Shaft—The invention would Prove more valuable than any other Species of Plough Upon the level lands in the river Counties—The description of the invention in Communicated to you in Confidence as a matter in Course—I communicated to the Secretary of the Interior a more detailed description of it, Supposing that my letter might Some how have the effect of a Caveat—Though informally entered—
>
> Respectfully
>
> Oscar J E Stuart
>
> P.S. If I cannot get a patent under the existing laws, cannot an act be got through Congress at the next Session, So as to embrace the Case—[76]

In fact, there was no Commissioner of Patents when Stuart wrote to Thompson and Quitman.[77] Former Commissioner of Patents Charles Mason was a Northern Democrat, born in New York and a resident of Iowa, but he resigned on August 5, 1857, because he did not want to serve in the new Buchanan administration.[78] The new Commissioner of Patents, Joseph Holt, was not appointed until September 10, 1857.[79]

Holt was not only a Southern Democrat, but also a former resident of Mississippi.[80] Holt was born in Breckinridge County, Kentucky on January 6, 1807.[81] He practiced law in Kentucky from 1828 to 1835, then moved to Vicksburg, Mississippi, where he practiced law until 1842, when he retired and returned to Kentucky.[82] Holt supported Buchanan's presidential campaign, and moved to Washington, D.C. in the spring of

76. *Id.*

77. *See* DOBYNS, *supra* note 42, at 151.

78. *Id.* at 149; Richard Acton, *Mason, Charles*, BIOGRAPHICAL DICTIONARY IOWA, http://uipress.lib.uiowa.edu/bdi/DetailsPage.aspx?id=253 (last visited Oct. 26, 2017).

79. E.D. Sewall, *Joseph Holt: Sixth Commissioner of Patents*, 2 J. PAT. OFF. SOC'Y 171, 174 (1919).

80. DOBYNS *supra* note 42, at 151; Sewall, *supra* note 79, at 174.

81. Sewall, *supra* note 79, at 173.

82. *Id.*

1857, presumably in order to seek a position in the new administration, although he denied it.[83]

Secretary Thompson was born in Leasburg, North Carolina on May 15, 1810, but moved to Mississippi, where he began practicing law in 1835.[84] He represented the First District of Mississippi in Congress from 1839 to 1851, and was appointed Secretary of the Interior by President Buchanan in 1857.[85] Thompson recommended Holt to Buchanan for Commissioner of Patents, probably on the basis of Holt's connection to Mississippi and support of Buchanan's candidacy.[86]

Indeed, *The National Era*, an abolitionist newspaper published in Washington, D.C., opposed Holt's appointment because he was a Southerner:

> Thomas H. Holt, of Louisville, Kentucky, Humphrey Marshal's defeated opponent for Congress, is now stated to be certain to be appointed Commissioner of Patents. If any position in the Government, above all others, should be given to a Northern man, it is the head of the Patent bureau; for five-sixths of all the inventions are the product of the free States.[87]

However, Stuart's suspicions of Holt's sympathies may have been accidentally accurate.[88] When the Confederate States of America seceded, Thompson resigned and became the Inspector General of the Confederate States Army, but Holt remained loyal to the United States of America, and after the war, Thompson and Holt were bitter enemies.[89]

In any case, Thompson responded to Stuart's letter, telling him that his question was novel, and would be forwarded to the Attorney General for a formal opinion.[90] The Attorney General refused to issue an opinion until the Patent Office had actually received a patent application for the

83. *Id.* at 174.

84. *Thompson, Jacob*, BIOGRAPHICAL DIRECTORY U.S. CONG., http://bioguide.congress.gov/scripts/biodisplay.pl?index=T000203 (last visited Oct. 26, 2017).

85. *Id.*

86. Sewall, *supra* note 79, at 174.

87. *General Summary*, NAT'L ERA, Sept. 17, 1857, http://www.accessible.com/accessible/docButton?. Humphrey Marshall represented the 7th District of Kentucky in Congress as a Whig from 1849 to 1852 and as a member of the American Party from 1855 to 1859. *Marshall, Humphrey*, BIOGRAPHICAL DIRECTORY U.S. CONG., http://bioguide.congress.gov/scripts/biodisplay.pl?index=M000155 (last visited Oct. 26, 2017). He supported John C. Breckinridge in 1860 and became a Brigadier General in the Confederate States Army. *Id.*

88. *See* Sewall, *supra* note 79, at 171.

89. *Id.*

90. JAMES, *supra* note 57, at 49.

invention of a slave.[91] So on November 15, Stuart filed a patent application for a "double cotton scraper, with two Ploughs attached to the same beam," which included an affidavit signed by Ned, stating that he was the inventor and that he was a slave owned by Stuart.[92]

On November 24, 1857, Holt responded to Stuart's patent application, stating that the invention could not be patented, because neither Stuart nor Ned could take the patent oath.[93] Stuart could not take the oath, because he conceded that he was not the inventor, and Ned could not take the oath, because he could not be a citizen of the United States.[94]

> By reference to Page 3 Section 6 of enclosed pamphlets you will find that before the Office has authority under the law, to consider an application for letters Patent, it is required, that the applicant shall make oath or affirmation of Citizenship; and as the laws of the United States do not recognize slaves as Citizens it is impossible for the negro slave "Ned" to bring his application before the Office in such form as would entitle it to examination. The papers are herewith returned.[95]

Holt's response echoed but inverted the Supreme Court's recent and highly controversial *Dred Scott* opinion, which issued on March 5, 1857.[96] In *Dred Scott*, the Supreme Court held that African-Americans could not be citizens of the United States, so slaves lacked standing to sue for their freedom in federal court.[97] Holt presumably applied the logic of *Dred Scott* and concluded that if slaves could not be citizens of the United States, then they could not take the patent oath, and slave owners could not patent the inventions of their slaves. In other words, *Dred Scott* denied citizenship to African-Americans in order to help slave owners claim ownership of their slaves, but Holt applied the logic of *Dred Scott* in order to prevent slave owners from claiming ownership of the inventions of their slaves.[98]

91. *See, e.g.*, Letter from J.S. Black, Att'y Gen., to Jacob Thompson, Sec'y of Interior (Dec. 12, 1857) (on file with the National Archives).

92. Letter from Oscar J. E. Stuart, to The Congress of the United States (Dec. 18, 1857) (on file with the National Archives).

93. Letter from Joseph Holt, Comm'r of Patents, to Oscar J. E. Stuart (Dec. 12, 1857) (on file with the National Archives).

94. *Id.*

95. Letter from Joseph Holt, Comm'r of Patents, to Oscar J. E. Stuart (Nov. 24, 1857) (quoted in Letter from Oscar J. E. Stuart, to Jacob Thompson, Sec'y of the Interior (Dec. 18, 1857), *reprinted in* JAMES, *supra* note 57, at 49).

96. Scott v. Sandford (*Dred Scott*), 60 U.S. 393, 419–20 (1857) (emphasizing Congress's inability to naturalize African-Americans).

97. *Id.* at 453.

98. Holt's response to Stuart suggests that slaves could not take the patent oath because they could not be citizens of the United States. *See* Letter from Holt to Stewart, *supra* note 95. But the Patent Act explicitly permitted foreign citizens to patent their inventions in the

Holt returned Stuart's patent application, and forwarded Stuart's argument in support of the application to Thompson, explaining that he could not consider the application because neither Stuart nor his slave Ned could take the patent oath:

> U.S. Patent Office
> Dec. 12, 1857
>
> Sir,
>
> Mr. Oscar J.E. Stuart, a citizen of the State of Mississippi, has filed in this Office an application for letters Patent, for an agricultural implement, designated as a "double cotton scraper, with the Ploughs attached to the same beam." The fee has been paid, and the proper specification drawings and model presented, but for want of the Oath required by the Act of Congress, the further progress of the case has been arrested. It appears from the petition that the invention was not made by the applicant, (Stuart), but by his Slave, and he asks that the Oath may be made by him (Stuart) and the patent issued to him. Believing that under existing law this cannot be done, further action upon the case has been declined, and the question is now submitted to you, and if deemed advisable, through you to the Attorney General.
>
> The sixth Section of the Act of July 4th. 1836 is explicit in requiring that the Application and Oath shall be made by the inventor, and the patent issued to him. There is much reason in this exaction because the invention being a purely mental operation, he who performs it, is alone in a condition to testify to its origin and history. The Slave being incompetent to take the Oath, and incompetent to receive a Patent, there is manifestly a casus Omissus, which legislation alone can supply.
>
> The argument of Mr. Stuart, in support of his application is herein enclosed.
>
> All of which is respectfully submitted.[99]

Stuart also wrote to Thompson, objecting to Holt's refusal to consider his patent application, on the ground that it satisfied the spirit of the Patent Act, even though it did not satisfy the letter of the law.[100]

> To the Hon Jacob Thompson
> Secretary of the Interior
>
> On or about the 15th Ultimo, I forwarded to the Commissioner of Patents, my petition and specification accompanied by the necessary

United States by swearing to foreign citizenship. Patent Act of 1836, ch. 357, 5 Stat. 117, 121–22 (1836). Presumably, Holt assumed that slaves could not be citizens of any nation, and therefore could not take the patent oath.

99. Letter from Holt to Thompson (Dec. 1857), *supra* note 93.

100. Letter from Stuart to Thompson (Dec. 1857), *supra* note 95, at 49.

drawings, in order to procure a patent if one might lawfully issue, for a useful machine the invention of a negro slave called Ned (part of the the Estate of my deceased wife of whose will I am the Executor) being the same machine mentioned in my letter to you of the 25th of last August, which you submitted to the Attorney General, and upon the points submitted, he refused to give an opinion until an application was actually filed in the Office of the Commissioner of Patents, for a patent for the invention mentioned in my letter to you. The question submitted to the Attorney General was: Can the master of a slave procure a patent for a useful invention discovered by his slave. If he can, will an affidavit by the master, that his slave is the original inventor, to the best of his knowledge & belief and complying with the other requisites of the law, be sufficient to authorize the issuance of the Patent. This was the question which the Attorney General refused to decide, when the same was submitted to him hypothetically Gov'r Brown took on the model of the machine with him to Washington, at least I have his letter acknowledging the receipt of it and promising to deliver it at the Patent Office. The papers forwarded were all signed and witnessed as acquired by the rules and regulations of the Patent Office. I also addressed a letter to the Commissioner enclosing him the Certificate of the Branch Mang. [?] of New Orleans of my having deposited thirty dollars to the credit of the Office on account of my application. Considering that the question which has been by you submitted to the Attorney General as an abstract proposition, would upon my application for a patent arise before the Commissioner as a practical one, upon the decision of which I must succeed or fail in obtaining a patent I submitted in the same letter, some affections upon the political philosophy in which the Patent laws are founded, for the Consideration of the Commissioner with the view of demonstrating that though the <u>letter</u> of the statute was against my application so far as making the affidavit is involved, yet that my right to a patent was within its spirits, and therefore I was entitled to a patent. The first notification I had of the reception of the papers at the Patent Office was the delivery to me by our Post Master of a bundle under the frank of the Com'r which upon opening, I found to contain the eight paintings of the machine, which I had forwarded to his address without a word of explanation for returning them. About a week after I received another bundle from him, containing my Petition and Specification, and a short note which is as follows[:]

. . . .

[Letter from Holt to Stuart, November 24, 1857]

Now, I was the applicant for the patent and not the slave. I am a citizen of the United States and made oath of the facts in my affidavit. Both the petition, and specification, expressly show that I am the applicant. How could the Commissioner arrive at such a monstrous conclusion against

the express declaration to the contrary in both the Petition and Specification. To suppose that he did not read them, would be a reflection upon him in his official capacity, which I have no inclination to indulge in. Following my affidavit as to the facts of the invention by the negro, and of my being a Citizen of the United States, is the affidavit of the negro that he is the original inventor of the machine and my slave as set forth in the Petition and Specification. The affidavit of the negro I regarded as a matter of supererogation, mere surplusage, neither strengthening nor diminishing whatever merits there might be in my application. Some of my friends thought differently, and as I thought it could do no harm his affidavit was forwarded in conjunction with mine. It may be that the error of the Commissioner has arisen by his considering what I considered surplusage the main substance of the matter. If such is the manner in which he arrived at his conclusion, it is the first instance in which a conjectural inference was ever known to overrule an express averment to the contrary of the party making it, and which like every other express and complete averment includes all that it does not [sic] embrace, and excludes all that it does not embrace. The very fact of which he informs me, that a negro slave from his anomalous condition is not a Citizen of the United States I call his attention to in my letter of the 24th ultimo. I never was such an unmitigated fool which is the implication of the Commissioner as to imagine that a slave could obtain a patent for a useful invention when under the laws, it is a question upon which there is a diversity of opinion among men learned in the law, whether the master who has a property alike in the fruits of the mind and labor of the hands of his slave whose automaton in legal contemplation he is, and to whom all his acquisitions enure can obtain a Patent when the invention is made by him.

My application has not been decided by the Commissioner; the law requires him to docket the same in my name and decide it, when he has done so. I can then appeal from his decision if against me and not before. Or I may then Petition Congress for relief. He has made up a hypothetical case as though the slave Ned had petitioned for a patent for the invention & decided he could not entertain it, because a slave could not be a Citizen of the United States; and upon that, returned all the papers, Petition, Specification, and Pictures, of my application. For if the slave has ever had any correspondence with his bureau upon the subject I am ignorant of it, and for such impertinence, you know according to our Southern usage, I would correct him. I have rec'd no answer to my letter of the 14th Ultimo enclosing the Certificate of Deposit. I wrote to Gov'r Brown that I would appoint any gentleman in Washington as my agent to manage my business with the Patent Office whom he would recommend. It is however useless for me to send my papers back to the Commissioner unless he will docket my application

> and decide it. What am I to do. I address you, because you are a Mississippian, and Southern man, and besides you have an Official Supervision over the Commissioner of Patents.[101]
>
> . . . .
>
> O.J.E. Stuart

Soon afterward, Senator Albert Gallatin Brown of Mississippi asked Thompson for information about Stuart's patent application, probably at Stuart's urging, and Thompson forwarded copies of the letters in his possession.[102]

> Department of the Interior
> January 11, 1858
>
> Sir:
>
> I enclose, herewith, copy of a letter addressed to this Department by the Commissioner of Patents, on the 12th ult. in relation to Mr. Stuart's application for a patent for a machine invented by his slave, and a copy of my letter to Atty Gen'l Black, soliciting his opinion on the point involved in the case. These papers will furnish the information requested in your note of the 10th inst.
>
> . . . .
>
> J. Thompson
> Secretary[103]

On January 20, 1858, Holt presented to Congress the Report of the Commissioner of Patents for the Year 1857.[104] Among other things, he observed that the Patent Office had received and rejected "several" patent applications for inventions created by slaves:

> It should be mentioned that, within the year just closed, applications have been filed for letters patent for several inventions alleged to be valuable, and to have been made by slaves of the southern States. As these persons could not take the oath required by the statute, and were

101. *Id.*

102. John Boyle, *Patents and Civil Rights in 1857–58*, 42 J. PAT. OFF. SOC'Y 789, 794 (1960). Senator Brown served as the Governor of Mississippi from 1844 to 1848, and as a United States Senator from Mississippi from 1854 until 1861, when he resigned. *Brown, Albert Gallatin*, BIOGRAPHICAL DIRECTORY U.S. CONG., http://bioguide.congress.gov/scripts/biodisplay.pl?index=b000900 (last visited Oct. 26, 2017). He also served as a Confederate States Senator from Mississippi from 1862 to 1865. *Id.*

103. Letter from Jacob Thompson, Sec'y of the Interior, to A. G. Brown, Senator, Miss. (Jan. 11, 1858).

104. COMM'R OF PATS., REPORT OF THE COMMISSIONER OF PATENTS FOR THE YEAR 1857, S. Doc. No. 35-30, at 8 (1858) [hereinafter COMM'R OF PATENTS REPORT].

> legally incompetent alike to receive a patent and to transfer their interest to others, the applications were necessarily rejected. The matter is now presented to the consideration of Congress, that, in its wisdom, it may decide whether some modification of the existing law should not be made in order to meet this emergency, which has arisen, I believe, for the first time in the history of inventions in our country.[105]

In other words, the invention of a slave could not be patented for two related reasons. First, a slave inventor could not take the patent oath.[106] And second, a slave inventor could not receive, own, or transfer a property right.[107]

Thompson sent Stuart's rejected patent application to Attorney General Jeremiah S. Black and requested an opinion.[108] On June 10, 1858, Black issued an opinion stating that the invention of a slave could not be patented:

> Sir: I fully concur with the Commissioner of Patents in the opinion he has given on the application of Mr. O.T.E. Stewart, of Mississippi. For the reasons given by the Commissioner, I think as he does, that a machine invented by a slave, though it be new and useful, cannot, in the present state of the law, be patented. I may add that if such patent were issued to the master, it would not protect him in the courts against persons who might infringe it.[109]

Interestingly, Black simply deferred to Holt's conclusion.[110] He did not explain why he found Holt's interpretation of the Patent Act convincing.[111] He did not independently explain the basis for his opinion. And he did not provide any authority to support his opinion.[112] However, Black's opinion was consistent with other opinions addressing the patent oath.[113]

Soon afterward, Stuart asked Thompson whether the Attorney General had issued an opinion, and informed him that Senator Brown planned to introduce legislation to amend the Patent Act to enable slave owners

105. *Id.* at 8–9.

106. *Id.* at 9.

107. *Id.* at 9. *But cf.* Le Grand v. Darnall, 27 U.S. 664, 669–70 (1829) (holding that a slave owner's grant of property to his slave constituted manumission by necessary implication because slaves could not own property).

108. JAMES, *supra* note 57, at 49.

109. Invention of a Slave, *supra* note 1, at 171–72.

110. *See id.*

111. *Id.*

112. *Id.*

113. *See* Patents for Inventions, 1 Op. Att'y Gen. 332, 332 (1820) (concluding that an invention could not be patented because the inventor had practiced the invention in a foreign country and therefore could not make an oath or affirmation it had not been used); *see also* Oath of Applicant for a Patent, 10 Op. Att'y Gen. 137, 140 (1861) (concluding that the inventor must personally make the oath or affirmation, not an attorney or agent).

to patent the inventions of their slaves[114]:

> Sir
>
> Will you please inform me, if the Attorney General has ever decided the question, submitted to him, by your department, arising upon my application for a patent, for a useful machine invented by my slave, and if so, what is the result of his decision.
>
> Respectfully yours
>
> Oscar J E Stuart
>
> P.S. By my last advices from Gov'r Brown, he has been urging the Attorney General to decide the case against me rather than procrastinate his decision. As he upon such a decision, calculated to introduce a bill into Congress, to amend the Patent laws in such a manner; as to meet the peculiar features of my case.[115]

Two days later, Thompson sent Stuart a copy of the Attorney General's opinion, apologizing for the delay:

> Sir:
>
> I enclose herewith, a copy of the opinion of the Attorney General upon the points involved in your application for a patent for an improved plough, the invention of a slave.
>
> You have already been furnished, through Hon. A.G. Brown, of your state, with copies of the correspondence, between the Commissioner of Patents, and this Department, and are thus in possession of all the information upon the subject I am able to furnish.
>
> The opinion of the Attorney General was not received at this Department until the 12th inst. which will account for the apparent delay in communicating with you.[116]

The two letters crossed in the mail, and Thompson responded to Stuart's letter a couple of weeks later:

> June 30, 1858
>
> Sir:
>
> Your letter of the 16th inst. wishing to know whether the Attorney General had decided the question submitted to him by me arising upon your application for a patent for an agricultural implement the invention of your slave, has been received.
>
> In reply I have to state that on the 15th inst. I addressed you a letter

114. Letter from Stuart to Thompson (June 16, 1858), *supra* note 12.

115. *Id.*

116. Letter from Jacob Thompson, Sec'y of the Interior, to Oscar J. E. Stuart (June 18, 1858) (on file with the National Archives).

enclosing copy of the opinion of the Attorney General thereupon.[117]

The reaction to the Attorney General's opinion was mixed.[118] A University of Mississippi law student and former employee of the Department of the Interior asked Thompson for a copy of the Attorney General's opinion, indicating that his professors disagreed with the Attorney General's conclusion:

> Dr Sir:
>
> If convenient you will confer a favor upon the Law Class, by sending to my address, a copy of the decision of the Atty. General, upon the question as to whether a citizen is entitled to receive a patent for a machine invented by his slave, which arose in the case of O.J.E. Stuart of this State, and which was before your Department, while I was employed there. Prof. Stearns thinks that the owner of a slave would be entitled to a patent for a machine, entirely novel, invented by such slave.
>
> Very Respectfully,
> W.L. Stricklin[119]

By contrast, the *New-York Daily Tribune*, an abolitionist newspaper published by Horace Greeley, ran an anonymous editorial mocking Stuart's efforts to patent Ned's invention:

> A slave that can hoe is excellent. A slave that can sow is delightful. A slave that can reap is admirable. A slave that can gather into barns is a treasure. A slave that will not run away is indeed a possession. A slave that will stand anything, for the cat and the paddle up to the rendition of his wife and children, is an Abrahamic mode. Here one would suppose that catalogue of slavish virtues might end, unless we added to it that dubious virtue of fecundity, upon which decency will not permit us to dilate. But what will our readers say to a Slave figuring in the light of an Inventor? Of an Inventor of a useful agricultural machine? Of a machine so useful that it promises to be profitable? And what will our readers think of the botherations, dilemmas, obfuscations, and general topsyturviness of the Patent Office, when a Chattel with a black skin walked into the cloisters sacred to invention, and claimed to have shown a little intellectual power, and to be entitled to remuneration therefor? Claimed—poor Chattel that he was—to have invented something which human beings might find profitable and convenient. Horrible was the dignified distress of the Patent Office at this application. Here was a thing—in light of the Constitution, nothing but a thing—claiming the

117. *See* Letter from Jacob Thompson, Sec'y of the Interior, to Oscar J. E. Stuart (June 30, 1858).

118. *See* Letter from W. L. Stricklin, to Jacob Thompson, Sec'y of the Interior (Nov. 19, 1858).

119. *Id.*

> honors and emoluments of an inventor! What should a thing be doing there? A thing with two legs, and a stomach, and a head, and two hands, absolutely pretending to have invented something! No plough ever applied. No cart ever applied. No horse ever applied. Therefore, when this two legged thing came up, there was a row in the Office, and the magnates ordered her or him or it to go about his, her, or its business, and pointedly declined to issue any Letters Patent whatever, thereby establishing it as a fixed fact that no nigger could invent anything. In this way was the negro of Mr. Oscar J. E. Stewart, who had blundered upon a useful agricultural machine, treated. Oscar J. E. Stewart could not stand this. Oscar J. E. Stewart considered that he had a right not merely to the brains, but to whatever came out of the brains of his private and personal nigger. So Oscar J. E. Stewart petitioned the Senate that, if the Patent Office would not, could not, or should not, issue a patent to his ingenious nigger, it might be compelled to issue the patent to him. The petition was received, and the report says that it was appropriately referred. We have tried pretty hard to make out what an appropriate reference would be. Was it to the Committee on Agriculture? Or to the Committee on Claims? Or to the Committee on Ways and Means? We shall watch this case for Mr. Oscar J. E. Stewart, and he shall have the benefit of our assistance. He shall have the hard cash for his nigger's brain work as well as for his nigger's handicraftiness, and much good may it do him.[120]

A month later, *The National Era*, an abolitionist newspaper published in Washington, D.C., ran the same editorial, under the sarcastic title "An Inventive Piece of Property."[121]

After receiving the Attorney General's opinion, Stuart redirected his efforts at Congress, asking it to amend the Patent Act to enable slave owners to patent the inventions of their slaves.[122] Among other things, he argued that slave owners had a right to own the inventions of their slaves, and it violated the principle of equal protection to discriminate against them[123]:

> To the Congress of the United States of America
>
> Your petitioner, Oscar J.E. Stuart, a Citizen of the Town of Holmesville County of Pike, and State of Mississippi, would respectfully represent: That about the twenty fifth day of August A.D. Eighteen hundred and fifty seven, a negro man slave called Ned, (part and parcel of the Estate

120. Editorial, N.Y. DAILY TRIB., Dec. 17, 1858, at 4 (internal quotation marks omitted).

121. *See An Inventive Piece of Property*, NAT'L ERA, Jan. 13, 1859, http://www.accessible.com/accessible/docButton?.

122. CONG. GLOBE, 35th Cong., 2d Sess. 33, 47 (1858).

123. Letter from Stuart to Congress, *supra* note 92; *see* CONG. GLOBE, 35th Cong., 2d Sess. at 47.

and separate property of Sarah J.E. Stuart, deceased, of which she was seized, and possessed at the time of her death The legal title to said slave, the possession and control of him, the direction of his labor, the receipt of the fruits thereof being, since her death, vested in him, as Executor of her last will and Testament, for the purposes therein expressed.), invented a new and useful machine, for the purpose of barring off both sides of a Cotton ridge, or a ridge of Indian Corn (where the Corn is planted in a drill,) and scraping both sides of it at the same time, and by a reversal of the ploughs on the shanks of the Crossbar, to which they are attached, by screws, and taking off the Scraper, the ploughs of the machine, thus reversed, can be used to hill either the Cotton or Corn, provided the Cotton or Corn, is not too high at the time to pass under the Crossbar attached to, and athwart the beam. If the Cotton or Corn is too high for the Crossbar to pass over it, without inferring it, by taking off the Scraper, and placing the team (two horses or mules) in the water furrow, the Ploughs without being reversed, will hill the Cotton or Corn, upon the right and left at the same time. Your Petitioner designated said machine, as a Double Cotton Scraper with two Ploughs attached to the same beam with the Scraper. There are two Double Cotton Scrapers, designated by your Petitioner, as Double Cotton Scraper A No. 1, and Double Cotton Scraper A No. 2. They are somewhat different in their Construction, yet have the same function in the Combination, as they may be severally used, and either of which may be used as part and parcel of the machine. The Scrapers and Crossbars, Shafts and Stays in their Connections as a part of said machine, and the design and combination of all the parts of said machine as a whole, is claimed by your Petitioner, as the original invention of said slave, and he verily believes, that said machine has not been known or used Prior to the invention thereof by said slave. With said machine one hand and two horses, can do the work of four hands, four horses, two Common Ploughs, and two Common Scrapers in the Cultivation of either Cotton or Indian Corn.

The Model of the machine, with Scraper A. No. 1, is now in the Patent Office. Your petitioner on the Fourteenth day of December, Eighteen hundred and fifty seven, forwarded to the Commissioner of Patents, his petition and specification, accompanied by all the necessary drawings of said machines, according to the Statute, and the rules and regulations of the Patent Office, in said case made and provided. Your petitioner made a special affidavit to the petition, and specification, as to the invention being that of the slave as therein set forth, and also caused to be deposited in said Office, a model of the machine, as he was legally required to do. All of which was in due time received at said Office, and the Commissioner of Patents having decided against the application of your Petitioner, upon the ground that the law did not authorize the issuance of a patent to the owner of a slave for a useful machine, the invention of his slave, and further expressed the opinion that no Patent could

issue in the case without further legislation. The matter was then at the instance of your Petitioner referred by the Honorable Secretary of the Interior to the attorney General of the United States for his opinion; who, on the tenth day of June, Eighteen hundred and forty eight, by his letter of that date addressed to the Secretary of the Interior, expressed his concurrence with the Commissioner of Patent in the decision he had previously rendered in the case, stating that "For the reasons given by the Commissioner I think as he does, that a machine invented by a slave, though it be new and useful, cannot, in the present state of the law, be patented." Your petitioner therefore asks of you, to so, amend the Patent laws, that a patent may issue to the master, for a useful invention, the Product of the intellect of his slave, upon his making affidavit of the fact, of the invention, being the original invention &c. of his slave, and he complying with all the other requisites of the statute, as in case he applied for a patent for an invention of which he was the original discoverer. Or to pass a special act for his benefit, in this case, so that a Patent may issue to him as Executor aforesaid for said invention.

Keeping in view the consideration, that the Patent laws were passed with the view of Protecting useful inventions, &c., to the end of Promoting through the agency of the arts, the highest degree of civilization among the people of our Country that could be caused by them, and a useful invention, the contrivance of the mind of a negro slave, having the same efficacy, in that respect, as though the invention was that of a white freeman, a Citizen of the Country, or a foreigner: Your Petitioner considers that this claim to a Patent is within the spirit, though the officials of the government, who have had his application under consideration, have not seemed it embraced by the letter of the Statute. At the time the Patent laws were enacted, the negro race were perhaps universally regarded by our people, as so stupid, that the opinion was equally universal, that a negro slave, never could invent anything of a useful character, and hence no express provision was made in the statute, for the protection of the exclusive rights of the master, for a term of years, to a useful invention of which his slave should be the inventor, and so the express provisions of the statute were confined to the political race of our Country, and to foreigners. It may now, be urged, as an argument for the amendments asked, that since the passage of our laws upon the subject of patents, under the ameliorating influence of the Christian religion, another wholesome discipline to which the minds of the negroes in the Slave States have been subjected, especially in the Cotton growing states, where they are the best fed, best clothed, and kindly treated mass of laborers on the face of the globe, and are contented in a corresponding ratio, the felicity of their condition, as a people, in comparison to what it is, anywhere else where they are in a state of freedom, has created within them, both a moral, and intellectual growth, which is

> gradually effacing, from their primordial organization, that mental stupidity, and sloth in action, stamped originally upon the nature of their aboriginal forefathers, in their native wilds in Africa, by the enervating influence of a tropical climate, thousands of consecutive years of sensuality, ignorance, barbarism, and abuse of freedom; and there is now a prospect, that under the Philanthropical restraints, and applicances of the benign institution of slavery, as organized amongst us, that the slaves by uniting a higher degree of intelligence and skill, than formerly with their manual labor, will render their senses of greater value to their owners than they have hitherto done, and from their increased intelligence will arise new property, and rights, claiming from you, the equal protection of the law.
>
> By the laws of the several slave states, the master has as good a right to the fruit of the intellect of his slave, as he has to the product of the labor of his hands, yet there is no law, to protect his rights as exclusive owner of an invention, the product of the labor of the intellect of his slave. The same principle of public policy, by which the rights of foreigners to useful inventions, are protected by law, equally, with the rights of our own Citizens, to inventions of a similar character in points of usefulness, is applicable to the protection of the right of the owner of a slave, who is a Citizen of the United States, to a useful invention of his slave, the title to which passes by operation of law to him.
>
> Unless the owner of a slave, is protected in his property to the invention of his slave, to the same extent that he would be, if the invention was his own, and not that of his slave, the principle of equality among the political race, which is the cornerstone, and the all pervading element of our political institutions, is not only violated, but the power of preserving the principle, will be shamefully desecrated, by those who willfully withhold the protection.
>
> I have shown that an amendment to the law is not only consistent with but in furtherance of the general policy, and spirit of it; that equal justice to all Citizens, in the diversities of relation, and rights, who stand upon a Constitutional equality in the eye of our government in their claims to protection of person, and property of every diversity, as they stand equally bound to its support upon the score of allegiance, and taxation demands it, and there is no reason for an invidious discrimination in the matter of protection, either upon the score of right or sound policy.
>
> All of which is respectfully submitted,
>
> Oscar JE Stuart[124]

On December 13, 1858, Senator Brown "presented the petition of Oscar J.E. Stuart, praying that the patent laws be so amended that a patent

124. *Id.*

may issue to the master for a useful invention by his slave; which was referred to the Committee on Patents and the Patent Office."[125]

Soon afterward, Senator David S. Reid of North Carolina, the Chairman of the Senate Committee on Patents and the Patent Office,[126] asked Holt for information about Stuart's patent application.[127] Holt responded by sending Reid the relevant correspondence:

> In answer to your enquiry in reference to the rejected application of Oscar J.E. Stuart, I have the honor to submit a copy of the letter of the Commissioner of Patents to the Hon. Secretary of Interior, and also a copy of the letter of the Attorney General to him, from which will appear with entire distinctiveness, the grounds on which the decision of this office was placed, and also that this decision was fully approved by the Attorney General.[128]

On January 31, 1859, Senator Reid introduced a bill to amend the Patent Act to permit slave owners to patent the inventions of their slaves.[129]

> To authorize the issue of patents, in certain cases, to negro slaves for the use of their owners.
>
> *Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled*, That the provisions of the several acts of Congress now in force in relation to the issuing of patents shall hereafter be extended to cases where a negro slave shall be an inventor, and the patent in such cases shall issue in the name of the inventor and vest the rights conferred thereby in the owner or owners of such negro slave.
>
> Sec. 2 *And be it further enacted*, That the owner or owners of such negro slave shall have the right, in his or their own name or names, to maintain all actions and appeals, to make application for extension and execute

125. CONG. GLOBE, 35th Cong., 2d Sess. 47 (1858); *see* Sen. Albert G. Brown, Notes on Oscar J. E. Stuart's Petition to the Committee on Patents and the Patent Office (Dec. 13, 1858) (on file with the National Archives).

126. *Reid, David Settle*, BIOGRAPHICAL DIRECTORY U.S. CONG., http://bioguide.congress.gov/scripts/biodisplay.pl?index=r000144 (last visited Oct. 26, 2017).

127. *See* Letter from Joseph Holt, Comm'r of Patents, to David S. Reid, Senator, Chairman of the Senate Comm. on Patents and the Patent Office (Jan. 10, 1859) (on file with the National Archives) ("In answer to your enquiry in reference to the rejected application of Oscar J. E. Stuart . . . .").

128. *Id.*

129. CONG. GLOBE, 35th Cong., 2d Sess. 687 (1859) ("Mr. Reid, from the Committee on Patents and the Patent Office, to whom was referred the memorial of Oscar J. E. Stuart, praying that the patent laws be so amended that a patent may issue to the master for a useful invention of his slave, reported a bill (S. No. 548) to authorize the issue of patents in certain cases, to negro slaves, for the use of their owners; which was read, and passed to a second reading.").

> assignments, and to exercise and enjoy all the rights and privileges conferred by law on other applicants and patentees, in as full and ample a manner as if such patent had issued in his or their own name or names; and if the owner of such negro slave shall be a citizen of the United States, or an alien who shall have been resident in the United States for one year next preceding, and shall have made oath of his intention to become a citizen thereof, the fees shall be the same as now required by law of applicants and patentees who are citizens of the United States.
>
> Sec. 3 *And be it further enacted*, That all applications for a patent under this act shall, in addition to the facts now required to be set forth by other applicants, be required to state that the inventor is a negro slave and the name or names of his owner or owners; and the oath of such inventor shall be verified by the oath of his owner or owners to the best of his or their knowledge and belief; and such cases shall be decided in the same manner and under the same rules and regulations that apply to other applications for patents.
>
> Sec. 4 *And be it further enacted*, That when a negro slave inventor shall be owned by a minor or other person not legally qualified to act the guardian or trustee of such person may make the oath required by this act, and the patent shall vest in such guardian or trustee, to be held in trust for the person or persons for whose use the slave shall be held.[130]

But the Senate took no further action on the bill.[131]

On January 9, 1860, Senator Brown made a final attempt to revive Stuart's bid to amend the Patent Act:

> On motion of MR. BROWN it was *Ordered*, That the memorial of Oscar J.E. Stuart, praying that the patent laws may be so amended that a patent may issue to the master for a useful invention of his slave, be referred to the Committee on Patents and the Patent Office.[132]

But the committee took no further action on Stuart's petition.[133]

At that point, Stuart finally abandoned his effort to patent Ned's invention, and focused on making and selling it, even without the protection of a patent.[134] In 1860, he published a broadsheet advertisement for the

130. S. 548, 35th Cong. (1859).

131. *See* S. JOURNAL, 35th Cong., 2d Sess. 240 (1859).

132. CONG. GLOBE, 36th Cong., 1st Sess. 374 (1860).

133. *See Daily Nashville Patriot*, CITY PRESS, Feb. 17, 1860, at 3 ("We don't know that any member of the Committee on Patents is either a Negro or a Black Republican, but one of them is unquestionably very *Ni-black*. It is strange the Speaker didn't make Mr. Miles one of the Committee on Mileage. Apropos, what domestic instrument is like a certain member of this Committee? We should say the Loomis."). It is possible that the editorial was commenting on the Committee's failure to act on Stuart's petition.

134. MOORE, *supra* note 68, at 189; *see* Oscar J. E. Stuart, *A Want Supplied in the Cultivation of Cotton and Corn* (1860) [hereinafter Oscar Stuart Advert.].

Stuart Double Plow and Scraper, featuring testimonials from eight prominent Mississippi planters.[135] According to one testimonial:

> I have had in use for several weeks past, upon my plantation in Pike County, Mississippi, two of the DOUBLE COTTON SCRAPERS, AND DOUBLE PLOWS, (all attached to the same beam,) of Col. Oscar J. E. Stuart, of Holmesville. One of the machines with Scraper, A. No. 1—and with one Scraper, A. No. 2—with them I have Scraped both Cotton and Corn. I have also used for some years past, the Yost Scraper, the Taylor Scraper, and the new Plough and Scraper of Baggett & Marshall. I regard the Machine of Col. Stuart as superior to either and all of them. With it, one hand and two horses will do double the work in good ground of the Baggett & Marshall Scraper, and the work of four hands, four horses, two common barring ploughs, and two common Scrapers. The ground should be as free from trash and stumps as practicable, and it is as well adapted to barring and scraping upon a hill-side, as upon a plane, provided the circular ridges are not too short, and not too many abrupt curves. By taking off the scraper and reversing the ploughs, it may also be used for hilling a row on both sides at once, of either cotton or corn. Or by causing both horses to walk in the same water furrow, it will hill a row of either, upon the right and left without reversing the ploughs.[136]

Senator Brown also endorsed the machine, adding the rather remarkable claim that its invention by a slave disproved abolitionist criticisms of slavery:

> Dear Sir—I have tried your "DOUBLE PLOW AND SCRAPER" and have no hesitation in saying it comes up fully to your description of it. It bars off and scrapes both sides of a cotton row at once, and does the work quite as well as it can be done by any other mode. In my opinion it is destined to supersede all the implements of its kind *now* in use. But it is impossible to say what the ingenuity of the age may bring forward in the course of time. The Taylor Scraper was a great improvement on the Hoe; the YOST patent was a great improvement on that; but your "Double Plow and Scraper" goes a great way ahead of both. When it shall be made by machinery instead of being hammered out in a country smith shop, it will, in my judgment, be the very best agricultural implement ever offered to the cotton planter. With two mules and one hand, it will do as much work as four mules and four hands can do with the Taylor Scraper and common plough—and twice as much as can be done with the Yost patent with two mules and two hands.
>
> To give your "DOUBLE PLOW AND SCRAPER" a fair chance of showing its excellence, the ground should be well prepared in the spring, the

135. *See id.*

136. *Id.*; U.S. Patent No. 12,571 (issued Mar. 20, 1855).

> seeds sown in the centre of a ridge, well thrown up, and as nearly as possible in a straight row. This being done, I guarantee it will do from two to four times as much work as any other implement known to the public, the attendance being the same.
>
> I am glad to know that your implement is the invention of a negro slave—thus giving the lie to the abolition cry that slavery dwarfs the mind of the negro. When did a free negro ever invent anything?[137]

In the broadsheet, Stuart implied that he had patented his double plow and scraper, even though his patent application had been denied[138]:

> The undersigned having taken the proper steps to procure a Patent for the Machine described in the foregoing certificates, has established a Factory for their manufacture at Summit, Miss., where he will furnish them at Forty dollars, cash. If he should receive a sufficient number of orders to justify him in having them manufactured at Wheeling, Va., by machinery, he expects to be able to sell them cheaper.[139]

It is unknown how many machines Stuart made or sold, but the number is probably low, as the Yost Plow and Scraper cost about ten dollars, and was considered quite expensive.[140] In any case, when Mississippi seceded from the United States on January 9, 1861, Stuart shuttered the business and accepted a commission as a Colonel in the Confederate States Army.[141] He survived the war and returned to the practice of law, and never resumed making and selling the Stuart Double Plow and Double Scraper.[142]

137. MOORE, *supra* note 68, at 188 (quoting Oscar Stuart Advert., *supra* note 135).

138. DOBYNS, *supra* note 42, at 152; Oscar Stuart Advert., *supra* note 135 (quoted in MOORE, *supra* note 68, at 188).

139. Oscar Stuart Advert., *supra* note 135.

140. JAMES C. BONNER, A HISTORY OF GEORGIA AGRICULTURE, 1732–1860, at 96 (1964); MOORE, *supra* note 68, at 184.

141. DOBYNS, *supra* note 42, at 152–53; MOORE, *supra* note 68, at 189.

142. *See* Yancy, *supra* note 8, at 51.

B. Benjamin T. Montgomery's "Canoe-Paddling" Propeller

Stuart wasn't the only Mississippi slave owner who tried to patent the invention of a slave.[143] In 1859, Mississippi Senator Jefferson Davis tried to patent a propeller invented by Benjamin T. Montgomery, a slave who belonged to his older brother Joseph Davis.[144] Davis's application was also rejected, presumably for the same reason as Stuart's.[145] In 1864, Montgomery unsuccessfully tried to patent the propeller himself.[146] And after the Civil War, he bought Joseph and Jefferson Davis's plantations, where he founded an African-American community that lasted for about a decade.[147]

Benjamin T. Montgomery[148]

1. Benjamin T. Montgomery

Benjamin T. Montgomery was born a slave in 1819 in Loudoun County, Virginia.[149] He may have learned to read and write as a child. In 1836, Montgomery was sold to a slave trader, who took him to Natchez, Mississippi.[150] In 1837, Montgomery was purchased in a slave auction by Joseph E. Davis,[151] a former lawyer who owned "Hurricane Place," a large plantation south of Vicksburg, Mississippi.[152] His brother Jefferson

143. *See* JAMES, *supra* note 57, at 52–53.
144. *Id.* at 53.
145. *Id.*
146. DOBYNS, *supra* note 42, at 153; JANET SHARP HERMANN, THE PURSUIT OF A DREAM 18 (1981).
147. HERMANN, *supra* note 147, at 104–05, 205.
148. Photograph of Benjamin T. Montgomery, Montgomery Family Papers (on file with the National Archives).
149. HERMANN, *supra* note 147, at 17.
150. *Id.*
151. *Id.*
152. *Id.* at 6; Davis v. Bowmar, 55 Miss. 671, 676 (1878).

Davis owned "Brierfield Place," a smaller neighboring plantation.[153]

At the time, Joseph Davis owned about 115 slaves, and was one of the larger slave owners in Mississippi.[154] Other Mississippi slave owners considered him unusually liberal, because he gave his slaves better housing and more food than the norm.[155] Even more unusual, he gave his slaves a limited degree of autonomy, allowing them to "own" certain kinds of property and the "right" to a trial by a jury of their peers.[156]

Shortly after arriving at Hurricane, Montgomery escaped, but was captured and returned to Joseph Davis.[157] According to Montgomery's son Isaiah, Joseph Davis "inquired closely into the cause of [Montgomery's] dissatisfaction," and they soon "reached a mutual understanding and established a mutual confidence which time only served to strengthen throughout their long and eventful connection."[158] With Joseph Davis's permission and encouragement, Montgomery improved his literacy and learned an assortment of technical skills, including surveying, architectural drafting, and mechanical engineering. According to Davis, Montgomery had "few Superiors as a Machinist."[159]

On December 24, 1840, Montgomery married Mary Virginia Lewis, who was born a slave in Virginia.[160] They had four children who lived to adulthood, Isaiah, Mary Virginia, Rebecca, and William Thornton.[161]

Even as a slave, Montgomery became a successful merchant.[162] In 1842, he opened a store at Hurricane, where he sold dry goods and staples to the slaves and other members of the community.[163] Davis soon asked Montgomery to sell goods produced by the plantation.[164] And eventually,

153. *Davis*, 55 Miss. at 676 (stating that Hurricane contained about 2960 acres and Brierfield contained about 890 acres). Many years later, the New York Times reported, probably inaccurately, that Joseph Davis had purchased Montgomery as a gift for his brother Jefferson Davis. *Story of Ben Montgomery*, N.Y. TIMES, Sept. 17, 1893, at 12.

154. HERMANN, *supra* note 147, at 11.

155. *Id.* at 11–12.

156. *Id.* at 12, 14.

157. *Id.* at 17; BOOKER T. WASHINGTON, 1 THE STORY OF THE NEGRO: THE RISE OF THE RACE FROM SLAVERY 154 (Doubleday, Page & Co. 1940) (1909).

158. HERMANN, *supra* note 147, at 17–18.

159. *Id.* at 18.

160. *Id.* at 19.

161. *Id.* at 19–20; *Crowe (Milburn J.) Photograph Album PI/2005.0015*, MISS. DEP'T ARCHIVES & HIST., http://www.mdah.ms.gov/arrec/digital_archives/series/crowe/colldesc (last visited Oct. 27, 2017).

162. HERMANN, *supra* note 147, at 18.

163. *Id.* at 18–19.

164. *Id.* at 19.

Montgomery became Davis's agent and the business manager of the plantation.[165] Montgomery used his earnings to buy his wife's freedom.[166] He could have purchased his own freedom, but did not, possibly because he considered his position at Hurricane preferable to any realistic alternatives.[167] In any case, Hurricane was very profitable and Joseph Davis was very successful, due at least in part to Montgomery's labors.[168]

2. Jefferson Davis's Attempt to Patent Montgomery's Propeller

In the late 1850s, Montgomery invented a propeller intended as an improvement on the paddle wheel used on steamboats.

> Acting on 'the canoe paddling principle,' the blades cut into the water at an angle, causing less resistance and therefore less loss of power and jarring of the boat.With this propeller, which weighed a fraction of the conventional paddle wheel, there was no need for a wheelhouse. [Montgomery] made a prototype which he operated by hand on the Mississippi for a couple of years before the Civil War, but he dreamed of powering it with a steam engine so that its advantages could be truly tested. Jefferson Davis apparently tried to patent the propeller in Montgomery's name and was told by the U.S. Patent Office that a slave could not receive a patent. He reapplied in his brother's name and was refused because admittedly Joseph was not the inventor.[169]

Jefferson Davis tried to patent Montgomery's invention.[170] On February 7, 1859, the Richmond Daily Dispatch reported on Jefferson Davis's patent application[171]: "INVENTION OF A NEGRO.—A Southern member of Congress has applied for a patent to an invention of one of his slaves. There is no case recorded where a *free* negro has applied for a patent."[172] Of course, the report was inaccurate, as many free African-Americans had both applied for and received patents on their inventions.[173] Davis's attempt to patent Montgomery's invention was unsuccessful.[174] Presumably, the Patent Office rejected his patent application based on the Attorney General's opinion in *Invention of a Slave*.[175]

165. *Id.*
166. *Id.*
167. HERMANN, *supra* note 147, at 21–22.
168. *Id.* at 22.
169. *Id.* at 18.
170. *See The Negro in the Field of Invention*, *supra* note 36, at 24.
171. *Invention of a Negro*, DAILY DISPATCH, Feb. 7, 1859, at 1.
172. *Id.*
173. *The Negro in the Field of Invention*, *supra* note 36, at 22.
174. *Id.* at 24.
175. *See* Invention of a Slave, *supra* note 1.

3. Davis Bend During the Civil War

When Mississippi seceded from the United States on January 9, 1861, Jefferson Davis resigned from the United States Senate and briefly returned to Davis Bend.[176] Soon afterward, he left to attend the Montgomery Convention in Montgomery, Alabama, where the seceding states met to form a new government.[177] And, on February 18, 1861, he became the President of the Confederate States of America.[178]

On April 24, 1862, the United States Army captured New Orleans,[179] and on April 25, Joseph Davis fled Davis Bend, leaving Montgomery in charge of Hurricane.[180] On June 24, 1862, United States Army soldiers looted Hurricane and burned the mansion to the ground.[181] All of Joseph Davis's white overseers fled, and Montgomery assumed command of Hurricane. But in June 1863, Montgomery and his family moved to Cincinnati, where he worked as a carpenter in a canal-boat yard.[182]

On December 18, 1863, Colonel Samuel Thomas and two companies of African-American soldiers from the 64th U.S. Colored Infantry occupied Davis Bend, under orders to make it a "negro paradise."[183] Hundreds of freed slaves had already gathered at Hurricane and Brierfield, and the United States Army Freedmen's Department sent many thousands more to Davis Bend.[184] In early 1864, Thomas began dividing the land at Davis Bend among African-American lessees, but was forced to stop by the Department of the Treasury, which claimed jurisdiction over abandoned property.[185] By the time the Freedmen's Department regained jurisdiction in the fall of 1864, much of Davis Bend had been restored to its former owners, who had taken the loyalty oath, 1,200 acres of Hurricane had been leased to two white northerners, and 500 acres were reserved for use as a "Home Farm" for the destitute.[186] Thomas divided the remaining two thousand acres on Davis Bend among seventy African-American lessees, who produced a modestly successful cotton harvest,

176. HERMANN, *supra* note 147, at 37.

177. *Id.*; Roger D. Hardaway, *Tennesseans at the Confederate Constitutional Convention*, 43 TENN. HIST. Q. 44, 44 (1984).

178. GERHARD PETERS, THE PRESIDENCY A TO Z 151 (Gerhard Peters, John T. Woolley & Michael Nelson eds., 2013).

179. CHESTER G. HEARN, THE CAPTURE OF NEW ORLEANS, 1862, at 1 (1995).

180. HERMANN, *supra* note 147, at 38.

181. *Id.* at 39–40.

182. *Id.* at 40–42.

183. *Id.* at 46–47.

184. HERMANN, *supra* note 147, at 47–49; Steven Joseph Ross, *Freed Soil, Freed Labor, Freed Men: John Eaton and the Davis Bend Experiment*, 44 J. S. HIST. 213, 217 (1978).

185. HERMANN, *supra* note 147, at 47–48.

186. *Id.* at 49–50.

despite the Army's confiscation of much of their property and an armyworm infestation.[187]

4. Montgomery's Attempt to Patent His Propeller

In the meantime, Montgomery displayed a model of his propeller at the Western Sanitary Fair in Cincinnati in December 1863.

> Ben. D. Montgomery, a colored man, who has been in slavery for twenty-seven years on the plantation of Jeff. Davis' brother, and who came to Cincinnati last June, exhibits at the Sanitary fair a model of his own invention. It is that of a propeller, acting on the canoe paddling principle, as compared with the paddle wheel. The advantages supposed to be in favor of the former plan, are the following:
>
> 1. No loss of power by oblique action.
> 2. Much of the jarring caused by such action is obviated, as the entry and emersion of the paddles are in an erect position.
> 3. Occupies less than half the space.
> 4. Merely a fraction of the weight is necessary.
> 5. Wheelhouse dispensed with.
> 6. There are but two points of resistance to the water during each revolution of the crankshaft, which admirably adapt it to steam power.
>
> The inventor has had the plan in operations, by hand, on the Mississippi river for more than two years, and with entire satisfaction as to the result. Skiffs of only half the weight propelled by oars and in equal force, were in every instance of trial inferior in speed. Mr. Montgomery has applied for a patent for this invention.[188]

In fact, Montgomery filed a patent application for his propeller on June 28, 1864, but no patent was ever issued.[189] According to Isaiah T. Montgomery,

> the patent was not pressed after the war owing to the opinion of many boatmen that the paddles could not be sufficiently protected from damage by drift, and other floating substances; but my father constructed two boats (handled by man power) using double hulls, and operating the paddles between them, which proved quite superior to the propelling

187. *Id.* at 50.

188. Charles B. Boynton, *An Important Invention*, CIN. DAILY GAZETTE, Dec. 25, 1863.

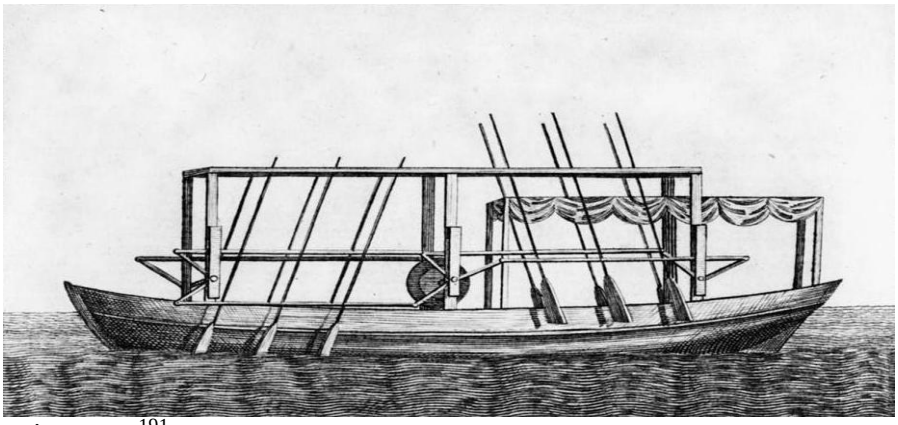
189. Letter from William E. Simonds, Comm'r of Patents, to Mrs. Jefferson V. Davis (May 14, 1982) (on file with Rice University).

> Dear Madam:
>
> June 28, 1864, a colored man by the name of B. T. Montgomery filed an application for a patent for a propeller in this office. He represented himself as having been at some previous time the body servant of your husband. Will you kindly let me know whether you have any knowledge as to the correctness or incorrectness of his representation, and if you know what the fact was.

Id.

power of oars.[190]

It is also possible that the Patent Office concluded that Montgomery's invention was not patentable because it was anticipated by John Fitch's August 26, 1791 patent on a method of propelling boats by steam



using oars.[191]

John Fitch's Steamboat (1786)[192]

5. Davis Bend After the Civil War

On March 3, 1865, Congress created the Bureau of Refugees, Freedmen, and Abandoned Lands, or Freedmen's Bureau, to assist African-Americans in the former Confederacy.[193] President Lincoln appointed General Oliver O. Howard as Commissioner of the Freedmen's Bureau, and appointed Colonel Thomas as an Assistant Commissioner for Mississippi.[194]

In early 1865, Benjamin Montgomery sent his twenty-two-year-old

190. Letter from Isaiah Montgomery, to Henry E. Baker (Sept. 16, 1903), *reprinted in* JAMES, *supra* note 57, at 76.

191. U.S. Patent No. 28X (issued Aug. 26, 1791); DOBYNS, *supra* note 42, at 153 ("Apparently, Benjamin Montgomery later filed his application for a U.S. patent as a freed man on June 28, 1864, but did not receive a patent. Perhaps this is because of a strong similarity between his paddling propeller and the steamboat that John Fitch demonstrated to the Constitutional Convention.").

192. *Plan of Mr. Fitch's Steam Boat*, LIBR. OF CONG., https://www.loc.gov/resource/cph.3c10381/ (last visited Oct. 27, 2017).

193. An Act to establish a Bureau for the Relief of Freedmen and Refugees, ch. 90, 13 Stat. 507, 507–09 (1865); HERMANN, *supra* note 147, at 64; Richard Wormser, *Freedmen's Bureau (1865–72)*, PBS, https://www.pbs.org/wnet/jimcrow/stories_events_freed.html (last visited Oct. 27, 2017).

194. W. E. Burghardt Du Bois, *The Freedmen's Bureau*, ATLANTIC MONTHLY (March 1901), https://www.theatlantic.com/past/docs/issues/01mar/dubois.htm; *see* HERMANN, *supra* note 147, at 64; Wormser, *supra* note 197.

son Thornton Montgomery to Hurricane to reopen the Montgomery store.[195] Soon afterward, Benjamin Montgomery joined him. In the spring of 1865, the Montgomerys formed a partnership with other prominent African-Americans in Davis Bend to operate the Hurricane sawmill.[196] And in July, Montgomery formed an association of African-American planters to bid for the Hurricane cotton gin concession.[197] On July 15, 1865, the association presented a petition to Thomas, signed by fifty-six African-American planters.[198]

Thomas rejected their bid, in a formal statement, concluding that the United States had to retain control of the gin because it would have a large cotton harvest.[199] He also criticized the association and its leaders, accusing them of incompetence and profiteering.[200] The leaders of the association responded to Thomas's statement, denying his charges.[201] When Thomas ignored their response, Montgomery contacted Joseph Davis, who had returned to Vicksburg, Mississippi in October 1865.[202]

Davis sent an engineer to examine the gin, who concluded that Thomas's agent had mismanaged it.[203] On October 21, 1865, Davis wrote to Thomas, complaining about his mismanagement of the gin and abuse of "his people."[204] When Thomas did not respond, Davis wrote angry letters to his superior, Commissioner Howard, as well as President Andrew Johnson.[205] Davis's complaints prompted an investigation and a hearing, at which Benjamin Montgomery and others testified.[206] On November 24, the board of investigation rejected Davis's accusations, concluding that the African-American planters were fairly compensated, and criticizing both Davis and Montgomery.[207]

Apparently, Thomas privately threatened to arrest and imprison Montgomery for doing business with Davis, who had refused to make the

195. HERMANN, *supra* note 147, at 66.
196. *Id.* at 67
197. *Id.* at 68.
198. *Id.*
199. HERMANN, *supra* note 147, at 70.
200. *See id.* at 70–71.
201. *Id.* at 72.
202. *Id.* at 72–73.
203. *Id.* at 73–74.
204. HERMANN, *supra* note 147, at 74.
205. *Id.* at 75–76.
206. *Id.* at 77.
207. *Id.* at 80–82.

loyalty oath.[208] A fearful Montgomery asked Davis to abandon his complaint, to no avail.[209] Davis continued to send letters of complaint to anyone and everyone.[210]

On April 10, 1866, Thomas was relieved of his duties in Mississippi and transferred to the Freedmen's Bureau headquarters in Washington, D.C., possibly due in part to political pressure generated by Davis's incessant letters.[211] By that time, the Montgomerys were the undisputed leaders of the African-American community at Davis Bend.[212] They operated two successful stores at Hurricane, under the name Montgomery & Sons, and in 1866 Thornton Montgomery became a partner in the Hurricane cotton gin concession.[213]

While Joseph Davis wanted to reclaim his lands, he resisted asking for a pardon.[214] But in the spring of 1866, he relented and took the loyalty oath, and sent a copy to President Johnson in May, formally requesting a pardon.[215] Johnson granted the pardon and the Freedmen's Bureau ruled that Davis could reclaim Hurricane and Brierfield on January 1, 1867, when the freedmen's leases expired.[216]

On November 19, 1866, Joseph Davis secretly sold Hurricane and Brierfield to Montgomery for a $300,000 gold bond, payable over ten years at six percent interest, in violation of the Mississippi Black Code, which forbade the sale of property to African-Americans.[217] And on November 21, 1866, Montgomery placed an advertisement in the *Vicksburg*

208. *Id.* at 82.
209. HERMANN, *supra* note 147, at 83.
210. *See id.* at 84.
211. *Id.* at 88.
212. *See id.* at 94.
213. *Id.* at 94, 97–100.
214. HERMANN, *supra* note 147, at 103.
215. *Id.*
216. *Id.* at 104.
217. *Id.* at 104, 109. Many apocryphal accounts claim that Davis "sold" Hurricane and Brierfield to Montgomery in 1863 only in order to avoid their confiscation by the United States under the Confiscation Act of 1862, which specifically authorized the confiscation of property belonging to the "President . . . of the so-called confederate states of America." Confiscation Act of 1862, ch. 195, 12 Stat. 589, 590 (1862); *Ben. Montgomery*, CLEV. GAZETTE, June 8, 1889, at 1; *Jeff Davis' Slave*, INDIANAPOLIS FREEMAN, Aug. 17, 1889, at 8; *Our Wealthy Colored Men—How is This for a Negro Problem Item?*, CLEV. GAZETTE, Sept. 22, 1883, at 1; *Snobism*, SEMI-WKLY. LOUISIANAN, May 14, 1871, at 2; *Story of Ben Montgomery*, *supra* note 155; *The Story of a Devoted Slave*, FRIEND: RELIGIOUS & LITERARY J., Oct. 4, 1902, at 93. *But see* Joseph R. Davis, *Ben Montgomery: He Was Never the Slave or Private Secretary of Jefferson Davis*, ST. LOUIS REPUBLIC, Oct. 4, 1893. But the Mississippi Supreme Court later found that Joseph Davis asserted title to both Hurricane and Brierfield in his 1863 pardon application, specifically because his property was not subject to confiscation under the Act. *See* Davis v. Bowmar, 55 Miss. 751, 764, 775, 779 (1878).

Daily Times announcing his plan to create "a community composed exclusively of colored people" at Hurricane and Brierfield.[218] On February 21, 1867, Mississippi gave African-Americans the right to own real property, and Davis legally closed the sale contract with Montgomery.[219]

Montgomery paid Davis seventy-five dollars an acre for Hurricane and Brierfield, which was probably a fair price at the time.[220] Davis also lent Montgomery working capital on reasonable terms.[221] Unfortunately, a major flood in the spring of 1867 destroyed much of the early crop and damaged many of the plantation buildings.[222] But even more damaging, the flood caused the Mississippi River to reroute and bypass Davis Bend, rendering it impassable to commercial vessels.[223] Montgomery also struggled with persistent racial discrimination from white neighbors and government officials.[224] Nevertheless, Montgomery was appointed Justice of the Peace for Davis Bend on September 10, 1867, and became the first African-American to hold public office in Mississippi.[225]

Making matters worse, infestations of cutworms, locusts, and army worms destroyed much of the 1867 crop, and Montgomery could not cover his mortgage or loan payments to Davis.[226] The 1868 harvest was also poor, due to early flooding, late drought, and another army worm infestation.[227] Montgomery's credit was overextended and he struggled to raise working capital.[228] While Joseph Davis forgave Montgomery's interest payments in the hope of future profit, Jefferson Davis bristled, disparaging Montgomery's abilities and honesty.[229]

Joseph Davis never returned to Davis Bend, and died on September 18, 1870,[230] bequeathing his portion of the proceeds of the bond to his grandchildren and Jefferson Davis's children.[231] Joseph Davis's will also instructed his executors to "extend a liberal indulgence" to Montgomery with respect to his payment of the principal and interest on the bond.[232] Fortunately, for Montgomery, Hurricane and Brierfield had several years

218. HERMANN, *supra* note 147, at 111–12.
219. *Id.* at 110.
220. *Id.* at 109–10.
221. *See id.* at 115.
222. *Id.* at 116–19.
223. HERMANN, *supra* note 147, at 119.
224. *Id.* at 120, 122–23.
225. *Id.* at 129–30.
226. *Id.* at 131–33.
227. *Id.* at 135–36.
228. HERMANN, *supra* note 147, at 138, 201, 214.
229. *Id.* at 138–39.
230. *Id.* at 143.
231. *Id.* at 202.
232. *Id.* at 146.

of good harvests, and profits dramatically increased.[233] While a general decrease in land values rendered the mortgage on Hurricane and Brierfield quite burdensome, it enabled Montgomery to purchase a neighboring plantation called Ursino quite cheaply.[234] By 1872, Montgomery had a credit rating of "A No 1," entitling him to unlimited general credit, and was among the wealthiest planters in Mississippi.[235]

6. Benjamin Montgomery's Other Innovations

After the Civil War, Montgomery continued to innovate, but did not apply for any more patents.[236] In 1868, he suggested the construction of a steam-powered cotton press, and may have actually built one.[237] In 1870, he purchased a large steam-powered pump from an Aurora, Indiana company, in order to drain a slough for planting.[238] In the course of using the pump, he designed several mechanical improvements, which he sent to the manufacturers, who machined the parts and sent them to him free of charge.[239] In October 1873, the Hurricane cotton gin was destroyed in a fire, and Montgomery built a new gin of his own design.[240]

Montgomery also invested in agricultural innovation, in particular developing more productive and higher quality strains of cotton.[241] In 1870, he won first prize for the best single bale of long staple cotton at the St. Louis Fair.[242] And in 1876, his short staple cotton won a medal at the Centennial International Exhibition, the first official World's Fair in the United States, held in Philadelphia, Pennsylvania.[243]

But soon afterward, white opposition to the reconstruction government began to grow, and racial tension increased.[244] Montgomery's 1874 crop was poor, and by 1875, he was seriously overextended.[245] Land values and cotton prices had fallen precipitously, and it was impossible for him to make his mortgage payments.[246]

233. HERMANN, *supra* note 147, at 143.
234. *Id.* at 149.
235. *Id.* at 156.
236. *See id.* at 153–55.
237. *Id.* at 153–54.
238. HERMANN, *supra* note 147, at 154.
239. *Id.*
240. *Id.* at 155.
241. *See id.* at 150–51.
242. *Id.* at 151.
243. *See* HERMANN, *supra* note 147, at 151; Stephanie Grauman Wolf, *Centennial Exhibition (1876)*, ENCYCLOPEDIA GREATER PHILA., http://philadelphiaencyclopedia.org/archive/centennial/ (last visited Oct. 27, 2017).
244. HERMANN, *supra* note 147, at 195.
245. *Id.* at 201.
246. *Id.*

In 1874, Jefferson Davis filed an action against the other executors and heirs of the Joseph Davis estate, claiming that he owned legal title to Brierfield.[247] While he acknowledged that he did not have written title, he claimed that Joseph Davis's verbal gift and his own labor gave him a legal right to the property.[248] Montgomery was caught in the middle of the dispute, and responded by asking to be released from the purchase agreement, because he could not make the payments.[249]

On December 31, 1874, while supervising the demolition of an old house at Hurricane, Montgomery was severely injured by a collapsing wall.[250] He never fully recovered from his injuries, and died on May 12, 1877.[251] In the meantime, poor harvests and the declining price of cotton drove Montgomery into bankruptcy.[252] He died intestate, with essentially no assets.[253] The Mississippi Supreme Court awarded Brierfield to Jefferson Davis, and the executors of the Joseph Davis estate foreclosed on Montgomery's mortgage.[254] Thornton and Isaiah Montgomery abandoned the store and focused on planting at Ursino, with limited success.[255]

7. Benjamin Montgomery's Legacy

Isaiah Montgomery adopted his father's goal of creating an ideal African-American community, which he believed depended on ownership of the land.[256] In 1879, he purchased a section (640 acres) in Waubansee County, Kansas, and in conjunction with the Kansas Freedmen's Relief Association, which purchased four adjacent sections, proposed to sell forty-acre plots to African-Americans on reasonable terms.[257] But he never moved to or even visited the settlement, and it soon failed.[258]

In 1885, Isaiah Montgomery opened a store in Vicksburg, and refocused his dream of an African-American community on the Yazoo Delta, where inexpensive land was available alongside a new railroad line.[259] In the spring of 1887, he formed a partnership to purchase 840 acres of land

247. *Id.* at 201–02.
248. *Id.* at 202.
249. Davis v. Bowmar, 55 Miss. 671, 684 (1878); HERMANN, *supra* note 147, at 202.
250. HERMANN, *supra* note 147, at 203.
251. *Id.* at 205.
252. *See id.*
253. *Id.* at 206.
254. *Id.* at 207.
255. HERMANN, *supra* note 147, at 205–08.
256. *Id.* at 210.
257. *Id.* at 210–11.
258. *Id.* at 211, 213.
259. *Id.* at 219, 221.

about halfway between Memphis and Vicksburg, for a prospective community he named "Mound Bayou," after a large Native American mound at its center.[260]

Isaiah Montgomery was also active in Republican politics.[261] In 1884, he was a delegate to the Warren County and district party conventions.[262] And in 1890, he was the only African-American and only Republican delegate at the state constitutional convention.[263] Appointed to the franchise committee, he delivered a speech endorsing the committee's proposal to effectively disenfranchise most of the African-American voters in the state.[264] Unsurprisingly, he was vilified by African-American civil rights leaders.[265] But Montgomery was probably following his father's lead and trying to protect his nascent community by placating the racist government.[266]

For a time, Mound Bayou thrived.[267] In 1907, it had a population of about 4,000, and boasted many stores and churches, a train station, a telephone exchange, a newspaper, and a bank.[268] As racial discrimination and violence permeated the rest of the state, Mound Bayou became a symbol of freedom and autonomy for African-Americans.[269] But unsuccessful investments and declining cotton prices gradually bankrupted the community.[270]

8. Rediscovering Benjamin Montgomery

In 1892, patent lawyer James H. Layman of Cincinnati wrote to Patent Commissioner William Edgar Simonds:

> I have just received a copy of the official circular of March 8, in regard to collecting models for the Columbian Exposition, and would respectively call your attention to a very interesting display the Patent Office is capable of making. It is well known the office possesses a steamboat model made by Abraham Lincoln, but it is not so well known that it once contained a model constructed by Jefferson's Davis' body servant, a slave who indignantly repudiated the idea of having white blood in his veins. This slave was named Montgomery, and about the

260. HERMANN, *supra* note 147, at 221.
261. *Id.* at 220–21.
262. *Id.* at 228.
263. *Id.* at 229.
264. *Id.*
265. HERMANN, *supra* note 147, at 230.
266. *Id.* at 231.
267. *Id.* at 223.
268. *Id.* at 223–24.
269. *See id.* at 223.
270. HERMANN, *supra* note 147, at 241.

> time Vicksburg was captured, he came to Cincinnati, and made an application for a patent on his invention, a substitute for paddle wheels.
>
> The application was placed in the hands of Knight Bros, of this city, and I prepared the drawings for them, and while I was at work on the case, the inventor told me that some of the rebel gun boats were to be provided with his propeller. He also showed me a number of Vicksburg papers that contained very flattering notices of the invention.
>
> I do not remember whether his application was allowed, or was forfeited on account of nonpayment of the final fee, but for some reason the patent was not issued.
>
> I was in Washington at the time Mr. Marble was Commissioner, called his attention to the matter, but he took no interest in it, and one of the attendants told me the model had been sent to some Eastern college.
>
> As previously stated, the entire model, including the frame work and metallic portions, was made by this slave, and when it was submitted here to an expert model-maker, for the purpose of having it duplicated, he said there was not a man in his shop capable of doing such a finished piece of work.
>
> Now, if the slave's propeller model could be procured and exhibited in the same case with the great emancipator's model of his boat, it would attract the attention of thousands.
>
> It is my impression, however, that Lincoln's model would suffer by the comparison.[271]

A few days later, newspapers reported that the Patent Office planned to include Montgomery's model in its exhibit at the 1893 Chicago World's Fair:

> Commissioner Simonds will include with the Patent Office exhibit at the World's Fair Abraham Lincoln's model of a device for "lifting vessels over shoals," patented May 22, 1849, together with the model accompanying an application for a patent for a "propeller for vessels," filed by B. T. Montgomery, in 1864. Montgomery was a colored man who claimed to have been the body servant of Jefferson Davis. The model was made by him, and is of superior workmanship.[272]

On September 16, 1903, Isaiah Montgomery wrote to patent examiner Henry E. Baker, who was compiling a history of African-American

271. Letter from James H. Layman, Patent Solicitor, to W.E. Simonds, Comm'r of Patents (Apr. 23, 1892), *reprinted in* SLUBY, *supra* note 55, at 33–34.

272. *Some Affairs of State*, PITT. DISPATCH, Apr. 27, 1892, at 4, http://chroniclingamerica.loc.gov/lccn/sn84024546/1892-04-21/ed-1/seq-4/; *Two World's Fair Exhibits*, WHEELING INTELLIGENCER, Apr. 27, 1892, at 1, http://chroniclingamerica.loc. gov/lccn/sn84026844/1892-04-27/ed-1/seq-1/.

inventors:

> My [D]ear Sir:–
>
> Through the courtesy of my friend, Mr. R. D. Littlejohn of Columbus, I am in receipt of your interesting letter of the 9th inst. And I would say in reply, that my father, Benjamin T. Montgomery, had several articles before the U. S. Patent office; those presented previous to the war were looked after by Mr. Jefferson Davis (of Confederate States Fame); he experienced considerable trouble in presenting articles for a Patent by a slave, which I have always thought was responsible for that clause of the Confederate States' Constitution, which allowed patents to be issued in the name of slaves.
>
> The articles to which you refer consisted of a system of walking paddles for the propulsion of boats; the patent was not pressed after the war owing to the opinion of many boatmen that the paddles could not be sufficiently protected from damage by drift, and other floating substances; but my father constructed two boats (handled by man power) using double hulls, and operating the paddles between them, which proved quite superior to the propelling power of oars. Mr. Davis designated the swiftest of these boats the Nautilus, owing to its likeness to that fish or water creature. You may also cross some improvements in cotton bale presses, which were handled by Munn and Co., after the war.
>
> Another Montgomery, Peter T., brother of my father, had a ditching plow before the Patent Office, and his son, B. S. T. Montgomery (and employee in the 6th Auditor's Office) has secured patent on a device for holding books, papers etc., to be read or copied with a typewriter. If you could run across him up there, he will be able to talk interestingly about all of the cases above referred to.
>
> I shall be quite glad to have a few copies of the issue of the Post containing your article, and will pay the cost of the same if sent to my home address, Mound Bayou, Miss., (Bolivar County)[.][273]

IV. FREE AFRICAN-AMERICAN PATENTS AFTER *INVENTION OF A SLAVE*

When the Supreme Court decided *Dred Scott*, abolitionists recognized that, among other things, it would indirectly prevent free African-Americans from patenting their inventions.[274] If African-Americans could not be citizens, then they could not take the Patent Oath, and could not patent their inventions.[275]

273. Letter from Isaiah Montgomery, *supra* note 194, at 76–77.

274. *See, e.g.*, Congressman Philemon Bliss, Speech, *supra* note 10.

275. Chas. E. Tullar, *Parties in General*, 1 J. PAT. OFF. SOC'Y 131, 132 (1918); Congressman Philemon Bliss, Speech, *supra* note 10.

For example, when Representative Philemon Bliss of Ohio attacked the *Dred Scott* decision on January 7, 1858, he explicitly predicted that it would prevent free African-Americans from patenting their inventions:

> This court has undertaken to outlaw a large class of free American citizens. By its wicked edict they are, for the first time, turned out of the Federal courts; banished the public domain by denying pre-emptions; robbed of their property in inventions by refusing patents; cut off from foreign travel, except as permanent wanderers, without nationality; and deprived of every constitutional guarantee of personal rights.[276]

The Attorney General's opinion in *Invention of a Slave* inadvertently supported that prediction. If the invention of a slave could not be patented because a slave inventor could not be a citizen and therefore, could not take the Patent Oath, then the invention of a free African-American could not be patented either, because a free African-American inventor also could not be a citizen, and presumably could not take the Patent Oath.

Apparently, Holt reached the same conclusion.[277] In late 1861, he rejected a patent application filed by a free African-American inventor from Massachusetts because under *Dred Scott* the applicant could not be a citizen of the United States and therefore could not take the Patent Oath.[278] Of course, the Patent Office had already issued many patents to free African-American inventors.[279] There is no evidence that Holt made any effort to revoke any of those patents.[280] Perhaps he did not realize that free African-Americans were patent owners, thought that the effect of *Dred Scott* on patents was not retroactive, or just didn't care.[281]

On December 16, 1861, Senator Charles Sumner of Massachusetts objected to Holt's rejection of his constituent's patent application and proposed a resolution intended to ensure that African-American inventors

276. Congressman Philemon Bliss, Speech, *supra* note 10.

277. CONG. GLOBE, 37th Cong., 2d. Sess. 89 (1861); *see* COMM'R OF PATENTS REPORT, *supra* note 104, at 8–9.

278. CONG. GLOBE, 37th Cong., 2d. Sess. at 89; *see* Scott v. Sandford (*Dred Scott*), 60 U.S. 393, 404 (1857).

279. *The Negro in the Field of Invention*, *supra* note 36, at 22; *The Negro as an Inventor*, *supra* note 3, at 399–400.

280. *See* DIGEST OF PATENTS, *supra* note 37, at 8–9.

281. Notably, under the language of the Patent Act, foreign black inventors could patent their inventions in the United States. The Patent Oath simply required patent applications to swear to their citizenship. While free African-Americans could not take the Patent Oath because they could not be citizens of the United States, presumably foreign black inventors could have taken the Patent Oath, because they were citizens of foreign countries. However, there is no record of a foreign black inventor applying for a patent during the brief relevant time period. Courts later held that minors, married women, and others suffering from a legal disability could apply for and own patents under the Patent Act. Fetter v. Newhall, 171 F. 841, 843 (C.C.S.D.N.Y. 1883).

could patent their inventions:

> Mr. SUMNER. I propose the following resolution, and ask for its present consideration:
>
> *Resolved*, That the Committee on Patents and the Patent Office be directed to consider if any further legislation is necessary in order to secure to persons of African descent, in our own country, the right to take out patents for useful inventions, under the Constitution of the United States.
>
> If I can have the attention of my friend, the chairman of the Committee on Patents, I should like to state to him why this resolution is introduced. It is within my knowledge that a person of African descent in the city of Boston has applied for a patent for a useful invention, and that it has been refused to him on the ground that under the Dred Scott decision he was not a citizen of the United States, and, therefore, that a patent could not issue to him. I wish the committee to consider whether that abuse can in any way be removed. That is all.
>
> The resolution was considered by unanimous consent, and agreed to.[282]

While there is no record of the Committee or Congress taking any further action on the issue, clearly the circumstances had changed, and Holt's conclusion would not stand.[283] On November 29, 1862, Attorney General Edward Bates issued an opinion concluding that free African-Americans could be citizens of the United States.[284] And the ratification of the Reconstruction Amendments rendered the issue moot.[285] At least in theory, African-American patent applicants would receive the same treatment as anyone else.

V. THE PATENT LAW OF THE CONFEDERATE STATES OF AMERICA

Among other things, the Confederate States of America created a patent system. The Confederate Patent Act was largely identical to the United States Patent Act, with one notable exception: it explicitly authorized slave owners to patent the inventions of their slaves.[286]

On December 20, 1860, after learning of the election of President

282. CONG. GLOBE, 37th Cong., 2d. Sess. at 89.
283. *See* Citizenship, *supra* note 14, at 413.
284. *Id.*
285. *See* U.S. CONST. amend. XVI, § 1.
286. *See* Act of May 21, 1861, ch. 46, Pub. Laws, Provisional Cong., 2d Sess., *reprinted in* PROVISIONAL STATUTES AT LARGE, *supra* note 13, at 148.

Abraham Lincoln, a South Carolina constitutional convention unanimously voted to secede from the United States of America.[287] Six more states voted to secede before Lincoln's inauguration on March 4, 1861: Mississippi (January 9, 1861); Florida (January 10, 1861); Alabama (January 11, 1861); Georgia (January 19, 1861); Louisiana (January 26, 1861); and Texas (February 1, 1861).[288] On February 4, 1861, delegates from those states convened the Montgomery Convention in Montgomery, Alabama, and formed the Confederate States of America, adopting a provisional constitution, forming a provisional Congress, and electing a provisional president, Jefferson Davis, who was sworn in on February 18, 1861.[289]

On February 12, 1861, the provisional Congress of the Confederate States of America established a Committee on Patents, composed of five deputies of the provisional Congress.[290] On February 18, 1861, Deputy Walter Brooke of Mississippi, the chairman of the committee, proposed "[a] bill to establish a patent office, and to provide for the granting and issuing of patents for new inventions and improvements[,]" which largely copied the Patent Act of 1836.[291] And on March 2, 1861, Brooke proposed a resolution allowing any citizen of the Confederate States to file a caveat with the Office of the Attorney General, which was adopted by the provisional Congress.[292] Notably, the resolution did not require the person filing a caveat to make an oath or affirmation that they were the original inventor or discoverer of the claimed invention or discovery.[293]

On March 11, 1861, the Confederate States of America ratified the Confederate States Constitution, which largely copied the United States

287. *See* DECLARATION OF THE IMMEDIATE CAUSE WHICH INDUCE AND JUSTIFY THE SECESSION OF SOUTH CAROLINA FROM THE FEDERAL UNION AND THE ORDINANCE OF SECESSION, *reprinted in* AMERICAN HISTORY LEAFLETS, NO. 12, ORDINANCES OF SECESSION AND OTHER DOCUMENTS 3 (Albert Bushnell Hart & Edward Channing, eds., 1893).

288. *Id.* at 9–16; Martin Kelly, *Order of Secession During the American Civil War*, THOUGHT CO. (June 2, 2017), https://www.thoughtco.com/order-of-secession-during-civil-war-104535.

289. *See* G. Edward White, *2010 Hendricks Lecture in Law and History: Recovering the Legal History of the Confederacy*, 68 WASH. & LEE L. REV. 467, 482 (2011). *See generally* PROVISIONAL STATUTES AT LARGE, *supra* note 13 (indicating the provisional Congress consisted of one house and its members were referred to as deputies (representatives of states that seceded before the Battle of Fort Sumter) and delegates (representatives of states that seceded after the Battle of Fort Sumter)).

290. *See* H. JACKSON KNIGHT, CONFEDERATE INVENTION: THE STORY OF THE CONFEDERATE STATES PATENT OFFICE AND ITS INVENTORS 18 (2011).

291. *See id.* at 18–19; *see also* Patent Act of 1836, ch. 357, 5 Stat. 117, 117.

292. *See* KNIGHT, *supra* note 295, at 21.

293. *See id.*

Constitution, with certain notable exceptions, including an explicit endorsement of racial slavery.[294] However, the Intellectual Property Clause of the Confederate States Constitution was identical to the Intellectual Property Clause of the United States Constitution, authorizing the Confederate States Congress "to promote the progress of science and useful arts, by securing, for limited times, to authors and inventors, the exclusive right to their respective writings and discoveries."[295]

On April 12, 1861, the Confederate States Army attacked the United States Army at Fort Sumter in Charleston Harbor, South Carolina, effectively declaring war on the United States.[296] After the attack on Fort Sumter, four more states voted to secede and join the Confederate States of America: Virginia (April 17, 1861); Arkansas (May 6, 1861); Tennessee (May 6, 1861); and North Carolina (May 20, 1861).[297]

On May 16, 1861, the Confederate States Congress considered Brooke's bill to create a patent office.[298] Several representatives proposed amendments to the bill, including John Hemphill of Texas, who proposed the following amendment, which explicitly provided that slave owners could patent the inventions and discoveries of their slaves:

> Be it further enacted, That in case the original inventor or discoverer of the art, machine, or improvement for which a patent is solicited is a slave, the master of such slave may take an oath that the said slave was the original inventor, and on complying with the requisites of the law shall receive a patent for said discovery or invention and have all the rights to which a patentee is entitled by law.[299]

Hemphill's amendment was adopted and the bill passed.[300] On May 21, 1861, President Davis signed the bill into law, created the Patent Office of the Confederate States of America, and nominated Rufus Randolph Rhodes of Mississippi as Commissioner of Patents.[301] And the Confederate States Congress confirmed Rhodes the same day.[302]

According to Isaiah T. Montgomery, President Davis recommended that the Confederate States Congress allow slave owners to patent the

294. *See, e.g.*, CONFEDERATE STATES OF AMERICA CONST., art. I, § 9, cl. 4 (1861) ("No bill of attainder, *ex post facto* law, or law denying or impairing the right of property in negro slaves shall be passed.").

295. CONFEDERATE STATES OF AMERICA CONST., art. I, § 8, cl. 8 (1861).

296. Kelly, *supra* note 293.

297. *Id.*

298. JOURNAL OF THE PROVISIONAL CONGRESS OF THE CONFEDERATE STATES, 2d. Sess. 230 (May 16, 1861).

299. *Id.*

300. *Id.*

301. *Id.* at 263.

302. *Id.* at 268.

inventions and discoveries of their slaves, based on his own experience trying to patent Benjamin Montgomery's propeller.[303] While there is no other direct evidence that Davis proposed the amendment, Montgomery's claim is certainly plausible, especially given that both the chairman of the Committee on Patents and the newly-appointed Commissioner of Patents were both Mississippians. In any case, the amendment was ultimately irrelevant, because no one ever filed a patent application in the Confederate States Patent Office for the invention of a slave.[304]

CONCLUSION

The story of the Attorney General's opinion in *Invention of a Slave* illustrates the peculiar and conflicted logic of the ideology of slavery. In *Dred Scott*, the Supreme Court held that African-Americans could not be citizens of the United States in a vain attempt to insulate racial slavery and discrimination from challenge.[305] The ideology of slavery insisted that African-Americans were intellectually inferior to whites, and by extension, incapable of creating patentable inventions. African-American inventors refuted that claim, so the ideology of slavery had to pretend they didn't exist.

The ideology of slavery insisted that slave owners had a right to own everything produced by their slaves, so when slaves created inventions, slave owners had a right to own those inventions as well. Indeed, the ideology of slavery led slave owners to characterize denying them the right to patent the inventions of their slaves as a violation of the principle of equal protection. But the ideology of slavery then had to explain how it was possible for slaves to create inventions in the first place, which it accomplished by rationalizing slavery itself as a form of humanitarianism. In the twisted logic of the ideology of slavery, the existence of slave inventors only "proved" that African-Americans benefited from slavery.

In *Invention of a Slave*, the Attorney General applied the ideology of slavery as expressed in *Dred Scott* to deny slave owners the right to patent the inventions of their slaves. As Kenneth Dobyns observed in his history of the early patent office, "[a] century or more later, some people have considered this to be another instance of the federal government de-

303. *See* JAMES, *supra* note 57, at 76; *see also The Negro in the Field of Invention*, *supra* note 36, at 24 ("The writer is informed by a recent letter from Isaiah T. Montgomery that it was Jefferson Davis's failure in this matter that led him to recommend to the Confederate Congress the law passed by that body favorable to the grant of patents for the inventions of slaves.").

304. *See* KNIGHT, *supra* note 295, at 207–29.

305. Scott v. Sandford (*Dred Scott*), 60 U.S. 393, 419–20 (1857).

priving slaves of rights, but it could also be interpreted as a federal government which deprived slave owners of at least one benefit of owning slaves."[306] But ironically, the Patent Office applied that same logic to prevent free African-Americans from patenting their inventions, as well. The story of *Invention of a Slave* reflects the struggle over the ideology of slavery in a microcosm.

306. DOBYNS, *supra* note 42, at 152.