The opinion in support of the decision being entered today was **not** written
for publication and is **not** binding precedent of the Board.

Paper No. 19

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte NICHOLAS V. ROSS et al.

Appeal No. 1999-0545
Application No. 08/606,068

HEARD: October 23, 2000

Before ABRAMS, NASE, and GONZALES, Administrative Patent Judges.

ABRAMS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1-12, which are all of the claims pending in this application.

We AFFIRM-IN-PART.

BACKGROUND

The appellants' invention relates to an apparatus for continuously casting molten metal . An understanding of the invention can be derived from a reading of exemplary claim 1, which appears in the appendix to the appellants' Brief.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Wood et al. (Wood)	4,934,441	Jun. 19, 1990
Ross	5,133,402	Jul. 28, 1992

Claims 1-12 stand rejected under 35 U.S.C. § 103 as being unpatentable over the combined teachings of Ross and Wood.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellants regarding the above-noted rejection, we make reference to the Answer (Paper No. 15) for the examiner's complete reasoning in support of the rejection, and to the Brief (Paper No. 14) for the appellants' arguments thereagainst.

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellants' specification and claims, to the applied prior art references, and to the respective positions articulated by the appellants and the examiner. As a consequence of our review, we make the determinations which follow.

The appellants' invention is directed to heating the edge dam blocks associated with continuous belt metal casting machines. As explained in the specification, it has been recognized in the prior art that heating the continuous belts on these machines minimizes the loss of heat from the casting to the belts, which would result in distortions to the cast metals. The appellants' invention further improves upon this by heating the edge dam blocks by means of induction heaters. As manifested in independent claim 1, the invention comprises first and second endless orbiting means for forming a casting region mounted on pulleys and having common first lengths and facing front surfaces at the casting region, first and second edge dam blocks each comprising a continuous chain and disposed on the outer edges of the front surfaces for rotation with the orbiting means, the edge dam blocks having common second lengths greater than the first lengths to define first and second catenaries, means for providing molten metal to the casting region, and

> first and second induction heating means for inductively heating the first and second edge dam blocks prior to introduction of molten metal into the casting region, the induction heating means being located at the catenaries and respectively associated with the dam blocks, whereby the dam blocks are inductively heated during rotation of the orbiting means to preclude temperature distortion of the casting region from the molten metal.

The examiner has rejected claim 1, and all of the other claims, as being unpatentable over the "combined teaching of Ross and Wood," presenting two scenarios with regard to their application (Answer, page 3). In the first, it is the examiner's position that it would have been obvious to "prolong the service life of dam block [sic,

blocks] of Ross by providing a heating means for his dam blocks in view of Wood et al." and to substitute an induction heater for the radiant heater disclosed by Wood in view of Ross' teaching that induction heaters offer advantages over radiant heaters. The examiner's alternative assertion is that it would have been obvious to use an induction heater in the Wood apparatus in place of the disclosed radiant heater, in view of the Ross teaching that this offers advantages. Where a rejection is predicated upon two references, each containing pertinent disclosure which has been pointed out to the applicants, it is merely a matter of exposition that the rejection is stated to be A in view of B instead of B in view of A; such differing forms of expression do not constitute different grounds of rejection. See In re Bush, 296 F.2d 491, 496, 131 USPQ 263, 267 (CCPA 1961). In light of this principle, and in view of the examiner's alternative expressions of the rejection, we have chosen to evaluate the rejection by treating it from the standpoint of Wood being the primary reference.

The guidance provided by our reviewing court with regard to evaluating the issue of obviousness under 35 U.S.C. § 103 is as follows. The initial burden of establishing a basis for denying patentability to a claimed invention rests upon the examiner. See In re Piasecki. 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984). The question under 35 U.S.C. §103 is not merely what the references expressly teach but what they would have suggested to one of ordinary skill in the art at the time the

invention was made. See Merck & Co. v. Biotech Labs., Inc. 874 F.2d 804, 807, 10 USPQ2d 1843, 1846 (Fed. Cir. 1989), cert. denied, 493 U.S. 975 (1989) and In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). While there must be some suggestion or motivation for one of ordinary skill in the art to combine the teachings of references, it is not necessary that such be found within the four corners of the references themselves; a conclusion of obviousness may be made from common knowledge and common sense of the person of ordinary skill in the art without any specific hint or suggestion in a particular reference. See In re Bozek, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969). Further, in an obviousness assessment, skill is presumed on the part of the artisan, rather than the lack thereof. In re Sovish, 769 F.2d 738, 743, 226 USPQ 771, 774 (Fed. Cir. 1985). Insofar as the references themselves are concerned, we are bound to consider the disclosure of each for what it fairly teaches one of ordinary skill in the art, including not only the specific teachings, but also the inferences which one of ordinary skill in the art would reasonably have been expected to draw therefrom. See In re Boe, 355 F.2d 961, 965, 148 USPQ 507, 510 (CCPA 1966) and In re Preda, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968).

As best shown in Figure 2, Wood discloses an apparatus for continuously casting molten metal by means of first and second endless orbiting belts having common first lengths and facing front surfaces that define a casting region. The apparatus further

comprises first and second edge dam blocks having common second lengths greater than the first lengths and defining first and second catenaries, which are indicated by the numeral 30 in Figures 2 and 12. Wood evidences concern for the detrimental effect upon the casting process of the presence of varying amounts of heat transfer on the edges of the moving mold, which causes differential thermal expansion of the edge dams (column 2, line 9 et seq.). As part of an effort to solve this problem, the reference teaches that each moving edge dam block "may be heated by a radiant heater burner 270 (Fig. 2) supplied with gas . . . regulated by a remotely actuatable gas valve 269" (column 12, lines 16-19), which heaters are "adjacent to the edge dams 30 and located toward the entrance E of the moving mold M" (column 12, line 68-column 13, line 2). It is our view that this location meets the terms of claim 1, inasmuch as it is "at the catenaries" (emphasis added), that is, the hanging portions 30 of the edge dam blocks, as can be seen in Figure 2. Therefore, from our perspective, Wood discloses all of the subject matter recited in claim 1 except for the requirement that the heating means be of the inductive type.

Ross is cited by the appellants on page 2 of their specification as representing a prior art system in which heat loss to the casting is minimized by inductive heating of the endless belts. Ross' inductive heaters are located in close proximity to the belts, at a point prior to molten metal being provided to the casting region (column 3, line 44 et seq.). Ross

does not teach that the edge dam blocks should separately be heated, however, Ross does provide teachings regarding the advantages of utilizing induction heaters that lead us to conclude that it would have been obvious to one of ordinary skill in the art to modify the Wood apparatus by replacing the radiant edge dam block heaters with induction heaters. In this regard, Ross points out that infra red heating units[1] "take up considerable physical space within the casting machine" which "cause engineering and construction problems in order to provide available space." The reference goes on to state that these heaters suffer from an "inconsistency" in the transfer of heat "decreasing the certainty that a controlled transfer of heat to the belts is occurring," and,"if a flame infra red heating device is used, imprecise fuel flow rates can cause flames to issue from the burner housing and burn the endless belts damaging their surface." See column 2, lines 19-36. According to Ross, among the advantages

achieved by using induction heaters are the ability to provide instantaneous heat of a desired temperature in an independent manner as soon as the induction heaters are energized, the ability to induce highly concentrated amounts of energy into the belt within a limited physical space, the efficient use of space, and the ability to adjust the amount of heat produced. See column 3, line 51 et seq.). Finally, on this subject, Ross states:

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[1]The appellants have not argued that the infra red heating units of Ross are not radiant heaters.

> [e]mploying induction heating to pre-heat the belts results in consistent, highly controllable temperatures. In some instances it is desirable to elevate the temperature at the edges of the belts to a higher degree then [sic, than] the center of the belts or visa versa. Through the use of the induction heating this can be accomplished. (column 5, lines 51-56).

It is our opinion that the artisan would have been taught by Ross the disadvantages in continuous casting machines of utilizing an infra red heater such as the gas heater disclosed by Wood for applying controlled heat to the endless elements utilized in the casting process, and the advantages of heaters of the induction type. Thus, from our perspective, one of ordinary skill in the art would have found it obvious to replace the infra red edge dam block heaters of Wood with induction heaters, explicit suggestion being provided by the above-cited passages from Ross. Interestingly, the advantages set out by Ross are among those stated by the appellants on pages 1-4 of their specification.

We conclude that the combined teachings of Wood and Ross establish a prima facie case of obviousness with regard to the subject matter recited in independent claim 1, and we will sustain the rejection. The appellants have chosen not to challenge with any reasonable specificity before this Board the rejection of dependent claims 2, 3, 6, 8 and 9 (Brief, page 8). This being the case, they are grouped with independent claim 1, from which they depend, and fall therewith. See In re Nielson, 816 F.2d 1567, 1572,

2 USPQ2d 1525, 1528 (Fed. Cir. 1987).

Claim 4 adds to claim 3 the requirement that the induction heating means comprise "annular coils encompassing the dam blocks at the catenaries." Such an induction heating coil is not disclosed or taught in Wood or Ross,[2] and we are not persuaded that it would have been obvious by the examiner's unsupported conclusion that "the shape of the induction coil depends on the configuration of the objected [sic, object] to be heated" and thus "[i]t would have been obvious to those of skill in the art to design an appropriate induction coil for heating the specific object" (Answer, pages 5 and 6). A prima facie case of obviousness therefore has not been established with

regard to the subject matter recited in claim 4, and we will not sustain the rejection of claim 4 or of claim 5, which depends therefrom.

Independent claim 7 recites the invention in terms of a method for continuously casting molten metal. It comprises the steps of rotating first and second endless belts and first and second endless dam blocks to form a casting region wherein the dam blocks have a length longer than the belts to form catenaries, providing molten metal to the casting region, and inductively heating the edge dam blocks with induction heaters "disposed in

[2]The Ross induction heater is U-shaped and does not "encompass" the element being heated.

the catenaries" (emphasis added) to avoid temperature shock to the edge dam blocks during the providing step. Except for the use of induction heaters, it is our conclusion that the claimed method is taught by Wood. On the basis of the rationale set forth above with regard to claim 1, we are of the view that it would have been obvious to one of ordinary skill in the art to perform the Wood method with an induction heater. Thus, we also will sustain the rejection of claim 7.

Independent apparatus claim 10 differs from claim 1 in that it sets forth the invention is somewhat different terms, However, we will sustain the rejection on the basis of Wood and Ross for the same reasons as were applied to independent

apparatus claim 1. We also will sustain the rejection of dependent claim 11, the patentability of which was not argued with any reasonable specificity before the Board.

Dependent claim 12 adds to claim 10 the limitation concerning annular induction coils which also was present in claim 4. As we stated above, this feature is not taught by the applied prior art, and we therefore will not sustain the rejection of claim 12.

We have, of course, carefully considered all of the arguments set forth by the appellants. However, with regard to those rejections which we have sustained, these

arguments have not been persuasive. Our position with regard to each should be apparent from the explanations we have provided for reaching our conclusions. We wish to emphasize, however, that we regard Wood as disclosing edge dam blocks comprising catenaries in advance of the casting region, with the dam edge block heaters being "at" the catenaries, as specified in independent claims 1 and 10, and "in" the catenaries, as required by independent claim 7.

SUMMARY

The rejection of claims 1-3 and 6-11 is sustained.

The rejection of claims 4, 5 and 12 is not sustained.

The decision of the examiner is affirmed-in-part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

NEAL E. ABRAMS Administrative Patent Judge	)
JEFFREY V. NASE Administrative Patent Judge	) BOARD OF PATENT) APPEALS) AND) INTERFERENCES
JOHN F. GONZALES Administrative Patent Judge	)

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