Paper No. 32

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KIYOSHIGE MURAOKA
and
TOSHIRO MATSUO

Appeal No. 2001-0080
Application No. 08/577,217

HEARD: May 23, 2002

Before LIEBERMAN, DELMENDO, and MOORE, Administrative Patent Judges.

DELMENDO, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1, 6 through 9, 11, and 12, which are the only claims pending in the above-identified application.[1]

[1] In reply to the final Office action of July 16, 1999 (paper 19), the appellants submitted an amendment pursuant to 37 CFR § 1.116 (1981) on February 28, 2000 (paper 25), proposing a change to claim 6. The examiner indicated in the advisory

The subject matter on appeal relates to a pneumatic tire comprising the recited tread and the recited conductive thin film. Further details of this appealed subject matter are recited in illustrative claim 1, the sole independent claim on appeal, reproduced below:

> 1. A pneumatic tire comprising a tread and a conductive thin film provided on the surface of said tread continuously in the circumferential direction of the tire,
>
> wherein said conductive thin film is made from a rubber composition comprising a rubber and at least 10 parts by weight of carbon black per 100 parts by weight of said rubber, said carbon black has an average particle size of at most 40 nm and a DBP oil absorption of at least 150 ml/100 g, and said conductive thin film has a thickness of 0.1 to 0.5 mm and a volume resistivity of not more than 10^5 Ω·cm, and said conductive thin film is provided on at least both edge portions of said tread, and the width in the direction from one edge toward the center of said tread of said conductive thin film located on one side of the tread is from 10 to 50% of the full width of said tread; and
>
> said tread is made from a rubber composition comprising a diene rubber and 40 to 100 parts by weight of silica having a BET specific surface area of 100 to 300 m^2/g per 100 parts by weight of said diene rubber, the content of said silica being at least 50% by weight based on the whole filler incorporated in said composition.

The examiner relies on the following prior art references as evidence of unpatentability:

Hanson	2,339,546	Jan. 18, 1944

---

action of March 24, 2000 (paper 26) that the amendment will be entered for purposes of this appeal.

Krishnan et al. (Krishnan)	5,143,967	Sep. 1, 1992
Bergh et al. (Bergh)	5,447,971 (effective filing date	Sep. 5, 1995 Apr. 2, 1993)
Teeple et al. (Teeple)	5,518,055 (filing date	May 21, 1996 Sep. 20, 1994)
U.S. Rubber Co. (GB '757)(published GB patent application)	544,757	Apr. 27, 1942

T.M. Aminabhavi & P.E. Cassidy, Electrical Resistivity of Carbon-Black-Loaded Rubbers, 63 RUBBER CHEMISTRY AND TECHNOLOGY 451-471 (1990)(Aminabhavi).

Claims 1, 6 through 9, 11, and 12 on appeal stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combined teachings of Hanson, GB '757, Teeple, Bergh, Krishnan, and Aminabhavi. (Examiner's answer, pages 6-13.)

We reverse this rejection.

To reject claims under 35 U.S.C. § 103 as prima facie obvious over a combination of references, both the suggestion to combine the references and the reasonable expectation of success must be founded in the prior art, not from the appellants' own disclosure. In re Vaeck, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991) (citing In re Dow Chemical Co., 837 F.2d 469, 473, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988)). In this regard, our reviewing court has repeatedly stated that the examiner must point to some teaching or motivation in the prior

art to support the proposed combination of references. See, e.g., In re Dembiczak, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999) ("[T]he best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references."). In the present case, the examiner has engaged in impermissible hindsight reconstruction.

Hanson describes a rubber tire comprising a conducting element that extends from the face of the tire tread to a bead portion of the tire, the terminus of the element in the face of the tread being adapted to contact the road, and the terminus of the bead portion being adapted to contact the tire rim. (Page 1, right column, lines 33-40.) The tire is said to provide an electrical contact between the surface of the road and the tire rim. (Id. at lines 40-43.) Hanson further teaches that the conducting element is made from a rubber composition containing, e.g., about 30% of conductive carbon black and that the element "may be of any convenient thickness, depending on the type of tire..." (e.g., 0.04 to 0.10 inch or 1.0 to 2.5 mm). (Page 3, right column, lines 13-42.)

GB '757 describes a tire comprising a layer of rubber cement, which is two or three thousandths of an inch in

thickness (0.05 to 0.076 mm) and contains, inter alia, at least 15% by weight of conductive carbon black. (Page 2, line 88 to page 3, line 3.)

Teeple describes a radial pneumatic tire having a silica-rich tread compound in which the filler material, which constitutes approximately 35% by weight of the total weight of the tire, has at least 50% by weight of silica. (Column 4, lines 32-57.) Teeple further teaches that the tire tread has an electrical discharge ring 20, which is positioned so that distance B as shown in Figure 1 is preferably 7% of the tread width TW. (Column 5, lines 21-28.) In addition, Teeple teaches that the discharge ring 20 has a thickness of about 0.20 to about 1.0 mm and that the volume resistivity is about 10^7 to about 10^8 Ω·cm. (Column 5, lines 41-48.)

Krishnan describes a sulfur cured rubber composition containing a dispersion of a particular electrically conductive carbon black which, on a frequency sensitive basis, exhibits a relatively linear electrical conductivity response to variations of pressure applied to the rubber composition. (Column 1, lines 7-12.) The conductive carbon black is said to have a surface area characterized by an iodine absorption number (ASTM D1510) in a range of about 220 to about 300, a relatively "high structure" characterized by a dibutylphthalate value (ASTM 2414)

in a range of about 150 to about 210, and "a medium particle size of an average" of about 20 to about 50 nm. (Column 1, lines 50-63.)

Bergh describes the use of silica having an ultimate particle size of 50 to 10,000 angstroms and a BET surface area, as measured using nitrogen gas, of about 100 to about 200 in sulfur vulcanized tread compositions. (Column 2, line 49 to column 3, line 4; column 4, lines 24-32.)

Aminabhavi teaches that the electrical resistivity of rubbers is known to be largely influenced by the type and amount of carbon black in addition to its degree of dispersion in the rubber matrix. According to the examiner (examiner's answer, page 6), this reference "clearly shows that the ordinary artisan understands the impact of particle size and 'structure' on resistivity/conductivity of rubber and particularly that high conductivity is achieved by selecting small particle size and 'high structure' carbon blacks..." (Footnote omitted.)

In comparing the disclosure of Hanson, the principal prior art reference (examiner's answer, page 6, statement of rejection), to the subject matter of appealed claim 1, we find that Hanson differs in many respects. For one, Hanson does not teach any average particle size for the carbon black. Nor does Hanson teach any particular DBP oil absorption value for the

carbon black. Also, Hanson does not teach the recited conductive film thickness and width. Further, Hanson does not teach a rubber composition having the recited components in the recited amounts.

In spite of the numerous differences between Hanson and the invention recited in appealed claim 1, the examiner held (examiner's answer, pages 7-8):

> [T]he ordinary artisan...would have found it to have been prima facie obvious to include a thin conductive layer along at least the side edges of the tread surface of any relatively non-conductive tread rubber to avoid static accumulation, this being known to be particularly important for silica-rich treads in light of the teachings of Teeple at al. Only the expected results would be achieved. [Footnote omitted.]

The examiner further stated (id. at page 8): "The remaining features of the claims represent result-effective variables whose claimed values represent mere routine and obvious optimizations of this basic concept leading to none but the expected results."

We cannot agree with the examiner's analysis and conclusion. The examiner has not pointed to any teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill in the art to arbitrarily and selectively combine Hanson with the other references such as Teeple, which teaches a conductive discharge ring of undisclosed composition

having a different set of characteristics. For example, the examiner would have us believe that Hanson's conductive film could be modified to have a thickness smaller than 0.04 to 0.10 inch. However, the examiner has not adequately explained why one of ordinary skill in the art would have used a thickness outside the range disclosed in Hanson, especially when the film contains carbon black as taught in Hanson. In Hanson, where carbon black is used as part of the conductive film, the disclosed range of thicknesses is taught as "entirely satisfactory." (Page 3, right column, lines 9-12.) Hence, one of ordinary skill in the art would have no reason to optimize outside Hanson's range when carbon black is used. While the examiner alleges that Teeple teaches the here claimed film thickness (examiner's answer, pages 9-10), the examiner glosses over the fact (id. at page 8, footnote 4) that Teeple does not disclose the composition of the discharge ring, much less a discharge ring having carbon black as in Hanson.

Also, the examiner does not adequately explain why one of ordinary skill in the art would have been led to combine Hanson with Bergh, Krishnan, and Aminabhavi, which do not relate to conductive thin films for tires. Again, it is our judgment that the examiner has impermissibly used the appellants'

specification as a template to piece together isolated teachings in the prior art to arrive at the conclusion of obviousness. In re Warner, 397 F.2d 1011, 1016, 154 USPQ 173, 177 (CCPA 1967) ("[W]here the invention sought to be patented resides in a combination of old elements, the proper inquiry is whether bringing them together was obvious and not, whether one of ordinary skill, having the invention before him, would find it obvious through hindsight to construct the invention from elements of the prior art."); In re Rouffet, 149 F.3d 1350, 1359, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998) ("[T]he Board must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious.").

As a final point, we note that the appellants have relied on experimental data provided in the specification as evidence of nonobviousness. (Appeal brief, page 15.) The examiner, however, does not even acknowledge this evidence. While we do not need to address the sufficiency of the evidence in this case, we point out that the examiner's failure to specifically discuss the evidence constitutes reversible error.

In summary, we reverse the examiner's 35 U.S.C. § 103(a) rejection of all the appealed claims as unpatentable over the

combined teachings of Hanson, GB '757, Teeple, Bergh, Krishnan, and Aminabhavi.

The decision of the examiner is reversed.

REVERSED

Paul Lieberman	)	
Administrative Patent Judge	)	
	)	
	)	
	)	
	)	BOARD OF PATENT
Romulo H. Delmendo	)	
Administrative Patent Judge	)	APPEALS AND
	)	
	)	INTERFERENCES
	)	
	)	
James T. Moore	)	
Administrative Patent Judge	)	

RHD/kis

BIRCH, STEWART, KOLASCH & BIRCH
P. O. BOX 747
FALLS CHURCH, VA 22040-0747