

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte FRANK HOLM IVERSEN, HEINZ OTTO LASSEN, MARTEN
NOMMENSEN, CHRISTIAN PETERSEN (DECEASED), and BEATE
SONKSEN (LEGAL REPRESENTATIVE)

Appellants

Appeal 2008-3590
Application 11/135,873
Technology Center 2800

Decided: September 23, 2008

Before KENNETH W. HAIRSTON, JOHN C. MARTIN, and JOSEPH F.
RUGGIERO, *Administrative Patent Judges*.

MARTIN, *Administrative Patent Judge*.

DECISION ON APPEAL
STATEMENT OF THE CASE

This is an appeal under 35 U.S.C. § 134(a) from the Examiner's rejections of claims 1-11, all of the pending claims.

We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM-IN-PART.

A. Appellants' invention

Appellants' invention is a method for mounting a drive shaft of a compressor, particularly a hermetical refrigerant compressor. Specification [0001].

Appellants' Figures 1 and 2 are reproduced below.

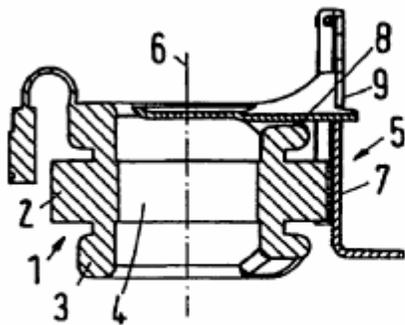


Fig. 1

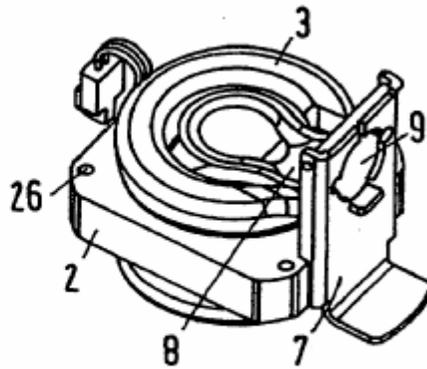


Fig. 2

Figure 1 is a cross-section through a stator and Figure 2 is a perspective view of the stator. *Id.* at [0021-22].

The stator 1 includes a sheet pack 2 and a coil having coil ends 3. *Id.* at [0030]. A compressor block 5 is fixedly connected to the outside of the sheet pack, such as by welding. *Id.* Compressor block 5, which can be

formed of sheet metal, includes a “basic unit” 7 that extends parallel to rotor axis 6. *Id.* Welded at a right angle to basic unit 7 is a “first bearing support 8.” *Id.* However, first bearing support 8 as depicted in Figure 2 does not yet have an opening formed therein for receiving a bearing.

Figures 3 and 4 are reproduced below.

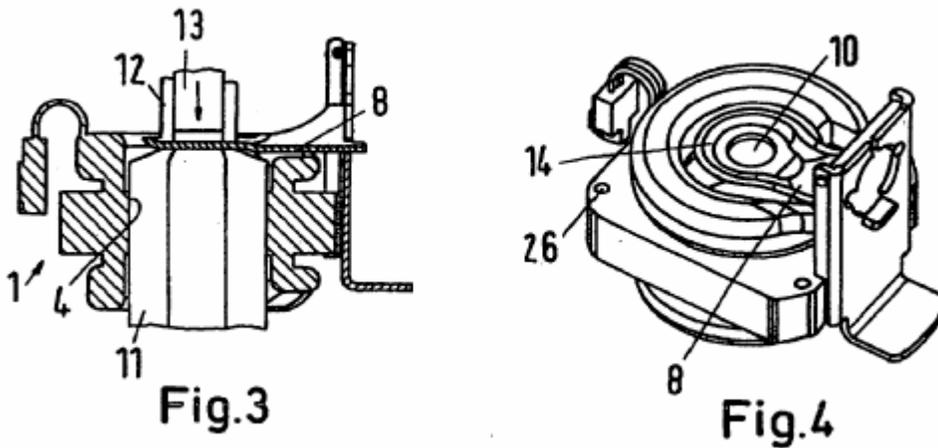


Figure 3 is a sectional view according to Figure 1 with an inserted tool, while Figure 4 is a perspective view according to Figure 2 after forming an opening for the first bearing. *Id.* at [0023-24].

The tool is a punching tool having an upper support part 12 and a lower support part 11. *Id.* at [0031]. Because the lower support part is sized to fill the stator opening, the resulting punched opening 10 in first bearing support 8 is “exactly concentric to the axis 6 of the stator opening 4.” *Id.* Thus, the edge of opening 10 functions as a “positioning stop” (*id.* at [0010]) that “has exactly the desired alignment to the rotor opening.” *Id.* at [0012].

Figure 5 is reproduced below.

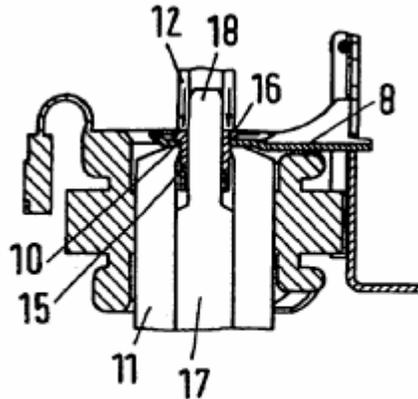


Fig.5

Figure 5 shows the stator after insertion of a bearing bush 15 into opening 10 of first bearing support 8. *Id.* at [0034].

The remaining assembly steps, depicted in Figures 6-8, are not the subject of claim 1 and therefore are not discussed herein.

B. The claims

Claim 1, the sole independent claim, reads:

1. A method for mounting a drive shaft of a compressor having a motor with a stator and a rotor, the method comprising the steps of:
 - mounting a first bearing support on the stator; and
 - providing a positioning stop for a first bearing in the first bearing support after mounting the first bearing support on the stator.

C. The references

The rejections are based on the following references:¹

Bianchi	US 6,095,768	Aug. 1, 2000
Wingeier	US 6,842,967 B2	Jan. 18, 2005

D. The rejections

As noted by Appellants (Reply Br. 3), there are two grounds of rejection before us:²

(a) Claims 1-8 stand rejected under 35 U.S.C. § 103(a) for obviousness over Bianchi (Answer 3); and

(b) Claims 9-11 stand rejected under § 103(a) for obviousness over Bianchi in view of Wingeier (*id.* at 5).

¹ Regarding Kawasaki U.S. Patent 5,661,894, which was cited for the first time in the Answer (at 9) in the discussion of claim 5, the Examiner has explained that “there is no new grounds of rejection with respect to claim 5, the Kawasaki reference was merely included as a supporting reference, and the original grounds of rejection as supplied in the final office action remains unchanged.” January 25, 2007, Office communication.

² In the Final Office Action, the Examiner rejected claims 1-4 and 7 under 35 U.S.C. § 102(b) for anticipation by Bianchi (Final Action 3), rejected claims 1-8 under § 103(a) for obviousness over Bianchi (*id.* at 3-5), and rejected claim 9-11 under § 103(a) for obviousness over Bianchi in view of Wingeier (*id.* at 5-6). The Examiner failed to repeat the § 102(b) rejection in the Answer and subsequently withdrew that ground of rejection in the January 25, 2007, Office communication.

THE ISSUE

The issue is whether Appellants have shown reversible error by the Examiner in maintaining the rejections. *See In re Kahn*, 441 F.3d 977, 985-86 (Fed. Cir. 2006) (“On appeal to the Board, an applicant can overcome a rejection by showing insufficient evidence of *prima facie* obviousness or by rebutting the *prima facie* case with evidence of secondary indicia of nonobviousness.”) (quoting *In re Rouffet*, 149 F.3d 1350, 1355 (Fed. Cir. 1998)).

ANALYSIS

A. Principles of law

“[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). If that burden is met, the burden shifts to the applicant to rebut the *prima facie* case with evidence of secondary indicia of nonobviousness. *Kahn*, 441 F.3d at 985-86.

A rejection under 35 U.S.C. § 103(a) must be based on the following factual determinations: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the claimed invention and the prior art; and (4) any objective indicia of non-obviousness. *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1360 (Fed. Cir. 2006) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966)).

B. Bianchi

Bianchi discloses a compressor for use in a refrigerator (Bianchi, col. 1, ll. 4-5).

Bianchi's Figure 1 is reproduced below.

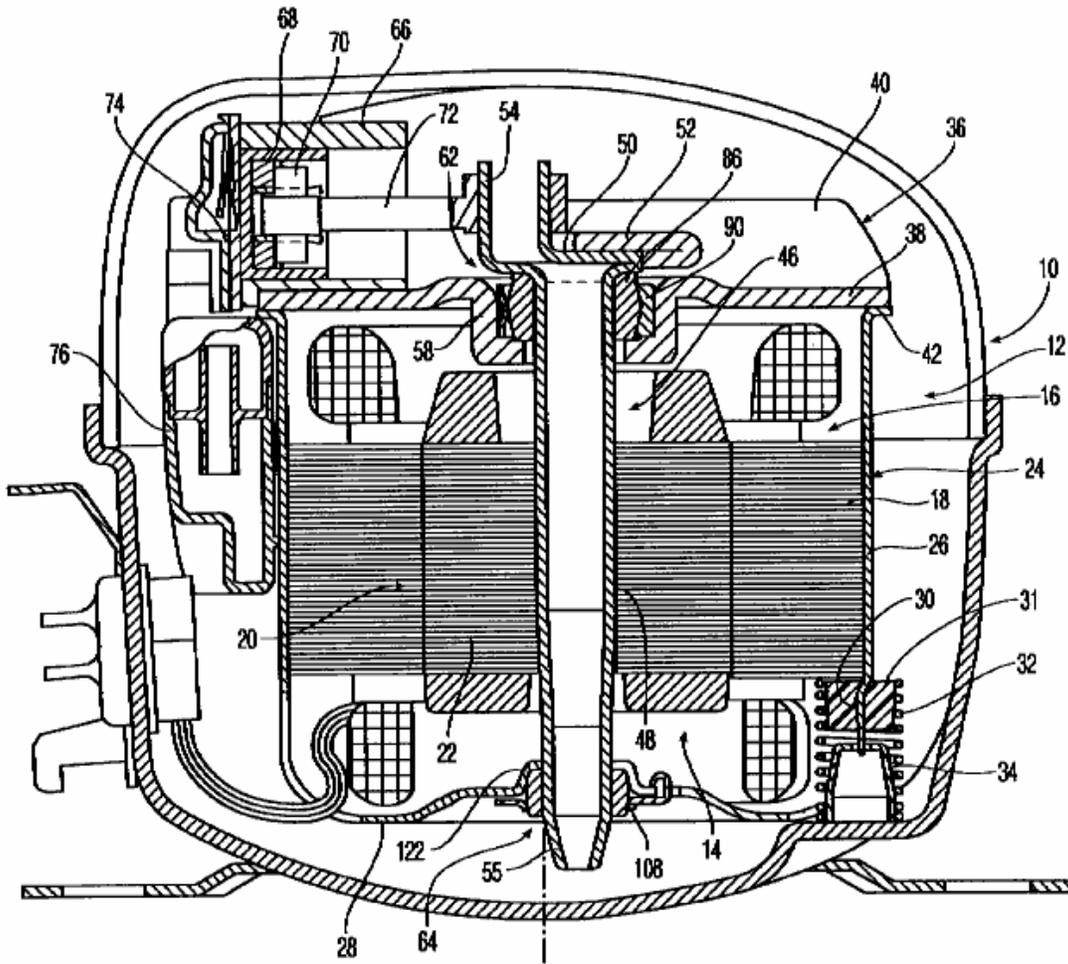


Fig. 1

Figure 1 is a diametral section of Bianchi's hermetic motor-driven compressor. *Id.*, col. 2, ll. 13-14.

The compressor comprises a casing, generally indicated 24, which encloses the stator 16 and to which a pack of stator laminations 18 is fixed (*id.*, col. 2, ll. 54-59).

A U-shaped block 36 including a web 38 and side walls 40 extends over casing 24 and has its web 38 welded to a rim or flange 42 of casing 24 (*id.*, col. 3, ll. 6-15).

Inside the stator 16 there is a squirrel-cage rotor 20 including a pack of laminations 22 (*id.*, col. 2, ll. 54-5) mounted on a crankshaft 46 (*id.*, col. 3, ll. 18-19). The upper end of the crankshaft is supported for rotation by a main self-aligning bearing 62 located in a seat 56 (Fig. 3 *infra*) in web 38 of block 36 (*id.*, col. 3, ll. 40-41).

The lower end of crankshaft 46 is supported for rotation by a secondary self-aligning bearing 64 located in a seat 60 (Fig. 3) in base wall 28 (*id.*, col. 3, ll.41-42), which is part of casing 24 (*id.*, col. 2, ll. 60-62).

Bianchi's Figures 3 and 10 are reproduced below.

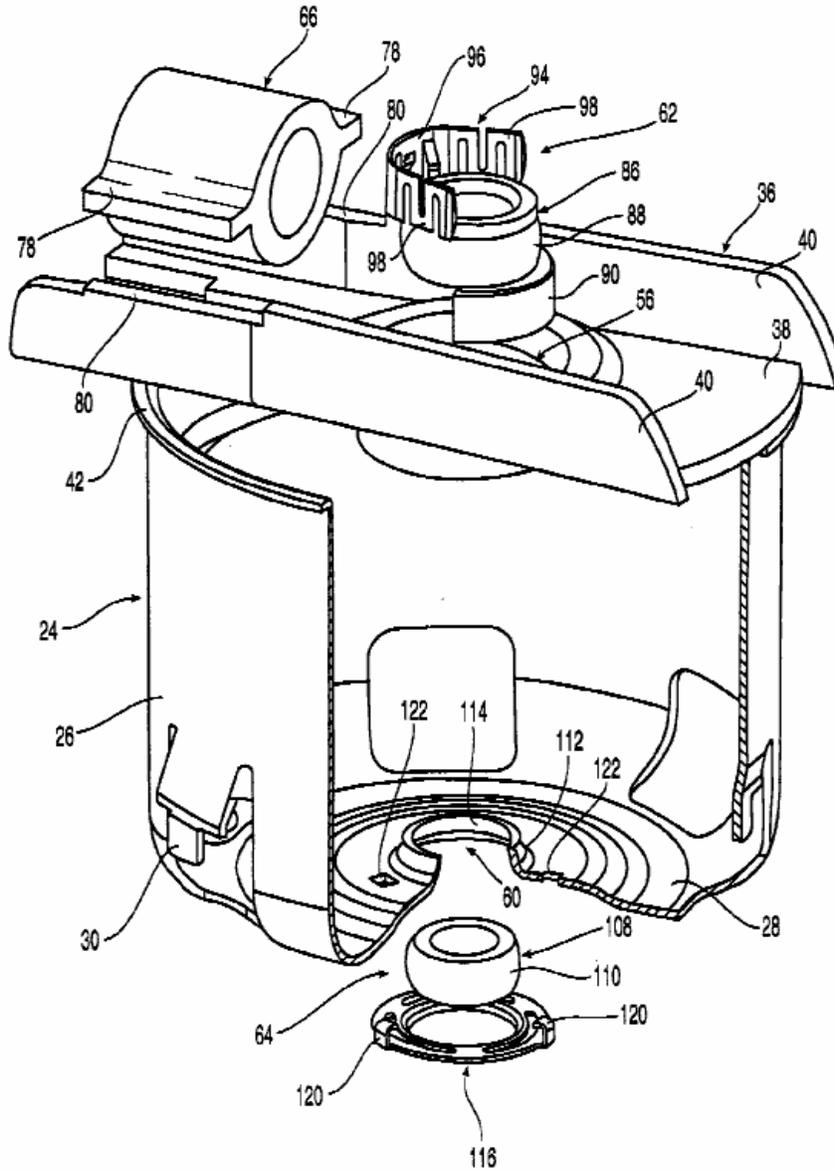


Fig. 3

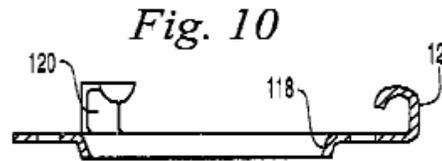


Figure 3 is an exploded and cut-away perspective view showing some of the components of the compressor (*id.*, col. 2, ll. 17-18), including bearings 62 and 64. Figure 10 is a plan view of a washer that is part of the secondary bearing (*id.*, col. 2, ll. 33-34).

Main self-aligning bearing 62 is described as including three elements: (a) an inner bush-shaped element 86 that surrounds the upper part of the straight portion 48 of the crankshaft 46 (*id.*, col. 4, ll. 21-23); (b) an outer curved element 90 that is interposed between the bush 88 and the peripheral surface 82 of “set” (*sic*, seat) 56 (*id.*, col. 4, ll. 26-29); and (c) a resilient loading element 94 (*id.*, col. 4, ll. 33-34) having a rear portion 96 and opposed side jaws 98 (*id.*, col. 4, ll. 48-49).

Secondary self-aligning bearing 64 comprises an inner bush-shaped element 108 and an outer element that is constituted as a central annular projection 112 formed in the base wall 28 of the casing 24 (*id.*, col. 5, ll. 45-52). Projection 112 has a generally concave spherical inner surface 114 (FIG. 3) corresponding to the outer surface of inner element 108 (*id.*, col. 5, ll. 53-5). Washer 116 has a shaped radially inner rim 118 (see Fig. 10) that engages the axially outermost portion of the inner element 108 and serves to retain inner element 108 in “seat 64 [*sic*, 60],” which is formed jointly by annular projection 112 and rim 118 (*id.*, col. 5, ll. 61-63).

C. The rejection of claims 1-8 based on Bianchi

Appellants do not dispute the Examiner's reading of the recited "first bearing support" alternatively on web 38 of block 36 (which supports upper bearing 62) and base wall 28 (which supports lower bearing 64) (Answer 3).

Appellants do, however, question the Examiner's reading of the recited "positioning stop for a first bearing in the first bearing support" alternatively on (a) the combination of elements 90 and "98" (*sic*, 94) and (b) washer 116 (*id.* at 3, 7).

(a) The Examiner's reliance on elements 90 and 94

We will begin by addressing the Examiner's reliance on elements 90 and 94, which surround inner bush-shaped element 86. Appellants argue (Reply Br. 5) that it is unreasonable to characterize elements 90 and 94 (incorrectly identified by Appellants as 98) as "a positioning stop for the first bearing" because Bianchi describes all three of elements 86, 90, and 94 as parts of bearing 62 (Bianchi, col. 4, ll. 21-34). This argument is unconvincing because it gives an unduly narrow interpretation to "bearing," which is not defined in Appellants' Specification and therefore must be given its broadest reasonable interpretation consistent with *Appellants'* disclosure. *In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997). That disclosure uses the term "bearing" to refer to, for example, bearing bush 15, which has a bearing surface that engages and supports the upper end of the rotor shaft for rotation about its axis. The corresponding element in Bianchi

is bush-shaped element 86, which has a bearing surface that engages and supports the upper end of the rotor shaft for rotation. The function of elements 90 and 94, in contrast, is to position element 86 in seat 56 in web 38 of block 36. We therefore agree with the Examiner that “these elements are in fact vital for holding the bearings in a fixed position, and may be interpreted to be positioning stops under the broadest reasonable definition of a positioning stop.” April 4, 2006, Advisory Action at 2. Bianchi’s description of elements 86, 90, and 94 as forming a “self self-aligning bearing 62” is simply a description of that particular type of bearing. That description would not have been understood by a person having ordinary skill in the art to preclude the term “bearing” as used in Appellants’ claim 1 from being read on Bianchi’s bush-shaped element 86 or to preclude the recited “positioning stop” from being read on Bianchi’s elements 90 and 94. Thus, Appellants have not demonstrated that the Examiner erred in reading the claim language “providing a positioning stop for a first bearing in the first bearing support” on elements 90 and 94.

However, we agree with Appellants that elements 90 and 94 are not mounted on the bearing support after the bearing support is mounted on the stator, as required by claim 1. The Examiner, after correctly stating that “Bianchi is silent on whether the positioning stop is provided to the first bearing support before or after the first bearing support is mounted on the stator” (Answer 3), concluded that

it would have been obvious to one of ordinary skill in the art at the time of the invention to provid[e] the first bearing in the first support after mounting the first bearing support on the stator since it has been held that “selection of any order of performing process steps is prima facie obvious in the absence of new or unexpected results” (*In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946)). . . . [S]ince Bianchi makes no requirement that the positioning stop be provided on the first bearing support before the mounting of the stator to the first bearing support, it would have been obvious to one of ordinary skill in the art to provide the positioning stop to the first bearing support after mounting the first bearing support on the stator as merely a design choice.

Answer 3 (italics added). We agree with Appellants that the Examiner’s reliance on *Burhans* is misplaced because its underlying facts are unlike those presented in this appeal.³ The claimed subject matter at issue in *Burhans* was a method of making wheat flour that consisted of a number of steps performed in a particular sequence.⁴ In contrast, the question

³ We do not understand the Examiner’s position to be that *Burhans* recites a *per se* rule that must be applied without regard to the specific facts. See *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995) (“The use of *per se* rules, while undoubtedly less laborious than a searching comparison of the claimed invention -- including all its limitations -- with the teachings of the prior art, flouts section 103 and the fundamental case law applying it.”).

⁴ *Burhans*’s claim 4, for example, read as follows:
4. The method of making genuine whole wheat flour which consists in separating the germs from the wheat, manufacturing flour from the remaining constituents of the wheat, aging the flour, incorporating thereinto finely divided
(Continued on next page.)

presented by the rejection before us is the obviousness of assembling the components of Bianchi's complex compressor structure in a manner that satisfies the claim language. Under these circumstances, a prima facie case for obviousness must take into account any technical problems that would have been presented by the prospect of assembling Bianchi's compressor in the manner proposed by the Examiner. Only if the proposed order of assembly would have been technically feasible is prima facie obviousness established, thereby shifting the burden shifted to the applicant to submit rebuttal evidence, such as evidence of unexpected results.

Appellants have questioned the technical feasibility of inserting elements 90 and 94 in seat 56 after web 38 has been welded to the casing 24 (i.e., after the first bearing support has been mounted on the stator).

Specifically, Appellants correctly point out that

inserting elements 90 and 98 *after* Bianchi's block 36 is mounted to the casing 24 also implicates further complications, or at least modifications, to the assembly process. Referring to Bianchi's Figure 1, the crank 50 and counterweight 52 of the crankshaft 46 would apparently prevent the insertion of elements 90 and 94 around the inner element 86 *after* mounting the block 36 to the casing 24. If, to avoid this problem, the crankshaft 46 was also not inserted through the block 36 until *after* the block 36 was mounted on the casing 24, it would

nonrancid wheat germ constituents, and thereafter impregnating the flour with carbon dioxide.
Burhans, 154 F.2d at 691.

apparently be necessary to somehow mount the rotor 20 onto the crankshaft 46 *inside* the casing 24.

Reply Br. 5-6. The Examiner has not explained, and it is not otherwise apparent, why a person skilled in the art, faced with this technical problem, nevertheless would have elected to assemble the compressor in the manner proposed by the Examiner rather than avoid this problem by assembling the rotor, crankshaft, and bearing 64 components on block 36 before it is welded to casing 24. As a result, we are unable to sustain the rejection to the extent it is based on reading the recited “positioning means” on elements 90 and 94.

(b) The Examiner’s reliance on washer 116

We turn now to the Examiner’s alternative reading of the recited “positioning stop” on washer 116. Appellants do not deny that washer 116, and more particularly its rim 118, can be fairly characterized as a “positioning stop.” Instead, they argue that because washer 116 is not part of base wall 28, on which the Examiner reads the recited “first bearing support,” washer 116 is not provided “*in* the first bearing support” (emphasis added), as required by claim 1.

We are not persuaded by this argument, which appears to be based on construing the claim language as requiring that the positioning stop be *formed* in the first bearing support rather than being added thereto as a separate element. The claim language “providing a positioning stop . . . in the first bearing support” is broad enough to read on adding to the first bearing support, after it has been mounted on the stator, a separate element

Appeal 2008-3590
Application 11/135,873

that becomes part of the first bearing support and thereafter functions as a positioning stop for (or “in”) the first bearing support. The claim language thus construed reads on Bianchi’s washer 116, which is connected to base wall 28 (the recited “first bearing support”) by tongues 120 after casing 24 (including base wall 28) has been attached to stator laminations 18, and which thereafter functions as a positioning stop by holding bearing 64 in seat 60.

Appellants do not deny that it would have been obvious to attach washer 116 to base wall 28 after casing 24 (including base wall 28) has been mounted on the stator, as is necessary for washer 116 to satisfy the requirement of claim 1 that the positioning stop be provided *after* the first bearing support is mounted on the stator.

For the foregoing reasons, Appellants have not shown that the Examiner erred in rejecting claim 1 for prima facie obviousness based on reading the recited “first bearing support” on base wall 28 and the recited “positioning means” on washer 116.

However, Appellants argue that providing a positioning stop for a first bearing in the first bearing support *after* mounting the first bearing support on the stator has *new or unexpected results*. As discussed above in the "Summary of Claimed Subject Matter," advantages and beneficial properties of the claimed method over the prior art are expressly disclosed in the Specification.

Br. 8. Under the heading “Summary of Claimed Subject Matter,” the Brief explains that the invention provides an exact concentric alignment of the

rotor in the rotor opening, thereby permitting a reduction in the size of the air gap, energy losses, and frictional losses, and can be implemented using relatively cheap sheet metal parts. Br. 3. This argument is unconvincing because it is not commensurate in scope with claim 1, which does not recite the method to which Appellants attribute those results, i.e., forming a positioning stop (e.g., the edge of an opening) in a bearing support (e.g., by punching) after the bearing support is mounted on the stator. *See In re Dill*, 604 F.2d 1356, 1361 (CCPA 1979). As explained above, claim 1 is broad enough to read on attaching Bianchi's washer 116 to base wall 28 after base wall 28 has been mounted on the stator. Also, there is no evidence (or even an assertion in the Specification) that the foregoing advantages were unexpected. *See In re Soni*, 54 F.3d 746, 750 (Fed. Cir. 1995) ("One way for a patent applicant to rebut a *prima facie* case of obviousness is to make a showing of 'unexpected results,' i.e., to show that the claimed invention exhibits some superior property or advantage that a person of ordinary skill in the relevant art would have found surprising or unexpected."). However, "[i]t is well settled that unexpected results must be established by factual evidence. Mere argument or conclusory statements in the specification does not suffice." *Id.* (citing *In re De Blauwe*, 736 F.2d 699, 705 (Fed. Cir. 1984)).

Inasmuch as the limitations of claim 2, which depends on claim 1, are not separately argued, the rejection of claim 2 is likewise sustained.

Appellants separately argue claims 3-5 and 7 (Br. 9-11; Reply Br. 6-7). In rejecting each of claims 3 and 4, each of which depends on claim 1, the Examiner reads the recited “first bearing support” on only Bianchi’s web 38 (Answer 4, 8-9). In view of our above determination that elements 90 and 94, which are associated with web 38, fail to satisfy the “after” requirement of claim 1, we cannot sustain the rejection of claims 3 and 4 or the rejection of claims 5 and 6, which depend on claim 4.

Claim 7, which depends on claim 1 through unargued claim 2,⁵ reads as follows:

7. The method according to claim 2, wherein manufacturing the opening in the first bearing support includes enlarging a pre-existing opening to a measure of the bearing, the pre-existing opening having a short measure in relation to the first bearing.

Claims App., Br. 17. Although this claim requires enlargement of a dimension of a preexisting opening to a dimension of the bearing, the direction in which the dimension is measured is not specified.

⁵ Claim 2 reads:

2. The method according to claim 1, wherein the step of providing the positioning stop for the first bearing includes manufacturing an opening in the first bearing support after the first bearing support is mounted on the stator, wherein an edge of the opening is used as the positioning stop for the first bearing.

Claim App., Br. 16.

Appeal 2008-3590
Application 11/135,873

In the Final Action, the Examiner read the claimed dimension on a axial dimension:

With respect to claim 7, Bianchi teaches the method of claim 2, wherein manufacturing the opening in the first bearing support includes enlarging a pre-existing opening (the area bounded by the bearing support cup (Fig. 1, #122 [*sic*, 112]) formed in the casing) to a measure of the bearing (by adding Fig. 3, #118), the pre-existing opening having a shot [*sic*, short] measure (in the axial direction) in relation to the first bearing.

Final Action 4. Appellants' discussion of the rejection of claim 7 in the Brief (at 11) failed to address the Examiner's reading of the claimed dimension on an axial dimension. In the Answer the Examiner, in addition to essentially repeating (at 5) the above-quoted explanation of the rejection from the Final Action, further explained:

In response to applicant's argument that the positioning stop of Bianchi is not formed by enlarging a pre-existing opening, it is noted that the bottom opening in the bearing support (Fig. 3, #28) is defined by an axial projection in the bearing support. This axial projection encompasses an area. By adding the positioning stop (Fig. 3, #116) to the bearing support, the axial projection of the positioning stop is added to the bearing support thereby enlarging the opening to include the area bounded by the axial projection of the positioning stop. Therefore, by adding the positioning stop to the bearing support, the area that is defined by the axial projections that support the bearing is increased.

Answer 9. The Reply Brief does not even discuss the rejection of claim 7, let alone point out any error in the Examiner's position.

Appeal 2008-3590
Application 11/135,873

The rejection of claim 7 is therefore sustained, as is the rejection of claim 8, which depends on claim 7 and is not separately argued.

D. The rejection of claims 9-11 based on Bianchi in view of Wingeier

Claim 9 depends on claim 1, and claims 10 and 11 each depend on claim 9. Inasmuch as Appellants have not separately argued the limitations of claims 9-11 in the Brief or the Reply Brief, the rejection of those claims for obviousness over Bianchi in view of Wingeier is sustained.

DECISION

The § 103(a) rejection of claims 1, 2, 7, and 8 for obviousness over Bianchi is sustained.

The § 103(a) rejection of claims 3-6 for obviousness over Bianchi is not sustained.

The § 103(a) rejection of claims 9-11 for obviousness over Bianchi in view of Wingeier is sustained.

The Examiner's decision that claims 1-11 are unpatentable over the prior art is therefore affirmed-in-part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. §§ 41.50(f) and 41.52(b).

AFFIRMED-IN-PART

Appeal 2008-3590
Application 11/135,873

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