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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte RAINER SCHARP

Appeal 2015-000865
Application 13/066,552
Technology Center 3700

Before JENNIFER D. BAHR, WILLIAM A. CAPP, and
AMANDA F. WIEKER, *Administrative Patent Judges*.

CAPP, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant seeks our review under 35 U.S.C. § 134 of the final rejection of claims 1, 4, 7–9, 11, and 15 as unpatentable under 35 U.S.C. § 103(a) over Fedyna (DE 10 2007 036 236 A1, pub. Feb. 5, 2009), Lapp (US 2007/0283917 A1, pub. Dec. 13, 2007), Martins Leites (US 5,150,517, iss. Sept. 29, 1992), and Muscas (US 2011/0107997 A1, pub. May 12, 2011).¹ We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

¹ An alternative ground of rejection over a combination based on Köhnert (US 6,789,460 B2, iss. Sept. 14, 2004) has been withdrawn. Ans. 7.

THE INVENTION

Appellant's invention relates to a piston for an internal combustion engine. Spec. 1. Claim 1, reproduced below with emphasis added, is illustrative of the subject matter on appeal.

1. A piston for an internal combustion engine, comprising:
a first piston component comprising a piston ring element that has at least a part of a piston crown, a circumferential top land, as well as a circumferential ring belt provided with ring grooves, and

a second piston component, comprising a piston base body that has at least a piston skirt having pin bosses that are provided with pin bores, wherein the first piston component and the second piston component form a circumferential cooling channel that is open toward the second piston component which channel is closed off by means of a circumferential closure element,

wherein *the closure element is configured in one piece with the first piston component and extends radially in the direction of the second piston component,*

wherein the second piston component has a circumferential contact flange that is configured in one piece with the second piston component and extends radially in the direction of the first piston component,

wherein *the closure element lies on the contact flange under bias,*

wherein the first piston component forms a wall region of a combustion chamber bowl and wherein the second piston component forms a crown region of the combustion chamber bowl, and

wherein *a joining seam formed by friction welding is disposed in a region of the combustion chamber bowl.*

OPINION

Appellant argues claims 1, 4, 7–9, 11, and 15 as a group. Appeal Br. 6–7. We select claim 1 as representative. *See* 37 C.F.R. § 41.37(c)(1)(iv) (2015).

The Examiner finds that the proposed combination teaches or suggests all of the elements of claim 1 and concludes that it would have been obvious to combine the prior art to achieve the claimed invention. Final Action 6–8. Appellant argues that four elements of claim 1 are not taught by the prior art. Appeal Br. 6–7.

The “joining seam” element

Appellant argues that Fedyna fails to disclose a joining seam in the region of the combustion bowl. Appeal Br. 6. In response, the Examiner points out that the rejection is based on a finding that Muscas discloses lower and upper joining surfaces (41, 43) that are welded together in construction of the piston. Ans. 8.

Muscas discloses a piston 10 with a top part 18 and a bottom part 16. Muscas ¶ 34, Figs. 3, 3a. Upper and lower end joining surfaces 41, 43 are welded to one another in construction of the piston. *Id.* The location of end joining surfaces 41, 43 is immediately adjacent to the interior surface of the combustion bowl 22. *See* Muscas, Fig 3.

The Examiner’s finding with respect to Muscas’s disclosure of the joining seam element is supported by a preponderance of the evidence. Appellant’s argument that Fedyna fails to disclose this element is not persuasive. Non-obviousness cannot be established by attacking references individually where the rejection is based upon the teachings of a combination of references. *In re Keller*, 642 F.2d 413, 425 (CCPA 1981).

The cooling channel “closure element”

Appellant argues that Fedyna’s cooling channel is closed by a closing element that is an integral part solely of the second piston component. Appeal Br. 6. In response, the Examiner states that Fedyna discloses that the first piston component and the second piston component form a circumferential cooling channel that is open toward the second piston component. Ans. 9. The Examiner further states that element (5') is configured in one piece with the first piston component and extends radially in the direction of the second piston component. Ans. 9. The Examiner supports this position by furnishing an annotated version of Fedyna Figures 1 and 2. *Id.* at 10. The Examiner identifies a location in the lower right hand corner of Fedyna, Figure 1 (at 5') as corresponding to the claimed closure element. *Id.*

In reply, Appellant argues that the feature identified by the Examiner does not extend radially in the direction of a second piston part as claimed. Reply Br. 3.

Figure 3 of Fedyna depicts piston upper part 1 and piston lower part 2 in an assembled condition. *See* Fedyna, Fig 3. The two parts are joined near the top of the assembled piston through engagement of screw threads 4. *Id.*. When the upper and lower piston parts 1 and 2 are assembled, they form a cooling canal 7 that is impinged upon with a cooling medium such as motor oil. *Id.*; *see also id.* ¶ 22.² Figure 3 also depicts a second joint location 5' near the bottom of piston upper part 1. *Id.* ¶ 23. At joint location 5', annular sealing edge 9 on the lower piston part 2 contacts sealing contour 10 on

² Paragraph citations to the specification of Fedyna are to the U.S. counterpart (US 2011/0168016 A1, pub. July 14, 2011) which is in English.

upper piston part 1. *Id.* As shown in Figure 3, annular sealing edge 9 is radially inward of at least a portion of piston upper part 1 at or near the point of contact between annular sealing edge 9 and sealing contour 10. *Id.* Thus, a portion of upper piston part 1 and lower piston part 2 are juxtaposed radially with respect to each other. As we understand the Examiner's rejection, the portion of upper piston part 1 that is disposed at or near sealing contour 10 and proximate to joint location 5' is the structure identified by the Examiner as corresponding to the claimed circumferential closure element that extends radially in the direction of the second piston component.

Appellant's Reply Brief makes the following assertion:

contrary to the Examiner's statements, Fedyna et al. does not disclose a closure element which extends radially in the direction of a second piston part. The elements 5' according to Fedyna et al. as shown in FIG. 1 are only joint elements which mesh with the flange 9 in order to seal the cooling channel. Nowhere in Fedyna et al. does it state or show a closure element of the upper piston part that extends radially in the direction of the lower piston part.

Reply Br. 3. During examination of a patent application, pending claims are given their broadest reasonable construction consistent with the specification. *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). Under the broadest reasonable interpretation standard, claim terms are given their ordinary and customary meaning as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Appellant does not offer a proposed construction of "*extends radially in the direction of the lower piston part*" that is sufficiently narrow to exclude the arrangement depicted in Figure 3 of Fedyna. Applying a broad, but reasonable, construction of "*extends radially in the direction of the lower*

piston part,” we agree with the Examiner that Fedyna discloses the cooling channel closure element.

The “one piece with the first piston component” element

Appellant argues that Fedyna’s closure element is not an integral part of the first piston component. Appeal Br. 6. Appellant identifies Fedyna element 8 with sealing edge 9 as the structure in Fedyna that corresponds to the closure element of claim 1. *Id.* Appellant argues that element 8 is an integral part of piston part 2 and, therefore, does not satisfy the claim limitation at issue.

Appellant’s argument is not persuasive. In the embodiment of Appellant’s invention depicted in Figure 1 of the drawings, cooling channel 23 is closed at a joint where closure element 25 and contact flange 26 come together. *See* Fig. 1. In Fedyna, coolant canal 7 is similarly closed at joint 5' where collar 8 with annular sealing edge 9 on piston lower part 2 engages sealing contour 10 on piston upper part 1. Fedyna, Fig. 3. The portion of piston upper part 1 immediately adjacent to sealing contour 10 is correctly characterized as being “configured in one piece with the first piston component” within the meaning of claim 1.

Thus, the Examiner’s finding that Fedyna discloses a closure element that is configured in one piece with the first piston component and extends radially in the direction of the second piston component is supported by a preponderance of the evidence.

The “under bias” element

Appellant argues that Fedyna does not disclose that the upper piston part lies under bias on a contact flange, as claimed. Appeal Br. 6.

Fedyna teaches that piston upper part 1 and piston lower part 2 are screwed together at screw thread 4. Fedyna ¶ 22. The screw threads are engaged in a manner that seals cooling canal 7 with regard to the cooling medium. *Id.* A person of ordinary skill in the art would have been sufficiently familiar with the operation of screw threads to understand that as screw threads 4 of Fedyna engage, upper piston part 1 moves axially toward lower piston part 2. Fedyna further explains that

[A] collar 8 is arranged on the piston lower part 2, which collar has an annular sealing edge 9. In contrast thereto, the piston upper part 1 has a sealing contour 10, in particular a sealing groove, opposite the sealing edge 9 of the lower piston part 2, in/on which sealing contour said sealing edge 9 sealingly rests subsequent to the piston upper part and piston lower part 1, 2 having been completely screwed together. Yet another joint location 5' between the piston upper part 1 and the piston lower part 2 is thus sealed upon complete assembly of the piston 3.

Fedyna ¶ 23. A person of ordinary skill in the art would understand that the teaching of sealing edge 9 “sealingly resting” on sealing contour 10 after upper and lower piston parts have been completely screwed together reflects an “under bias” condition within the meaning of claim 1. The fact that Fedyna does not use the identical words to describe the “under bias” condition is of no moment. *See In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009) (a reference need not satisfy an *ipsissimis verbis* test).

Conclusion of Unpatentability

In view of the foregoing discussion, we determine the Examiner’s findings of fact are supported by a preponderance of the evidence and that the Examiner’s legal conclusion of unpatentability is well-founded. Accordingly, we sustain the Examiner’s unpatentability rejection of claims 1, 4, 7–9, 11, and 15.

Appeal 2015-000865
Application 13/066,552

DECISION

The decision of the Examiner to reject claims 1, 4, 7–9, 11, and 15 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED