

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HEITOR TEOFILo BARBOSA

Appeal No. 2006-0045
Application No. 10/190,473

ON BRIEF

Before McQUADE, NASE, and BAHR, Administrative Patent Judges.
McQUADE, Administrative Patent Judge.

DECISION ON APPEAL

Heitor Teofilo Barbosa originally took this appeal from the final rejection (mailed June 30, 2004) of claims 1 and 3-15. As the appellant has since canceled claims 4, 6, 7, 9 and 11, the appeal now involves claims 1, 3, 5, 8, 10 and 12-15, all of the claims currently pending in the application.

THE INVENTION

The invention relates to "a constructional form of a ball-end pin with a plastic flange to be applied in ball joints of the steering and suspension systems of automotive vehicles" (specification, page 1). Representative claims 1 and 12 read as follows:

1. A ball joint assembly employed in ball joints of the steering and suspension systems of vehicles, comprising

a ball-end pin and a separate plastic flange formed to receive a protection cover,

wherein the flange is made of injected plastic material and has a conical central orifice with at least one of longitudinally-extending protrusions and grooves,

wherein the ball-end pin is shaped by a stamping process and has a conical section with longitudinally-extending grooves that eliminates the machining process, said grooves being formed during the stamping process to mate with said longitudinally-extending protrusions.

12. A ball joint assembly employed in ball joints of the steering and suspension systems of vehicles, comprising

a ball-end pin member having a spherical ball portion and a pin portion extending from the ball portion;

a substantially rigid flange member matingly disposed on said pin portion, said flange member having a conical central orifice; and

a resilient boot member extending from said flange member to a housing encapsulating said spherical ball portion,

wherein said pin portion has a conical section, said conical section of said pin portion and said central orifice of said flange member being formed with matching longitudinally-extending grooves and protrusions to mate said flange member with said pin portion.

THE PRIOR ART

The references relied on by the examiner to support the final rejection are:

Templeton 3,248,955 May 03, 1966

Buhl et al. (Buhl) 5,312,200 May 17, 1994

THE REJECTION

Claims 1, 3, 5, 8, 10 and 12-15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Templeton in view of Buhl.

Attention is directed to the main and reply briefs (filed March 29, 2005 and July 11, 2005) and answer (mailed May 19, 2005) for the respective positions of the appellant and examiner regarding the merits of this rejection.

DISCUSSION

Templeton, the examiner's primary reference, discloses a boot seal for an automotive ball and socket joint 41 composed of a socket portion 42 mounted on a wheel arm 43, a ball stud portion 44 mounted on a wheel knuckle 45, and a lubricant fitting 49 (see Figure 4). The boot seal 10 consists of a rubber tubular body 11, a metal ring 12 crimped on one end of the body and a self-lubricating plastic collar 13 partially embedded in the other end of the body. The collar includes a cylindrical portion 29 having an inner periphery 33 forming a radial bearing, a flat end face 34 forming an axial bearing, a plurality of axially extending grooves 35 on the inner periphery 33, and a plurality of radial grooves 36 on the end face 34. In use,

[t]he collar 13 receives the stud shank therethrough and the inner peripheral cylindrical wall 33 of the collar embraces the cylindrical portion

60 of the stud in bearing relation. The end face 34 of the collar engages the flat bottom face 65 of the knuckle 45. . . .

. . . The main chamber 37 [of the boot] is continually vented . . . through the passages provided by the axial grooves 35 and the radial grooves 36 in the collar 13.

Thus when excessive amounts of grease or other lubricant are introduced through the fitting 49 into the socket 42 and flow from the socket . . . into the boot chamber 37, the excess grease can be released through the passages

The Teflon or nylon collar 13 provides low friction radial and axial bearing surfaces which do not interfere with the free rotation of the stud relative to the socket. The flexibility of the body 11 of course readily accommodates free tilting of the stud in its socket [column 3, line 75, through column 4, line 45].

In applying Templeton against independent claims 1 and 12, the examiner (see page 3 in the answer) finds correspondence between the ball-end pin (or pin-member), the flange (or flange member) and the protection cover (or boot member) recited in these claims and Templeton's ball stud portion 44, collar 13 and boot 10, respectively. The examiner concedes, however, that the Templeton structure does not respond to the limitations in these claims requiring a conical central orifice in the flange (or flange member), a conical section on the ball-end pin (or pin member), and mating or matching longitudinally-extending grooves and protrusions on the conical central orifice and in the conical section. To account for these deficiencies, the examiner turns to Buhl.

Buhl discloses an automotive ball joint comprising an elastically deformable sealing cuff which is fixedly connected to the ball pivot component of the joint. The ball

pivot component corresponds to the ball stud portion 44 disclosed by Templeton and the ball-end pin (or pin-member) recited in the appellant's claims. For purposes of the rejection, the examiner focuses on the embodiment illustrated by Buhl in Figures 3 and 3a which is described as follows:

FIG. 3 shows a positive-locking connection between the edge profile 9 on the [conical] shaft part 5 of the ball pivot 2 with a fluted or knurled area 13 on the circumference of the shaft part 5 of the ball pivot 2. Into the depressions of the area 13 the material of the undersized edge profile 9 of the sealing cuff 7 penetrates. This also brings about positive-locking, firm connection between the edge profile 9 of the sealing cuff 7 and the shaft part 5 of the ball pivot 2. This firm connection can be supported by embedding a retaining ring 14 in the material of the edge profile 9 of the sealing cuff 7 instead of an outer circumferential retaining ring 10. The design of this positive-locking connection between the edge profile 9 of the sealing cuff 7 and a fluted area 13 provided at the inner end of the shaft part 5 of the ball pivot 2 is illustrated in FIG. 3a on an enlarged scale compared with the scale of FIG. 3 [column 3, line 60, through column 4, line 8].

Combining Templeton and Buhl to reject claims 1 and 12, the examiner submits that it would have been obvious "to modify the Templeton [collar] orifice to be conical in shape and have protrusions mating with grooves on the ball-end pin, as taught by Buhl, for the purpose of locking the flange to the shank" (answer, page 3).

This proposed modification of Templeton's collar 13 and ball-end pin (stud portion 44) in view of Buhl, however, is entirely inconsistent with the stated purposes of the collar. More specifically, locking the collar to ball stud portion would appear to

severely limit, if not destroy, the grease venting function of the collar and eliminate the bearing relationship between the collar and ball stud portion which permits interference-free rotation of the ball stud portion relative to the socket. In this light, it is evident that the only suggestion for combining Templeton and Buhl in the manner advanced by the examiner stems from hindsight knowledge impermissibly derived from the appellant's disclosure.

Thus, the combined teachings of Templeton and Buhl do not justify the examiner's conclusion that the differences between the subject matter recited in claims 1 and 12 and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art. Accordingly, we shall not sustain the standing 35 U.S.C. § 103(a) rejection of independent claims 1 and 12, and dependent claims 3, 5, 8, 10 and 13-15, as being unpatentable over Templeton in view of Buhl.

SUMMARY

The decision of the examiner to reject claims 1, 3, 5, 8, 10 and 12-15 is reversed.

REVERSED

JOHN P. McQUADE)
Administrative Patent Judge)
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) BOARD OF PATENT
JEFFREY V. NASE) APPEALS
Administrative Patent Judge) AND
) INTERFERENCES
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JENNIFER D. BAHR)
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