

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 TOMAZ DOPICO VARELA
and STEVEN E. HUNTER

Appeal 2007-0944
Application 11/159,426
Technology Center 3600

Decided: APRIL 18, 2007

Before EDWARD C. KIMLIN, BRADLEY R. GARRIS, and
JEFFREY T. SMITH, *Administrative Patent Judges*.

KIMLIN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1-4, 6, 7, 9-14, 18, and 20-26. Claims 5, 8, 15-17, 19, and 27-28 have been indicated as allowable by the examiner. Claim 1 is illustrative:

1. A vehicle wheel end assembly comprising:

a non-rotating wheel component;

- an input shaft supported by said non-rotating wheel component;
- an output shaft driven by said input shaft and mounted for rotation relative to said non-rotating wheel component;
- a tube partially received within said non-rotating wheel component with said tube having a first engagement surface in contact with a second engagement surface on said non-rotating wheel component such that a retaining contact pressure is created between said tube and said non-rotating wheel component;
- a wheel hub operably driven by said output shaft; and
- at least one bearing mounted directly between said tube and said wheel hub to support said wheel hub for rotation relative to said tube.

The Examiner relies upon the following reference in the rejection of the appealed claims:

Riise US 1,824,793 Sep. 29, 1931

Appellants' claimed invention is directed to a vehicle wheel end assembly comprising, inter alia, a non-rotating wheel component and a tube partially received within the non-rotating wheel component. An engagement surface of the tube is in contact with an engagement surface of the wheel component such that a retaining contact pressure is created between the tube and the wheel component.

Appealed claims 1, 3, 4, 6, 7, 10, 22, and 26 stand rejected under 35 U.S.C. 102(b) as being anticipated by Riise. Claims 2, 9, 11-14, 18, 20, 21, and 23-25 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Riise.

In accordance with the groups of claims separately argued by Appellants, the following groups of claims stand or fall together:

- (1) claims 1-3, 4, 6, 7, 9, 10, 18, 22, and 26;
- (2) claims 11, 23, and 24;
- (3) claims 12-14 and 20;
- (4) claims 21 and 25.

We have thoroughly reviewed each of Appellants' arguments for patentability. However, we fully concur with the Examiner that the claimed subject matter is unpatentable over the cited prior art. Accordingly, we will sustain the Examiner's rejections for essentially those reasons expressed in the Answer, and we add the following primarily for emphasis.

We consider first the Examiner's rejection of claims 1, 3, 4, 6, 7, 10, 22, and 26 under § 102 over Riise. Riise, like Appellants, discloses a wheel end assembly having a non-rotating wheel component and a tube partially received within the non-rotating wheel component, wherein the tube has an engagement surface in contact with an engagement surface of the non-rotating wheel component. The principal argument advanced by Appellants is that "Riise does not disclose or teach a retaining contact pressure between component 7 and 5" (page 3 of Br., penultimate para.). Appellants point out that spindle or tube 7 is inserted through an opening in the cover 5 and that the tube and cover are aligned with each other with bolts 8. Appellants reason that "[t]here is no retaining contact pressure created between the cover 5 [sic, and] the spindle 7 because if there were then there would be no reason to include the bolts 8" (page 3 of principal Br., last para.). Appellants maintain "[i]f the bolts 8 were not used in Riise, the cover 5 and spindle 7

would not be held or retained to each other" (sentence bridging pages 3 and 4 of principal Br.).

Like the Examiner, we find that claim 1 on appeal does not preclude the use of bolts for applying a retaining contact pressure between the tube and the non-rotating wheel component. We find no error in the Examiner's reasoning that "a contact pressure is formed between the contacting surfaces of the elements due to the nut being torqued onto the bolt," and that "Riise does indeed include contact pressure between the cover 5 and the spindle tube 7, due to the retaining pressure caused by the bolts 8 connecting the cover 5 and the tube 7 together" (page 6 of Answer, second para.). The argument that "claim 2 states that retaining contact pressure is created by contact by the first and second engagement surfaces" is not availing to Appellants with respect to the § 102 rejection of claim 1 (page 4 of principal Br., second para.). Manifestly, a recitation in dependent claim 2 is not relevant to the § 102 rejection of claim 1.

We now turn to the § 103 rejection of claims 2, 9, 11-14, 18, 20, 21, and 23-25 over Riise. Claim 2 on appeal recites that the "retaining contact pressure comprises a press-fit to prohibit said tube from moving axially relative to said non-rotating wheel component." In our opinion, Riise's use of bolts accomplishes such a press-fit. Moreover, we agree with the Examiner that it would have been obvious for one of ordinary skill in the art to alternatively employ either bolts or a press-fit without bolts for preventing the tube from moving axially relative to the non-rotating wheel component. While Appellants have not accepted the Examiner's Official Notice that a press fit and bolts are equivalents, it is not necessary for a finding of

obviousness that the two well-known means for securing components together be equivalent in all respects. In our view, one of ordinary skill in the art would have found it obvious to perform a cost/benefit analysis in determining the advantage in selecting a press-fit or the use of bolts to prevent axial movement. We agree with the Examiner that the desired reduction in the number of parts would have motivated one of ordinary skill in the art to utilize a press-fit rather than the bolts of Riise, along with the obvious advantages of reducing the weight/cost and assembly time of the wheel and assembly.

Appellants separately argue claim 18 which defines the gear case joint 136 as "outboard of said input and output gears," 64 and 68, respectively. Appellants contend that the gear case joint of Riise, depicted by section line 2, is not outboard of gears 16 and 19. However, we agree with the Examiner that the broadest reasonable interpretation of the claim 18 language is that the gear case joint can be partially or totally disposed outboard of the input and output gears. Since Appellants acknowledge that "[t]he gear case joint [of Riise] clearly overlaps the gears" (page 6 of Reply Br., last para.), thereby conceding that the gear case joint of Riise is at least partially disposed outboard of the input and output gears, Appellants have not refuted the Examiner's factual finding that "Riise does show the gear case joint being located outboard of the center line of the gears" (page 8 of Answer, first para.).

As for the recitations in claims 21 and 25 that the retaining contact pressure forms the sole attachment interface between the tube and the non-rotating wheel component, for the reasons set forth above, we find that it

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would have been obvious for one of ordinary skill in the art to utilize a press-fit as the sole means for retaining contact pressure.

As a final point with respect to the § 103 rejection, we note that Appellants base no argument upon objective evidence of nonobviousness, such as unexpected results.

In conclusion, based on the foregoing and the reasons well stated by the Examiner, the Examiner's decision rejecting the appealed claims 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)(iv).

AFFIRMED

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