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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte GLEN HEMAN, JOHN PAYNE, and DAVID PAYNE

Appeal 2019-001690
Application 13/830,303
Technology Center 3600

Before JILL D. HILL, LISA M. GUIJT, and LEE L. STEPINA,
Administrative Patent Judges.

GUIJT, *Administrative Patent Judge.*

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision to reject claims 1 and 3–19.² We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as Haldex Brake Products Corporation. Appeal Br. 3.

² Appeal is taken from the Non-Final Action dated February 13, 2018.

CLAIMED SUBJECT MATTER

Claims 1 and 15 are the independent claims on appeal. Claim 1, reproduced below with disputed limitations emphasized, is exemplary of the subject matter on appeal.

1. An overhead door torsion spring adjuster, comprising:
 - a housing;
 - a first gear positioned within said housing;
 - a first shaft coupled with said first gear; and
 - a second gear comprising base* positioned within said housing *and a collar that is integral with said base* and extends from said base at least partially outside of said housing, *wherein said base and said collar are integrally formed together from the same material*, wherein said base engages said first gear such that said second gear rotates with rotation of said first shaft and said first gear, wherein said second gear comprises an opening extending through said base and said collar, wherein said opening is operable to receive a second shaft, and wherein said collar is operable to be coupled with said second shaft.

EVIDENCE

Morin	US 6,196,507 B1	Mar. 6, 2001
Dorma	US 6,408,925 B1	June 25, 2002
Ehrlich	US 2012/0125545 A1	May 24, 2012

REJECTIONS

- I. Claims 1, 3–5, and 10–19 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Ehrlich and Dorma.
- II. Claims 6–9 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Ehrlich, Dorma, and Morin.

ANALYSIS

Rejection 1

Appellant argues independent claims 1 and 15 as a group, and does not present separate arguments for the patentability of dependent claims 3–5, 10–14, and 16–19. Appeal Br. 9–14. We select claim 1 as representative, with claims 3–5, 10–14, and 16–19 standing or falling with claim 1. *See* 37 C.F.R. § 41.37(c)(1)(iv).

Regarding independent claim 1, the Examiner finds Ehrlich generally discloses an overhead door torsion spring adjuster 630 comprising a second gear having a base (i.e., pinion 650) and a collar (i.e., stationary cone or spine body 634, keys 648). Non-Final Act. 2–3 (citing Ehrlich ¶¶ 125, 126, Figs. 9B, 10B). The Examiner determines that Ehrlich discloses that “the second gear and collar are designed to join in a fixed manner to achieve a ‘higher mechanical advantage,’” via keyways 646 and keys 648, however, Ehrlich does not disclose that “the second gear and collar [are] made of one material,” as claimed. *Id.* at 3 (citing Ehrlich ¶ 126). The Examiner relies on Dorma for disclosing a second gear having a base and collar integrally formed together from the same material. Final Act. 2 (citing Dorma Fig. 10); *see* Dorma 6:5–26 (disclosing, with reference to Figure 10, that worm gear 208 is “joined to” sleeve 209); *cf.* Dorma, Fig. 10 (depicting worm gear 208 and sleeve 209 as formed as a single piece).

The Examiner reasons that it would have been obvious to modify Ehrlich’s second gear (i.e., pinion 650) to be integral with, and of the same material as, the collar (i.e., stationary cone 634), because the modification “inherently renders a stronger structure,” and alternatively, is (i) “combining prior art elements according to known methods (i.e. integration) to yield

predictable results”; (ii) “[a] simple substitution of one known element for another (integral for two-part) to obtain predictable results”; or (iii) “[the] use of known technique (integration of two structural components) to improve similar devices in the same way.” Non-Final Act. 3–4.

Appellant argues that the Examiner’s proposed modification of Ehrlich would render Ehrlich’s overhead door assembly unsatisfactory for its intended purpose, because “the adjustment mechanism 630 would no longer include the corresponding keyways 646 and keys 648 that perform the self-locking featured.” Appeal Br. 10 (citing Ehrlich ¶ 125); *see* Reply Br. 2.

Appellant submits that

[t]he self-locking feature of the adjustment mechanism 630 allows the adjustment mechanism 630 to hold tension in spring 544. Without the self-locking feature, any tension in spring 544 would be released as the spring 544 causes the components of adjustment mechanism 630 to rotate backwards (*i.e.*, cone 534, shaft 532, stationary cone 634 and pinion 650). Thus, if the adjustment mechanism 630 of Ehrlich was modified so that the pinion 650 and stationary cone 634 were integrally formed together from the same material, the adjustment mechanism would not work for its intended purpose of pre-tensioning spring 544.

Appeal Br. 10.

The Examiner responds that “it is well known” (*i.e.*, the Examiner is taking Official Notice) that “a worm gear, such as [Ehrlich’s worm gear] 558, is used to prevent unintentional rotation and back-driving.” Ans. 5. The Examiner determines that “integrally forming the two components [(*i.e.*, pinion 650 and stationary cone 634)] together from the same material would still allow the worm gear 558 . . . of Ehrlich to perform the function of preventing back-driving which would continue to prevent the tension in the

spring from being released,” such that “Ehrlich would still work for its intended purpose as a spring adjustor.” *Id.* at 5–6.

Appellant replies that “the Examiner mischaracterizes the teachings of Ehrlich,” which “clearly states . . . that the keyways 646 and 648 make the *entire* adjustment mechanism 630 self-locking such that an additional lock is not necessary to prevent the components from back-driving.” Reply Br. 2 (emphasis added). Appellant also replies that “while Appellant concedes that worm gears often do prevent back-driving in a gear system, worm gears do not always prevent back-driving,” concluding that

a person having ordinary skill in the art, knowing that worm gears do not always prevent back-driving and known that Ehrlich teaches that the keyways 646 and keys 648 do prevent back-driving, would not have thought it obvious to modify Ehrlich to remove the keyways 646 and keys 648 that prevent back-driving.

Id. at 3 (citing Exhibit A, “Introduction to Worm Gearing,” by Simonelli, et al., Gear Technology, Mar./Apr. 1993, pp. 34–36) (“Simonelli”).

We are not persuaded by Appellant’s argument. Paragraph 125 of Ehrlich discloses that

keyways **646** and corresponding keys **648** provide a higher mechanical advantage and help to prevent *the components* from unintentionally rotating backwards, or back-driving. Accordingly, the adjustment mechanism 630 is self[-]locking and does not require an additional lock to prevent the components from back-driving. However, one or more additional locks may be provided.

Ehrlich ¶ 125. Thus, Ehrlich teaches a mechanical advantage of keying together *components* (i.e., stationary cone 634 and pinion 650) to prevent back-driving of *the components*, and also suggests that a lock may also prevent such back-driving in the absence of keying. In this respect, the

Examiner's modification appears to provide another alternative to keying — fixing such components relative to each other by making them as a single piece. Appellant has not provided sufficient support for concluding that, without such keying, other components of Ehrlich's adjustment mechanism 530 unintentionally rotate backwardly.

Moreover, Ehrlich itself discloses that

[t]he static friction of the interaction between the worm gear 558 and pinion 550 is sufficient to resist the torsional force of the torsion spring 544 such that adjustment of the position of the pinion 550 relative to the body 552 is maintained by frictional force. Thus, the adjustment mechanism 530 is self-locking in that an additional lock is not necessary to prevent the worm gear 558, pinion 550, and cone 534 from rotating backwards, or back driving.

Ehrlich ¶ 120. This disclosure supports the Examiner's position that the keying between stationary cone 634 and pinion 650 is not the mechanism by which components other than stationary cone 634 and pinion 650 relative to each other are prevented from back driving.

Notably, regarding the loss of keying between components resulting from the Examiner's proposed modification, “[t]he fact that the motivating benefit comes at the expense of another benefit, however, should not nullify its use as a basis to modify the disclosure of one reference with the teachings of another. Instead, the benefits, both lost and gained, should be weighed against one another.” *Winner Int'l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 n.8 (Fed. Cir. 2000).

Appellant also argues that that Examiner's rationale for combining Ehrlich and Dorma lacks factual support because

forming the stationary cone 634 and pinion 650 integrally together from the same material does not inherently result in a

stronger structure because doing so results in a transition region where the smaller diameter cone 634 expands into the larger diameter pinion 650. An integral stationary cone 634 and pinion 650 would be subject to stress fractures from a stress concentration in this transition region. Repeated loading and unloading of torsion spring 544 and stationary cone 634 increases the likelihood of a stress fracture forming in this region.

Appeal Br. 11.

The Examiner responds by clarifying that by describing the result of the proposed modification as “stronger,” the Examiner means that forming Ehrlich’s stationary cone 634 and pinion 650 as a single piece results in preventing the two components from separating or slipping. Ans. 6.

Appellant’s argument does not apprise us of error in the Examiner’s determination that the Examiner’s modification prevents the two components from slipping, relative to one another—a problem addressed by the keying in Ehrlich. In addition, Appellant’s arguments fail to address the alternative rationales relied on by the Examiner, as set forth *supra*, such as combining prior art elements according to known methods to yield predictable results. *See* Ans. 6–7. Thus, Appellant’s argument does not apprise us of error in the Examiner’s reasoning.

Finally, Appellant argues that “it would not have been obvious to integrally form the stationary cone 534 and pinion 550 of Ehrlich together from the same material . . . because it would complicate assembly of the counterbalance mechanism 520 of Ehrlich.” Appeal Br. 12. Specifically, the Examiner’s proposed modification would make it more difficult (i) “to screw the stationary cone 534 into the torsion spring 544 because the assembler would need to hold or support both the adjustment mechanism 530 and the stationary cone 534 while screwing the stationary cone 534 into

the torsion spring 544”; and (ii) “when installing the entire unit above the overhead door on a truck . . . , the installer would need to rotate the entire counterbalance mechanism 520 in order to align the adjustment mechanism 530 and bracket 528 in the correct position for mounting.” Appeal Br. 12–13.

We are not persuaded by Appellant’s argument. Appellant does not provide sufficient argument or evidence that the Examiner’s proposed modification is not possible, only an unsupported attorney argument that it is more difficult, and in this respect, as stated *supra*, “[t]he fact that the motivating benefit comes at the expense of another benefit, however, should not nullify its use as a basis to modify the disclosure of one reference with the teachings of another. Instead, the benefits, both lost and gained, should be weighed against one another.” *Winner Int’l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 n.8 (Fed. Cir. 2000). Notably, the addition of stationary cone 534 to the adjustment mechanism 630 does not appear to create such an unwieldy structure, wherein an installer would be unable to manage supporting the structure during installation, and the structure of stationary cone 634 and adjustment mechanism 630 together appears to be movable relative to shaft 532 until stationary cone 634 is anchored to shaft 532 when a pin (not shown) is used. *See, e.g.*, Ehrlich ¶ 125.

Accordingly, we sustain the Examiner’s rejection of claim 1, and claims 3–5, 10–14, and 16–19 fall therewith.

Rejection II

Appellant chose not to present arguments for the patentability of claims 6–9 apart from the arguments presented for claim 1 *supra*. Appeal

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Br. 11. Accordingly, for essentially the same reasons as stated *supra*, we also sustain the Examiner's rejection of claims 6–9.

DECISION

The Examiner's decisions rejecting claims 1 and 3–19 are
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). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED