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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/123,318	12/02/2013	Igor Singur	40047-171US1	5365

69713 7590 03/12/2020

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EXAMINER
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ART UNIT	PAPER NUMBER
3731	

NOTIFICATION DATE	DELIVERY MODE
03/12/2020	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte IGOR SINGUR

Appeal 2018-005403
Application 14/123,318
Technology Center 3700

Before JOHN C. KERINS, WILLIAM A. CAPP, and GEORGE R. HOSKINS, *Administrative Patent Judges*.

CAPP, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant[1] seeks our review under 35 U.S.C. § 134(a) of the final rejection of claims 16–20, 23, 24, 26–32, and 34–43.[2] We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM IN PART.

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[1] We use the word "Appellant" to refer to "applicant" as defined in 37 C.F.R. § 1.42(a). Appellant identifies KHS GmbH as the real party in interest. Appeal Br. 1.

[2] Claims 21 and 22 are objected to as being dependent upon a rejected base claim. Final Act. 17.

THE INVENTION

Appellant's invention relates to handling machines for containers such as bottles. Spec. 1. Claim 16, reproduced below with paragraph indentation added, is illustrative of the subject matter on appeal.

> 16. An apparatus comprising a container closing machine, said container closing machine comprising
>
> a central supporting column,
>
> a manipulation unit connected to said central supporting column, and
>
> a first direct drive, said first direct drive comprising a stator and a rotor,
>
> wherein said first direct drive is disposed between said central supporting column and said manipulation unit connected to said central supporting column,
>
> wherein said first direct drive is configured to produce reciprocal relative motion,
>
> wherein said central supporting column defines an interior space,
>
> wherein a structure selected from the group consisting of said stator and said rotor is coupled to said central supporting column,
>
> wherein said manipulation unit comprises a ring,
>
> wherein said ring defines an interior space,
>
> wherein a structure selected from the group consisting of said stator and said rotor is disposed in said interior space defined by said ring of said manipulation unit,
>
> wherein said ring of said manipulation unit and said central supporting column share a common axis of rotation,
>
> wherein said common axis of rotation defines a radial plane perpendicular thereto,
>
> wherein said rotor and said stator lie in said radial plane opposite each other, and
>
> wherein said rotor and said stator are separated along said radial plane by a gap.

THE REJECTIONS

The Examiner relies upon the following as evidence in support of the rejections:

NAME	REFERENCE	DATE
Vander Bush	US 5,419,094	May 30, 1995
Bernhard	US 2006/0086410 Al	Apr. 27, 2006
Knieling	US 2010/0212259 Al	Aug. 26, 2010

The following rejections are before us for review:[3]

1. Claim 42 is rejected under 35 U.S.C. § 112(b) as indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor regards as the invention.

2. Claims 16, 17, 19, 20, 23, 24, 26–29, 31, 32, 34–39, and 43 are rejected under 35 U.S.C. § 103 as being unpatentable over Knieling and Bernhard.

3. Claims 18, 30, and 40–42 are rejected under 35 U.S.C. § 103 as being unpatentable over Knieling, Bernhard, and Vander Bush.

OPINION

Indefiniteness of Claim 42

The Examiner takes the position that claim 42 is indefinite because the phrase "wherein said first direct drive controls the rotation of said manipulation elements" contradicts the teachings of the Specification. Final Act. 3. The Examiner points out that the Specification teaches that the "second direct drive," not the "first direct drive," controls rotation of the

[3] Certain rejections under Sections 112(b) & (d) have been withdrawn by the Examiner. Ans. 2.

manipulation elements. *Id.* Thus, according to the Examiner, it is unclear how the first direct drive controls rotation of the manipulation elements. *Id.*

In traverse, Appellant, in cursory fashion, expresses doubt and uncertainty as to why there is a contradiction. Appeal Br. 3. Appellant mentions that it is permissible for a specification to recite more than one embodiment. *Id.* Appellant, without further comment, explanation, or argument, directs our attention to page 14 of the Specification, lines 10 through 12. *Id.* The referenced passage provides as follows:

> The peripheral speed of head plate 4 relative to central column 6, is in fact, determined with the aid of first direct drive 7, 8.

Spec. 14, ll. 10–12.

In response, the Examiner reiterates that, to the extent that there is any independence between the peripheral speed of head plate 4 and rotation of manipulation elements 3, such is attributable to a second direct drive, not the first direct drive. Ans. 3. Appellant's Reply Brief is silent on this issue and does not address, much less rebut, the Examiner's position. *See generally* Reply Br.

The test for definiteness under 35 U.S.C. § 112, is whether "those skilled in the art would understand what is claimed when the claim is read in light of the specification." *Orthokinetics, Inc. v. Safety Travel Chairs, Inc*., 806 F.2d 1565, 1576 (Fed. Cir. 1986) (citations omitted). The PTO can properly reject a claim as indefinite if the claim is ambiguous, vague, incoherent, or otherwise unclear. *In re Packard*, 751 F.3d 1307, 1311 (Fed. Cir. 2014). During patent prosecution when claims can be amended, ambiguities should be recognized, scope and breadth of language explored, and clarification imposed. *See In re Zletz*, 893 F.2d 319, 321 (Fed.

Cir. 1989). Section 112 places the burden of precise claim drafting on the applicant. *See In re Morris*, 127 F.3d 1048, 1056–57 (Fed. Cir. 1997). Rigorous application of the statutory standard to particularly point out and distinctly claim the subject matter regarded to be the invention serves an important public notice function. *See Predicate Logic, Inc. v. Distributive Software, Inc.*, 544 F.3d 1298, 1300 (Fed. Cir. 2008).

Appellant's invention includes a manipulation unit comprised of head plate 4 and ring 5. Spec. 9–10, Fig 2. Such manipulation unit rotates about axis R which extends axially through the centerline of column 6. *Id.* First direct drive 7, 8 generates a reciprocal relative motion between column 6 and head plate 4. *Id.* Manipulation elements 3 are circumferentially arranged on head plate 4 and rotate so as to screw caps 2 onto bottles 1. *Id.* With respect to controlling the respective rates of rotation of the drive elements, Appellant's drive elements Specification provides as follows:

> First direct drive 7, 8 is arranged between column 6 and manipulation unit 4, 5. Second direct drive 9, 10, on the other hand, is located between manipulation unit 4, 5 and the one or plurality of manipulation elements 3 connected to manipulation unit 4, 5. *The two direct drives 7, 8 and 9, 10 are configured independently of one another and can be self-dependently controlled/regulated either individually or both together.* For this purpose, there is provided a controller 11 that serves to act on respective direct drives 7, 8; 9, 10.

Spec. 11 (emphasis added).

As with the Examiner, we are at a loss to understand, in light of the teachings of the Specification, how the first direct drive controls rotation of manipulation elements independently of the peripheral speed of head plate 4. Appellant's referral to page 14, lines 10–12 fails to clarify the matter as it merely relates to the first direct drive determining the peripheral speed of

head plate 4. It says nothing about the first direct drive determining the rotational speed of manipulation elements 3, much less controlling such rotational speed independent of the peripheral speed of head plate 4.

We sustain the Examiner's indefiniteness rejection of claim 42.

Unpatentability of
Claims 16, 17, 19, 20, 23, 24, 26–29, 31, 32, 34–39, and 43
over Knieling and Bernhard

Claim 16

The Examiner finds that Knieling discloses the invention substantially as claimed except for the first direct drive having a stator and rotor, but that modifying Knieling's magnetic drives to be configured as a stator and rotor would have been an obvious modification. Final Act. 5–7; *see also* Knieling ¶ 17 (disclosing alternative embodiment with stator and rotor arrangement). The Examiner further finds that, although Knieling features a central support column, such column does not define an interior space, for which the Examiner relies on Bernhard. *Id.* at 8. The Examiner concludes that it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Knieling by the teachings of Bernhard to incorporate a center pillar that has an interior space. *Id*. According to the Examiner, a person of ordinary skill in the art would have used such space as a conduit for electrical wires. *Id.*

In traverse, Appellant raises a plethora of arguments, none of which we find to be persuasive. We address the more prominent arguments separately under individual sub-headings below.

Closing Machine

Appellant argues, at considerable length, that the embodiment of Knieling relied on by the Examiner is a cleaning machine, not a closing machine as claimed. Appeal Br. 3–11.

In response, the Examiner directs our attention to paragraph 55 of Knieling and explains that Knieling is best understood as teaching that the structural configuration of the Figure 5 embodiment can be implemented as either a cleaning machine or a closing machine. Ans. 4–5.

In reply, Appellant argues that the Examiner's position is based on an unreasonable and incorrect grammatical construction of Knieling paragraph 55. Reply Br. 1–5.

Knieling is directed to an apparatus for treating containers. Knieling, Abstract. In Knieling's apparatus, containers 10 are held by gripping devices 7. With the containers held in place by gripping devices 7, bottle caps (screw closures) are placed on the containers by closing head 6 on carrier 8. *Id.* ¶¶ 41–42, Fig.1. Knieling discloses an alternative embodiment in Figure 5. *Id.* ¶¶ 51–55. The Figure 5 embodiment features line 56 and spray head 58 for cleaning containers. *Id.* Figure 6 shows a more detailed view of the drive unit of the Figure 5 embodiment. *Id.* ¶ 55, Fig. 6. Knieling discloses yet another alternative embodiment in Figure 7. *Id.* ¶ 56, Fig. 7. The Figure 7 embodiment discloses a closing head 6 arranged on a carrier 8. *Id.* Knieling discloses that in contrast to "the above embodiment" such carrier is arranged in a height displaceable manner. *Id.* We interpret "the above embodiment" in paragraph 56 as referring to the Figure 5 embodiment discussed in paragraphs 51–55.

Much of the dispute between Appellant and the Examiner centers on the following passage in paragraph 55 of Knieling.

> It is pointed out that the embodiments shown in FIGS. 5 and 6 on the one hand and 6 to 7 on the other hand can also be combined with one another.

Id. ¶ 55. Appellant interprets the foregoing passage such that the embodiments of Figures 5 and 6 can be combined only with each other and that the embodiments of Figures 6 and 7 can be combined only with each other. However, Appellant argues that Knieling does not teach that the embodiment of Figures 5 and 6 can be combined with the embodiment of Figures 6 and 7. The Examiner, on the other hand, takes the position that the two embodiments can be combined.

Having considered the competing positions of Appellant and the Examiner, we find the Examiner's position to be more persuasive. Read together and in context, paragraphs 51 through 61 and Figures 5 through 8 disclose respective cleaning and closing machines that share many of the same features. The Figure 6–8 embodiment is not described in detail or in its entirety. *Id.* ¶ 56, Figs. 6–8. A person of ordinary skill in the art reading Knieling would understand that the description of the Figure 6–8 embodiment focuses on certain differences between the cleaning version and the closing version of the same machine, but that the features in Figure 5 relied on by the Examiner in the rejection are also present in the Figure 7 closing machine. Thus, we agree with the Examiner that the features relied on by the Examiner in the rejection taken from the Figure 5 cleaning machine embodiment of Knieling are equally applicable to a closing machine embodiment such as that of Figure 7.

The Ring Element

Appellant argues that Knieling lacks a ring as claimed. Appeal Br. 11. Appellant characterizes the structure in Knieling, part of which the Examiner finds constitutes a ring, as a "socket." In Appellant's own words:

> Figure 5 of Knieling shows a circular wall that defines a socket. This socket fits over the top of the column . . . .
>
> . . . .
>
> What the examiner calls a "ring" is actually more like a cup or bowl that fits over a bearing to enable the carrier 8 to rotate without falling off the bearing.

Id. at 11–12.

In response, the Examiner takes the position that element 8 of Knieling's Figure 5 can be characterized as a structure that has: (1) a plate component; and (2) a ring component. Ans. 5. The Examiner points out that claim 16 does not recite that the ring remains unattached or disconnected from any and every other structure recited in the claim. *Id.*

In reply, Appellant essentially repeats, with considerable rhetorical embellishment, its argument from the Appeal Brief. Reply Br. 6–8.

The dispute between Appellant and the Examiner is largely a matter of claim construction. 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). Construing claims broadly during prosecution is not unfair to the

applicant, because the applicant has the opportunity to amend the claims to obtain more precise claim coverage. *Am. Acad. of Sci.*, 367 F.3d at 1364.

In construing claims, we do not look at the ordinary meaning of a term in a vacuum. *E.I. Du Pont De Nemours & Company v. Unifrax I LLC*, 921 F.3d 1060, 1068 (Fed. Cir. 2019). The PTO is required to consult the Specification during examination in order to determine the permissible scope of the claim. *In re Morris*, 127 F.3d 1048, 1055 (Fed. Cir. 1997). The use of the words in the context of the written description and as customarily used by those of skill in the art reflects both the "ordinary" and "customary" meaning of the terms in the claims. *Ferguson Beauregard/Logic Controls, Div. of Dover Res., Inc. v. Mega Sys., LLC*, 350 F.3d 1327, 1338 (Fed. Cir. 2003). Thus, construing claim terms without considering the context in which those terms appear is not reasonable. *TriVascular, Inc. v. Samuels*, 812 F.3d 1056, 1062 (Fed. Cir. 2016).

Appellant's Specification and drawings disclose and depict a manipulation unit that rotates about axis R on supporting column 6. Spec. 10, Fig 1. Such manipulation unit is comprised of head plate 4 and ring 5. *Id.* Appellant teaches that ring 5 is connected to the underside of head plate 4. Spec. 9. The precise manner and means of such connection, such as whether it is relatively permanent, such as by welding, or temporary, such as by mechanical fasteners (screws or bolts), is not described.

The Figure 5 embodiment of Knieling discloses structure identified as carrier 8. Knieling, Fig. 5, ¶ 51. The upper portion of carrier 8 reasonably correlates to head plate 4 of Appellant's invention. *Compare* Appellant's Figs. 1–3, *with* Knieling, Fig. 5. The lower portion of Knieling's carrier 8 reasonably correlates to ring 5 of Appellant's invention in that it is a

structure that circumferentially surrounds a cylindrical object. It is clear from reviewing Appellant's disclosure that ring 5 is a structure that is intended to be connected to and interact with other components including, but not limited to, head plate 4. The mere prospect that Appellant's manipulation unit is comprised of components that are separately labeled as a head plate and a ring fails to patentably distinguish over carrier 8 of Knieling. We, therefore, agree with the Examiner that the ring limitation of claim 16 is satisfied by Knieling.

Connection of Manipulation Unit to Support Column

Appellant next argues that Knieling fails to disclose a manipulation unit that is connected to a central support column as claimed. Appeal Br. 12–17. Appellant takes the position that Knieling's carrier 8, which corresponds to Appellant's manipulation unit, is merely magnetically coupled to Knieling's shaft body (central column) 18. *Id.* Appellant attempts to distinguish between objects that are "connected" and objects that are only "magnetically coupled." *Id.*

In response, the Examiner states that the definition of coupling is broad enough to encompass connecting elements through magnetism. Ans. 6. The Examiner observes that Appellant's Specification fails to provide an operational definition of "connected" that is sufficiently narrow to exclude magnetically "coupled." *Id*. The Examiner further notes that claim 16 does not require a connection that excludes structure that may be interposed between the manipulation unit and the support column. *Id.* at 6–7. Furthermore, the Examiner explains that, in the modification proposed in the rejection, Knieling's shaft body 18 remains stationary. *Id.* at 8.

In reply, Appellant accuses the Examiner of adopting a construction of "connect" that is so broad that everything in the entire universe is connected. Reply Br. 9.

> [T]he examiner's interpretation of "connect" would mean that all objects in the universe are "connected" to everything else by virtue of their gravitational fields. Thus, given the examiner's definition, no two objects could ever be not connected.

Id. Reply Br. 9. However, Appellant's hyperbole is not helpful in analyzing the scope of Appellant's claim language.

Appellant's Specification teaches that manipulation unit 4, 5 is "rotatably connected" to column 6. Spec. 8. Inasmuch as the manipulation unit rotates in relation to column 6 being fixed in place or stationary, a person of ordinary skill in the art would understand that such "connection," is not a fixed connection locking the two components together. Otherwise, Appellant's Specification teaches that there is an "unavoidable spacing" between the outer wall surface of central column and the inner wall surface of the ring portion of the manipulation unit. *Id.* at 4.

Appellant's manipulation unit 4, 5 rotates about column 6. Spec. 10, Fig 1. In a substantially similar manner, Knieling's carrier 8 rotates about sleeve shaped body 20. Knieling ¶¶ 50–51, Figs. 4, 5. In the Examiner's proposed modification, carrier 8 also rotates about (now stationary) shaft 18. *Id.*, Ans. 8. Knieling's carrier 8 is mounted via bearing 36 so as to rotate relative to sleeve-shaped body 20. Knieling ¶ 54. Such bearing is supported against sleeve-shaped body 20. *Id.* We interpret such bearing being "supported against" as substantially identical to Appellant's "rotatably connected" relationship between the manipulation unit and support column 6. As we understand the Examiner's rejection, shaft 18 becomes

stationary and, therefore, no longer rotates within sleeve 20. Thus, elements 18 and 20 of Knieling, taken together, effectively become a central support column. In that regard, we note that the central support column identified in the Examiner's rejection is labeled as such by means of an annotation to Figure 5. *See* Final Act. 7. Elsewhere in the Final Office Action, the Examiner refers to the support column as "not labeled." *Id.* at 6. If the Examiner intended for us to understand that the support column is limited to shaft 18, we would have expected the Examiner to refer to shaft 18, which is explicitly labeled as such in Figure 5. In any event, we agree with the Examiner that there is sufficient connection between carrier 8 and (modified stationary) shaft 18, either alone or through sleeve shaped body 20, that they are sufficiently "connected" to satisfy the language of claim 16 at issue. Further in that regard, we also agree with the Examiner that the magnetic coupling between drive elements 22 and 24 is sufficient to satisfy the "connected" limitation. Thus, whether the connection is made via bearing 36 or via magnets 32 and 34 of respective drive elements 22 and 24, the claim language is satisfied.

Direct Drive

Appellant argues that Knieling fails to disclose a direct drive as claimed. Appeal Br. 17–18. According to Appellant, magnetic coupling of magnets 32 and 34 in drive elements 22 and 24 of Knieling amounts to something other than a "direct" drive. *Id.*

In response, the Examiner directs our attention to the paragraph 17 of Knieling which provides as follows:

> It is provided here that the two coupling devices rotate together, i.e. that a rotation of the first drive element, which is arranged outside the sterile chamber, leads to a synchronous rotation of

> the second drive element. However, it would also be possible that one of the drive elements is a stator and the second drive element is a rotor which is arranged such as to be able to rotate relative to this stator. For example, the first drive element outside the sterile chamber could be configured as the stator, which in particular comprises a plurality of electromagnets, and the second drive element could be a rotor arranged inside the sterile chamber. In this case, such an electric motor could be constructed either as an external rotor motor or as an internal rotor motor.

Knieling ¶ 17.

In reply, Appellant argues that even if the magnets of Figure 5 were replaced with a stator and rotor, the resulting apparatus would still rotate the carrier 8 and, therefore, would not cause "reciprocal motion" as recited in the claim. Reply Br. 11.

As we understand the Examiner's proposed modification, Knieling's carrier 8 would rotate relative to stationary central column 18, 20. Ans. 8. Appellant does not explain how such motion differs from that of its manipulation unit 4, 5 with respect to column 6. We are unable to discern any patentable distinction as to how Appellant's invention discloses a drive that is "direct," but Knieling, modified as proposed, is not direct. Thus, we are not apprised of error with respect to the Examiner's findings of fact on this issue.

Support Column

Appellant argues that Knieling fails to disclose a support column as claimed. Appeal Br. 18–19. Appellant argues that shaft 18 fits inside sleeve 20 in a manner such that the shaft never touches carrier 8. *Id.* Appellant concedes that sleeve 20 supports bearing 36 that supports

carrier 8. *Id.* at 18. Appellant does not explain why it focused on shaft 18 as the support column to the exclusion of sleeve 20.

As we understand the Examiner's rejection, and as discussed in detail above, the structure in Knieling that satisfies the central support column limitation of claim 16 includes sleeve 20. Final Act. 7 (annotated Fig. 5). With the foregoing understanding, we agree with the Examiner that the claim limitation at issue is satisfied by Knieling.

Column Defining an Interior Space

Appellant argues that a person of ordinary skill in the art would have lacked motivation to impart interior space to a support column. Appeal Br. 20–23. In response, the Examiner finds a person of ordinary skill in the art would have used a support column with an interior space to act as a conduit for electrical wires, to power the stator disposed at the top of the stationary central column 18, 20 as an obvious alternative to rotating the entire shaft body 18 as discussed above. Ans. 10.

The Examiner's rationale is sufficient to support the rejection. *See In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring an obviousness conclusion to be based on explicit articulated reasoning with rational underpinning) (cited with approval in *KSR Int'l Co. v. Teleflex Inc*., 550 U.S. 398, 418 (2007)).

Gap Separating Stator and Rotor

Appellant argues that the "gap" limitation in claim 16 is not satisfied by Knieling, because Knieling's magnets are separated by the wall of sleeve 20 and, therefore, are separated by "more than a gap." Appeal Br. 19–20.

This argument is without merit. Knieling's magnets are spaced apart from each other and, therefore, not in physical contact with each other. Knieling, Fig. 5. This is sufficient to establish that there is a "gap" between them. Appellant does not direct us to any language in the Specification that would require "gap" to be interpreted as the stator and rotor having nothing more than air or a vacuum interposed between them.

The Examiner's findings of fact on this issue are supported by the record before us.

Conclusion – Claim 16

We have considered Appellant's remaining arguments and find them to be without merit. 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. We sustain the Examiner's unpatentability rejection of claim 16.

Claim 17

Claim 17 depends from claim 16 and adds the limitation: "further comprising a manipulation element connected to said manipulation unit, and a second direct drive disposed between said manipulation unit and said manipulation element." Claims App. Appellant argues that this limitation is not satisfied by Knieling. Appeal Br. 24–25. In traversing the rejection, Appellant relies on many of the same arguments concerning the Figure 5 embodiment of Knieling not being a "closing machine" that we previously considered and found unpersuasive with respect to claim 16 and find equally unpersuasive here. *Id*.

The Examiner explains that the first drive of Knieling rotates carrier 8 and that the second drive rotates the closing head 6. Ans. 12.

Operation of the Figure 7 embodiment is described in Knieling paragraphs 56–58. Knieling ¶¶ 56–58. The Examiner's finding that Knieling discloses two direct drives as claimed is supported by a preponderance of the evidence. *Id.* We sustain the Examiner's unpatentability rejection of claim 17.

Claim 19

Claim 19 depends from claim 17 and adds the limitation: "wherein said second direct drive comprises a stator and a rotor, wherein said stator is connected to said manipulation unit and said rotor is movable relative to said stator." Claims App. In traversing the rejection, Appellant argues that this limitation is missing in Knieling. Appeal Br. 30–31. Appellant also repeats the "no second drive" argument that we previously considered and found unpersuasive with respect to claim 17 and find equally unpersuasive here. *Id*. Appellant also re-argues the "ring" limitation that we rejected in connection with claim 16. *Id.*

In response to the argument that Knieling's second drive lacks a stator and rotor as claimed, the Examiner explains:

> When combining the embodiments shown in Figures 5 and 6 with the embodiments shown in Figures 7 and 8, the closing system of the embodiments shown in Figures 7 and 8 would be combined with the carousel system of the embodiments shown in Figures 5 and 6 to result in a single device. In order for the stator and rotor of the second drive to rotate the closing head of the closing system relative to the container, the stator would have to be situated on the carrier and the rotor situated with the closing head.

Ans. 15. We note further that Knieling teaches that inner and outer rotating magnets 32*b* and 34*b* cooperate to generate rotational movement of the (Figure 8) carrier 8 and also of closing head 6. Knieling ¶ 61. Appellant's

arguments fail to apprise us of error in the Examiner's findings of fact or conclusion of unpatentability. We sustain the Examiner's unpatentability rejection of claim 19.

Claim 20

Claim 20 depends from claim 19 and adds the limitation: "wherein said stator and said rotor of said second direct drive are separated by a gap along a radial plane defined by said axis of rotation." Claims App. Appellant raises a plethora of arguments against the rejection, which have already been considered above, or which are not directed to the disclosure of Knieling relied on by the Examiner and, therefore, are not persuasive. *Compare* Final Act. 10, *with* Appeal Br.31–32. A cursory review of Figure 8 and paragraphs 59–61 of Knieling demonstrates that the Examiner's findings are amply supported by the record.

We are not apprised of error and sustain the Examiner's unpatentability rejection of claim 20.

Claim 23

Claim 23 depends from claim 16 and adds the limitation: "further comprising a plurality of manipulation elements disposed at a periphery of said manipulation unit, and a cam for acting upon said manipulation elements." Claims App. Appellant traverses the rejection by arguing that carrier 8 in Figure 5 of Knieling fails to satisfy the manipulation unit element of claim 23. Appeal Br. 32.

Appellant's argument is not persuasive as it mischaracterizes the teachings of Knieling regarding the Figure 5–6 embodiment, on the one hand, and the Figure 6–8 embodiment on the other hand, taken as a whole.

Figures 7–8 of Knieling depict closing head (manipulation element) 6 offset radially from shaft 84, so the manipulation element is peripheral to the manipulation unit. Knieling, Figs. 7–8. Operation of Knieling's cam is described in the following paragraph.

> The drive rod 92 is guided in a guide device 78 and comprises an actuating element 74 which cooperates with a guide cam 72. This guide cam 72 is arranged on the shaft body 84 in a height-displaceable manner via a carriage 82, the shaft body being rotatably mounted in the carriage.

Id. ¶ 58.

The Examiner's findings are supported by a preponderance of the evidence. We sustain the Examiner's unpatentability rejection of claim 23.

Claim 24

Claim 24 depends from claim 16 and adds the limitation: "further comprising a plurality of manipulation elements, each of which comprises a drive that controls motion of said manipulation element." Claims App. In traversing the rejection, Appellant, once again, confuses the teachings of Knieling with respect to the cleaning machine embodiment of Figures 5 and 6 as it relates to and shares common features with the closing machine of Figures 6–8. Appeal Br. 32–33.

Figure 8 of Knieling depicts closing head 6, including magnets 32*b* and 34*b*. Knieling, Fig. 8. A person of ordinary skill in the art would understand that Knieling's closing machine features a plurality of such closing heads. We sustain the Examiner's unpatentability rejection of claim 24.

Claim 26

Claim 26 depends from claim 16 and adds the limitation:

> wherein said central supporting column comprises an outer wall surface, and wherein said structure, which is selected from the group consisting of said stator and said rotor, is flush with said outer wall surface of said central supporting column.

Claims App. Appellant argues that Knieling's inner magnet is flush with shaft 18, which is not a supporting column. Appeal Br. 33.

As we understand the Examiner's rejection of claim 16, discussed above, the central support column of Knieling includes sleeve 20. With such understanding, we determine that neither the stator nor the rotor of Knieling is flush with outer wall surface of sleeve 20. *See* Knieling, Fig. 5.

Consequently, we do not sustain the Examiner's unpatentability rejection of claim 26.

Claim 27

Claim 27 depends from claim 16 and adds the limitation: "wherein said manipulation unit comprises a head plate, and wherein said ring is connected to an underside of said head plate." Claims App. Appellant argues that Knieling's corresponding structure to Appellant's head plate and ring is not "connected" because they are "integral" to each other. Appeal Br. 33–35.

Appellant's argument is without merit. As discussed above in relation to claim 16, Knieling's ring structure is connected to its head plate structure. Under the facts and circumstances of this case, we do not draw a patentable distinction between a permanent connection such as welding or integral one-piece construction such as die-casting and a more temporary connection such through mechanical fasteners.

Consequently, we sustain the Examiner's unpatentability rejection of claim 27.

Claim 28

Claim 28 falls with claim 16. Appeal Br. 35. *See* 37 C.F.R. § 41.37(c)(1)(iv) (failure to separately argue claims constitutes a waiver of arguments for separate patentability).

Claim 29

Claim 29 depends from claim 16 and adds the limitation: "wherein said first direct drive and a second direct drive are configured to be rotationally symmetric about a common and coincident central axis." Claims App. Appellant argues that this limitation is not met by the combined Figures 5 and 7 embodiments of Knieling. Appeal Br. 35–36.

In response, the Examiner explains that the Figure 5 embodiment of Knieling rotates about central axis T and that the Figure 7 embodiment similarly rotates about central shaft 84. Ans. 21. A person of ordinary skill in the art would appreciate that when combining the respective embodiments of Figures 5 and 7, as is expressly suggested by Knieling as discussed above, that both direct drives in the combination will be rotationally symmetric about the central axis of the device.

The Examiner is entitled, indeed required, to apply the broadest, reasonable construction to a claim term that is consistent with the specification. *Am. Acad. of Sci.*, 367 F.3d at 1364. Appellant fails to offer a proposed construction of "rotationally symmetric," supported by the Specification, that is sufficiently narrow to differentiate the claimed invention from Knieling. Using a broad but reasonable interpretation, we fail to see any patentable distinction between Appellant's invention and

Knieling based on the respective rotational axis of the various drive units. We sustain the Examiner's unpatentability rejection of claim 29.

Claim 31

Claim 31 falls with claim 27. Appeal Br. 37. 37 C.F.R. § 41.37(c)(1)(iv).

Claim 32

Claim 32 depends from claim 16 and adds the limitation: "further comprising a capping head disposed at a periphery of said manipulation unit." Claims App. Appellant argues that Knieling fails to disclose that closing head 6 is at the periphery of the manipulation unit. Appeal Br. 37.

It appears to us that Knieling inadvertently labeled two different elements as a "carrier 8," a first such element in Figure 5 and a different element in Figures 7 and 8. Knieling ¶¶ 51–61, Figs. 5–8. In Figure 5, carrier 8 sits atop and rotates about central support column 20. *Id.* at Fig. 5. In Figures 7 and 8, carrier(s) 8 is associated with closing head(s) 6. *Id.* at Figs. 7, 8. Each closing head is displaced laterally from shaft 84. *Id.* at Fig. 7. Such lateral displacement is sufficient to satisfy Appellant's "disposed at a periphery" limitation. A person of ordinary skill in the art would have been able to understand Knieling's invention notwithstanding this minor, duplicative labeling mistake.

We sustain the Examiner's unpatentability rejection of claim 32.

Claim 34

Claim 34 falls with claim 24. Appeal Br. 37. 37 C.F.R. § 41.37(c)(1)(iv).

Claim 35

Claim 35 depends from claim 24 and adds the limitation: "wherein said drive that controls motion of said manipulation element rotates said manipulation element." Claims App. Appellant's traverse mischaracterizes the Examiner's rejection as relying on shaft 84 of Knieling to rotate the manipulation element. Appeal Br. 37–38. The Examiner illuminates Appellant's error in the Answer. Ans. 24.

As previously discussed in more detail, Figure 8 of Knieling depicts magnetic elements 32*b* and 34*b* that cause rotation of closing head 6, which corresponds to Appellant's manipulation element. Knieling ¶ 61, Fig. 8. We sustain the Examiner's unpatentability rejection of claim 35.

Claim 36

Claim 36 depends from claim 16 and adds the limitation: "wherein said stator is attached to said central supporting column." Claims App. Appellant argues that element 22 relied on by the Examiner in the rejection is not present in the Figure 5 embodiment of Knieling. Appeal Br. 38.

Appellant's argument is not well taken. Knieling teaches that, in the Figure 5 embodiment, rotation of carrier about carrier axis T is generated by a magnetic coupling — "as described in the above-mentioned figures." Knieling ¶ 51. Element 22 is depicted in Figures 1–3, which we interpret as the "above-mentioned figures" referred to in paragraph 51. Moreover, as discussed in connection with claim 16 above, the Examiner's determination of obviousness is premised on replacing the rotating magnetic elements 34 and 34 in Figures 5–6 with a stator-rotor combination, with the stator attached to the central supporting column 18, 20. We are, thus, not apprised of error and sustain the Examiner's unpatentability rejection of claim 36.

Claim 37

Claim 37 depends from claim 16 and adds the limitation: "wherein said rotor is attached to said central supporting column." Claims App. The Examiner finds that modifying Knieling to attach the rotor to the support column entails only a simple rearrangement of parts that is within the ambit of ordinary skill. Final Act. 12–13.

Appellant argues that there is insufficient legal basis for the Examiner's findings and conclusion of unpatentability. Appeal Br. 38–40.

In response, the Examiner states:

> If the carrier is able to rotate when the stator is attached to the carrier, then having the stator or the rotor attached to the central support column produces the same predictable result of rotating the carrier relative to the central support column by using a rotor and stator system.
>
> Therefore, since the Specification as originally filed provides no criticality of having the rotor on the central support column, it would have been prima facie obvious to modify Knieling et al. and Bernhard to obtain the invention as specified in Claim 37 because such a modification would have been considered a mere design consideration which fails to patentably distinguish over the prior art.

Ans. 26.

A claim can be obvious even where all of the claimed features are not found in specific prior art references, where there is a showing of a reason to modify the teachings of the prior art to achieve the claimed invention. *See Randall Mfg. v. Rea*, 733 F.3d 1355, 1361–62 (Fed. Cir. 2013); *see also Broadcom Corp. v. Emulex Corp*., 732 F.3d 1325, 1334 (Fed. Cir. 2013). For this reason, "we do not ignore the modifications that one skilled in the art would make to a device borrowed from the prior art." *In re ICON Health & Fitness, Inc*., 496 F.3d 1374, 1382 (Fed. Cir. 2007). Here, a person of

ordinary skill in the art would have rearranged the respective positions of the rotor and stator in order to impart the correct direction of rotation to the apparatus. This is a sufficient reason to rearrange the parts.

Appellant's rebuttal that placing the rotor on Knieling's central column 18, 20, and the stator on Knieling's carrier 8, "means that the carrier 8 must be stationary" (Appeal Br. 39) is not supported by the evidence of record. Appellant's Specification indicates that a rotor may be placed on the central column, and the stator placed on a manipulation unit, and still result in a functioning device. Spec. 3:3–29, 4:23–5:5, 10:19–24. Such disclosure reinforces the Examiner's determination that there is no criticality to the respective placement of the rotor and the stator. Further, Appellant presents neither evidence nor persuasive technical reasoning that rearranging the relationship of a stator to a rotor requires more than ordinary skill or produces unexpected results. We are persuaded by the Examiner's reasoning and sustain the rejection of claim 37.

Claim 38

Claim 38 falls with claim 16. Appeal Br. 40. 37 C.F.R. § 41.37(c)(1)(iv).

Claim 39

Claim 39 depends from claim 16 and adds the limitation: "wherein said central supporting column comprises an outer wall surface, said outer wall surface being flush with said rotor." Claims App. As we understand the rejection, the outer wall surface of the support column in Knieling is the outer wall surface of sleeve 20. *See, e.g.*, Final Act. 7. With that in mind, even under the modification of Knieling proposed by the Examiner, the rotor

would not be flush with the outer wall surface of sleeve 20. *See, e.g.*, Knieling, Fig. 5.

Accordingly, we do not sustain the Examiner's unpatentability rejection of claim 39.

Claim 43

Claim 43 depends from claim 16 and adds the limitation: "wherein said first direct drive is a drive that is operated on a purely electromagnetic basis and without interposed power-transmission elements between said stator and said rotor thereof." Claims App.

Appellant argues that the rejection cites to paragraph 17, which is not explicitly recited as related to the Figure 5 embodiment of Knieling. Appeal Br. 42. Appellant further argues that:

> In figure 5 [of Knieling], a motor 26 rotates the shaft 18 about axis T so that an inner magnet 32 on the shaft can drag an outer magnet 36 along with it, thus rotating the carrier 8. This involves a magnetic transmission made of inner and outer magnets 32, 36. Thus, the drive 26 does not directly drive the carrier 8. It drives it indirectly by rotating the inner magnet 32, which then couples to the outer magnet 36 and rotates the carrier 8.

Id.

In response, the Examiner refers to paragraph 17 of Knieling as teaching that it would be possible that one drive element is a stator and the second drive element is a rotor, which is arranged to rotate relative to the stator. Ans. 30. We agree with Examiner that such describes a "direct" drive as claimed. We disagree with Appellant that paragraph 17 of Knieling is not applicable to the Examiner's proposed modification of Knieling.

We sustain the Examiner's unpatentability rejection of claim 43.

Unpatentability of Claims 18, 30, and 40–42 over Knieling, Bernhard, and Vander Bush

Claim 18

Claim 18 depends from claim 16 and adds the limitation: "wherein said first direct drive and said second direct drive are configured to be operable independently of each other." Claims App. The Examiner relies on Vander Bush as disclosing this limitation. Final Act. 15. Appellant argues that Vander Bush does not satisfy this limitation. Appeal Br. 26–30.

The Examiner directs our attention to a passage in Vander Bush teaching that:

> The improvement of the invention comprising a control means for directly sensing the instantaneous turret speed and reactively controlling the rotation means to rotate the spindle shafts at a constant rotational speed to thread caps onto the bottles with a constant final torque tightness independent of the turret speed and the bottle through put rate.

Vander Bush, col. 2, ll. 21–27.

In essence, Appellant argues that such teaching is not reflective of true "independence." Appeal Br. 27.

Vander Bush discloses a rotary capping machine. Vander Bush, Abstract. In Vander Bush, turret 28 rotates about non-rotating center shaft 26. *Id.* The rotational speed of turret 28 can be adjusted to alter the through put rate of the machine. *Id.* Spindle shafts 44 that rotate capping heads 48 are controlled to always rotate at a constant speed regardless of changes to the turret speed. *Id.* This is sufficient "independence" to satisfy the claim language of claim 18.

We sustain the Examiner's unpatentability rejection of claim 18.

Claim 30

Claim 30 depends from claim 17 and adds the limitation: "further comprising a controller for triggering said first and second direct drives independently of each other." Claims App. The Examiner relies on Vander Bush as disclosing this limitation. Final Act. 15. Appellant argues that the claim limitation is not met. Appeal Br. 36. Appellant asserts that "triggering" refers to starting and stopping the rotation of the direct drives independent of each other. *Id.*

We have reviewed Appellant's Specification, in general, and its teaching about "triggering" the drives, in particular. Spec. 8, 16. In our opinion, the Specification does not support Appellant's narrow construction of the term "triggering." In our opinion, one or both of the drives may be considered "triggered" when the control means changes the rotational speed of the respective drive. Using such a construction of "triggering," we agree with the Examiner that Vander Bush has a control means that "triggers" the drive for the spindle shafts and capping heads independently of the drive for the turret.

We sustain the Examiner's unpatentability rejection of claim 30.

Claim 40

Claim 40 depends from claim 16 and adds the limitation: "further comprising a controller for triggering said first direct drive independently of a second direct drive." Claims App. The Examiner finds Vander Bush discloses "a controller (76) for triggering said first direct drive independently of a second direct drive." Final Act. 16 (citing Vander Bush, col. 5, ll. 17–24).

Appellant argues that the Examiner errs, because "control means 76 is not described as triggering the first drive, which would be drive 30." Appeal Br. 41. According to Appellant, Vander Bush's first drive 30 is controlled by an operator using control panel 24. *Id.* Appellant argues that control means 76 only controls second drive 68. *Id.*

In answer, the Examiner no longer relies solely on element 76 as the controller that triggers the first direct drive — that is, motor 30 which rotates turret 28. Ans. 28–29; *see* Vander Bush, col. 3, ll. 27–29, 5 ll. 49–58. The Examiner nonetheless maintains that Vander Bush discloses a controller for triggering the first direct drive (for turret 28) independently of a second direct drive (for spindle shafts 44). Ans. 28–29. We agree with those findings.

Specifically, in Vander Bush, the operator inputs bottle through put speed into the control panel 24. Vander Bush, col. 5, ll. 49–58. Changes in turret speed are then directed by the control means in response to change inputs for bottle through put speed. *Id.* Vander Bush's control means further "sens[es] the instantaneous turret speed and reactively control[s] the rotation means to rotate the spindle shafts at a constant rotational speed to thread caps onto the bottles with a constant final torque tightness i*ndependent of* the turret speed and the bottle through put rate." *Id*. at col. 2, ll. 21–27 (emphasis added). This is sufficient to satisfy the language of claim 40. We sustain the Examiner's unpatentability rejection of claim 40.

Claims 41 and 42

Claims 41 and 42 fall with claim 16. Appeal Br. 42. 37 C.F.R. § 41.37(c)(1)(iv).

CONCLUSION

In summary:

Claims Rejected	§	Reference(s)/Bases	Aff'd	Rev'd
42	112b	Indefiniteness	42	
16, 17, 19, 20, 23, 24, 26-29, 31, 32, 34-39, 43	103	Knieling, Bernhard	16, 17, 19, 20, 23, 24, 27-29, 31, 32, 34-38, 43	26, 39
18, 30, 40-42	103	Knieling, Bernhard, Vander Bush	18, 30, 40-42	
Overall Outcome			16-20, 23, 24, 27-32, 34-38, 40-43	26, 39

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 IN PART