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Whitmyer IP Group LLC 600 Summer Street 3rd Floor Stamford, CT 06901			TIGHE, BRENDAN P	
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte TORGNY BROGARDH

Appeal 2018-003774
Application 14/890,814
Technology Center 3600

Before STEFAN STAICOVICI, EDWARD A. BROWN, and
ANNETTE R. REIMERS, *Administrative Patent Judges*.

REIMERS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE¹

Appellant² appeals under 35 U.S.C. § 134(a) from the Examiner's decision to reject under 35 U.S.C. § 102(a)(2) claims 1–3, 5–7, and 9–19³ as

¹ The Examiner indicates that “[c]laim 21 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.” Final Office Action (“Final Act.”) 8, dated Apr. 21, 2017.

² 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 “ABB Schweiz AG.” Appeal Brief (“Appeal Br.”) 2, filed Nov. 6, 2017.

³ Claim 19 is not included in the heading of the rejection but is addressed in the body of the rejection. *See* Final Act. 2, 6–7.

anticipated by Kock (US 7,685,902 B2, issued Mar. 30, 2010) and under 35 U.S.C. § 103 claim 8 as unpatentable over Kock. Claims 4 and 20 have been canceled. Appeal Br. 12, 14 (Claims App.). An Oral Hearing in accordance with 37 C.F.R. § 41.47 was held on December 13, 2019. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

CLAIMED SUBJECT MATTER

The claimed subject matter “relates to an industrial robot comprising a plurality of actuators working in parallel to manipulate an end effector.”

Spec. ¶ 1, Fig. 1.

Claim 1, the sole independent claim on appeal, is representative of the claimed subject matter and recites:

1. An industrial robot, comprising:

a first actuator configured to rotate a first drive arm about a first axis;

a second actuator configured to rotate a second drive arm about a second axis;

a first kinematic chain configured to transmit rotation of the first drive arm to a respective movement of an end effector, the first kinematic chain comprising (i) a first rod, (ii) a first joint connecting the first drive arm and the first rod, the first joint having at least two degrees of freedom, and (iii) a second joint connecting the first rod and the end effector; and

a second kinematic chain configured to transmit rotation of the second actuator to a respective movement of the end effector, the second kinematic chain comprising (i) a second rod, (ii) a third joint connecting the second drive arm and the second rod, (iii) a sub-chain portion connecting the second rod and the first rod, the sub-chain portion including a fourth joint, (iv) the first rod, and (v) the second joint;

wherein movement of the first rod is configured to have at least two degrees of freedom in relation to the first drive arm.

ANALYSIS

Anticipation by Kock

Claims 1–3, 5–7, and 9–19

Independent claim 1 is directed to an industrial robot including “a second kinematic chain configured to transmit rotation of the second actuator to a respective movement of the end effector,” the second kinematic chain comprising “(i) a second rod, (ii) a third joint connecting the second drive arm and the second rod, (iii) a sub-chain portion connecting the second rod and the first rod, the sub-chain portion including a fourth joint, (iv) the first rod, and (v) the second joint.” Appeal Br. 12 (Claims App.).

The Examiner finds that Kock teaches

a second kinematic chain (9 & 10 & 12 & 13 & 30 & 33) configured to transmit rotation of the second actuator [11] to a respective movement of the end effector [7], the second kinematic chain comprising the first rod [30], the second joint [33], a second rod (10), a third joint (12) connecting the second drive arm and the second rod, a sub-chain portion (13 & 30 & 33) connecting the second rod and the first rod (Fig. 1), the sub-chain portion including a fourth joint (13) the first rod [30] and the second joint [33].

Final Act. 3

Appellant contends that “there is nothing in Kock that discloses or suggests that the link 30 and joint 33 (i.e., the alleged ‘first rod’ and ‘second joint’) are included in a same kinematic chain as elements 9, 10, 12, and 13 (i.e., the other components of the alleged ‘second kinematic chain’).”

Appeal Br. 7. Specifically, Appellant contends that

elements “9, 10, 12, and 13” of Kock (i.e., the other components of the alleged “second kinematic chain”) are not connected to the link 30 and joint 33 in any way that would permit the rotation means 11 (i.e., the alleged “second actuator”) to transfer energy to the platform 7 via the link 30 and/or the joint 33.

Appeal Br. 8; *see also* Reply Br. 3.⁴

In response to Appellant’s argument, the Examiner states that [a]s there are no limitations which exclude intervening connections between the elements of either kinematic chain nor are there any limitations which exclude any specific elements in the first and second kinematic chain[,] there is no reason the end effector of Kock could not act as an indirect connection between the first rod, second joint, and other elements of the second kinematic chain of Kock and therefore the first rod and second joint of Kock are reasonably a part of the second kinematic chain of Kock.

Ans. 3.⁵

Appellant has the better position here. Kock discloses:

The first arm 3 comprises a supporting first arm part 9 and a second arm part comprising a link arrangement 10 pivotally connected in series via a joint 12. The supporting first arm part 9 is rotationally attached to the column 6 through connecting means 11. The link arrangement 10 is pivotally connected to the movable platform 7 via a joint 13.

...

The third arm 5 comprises a supporting first arm part 23 and a second arm part comprising a link arrangement 24 pivotally connected in serial via joints 25, 26 and 27. The supporting first arm part 23 is rotary attached to the column 6 through connecting means 28. The link arrangement 24 comprises three links 29, 30 and 31 of the same length, arranged in parallel and pivotally

⁴ Reply Brief (“Reply Br.”), filed Feb. 22, 2018.

⁵ Examiner’s Answer (“Ans.”), dated Jan. 3, 2018.

connected to the movable platform 7 via joints 32, 33 and 34 (not shown), respectively.

Kock 6:42–63 (emphasis omitted), Fig. 1.

Similar to the subject invention, rods 29, 30, and 31 together with first drive arm 23 of Kock form a first kinematic chain because these components *collectively transmit a rotational force* from actuator 28 to end effector 7. *Compare* Kock 6:42–47, Fig. 1 *with* Spec. ¶ 37, Fig. 1. However, as correctly noted by Appellant, the first and second kinematic chains of Kock each extend between respective actuators (connectors) 28, 11 and end effector (platform) 7 “without any connection therebetween.” Reply Br. 4. Stated differently, first kinematic chain (23, 24, 25, 26, 27, 29, 30, 31, 32, 33, 34) of Kock “play[s] no role in transmitting a force” from actuator (connector) 11 to end effector (platform) 7, and second kinematic chain (3, 9, 10, 12, 13) of Kock “play[s] no role in transmitting a force” from actuator (connector) 28 to end effector (platform) 7. Reply Br. 4; *see also* Kock 6:42–63, Fig. 1.

Additionally, Appellant correctly notes that end effector (platform) 7 “does not form a part of either kinematic chain” of Kock. Reply Br. 4. To consider end effector (platform) 7 as an “indirect connection” between first rod 30, second joint 33, and elements 3, 9, 10, 12, 13 of the second kinematic chain of Kock, as the Examiner proposes, more or less renders meaningless or superfluous the second kinematic chain being “configured to *transmit rotation* of the second actuator to a respective *movement of the end effector*,” as set forth in claim 1. *See* Appeal Br. 12 (Claims App.) (emphases added); *see also* Ans. 3; Reply Br. 4–5; *Bicon Inc. v. Straumann Co.*, 441 F.3d 945, 950 (Fed. Cir. 2006); *see also* *Stumbo v. Eastman*

Outdoors, Inc., 508 F.3d 1358, 1362 (Fed. Cir. 2007) (denouncing claim constructions which render phrases in claims superfluous). For these reasons, the Examiner fails to establish by a preponderance of the evidence that Kock anticipates the industrial robot of claim 1.

Accordingly, we do not sustain the Examiner's rejection of claims 1–3, 5–7, and 9–19 as anticipated by Kock.

Obviousness over Kock

Claim 8

The Examiner's rejection of claim 8 as unpatentable over Kock is based on the same unsupported findings discussed above with respect to independent claim 1. *See* Final Act. 7–8. The Examiner does not rely on any proposed modifications to Kock to remedy the deficiencies of Kock. Accordingly, for reasons similar to those discussed in the rejection of claim 1, we do not sustain the Examiner's rejection of claim 8 as unpatentable over Kock.

CONCLUSION

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–3, 5–7, and 9–19	102(a)(2)	Kock		1–3, 5–7, and 9–19
8	103	Kock		8
Overall Outcome				1–3 and 5–19

REVERSED