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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/833,921	08/24/2015	Amir BELSON	NEOG704-315C4/US	7283
96240	7590	06/30/2020	EXAMINER	
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			ART UNIT	PAPER NUMBER
			3799	
			NOTIFICATION DATE	DELIVERY MODE
			06/30/2020	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte AMIR BELSON

Appeal 2020-000060
Application 14/833,921
Technology Center 3700

Before MICHAEL J. FITZPATRICK, JEREMY M. PLENZLER, and
LEE L. STEPINA, *Administrative Patent Judges*.

Opinion for the Board by STEPINA, *Administrative Patent Judge*.

Opinion Concurring by PLENZLER, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision to reject claims 2–16 and 18–21.² We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

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 Intuitive Surgical Operations, Inc. Appeal Br. 2.

² Claim 1 has been cancelled, and claim 17 is withdrawn. Appeal Br. 29, 32 (Claims App.).

CLAIMED SUBJECT MATTER

The claims are directed to a system for facilitating insertion of a flexible endoscope along a tortuous path, such as for colonoscopic examination and treatment. Spec. ¶ 2.

Claims 2 and 18 are the sole pending independent claims and are reproduced below with emphasis added.³

2. A system for advancing an instrument along an arbitrary path, comprising:

a flexible and steerable instrument, the instrument including a distal portion configured to be selectively steered to assume a selected three-dimensional curve during advancement along an arbitrary path; and

an electronic motion controller operably coupled to the instrument to receive signals from the instrument representing a three-dimensional model of the three-dimensional curve, the electronic motion controller comprising electronic memory configured to store the three-dimensional model based on the signals received from the instrument as the instrument traverses along the path and assumes the selected three-dimensional curve.

18. A system for controlling movement of a steerable instrument along a path, comprising:

a flexible and steerable instrument having a proximal portion comprising a plurality of interconnected segments, each segment being coupled with a respective actuator of a plurality of actuators; and an electronic motion controller logically coupled to an electronic memory, wherein the electronic motion controller is configured to:

selectively steer a distal portion of the instrument in one or both of two steering directions orthogonal to one another and to an advancement direction of the instrument to assume a

³ Appellant indicates that disclosure of the italicized limitations in claim 2 may be found in the Specification in paragraphs 35, 36, and 45. Appeal Br. 5. However we find written description of these limitations only in originally filed claim 1 of the present Application.

selected three-dimensional curve during advancement of the instrument along an arbitrary path,

generate a three-dimensional model of the selected three-dimensional curve in the electronic memory based on information related to positions of segments of the instrument along a length of the instrument received during advancement of the instrument along the arbitrary path,

control at least the proximal portion of the instrument by controlling the actuators to linearly assume the selected curve of the distal portion in an infinitely variable motion while the instrument is advanced distally along the arbitrary path, and

propagate a measured length of at least one side of the distal portion from the selected three-dimensional curve to at least one side of the proximal portion while advancing the instrument distally along the arbitrary path.

Appeal Br. 29 (Claims App.).

REFERENCE

The prior art relied upon by the Examiner is:

Name	Reference	Date
Ueda	US 5,681,260	Oct. 28, 1997

REJECTION

Claims 2–16 and 18–21 are rejected under 35 U.S.C. § 103(a) as unpatentable over Ueda.

OPINION

The Examiner finds that the embodiment of Ueda’s invention depicted in Figures 28–31 (hereinafter “Ueda’s twelfth embodiment”) discloses many of the elements recited in claims 2 and 18. Final Act. 2–3 (citing Ueda, 19:18–21:17, Figs. 28–31). However, with respect to claim 2, the Examiner

finds Ueda's twelfth embodiment "is silent with respect to the electronic motion controller operably being coupled to receive signals from the instrument *representing* a three-dimensional model of the three-dimensional curve." *Id.* at 3. With respect to claim 18, the Examiner finds Ueda's twelfth embodiment fails to disclose "the electronic memory *configured* to store a three-dimensional model based on signals received from the instrument as the instrument traverses along the path and assumes the selected curve." *Id.*

To address these deficiencies, the Examiner finds that the embodiment of Ueda's invention disclosed in Figures 17–19 (hereinafter "Ueda's sixth embodiment") includes "a memorizing part 126 is operably coupled with the electronic motion controller to record movements and positions of the endoscope during insertion into the body." *Id.* (citing Ueda, 13:30–14:67, Figs. 17–19). The Examiner concludes that it would have been obvious "to include the memorizing part 126 to the three-dimensionally controlled embodiment of Ueda et al. to enable a three-dimensional curve to be efficiently and precisely propagated along the endoscope during insertion and also allow for recordation of the insertion path for use in future procedures on the same patient." *Id.* (citing Ueda, 14:10–67). The Examiner finds that Ueda's twelfth embodiment guides its insertable instrument via the use of a magnetic field and coreless coils through which current is passed. *Id.* at 8 (citing Ueda, 21:10–17, Fig. 31). The Examiner explains the proposed modification to meet all the requirements of claims 2 and 18 as follows.

[I]n view of the teachings of Ueda and the embodiment shown in Figs 17-19, one of ordinary skill in the art would have been motivated to modify the embodiment as seen in Figs 28-31 to

include a memorizing part 126, to *memorize the amount of current passed to each coreless coil* from the controlling apparatus 231 during insertion of the endoscope enabling accurate propagation of the curve as well as recordation of the inserting process, so that in the case of the next insertion, the recorded inserting process may be made a guide.

Final Act. 8 (emphasis added). Thus, the Examiner’s proposed modification relies on the use of the amount of electrical current passed to each coreless coil 241, 242 (or coreless coil 261–264)⁴ of Ueda to provide the information needed to meet the implicit requirement in claims 2 and 18 for a configuration that generates a three-dimensional model of the curve assumed by the instrument.

Appellant asserts that the memorizing part of Ueda’s sixth embodiment records the X, Y locations of magnetic force generating parts 89a–89i, which are located outside of the body. Appeal Br. 19–20. Appellant argues that memorizing part 126 of Ueda’s sixth embodiment does not measure electric current flow. *Id.* at 20. According to Appellant, because the Ueda’s sixth embodiment has these differences from the Ueda’s twelfth embodiment, “Ueda [does not] contain any suggestion that would have motivated a person of ordinary skill in the art at the time of invention to try modifying any of Ueda’s embodiments to include a memorizing part configured to memorize [electric] current flow.” Appeal Br. 20.

Appellant also argues even assuming that Ueda’s memorizing part could be modified to memorize the amount of electric current supplied to each coreless coil in Ueda’s twelfth embodiment, doing so “would not yield

⁴ In Figure 28, Ueda depicts two coreless coils represented by reference numbers 241 and 242. In Figure 31, Ueda depicts a variation of the invention including four coreless coils 261–264.

position information, let alone three-dimensional position information, of Ueda's insertable part 8." *Id.* at 21. Specifically, Appellant asserts that Ueda uses coils 261–264 merely to control advancement and retraction of insertable part 8, and information relating to the amount of current flowing through these coils would not provide the kind of information necessary to create a three-dimensional model. *See id.* at 21–23.

In response, the Examiner finds that magnetic field generating apparatus 211 of Ueda moves in X, Y, and Z directions. Ans. 7. The Examiner determines that, because magnetic field generating apparatus 211 controls the movement of coils 241, 242, by recording the movements of magnetic field generating apparatus 211 as well as the current passing through coreless coils 241, 242, "one would undoubtedly be able to record the entire inserting process in three dimensions as required by the current claim language." *Id.*

Appellant reiterates that Ueda's memorizing part 126 records the positions of the magnetic force generating parts 89a–89i and does not disclose any architecture that would receive and record electrical current flow values. Reply Br. 2. Appellant also asserts that the Examiner's proposed configuration to record the X, Y position of magnetic field generating apparatus 211 and the current passing through coreless coils 241, 242 in Ueda would, at most, provide a path followed by Ueda's magnet field generating apparatus 211 during insertion, not the three-dimensional shape of Ueda's insertion part 8 at any given time. *Id.* at 4.

We do not sustain the Examiner's rejection of claims 2 and 18 because the Examiner falls short of establishing that the amount of electrical current passing through coreless coils 241, 242 is capable of providing an

indication as to the position of these coils (or of the insertable part 8 upon which they are located) within the patient's body in Ueda's twelfth embodiment. Rather, Ueda explains that, in its twelfth embodiment, coreless coils 241 and 242 are switched on or off to create an attractive or repulsive force. Ueda, 20:20–29. Although these forces interact with the magnetic force created by magnetic force generating apparatus 211 to allow guidance of coreless coils 241, 242, the position of the insertable part is ascertained via the use of the endoscope image, not the amount of electrical current passing through coreless coils 241, 242. “While the endoscope image displayed in the TV monitor 7 is being observed, the magnetic field generating part 251 of the magnetic force generating apparatus 211 will be moved and the insertable part 8 will be guided within the inspected object by using said magnetic force.”⁵ *Id.* at 20:29–34. Thus, it is unclear how memorizing “the amount of current passed to each coreless coil from the controlling apparatus 231 during insertion of the endoscope” would enable “accurate propagation of the curve as well as recordation of the inserting process, so that in the case of the next insertion, the recorded inserting process may be made a guide” as stated by the Examiner. Final Act. 8. Accordingly, the Examiner's reasoning for modifying Ueda's twelfth embodiment based on Ueda's sixth embodiment relies on an unsupported finding of fact, and we do not sustain the Examiner's rejection of claims 2–16 and 18–21 as unpatentable over Ueda.

⁵ Ueda's states that its twelfth embodiment is similar to its first embodiment, which also uses the image from the endoscope to determine how the endoscope should be moved and then uses a magnetic field to achieve the intended movement. *See* Ueda, 9:14–29, 49–60, 19:33–36.

CONCLUSION

The Examiner's rejections are reversed.

DECISION SUMMARY

Claims Rejected	35 U.S.C. §	Basis	Affirmed	Reversed
2-16, 18-21	103(a)	Ueda		2-16, 18-21

REVERSED

PLENZLER, *Administrative Patent Judge*, Concurring.

I agree with the majority's decision to reverse the Examiner's rejection of claims 2–16 and 18–21, but write separately because I would construe the “instrument” recited in the claim 2 as a means-plus-function limitation, subject to 35 U.S.C. § 112 ¶ 6, which the Examiner's rejection does not address.

Based on the language of claim 2, we know that the “instrument” provides “signals . . . representing a three-dimensional model of the three-dimensional curve” along which it is advanced.⁶ We know nothing, however, regarding what structure is associated with the “instrument,” other than it is “flexible and steerable” and has a “distal portion.” Neither Appellant, nor the Examiner, proposes an express construction of that term, and we have no reason to believe that “instrument” is understood by persons of ordinary skill in the art as the name for any particular structure. Therefore, I would determine that “instrument” is a means-plus-function term, subject to 35 U.S.C. § 112 ¶ 6.

The standard for determining whether a limitation is a means-plus-function term is not based merely on the presence or absence of the word “means,” but, rather, is based on “whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently

⁶ Independent claim 18 is different in scope. Claim 18 includes additional structure for the “instrument” and does not require that the “instrument,” itself, provides “signals . . . representing a three-dimensional model of the three-dimensional curve” as in claim 2. Rather, claim 18 requires that the controller “generate[s] a three-dimensional model of the selected three-dimensional curve in the electronic memory based on information related to positions of segments of the instrument along a length of the instrument received during advancement of the instrument along the arbitrary path.”

definite meaning as the name for structure.” *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1349 (Fed. Cir. 2015) (internal citation omitted). As Appellant does not propose any particular construction, it does not contend that “instrument” is understood as the name for any particular structure. Although there is a presumption that a limitation lacking the word “means” is not subject to § 112 ¶ 6, that presumption is overcome when it is “demonstrate[d] that the claim term fails to ‘recite sufficiently definite structure’ or else recites ‘function without reciting sufficient structure for performing that function.’” *Id.* As noted above, claim 2 recites function “without reciting sufficient structure for performing that function.” *Id.* In fact, claim 2 simply recites “instrument,” without *any* additional meaningful structure, for providing “signals . . . representing a three-dimensional model of the three-dimensional curve.” *See Williamson*, 792 F.3d at 1350 (“Generic terms such as ‘mechanism,’ ‘element,’ ‘device,’ and other nonce words that reflect nothing more than verbal constructs may be used in a claim in a manner that is tantamount to using the word ‘means’ because they ‘typically do not connote sufficiently definite structure’ and therefore may invoke § 112, para. 6.”).

A means-plus-function limitation “shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.” 35 U.S.C. § 112 ¶ 6. Appellant explains that “the as-filed specification discloses an endoscope 100” as the “instrument.” Appeal Br. 4 (citing Spec. ¶¶ 25–28, Fig. 2). Appellant contends that “the three-dimensional model [is] based on the signals received from the instrument as the instrument traverses along the path and assumes the selected three-dimensional curve.” Appeal Br. 5. According to Appellant, “each time the

endoscope body 102 advances one unit, each section in the automatically controlled proximal portion 106 is signaled to assume the shape of the section that previously occupied the space that it now sits in” to create “a three-dimensional mathematical model of the patient’s colon.” *Id.*⁷

⁷ Appellant does not explain how the endoscope, itself (the “instrument”), generates “a three-dimensional model of the three-dimensional curve,” such that it could send “signals . . . representing a three-dimensional model of the three-dimensional curve.” This concurrence should not be interpreted as taking any position as to whether Appellant’s disclosure of the structure corresponding to the recited “instrument” complies with 35 U.S.C. § 112 ¶ 2.