The opinion in support of the decision being entered today was not written
for publication and is not binding precedent of the Board.

Paper No. 14

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte GERALD ROOS

Appeal No. 2004-1072
Application No. 09/868,150

ON BRIEF

Before STAAB, McQUADE, and NASE, Administrative Patent Judges.

NASE, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 7 to 10. Claims 11 and 12 the only other claims pending in this application, have been objected to as depending from a non-allowed claim.

We REVERSE and enter a new rejection pursuant to 37 CFR § 1.196(b).

BACKGROUND

The appellant's invention relates to an electromagnetic actuator (specification, p. 1). A copy of dependent claims 8 to 10 is set forth in the appendix to the appellant's brief. Claim 7 reads as follows:

> Electromagnetic actuator, having at least one electromagnet (10) that acts on a correspondingly designed armature surface (20) of a moveable armature (22) in a first effective range (12) by way of at least one first conical and/or stepped pole face (18) using a magnetic field (16) generated by at least one coil (14), thereby forming a first magnetic flux (48), wherein said first magnetic flux (48) flows through a first working air gap (60), characterized in that, shortly before the moveable armature (22) reaches an end position, the electromagnet (10) acts on a corresponding armature surface (28) by way of at least a second pole face (26) in at least a second effective range (24), whereby a second magnetic flux (58) is formed, wherein said second magnetic flux (58) flows through a second working air gap (62).

Claims 7 to 10 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,281,685[1] to Uemura.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellant regarding the above-noted rejection, we make reference to the answer (Paper No. 12, remailed December 5, 2003) for the examiner's complete reasoning in

[1] Issued August 4, 1981.

support of the rejection, and to the refiled brief[2] (Paper No. 11, filed June 5, 2003) for the appellant's arguments thereagainst.

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellant's specification and claims, to the patent to Uemura, and to the respective positions articulated by the appellant and the examiner. As a consequence of our review, we make the determinations which follow.

Uemura's invention relates to an electromagnetic locking type actuator. Figure 1 illustrates a first embodiment of Uemura's invention, partly in section. A plunger shaft 1 and a disc-shaped armature 2 fitted at an end thereof constitute a reciprocable control member. A tubular inner yoke 3 has mounted thereon a permanent magnet 4 and an electromagnetic coil 5. The permanent magnet 4 is held between a tubular outer yoke 6 and an annular side yoke 16. An electromagnetic coil 5 is held between the inner yoke and the outer yoke 6. Uemura teaches (column 1, line 65, to column 2, line 24) that:

> The inner yoke 3, the outer yoke 6, a flat portion 2a and a conical portion 2b of the disc-shaped armature 2, and a gap 7 between a tapered portion 3a of the inner yoke 3 and the conical portion 2b of the disc-shaped armature 2 form a magnetic path for passage of flux generated by the permanent magnet 4 and the

[2] A postcard receipt submitted with the refiled brief establishes that the original brief (apparently lost in the Office) was received by the Office on October 7, 2002.

> electromagnetic coil 5. The outer yoke 6 is provided with an adequate gap 4a for preventing the flux of the permanent magnet 4 from leaking directly to the inner yoke 3 through a flange portion 6b of the outer yoke 6. The electromagnetic coil 5 is constructed so as to be excited by an electric current in a first direction or an electric current in a second direction opposite to the first direction. When the electric current in the first direction is applied to the coil 5, the disc-shaped armature 2 is attracted by the electromagnetic force of the coil. Subsequently, when the disc-shaped armature 2 reaches the movement terminating position shown by solid lines in FIG. 1 and the current in the first direction is discontinued, only the magnetic force of the permanent magnet 4 holds the disc-shaped armature 2 at such position. On the contrary, when the electric current in the second direction or in the direction opposite to the first direction is applied to the electromagnetic coil 5, the electromotive force of the electromagnetic coil 5 and the electromotive force by the permanent magnet 4 cancel each other out so as to thereby maintain the disc-shaped armature 2 in a magnetically released state.

Uemura further teaches (column 3, lines 3-64) that:

> When the electric current in the first direction is applied to the electromagnetic coil 5, the magnetic flux generated thereby flows in the outer yoke 6, the flat and conical portions 2a and 2b, respectively, of the disc-shaped armature 2, the gap 7 and the inner yoke 3, whereby the magnetic attraction of the electromagnetic coil 5 is largely generated at the tapered portion 3a of the inner yoke 3. At this time, the magnetic flux generated by the permanent magnet 4 is added to on the magnetic flux generated by the electromagnetic coil 5 to increase the magnetic attraction thereof. However, the magnetomotive force of the permanent magnet 4 is far smaller than the electromotive force of the electromagnetic coil 5.
>
> The disc-shape armature 2 is attracted until it reaches the movement terminating position shown by solid lines in FIG. 1 at which the flat portion 2a of the disc-shaped armature 2 abuts against a ring-shaped projection 6a of the outer yoke 6 and the flat portion 3b of the inner yoke 3, and the magnetic reluctance of the magnetic path is rapidly reduced to a state of magnetic saturation. In this state, when the first direction current is cut off, the electromotive force of the electromagnetic coil 5 disappears and only the electromotive force of the permanent magnet 4 remains. However, since the reluctance of the magnetic path is, as mentioned above, a very small value, the disc-shaped armature 2 can be held at the movement terminating position shown by solid lines in FIG. 1 only by the magnetic force of the permanent magnet 4.

> During the movement of the disc-shaped armature 2, toward the abutment 6a as the fluid pressure in the fluid passage 9, 9a is gradually increased by advancement of the plunger shaft 1 thereinto, the forward end of the plunger shaft 1 urges the check valve 10 and the bleeder valve 11 leftward against the springs 12 and 13, respectively, thereby unblocking the opening 14 to place the fluid passages 8, 8a and 9, 9a in communication with each other and make the fluid pressure throughout all of these passages equal. Accordingly, variation of the fluid pressure in the passage 8, 8a is conveyed without alteration to the passage 9, 9a.
>
> When the disc-shaped armature 2 is in the position shown by solid lines in FIG. 1 as described above, and an electric current in the second direction capable of generating a magnetomotive force substantially equal to the magnetomotive force of the permanent magnet 4 is applied to the electromagnetic coil 5, the magnetic flux in the magnetic path disappears and the disc-shaped armature 2 is in a magnetically released state. Accordingly, the plunger shaft 1 is quickly moved rightward in FIG. 1 by the fluid pressure in the fluid passage 8, 8a. At this time, the check valve 10 initially substantially blocks the opening 14. However, the bleeder valve 11 is in an open state to allow a small amount of the fluid to pass through a choke passage (not shown) defined between the check valve 10 and the bleeder valve 11. With the continued rightward movement of the plunger shaft 1, the opening 14 is completely blocked by the bleeder valve 11. Thus, the successive blocking of the opening 14 by the check valve 10 and the bleeder valve 11 prevents a sudden increase of the fluid pressure in the fluid passage 8, 8a.

In the rejection before us in this appeal, the examiner (answer, pp. 3-4) determined that the claimed first magnetic flux was disclosed by Uemura at column 2, lines 1-3, and that the claimed second magnetic flux was disclosed by Uemura at column 2, lines 7-24. The appellant argues (brief, pp. 7-8) that Uemura does not disclose two different magnetic flux circuits as set forth in claim 7 but instead discloses

a single magnetic flux circuit. The examiner responded (answer, pp. 4-5) to this argument as follows:

> In the arguments received 6/5/03, the applicant contends Uemura does not disclose two different magnetic flux circuits, applicant attention is directed to Uemura in column 2, lines 10-13, Uemura specifically stated "When the electric current in the first direction is applied to the coil 5, the disc shaped armature 2 is attracted by the electromagnetic force of the coil", which is the first magnetic flux. Further, Uemura specifically stated in column 2, lines 18-20, "when the electric current in the second direction or in the direction opposite to the first direction is applied to the electromagnetic coil 5", which is the second magnetic flux. Further, the applicant argues that the patent of Uemura does not disclose nor obvious that "the electromagnet shortly before the armature 2 reaches its end position acts on an armature by a second pole face 6a", as indicated by the Examiner. Applicant should note that in claim 7, the claimed limitation "a second pole face" has been identified as element (26), which is equivalent to element (6a) of Uemura, and as seen in Figure 1. Therefore, before the moveable armature 2 reaches its end position, the electromagnet acts on an armature surface 2a by the second pole face 6a as seen in Figure 1.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. Verdegaal Bros. Inc. v. Union Oil Co., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir.), cert. denied, 484 U.S. 827 (1987). The inquiry as to whether a reference anticipates a claim must focus on what subject matter is encompassed by the claim and what subject matter is described by the reference. As set forth by the court in Kalman v. Kimberly-Clark Corp., 713 F.2d 760, 772, 218 USPQ 781, 789 (Fed. Cir. 1983), cert. denied, 465 U.S. 1026 (1984), it is only necessary for the claims to "'read on' something disclosed in the reference, i.e., all limitations of the claim are found in the reference, or

'fully met' by it." If a claimed element (or elements) is inherent in a prior art reference, then that element (or elements) is disclosed for purposes of finding anticipation. See Verdegaal Bros., Inc. v. Union Oil Co., 814 F.2d at 631-33, 2 USPQ2d at 1052-54.

It is well settled that the burden of establishing a prima facie case of anticipation resides with the United States Patent and Trademark Office (USPTO). See In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984). When relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. See Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Patent App. & Int. 1990).

After the USPTO establishes a prima facie case of anticipation based on inherency, the burden shifts to the appellant to prove that the subject matter shown to be in the prior art does not possess the characteristics of the claimed invention. See In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985); In re King, 801 F.2d 1324, 1327, 231 USPQ 136, 138 (Fed. Cir. 1986).

In our view, the examiner has not clearly set forth a prima facie case of anticipation based on inherency. In that regard, the examiner has not distinctly provided

a basis in fact and/or technical reasoning that shortly before the moveable armature 2 of Uemura reaches the end position shown in Figure 1, the electromagnetic coil 5 acts on the flat portion 2a of the armature 2 by way of the ring-shaped projection 6a of the outer yoke 6 in an effective range whereby a second magnetic flux is formed, wherein the second magnetic flux flows through a second working air gap. The examiner's position that the second magnetic flux is readable on the flux generated by Uemura when the electric current in the second direction or in the direction opposite to the first direction is applied to the electromagnetic coil 5 is without merit since the claimed second magnetic flux must be formed shortly before the moveable armature reaches an end position (i.e., shortly before armature 2 has reached the solid line position shown in Figure 1 from the position shown by broken lines in Figure 1).

Since the examiner has not clearly set forth a prima facie case of anticipation based on inherency, the decision of the examiner to reject claim 7, and claims 8 to 10 dependent thereon, under 35 U.S.C. § 102(b) must be reversed. However, since we believe that a basis in fact and/or technical reasoning exists that the claimed forming of a second magnetic flux is inherent in Uemura, for the reasons provided below, we enter the following new ground of rejection under the provisions of 37 CFR § 1.196(b).

New ground of rejection

Claims 7 to 10 are rejected under 35 U.S.C. § 102(b) as being anticipated by Uemura.

Claim 7 is readable on Uemura as follows: Electromagnetic actuator (Uemura's electromagnetic locking type actuator), having at least one electromagnet (Uemura's electromagnetic coil 5) that acts on a correspondingly designed armature surface (Uemura's conical portion 2b) of a moveable armature (Uemura's armature 2) in a first effective range by way of at least one first conical and/or stepped pole face (Uemura's tapered portion 3a of the inner yoke 3) using a magnetic field generated by at least one coil (Uemura's electromagnetic coil 5), thereby forming a first magnetic flux, wherein said first magnetic flux flows through a first working air gap (Uemura's gap 7), characterized in that, shortly before the moveable armature (Uemura's armature 2) reaches an end position, the electromagnet (Uemura's electromagnetic coil 5) acts on a corresponding armature surface (Uemura's flat portion 2a of armature 2) by way of at least a second pole face (Uemura's ring shaped projection 6a of outer yoke 6) in at least a second effective range whereby a second magnetic flux is formed (a second magnetic flux is inherently formed between Uemura's flat portion 2a of armature 2 and ring shaped projection 6a of outer yoke 6 when armature 2 of Uemura is moved from the position shown by broken lines in Figure 1 to the solid line position shown in Figure 1),

wherein said second magnetic flux flows through a second working air gap (second magnetic flux inherently flows through the air gap that exists shortly before armature 2 of Uemura has reached the solid line position shown in Figure 1 from the position shown by broken lines in Figure 1).

Claim 8 is readable on Uemura as follows: Electromagnetic actuator according to claim 7, wherein the second pole face is situated substantially perpendicular to the direction of movement of the armature (as shown in Figure 1 of Uemura, the ring shaped projection 6a is situated substantially perpendicular to the direction of movement of the armature 2).

Claim 9 is readable on Uemura as follows: Electromagnetic actuator according to claim 7, wherein the first, conical and/or stepped pole face is situated at least partially within the coil (as shown in Figure 1 of Uemura, the tapered portion 3a of the inner yoke 3 is situated at least partially within the electromagnetic coil 5).

Claim 10 is readable on Uemura as follows: Electromagnetic actuator according to claim 7, wherein the second pole face is situated between an upper end of an armature plunger and the coil in the direction of movement of the armature (as shown in Figure 1 of Uemura, the ring shaped projection 6a is situated between flat portion 2a of

the disc-shaped armature 2 and the electromagnetic coil 5 in the direction of movement of the armature 2).

As set forth above, it is our view that shortly before the moveable armature 2 of Uemura reaches the end position shown in Figure 1, the electromagnetic coil 5 inherently acts on the flat portion 2a of the armature 2 by way of the ring-shaped projection 6a of the outer yoke 6 in an effective range whereby a second magnetic flux is formed, wherein the second magnetic flux flows through a second working air gap. The bases for our determination that the claimed forming of a second magnetic flux is inherent in Uemura are as follows. One, Uemura states that when the electric current in the first direction is applied to the electromagnetic coil 5, the magnetic flux generated thereby flows in the outer yoke 6, the flat and conical portions 2a and 2b, respectively, of the disc-shaped armature 2, the gap 7 and the inner yoke 3, whereby the magnetic attraction of the electromagnetic coil 5 is largely generated at the tapered portion 3a of the inner yoke 3. Two, Uemura teaches that the gap 7 between the tapered portion 3a of the inner yoke 3 and the conical portion 2b of the disc-shaped armature 2 forms a magnetic path for passage of flux generated by the permanent magnet 4 and the electromagnetic coil 5. Three, the gap 7 between the tapered portion 3a of the inner yoke 3 and the conical portion 2b of the disc-shaped armature 2 in the broken lines position of Figure 1 is smaller than the gap between the ring shaped projection 6a of

outer yoke 6 and the flat portion 2a of armature 2. From the above, we conclude that the following are inherent in Uemura: (1) no flux will be formed between Uemura's flat portion 2a of armature 2 and ring shaped projection 6a of outer yoke 6 when armature 2 starts to move from the position shown by broken lines in Figure 1 towards the solid line position shown in Figure 1; and (2) flux will be formed between Uemura's flat portion 2a of armature 2 and ring shaped projection 6a of outer yoke 6 prior to armature 2 arriving at the solid line position shown in Figure 1 form the position shown by broken lines in Figure 1. Accordingly, a second magnetic flux is inherently formed between Uemura's flat portion 2a of armature 2 and ring shaped projection 6a of outer yoke 6 when armature 2 of Uemura is moved from the position shown by broken lines in Figure 1 to the solid line position shown in Figure 1, wherein the second magnetic flux flows through a second working air gap (second magnetic flux inherently flows through the air gap that exists shortly before armature 2 of Uemura has reached the solid line position shown in Figure 1 from the position shown by broken lines in Figure 1).

In view of our determination above that a basis in fact and/or technical reasoning exists that the claimed forming of a second magnetic flux is inherent in Uemura, the appellant's burden before the USPTO is to prove that Uemura does not perform the functions defined in claim 7. The appellant has not yet come forward with any evidence

to satisfy that burden.[3] Compare In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977); In re Ludtke, 441 F.2d 660, 664, 169 USPQ 563, 566-67 (CCPA 1971). Appellant's mere argument set forth in the brief that Uemura does not disclose two different magnetic flux circuits as set forth in claim 7 but instead discloses a single magnetic flux circuit is not evidence. See In re Pearson, 494 F.2d 1399, 1405, 181 USPQ 641, 646 (CCPA 1974)(attorney's arguments in a brief cannot take the place of evidence).

CONCLUSION

To summarize, the decision of the examiner to reject claims 7 to 10 under 35 U.S.C. § 102(b) is reversed and a new rejection of claims 7 to 10 under 35 U.S.C. § 102(b) has been added pursuant to provisions of 37 CFR § 1.196(b).

This decision contains a new ground of rejection pursuant to 37 CFR § 1.196(b). 37 CFR § 1.196(b) provides that, "[a] new ground of rejection shall not be considered final for purposes of judicial review."

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[3] In view of this new ground of rejection under 37 CFR § 1.196(b), the appellant has the opportunity to submit such evidence to the examiner.

37 CFR § 1.196(b) also provides that the appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of proceedings (§ 1.197(c)) as to the rejected claims:

> (1) Submit an appropriate amendment of the claims so rejected or a showing of facts relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the application will be remanded to the examiner. . . .
> (2) Request that the application be reheard under § 1.197(b) by the Board of Patent Appeals and Interferences upon the same record. . . .

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

REVERSED; 37 CFR § 1.196(b)

LAWRENCE J. STAAB Administrative Patent Judge	)	
JOHN P. McQUADE Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
JEFFREY V. NASE Administrative Patent Judge	)	

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