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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte RICHARD W. CADDELL

Appeal 2010-006485
Application 11/009,802
Technology Center 3700

Before: JENNIFER D. BAHR, JOHN C. KERINS, and
STEVEN D.A. MCCARTHY, *Administrative Patent Judges*.

BAHR, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Richard W. Caddell (Appellant) appeals under 35 U.S.C. § 134 from the Examiner's decision rejecting claims 1-17 and 20-24. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

The Claimed Subject Matter

Claim 1, reproduced below, is illustrative of the claimed subject matter.

1. A pump system comprising:
a mandrel extending longitudinally along an axis, said mandrel having a plurality of different radial diameters; and
a magnetically deflectable elastic member mounted about a partially arcuate outer surface of the mandrel.

Evidence

The Examiner relied on the following evidence in rejecting the claims on appeal:

Aubert	US 4,743,879	May 10, 1988
Hesketh	US 6,050,787	Apr. 18, 2000
Sharma	US 6,626,416 B2	Sep. 30, 2003
Pedersen	US 6,637,723 B1	Oct. 28, 2003

Rejections

The following rejections under 35 U.S.C. § 103(a) are before us for review:

- (1) claims 1-5, 7-12, 14-17, and 20-24 as unpatentable over Pedersen, Hesketh, and Sharma; and
- (2) claims 6 and 13 as unpatentable over Pedersen, Hesketh, Sharma, and Aubert.

OPINION

Obviousness based on Pedersen, Hesketh, and Sharma

Claims 1-5, 7, 8, 20 and 21

Appellant argues these claims together. Thus, we select claim 1 as representative, and the remainder of the claims stand or fall with claim 1.

The issue raised by Appellant is whether it would have been obvious to modify Pedersen's valve by replacing Pedersen's elastic member 60 and mechanical means for actuating the movement of the elastic member with a magnetically responsive elastic material and a ring magnet (i.e., coils 11), as taught by Hesketh, "in order to provide a fluid handling component for a pumping system that rapidly and accurately modulate[s] fluid flow using inexpensive materials." App. Br. 4-7; Reply Br. 1-2; Ans. 5-7. We have carefully considered Appellant's arguments, but we do not find them convincing.

Appellant argues that the proposed modification would not have been obvious because it would change the principle of operation of Pedersen from a valve to a pump and would require substantial reconstruction and redesign of Pedersen's support element 40. App. Br. 4-5.

The Examiner persuasively explained on pages 8-12 of the Answer why the proposed modification would not change the principle of operation of Pedersen's valve. Specifically, the combination of Pedersen and Hesketh proposed by the Examiner would result in the valve of Pedersen retaining the functionality of a valve but having the added functionality of a pump if a user chooses to operate it as such to pump fluid. Ans. 9, 11; Hesketh, col. 2, ll. 44-67 (describing operation of the device as a pump by generating multiple, sequential magnetic fields); *id.* at col. 3, ll. 15-19 (describing operation of the device as a basic valve by generating just one magnetic field

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and positioning the inlet and outlet ports sufficiently adjacent so that the magnetic field causes the tube to create one volume enabling both ports to communicate); *id.* at col. 4, ll. 13-24 (claim 5, directed to a method of using the pump of claim 1 or claim 4 as a valve).

Appellant's argument that the proposed modification would not have been obvious because it would require substantial reconstruction and redesign of Pedersen's support element 40 also is not convincing. Appellant does not specify what aspects of Pedersen's support element 40 would need to be reconstructed or redesigned, and does not identify any error in the Examiner's findings and technical reasoning evincing that the required revisions to Pedersen's support element would not have been beyond the technical grasp of a person of ordinary skill in the art. *See* Ans. 14.

Appellant also argues that Pedersen teaches away from the proposed modification, because Pedersen characterizes valves with bulky external structures protruding perpendicularly from the axis of flow as "problematic" and the Examiner's proposed modification "would add components, such as the body 5, that substantially protrude from the axis of flow." App. Br. 5 (quoting Pedersen, col. 1, ll. 56-67). This argument is not convincing because, as explained by the Examiner, the proposed modification substitutes actuating components, such as the body 5 and coils 11 as taught by Hesketh, for the actuating element 80, cam 93, mating follower 73, biasing pins 140, biasing element 100, threaded collar 120, cavity 130, and fluid tap 135 of Pedersen. Ans. 15. It is speculative at best that the components that would be added in the proposed modification would protrude perpendicularly from the axis of flow further than the components that they would replace.

Appellant argues that there would be no reason to modify Pedersen with the elastic member of Hesketh, and that incorporating the magnetic deflectable member of Hesketh into Pedersen would render the valve¹ unsatisfactory for its intended purpose. App. Br. 6. This argument, like Appellant's argument that the modification would change the principle of operation of Pedersen's valve, is predicated on the assertion that the modification would cause the valve to operate as a pump, and not as a valve. That assertion is factually inaccurate, as discussed above. *See* Ans. 17.

Appellant also argues that the proposed modification provides no benefit to Pedersen's valve, because the fluid in Pedersen is already configured to move, and because the tubular magnetically deflectable elastic member of Hesketh does not include a seal element, such as seal element 71 of Pedersen, to seal against the ports. App. Br. 6. Thus, according to Appellant, the proposed modification is improper. *Id.*

The Examiner cited as one benefit the elimination of the fluid tap 135 of Pedersen, which would reduce the overall size of the valve, thereby achieving one of the stated objectives of Pedersen acknowledged by Appellant. Ans. 17. The Examiner also found that the use of electromagnetic actuation would afford the benefit of providing a device that rapidly and accurately controls a fluid using inexpensive materials, and thus reasoned that it would have been obvious to modify Pedersen as proposed to achieve that benefit. *Id.* at 17-18. Appellant does not allege any error in the Examiner's findings or reasoning.

¹ Appellant's argument states that the modification "would render the valve of *Hesketh* unsatisfactory for its intended purpose" (App. Br. 6, emphasis added), but we, like the Examiner (Ans. 17), understand Appellant's argument to be that Pedersen's valve would be rendered unsatisfactory for its intended purpose.

As for the sealing relationship between the deflectable elastic member and the supporting member of Pedersen, the Examiner reasoned that a person of ordinary skill in the art would have appreciated that certain structural aspects, such as annular bulges to function as sealing elements, of Pedersen's flexible element 60 would be incorporated into the modified magnetic, elastic, deflectable member, and determined it would have been obvious to do so. Ans. 19. Appellant does not identify any flaw in the Examiner's findings or reasoning.

For the above reasons, Appellant's arguments do not apprise us of error in the Examiner's determination that the subject matter of claim 1 would have been obvious. We sustain the rejection of claim 1 and of claims 2-5, 7, 8, 20, and 21, which fall with claim 1, as unpatentable over Pedersen, Hesketh, and Sharma.

Claims 9-12, 14-17, and 22-24

Appellant argues these claims together. We select claim 9 as representative of the group.

Appellant reiterates many of the same arguments asserted against the rejection of claim 1 in contesting the rejection of claims 9-12, 14-17 and 22-24. App. Br. 8-10. For the reasons discussed above, these arguments do not apprise us of error in the rejection.

Appellant additionally argues that Pedersen discloses a valve, not a pump, and thus "fails to disclose the claimed 'pumping volume' feature." App. Br. 7. This argument seemingly attacks Pedersen individually, rather than as combined with Hesketh as proposed by the Examiner, and thus is unavailing. *See In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986) (Nonobviousness cannot be established by attacking the references individually when the rejection is predicated upon a combination of prior art

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disclosures). As discussed above, the combination of Pedersen and Hesketh proposed by the Examiner would result in the valve of Pedersen retaining the functionality of a valve but having the added functionality of a pump if a user chooses to operate it as such to pump fluid.

For the above reasons, Appellant's arguments do not apprise us of error in the Examiner's determination that the subject matter of claim 9 would have been obvious. We sustain the rejection of claim 9 and of claims 10-12, 14-17, and 22-24, which fall with claim 9, as unpatentable over Pedersen, Hesketh, and Sharma.

Obviousness based on Pedersen, Hesketh, Sharma, and Aubert

In contesting the rejection of claims 6 and 13, Appellant merely relies on the arguments asserted for claims 1 and 11. App. Br. 10. As discussed above, these arguments do not apprise us of error in the Examiner's rejection. Thus, we sustain the rejection of claims 6 and 13 as unpatentable over Pedersen, Hesketh, Sharma, and Aubert.

DECISION

The Examiner's decision rejecting claims 1-17 and 20-24 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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