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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* SHAHN S. SAGE

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Appeal 2011-001146  
Application 11/799,165  
Technology Center 3700

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Before MELANIE L. McCOLLUM, JEFFREY N. FREDMAN, and  
ULRIKE W. JENKS, *Administrative Patent Judges*.

FREDMAN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 involving claims to a catheter connection system. The Examiner rejected the claims as obvious. We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

*Statement of the Case*

*Background*

“The present invention provides catheter connectors, connections systems, and methods in which a catheter is attached to a threaded connector that is inserted into the lumen of the catheter” (Spec. 2 ¶ 06).

*The Claims*

Claims 1-28 are on appeal. Claim 1 is representative and reads as follows:

1. A catheter connection system comprising:
  - a connector body that comprises an intermediate section defining a stop surface and a first connector extending from the intermediate section, wherein a bore extends through the first connector and the intermediate section, and wherein the first connector comprises a threaded outer surface; and
  - a catheter comprising an end portion attached to the first connector, wherein the end portion comprises a lumen that extends through the end portion towards a distal end of the catheter, wherein the lumen is located within an elastically compressible inner body that is surrounded by a reinforcing braid located around an outer surface of the inner body;wherein, when the first connector is located within the lumen in the end portion of the catheter, the elastically compressible inner body is compressed by and conforms to the shape of the threaded outer surface of the first connector to make a fluid-tight seal between the bore in the connector body and the lumen of the catheter and the end portion of the catheter abuts the stop surface of the intermediate section of the connector body.

*The issues*

A. The Examiner rejected claims 1-4, 6, 7, 10-17, and 20-25 under 35 U.S.C. § 103(a) as obvious over Mitsui<sup>1</sup> and Davis<sup>2</sup> (Ans. 4-14).

B. The Examiner rejected claim 5 under 35 U.S.C. § 103(a) as obvious over Mitsui, Davis, and Pacella<sup>3</sup> (Ans. 14-15).

C. The Examiner rejected claims 8, 9, 18, and 19 under 35 U.S.C. § 103(a) as obvious over Mitsui, Davis, and Ebling<sup>4</sup> (Ans. 15-16).

D. The Examiner rejected claims 26-28 under 35 U.S.C. § 103(a) as obvious over Mitsui, Davis, and Burbank<sup>5</sup> (Ans. 17-20).

A. *U.S.C. § 103(a) over Mitsui and Davis*

The Examiner finds that Mitsui teaches

when the first connector [13] is located within the lumen in the end portion of the catheter [30], the elastically compressible inner body [31a] is compressed by and conforms to the shape of the outer surface of the first connector to make a fluid-tight seal between the bore in the connector body [10] and the lumen of the catheter

(Ans. 4). The Examiner finds that Mitsui “does not teach that the first connector [13] comprises a threaded outer surface, since Mitsui et al teaches that the first connector comprises ring-shaped projections” (Ans. 5). The Examiner finds that Davis teaches “a catheter connection system . . . wherein a first connector . . . comprises a threaded outer surface” (Ans. 5).

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<sup>1</sup> Mitsui et al., US 6,308,992 B1, issued Oct. 30, 2001.

<sup>2</sup> Davis et al., US 6,868,773 B2, issued Mar. 22, 2005.

<sup>3</sup> Pacella, S., US 4,192,532, issued Mar. 11, 1980.

<sup>4</sup> Ebling et al, US 4,592,749, issued Jun. 3, 1986.

<sup>5</sup> Burbank et al., US 5,931,829, issued Aug. 3, 1999.

The Examiner finds it obvious to

substitute the ring-shaped projections, of the first connector of the system of Mitsui et al, with the external threads, as taught by Davis et al, as an obvious preferential design choice to the user, as either the projections or the threads will function to securely and sealingly engage the catheter with the first connector. Davis et al states that the external threads on the first connector aid in firmly connecting the first connector with the catheter

(Ans. 5).

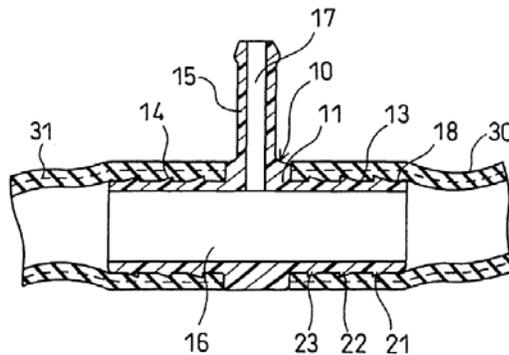
The issue with respect to this rejection is: Does the evidence of record support the Examiner's conclusion that Mitsui and Davis render claim 1 obvious?

*Findings of Fact*

1. Mitsui teaches “a hose connecting assembly that enables easy connection with a hose and ensures a tight seal even at a place exposed to vibrations” (Mitsui, col. 1, ll. 60-63).

2. Figure 2 of Mitsui is reproduced below:

*Fig. 2*



“FIG. 2 is a cross sectional view illustrating the vicinity of a hose connecting tube and a hose” (Mitsui, col. 5, ll. 35-36).

3. Mitsui teaches that “connection tube **10** includes a tubular main body **11**, hose connecting tubes **13** and **14** integrally formed with the tubular main body **11** at its respective ends, and a branch tube **15** projected from a middle portion of the tubular main body **11**” (Mitsui, col. 6, ll. 51-55).

4. Mitsui teaches that a “main flow path **16** connecting with the hoses **30** and **31** is formed inside the tubular main body **11** and the hose connecting tubes **13** and **14**” (Mitsui, col. 6, ll. 55-57).

5. Mitsui teaches “the hose **30** includes an inner layer **31a** made of an EPDM rubber, a thread-reinforced layer **31b** made of reinforcing threads that are spirally networked, and an outer layer **31c** made of an EPDM rubber” (Mitsui, col. 7, ll. 53-57).

6. Mitsui teaches that as “long as the following conditions are fulfilled, the hose **30** including the spirally networked reinforcing threads may be replaced with a hose **30B** including braided reinforcing threads” (Mitsui, col. 7, ll. 57-60).

7. Mitsui teaches that “when the hose connecting tube **13** of the connection tube **10** is pressed into the hose **30** in such a manner that the hose **30** climbs over the ring-shaped projections **21**, **22**, and **23**, the ring-shaped projections **21**, **22**, and **23** . . . partly expand the inner wall of the hose **30**” (Mitsui, col. 8, ll. 27-33).

8. Mitsui teaches that

when the ring-shaped projections **21**, **22**, and **23** expand the diameter of the hose, a large clamping force is generated as the reaction force against the hose connecting tube **13**. The hose **30** having such a large clamping force does not readily come off the hose connecting tube **13** and ensures a

sufficiently large sealing property. Namely the hose **30** is securely joined with the hose connecting tube **13** without any specific clamping mechanism, such as clips.

(Mitsui, col. 8, ll. 38-46).

9. Davis teaches that the “tubular section **39** may have external threads **41** which aid in firmly connecting the tubular section **39** to the tube **11** and which engage with the hardened adhesive **37** to provide a strengthened mechanical connection between the adhesive **37** and the fluid coupling **20**” (Davis, col. 4, ll. 25-29).

10. Figure 3 of Davis is reproduced below:

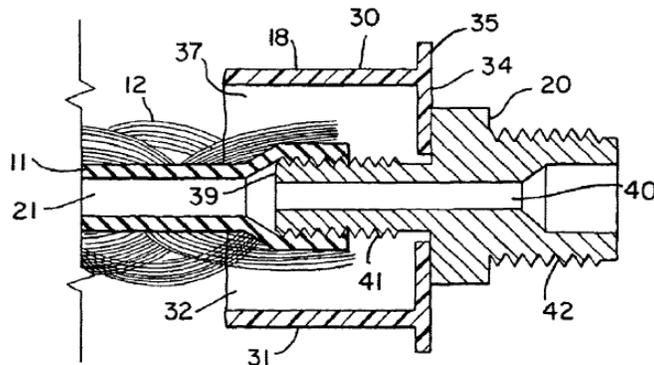


FIG. 3

“FIG. 3 is a cross-sectional view of the end fitting with fluid coupling of the actuator” (Davis, col. 3, ll. 3-4).

11. Davis teaches that “fitting **18** at the first end **15** includes a fluid coupling **20** by which a fluid supply line, e.g., a line supplying air under pressure, can be connected to supply fluid under pressure to the interior bore **21** of the tube **11**” (Davis, col. 3, ll. 25-30).

*Principles of Law*

“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007). “If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability.” *Id.* at 417. As noted by the Court in *KSR*, “[a] person of ordinary skill is also a person of ordinary creativity, not an automaton.” 550 U.S. at 421.

*Analysis*

*Claim 1*

Mitsui teaches “a hose connecting assembly that enables easy connection with a hose and ensures a tight seal even at a place exposed to vibrations” (Mitsui, col. 1, ll. 60-63; FF 1).

Mitsui teaches a connector body where “connection tube **10** includes a tubular main body **11**, hose connecting tubes **13** and **14** integrally formed with the tubular main body **11** at its respective ends, and a branch tube **15** projected from a middle portion of the tubular main body **11**” (Mitsui, col. 6, ll. 51-55; FF 3). Mitsui teaches a lumen with an elastically compressible inner body reinforced by a braid on the outer surface (FF 5). Mitsui teaches that when the first connector “tube **13** of the connection tube **10** is pressed into the hose **30** in such a manner that the hose **30** climbs over the ring-shaped projections **21**, **22**, and **23**, the ring-shaped projections **21**, **22**, and **23** . . . partly expand the inner wall of the hose **30**” (Mitsui, col. 8, ll. 27-33; FF 7).

The Examiner finds that Mitsui “does not teach that the first connector [13] comprises a threaded outer surface” (Ans. 5).

Davis teaches that the “tubular section **39** may have external threads **41** which aid in firmly connecting the tubular section **39** to the tube **11** and which engage with the hardened adhesive **37** to provide a strengthened mechanical connection between the adhesive **37** and the fluid coupling **20**” (Davis, col. 4, ll. 25-29; FF 9).

Appellant “submits that the asserted motivation for making the proposed modification is not sufficient to establish a *prima facie* case of obviousness” (App. Br. 15).

We are not persuaded. Applying the *KSR* standard of obviousness to the findings of fact, we conclude that the person of ordinary creativity would have reasonably substituted the threaded connector of Davis for the ring shaped projection connection tube of Mitsui. We agree with the Examiner that this substitution is a “design choice to the user, as either the projections or the threads will function to securely and sealingly engage the catheter with the first connector” (Ans. 5). Such a combination is merely a “predictable use of prior art elements according to their established functions.” *KSR*, 550 U.S. at 417.

Appellant contends that “the Examiner has not established that the proposed combination would form an adequate seal in the absence of the series of circumferential exterior surfaces that are described in Mitsui et al. as providing the required seal” (App. Br. 14). Appellants contend that “the Examiner has failed to establish that substituting the threads of Davis et al.

for the . . . ring-shaped projections of Mitsui et al. would ‘yield predictable results’ to one of ordinary skill in the art” (App. Br. 14).

We are not persuaded. Davis teaches that the external threads “aid in firmly connecting the tubular section **39** to the tube **11**” (Davis, col. 4, ll. 26-27; FF 9). Davis also teaches that the tubing is under liquid pressure (FF 11), which demonstrates that the threads would be predictably expected to form a strong, fluid tight seal.

Appellant contends that “[i]f it is the unstated assertion of the Examiner that the threaded connector of Davis et al. alone inherently forms a sealed connection, then Appellant submits that the standards for a rejection based on inherency have not been met” (App. Br. 15).

We are not persuaded. We note that Appellant’s claims are in the open “comprising” format, so that the claimed connection system does not exclude the use of the adhesive taught by Davis. However, even if the adhesive were not used, the intent of Davis is a connector which permits passage of fluid under pressure (FF 9, 11). This is sufficient for the Examiner to reasonably infer that the connection method of Davis inherently forms a sealed connection. *See In re Best*, 562 F.2d 1252, 1255 (CCPA 1977) (“Where, as here, the claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product.”)

*Claims 2, 13, and 23*

Appellant contends that:

nothing has been identified within the disclosures of Mitsui et al. and Davis et al. (taken alone or together) as teaching or suggesting that, when a connector is located within the lumen in an end portion of a catheter, the outer dimensions of the catheter within the end portion occupied by the connector remain substantially unchanged as compared to the outer dimensions of the catheter when the connector is not located within the lumen

(App. Br. 18).

We are not persuaded. This argument fails to incorporate the threading of Davis in place of the connectors of Mitsui. While the tube in Mitsui may slightly change in size when occupied by the connector, the threaded connection in Davis would not reasonably be expected to change in size. It is the threading connection of Davis that is a functional connection to the tube now required by this obviousness rejection, not the connection of Mitsui. Appellant has identified no evidence to suggest that the outer “sheath 12 formed of braided fibers 13” (Davis, col. 3, ll. 15-16; FF10) of Davis would change in size once the threaded connector is engaged in the end of the tube 11, and Davis teaches that the “tubular section **39** may have external threads **41** which aid in firmly connecting the tubular section **39** to the tube **11**” (Davis, col. 4, ll. 25-27; FF 9). These threads would not firmly connect if the tube portion changed in size, either being unable to fit into a smaller tube or being unable to engage in a larger tube.

*Conclusion of Law*

The evidence of record supports the Examiner's conclusion that Mitsui and Davis render claim 1 obvious.

*B. U.S.C. § 103(a) over Mitsui, Davis, and Pacella*

The Examiner finds it obvious to “modify the connector body, of the modified system of Mitsui et al and Davis et al, with wrench flats, as taught by Pacella, as an obvious structural design choice to the user, for a means to turn or rotate the connector body with respect to the catheter via a wrench so that the connector body and the catheter will engage together” (Ans. 15).

The Examiner provides sound fact-based reasoning for combining Pacella with Mitsui and Davis. We adopt the fact finding and analysis of the Examiner as our own. Appellant's arguments are directed at elements taught by Mitsui and Davis as discussed in the primary rejection, but not at the combination with Pacella. Therefore, consistent with the rejection which we affirmed above, we affirm this rejection for the reasons stated by the Examiner.

*C. U.S.C. § 103(a) over Mitsui, Davis, and Ebling*

Appellant contends that “Ebling et al., however, expressly teaches away from the use of silicone tubing in connection with ‘barbs,’ e.g., cylindrically-shaped outward projecting ribs, on connectors because the ‘barbs,’ and/or sutures used in conjunction with the ‘barbs,’ may cut into silicone tubing after or during being secured on a connector” (App. Br. 21).

We are not persuaded. This argument fails to incorporate the teachings of Davis for a threaded connection. In a threaded connection, as in Davis, it is not only the tube being inserted which has external threads, but

the inner tube into which the tube is being inserted is also threaded with threads which match the external threads, “so that a connector can be threaded onto it” (Davis, col. 3, ll. 54-55).

A teaching away requires a reference to actually criticize, discredit, or otherwise discourage the claimed solution. *See In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004) (“The prior art’s mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed”). Appellant incorrectly focuses on Mitsui’s connection, when the rejection relies upon the connection of Davis. While Ebling might reasonably be taken as criticizing the solution of Mitsui for connection, it is not Mitsui’s connection upon which the rejection relies, but rather the connectors of Davis. Appellant does not identify, and we do not find, any criticism of threaded connectors of Davis in Ebling.

*D. U.S.C. § 103(a) over Mitsui, Davis, and Burbank*

The Examiner finds it obvious to “modify the first connector and the delivery catheter, of the system of Burbank et al, with a threaded outer surface and a reinforcing braid, respectively, as taught by Davis et al, as the threaded outer surface will aid in firmly connecting the first connector to the catheter” (Ans. 18).

The Examiner provides sound fact-based reasoning for combining Burbank with Mitsui and Davis. We adopt the fact finding and analysis of the Examiner as our own. Appellant’s arguments are directed at elements taught by Mitsui and Davis as discussed in the primary rejection, but not at the combination with Burbank. Therefore, consistent with the rejection

which we affirmed above, we affirm this rejection for the reasons stated by the Examiner.

#### SUMMARY

In summary, we affirm the rejection of claims 1, 2, 13, and 23 under 35 U.S.C. § 103(a) as obvious over Mitsui and Davis. Pursuant to 37 C.F.R. § 41.37(c)(1), we also affirm the rejection of claims 3, 4, 6, 7, 10-12, 14-17, 20-22, 24, and 25 as these claims were not argued separately.

We affirm the rejection of claim 5 under 35 U.S.C. § 103(a) as obvious over Mitsui, Davis, and Pacella.

We affirm the rejection of claims 8, 9, 18, and 19 under 35 U.S.C. § 103(a) as obvious over Mitsui, Davis, and Ebling.

We affirm the rejection of claims 26-28 under 35 U.S.C. § 103(a) as obvious over Mitsui, Davis, and Burbank.

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

AFFIRMED

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