UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ANDREW S. KREAGER,
STEPHEN P. ANDRZEJEWSKI,
PHILIP T. DODGE, and
BARRY T. AUBREY

Appeal 2008-0443
Application 10/405,458
Technology Center 1700

Decided: January 29, 2008

Before EDWARD C. KIMLIN, THOMAS A. WALTZ, and
KAREN M. HASTINGS, *Administrative Patent Judges*.

HASTINGS, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 13-24. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

BACKGROUND

The invention relates to a method of making a three layer plastic part. Claim 13 is illustrative:

13. A method for making a plastic part, the method comprising:

a) charging a first mold half and a second mold half with a skin resin, wherein the first mold half and the second mold half are at a sufficient temperature to melt the skin resin;

b) allowing a first skin layer to form on the first mold half and a second skin layer to form on the second mold half;

c) inverting the first mold half and the second mold half such that excess skin resin is poured out;

d) optionally adding one or more reinforcements to the first skin layer and to the second skin layer;

e) charging the mold half[1] and the second mold half with a foam resin;

f) clamping the first mold half and the second mold half together;

g) heating the first mold half and the second mold half to a sufficient temperature to activate the foam resin;

h) allowing a foam layer to form, wherein the foam layer is adhered to the first skin layer and to the second skin layer;

i) cooling the first mold half and second mold half; and

j) removing the plastic part from the first mold half and the second mold half.

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[1] The lack of the term "first" to modify "mold half" appears to be an oversight.

The Examiner relies upon the following references as evidence of unpatentability:

Heisler	US 2,736,925	Mar. 6, 1956
Lemelson	US 3,875,275	Apr. 1, 1975
Needham	US 5,532,282	Jul. 2, 1996
Grimmer	US 5,654,102	Aug. 5, 1997
Frohaug	WO 00/11065	Mar. 2, 2000

Claim 13 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Lemelson in view of Heisler. To reject claims 14-20, 22, and 23[2], the Examiner adds Frohaug. To reject claim 16, the Examiner further adds Grimmer.

Claims 21, 23, and 24 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Lemelson in view of Heisler, Frohaug, and Needham. To again reject claim 23, the Examiner adds Grimmer to this combination.

Appellants do not separately argue with any reasonable specificity the individual claims rejected under 35 U.S.C. § 103(a) (Br. 9-10). Therefore, we select the broadest independent claim 13 to decide the issue on appeal regarding claims 13-24.

DISCUSSION

with Findings of Facts

The issue raised by this appeal is whether Appellants have overcome the rejections by showing that the applied reference evidence does not support the Examiner's conclusion of obviousness; specifically, whether the combined teachings of Lemelson and Heisler would have taught or

[2] The inclusion of claim 23 in this rejection appears to be an inadvertent oversight, since claim 23 depends from claim 21.

suggested to one of ordinary skill in the art the use of the method steps as required by claim 13.

A preponderance of the evidence of record supports the following Findings of Facts (FF):

1. Lemelson describes a method for making a plastic part (Fig. 3) which explicitly includes all the claimed method steps in Appellants' claim 13 except it is silent with respect to (a) inverting the mold halves such that excess skin resin is poured out and (b) heating the mold halves to activate the foam resin (Ans. 3-4; Lemelson abstract; Figs. 3, 7; col. 4, ll. 32-43; col. 5, l. 43 to col. 6, l. 32; col. 10, ll. 45-60; col. 11, ll. 55-60).

2. Lemelson describes a rotational molding process which introduces a foam resin into the mold halves after the resin skin was formed in the mold halves (e.g., mold halves 47a, 47b of Lemelson). A rotational molding process inherently inverts the mold halves as they are being rotated (Ans. 10).

3. Lemelson describes adding a resin containing a blowing agent and expanding it in situ, after the initial skin is formed (col. 6, ll. 7-32). Furthermore, Lemelson teaches that steam may be introduced into the mold to expand the plastic material injected into the mold (col. 11, ll. 55-60). Lemelson also describes heating during the molding process may be accomplished by introducing hot air or gas into the mold and/or that the *mold itself* may be heated (col. 9, ll. 5-25).

4. One of ordinary skill in the art would recognize that it would have been prima facie obvious to heat the mold of Lemelson in order to perform

the foaming expansion described therein, as such heating is conventional and thus within the teachings of Lemelson (Ans. 4 and 12-13).

5. Thus, we determine that even though Lemelson is silent with respect to explicitly teaching heating the mold halves to activate the foam resin, Lemelson nonetheless suggests "heating the first mold half and the second mold half to a sufficient temperature to activate the foam resin" as required by clause (g) of claim 13.

6. Lemelson does not describe that excess skin resin [powder] is "poured out" as required by step (c) of claim 13; if "poured out" requires *removal* of excess powder from the mold. However, it is noted that the periodic inversion of each mold half during rotation will result in excess skin resin being "poured out" of each respective mold half during the rotation, until all the powder is melted to form the skin shell (col. 9, ll. 5-25; col. 10, ll. 17-25).

7. Lemelson invites modifications of the process (col. 8, ll. 53-67):

> It is noted that the apparatus of FIGS. 1-3 may also be modified for the molding of composite articles in a number of steps whereby a first mold is used to produce a first unitary or composite molding [article] and thereafter, either a portion of the first mold retains the molding therein while another mold member is assembled with said portion to define a second molding cavity with the first portion and the molding retained therein after which further material is molded onto the first portion by introducing same into the new mold cavity through either the tubular member forming part of the first portion, a second tubular member disposed in the first mold cavity or through an opening to the newly formed mold assembly.

8. Heisler describes a method for making a hollow shaped article by the sequential steps of: (a) preheating mold halves to a sufficient temperature to cause first and second resin skin layers to form on the respective mold

halves (b) filling the unclamped preheated mold halves with powdered resin, (c) rotating and inclining a mold half such that the excess powder spills out of the mold half, and (d) clamping the two mold halves together to form the hollow article (Ans. 4; col. 5, l. 25 to col. 6, l. 75; col. 7, ll. 40-64; col. 8, l. 52 to col. 9, l. 32).

9. Heisler does not introduce a foam resin into the hollow article.

10. One of ordinary level of skill in the art would be an engineer or scientist who designs molding parts and methods as exemplified in the applied references.

11. One of ordinary level of skill would readily understand that "inverting" is a matter of degree of "inclining" (e.g., inclining an upright object 180 degrees amounts to inverting the object upside down).

PRINCIPLES OF LAW

"Section 103 forbids issuance of a patent when 'the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.'" *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1734 (2007). The legal question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, and (3) the level of skill in the art. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). *See also KSR*, 127 S. Ct. at 1734 ("While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.")

The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art. *See, In re Young,* 927 F.2d 588, 591 (Fed. Cir. 1991).

"The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR*, 127 S. Ct. at 1739. The question to be asked is "whether the improvement is more than the predictable use of prior art elements according to their established functions." *KSR,* 127 S. Ct. at 1740. The Supreme Court also noted in *KSR* that an obviousness analysis "need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *KSR*, 127 S. Ct. at 1741.

Unless the steps of a method claim actually recite an order, the steps are not ordinarily construed to require one. Even if the specification discusses only a single embodiment, the steps are not required to be in the order written if they can be logically performed in another order. *See Altiris Inc. v. Symantec Corp.,* 318 F.3d 1363, 1371(Fed. Cir. 2003).

It has long been established that the selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results. *See In re Burhans,* 154 F.2d 690, 692 (CCPA 1946). Further, "[t]he fact that no single reference shows all the steps and that no reference shows the steps in the exact order named does not change the situation, since, in view of the prior art, what appellant has done would be the obvious thing to do in order to produce the claimed results." *In re Lang*, 97 F.2d 626, 628 (CCPA 1938).

OPINION

We agree with the Examiner that Lemelson describes (FF 1-3), or suggests (FF 4-5), every limitation in claim 13 except for inverting the mold halves such that excess skin resin is poured out (FF 6). Heisler describes that using excess powder and pouring out said excess from a mold is well known (FF 8 and 11). Thus, the issue on appeal is whether the combination of Lemelson and Heisler would have taught or suggested to one of ordinary skill in the art the use of the method steps as required by claim 13.

Appellants' first contention is that Lemelson does not teach a process in which two individual skin layers are formed, and subsequently clamped together to form a single article as required by claim 13 (Br. 4-6). Appellants further argue that foam resin is introduced into the mold halves prior to joining the halves together and that a "subsequent heating step" is required by claim 13 (Br. 8). We disagree that claim 13 is so limited. We decline to read in any particular order of steps that is not explicitly required by the claim. *See Altiris Inc.,* 318 F.3d at 1371. During examination proceedings, claims are given their broadest reasonable interpretation consistent with the specification. *In re Am. Acad. Of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). Limitations from the specification should not be read into the claims, even if only a single embodiment is described. *Am. Acad.*, 367 F.3d at 1369. Thus, we agree with the Examiner that the claim does not require that two *separate* skin halves be formed and then joined (Ans. 10). The claim also does not require clamping together the mold halves *after* the skin is formed (Ans. 9). The plain language of the claim does not require that the foam resin be introduced into the mold halves prior to joining them together, as Appellants contend (Br. 6).

Lemelson does teach inverting the mold halves, since rotating them inherently inverts them (FF 2). While we agree with Appellant that Lemelson does not *remove* excess skin resin from the mold (FF 6), the periodic inversion of the mold halves of Lemelson fairly suggests that excess skin resin would at least temporarily be "poured out" of the respective mold halves as claimed (into the other mold half) (FF 6). A broadest reasonable interpretation of claim 13 clause (c) would appear to require no more than that. Further, contrary to Appellants' remarks (Br. 4), there is a mechanism in Lemelson for introducing the foam resin after the mold halves are combined, since the foam resin may be introduced via the openings 27 in the tubular member 26 after the first hollow shell-like molding (i.e., the skin layer) is formed (col. 5, l. 45 to col. 6, l. 32).

However, even assuming that the claimed "excess skin resin is poured out" means that the excess is removed completely from the mold, Heisler describes the use of this feature in a molding process (FF 8). Appellants contend the combination of Lemelson with Heisler as proposed by the Examiner does not remedy the deficiencies of Lemelson (Br. 7-9). We disagree. Each of Lemelson and Heisler exemplify well established techniques for molding plastic articles. Heisler exemplifies that forming two halves of a plastic article (that is, the skin of the article) and then clamping them together to form a single article is well known. Heisler further teaches that using excess powdered resin and pouring out the excess by inclining a rotating mold is known (FF 8). We find that "inverting" is merely a matter of degree of "inclining" (FF 11). It would have been within the level of ordinary skill in the art to incline the mold half such that it was inverted to ensure complete removal of the excess powder. Ensuring that excess resin

powder was poured out after the two skin halves were formed would have been within the level of skill in the art. As pointed out by the Examiner (Ans. 4), Lemelson invites such modifications to his process (FF 7). Thus, to modify Lemelson to prefabricate the skin in a manner taught by Heisler (namely, filling mold halves with excess powder and inclining/inverting the mold halves to remove excess powder) before filling the skin with foam resin would have been prima facie obvious, following the combined teachings of Lemelson and Heisler.

The Supreme Court noted in *KSR* that an obviousness analysis "need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." 127 S. Ct. at 1741. As pointed out by the Examiner, the selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results. *See In re Burhans,* 154 F. 2d at 690. The fact that no single reference shows all the steps and that no reference shows the steps in the exact order named does not change the situation, since, in view of the prior art, what Appellants have done would have been an obvious thing to do as set forth by the Examiner. *See In re Lang*, 97 F. 2d at 628.

While Appellants are correct that Heisler does not introduce a foam resin into the hollow article (FF 9), we do not find this persuasive of error. The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art. *See In re Young,* 927 F.2d at 591. All of the relevant teachings of the cited references must be considered in determining what they fairly teach to one having ordinary skill in the art. *See In re Mercier*, 515 F. 2d 1161, 1165 (CCPA 1975). Here, the

combined teachings of Lemelson and Heisler exemplify that all the claimed steps are known in the art of molding plastic parts. Thus, to modify Lemelson for the reasons proposed by the Examiner would have been prima facie obvious (Ans 4).

Further, the combination of familiar elements is likely to be obvious when it does no more than yield predictable results, and the question is whether the improvement is more than the predictable use of prior art elements according to their established functions. *KSR*, 127 S. Ct. at 1739, 1740. We find that pouring out the excess skin resin from first and second mold halves of Lemelson achieves the predictable result of removing any excess resin. This may be done by separately forming each skin half in a respective mold half, then clamping the two mold halves together (although as noted previously, the current claim language does not require this order of steps). These steps are well known in the molding art, as exemplified by Heisler, and thus are prima facie obvious (FF 8). Appellants have not shown that there is more than a predictable result flowing from forming the skin halves in separated mold halves that are inverted to remove excess resin, then subsequently clamped together, instead of clamping the mold halves together before making the skin resin.

Therefore, we determine that performing the method steps set out in Appellants' claim 13 would have been prima facie obvious to one of ordinary skill in the art for the foregoing reasons and those set out by the Examiner (Ans. 3-4).

Appellants have failed to successfully rebut this prima facie case with argument or evidence of nonobviousness. We note that Appellants base no argument upon objective evidence of nonobviousness, such as unexpected

results. Accordingly, we hereby sustain the rejections under 35 U.S.C. § 103 of claims 13-24 advanced by the Examiner on this appeal.

OTHER ISSUES

In any further prosecution of this case, the Examiner should consider the "powder tip molding" method discussed in the Background Art (Specification 2: 11-21). Specifically, it appears that Appellants admit, by virtue of describing it as "Background Art", that the process as claimed herein is known, except that a "preformed foam middle layer" was introduced into the mold half, rather than a "foam resin" as set out in claim 13.[3] Thus, the Examiner (and Appellants) should consider the question of whether substituting a "foam resin" would *patentably* distinguish over the prior art method using a "preformed foam layer", or whether using a "foam resin" was simply a known alternative way for one of ordinary skill in the art to form a foam layer in manufacturing a plastic part.

Tsuchihashi (cited in related application SN 10/426,376) exemplifies that forming a first resin layer (a skin layer) by filling a preheated mold with powdered resin, then turning the mold upside down (that is, tipping the mold) to remove excess resin powder, and then introducing a "foam resin" (e.g., a resin which is subsequently activated to form a foam layer, as explicitly claimed in Appellants' claim 17) into a mold after the skin layer was formed, was known in the art of molding plastic parts.

The Examiner should consider whether, in light of the guidance offered by Tsuchihashi on how to prepare a foam layer *in situ* after a first

[3] The Appellants should clarify in more detail what is meant by the phrase "powder tip molding"; it appears that Appellants mean that the mold halves are "tipped" to remove excess powder.

skin layer was formed, including turning the mold upside down to remove excess skin resin powder, one of ordinary skill in the art would have used that familiar treatment to modify the tip molding process described as "Background Art" to obtain a three layered plastic part as claimed, with the results being predictable. *See KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. at 1739 ("The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.").

In any further prosecution of this case, the Examiner should also consider whether a rejection based on the combined teachings of Bartels and Tsuchihashi is applicable. Note related copending SN 10/426,376, the subject of related Appeal 2008-0444, which was decided January 24, 2008, affirming a rejection based on Bartels and Tsuchihashi.[4].

CONCLUSION

For the foregoing reasons and those stated in the Answer, we determine that the Examiner has established a prima facie case of obviousness in view of the reference evidence. This prima facie case has not been adequately rebutted by Appellants' arguments. Therefore, we AFFIRM each ground of rejection presented in this appeal.

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[4] All the claims in related Appeal 2008-0444 (SN 10/426,376) were provisionally rejected under the judicially created doctrine of obviousness-type double patenting over the claims in the instant application. The Appellants did not contest this rejection. In any further prosecution, the Examiner should consider whether the claims of each of these applications should be likewise provisionally rejected over the other.

DECISION

The Examiner's decision is AFFIRMED.

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

AFFIRMED

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