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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte FRANK-THOMAS LENTES, KARIN NAUMANN,
MONIKA BUERKNER-BRIGALDINO,
NORBERT GREULICH-HICKMANN, and JAN PHILIPP STEIGLEDER

Appeal 2018-007936¹
Application 14/739,780
Technology Center 1700

Before JEFFREY T. SMITH, MICHAEL G. McMANUS, and
MERRELL C. CASHION, JR., *Administrative Patent Judges*.

SMITH, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from a final rejection of claims 1, 2, 6–14, and 19–29. We have jurisdiction under 35 U.S.C. § 6.

We AFFIRM.

¹ Appellant and the real party in interest is Schott AG. (App. Br. 1).

Appellant's invention is generally directed to a method for producing a glass article from a glass melt and a device for producing a glass article from a glass melt. (Spec. ¶ 2). Claims 1 and 14 illustrate the subject matter on appeal and are reproduced below:

1. A method for producing a glass article from a glass melt, comprising:

continuously introducing the glass melt into a stirrer vessel having an atmosphere so as to define an upper surface of the glass melt at the atmosphere,

arranging at least one blade stirrer having at least one stirrer blade which is fixed to a stirrer shaft substantially vertically in the stirrer vessel with the at least one stirrer blade being configured and located with respect to the upper surface so that the glass melt at the upper surface is not drawn from the upper surface into the stirrer vessel by the at least one blade stirrer during stirring,

stirring the glass melt in the stirrer vessel by the at least one blade stirrer so that a stable skin forms on the upper surface to prevent depletion of glass components that are susceptible to evaporation,

continuously discharging the glass melt from the stirrer vessel, and

shaping the glass melt to obtain the glass article.

14. A device for producing a glass article from a glass melt, comprising:

a continuous glass introduction device to continuously introduce the glass melt into a stirrer vessel having an atmosphere so as to define an upper surface of the glass melt at the atmosphere,

a glass stirring device having at least one blade stirrer in the stirrer vessel, the at least one blade stirrer having a plurality of stirrer blades fixed to a stirrer shaft arranged substantially vertically in the stirrer vessel, the plurality of stirrer blades comprising three upper stirrer blades proximate to the upper surface and two lower stirrer blades remote from the upper surface, the three upper stirrer blades being arranged on the stirrer shaft each offset by 10° and configured to convey downwards, the two lower stirrer blades being arranged on the stirrer shaft each offset by -10° and configured to convey upwards,

a continuous glass discharge to continuously discharge the glass melt from the stirrer vessel,

and

a glass shaping device configured to shape the glass melt into the glass article.

The following rejections are presented for our review:

I. Claims 1, 2, 6–8, 10, and 13 rejected under 35 U.S.C.

§ 102(a)(1) as anticipated by or, in the alternative, under 35 U.S.C.

§ 103 as obvious over Berndhaeuser (US 2011/0083474 A1, published Apr. 14, 2011).

II. Claim 9 rejected under 35 U.S.C. § 103 as unpatentable over Berndhaeuser and Burdette (US 2006/0042318 A1, published Mar. 2, 2006).

III. Claims 11, 12, 14, and 19–29 rejected under 35 U.S.C. § 103 as unpatentable over Berndhaeuser.

The complete statement of the rejections on appeal appears in the Answer. (Ans. 4–11).

OPINION

In response to the Examiner’s rejections, Appellant has provided arguments for four specific groups of claims in the principal brief. Specifically, Group I claims 1, 6–13, and 28; Group II claims 2, 6, 8–10, 12, 13, and 29; Group III claims 14 and 19–26; and Group IV claim 27. Appellant indicates the claims within each group stand or fall together. (App. Br. *generally*). We will address the claims as argued by Appellant.²

Group I Claims 1, 6–13, and 28

Appellant has limited the arguments to independent claim 1. (App. Br. 4–6). Claim 1 is reproduced from the Appendix to the Appeal Brief below:

1. A method for producing a glass article from a glass melt, comprising:

continuously introducing the glass melt into a stirrer vessel having an atmosphere so as to define an upper surface of the glass melt at the atmosphere,

² In the Reply Brief, Appellant presents new arguments for claim 6 (Reply Br. 4–5) that could have been presented in the principal brief. A new argument not timely presented in the Appeal Brief will not be considered when filed in the Reply Brief, absent a showing of good cause explaining why the argument could not have been presented in the Appeal Brief. *See Ex parte Borden*, 93 USPQ2d 1473, 1474 (BPAI 2010) (informative) (“[T]he reply brief [is not] an opportunity to make arguments that could have been made in the principal brief on appeal to rebut the Examiner’s rejections, but were not.”); *see also Optivus Tech., Inc. v. Ion Beam Applications S.A.*, 469 F.3d 978, 989 (Fed. Cir. 2006) (argument raised for the first time in the Reply Brief is considered waived); *see also* 37 C.F.R. § 41.37 and § 41.41. Because the record contains no such showing, we will not consider the new arguments in the Reply Brief.

arranging at least one blade stirrer having at least one stirrer blade which is fixed to a stirrer shaft substantially vertically in the stirrer vessel with the at least one stirrer blade being configured and located with respect to the upper surface so that the glass melt at the upper surface is not drawn from the upper surface into the stirrer vessel by the at least one blade stirrer during stirring,

stirring the glass melt in the stirrer vessel by the at least one blade stirrer so that a stable skin forms on the upper surface to prevent depletion of glass components that are susceptible to evaporation,

continuously discharging the glass melt from the stirrer vessel, and

shaping the glass melt to obtain the glass article.

Appellant argues the claim language requiring skin formation at the top of the glass melt specifies arrangements of elements and stirring conditions. Appellant specifically states:

“. . . [T]he glass melt at the upper surface is not drawn from the upper surface into the stirrer vessel” and “stirring: so that a stable skin forms on the upper surface” and further recites the structural result of the claimed “stable skin”, namely to “prevent depletion of glass components that are susceptible to evaporation”.

(App. Br. 4) (emphasis omitted).

Appellant points to the holding in *Hoffer v. Microsoft Corp.*, 405 F.3d 1326 (Fed. Cir. 2005) to support the proposed claim interpretation. (App. Br. 4).

We agree with Appellant’s interpretation of claim 1 as affirmatively reciting the arrangement and stirring steps and the result of the stirring steps.

With this interpretation we analyze the prior art cited by the Examiner.

The Examiner found Berndhaeuser discloses a method for producing a glass article from a glass melt, comprising: continuously introducing the glass melt into a stirrer vessel via upper inlet (4), stirring the glass melt in the stirrer vessel by stirring blades (11) fixed to a stirrer shaft and arranged vertically in the stirrer vessel, continuously discharging the glass melt from the stirrer vessel via lower outlet (5), and shaping the glass melt to obtain the glass article as required by independent claim 1. (Final Act. 3–4). The Examiner determined that Berndhaeuser anticipates or renders obvious the subject matter of claim 1 because:

Berndhaeuser teaches an embodiment where stirring does not cause the upper surface to be drawn in (Fig. 2a-3b and Fig. 4a- first stirrer). Berndhaeuser states, “all of the entering fluid enters the inner stirring region of the stirrer and is fed axially downward” [0049], and, “the inflowing fluid is not diverted toward the upper region of the stirrer, but instead it enters the inner stirring region of the stirrer directly from the inlet” [0047] regarding Fig 2b. One skilled in the art would expect that where the inflowing fluid is entering right into the stirrer as shown in Fig 2b and 3b and the glass on the surface is not being drawn in, a stable skin would necessarily form.

As evidence to support this inherency statement, the specification as originally filed states “the glass surface in the stirrer vessel is substantially not touched during the stirring- apart from, for example, the stirrer shaft of the blade stirrer- so that a stable [‘]skin[’] forms on the glass surface, preventing further depletion of glass components that are susceptible to evaporation” [(Spec. ¶ 62)].

(Final Act. 3–4) (first two alterations in original, emphasis omitted).

For reasons set forth below, we reverse the anticipation rejection, however, we affirm the obviousness rejection.

“[T]he [E]xaminer bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability.” *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). “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. of Cal.*, 814 F.2d 628, 631 (Fed. Cir. 1987). Anticipation, including by inherency, “may not be established by probabilities or possibilities.” *In re Oelrich*, 666 F.2d 578, 581 (CCPA 1981).

Berndhaeuser discloses a glass melt can be formed under conditions wherein the blades’ shape, azimuth angle, and distances thereof relative to one another, and the stirring vessel can be optimized for respective stirring task. (Berndhaeuser ¶ 54). Consequently, the Examiner has not directed us to evidence that establishes Berndhaeuser necessarily operates under conditions wherein the inflowing fluid is entering right into the stirrer, as shown in Figures 2b and 3b, without drawing in the glass on the surface and necessarily forming a stable skin as claimed. For these reasons, we do not sustain the anticipation rejection.

However, Berndhaeuser discloses the operating conditions can be optimized through the use of physical or mathematical simulations to achieve respective stirring task. (Berndhaeuser ¶ 54). Berndhaeuser further discloses:

By optimizing the rotational speed of the stirrers, diameter, number of stirrer blades, feed action of the stirrer blades, the helical arrangement thereof on the stirrer shaft and

comparable parameters as well as through mathematical and/or physical simulations, optimized stirring results can be achieved for the respective application.

(Berndhaeuser ¶ 60).

Consequently, a person of ordinary skill in the art, following the teachings of Berndhaeuser, would have sufficient skill to form a glass melt wherein the reaction vessel is operated with the appropriate design and rotational speed of the stirrers so that the glass melt at the upper surface is not drawn from the upper surface into the stirrer vessel by the at least one blade stirrer during stirring so that a stable skin is formed at the upper surface of the glass melt.

Accordingly, we are of the opinion that, prima facie, one of ordinary skill in this art routinely following the teachings of Berndhaeuser would have reasonably arrived at the claimed method for producing a glass article from a glass melt, wherein stirring the glass melt in the stirrer vessel occurs at a rate so that a stable skin forms on the upper surface, as required by claim 1, without resort to Appellant's Specification. *See, e.g., KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 417, 418 (2007) (“[A]nalysis [of whether the subject matter of a claim would have been obvious] 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.”); *In re Translogic Tech. Inc.*, 504 F.3d 1249, 1260 (Fed. Cir. 2007) (“[A] flexible approach to the [teaching, suggestion, or motivation to combine] test prevents hindsight and focuses on evidence before the time of invention without unduly constraining the breadth of knowledge available to one of ordinary skill in the art during the obviousness analysis.” (citation omitted)); *In re Kahn*, 441 F.3d 977, 985–88

(Fed. Cir. 2006); *In re Keller*, 642 F.2d 413, 425 (CCPA 1981) (“[T]he test [for obviousness] is what the combined teachings of the references would have suggested to those of ordinary skill in the art.”); *In re Sovish*, 769 F.2d 738, 743 (Fed. Cir. 1985) (skill is presumed on the part of one of ordinary skill in the art); *In re Bozek*, 416 F.2d 1385, 1390 (CCPA 1969) (“Having established that this knowledge was in the art, the examiner could then properly rely, as put forth by the solicitor, on a conclusion of obviousness ‘from common knowledge and common sense of the person of ordinary skill in the art without any specific hint or suggestion in a particular reference.’”); *see also In re O’Farrell*, 853 F.2d 894, 903–04 (Fed. Cir. 1988) (“For obviousness under § 103, all that is required is a reasonable expectation of success.”).

For the foregoing reasons the rejection of claims 1, 6–8, 10, and 13 under 35 U.S.C. § 102(a)(1) as anticipated by Berndhaeuser is reversed and the rejection of claims 1, 6–13, and 28 under 35 U.S.C. § 103 as obvious over Berndhaeuser is affirmed.

Group II claims 2, 6, 8–10, 12, 13, and 29

Appellant has limited the arguments to independent claim 2. (App. Br. 6–7). Claim 2 is reproduced from the Appendix to the Appeal Brief below:

2. A method for producing a glass article from a glass melt, comprising:
 - continuously introducing the glass melt into a stirrer vessel having an atmosphere so as to define an upper surface of the glass melt at the atmosphere,
 - arranging at least one blade stirrer having at least one stirrer blade which is fixed to a stirrer shaft substantially

vertically in the stirrer vessel with the at least one stirrer blade being configured and located with respect to the upper surface so that the glass melt at the upper surface is drawn from the upper surface into the stirrer vessel by the at least one blade stirrer during stirring,

stirring the glass melt in the stirrer vessel by the at least one blade stirrer so that a formation of the upper surface of the glass melt with a different composition from the composition of the glass melt introduced is prevented,

continuously discharging the glass melt from the stirrer vessel, and

shaping the glass melt to obtain the glass article.

Appellant argues the claim language requiring the prevention of the formation of a different composition at the upper surface of the glass melt specifies arrangements of elements and stirring conditions. Appellant specifically states:

[T]he prevention of different compositions of claim 2 is an integral part of the invention as disclosed at least at paragraphs [0062] and [0059], respectively, of the present application. Thus, and much like the elements in the *Hoffer* case, Appellant submits that the claimed result is more than an intended result of the affirmatively recited arranging and stirring steps.

(App. Br. 6–7) (second and third alterations in original).

We agree with Appellant’s interpretation of claim 2 as affirmatively reciting the arrangement and stirring steps and the result of the stirring steps.

With this interpretation we analyze the prior art cited by the Examiner.

The Examiner relies on Berndhaeuser for disclosing a method for producing a glass article from a glass melt that anticipates or renders obvious the subject matter of claim 2.³ (Final Act. 3–4).

³ As discussed above when addressing claim 1.

Berndhaeuser is directed to solving the need for methods and devices that enable even more efficient homogenization of glass melts.

(Berndhaeuser ¶ 16). Berndhaeuser further discloses all glass inhomogeneities enter into the stirrer system, reach the inner stirring region between the stirrer shaft and the ends of the stirrer blades, and are reduced there by means of expansion, chopping, and spatial redistribution.

(Berndhaeuser ¶ 20). Consequently, Berndhaeuser describes to a person of ordinary skill in the art the arrangement and stirring steps resulting in homogenization of glass melts and prevention of different compositions as required by claim 2.

Moreover, as discussed above, when addressing claim 1, Berndhaeuser discloses the operating conditions can be optimized through the use of physical or mathematical simulations to achieve respective stirring task.

Consequently, a person of ordinary skill in the art following the teachings of Berndhaeuser would have sufficient skill to form a glass melt, wherein the reaction vessel is operated with the appropriate design and rotational speed of the stirrers for homogenization of the glass melt.

For the foregoing reasons the rejection of claims 2, 6, 8, 10, and 13 under 35 U.S.C. §§ 102(a)(1) over Berndhaeuser is affirmed and the rejection of claims 2, 6, 8–10, 12, 13, and 29 under 35 U.S.C. § 103 as over Berndhaeuser is affirmed.

Groups III and IV claims 14 and 19–27

The Examiner determined that the arrangement of the blades required by the subject matter of claims 14 and 19–27 would have been obvious to a

person of ordinary skill in the art through routine optimization. (Final Act. 8–12).

Appellant argues Berndhaeuser does not disclose the claimed configuration of stirring blades as required by claims 14 and 19–27. (App. Br. 7–11).

We agree with the Examiner’s obviousness determination. As stated above when addressing claim 1, Berndhaeuser discloses the operating conditions can be optimized through the use of physical or mathematical simulations to achieve respective stirring task. (Berndhaeuser ¶ 54).

Berndhaeuser specifically discloses the optimizable parameters include

the rotational speed of the stirrers, diameter, number of stirrer blades, feed action of the stirrer blades, the helical arrangement thereof on the stirrer shaft and comparable parameters as well as through mathematical and/or physical simulations, optimized stirring results can be achieved for the respective application.

(Berndhaeuser ¶ 60).

Consequently, a person of ordinary skill in the art, following the teachings of Berndhaeuser, would have sufficient skill to form a glass melt wherein the reaction vessel is formed with the arrangement of the blades required by the subject matter of claims 14 and 19–27.

For the foregoing reasons, the rejection of claims 14 and 19–27 under 35 U.S.C. § 103 over Berndhaeuser is affirmed.

CONCLUSION

In summary:

| Claims Rejected | Basis | Affirmed | Reversed |
|------------------------|--|--------------------------|-----------------------|
| 1, 2, 6–8, 10, and 13 | § 102(a)(1) Berndhaeuser | 2, 6, 8, 10, and 13 | 1, 6–8, 10, and 13 |
| 1, 2, 6–8, 10, and 13 | § 103 Berndhaeuser | 1, 2, 6–8, 10, and 13 | |
| 9 | § 103(a) Berndhaeuser and Burdette | 9 | |
| 11, 12, 14, and 19–29 | § 103(a) Berndhaeuser | 11, 12, 14, and 19–29 | |
| Outcome | | 1, 2, 6–14, and 19–29 | |

TIME PERIOD

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

AFFIRMED