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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte HERVE THELLIER, CHRISTOPHE MACHURA,
JEROME GOBIN and GILLES GARNIER

Appeal 2011-012857
Application 10/550,736
Technology Center 1700

Before CHUNG K. PAK, CHARLES F. WARREN, and
DEBORAH KATZ, *Administrative Patent Judges*.

WARREN, *Administrative Patent Judge*.

DECISION ON APPEAL

Applicants appeal to the Board from the final rejection of claims 13-26. We have jurisdiction. 35 U.S.C. §§ 6 and 134(a) (2002); 37 C.F.R. § 41.31(a) (2010).

An oral hearing was held January 25, 2013.

We affirm the decision of the Primary Examiner.

Claim 13 illustrates Appellants' invention of a method of simultaneously bending two or more superposed glass sheets, with reference to Specification Figures 2, 5D-G, and 6 (Spec. 15:27 to 17:18, 19:7-24), and

is representative of the claims on appeal:

13. A method of simultaneously bending two or more superposed glass sheets, comprising the sequential steps of:

allowing the glass sheets (3) to sag under gravity (Fig. 2B),

placing a central region of the superposed glass sheets (3) into contact with a male former (2) in a bending cell, said male former (2) being surrounded by a passage between the male former (2) and a surrounding skirt (16), by advancing female former (4) supporting the superposed glass sheets (3) toward the male former (2) located above the female former (4), while continuously supporting the glass sheets (3) with the female former (4) (Fig. 2C);

pressing a peripheral region of the superposed glass sheets (3) between the male former (2) and the female former (4) to clamp together the edges of the glass sheets (3) to seal the space between the sheets (3), wherein the glass sheets (3) are continuously supported by the female former (4) prior to the pressing step and until at least the commencement of the pressing step (Figs. 2C, 5D);

applying a partial vacuum to an uppermost one of the superposed glass sheets (3) through the convex surface of the male former (2), which has means for applying a partial vacuum through the convex surface (Fig. 6), while continuing the pressing step, wherein application of the partial vacuum commences after the upper glass sheet (3) has made contact with the male former (2) (Fig. 2D, 5E);

discontinuing the pressing step by separating the male former (2) from the female former (4), the superposed glass sheets (3) remaining in contact with the male former (2) under the effect of a partial vacuum at least partially applied through the passage between the male former (2) and the skirt (16) surrounding the male former (2) (Figs. 2D, 5E, 6);

while the superposed glass sheets (3) are in contact with the male former (2) under the effect of the partial vacuum, bringing a cooling support (15) under the glass sheets (3) (Fig. 5F);

stopping the partial vacuum to allow the superposed glass sheets (3) to rest on the cooling support (15) (Fig. 5G); and

taking the superposed glass sheets (3) away for cooling the glass (3) outside the bending cell (Fig. 5G).

Appellants request review of the grounds of rejection under 35 U.S.C. § 103(a) advanced on appeal by the Examiner: claims 13-18, 20, 21 and 23-26 over Herrington (US 5,292,356) and Kuster (US 5,713,976); and claims 19 and 22 over Herrington, Kuster and Morin (US 6,138,477). App. Br. 4; Ans. 4, 7.

We decide this appeal on claims 1 and 15 because Appellants argue only claims 15 and 24 as a separate group and do not advance a separate argument with respect to the second ground of rejection. *See* App. Br. 9. 37 C.F.R. § 41.37(c)(1)(vii) (2010).

OPINION

We are of the opinion Appellants have not established that the Examiner erred in concluding that one of ordinary skill in the art would have combined Herrington and Kuster, common to both grounds of rejection, and thence would have been led to modify Herrington's press bending apparatus 18 for, among other things, superposed glass sheets S, by modifying male press member 29 to include flange or skirt 17 that surrounds convex bending block or male former 11 forming gap 41 of Kuster's press bending apparatus 10 for superposed glass sheets 2", in the reasonable expectation that the air passing over the lower sheet of the superposed glass sheets and through the gap between the flange or skirt would produce a partial vacuum which at least in part presses the superposed glass sheets S against convex shaping surface 31 of male press member 29 of Herrington in the same manner that air passing over the lower sheet of superposed glass sheets 2" and through gap 41 between convex bending block or male former 11 and flange or skirt 17 presses superposed glass sheets 2" against convex bending block or male former 11 as taught by Kuster, thus arriving at a method of simultaneously

bending superposed glass sheets encompassed by representative claim 1. Ans. 4-5, 8-9; App. Br. 5-9; Reply Br. 1-3. *See* Herrington col.4 ll.28-25 and 51-54, col.5 ll.9-12, 28-31, and 43-51, col.6 ll.1-18, col.7 ll.1-6 and 23-49, col.8 l.48 to col.9 l.16, Figs. 2, 3; Kuster abstract, col.2 l.3 to col.3 l.6, col.4 l.6 to col.5 l.15, Figs. 1, 2.

Appellants principally contend that the combination of Herrington and Kuster would not have disclosed a method encompassed by claim 13 to one of ordinary skill in the art because neither reference would have disclosed the step of commencing the application of a partial vacuum to superposed glass sheets 3 after superposed glass sheets 3 have made contact with male former 2 while supported by female former 4 as specified in claim 13. App. Br. 5, 6-7, 8; Reply Br. 1-3.

Appellants contend that Herrington would have disclosed that while negative pressure is used to assist in the shaping of glass sheets S, the negative pressure is also used to assist in the “handling” of glass sheets S “which indicates that it is initiated before the glass sheet has contacted the upper mold member. That is, the description that the negative air pressure also assists in the handling of the glass sheet suggests that it is used to raise the glass sheet into contact with the upper mold member.”¹ App. Br. 5 (citing Herrington col.7 ll.23-25). In other words, Appellants argue that

¹ We disagree with Appellants’ contention that Herrington would have disclosed to one of ordinary skill in the art only a method of bending a single glass sheet. App. Br. 5, 6, 7 (citing Herrington col.1 ll. 29 and 38-39, col.3 ll.38, 52, 58, col.7 l.28). Indeed, we find Herrington would have disclosed that the described method is applicable to automotive glazing closures having multiple layered sheets of glass, such as laminated windshields, as the Examiner contends. Ans. 4 (citing Herrington col.4 ll.28-35).

Herrington's teaching that the vacuum assists in shaping the glass sheets being pressed "implies that the vacuum continues during the pressing step" without indicating "the time that the vacuum commences." App. Br. 7.

Appellants further contend Kuster would have disclosed that a vacuum is applied through gap 41 between upper bending block 11 and skirt 17 only "to raise the sheets from the lower bending ring 3 . . . and the skirt 17 is provided to enhance the 'lifting effect.'" App. Br. 8 (citing Kuster col.4 ll.15-19, 23-34 and 31-32). Appellants argue that in Kuster's alternative step of lowering upper bending block 11 "into contact with the bending ring 3," a vacuum "is not required to raise the glass sheets to the upper bending block 11," and thus "no vacuum is required." App. Br. 8.

In response to the Examiner's argument that Kuster teaches "the desired partial vacuum and force to correct the bending of the glass sheets" (Ans. 9 (citing Kuster col.4 ll.32-34)), Appellants point to Kuster's disclosure at column 4, lines 23-35, that the gap between flange or skirt 17 and convex bending block 11 reduces air flow "without reducing the lifting effect of the partial vacuum. In this way, it is possible[] to obtain the desired partial vacuum and consequently the force required to correct the bending of the glass sheets." Reply Br.1-2. On this basis, Appellants again maintain that Kuster's disclosure that flange or skirt 17 reduces air flow "without reducing the lifting effect of the partial vacuum" would teach that the advantage of the flange or skirt "is only relevant where the glass sheet is to be lifted from the lower bending ring." Reply Br. 2. Thus, Appellants submit, the lifting advantage of flange or skirt 17 disclosed by Kuster would not apply to Herrington, and therefore, it would not have been obvious to include a flange or skirt in Herrington's apparatus. Reply Br. 2-3.

We find Herrington would have disclosed to one of ordinary skill in the art that female press member or female former 30 is vertically mounted to lift sheets S and press sheets S against upper press member or male former 29 and then lower the bent sheets S for removal from bending apparatus 18, as the Examiner points out. Ans. 4. Herrington col.5 ll.44-51; *see also* col.6 ll.1-18, col.8 l.48 to col.9 l.52, Figs. 2, 3. We find Herrington would have described that male press member 29 is “commonly adapted to provide positive and negative air pressure to assist in the shaping and handling of the glass sheets.” Herrington col.7 ll.23-25; *see* Fig. 3. Herrington would have disclosed with respect to “shaping,” that “[t]he negative air pressure or vacuum, for example may be employed on the shaping surface [31] of the upper mold [29] to assist in the shaping of the glass sheet [S] as the sheet [S] is being pressed between the opposed shaping surfaces [30, 31].” Herrington col.7 ll.25-29; *see* Fig. 3. Herrington would have disclosed with respect to “handling,” that “[a]fter bending, the sheet [S] is retained by vacuum against the upper shaping surface [31] as the lower mold member [30] is retracted and a carrier ring is brought into position to receive the sheet [S] and convey it out of the press area.” Herrington col.7 ll.29-33; *see* Fig. 3. We find that Herrington would have further disclosed that when the carrier ring is in position, “[t]he vacuum is discontinued and a slight positive pressure is generally initiated to release the sheet [S] from the upper shaping surface [31] and deposit it on the carrier ring.” Herrington col.7 ll.33-36; *see* Fig. 3.

We find Kuster would have disclosed to one of ordinary skill in the art that in bending superposed glass sheets for compound glazings, such as windscreens for motor vehicles, pre-bent “glass sheets are applied . . . to the

upper monolithic convex bending block, whose shape corresponds to the desired final shape of the glass sheets, by suction of air around the end of the monolithic convex bending block which is applied to the whole surface of the sheets.” Kuster col.2 ll.14-20 *see also* col.2 ll.30-34. Kuster would have disclosed that this method subjects the upper glass sheet to bending to the desired shape by creating a partial vacuum between the surface of the monolithic convex bending block, which has an air-permeable surface, and the upper glass sheet, and at the same time, also subjects the lower sheet to the correction bending which would not occur “if the pair of glass sheets is sucked by a partial vacuum acting an [sic, on] the upper surface of the [upper] glass sheet.” Kuster col.2 ll. 34-50.

We find Kuster would have disclosed that “the upper bending block 11 is lowered by means of the lifting device 15, until the pre-bent pair 2' of glass sheets can be brought by suction against the upper monolithic convex bending block 11,” wherein the suction “is sufficient to raise the pair of glass sheets from the lower annular bending ring 3.” Kuster col.4 ll.6-17, Fig. 1. Kuster would have further disclosed that “it is not essential to completely raise the pre-bent glass sheets from the lower annular bending ring 3” because “it is also possible to lower the upper monolithic convex bending block 11 through a distance such that the glass sheets remain in contact with the bending ring 3.” Kuster col.4 ll.17-22, Fig. 1.

We find Kuster would have disclosed that gap 41 between flange or skirt 17 of casing 13 and convex bending block 11 can be adjusted to reduce the flow of air at the edge of the glass sheets “without reducing the lifting effect of the partial vacuum” and still obtain the desired bending of the glass sheets. Kuster col.4 ll.23-34, Fig. 1. Kuster would have disclosed that air-

permeable forming plate 36, which also has openings 37, of convex bending block 11 has the “primary function” of separating “the bent pair of glass sheets from the forming surface after the . . . bending operation” using positive pressure to replace the glass sheets on annular bending ring 3.

Kuster col.4 ll.49-62, Fig. 2. Kuster would have disclosed that air is sucked through gap 41 and thus “perpendicularly to the surface of the pair of glass sheets at its periphery . . . produces the described lifting effect and presses the two glass sheets against the bending surface of the forming plate 36.”

Kuster col.5 ll.9-14, Fig. 2.

On this record, we are not convinced that a preponderance of the evidence in Herrington and Kuster supports Appellants’ contention that the combined references would not have disclosed to one of ordinary skill in the art a method that includes the step of commencing the application of a partial vacuum to superposed glass sheets 3 after superposed glass sheets 3 have made contact with male former 2 while supported by female former 4 as specified by claim 13. We disagree with Appellants’ contention that one of ordinary skill in the art would not have reasonably inferred from the disclosure of “shaping and handling” at column 7, lines 23-36, of Herrington that “handling” includes commencing a vacuum to “handle” or raise sheets S from lower mold member 30 into contact with upper mold member 29 before sheets S are pressed against upper mold member 29 by lower mold member 30. Indeed, a number of disclosures in Herrington taken as a whole describe an initial step in which sheets S are pressed between upper male press member 29 and lower mold member 30. With respect to “shaping,” Herrington describes in the same paragraph that the vacuum assists in the bending or “shaping” occurring while sheets S are pressed between the

opposing upper and lower shaping surfaces. Thus, we determine that one of ordinary skill in the art would have reasonably determined from Herrington that the vacuum that assists the opposing surfaces in bending or “shaping” the pressed sheets, commences *after* the sheets are pressed between the opposing surfaces as claimed. We are not convinced otherwise by Appellants’ position with respect to Herrington’s description of the use of vacuum in “handling” the bent sheet in the same paragraph. Indeed, we fail to find any additional disclosure in Herrington taken as a whole which supports Appellants’ contention that one of ordinary skill in the art would have inferred from the sole disclosure with respect to “handling” that the vacuum would have been used to “handle” sheets S prior to the sheets being pressed between the opposing upper and lower shaping surfaces, and Appellants do not call such disclosure to our attention.

We are further unconvinced by Appellants’ contentions that Kuster would have disclosed that flange or skirt 11 is used to form a vacuum only to raise superposed glass sheets 2" from lower bending ring 3 to upper bending block 11, and thus Kuster’s method that includes lowering upper bending block 11 to contact the sheets on lower bending ring 3 does not require a vacuum formed in that manner. Kuster taken as a whole would have taught one of ordinary skill in the art that the vacuum formed via gap 41 formed by flange or skirt 17 is used to press the superposed glass sheets 2" against upper bending block 11 in bending the sheets, without limitation based on the manner in which the sheets contact upper bending block 11. Indeed, we fail to find in Kuster any teaching of a method in which the vacuum formed via gap 41 formed by flange or skirt 17 is not used in bending the sheets, and Appellants have not called our attention to such disclosure in Kuster which

is necessary to support their contention that is contrary to the teachings of the reference.

We now consider claim 15, which further limits claim 13 by specifying that during the step of applying the partial vacuum through male former 2 covered with a fibrous material, positive pressure is also applied through the male former in a central region of the glass sheets. The Examiner finds that the vacuum and positive pressure applied through Herrington's adopted upper mold member correspond to the same pressures specified in claim 15. Ans. 5. Appellants submit that Herrington does not teach the step of applying both pressures in the same step as specified in claim 15, which step "reduces the risk off the glass being marked by contact." App. Br. 9 (citing Herrington col.7 ll. 33-36). We found above that Herrington's upper mold member or male former 29 is commonly adopted to provide both positive and negative pressure, the latter a vacuum to assist in shaping the glass against the upper mold member and the former to release and move the glass sheets away from the upper shaping surface.

We are of the view that one of ordinary skill in the art would have reasonably recognized that Herrington's vacuum and positive pressure used to adjust the position of the glass sheets relative to the upper mold member, can be used to adjust the position of the sheets relative to the member during the step of applying the vacuum in shaping the glass sheets. Thus, Appellants' submitted purpose of using the vacuum and the positive pressures in the same step is to reduce the risk of marking the glass by contact with the male former does not patentably distinguish the method encompassed by claim 15 over Herrington.

Appellants do not separately argue the second ground of rejection.
App. Br. 9.

Accordingly, based on our consideration of the totality of the record before us, we have weighed the evidence of obviousness found in the combined teachings of Herrington and Kuster alone and as combined with Morin with Appellants' countervailing evidence of and argument for nonobviousness and conclude, by a preponderance of the evidence and weight of argument, that the claimed invention encompassed by appealed claims 13-26 would have been obvious as a matter of law under 35 U.S.C. § 103(a).

The Primary Examiner's decision 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)(1)(iv).

AFFIRMED

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