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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte WERNER STAHLECKER

Appeal 2018-004615
Application 12/653,833
Technology Center 3700

Before JILL D. HILL, LISA M. GUIJT, and ERIC C. JESCHKE, *Administrative Patent Judges*.

GUIJT, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant[1] appeals under 35 U.S.C. § 134(a) from the Examiner's rejection[2] of claims 1–7 and 17–21. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM-IN-PART.

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[1] Appellant identifies the real party in interest as PTM Packaging Tools Pte. Ltd. Appeal Br. 1.

[2] Appeal is taken from the Final Office Action dated May 10, 2017.

STATEMENT OF THE CASE

Claims 1 and 17, reproduced below with disputed limitations italicized for emphasis, are the independent claims on appeal and also exemplary of the subject matter on appeal,

> 1. A paper cup comprising
>
> *a cup sleeve and a bottom connected in a substantially liquid-tight manner to the cup sleeve*,
>
> wherein the cup sleeve has a top curl shaped at an end of the cup sleeve opposite the bottom,
>
> wherein *the cup sleeve is arranged* between the bottom and the end of the cup sleeve opposite the bottom *at least in some sections at an angle greater than or equal to 10º relative to a central longitudinal axis of the paper cup*, and
>
> one of the some sections includes a top of the cup sleeve adjacent the top curl.
>
> 17. A paper cup comprising:
>
> a substantially frusto-conical shaped cup sleeve; and
>
> *a bottom connected in a substantially liquid-tight manner to a bottom are of the cup sleeve*,
>
> wherein the cup sleeve includes an outwardly folded top edge at a top area of the cup sleeve and *an outer wall extending at least in some sections at an angle greater than or equal to 10º relative to a central longitudinal axis of the cup sleeve*; and
>
> wherein one of the some sections includes the top area of the cup sleeve adjacent the outwardly folded top edge.

THE REJECTIONS

I. Claims 25 and 27 stand rejected under 35 U.S.C. § 112, second paragraph, as indefinite.

II. Claims 1, 2, 17–22, 24, 25, and 27 stand rejected under 35 U.S.C. § 102(b) as anticipated by Merta (US 2,272,920; issued Feb. 10, 1942).

III. Claims 1–4, 7, 17–22, 24, 25, and 27 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Frost '537 (US 2008/0023537 A1; published Jan. 31, 2008) and Merta.

IV. Claims 5 and 6 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Frost '537, Merta, and Fritz (US 2006/0289609 A1; published Dec. 28, 2006).

V. Claims 23 and 26 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Frost '537, Merta, and Frost '910 (US 7,451,910 B2; published Nov. 18, 2008).

ANALYSIS

Rejection I

The Examiner finds that the limitation "the top area," as recited in claims 25 and 27, lacks antecedent basis, and therefore, claims 25 and 27 are indefinite. Final Act. 2. In particular, the Examiner determines that because claims 25 and 27 recite "'the top area of *the cup sleeve adjacent the outwardly folded top edge*,' . . . it is unclear what is being further limited by Claims 25 and 27 since Claim 17 does not set forth a top area 'of the cup sleeve adjacent the outwardly folded top edge'." Ans. 7.

Appellant argues that claims 25 and 27 depend from independent claim 17, which provides antecedent basis for the limitation "the top area" by reciting "a top area of the cup sleeve." Appeal Br. 4.

Independent claim 17 recites, in relevant part, "wherein the cup sleeve includes an outwardly folded top edge at a top area of the cup sleeve," and further, "an outer wall extending at least in some sections . . . ; wherein one of the some sections includes the top area of the cup sleeve adjacent the outwardly folded top edge." Appeal Br., Claims App. 2. Thus, claim 17 defines a top area of the cup sleeve (i) as including the outwardly folded top edge; and (ii) as being included in a certain section adjacent the outwardly folded top edge. Dependent claims 25 and 27 recite, in relevant part, "wherein the top area of the cup sleeve adjacent the outwardly folded top edge" is either "a continuously smooth surface" or "a continuously planar surface," respectively. Appeal Br., Claims App. 3, 4.

We determine that the top area of the cup sleeve adjacent the outwardly folded top edge, as recited in claims 25 and 27, has sufficient antecedent basis relative to the top area of the cup sleeve recited in claim 17. In particular, the top area of the cup sleeve recited in claim 17 is the same top area of the cup sleeve further limited by claims 25 and 27 (i.e., to have either a continuously smooth or planar surface).

Accordingly, we do not sustain the Examiner's rejection of claims 25 and 27 as indefinite.

Rejection II

Regarding independent claims 1 and 17, the Examiner finds that Merta teaches "a cup sleeve" (i.e., cup 25) and "a bottom connected in a substantially liquid-tight manner to the cup sleeve," as claimed, wherein the Examiner "considers the bottom of Merta's conical cup to be the bottom vertex of said conical cup." Final Act. 3. In particular, the Examiner finds "Merta's cup [has] an *integrally* connected bottom in order to create a

conically shaped drinking cup." Ans. 7. The Examiner determines that the claims "do not necessitate that the bottom and cup sleeve be made from two distinct elements, or blanks." *Id.* at 7–8.

Appellant argues that Merta discloses "a conical paper cup" that "does not include any bottom connected to a cup sleeve;" rather, Merta "only includes a cup sleeve 25." Appeal Br. 5; *see also* Reply Br. 1 ("it is clear from [the claims] in view of the specification that the bottom and cup sleeve be distinct elements that are 'connected in a substantially liquid-tight manner'").

We agree with Appellant that independent claims 1 and 17 require two distinct structures: a cup sleeve and a bottom. For example, the Specification discloses, with reference to the sixth embodiment of the invention, that

> bottom 44 has an all-round bottom rim 52 bent approximately 90º downwards. The cup sleeve 50 is folded around by 180º with its lower rim and thus forms a pocket inside which the all-round bottom rim 52 is almost completely received. The cup sleeve 50 contacts both the outside and the inside of the all-round rim 52. The bottom rim 52 and those areas of the cup sleeve 50 in contact with it are thermally fused with one another or glued in order to ensure a liquid-tight connection of the bottom 44 to the cup sleeve 50.

Spec., p. 12. Figures 7 and 9, reproduced below, are illustrative of the sixth embodiment of the invention:

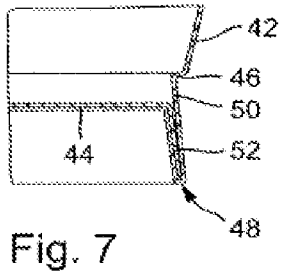

Fig. 7

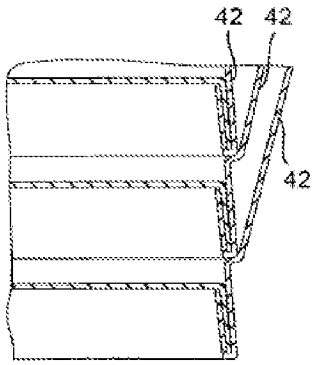

Fig. 9

Figures 7 and 9 each depicts an enlarged view of a section of the paper cup according to the sixth embodiment of the invention, wherein bottom 44 (including all-around bottom rim 52) is connected to cup sleeve 50, by inserting and gluing all-around bottom rim 52 in a pocket formed by cup sleeve 50. *Id.* at 8; *cf. id.* at 8, 12–13 (disclosing similar constructions for a seventh embodiment, including paper cup 54 with cup sleeve 58 and bottom 62, as depicted in Figures 10–13, and an eighth embodiment, including paper cup 64 with cup sleeve 66 and bottom 72 in Figures 14 and 15).

Merta discloses a "conical paper cup," as illustrated below in Figure 7. Merta, p. 1, ll. 2–3.

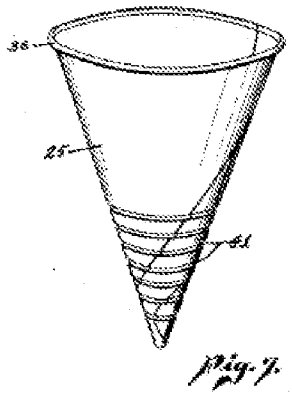

Fig. 7.

Figure 7 is a perspective view of the finished cup, which includes a series of annular beads 41 formed in the wall near the apex of the cup 25. Merta, p. 2,

ll. 8–9, 35–47. We agree with Appellant that the bottom of Merta's conical cup is constructed from Merta's cup sleeve 25. Although claims 1 and 17 read on a paper cup having a bottom *integrally* connected to a cup sleeve (i.e., formed as a single piece), the Examiner's finding that a portion of Merta's cup sleeve 25 defines, as distinct structure, a bottom connected to cup sleeve 25 is an unreasonable interpretation of Merta. The Examiner's interpretation also impermissibly reads the limitation "a bottom connected . . . to the cup sleeve" out of the claims.

Accordingly, we do not sustain the Examiner's rejection of independent claims 1 and 17, and claims 2, 17–22, 24, 25, and 27 depending therefrom.

Rejection III

Regarding independent claims 1 and 17, the Examiner finds that Frost '537 teaches a paper cup comprising bottom 3 connected in a substantially liquid-tight manner to cup sleeve 2, wherein cup sleeve 2 has a top curl (i.e., lip 6).[3] Final Act. 4.

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[3] To the extent the Examiner relies on the finding that Figure 9H of Frost '537 discloses that at least some sections of cup sleeve 2 are at an angle greater than or equal to 10º relative to a central longitudinal axis of the paper cup, such reliance/finding is in error. Final Act. 4–5 (citing Frost '537 ¶ 73, Fig. 9H) (wherein the Examiner determines that "an eyeball measurement of angle, alpha, in Fig. 9H yields an angle of approximately 25º, which [is] greater than 10º"); *see also* Ans. 9. Although Frost recognizes the existence of angle α in Figure 9H, Frost '537 does not disclose that Figure 9H is drawn to scale, and Figure 9H does not clearly show a range of values for angle α. Under our precedent, it is well established that patent drawings do not define the precise proportions of the elements and may not be relied on to show particular sizes if the specification is completely silent on the issue. *Hockerson-Halberstadt, Inc. v. Avia Group Int'l, Inc.*, 222 F.3d 951, 956

The Examiner further finds that Merta discloses "a paperboard cup with a sidewall angle of 20º." Final Act. 5 (citing Merta, Fig. 5); Ans. 9 (citing Merta, p. 2, col. 1, ll. 55–60). The Examiner reasons that it would have been obvious "to modify [Frost '537's] paperboard sidewall to be 20º," as taught in Merta, "to provide suitable nesting characteristics" (citing Merta, p. 1, col. 1, ll. 12–26) and "an optimal sidewall angle for forming the top curl" (citing Merta, p. 1, col. 1, l. 45–col. 2, l. 7, Fig. 5). Final Act. 5. Regarding the latter, the Examiner determines that, although Merta does not teach that "the entire wall" includes the "slight step," the claim limitation of "having the 10 degree measurement 'at least in some section'" does not include "the entire wall." Ans. 10. Alternatively, the Examiner reasons that it would have been obvious "to make Frost's sidewall at least 10 degrees since it is a known alternative for a cup sidewall while still maintaining a top curl." *Id.* at 9–10 (citing Merta, p. 1, col. 1, ll. 45–col. 2, l. 7).

Appellant argues that the Examiner's rationales for modifying Frost '537 lack factual support. Appeal Br. 10. First, Appellant submits that Merta discloses using *a top bead* to assist in *nesting* the cups—not the 20º angle of cup sleeve 25. *Id.* (citing Merta, p. 1, col. 1, ll. 12–26). Appellant concludes that Merta only provides motivation for modifying Frost '537 paper cup to have a top bead (not a 20º-angled cup sleeve), and further, that the paper cup of Frost '537 "already has a top bead or curl 6." Appeal Br. 10.

As set forth *supra*, the Examiner relies on Merta as factual support for modifying the cup sleeve of Frost '537 to have an angle of equal to or

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(Fed. Cir. 2000) (citing *In re Wright*, 569 F.2d 1124, 1127 (CCPA 1977)); *see also In re Mraz*, 455 F.2d 1069, 1072–73 (CCPA 1972).

greater than 10º, as taught in Merta, to provide suitable nesting characteristics. Merta discloses that "paper cups having no bead at the rim . . . present difficulty in dispensing due to the fact that the flexibility and the close nesting in a magazine stack make it difficult to strip and withdraw individual cups from a dispensing device." Merta, p. 1, col. 1, ll. 12–26. However, Merta is silent regarding any impact the angle of the sleeve of the paper cup has on nesting. Therefore, we are persuaded by Appellant's argument that Examiner's reasoning lacks factual support from Merta.

Second, Appellant argues that Merta fails to provide factual support for modifying the cup sleeve of Frost '537 in view of Merta's disclosure of an optimal sidewall angle for forming the top curl. Appeal Br. 11. Appellant submits that Merta discloses that "the top of the conical cup 25 must be formed into a cylinder 25a as shown in Fig. 3 before the bead can be formed" (quoting Merta p. 1, col. 1, ll. 35–38), and that, "[i]n the conical type of cup, however, to preserve good proportion, the included angle of the cone is usually approximately 40 degrees" and that "[t]his greatly increased angle presents a serious problem in forming the cylindrical portion prior to rolling the bead" (quoting Merta p. 1, col. 1, ll. 46–52). *Id.* Appellant further submits (quoting Merta) that, in order to form the cylindrical portion for forming the bead, "[t]he bottom of the portion to be formed into a cylinder is drawn out or expanded radially forming a slight step in the conical wall . . . to decrease the angle about 50 percent," such that, "[d]ue to this **decreased** angle, the portion of the wall above the expansion point may be very readily formed into a cylinder." *Id.* at 11–12 (quoting Merta, p. 1, col. 2, ll. 8–20). Appellant concludes that "the clear purpose of [Merta] is to

reduce the angle of the sidewall of the cup in order to easily form a cylinder to be able to form a bead." *Id.* at 12.

> Regarding forming a bead, Merta discloses that
>
> > [t]he first step in forming the bead in all of the successful processes is to press the conical wall of the cup to a substantially cylindrical form prior to rolling the head. This is done very easily in the frusto-conical cups because the average included angle of the cone is about 14 degrees which requires very little pressure to form the cone into a cylinder and consequently the cup may be gripped a the flat bottom without the danger of tearing paper during this operation.

Merta, p. 1, col. 1, ll. 35–44 (notably, the 14-degree angle of Merta's frusto-conical cone corresponds to a 7-degree angle relative to a central longitudinal axis of the paper cup (i.e., the claimed angle)). Merta discloses that, "[i]n the conical type of cup, . . . to preserve good proportion, the included angle of the cone is usually approximately 40 degrees," which corresponds to a 20-degree angle relative to a central longitudinal axis of the paper cup (i.e., the claimed angle) (*id.* at p. 1, col. 1, ll. 45–47), and therefore,

> [t]he stretching or expanding of the paper is controlled to reduce the angle of the upper portion **25***a* of the wall about 50 per cent as illustrated in Figure 5 where it will be seen that if the angle of the conical wall of the cups, for example, 20 degrees the angle of the upper portion **25***a* of the wall may be 10 degrees.

Id. at p. 2, col. 1, ll. 55–61. Merta's Figure 5 is reproduced below.

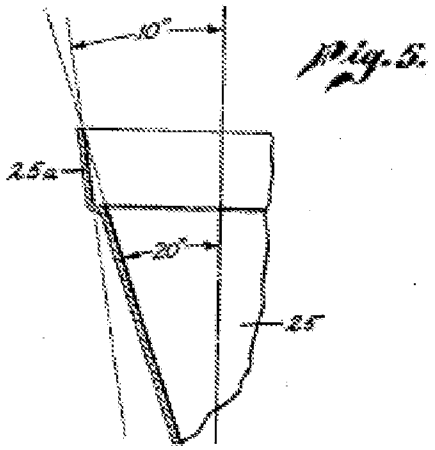

Figure 5 depicts "a fragmentary section of the upper portion of the cup wall illustrating the difference in angle between the upper portion after it has been expanded." Merta, p. 1, col. 2, l. 54 to p. 2, col. 1, l. 3.

Thus, we agree with Appellant that because the paper cup of Frost '517 is a frustro-conical (or flat-bottomed) paper cup, which Merta teaches has a conical wall of 7 degrees relative to a central longitudinal axis of the paper cup, it is unnecessary, in view of the teachings of Merta, to further modify the conical wall of Frost '517 to achieve a *decreased* angle of 10 degrees (i.e., closer to cylindrical in the context of a *conical* cup with a 20-degree starting angle) to form a bead. In other words, the Examiner's reasoning to modify the frusto-conical paper cup of Frost '517 to have a sleeve with the section including the top of the cup sleeve adjacent the top curl at an angle greater than or equal to 10 degrees relative to a central longitudinal axis of the paper cup lacks factual support.

Notwithstanding, Appellant does not address the Examiner's alternative reasoning to make the sidewall of the paper cup of Frost '517 at least 10 degrees, namely, that "it is a known alternative for a cup sidewall while still maintaining a top curl," as set forth *supra*.

As discussed *supra*, Merta teaches a method for overcoming the problems associated with forming a bead (or top curl) on a paper cup having a sidewall with an angle *greater than* the average angle of a sidewall of a frusto-conical cup (i.e., about 7 degrees relative to a central longitudinal axis of the paper cup, as discussed *supra*). *See, e.g.*, Merta, Fig. 7 (depicting a cup sleeve having a section with the claimed angle equal to 20 degrees adjacent the top curl formed by rolling a rim comprised of a cylindrical section having a 10-degree angle), Fig. 5. Appellant's Specification discloses, with respect to the prior art, that "[b]y shaping . . . the top curl on the top edge of the frustum-shaped cup sleeve and by inserting a bottom into the cup sleeve, a paper cup for receiving liquid is provided," and that "[t]he greater the cone angle of the cup sleeve, the greater [the diameter difference between the original upper rim and curled upper rim] and the greater is the tendency during creation of the top curl . . . to crease"; thus, "conventional paper cups are made with a cone angle of the cup sleeve of 9º at most." Spec., p. 1–2.

We agree with the Examiner that Merta teaches, as a known alternative, a method that overcomes the known problems associated with rolling the upper rim of a frusto-conical cup having a greater-than-average-angled cup sleeve, such that the Examiner's modified frusto-conical paper cup results in the claimed subject matter. "[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill." *KSR Int'l Co. v. Teleflex Inc.,* 550 U.S. 398, 417 (2007). Here, the Examiner has

shown that using Merta's technique on a frusto-conical cup with greater sidewall angles would have been obvious.

Accordingly, we sustain the Examiner's rejection of independent claims 1 and 17.

In the Appeal Brief, Appellant chose not to present separate arguments for the patentability of claims 2–4, 7, 19, 20, 22, 24, 25, and 27, apart from those presented for independent claims 1 and 17, and therefore, for essentially the same reasons as stated *supra*, we also sustain the Examiner's rejection of claims 2–4, 7, 19, 20, 22, 24, 25, and 27. Appeal Br. 12; Reply Br. 2–3.[4]

Dependent claims 18 and 21

Claims 18 and 21, which depend respectively from independent claims 1 and 17, require the outwardly folded top edge or top curl to be "pressed flat against an exterior surface of the cup sleeve." Appeal Br., Claims App. 2–3. The Examiner relies on Frost '537 for disclosing a top curl comprising "a circular curl that presses against the exterior of the cup sleeve." Final Act. 5 (citing Frost '537, Fig. 5A). Alternatively, the Examiner "considers Merta's top curl to curl all the way back towards the cup sleeve and contact, or press, against an exterior of the cup sleeve." Ans. 8 (citing Merta, Figs. 3, 4, element 25).

[4] Appellant's arguments in the Appeal and Reply Briefs concerning claims 22, 24, 25, and 27 address the Examiner's findings under Rejection II; for example, Appellant argues that "the Examiner supports his rejection of these claims as being anticipated by Merta." Reply Br. 1; *see also* Appeal Br. 7–9 (presenting separate arguments for the patentability of claims 22, 24, 25, and 27 pursuant to Rejection II).

Appellant correctly argues that "bead 6" of Frost '537 "is circular and is not flat." Appeal Br. 12–13; *see also* Spec., p. 16 (disclosing, with reference to Figure 22, that "[u]nlike the paper cup 64 in Fig. 14, in the paper cup 106 a top curl 108 is pressed flat after conclusion of the fourth curling step"). We further determine that the Examiner's reliance on Merta is also in error for the same reasons, in that although Merta may depict the top curl being pressed against an exterior surface of the cup sleeve, the top curl remains circular and is not flat in shape.

Accordingly, we do not sustain the Examiner's rejection of claims 18 and 21.

Rejections IV–V

Appellant chose not to present separate arguments for the patentability of claims 5, 6, 23, and 26, apart from those presented for independent claims 1 and 17, and therefore, for essentially the same reasons as stated *supra*, we also sustain the Examiner's rejection of claims 5, 6, 23, and 26. Appeal Br. 13; Reply Br. 1–2.

DECISION

The Examiner's rejection of claims 25 and 27 under 35 U.S.C. § 112, second paragraph, is REVERSED.

The Examiner's rejection of claims 1, 2, 17–22, 24, 25, and 27 under 35 U.S.C. § 102(b) is REVERSED.

The Examiner's rejection of claims 1–7 and 17, 19, 20, and 22–27 under 35 U.S.C. § 103(a) is AFFIRMED.

VI. The Examiner's rejection of claims 18 and 21 under 35 U.S.C. § 103(a) is REVERSED.

VII. 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–IN–PART