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(54) **BEVERAGE CUP FOR PLACEMENT IN HOLDER**

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(57) **ABSTRACT**

A car cup is disclosed. Such a car cup may include a base having a generally circular perimeter, and a sidewall that extends upwardly from the base and defines an open end of the cup. The sidewall may include a lower wall portion having a relatively small diameter, an upper wall portion having a relatively large diameter, and a transition portion extending between the upper wall portion and the lower wall portion. At least a portion of the transition portion may have a shape that is suitable for having visible matter disposed thereon. Visible matter may be printed or etched onto any or all of the upper wall portion, the lower wall portion, and the transition portion. Methods and apparatus for making such cups are also disclosed.

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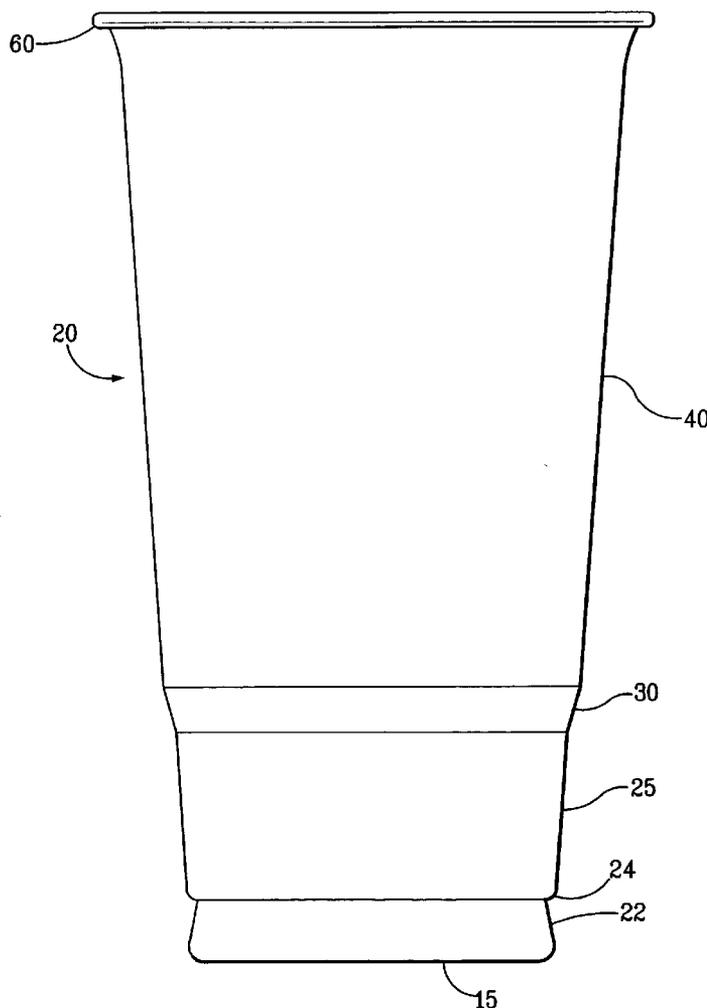
(21) Appl. No.: **11/058,024**

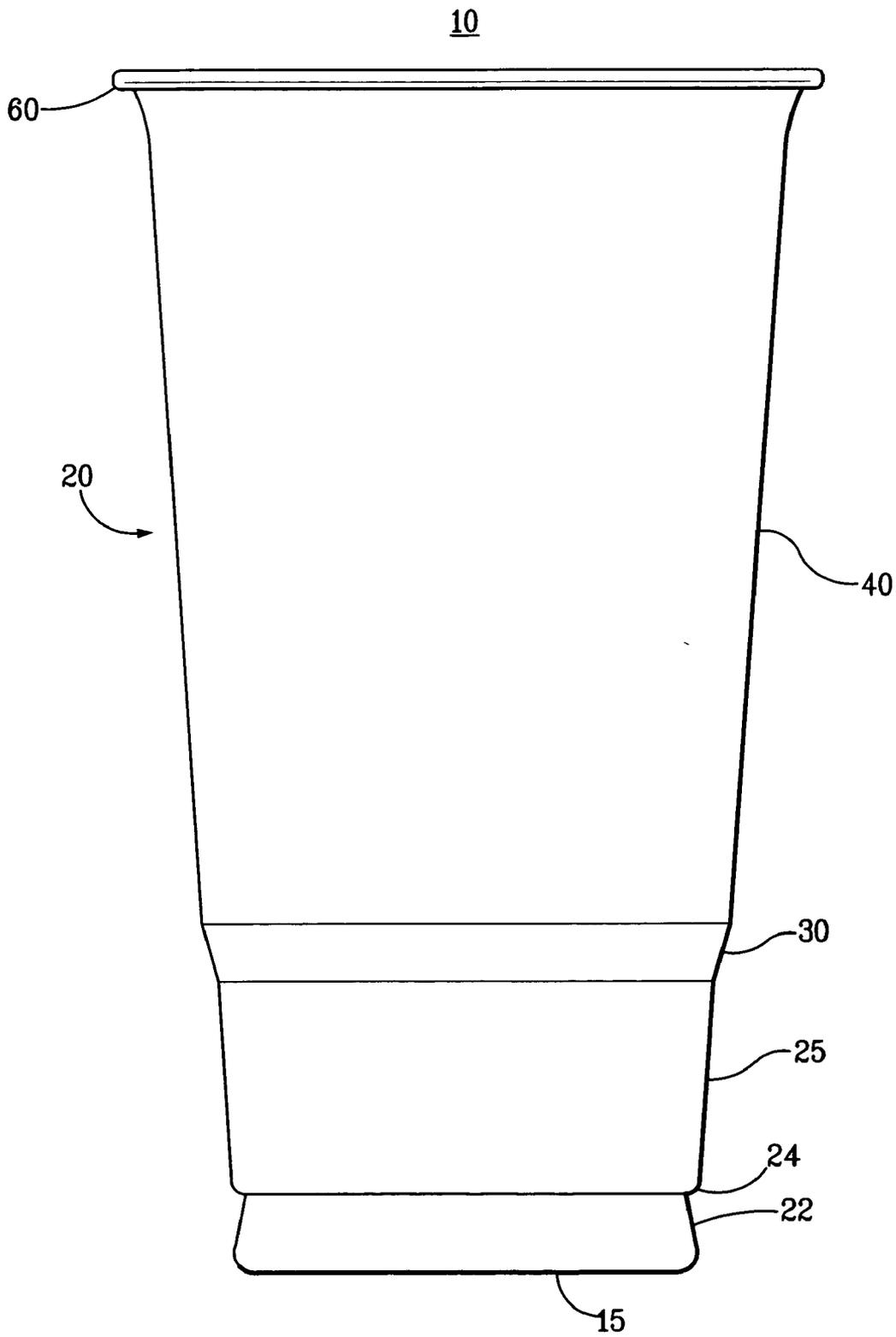
(22) Filed: **Feb. 15, 2005**

**Related U.S. Application Data**

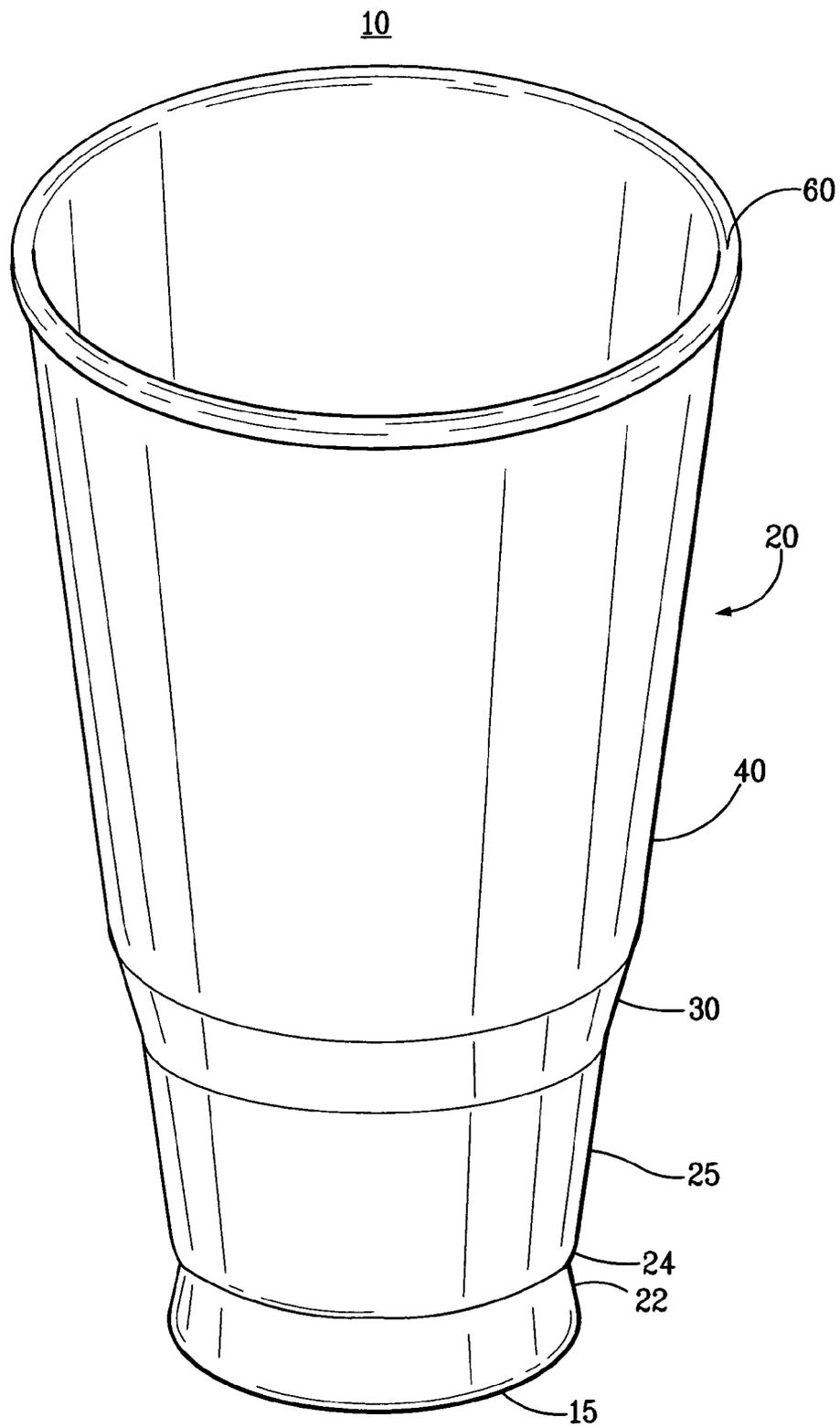
(60) Provisional application No. 60/545,675, filed on Feb. 17, 2004.

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*FIG. 1*



*FIG. 2*

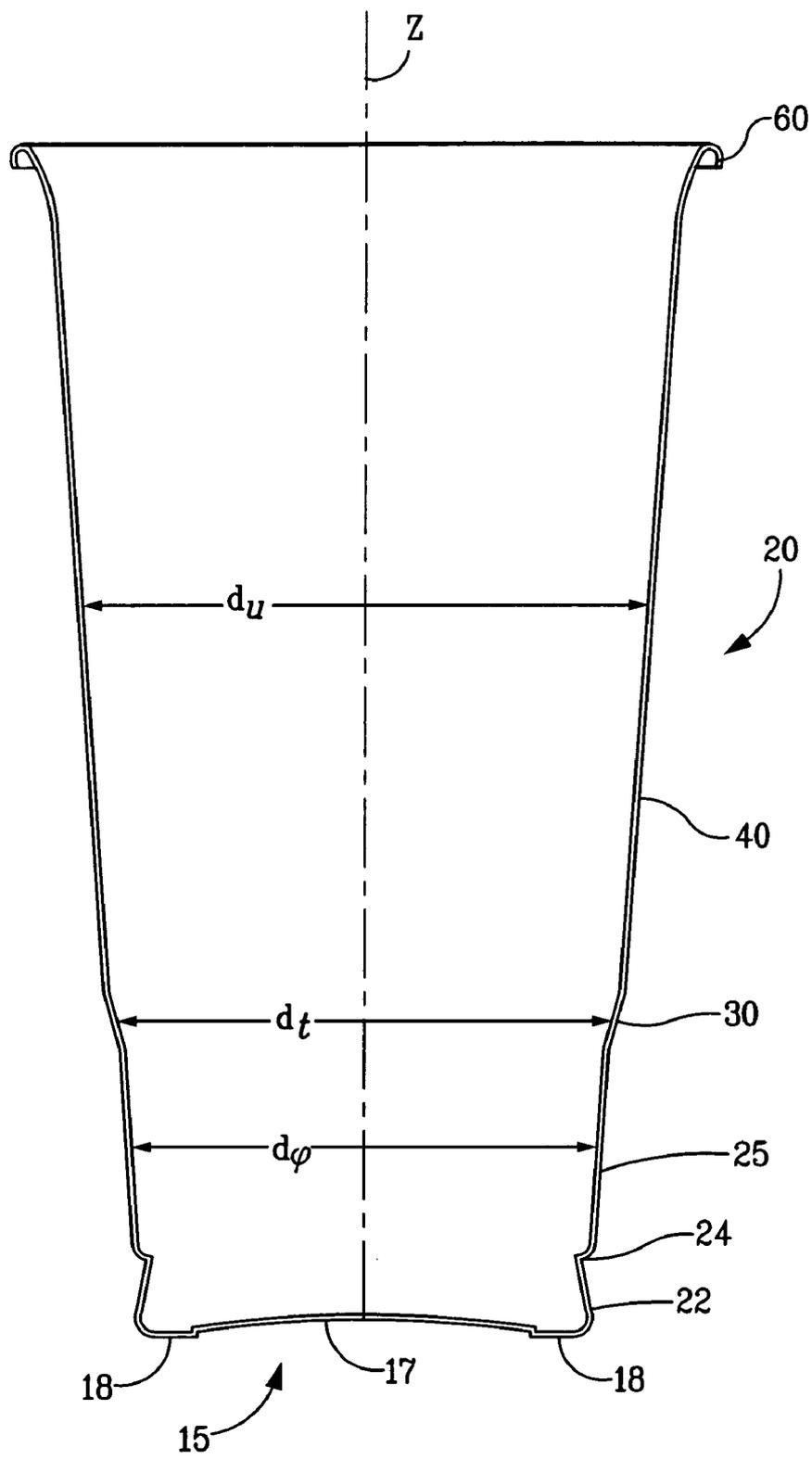


FIG. 3

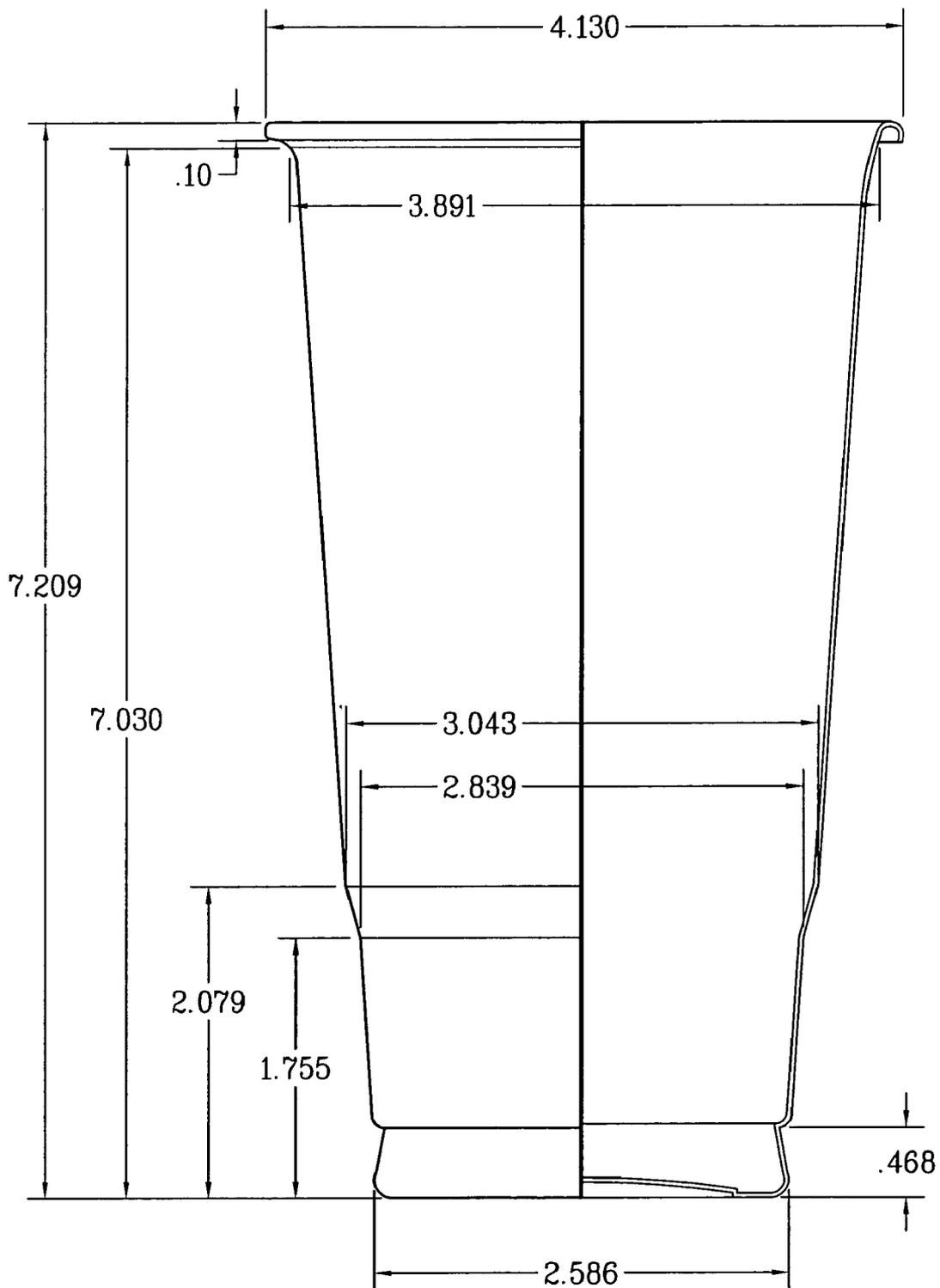


FIG. 4A

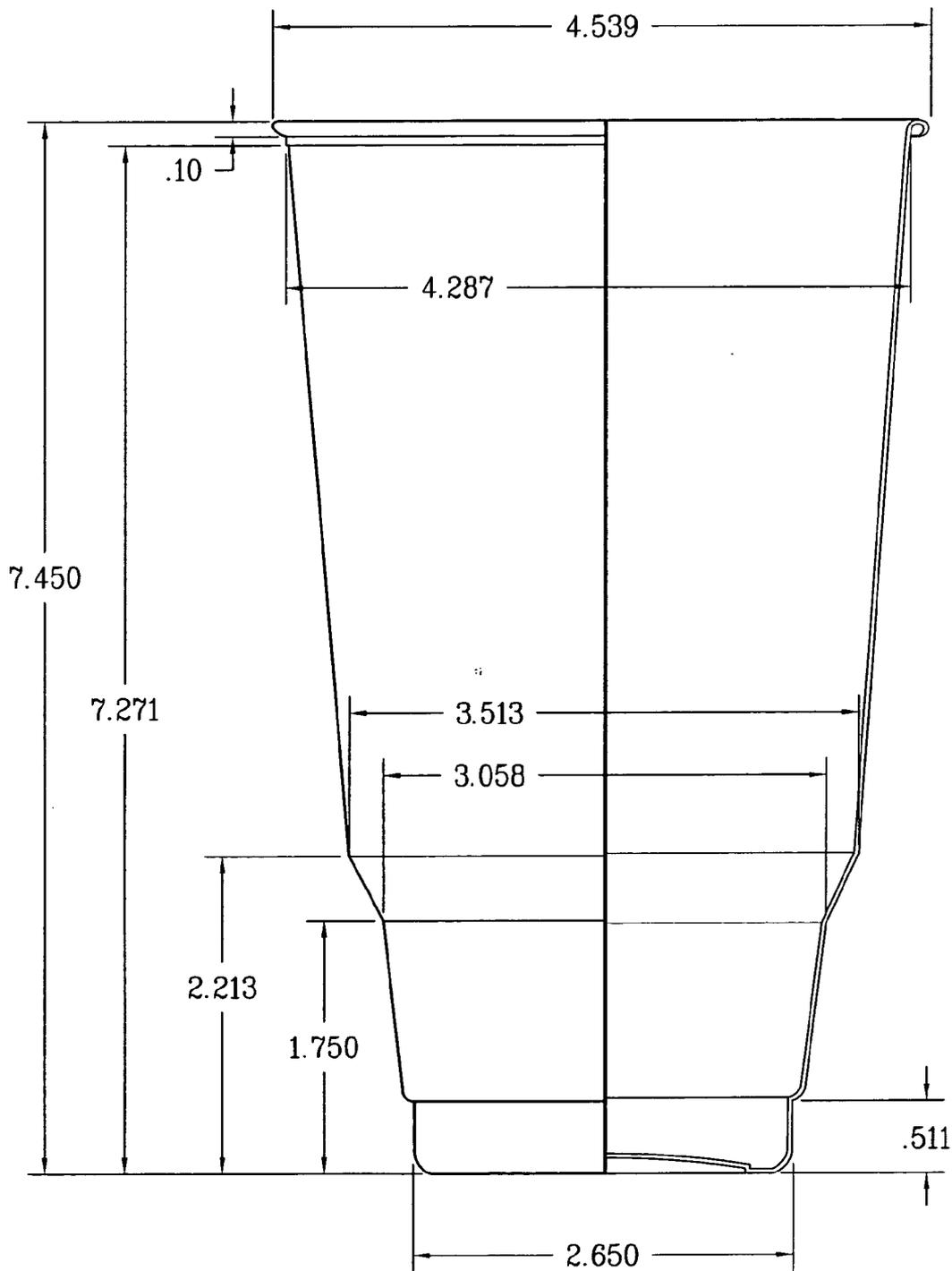
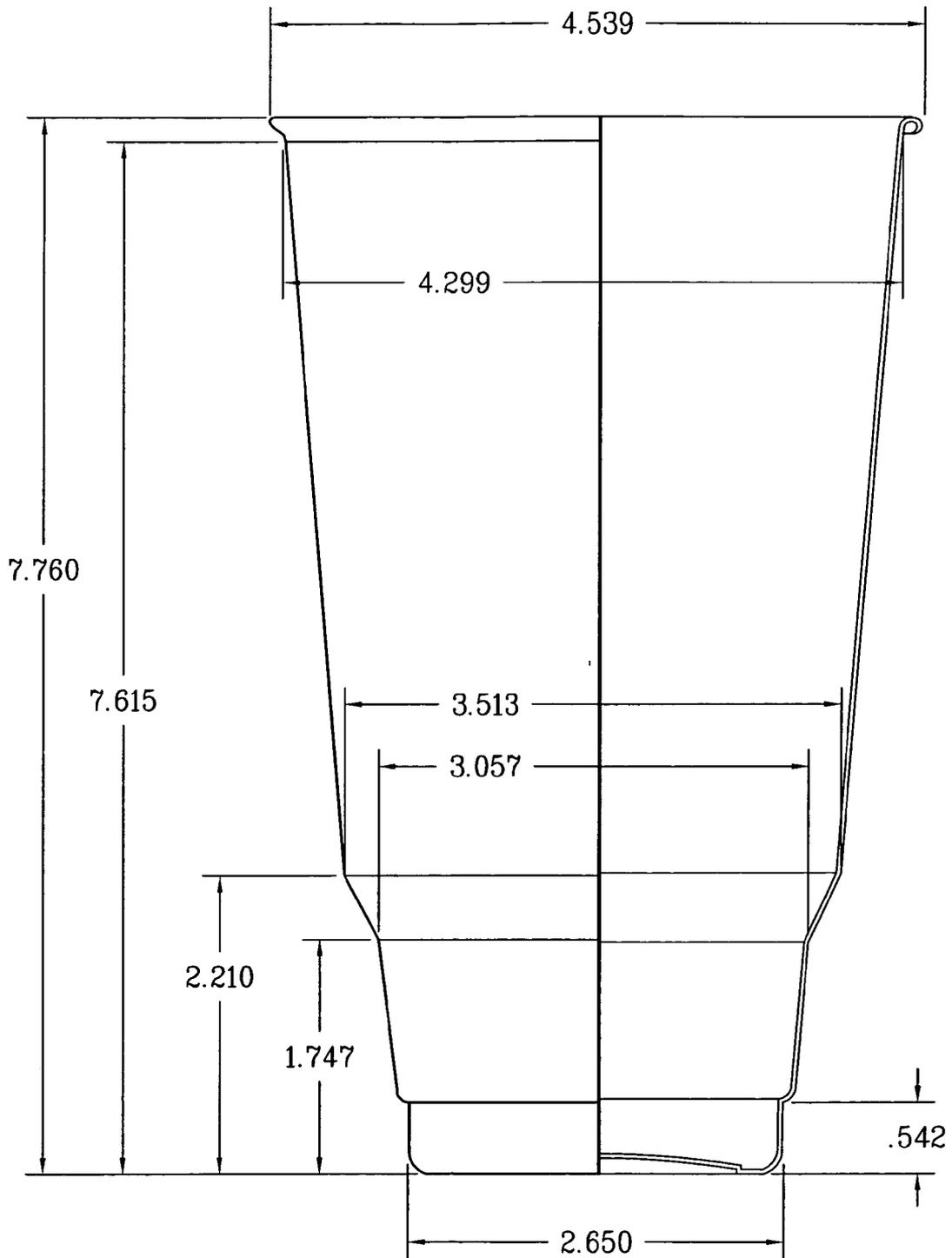


FIG. 4B



*FIG. 4C*

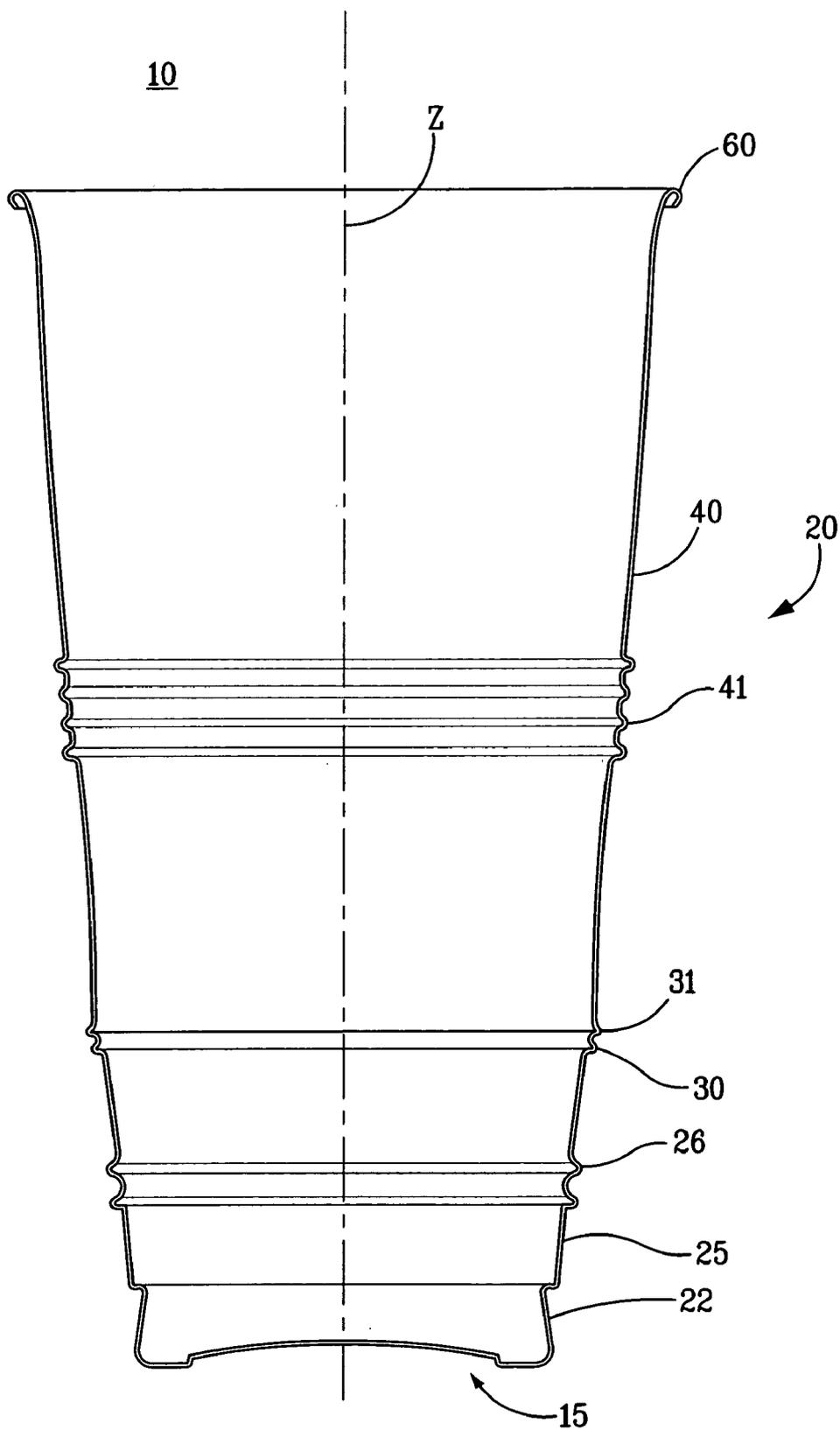


FIG. 5

**BEVERAGE CUP FOR PLACEMENT IN HOLDER**

**CROSS-REFERENCE TO RELATED APPLICATIONS**

[0001] This application claims benefit under 35 U.S.C. § 119(e) of provisional U.S. patent application No. 60/545,675, filed Feb. 17, 2004. The subject matter disclosed and claimed herein is related to the subject matter disclosed and claimed in U.S. patent application Ser. No. 29/199,673, filed Feb. 17, 2004, and U.S. patent application Ser. No. 29/199,657, filed Feb. 7, 2004.

[0002] The disclosure of each of the above-referenced U.S. patent applications is incorporated herein by reference.

**FIELD OF THE INVENTION**

[0003] Generally, the invention relates to beverage cups. More particularly, the invention relates to beverage cups having relatively wide upper portions and relatively narrow lower portions such that the cups are suitable for placement in automobile cupholders.

**BACKGROUND OF THE INVENTION**

[0004] It is well-known that take-out beverages are frequently consumed in automobiles. Many conventional cups, however, especially those having capacities of 32-ounces or more, are incompatible with conventional automobile cupholders. Specifically, the base of such a cup is typically too large in diameter to fit into a conventional automobile cupholder.

[0005] As a result, cups known as “car cups” were developed. Typical car cups have a relatively wide upper portion and a relatively narrow lower portion. The lower portion typically has a diameter that allows the cup to fit into a typical automobile cupholder. A transition portion may be provided between the upper portion and the lower portion. Such cups are typically made of a polymer material, such as polypropylene, for example.

[0006] It is also well-known that sellers of take-out beverages, such as fast-food restaurants, for example, typically desire car cups having visible matter that is disposed on the exterior surface of the cup. Such visible matter may include, for example, printed matter, which may be printed onto the exterior surface of the cup, or embossed matter, which may be embossed into the sidewall of the cup either during formation of the cup or afterward. The visible matter may be ornamental in nature, and may include designs, logos, photos, graphics, or text, for example. The visible matter may be related to the restaurant, a beverage or other product provided by the restaurant, a motion picture, or a sports team, for example. The visible matter may also include advertising.

[0007] Typically, such visible matter is provided only on the upper portion or the cup. It would be desirable, however, if car cups were available that allowed for such visible matter to be disposed on other parts of the cup, such as the transition portion and base portion, as well as on the upper portion.

**SUMMARY OF THE INVENTION**

[0008] The invention provides a car cup, which may be made of a polymer, such as polypropylene, for example. The

cup may have a base, which may be generally circular, and a sidewall that extends upwardly from the base and defines an open end of the cup. The sidewall may include a lower wall portion having a relatively small diameter, an upper wall portion having a relatively large diameter, and a transition portion extending between the upper wall portion and the lower wall portion. The upper wall portion may have a minimum diameter that is greater than the maximum diameter of the lower wall portion. The transition portion may have a maximum diameter that is approximately equal to the minimum diameter of the upper wall portion and a minimum diameter that is approximately equal to the maximum diameter of the lower wall portion. The sidewall may also include a stacking ring portion.

[0009] At least a portion of the transition portion may have a shape that is suitable for having visible matter disposed thereon. For example, a portion of the transition portion may be cylindrical or frusto-conical in shape. The transition portion may have a pitch that differs from the pitch of the lower wall portion and from the pitch of the upper wall portion. Any or all of the lower wall portion pitch, the transition portion pitch, and the upper wall portion pitch may be constant, or they may vary along the longitudinal axis of the cup. Visible matter may be printed or etched onto any or all of the upper wall portion, the lower wall portion, and the transition portion.

[0010] The invention also provides methods and apparatus for making such cups.

**BRIEF DESCRIPTION OF THE DRAWINGS**

[0011] FIG. 1 depicts an example embodiment of a car cup.

[0012] FIG. 2 is a side view of the car cup depicted in FIG. 1.

[0013] FIG. 3 is a cross-sectional view of the car cup depicted in FIGS. 1 and 2.

[0014] FIGS. 4A-4C provide dimensions for example embodiments of 32, 42, and 44-ounce car cups.

[0015] FIG. 5 is a cross-sectional view of an example embodiment of a car cup that includes embossing on the upper, lower, and transition regions.

**DETAILED DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS**

[0016] As shown in FIGS. 1-3, an example embodiment of a car cup 10 may have a base 15, which may have a generally circular perimeter. The base 15 may have a raised, interior portion 17, and an outer circumferential foot 18. A sidewall 20 may extend upward from the perimeter of the base 15 to define an open end of the cup 10. Thus, the base 15 and sidewall 20 may cooperate to define an open-ended container. The sidewall 20 may include a stacking ring portion 22, a lower wall portion 25, an upper wall portion 40, and a transition portion 30 between the upper wall portion 40 and the lower wall portion 25. The cup 10 may be radially symmetric about a longitudinal axis Z.

[0017] The cup 10 may also include a rim 60, which may be curled to provide a smooth interface with the lips of a person drinking from the cup. Techniques for forming such curled rims are well known and, therefore, need not be

described herein. The open end of the cup **10**, including the rim **60**, may be adapted to receive a complementary lid (not shown). Many examples of such lids are known and, therefore, need not be described herein.

[0018] The stacking ring portion **22** facilitates removal of a cup that is nested inside another cup. In the stacking ring portion **22**, the sidewall **20** slants inward (i.e., toward the center of the cup **10**) and then juts back outward to form a shoulder **24** where the stacking ring portion **22** meets the lower wall portion **25**. Thus, the foot of one cup may abut the shoulder of a cup into which it is nested, with air space remaining between the bottoms of the cups.

[0019] The lower wall portion **25** may extend from the upper end of the stacking ring portion **22**. The perimeter of the lower wall portion **25** may form a non-zero angle with the longitudinal axis **Z**. That is, the diameter  $d_l$  of the lower wall portion **25**, as measured transverse to the longitudinal axis **Z**, may vary along the longitudinal axis **Z**. As shown, the diameter  $d_l$  may vary such that the lower wall portion **25** has a uniform pitch (i.e., is at a constant, non-zero angle) relative to the longitudinal axis **Z**. Thus, part or all of the lower wall portion **25** may have a generally frusto-conical shape. The diameter  $d_l$  of the lower wall portion **25** may vary such that the lower wall portion **25** has a pitch that varies smoothly along the longitudinal axis **Z**. Thus, part or all of the lower wall portion **25** may have a convex or concave surface. The perimeter of the lower wall portion **25** may be generally parallel with the longitudinal axis **Z**. That is, the diameter  $d_l$  of the lower wall portion **25** may be constant along the longitudinal axis **Z**. Thus, part or all of the lower wall portion **25** may be generally cylindrical.

[0020] The transition portion **30** may extend from the upper end of the lower wall portion **25**. The perimeter of the transition portion **30** may form a non-zero angle with the longitudinal axis **Z**. That is, the diameter  $d_t$  of the transition portion **30** may vary along the longitudinal axis **Z**. As shown, the diameter  $d_t$  may vary such that the transition portion **30** has a uniform pitch relative to the longitudinal axis **Z**. Thus, part or all of the transition portion **30** may have a generally frusto-conical shape. The diameter  $d_t$  of the transition portion **30** may vary such that the transition portion **30** has a pitch that varies smoothly along the longitudinal axis **Z**. Thus, part or all of the transition portion **30** may have a convex or concave surface. The perimeter of the transition portion **30** may be generally parallel with the longitudinal axis **Z**. That is, the diameter  $d_t$  of the transition portion **30** may be constant along the longitudinal axis **Z**. Thus, part or all of the transition portion **30** may be generally cylindrical.

[0021] The upper wall portion **40** may extend from the upper end of the transition portion **30**. The perimeter of the upper wall portion **40** may form a non-zero angle with the longitudinal axis **Z**. That is, the diameter  $d_u$  of the upper wall portion **40** may vary along the longitudinal axis **Z**. As shown, the diameter  $d_u$  may vary such that the upper wall portion **40** has a uniform pitch relative to the longitudinal axis **Z**. Thus, part or all of the upper wall portion **40** may have a generally frusto-conical shape. The diameter  $d_u$  of the upper wall portion **40** may vary such that the upper wall portion **40** has a pitch that varies smoothly along the longitudinal axis **Z**. Thus, part or all of the upper wall portion **40** may have a convex or concave surface. The

perimeter of the upper wall portion **40** may be generally parallel with the longitudinal axis **Z**. That is, the diameter  $d_u$  of the upper wall portion **40** may be constant along the longitudinal axis **Z**. Thus, part or all of the upper wall portion **40** may be generally cylindrical.

[0022] The pitch of the sidewall **20** may change abruptly at the upper end of the lower wall portion, i.e., the point where the lower wall portion **25** and the transition portion **30** meet. That is, the transition portion **30** may have a pitch that is significantly different from the pitch of the lower wall portion **25**. Similarly, the pitch of the sidewall **20** may change abruptly at the upper end of the transition portion, i.e., the point where the transition portion **30** and the upper wall portion **40** meet. That is, the transition portion **30** may have a pitch that is significantly different from the pitch of the upper wall portion **40**.

[0023] The lower wall portion **25** may have a maximum diameter that is less than the minimum diameter of upper wall portion **40**. The diameter  $d_l$  of the lower wall portion **25** may be at a maximum at the point where the lower wall portion **25** meets the transition portion **30**. The diameter  $d_u$  of the upper wall portion **25** may be at a minimum at the point where the transition portion **30** meets the upper wall portion **40**. The diameter of the transition portion **30** may vary from a diameter that is approximately equal to the maximum diameter of the lower wall portion, to a diameter that is approximately equal to the minimum diameter of the upper wall portion **40**. The minimum diameter of the transition portion **30** may be approximately equal to the maximum diameter of the lower wall portion. The maximum diameter of the transition portion **30** may be approximately equal to the minimum diameter of the upper wall portion **40**.

[0024] In order for the cup **10** to function as a car cup, the lowest portion of the cup may be adapted to fit within a typical cup holder in a vehicle, such as an automobile, for example. A typical automobile cup holder may have a receiving diameter (i.e., the diameter of the hole in the cup holder into which the cup is to be placed) of less than about three inches, though it could be more less. Accordingly, in an example embodiment, the lowest portion of the cup (i.e., that portion of the cup that is to be received into the cup holder) may have a diameter of less than about three inches for about one to two inches from the bottom of the cup. In another embodiment, the lowest portion of the cup (including the stacking ring portion) may have a diameter of less than about three inches for about one to two inches from the bottom of the cup. It should be understood that the maximum diameter and distance from the bottom of the cup until the maximum diameter is reached may be selected depending on the particular requirements of the holder.

[0025] FIGS. 4A-4C are partial cutaway views that provide certain dimensions for example embodiments of 32-, 42-, and 44-ounce car cups, respectively. All dimensions are given in inches. It should be understood that the specific dimensions provided herein are provided for purposes of illustration, and that the dimensions of the cup may be chosen to produce any desired results. For example, the dimensions may be chosen so that the cup stands upright when empty, so that the cup stands upright when filled, so that the cup contains a desired volume, and so that the cup fits into a typical automobile car cup holder.

[0026] As shown in FIG. 5, visible matter may be disposed on any or all of the lower wall portion **25**, the

transition portion 30, and the upper wall portion 40. FIG. 5 depicts an example embodiment of a car cup 10 having visible matter 26, 31, and 41 embossed on each of the lower wall portion 25, the transition portion 30, and the upper wall portion 40, respectively. As shown, the embossing 26, 31, and 41 may be in the form of circumferential horizontal ridges. It will be appreciated that embossing may provide any type of wording or design. It will also be appreciated that, even if the transition portion 30 were to have a varying pitch, embossing may still be disposed on the lower wall portion 25.

[0027] To facilitate the disposition of visible matter on the cup, at least a portion of the sidewall may have a shape that is suitable for having visible matter disposed thereon. For example, at least a portion of the transition portion 30 may have a uniform pitch relative to the longitudinal axis of the cup. Thus, a portion of the transition portion 30 may be cylindrical or frusto-conical in shape. The portion of uniform pitch may be of at least a minimum height to allow for the embossing of visible matter thereon. In an example embodiment, the minimum height of the portion of uniform pitch may be at least about 0.25 inches, though it may be greater or less.

[0028] It should be understood that any or all of the lower wall portion pitch, the transition portion pitch, and the upper wall portion pitch may be constant, and that any or all may vary along the longitudinal axis of the cup 10. Visible matter may be printed or etched onto any or all of the upper wall portion 40, the lower wall portion 25, and the transition portion 30.

[0029] The cup 10 may be made of a polymer, such as polypropylene, for example, though it should be understood that the cup may also be made of other materials, such as polystyrene, for example. The cup 10 may be manufactured as a single piece by thermoforming. Techniques for thermoforming polypropylene are well known and, therefore, need not be described herein. Such techniques typically employ the use of a mold, the inner surfaces of which provide a negative of the outer surfaces of the cup. In order to provide embossing, the negative of the design or wording to be embossed on the sidewall of the cup may be provided in the mold, or in an insert in the mold.

What is claimed:

1. A car cup, comprising:

a base having a generally circular perimeter; and

a sidewall that extends upwardly from the base and defines an open end of the cup, wherein the sidewall includes a lower wall portion having a lower wall portion diameter, an upper wall portion having an upper wall portion diameter that is larger than the lower wall portion diameter, and a transition portion extending between the upper wall portion and the lower wall portion, and

wherein the transition portion has visible matter disposed on at least a portion thereof.

2. The car cup of claim 1, wherein the lower wall portion has a lower wall portion pitch and the transition portion has a transition portion pitch that differs from the lower wall portion pitch.

3. The car cup of claim 2, wherein the lower wall portion pitch is constant and the transition portion pitch is constant.

4. The car cup of claim 1, wherein the upper wall portion has an upper wall portion pitch that differs from the transition portion pitch.

5. The car cup of claim 4, wherein the upper wall portion pitch is constant and the transition portion pitch is constant.

6. The car cup of claim 1, wherein the visible matter is printed onto the transition portion.

7. The car cup of claim 1, wherein the visible matter is embossed onto the transition portion.

8. The car cup of claim 1, wherein at least one of the upper wall portion and the lower wall portion has visible matter disposed on at least a portion thereof.

9. The car cup of claim 1, wherein the transition portion has a generally frusto-conical shape.

10. The car cup of claim 1, wherein the lower wall portion has a maximum diameter, the upper wall portion has a minimum diameter, and the minimum diameter of the upper wall portion is greater than the maximum diameter of the lower wall portion.

11. The car cup of claim 10, wherein the transition portion has a maximum diameter that is approximately equal to the minimum diameter of the upper wall portion and a minimum diameter that is approximately equal to the maximum diameter of the lower wall portion.

12. The car cup of claim 1, wherein the sidewall includes a stacking ring portion.

13. A car cup, comprising:

a base having a generally circular perimeter; and

a sidewall that extends upwardly from the base and defines an open end of the cup, wherein the sidewall includes a lower wall portion having a lower wall portion diameter, an upper wall portion having an upper wall portion diameter that is larger than the lower wall portion diameter, and a transition portion extending between the upper wall portion and the lower wall portion, and

wherein at least a portion of the transition portion has a shape that is suitable for having visible matter disposed thereon.

14. The car cup of claim 13, wherein the portion of the transition portion that is suitable for having visible matter disposed thereon has a generally cylindrical shape.

15. The car cup of claim 13, wherein the portion of the transition portion that is suitable for having visible matter disposed thereon has a generally frusto-conical shape.

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