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(54) Title: BLENDER SYSTEM WITH EXTRA LARGE CAPACITY JAR

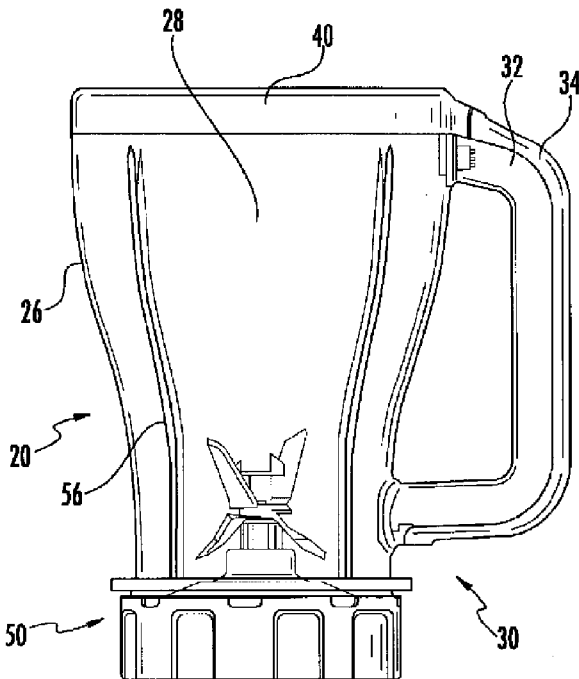


FIG. 5

(57) Abstract: A container (20) configured for use with a blender (70) is provided including a body having a first end (22), a second, opposite end (24), and at least one wall (26) extending there between to define a chamber (28) configured to receive one or more food products to be processed. The first end (22) has a first diameter. The second end (24) has a second diameter. The first diameter is substantially larger than the second diameter. A diameter of the container (20) varies over a height of the container to direct one or more food products therein towards the second end (24).



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— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

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BLENDER SYSTEM WITH EXTRA LARGE CAPACITY JAR

BACKGROUND

[0001] Exemplary embodiments of the present invention relate to a blender, and more particularly to a container of a blender configured to receive one or more food items therein.

[0002] Blenders are commonly used to process a plurality of different food products, including liquids, solids, semi-solids, gels and the like. It is well-known that blenders are useful devices for blending, cutting, and dicing food products in a wide variety of commercial settings, including home kitchen use, professional restaurant or food services use, and large-scale industrial use. They offer a convenient alternative to chopping or dicing by hand, and often come with a range of operational settings and modes adapted to provide specific types or amounts of food processing, e.g., as catered to particular food products.

SUMMARY

[0003] According to an embodiment of the invention, a container configured for use with a blender is provided including a body having a first end, a second, opposite end, and at least one wall extending there between to define a chamber configured to receive one or more food products to be processed. The first end has a first diameter. The second end has a second diameter. The first diameter is substantially larger than the second diameter. A diameter of the container varies over a height of the container to direct one or more food products therein towards the second end.

[0004] In addition to one or more of the features described above, or as an alternative, in further embodiments a ratio of the first diameter to the second diameter is between about 1.2:1 and 2:1.

[0005] In addition to one or more of the features described above, or as an alternative, in further embodiments a diameter of the container gradually decreases from the first end towards the second end.

[0006] In addition to one or more of the features described above, or as an alternative, in further embodiments a cross-section of the container is generally circular in shape.

[0007] In addition to one or more of the features described above, or as an alternative, in further embodiments the first end includes a first opening and the second end includes a second opening.

[0008] In addition to one or more of the features described above, or as an alternative, in further embodiments a lid is configured to attach to the first end to restrict movement of the one or more food products from the container through the first end.

[0009] In addition to one or more of the features described above, or as an alternative, in further embodiments a locking pin configured to couple a first connector extending from the lid and a second connector extending from the container restricts movement of the lid from the first end.

[0010] In addition to one or more of the features described above, or as an alternative, in further embodiments the locking pin is covered by a portion of an adjacent hollow component.

[0011] In addition to one or more of the features described above, or as an alternative, in further embodiments the hollow component is a portion of a handle.

[0012] In addition to one or more of the features described above, or as an alternative, in further embodiments a rotating blade assembly is configured to couple to the second end.

[0013] In addition to one or more of the features described above, or as an alternative, in further embodiments the rotating blade assembly includes a spindle rotatable about an axis and at least one blade attached to the spindle. When the rotating blade assembly is coupled to the second end, the at least one blade extends through the second opening into the chamber.

[0014] In addition to one or more of the features described above, or as an alternative, in further embodiments the container includes a plurality of marking to indicate a volume of food product within the chamber.

[0015] In addition to one or more of the features described above, or as an alternative, in further embodiments the container includes a handle extending from the container and configured to facilitate movement of the container.

[0016] In addition to one or more of the features described above, or as an alternative, in further embodiments the handle includes a handle insert and a generally hollow handle base configured to receive the complementary handle insert.

[0017] According to another embodiment of the invention, a container configured for use with a blender is provided including a body having a first end, a second, opposite end, and at least one wall extending there between to define a chamber configured to receive one or more food products to be processed. The first end has a first diameter and the second end has a second diameter. The diameter of the container gradually decreases from the first end towards the second end such that a ratio of the first diameter to the second diameter is between about 1.2:1 and 2:1.

[0018] In addition to one or more of the features described above, or as an alternative, in further embodiments the diameter of the container varies over a height of the container to direct the one or more food products therein towards the second end.

[0019] In addition to one or more of the features described above, or as an alternative, in further embodiments wherein a cross-section of the container is generally circular in shape.

[0020] In addition to one or more of the features described above, or as an alternative, in further embodiments the first end includes a first opening and the second end includes a second opening.

[0021] In addition to one or more of the features described above, or as an alternative, in further embodiments a lid is configured to attach to the first end to restrict movement of the one or more food products from the container through the first end.

[0022] In addition to one or more of the features described above, or as an alternative, in further embodiments a locking pin configured to couple a first connector extending from the lid and a second connector extending from the container restricts movement of the lid from the first end.

[0023] In addition to one or more of the features described above, or as an alternative, in further embodiments the locking pin is covered by a portion of an adjacent hollow component.

[0024] In addition to one or more of the features described above, or as an alternative, in further embodiments the hollow component is a portion of a handle.

[0025] In addition to one or more of the features described above, or as an alternative, in further embodiments a rotating blade assembly is configured to couple to the second end.

[0026] In addition to one or more of the features described above, or as an alternative, in further embodiments the rotating blade assembly includes a spindle rotatable about an axis and at least one blade attached to the spindle. When the rotating blade assembly is coupled to the second end, the at least one blade extends through the second opening into the chamber.

[0027] In addition to one or more of the features described above, or as an alternative, in further embodiments the container includes a plurality of marking to indicate a volume of food product within the chamber.

[0028] In addition to one or more of the features described above, or as an alternative, in further embodiments the container includes a handle extending from the container and configured to facilitate movement of the container.

[0029] In addition to one or more of the features described above, or as an alternative, in further embodiments the handle includes a handle insert and a generally hollow handle base configured to receive the complementary handle insert.

[0030] According to yet another embodiment of the invention, a method of blending one or more food items is provided including inserting the one or more food items into a chamber of a container via an opening formed in a first end. The container is arranged in a first configuration. A rotatable blade assembly is attached to the first end of the container to close the opening. The container is connected to a complementary base including rotating the container 180 degrees from the first configuration to a second, opposite configuration. The first end of the container has a first diameter and a second end of container has a second diameter. The second diameter is substantially larger than the first diameter. A diameter of the container varies over a height of the container to direct one or more food products therein towards the first end. One or more food processing operations are performed.

[0031] According to another embodiment of the invention, a method of blending one or more food items is provided including inserting the one or more food items into a chamber of a container via an opening. The container has a first end a second end, and at least one wall extending there between to define a chamber configured to receive the one or more food products. The first end has a first diameter and the second end has a second diameter. The diameter of the container gradually decreases from the first end towards the second end such that a ratio of the first diameter to the second diameter is between about 1.2:1 and 2:1. A rotatable blade assembly is attached to an end of the container to close the opening. The container is connected to a complementary base. One or more food processing operations are performed.

BRIEF DESCRIPTION OF THE FIGURES

[0032] The accompanying drawings incorporated in and forming a part of the specification embodies several aspects of the present invention and, together with the description, serves to explain the principles of the invention. In the drawings:

[0033] FIG. 1 is a perspective view of a container of a blender according to an embodiment of the invention;

[0034] FIG. 2 is an exploded view of the container of FIG. 1 according to an embodiment of the invention; and

[0035] FIG. 3 is a top view of the container of FIG. 1 according to an embodiment of the invention;

[0036] FIG. 4 is an exploded side view of the container and a rotatable blade assembly configured to couple to the container according to an embodiment of the invention;

[0037] FIG. 5 is an exploded side view of the container and a rotatable blade assembly configured to couple to the container according to an embodiment of the invention;

[0038] FIG. 6 is a side view of a container of FIG. 1 in an upside down configuration according to an embodiment of the invention; and

[0039] FIG. 7 is perspective view of an example of a blender according to an embodiment of the invention; and

[0040] FIG. 8 is a flow chart of a method of using a blender according to an embodiment of the invention.

[0041] The detailed description explains embodiments of the invention, together with advantages and features, by way of example with reference to the drawings.

DETAILED DESCRIPTION

[0042] Referring now to FIGS. 1-7, an example of a container 20 configured as part of a blender 70 (FIG. 7) is illustrated in more detail. The container 20 is adapted to receive a plurality of food products to be processed and may be formed from any of a plurality of materials compatible with food, such as glass or plastic for example. The container 20 generally includes a first end 22, a second, opposite end 24, and one or more walls 26 extending there between. The walls 26 define an interior volume of space or a chamber 28 within which the one or more food products to be processed are placed. A handle 30 may be mounted to or integrally formed with one of the walls 26 to facilitate transportation and manipulation of the container 22. In the illustrated, non-limiting embodiment, the handle 30 includes a generally hollow handle base 32 configured to receive a complementary handle insert 34. Exemplary materials that may be used for the container 20 or the handle insert 34 includes any food safe plastic material, such as a copolyester material, for example Tritan™ manufactured by Eastman Chemical Company.

[0043] When the container 20 is attached to the blender to perform one or more food processing operations, see FIG. 7, the container 20 is in a first “operational” configuration wherein the first end 22 is arranged as the top of the container 20 and the second end 24 functions as the bottom of the container 20. However, when the container 20 is separated from the blender 70, the container may be oriented in a second “non-operational” configuration (FIG. 6). When in the non-operational configuration, such as when one or more food products are being added to the container for example, the container 20 has a

reverse configuration wherein the first end 22 functions as the bottom and the second end 24 is configured as the top. In one embodiment, the container 20 is configured as an extra-large travel container 20 having a volume between about 40 fluid ounces and 64 fluid ounces.

[0044] In the illustrated, non-limiting embodiment shown in FIG. 2, a first opening 36 is formed at the first end 22 of the container 20. However, in other embodiments, the first end 22 of the container 20 may be generally sealed or closed. In embodiments where the first end 22 includes an opening 36, a lid 40 generally complementary in size to the first opening 36 is attached to the first end 22 of the container 20. Inclusion of the lid 40, such as during a food processing and/or blending operation restricts movement of the one or more food products from the chamber 28 via the first end 22 of the container 20. In one embodiment, the lid may be shaped or include one or more features to prevent the accumulation of food particles thereon. In addition, a gasket 42 may be positioned between the lid 40 and the first end 22 to form a seal preventing a food product from spilling out at the interface between the lid 40 and the opening 36.

[0045] In some embodiments, the lid 40 is removably secured to the container 20, such as via a plurality of threads, or a press-fit configuration. Alternatively, the lid may be fixedly attached to the first end 22 of the container. In such embodiments, one or more food products are inserted and removed from the chamber 28 via the opening 38 formed in the second end 24. In one embodiment, the lid 40 may be permanently attached to the first end 22 such as via a weld. For example, a conductive wire positioned between the lid 40 and the first end 22 may be used to form an induction weld, or a laser beam may be used to form a laser weld and fuse the lid 40 and the first end 22 about an interface thereof. In embodiments where a laser weld is used, the joined lid 40 and container 20 need not have any metal components, and therefore may be safe for use in a microwave.

[0046] In another embodiment, illustrated in FIG. 2, a locking pin 44 may be used to restrict movement of a lid 40 attached to the first end 22, such as via a plurality of threads for example. As shown, the locking pin 44 may be configured to couple a first connector 46 extending from a portion of the lid 40 and an adjacent second connector 48 extending from a portion of the container 20. Although the second connector 48 is illustrated as being arranged within the hollow handle base 32, other embodiments where the second connector 48 is arranged outside the handle 30 are within the scope of the invention. In the illustrated, non-limiting embodiment, the handle insert 34 is configured to cover and restrict user access to the locking pin 44.

[0047] Referring now to FIGS. 4 and 5, the second opening 38 formed at the second end 24 of the container 20 is configured to receive a portion of a rotatable blade assembly 50 for processing the one or more food items positioned within the chamber 28. In one embodiment, the rotatable blade assembly 50 is configured to removably couple to the second end 24 of the container 20, such as via a plurality of threads. When attached, the rotatable blade assembly 50 seals the bottom of the container 20 such that the food products contained within the chamber 28 are unable to escape the container 20 through the second opening 38. As shown, the rotatable blade assembly 50 includes a spindle 52 configured to rotate about an axis A and having at least one blade 54 mounted thereto. The at least one blade 54 is disposed within the chamber 28 such that rotation thereof is adapted to facilitate processing and/or blending of the food products arranged therein.

[0048] Referring again to FIGS. 1-6, the container 20 is illustrated as having a generally circular cross-section; however, containers having other cross-sectional shapes are within the scope of the invention. One or more ribs 56 may be formed in the walls 26 of the container 20. In the illustrated, non-limiting embodiment, a plurality of ribs 56, such as four ribs for example, are equidistantly spaced about a periphery of the container 20. Inclusion of the ribs 56 improves the overall blending efficiency of the blender 70 by preventing food particles from sticking to the walls 26 of the container 20.

[0049] As shown, a diameter of the horizontal cross-section of the chamber 28 is configured to vary over the height of the container 20. As a result, a first end 22 of the container 20 has a first diameter. Similarly, the second end 24 of the container 20 has a second diameter, different from the first diameter. In one embodiment, the second diameter is substantially smaller than the first diameter. For example, a ratio of the first diameter to the second diameter may be between about 1.2:1 to about 2:1, and more specifically, between about 1.4:1 and 1.6:1. The diameter of the chamber 28 gradually decreases from the first end 22 towards the second end 24 such that during operation the container 20 is configured to direct or funnel any food products located therein towards the second end 24, and more specifically, the at least one rotating blade 54 arranged within the chamber 28.

[0050] Referring now to FIG. 4, a plurality of markings 60 may be formed in the one or more walls 26 of the container 20 to indicate a volume of processed food therein. In the illustrated, non-limiting embodiment, the markings 60 are configured to identify a volume of processed food within the container 20 when the container 20 is in the first operational configuration, such as when the container 20 is attached to the remainder of the blender system 70. Alternatively, or additionally, a plurality of markings 60 may be configured to

identify a volume of processed food within the container 20 when the container 20 is in a second orientation, such as when the container 20 is separated from the blender system 70.

[0051] Referring now to FIG. 5, an example of a blender 20 is illustrated in more detail. In general, the blender 20 is configured to perform one or more food processing or blending operations including, but not limited to, dicing, chopping, cutting, slicing, mixing, blending, stirring, crushing, or the like.

[0052] The blender 70 includes a base 80 configured to receive and couple with a portion of the container 20, such as the second end 24 for example. The base 80 includes a housing 82 within which a motorized unit (not shown) and at least one controller (not shown) are located. The base 80 is adapted to couple with the container 30 such that when the container 20 is installed thereon, the motorized unit and the rotatable blade assembly 50 are mechanically coupled. As a result, the motorized unit can be adapted to drive rotation of the rotatable blade assembly 50 about axis A to perform one or more food processing and/or blending operations.

[0053] A method 100 of using the blender 70 is illustrated in more detail in FIG. 6. As shown in block 102, one or more food items are inserted into the chamber 28 of the container 20, such as through either the first opening 36 or the second opening 38. In embodiments where the lid 40 is fixedly attached to the container 20, the food items are inserted through the opening 38 formed in the second end 24. The opening 36, 38 of the container 20 is then sealed in block 104. If food items were inserted through the second opening 38, the rotatable blade assembly 50 is then coupled to the second end 24 such that the at least one blade 54 thereof is disposed within the chamber 28. In block 106, the container 20 is attached to the base 80 of the blender 70 to mechanically couple the motorized unit therein and the rotatable blade assembly. In embodiments where the one or more food items were inserted into the container 20 via the second opening 38, installation of the container 20 includes rotating the container 180 degrees between the non-operational orientation and the operational orientation. Once attached to the base 80, one or more food processing operations are performed (see block 108). Initiation of such operations may occur by a user pressing one or more buttons on the base 80.

[0054] A container 20 as described herein has an increased capacity compared to containers of conventional personal or single-opening blender systems. For example, existing containers typically have a volume between 16-24 fluid ounces, whereas the volume of the container 20 described herein is between about 40 and 64 fluid ounces. In addition, the blender 70 more efficiently performs one or more food operations by continually funneling

the one or more food products arranged within the chamber 28 toward the rotating blade assembly 50.

[0055] All references, including publications, patent applications, and patents cited herein are hereby incorporated by reference to the same extent as if each reference were individually and specifically indicated to be incorporated by reference and were set forth in its entirety herein.

[0056] The use of the terms “a” and “an” and “the” and similar referents in the context of describing the invention (especially in the context of the following claims) is to be construed to cover both the singular and the plural, unless otherwise indicated herein or clearly contradicted by context. The terms “comprising,” “having,” “including,” and “containing” are to be construed as open-ended terms (i.e., meaning “including, but not limited to,”) unless otherwise noted. Recitation of ranges of values herein are merely intended to serve as a shorthand method of referring individually to each separate value falling within the range, unless otherwise indicated herein, and each separate value is incorporated into the specification as if it were individually recited herein. All methods described herein can be performed in any suitable order unless otherwise indicated herein or otherwise clearly contradicted by context. The use of any and all examples, or exemplary language (e.g., “such as”) provided herein, is intended merely to better illuminate the invention and does not pose a limitation on the scope of the invention unless otherwise claimed. No language in the specification should be construed as indicating any non-claimed element as essential to the practice of the invention.

[0057] Exemplary embodiments of this invention are described herein, including the best mode known to the inventors for carrying out the invention. Variations of those embodiments may become apparent to those of ordinary skill in the art upon reading the foregoing description. The inventors expect skilled artisans to employ such variations as appropriate, and the inventors intend for the invention to be practiced otherwise than as specifically described herein. Accordingly, this invention includes all modifications and equivalents of the subject matter recited in the claims appended hereto as permitted by applicable law. Moreover, any combination of the above-described elements in all possible variations thereof is encompassed by the invention unless otherwise indicated herein or otherwise clearly contradicted by context.

CLAIMS:

What is claimed is:

1. A container configured for use with a blender, comprising:
a body having a first end, a second, opposite end, and at least one wall extending there between to define a chamber configured to receive one or more food products to be processed, wherein the first end has a first diameter and the second end has a second diameter, the first diameter being substantially larger than the second diameter, and a diameter of the container varies over a height of the container to direct one or more food products therein towards the second end.
2. The container according to claim 1, wherein a ratio of the first diameter to the second diameter is between about 1.2:1 and 2:1.
3. The container according to claim 1, wherein a diameter of the container gradually decreases from the first end towards the second end.
4. The container according to claim 1, wherein a cross-section of the container is generally circular in shape.
5. The container according to claim 1, the first end includes a first opening and the second end includes a second opening.
6. The container according to claim 5, wherein a lid is configured to attach to the first end to restrict movement of the one or more food products from the container through the first end.
7. The container according to claim 6, wherein a locking pin configured to couple a first connector extending from the lid and a second connector extending from the container restricts movement of the lid from the first end.
8. The container according to claim 7, wherein the locking pin is covered by a portion of an adjacent hollow component.
9. The container according to claim 8, wherein the hollow component is a portion of a handle.
10. The container according to claim 5, wherein a rotating blade assembly is configured to couple to the second end.
11. The container according to claim 10, wherein the rotating blade assembly includes a spindle rotatable about an axis and at least one blade attached to the spindle, wherein when the rotating blade assembly is coupled to the second end, the at least one blade extends through the second opening into the chamber.

12. The container according to claim 1, wherein the container includes a plurality of marking to indicate a volume of food product within the chamber.
13. The container according to claim 1, wherein the container includes a handle extending from the container and configured to facilitate movement of the container.
14. The container according to claim 13, wherein the handle includes a handle insert and a generally hollow handle base configured to receive the complementary handle insert.
15. A container configured for use with a blender, comprising:
a body having a first end, a second, opposite end, and at least one wall extending there between to define a chamber configured to receive one or more food products to be processed, wherein the first end has a first diameter and the second end has a second diameter and a diameter of the container gradually decreases from the first end towards the second end such that a ratio of the first diameter to the second diameter is between about 1.2:1 and 2:1.
16. The container according to claim 15, wherein the diameter of the container varies over a height of the container to direct the one or more food products therein towards the second end.
17. The container according to claim 15, wherein a cross-section of the container is generally circular in shape.
18. The container according to claim 15, the first end includes a first opening and the second end includes a second opening.
19. The container according to claim 18, wherein a lid is configured to attach to the first end to restrict movement of the one or more food products from the container through the first end.
20. The container according to claim 19, wherein a locking pin configured to couple a first connector extending from the lid and a second connector extending from the container restricts movement of the lid from the first end.
21. The container according to claim 20, wherein the locking pin is covered by a portion of an adjacent hollow component.
22. The container according to claim 21, wherein the hollow component is a portion of a handle.
23. The container according to claim 18, wherein a rotating blade assembly is configured to couple to the second end.
24. The container according to claim 23, wherein the rotating blade assembly includes a spindle rotatable about an axis and at least one blade attached to the spindle, wherein when

the rotating blade assembly is coupled to the second end, the at least one blade extends through the second opening into the chamber.

25. The container according to claim 15, wherein the container includes a plurality of marking to indicate a volume of food product within the chamber.

26. The container according to claim 15, wherein the container includes a handle extending from the container and configured to facilitate movement of the container.

27. The container according to claim 26, wherein the handle includes a handle insert and a generally hollow handle base configured to receive the complementary handle insert.

28. A method of blending one or more food items, comprising:

inserting the one or more food items into a chamber of a container via an opening formed in a first end, the container being arranged in a first configuration;

attaching a rotatable blade assembly to the first end of the container to close the opening;

connecting the container to a complementary base including rotating the container 180 degrees from the first configuration to a second configuration, wherein the first end has a first diameter and a second end of the container has a second diameter, the second diameter being substantially larger than the first diameter, wherein a diameter of the container varies over a height of the container to direct one or more food products therein towards the first end; and

performing one or more food processing operations.

29. A method of blending one or more food items, comprising:

inserting the one or more food items into a chamber of a container via an opening, wherein the container has a first end, a second end, and at least one wall extending there between to define a chamber configured to receive the one or more food products, wherein the first end has a first diameter and the second end has a second diameter and the diameter of the container gradually decreases from the first end towards the second end such that a ratio of the first diameter to the second diameter is between about 1.2:1 and 2:1;

attaching a rotatable blade assembly to an end of the container to close the opening;

connecting the container to a complementary base; and

performing one or more food processing operations.

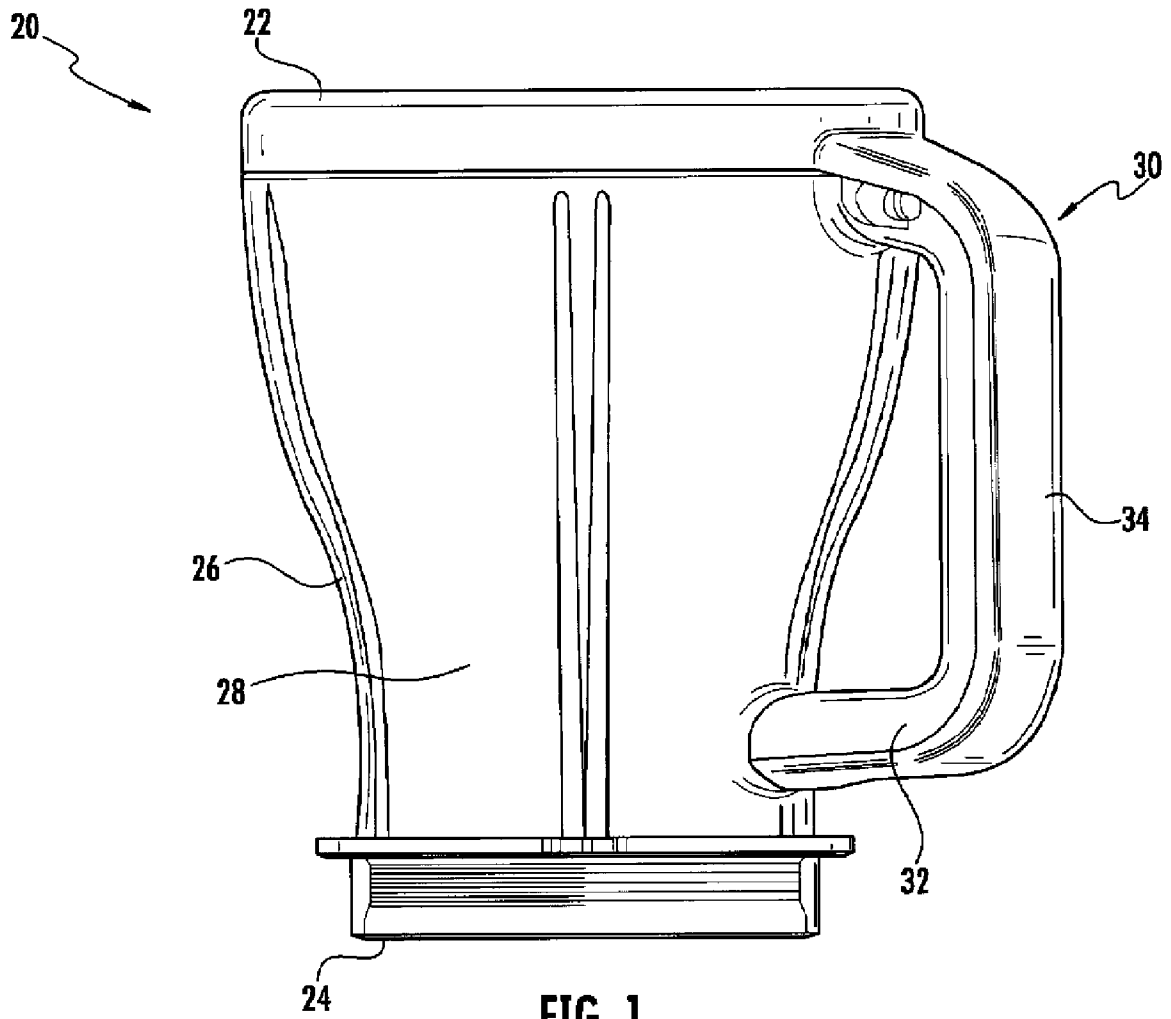


FIG. 1

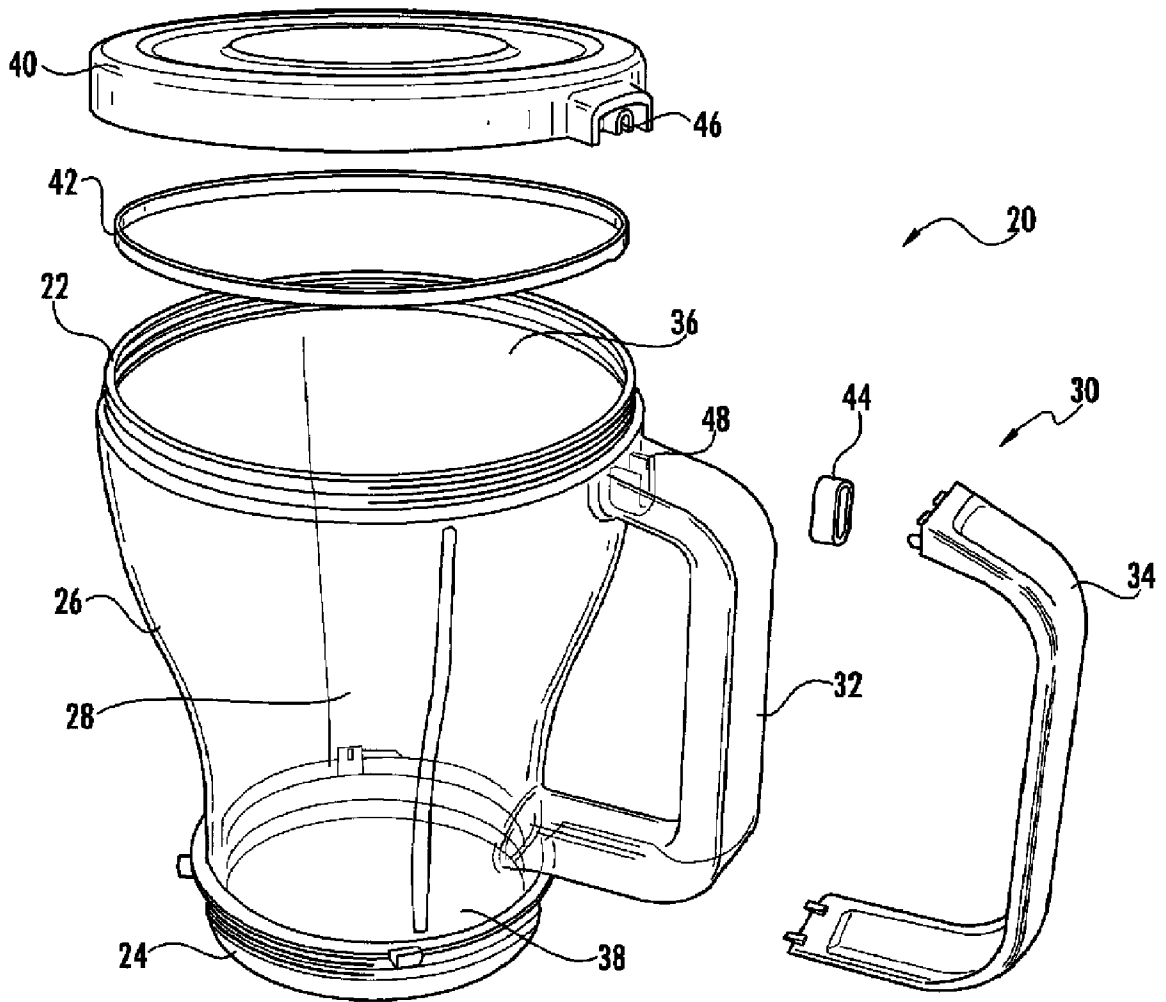


FIG. 2

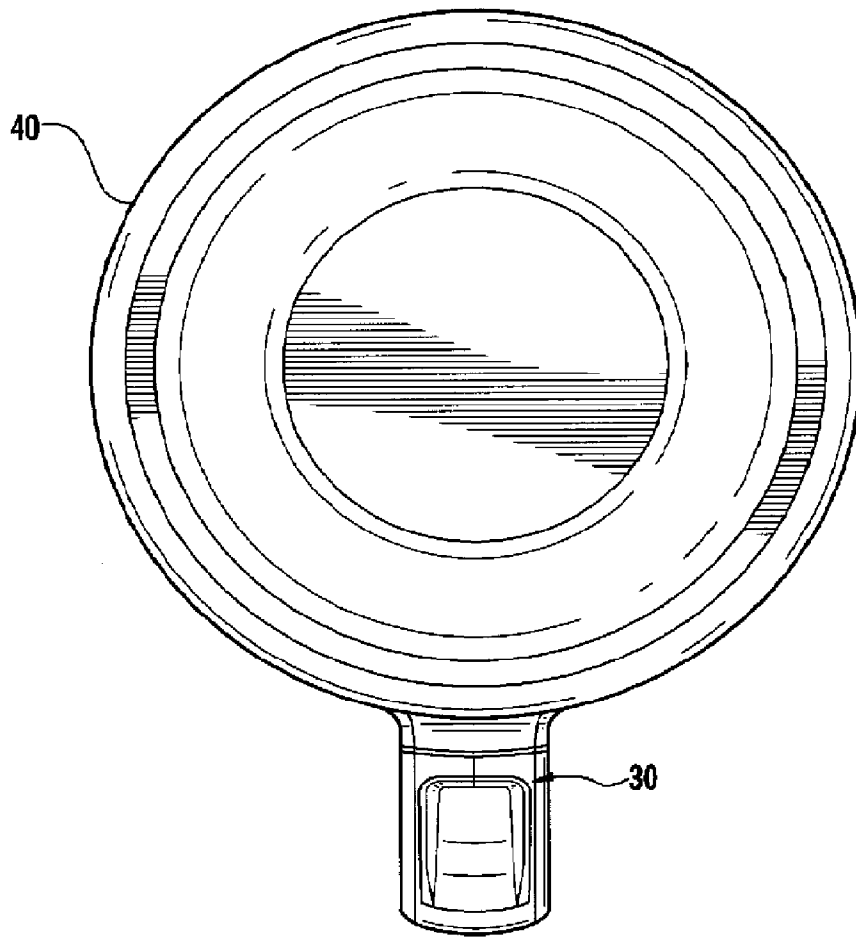
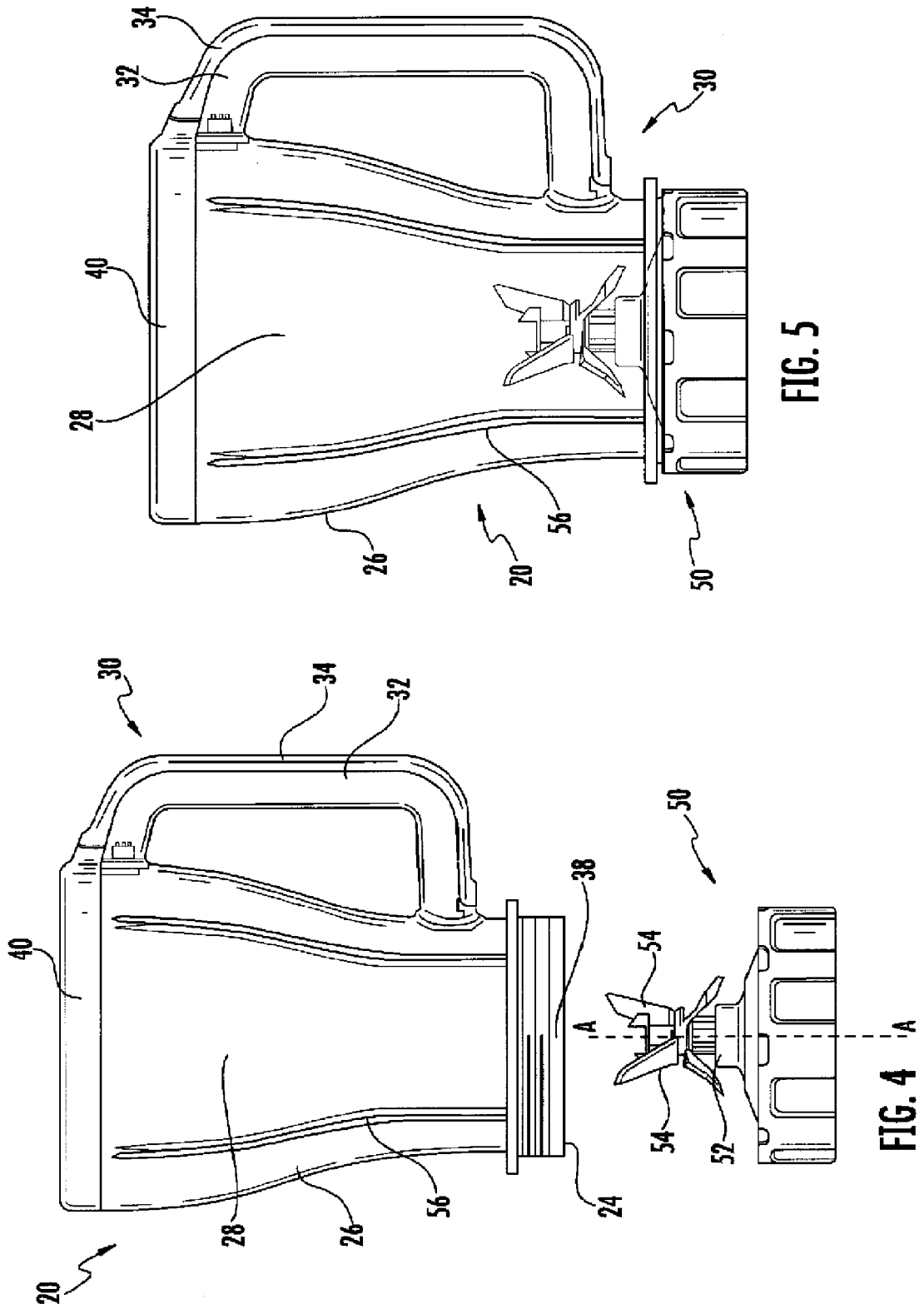


FIG. 3



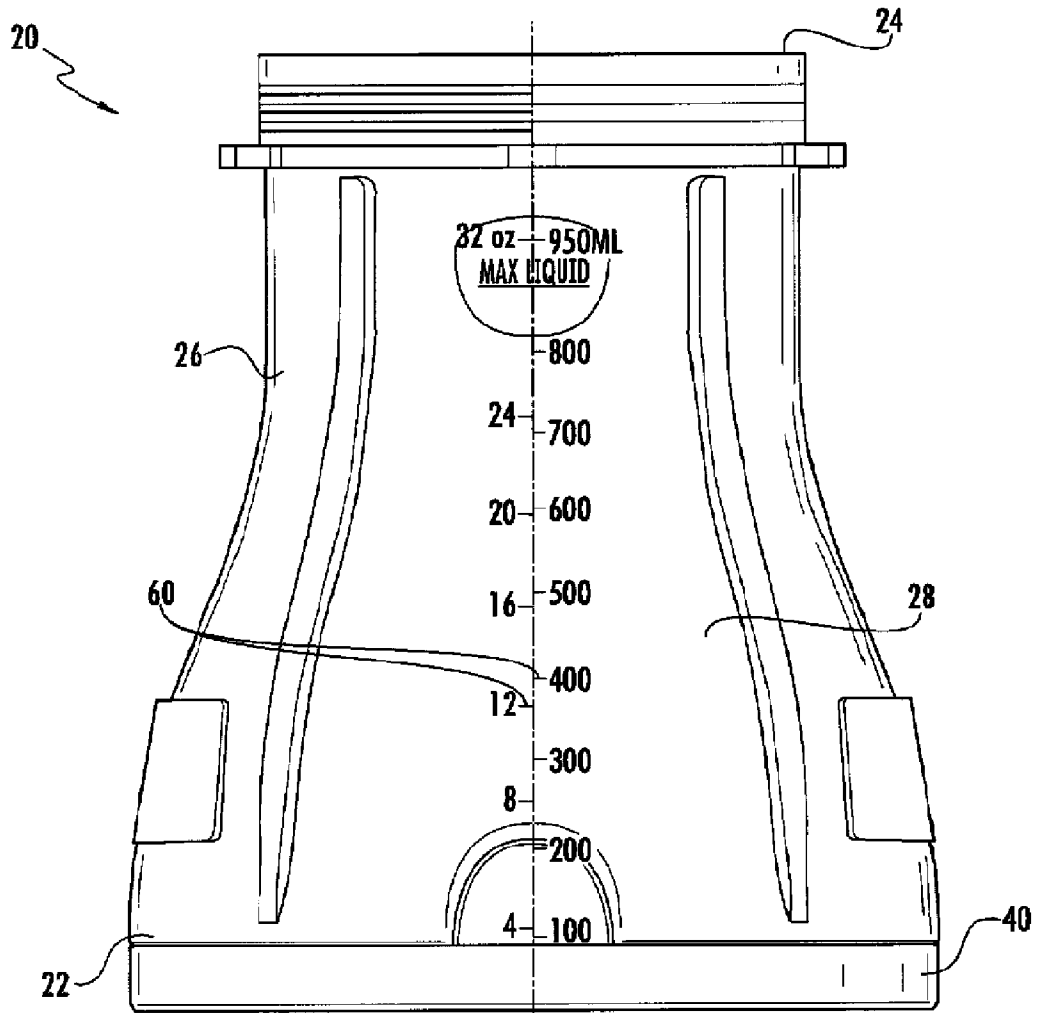


FIG. 6

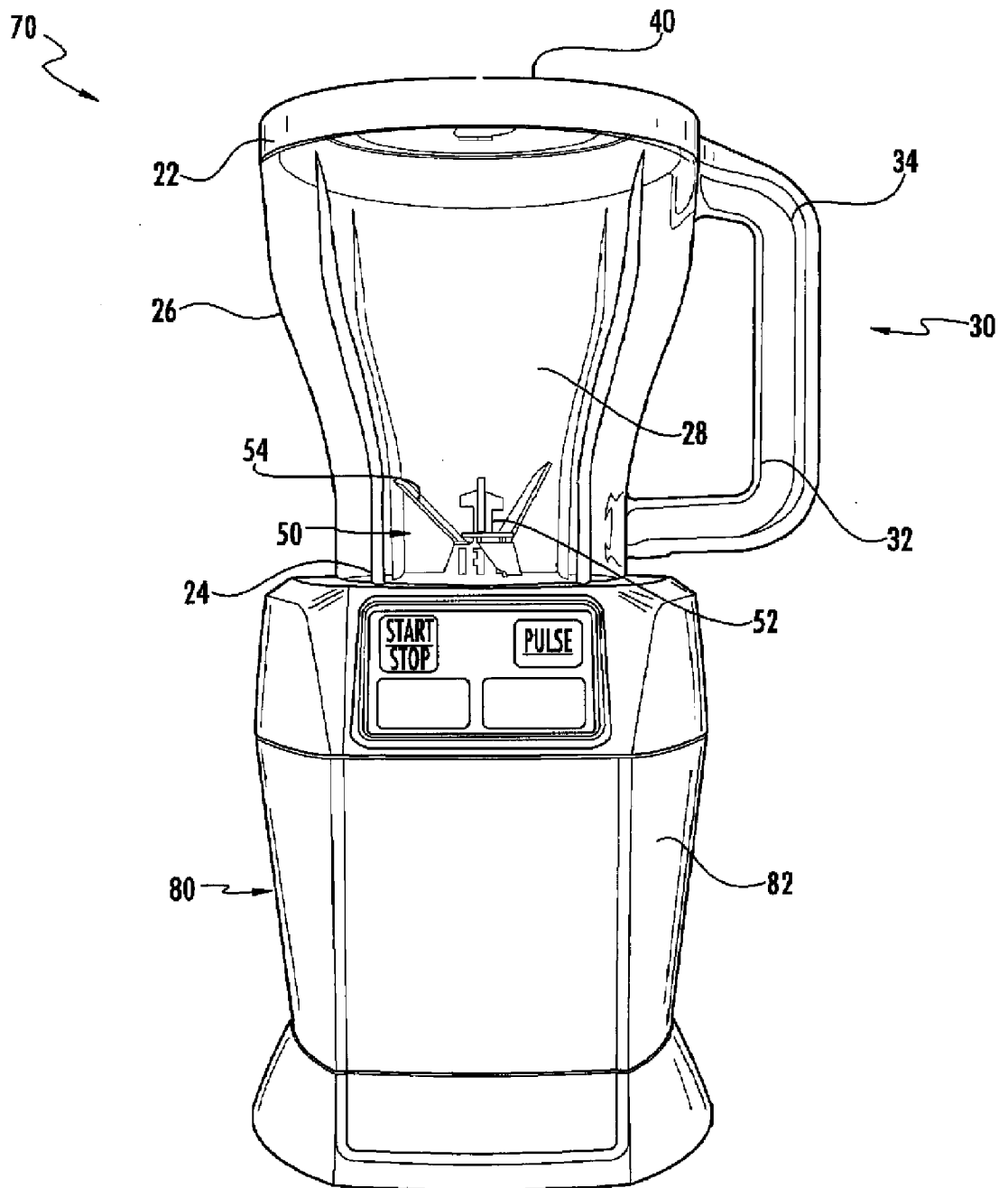


FIG. 7

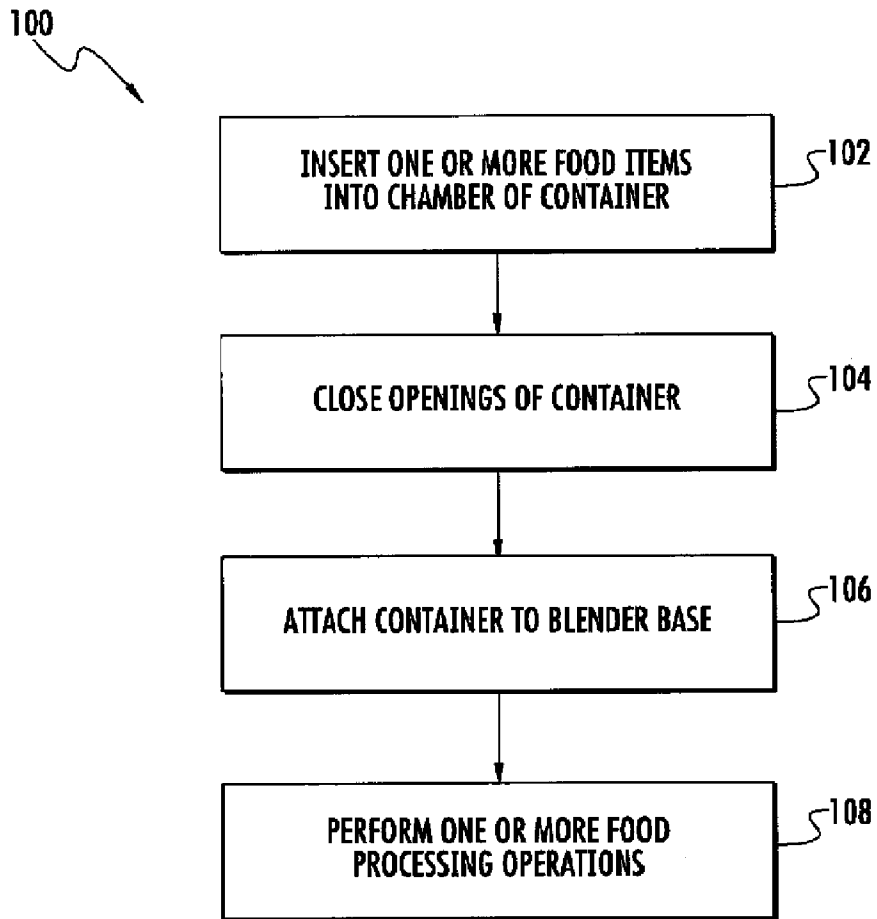


FIG. 8

INTERNATIONAL SEARCH REPORT

International application No PCT/US2015/058233

A. CLASSIFICATION OF SUBJECT MATTER INV. A47J43/07 ADD.				
According to International Patent Classification (IPC) or to both national classification and IPC				
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) A47J				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched				
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPO-Internal, WPI Data, PAJ				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
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<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.</td> <td style="width: 50%; border: none;"><input checked="" type="checkbox"/> See patent family annex.</td> </tr> </table>			<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.	<input checked="" type="checkbox"/> See patent family annex.
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer De Terlizzi, Marino			

INTERNATIONAL SEARCH REPORT

International application No
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