

(19)



(11)

EP 4 520 678 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
12.03.2025 Bulletin 2025/11

(51) International Patent Classification (IPC):
B65D 41/04 (2006.01) **B65D 47/12** (2006.01)
B65D 50/04 (2006.01)

(21) Application number: **24198567.0**

(52) Cooperative Patent Classification (CPC):
B65D 50/046; B65D 41/0485; B65D 47/122;
B65D 47/123

(22) Date of filing: **05.09.2024**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL
NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
GE KH MA MD TN

(71) Applicant: **The Procter & Gamble Company**
Cincinnati, OH 45202 (US)

(72) Inventor: **RODGERS, Kevin Michael**
45202 Cincinnati (US)

(74) Representative: **P&G Patent Belgium UK**
N.V. Procter & Gamble Services Company S.A.
Temselaan 100
1853 Strombeek-Bever (BE)

(30) Priority: **05.09.2023 US 202363580602 P**

(54) CONTAINER HAVING A LOCKING CLOSURE

(57) A package including a closure engaged with a container. The closure has one or more tabs that abut one or more abutments. The tabs can be displaced towards

the longitudinal axis and the closure can be rotated in the disengagement direction to dislodge the closure from the container.

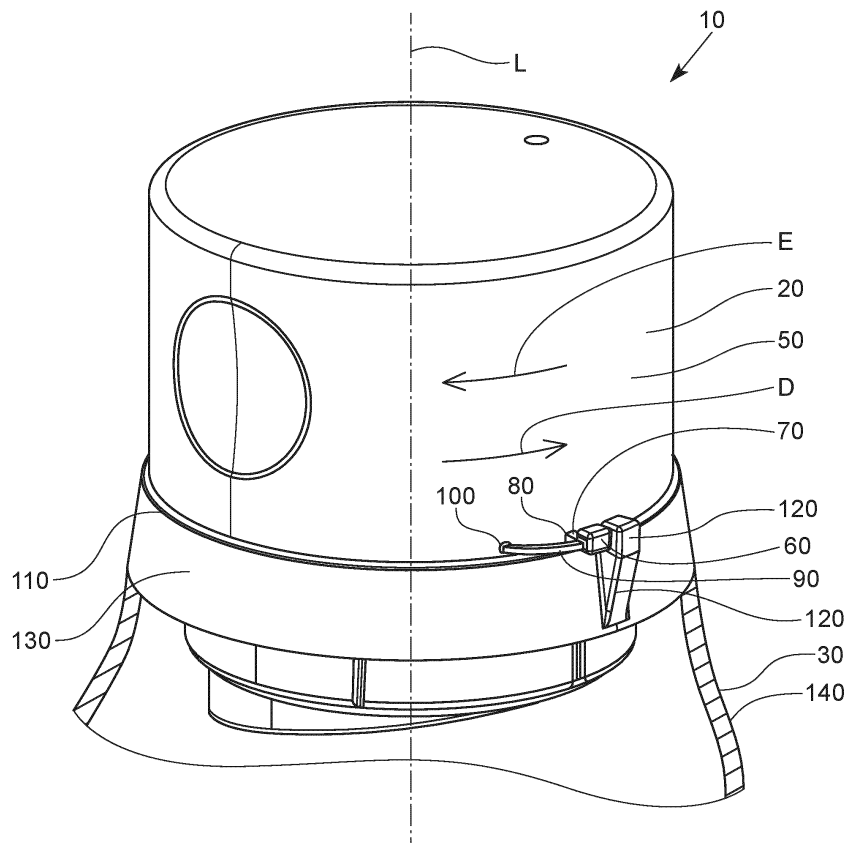


FIG. 1

Description

FIELD OF THE INVENTION

[0001] Locking closure for a container.

BACKGROUND OF THE INVENTION

[0002] Packages of liquid are commonly moved in commerce. Packages for liquids often comprise a container and a closure engaged with the container. Threaded closures are commonly used to close containers. Prior to shipment, a threaded closure is engaged with a container by a machine that screws the closure onto the open end of the container. During transport from the filling location to the user's home, packages for liquids are often subjected to vibrations and impacts that can cause the threads of the closure to back off from the position in which the closure is sealingly engaged with the container. A problem associated with the threads of the closure backing off is that the user may unintentionally open the package since little force is required to unscrew the closure once the closure is not sealingly engaged with the container. Another problem associated with the threads of the closure backing off is that the package may leak, especially if the package is tipped over or inverted. With these limitations in mind, there is a continuing unaddressed need for a package having a closure system in which the closure is restrained from unintentional opening or backing off during transport.

SUMMARY OF THE INVENTION

[0003] A package (10) comprising: a closure (20) engaged with a container (30), wherein said closure comprises: a threaded collar (40) and a peripheral wall (50) extending from said threaded collar, wherein said peripheral wall extends around a longitudinal axis (L) and has an engagement rotation direction (E) in which said threaded collar engages with said container and a disengagement rotation direction (D) in which said thread collar disengages with said container; a tab (60) outboard of and spaced apart from said peripheral wall and connected to said peripheral wall by a deformable first arm (70) extending from a first arm attachment location (80) on said peripheral wall to said tab and deformable second arm (90) extending from a second arm attachment location (100) on said peripheral wall to said tab, wherein said second arm attachment location is radially offset from said first arm attachment location by from about 2 degrees to about 30 degrees in the engagement rotation direction, wherein said first arm attachment location is radially offset from said tab by from about 0.5 degrees to about 20 degrees in the engagement rotation direction, wherein said tab has a tab width (W) orthogonal to said longitudinal axis; wherein said container comprises: an open end (110) about said longitudinal axis; and an abutment (120) projecting above said open end and

outboard of said open end and spaced apart from said peripheral wall by a clearance distance (C), wherein said clearance distance is greater than or equal to said tab width, and wherein said tab is abutted against said abutment.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004]

Figure 1 is a perspective view of a package including a closure engaged with a spout fitment that is part of the open end of a container.

Figure 2 is partial view of a closure engaged with a spout fitment that is part of the open end of a container.

Figure 3 is a side view of a closure.

Figure 4 is a top view of a closure.

Figure 5 is a side view of a spout fitment.

Figure 6 is a top view of a spout fitment.

DETAILED DESCRIPTION OF THE INVENTION

[0005] A perspective view of a package 10 is shown in Figure 1. The package 10 comprises a closure 20 engaged with a container 30. The closure 20 comprises a threaded collar (40) and a peripheral wall 50 extending from the threaded collar, wherein the peripheral wall extends around a longitudinal axis L and has an engagement rotation direction E in which the threaded collar engages with the container and a disengagement rotation direction D in which the thread collar disengages with the container.

[0006] The closure 20 comprises a tab 60 outboard of and spaced apart from the peripheral wall and connected to the peripheral wall by a deformable first arm 70 extending from a first arm attachment location 80 on the peripheral wall to the tab. The closure 20 further comprises a deformable second arm 90 extending from a second arm attachment location 100 on the peripheral wall 50 to the tab 60. The second arm attachment location 100 can be radially offset from the first arm attachment location 80 by from about 2 degrees to about 30 degrees in the engagement rotation direction E. The first arm attachment location 80 can be radially offset from the tab 60 by from about 0.5 degrees to about 20 degrees in the engagement rotation direction E. The tab has a tab width W orthogonal to the longitudinal axis. The tab width is a scalar quantity.

[0007] The container 30 comprises an open end 110 about the longitudinal axis L and an abutment 120 projecting above the open end and outboard of the open end and spaced apart from the peripheral wall by a clearance distance C. The clearance distance C is a scalar quantity. The clearance distance C can be greater than or equal to the tab width W. The tab 60 can be abutted against the abutment 120.

[0008] To unscrew the closure 20 from the container

30, the user presses the tab 60 towards the longitudinal axis to dislodge the tab 60 from the abutment 120. Then the user rotates the closure 20 in the disengagement rotation direction D to move the tab past the abutment 120. Optionally, the closure 20 comprises two the tabs 60 positioned radially opposite one another about the longitudinal axis L and the container comprises two the abutments 120 positioned radially opposite one another about the longitudinal axis L. The process of opening the package 10 process comprises the steps of pressing the tabs 60 towards the longitudinal axis L to dislodge the tabs 60 from the abutments 120. Then the user can rotate the closure 20 in the disengagement rotation direction D to move the tabs 60 past the abutments 120. The tab 60 or tabs 60 can have a first position abutting the abutment 120 or abutments 120 and a second position in which the tab 60 or tabs 60 are inboard of the abutment 120 or abutments 120 and rotatable in said disengagement rotation direction D past the abutment 120 or abutments 120.

[0009] The tab 60 or tabs 60 in combination with the abutment 120 or abutments 120 can help to resist backing off of the closure. The deformable first arm 70 and deformable second arm 90 can provide for flexible structures that can be deformed, optionally elastically deformed, by the user pushing on the tab 60 or tabs 60. The user can push the tab 60 or tabs 60 in far enough so that the tab 60 or tabs 60 can rotationally move past the abutment 120 or abutments 120 so that the closure 20 can be removed from the container 30.

[0010] The deformable first arm 70 and deformable second arm 90 can extend from away from the peripheral wall 50 at the first arm attachment location 80 and second arm attachment location 100 in a direction, respectively, in a direction about the longitudinal axis L in the disengagement rotation direction D.

[0011] The second arm attachment location can be radially offset from said first arm attachment location by from about 2 degrees to about 20 degrees, optionally from about 2 degrees to about 15 degrees, optionally from about 2 degrees to about 10 degrees, in the engagement rotation direction. The first arm attachment location can be radially offset from said tab by from about 0.5 degrees to about 15 degrees, optionally from about 0.5 degrees to about 10 degrees, from about 0.5 degrees to about 5 degrees, from about 2 degrees to about 20 degrees, from about 2 degrees to about 15 degrees, from about 2 degrees to about 10 degrees, in the engagement rotation direction.

[0012] The open end 110 can comprise a spout fitment 130, optionally a drain back spout fitment 150, engaged with the container body 140. The spout fitment can comprise a spout 180 that projects into the closure 20. A portion of the spout 180 can be positioned between the peripheral wall 50 and the longitudinal axis L.

[0013] The threaded collar 40 can be continuous about the longitudinal axis L. Optionally, the threaded collar 40 can have one or more slots positioned around the longi-

tudinal axis L.

[0014] The threaded collar 40, peripheral wall 50, tab 60, deformable first arm 70, and said deformable second arm 90 can be unitary with one another and comprised of plastic, optionally a thermoset plastic.

[0015] Each tab 60 can have an engaged portion abutting the abutment 120. The engaged portion can have a height H. The threaded collar 40 can comprise threads having a pitch P. The pitch P can be at least twice the height H. In such an arrangement, a 180 degree rotation in the disengagement direction D can move the closure 20 along the longitudinal axis L such that the tab 60 does not collide with an abutment 120 on the other side of the container 30.

[0016] The dimensions and values disclosed herein are not to be understood as being strictly limited to the exact numerical values recited. Instead, unless otherwise specified, each such dimension is intended to mean both the recited value and a functionally equivalent range surrounding that value. For example, a dimension disclosed as "40 mm" is intended to mean "about 40 mm."

[0017] Every document cited herein, including any cross referenced or related patent or application and any patent application or patent to which this application claims priority or benefit thereof, is hereby incorporated herein by reference in its entirety unless expressly excluded or otherwise limited. The citation of any document is not an admission that it is prior art with respect to any invention disclosed or claimed herein or that it alone, or in any combination with any other reference or references, teaches, suggests or discloses any such invention. Further, to the extent that any meaning or definition of a term in this document conflicts with any meaning or definition of the same term in a document incorporated by reference, the meaning or definition assigned to that term in this document shall govern.

[0018] While particular embodiments of the present invention have been illustrated and described, it would be obvious to those skilled in the art that various other changes and modifications can be made without departing from the spirit and scope of the invention. It is therefore intended to cover in the appended claims all such changes and modifications that are within the scope of this invention.

Claims

1. A package (10) comprising:
a closure (20) engaged with a container (30), wherein said closure comprises:

a threaded collar (40) and a peripheral wall (50) extending from said threaded collar, wherein said peripheral wall extends around a longitudinal axis (L) and has an engagement rotation direction (E) in which said threaded collar engages with said container and a disengagement

- rotation direction (D) in which said thread collar disengages with said container;
 a tab (60) outboard of and spaced apart from said peripheral wall and connected to said peripheral wall by a deformable first arm (70) extending from a first arm attachment location (80) on said peripheral wall to said tab and deformable second arm (90) extending from a second arm attachment location (100) on said peripheral wall to said tab, wherein said second arm attachment location is radially offset from said first arm attachment location by from about 2 degrees to about 30 degrees in the engagement rotation direction, wherein said first arm attachment location is radially offset from said tab by from about 0.5 degrees to about 20 degrees in the engagement rotation direction, wherein said tab has a tab width (W) orthogonal to said longitudinal axis;
 wherein said container comprises;
 an open end (110) about said longitudinal axis;
 and
 an abutment (120) projecting above said open end and outboard of said open end and spaced apart from said peripheral wall by a clearance distance (C), wherein said clearance distance is greater than or equal to said tab width, and wherein said tab is abutted against said abutment.
2. The package according to Claim 1, wherein said second arm attachment location is radially offset from said first arm attachment location by from about 2 degrees to about 20 degrees, optionally from about 2 degrees to about 15 degrees, optionally from about 2 degrees to about 10 degrees, in the engagement rotation direction.
 3. The package according to Claim 1 or Claim 2, wherein said first arm attachment location is radially offset from said tab by from about 0.5 degrees to about 15 degrees, optionally from about 0.5 degrees to about 10 degrees, from about 0.5 degrees to about 5 degrees, from about 2 degrees to about 20 degrees, from about 2 degrees to about 15 degrees, from about 2 degrees to about 10 degrees, in the engagement rotation direction.
 4. The package according to any one of Claims 1 to 3, wherein said open end comprises a spout fitment (130) engaged with a container body (140).
 5. The package according to Claim 4, wherein said spout fitment is a drain back spout fitment (150).
 6. The package according to Claim 4 or 5, wherein said threaded collar comprises threads (160) oriented away from said longitudinal axis and said spout fitment comprises complementary threads (170) oriented towards said longitudinal axis.
 7. The package according to any one of Claims 4 to 6, wherein said spout fitment comprises a spout (180) projecting into said closure and a portion of said spout is positioned between said peripheral wall and said longitudinal axis.
 8. The package according to any one of Claims 1 to 7, wherein said threaded collar is continuous about said longitudinal axis.
 9. The package according to any one of Claims 1 to 8, wherein said threaded collar is discontinuous about said longitudinal axis.
 10. The package according to any one of Claims 1 to 9, wherein said tab has a first position abutting said abutment and a second position in which said tab is inboard of said abutment and rotatable in said disengagement rotation direction past said abutment.
 11. The package according to any one of Claims 1 to 10, wherein said threaded collar, said peripheral wall, tab, deformable first arm and said deformable second arm are unitary with one another.
 12. The package according to any one of Claims 1 to 11, wherein said threaded collar, said peripheral wall, said tab, said deformable first arm and said deformable second arm are unitary with one another and comprised of plastic, optionally a thermoset plastic.
 13. The package according to any one of Claims 1 to 12, wherein said closure comprises two said tabs positioned radially opposite one another about said longitudinal axis and said container comprises two said abutments positioned radially opposite one another about said longitudinal axis.
 14. The package according to any one of Claims 1 to 13, wherein said tab has an engaged portion abutting said abutment, wherein said engaged portion has a height (H), wherein said threaded collar comprises threads having a pitch (P), wherein said pitch is at least twice said height.
 15. A process for opening the package of any one of Claims 1 to 14 comprising the steps of: pressing said tab towards said longitudinal axis to dislodge said tab from said abutment; rotating said closure in said disengagement rotation direction to move said tab past said abutment.

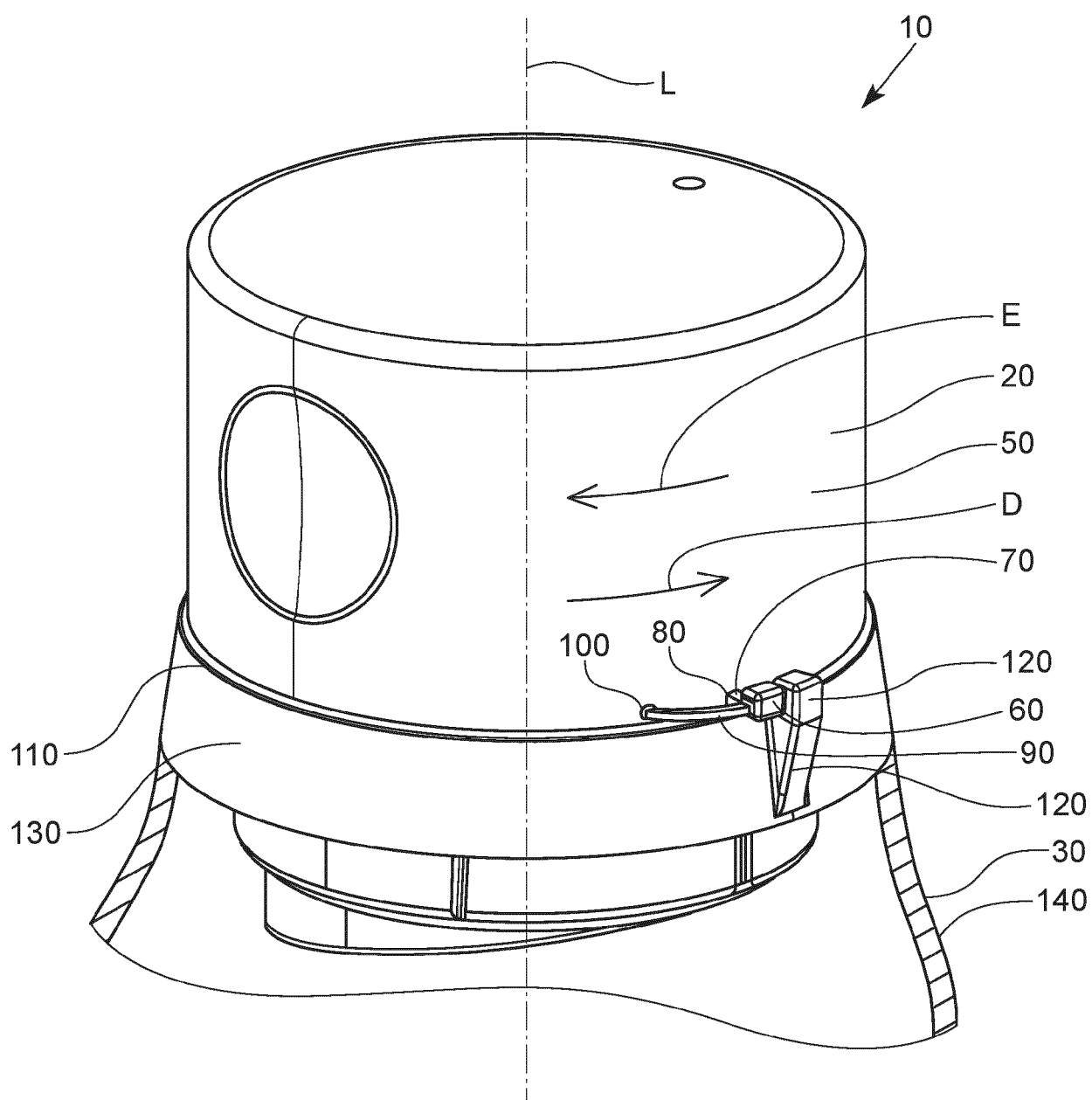


FIG. 1

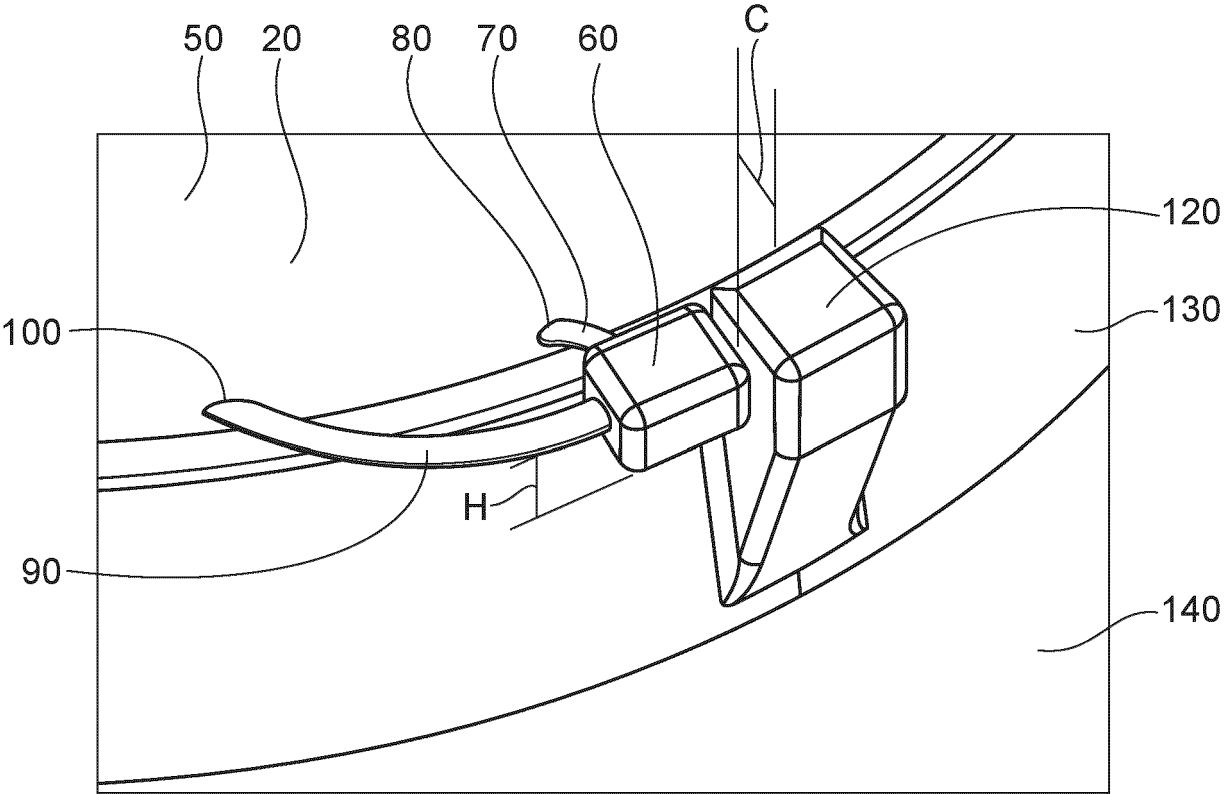


FIG. 2

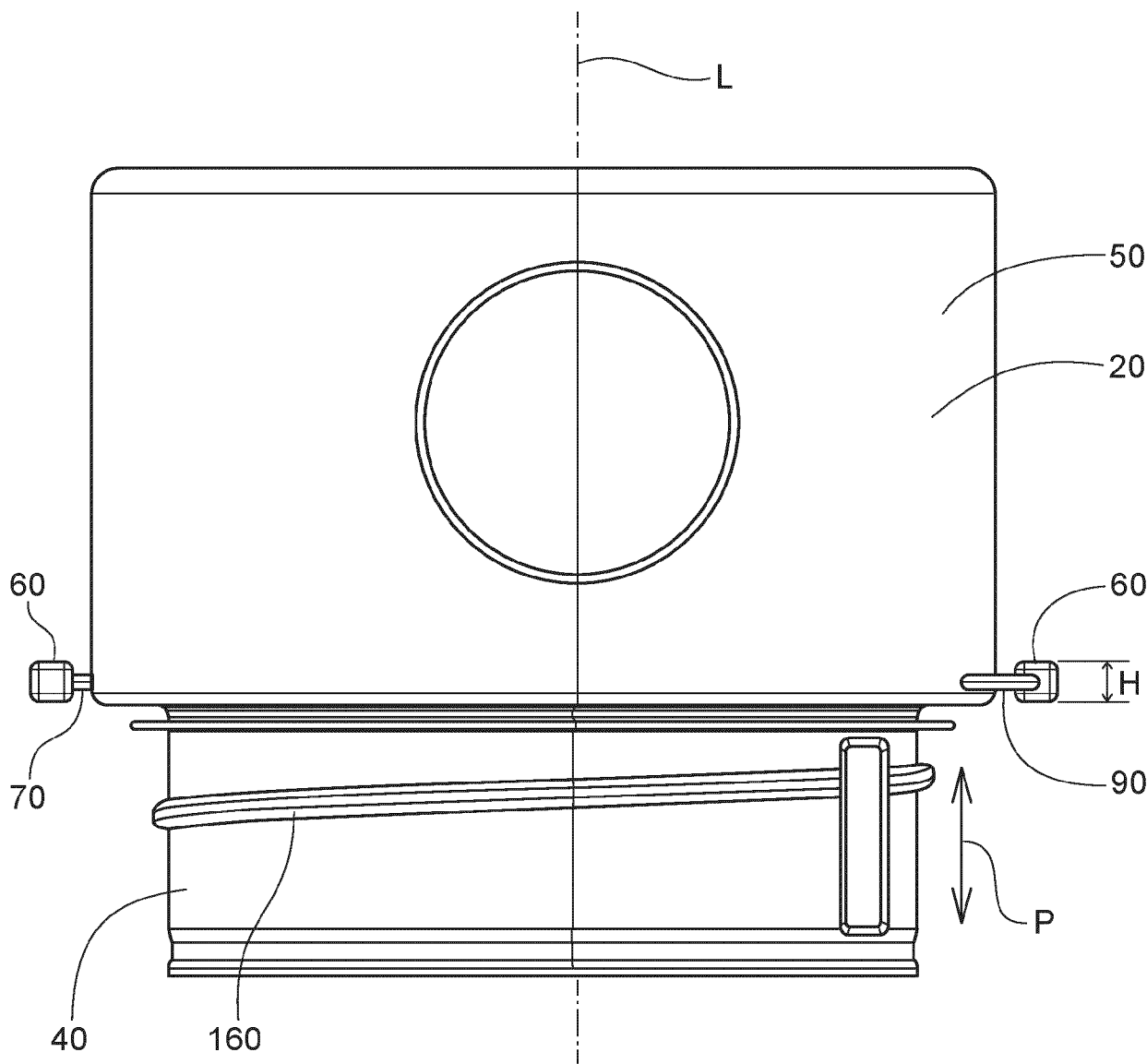


FIG. 3

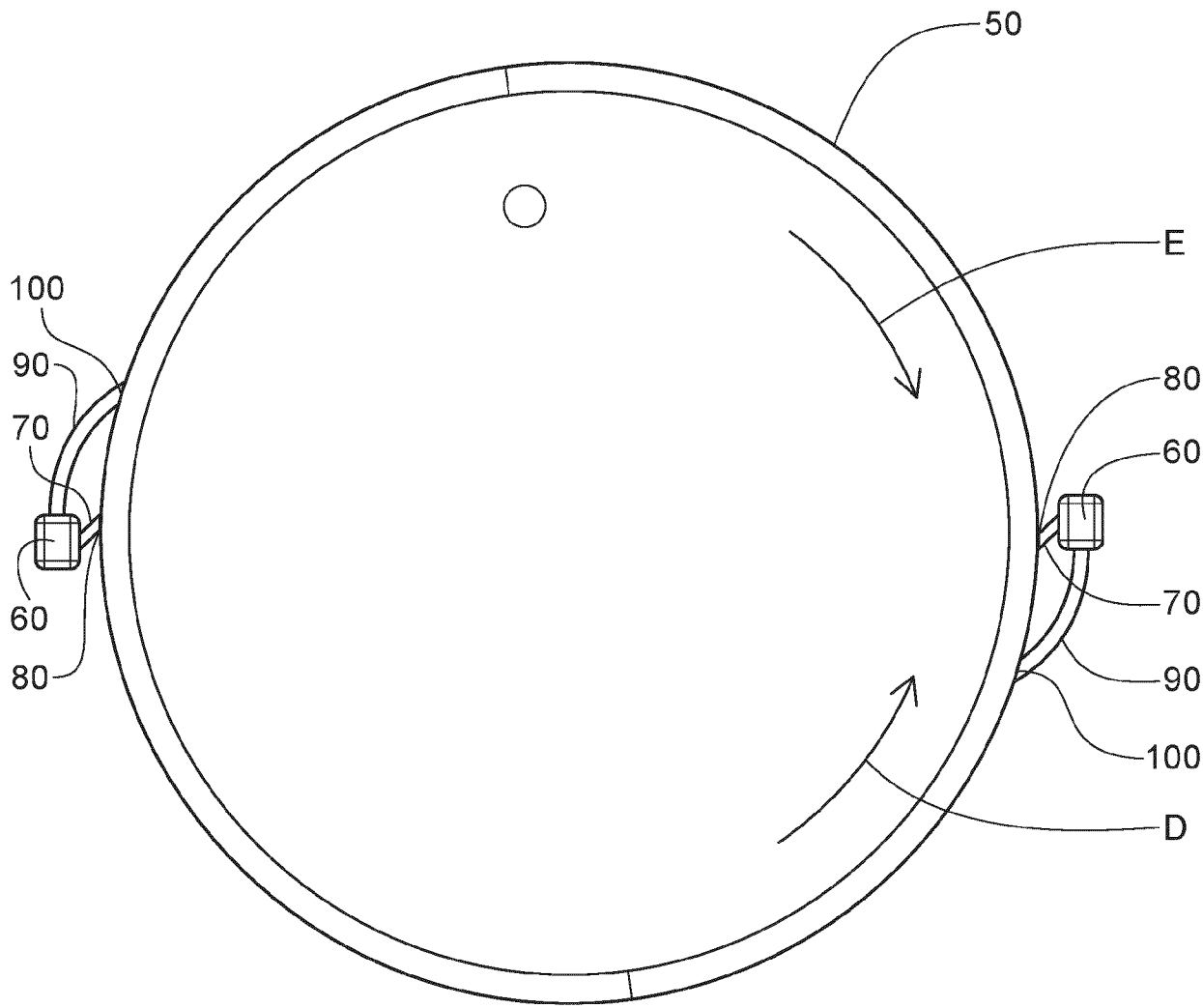


FIG. 4

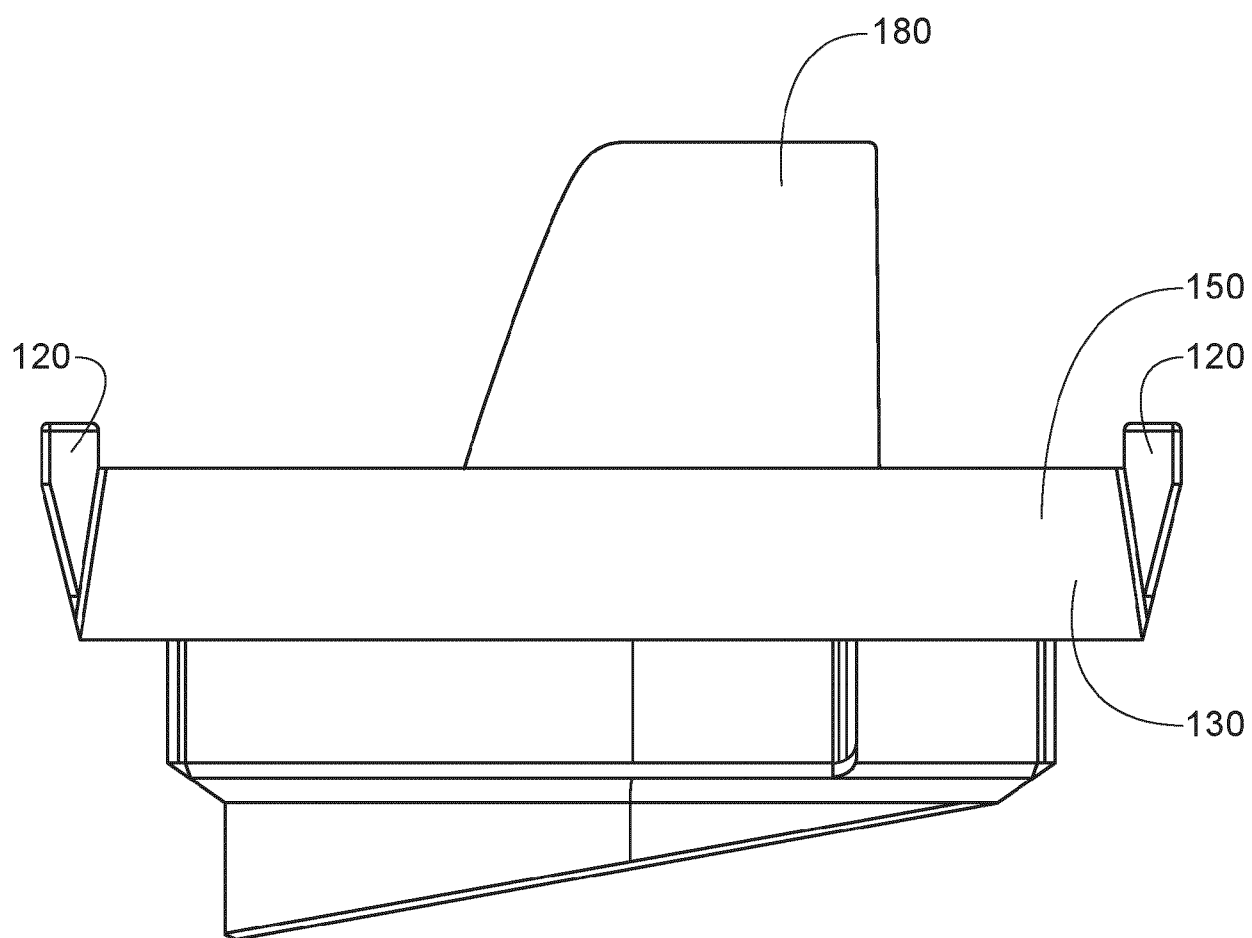


FIG. 5

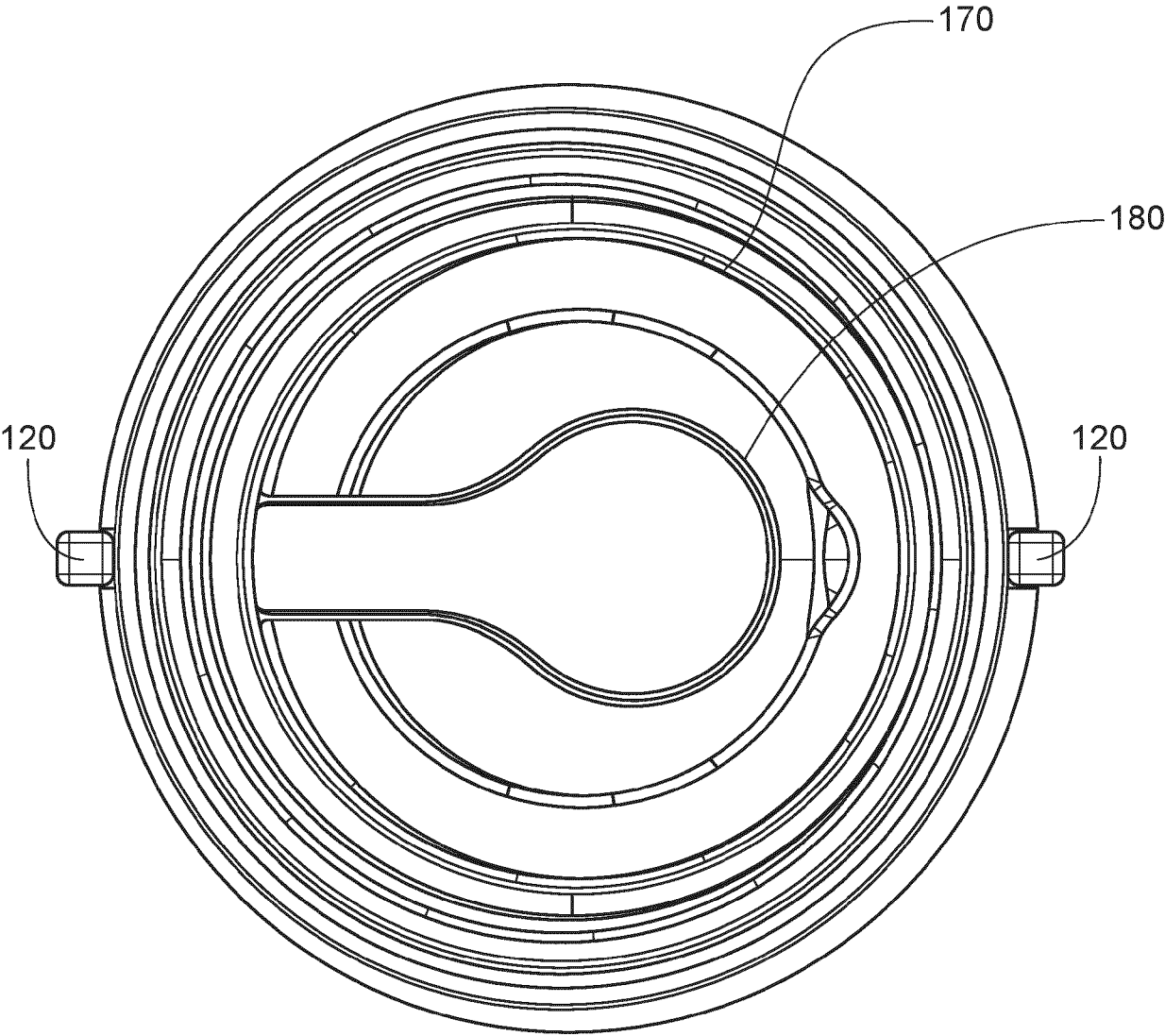


FIG. 6



EUROPEAN SEARCH REPORT

Application Number

EP 24 19 8567

5

10

15

20

25

30

35

40

45

50

55

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 5 165 559 A (KUSZ MAXIMILLIAN [US]) 24 November 1992 (1992-11-24)	1-3, 8-12,14, 15	INV. B65D41/04 B65D47/12 B65D50/04
Y	* figures 1-20 *	4-7,13	
X	US 6 279 766 B1 (JONES NARDA A [US] ET AL) 28 August 2001 (2001-08-28)	1-3, 8-12,14, 15	
A	* figures 1-7 *	4-7,13	
X	US 2017/029179 A1 (MINNETTE JEFFREY C [US] ET AL) 2 February 2017 (2017-02-02)	1-3, 8-12,14, 15	
A	* figures 1-18 *	4-7,13	
X	US 5 379 910 A (MONTGOMERY GARY V [US]) 10 January 1995 (1995-01-10)	1-3, 8-12,14, 15	
A	* figures 1-5 *	4-7,13	
X	US 3 989 152 A (JULIAN RANDALL K) 2 November 1976 (1976-11-02)	1-3, 8-12,14, 15	TECHNICAL FIELDS SEARCHED (IPC)
A	* figures 4-6 *	4-7,13	B65D
Y	US 6 065 648 A (TAUBER JOHN [US]) 23 May 2000 (2000-05-23)	4-7	
A	* figures 18-22 *	1-3,8-15	
Y	US 5 992 657 A (FRIEDMAN ALBERTO [US]) 30 November 1999 (1999-11-30)	13	
A	* figures 8-12 *	1-12,14, 15	
A	US 2018/319555 A1 (SPRICK WILLIAM D [US] ET AL) 8 November 2018 (2018-11-08) * figures 1-5 *	4-7	
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 29 November 2024	Examiner Tzianetopoulou, T
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 24 19 8567

29 - 11 - 2024

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5165559 A	24-11-1992	AT E111047 T1	15-09-1994
		AU 632658 B2	07-01-1993
		CA 2035368 A1	02-08-1991
		DE 69103781 T2	12-01-1995
		DK 0440480 T3	10-10-1994
		EP 0440480 A2	07-08-1991
		ES 2063444 T3	01-01-1995
		MX 172987 B	26-01-1994
		US 5165559 A	24-11-1992
US 6279766 B1	28-08-2001	NONE	
US 2017029179 A1	02-02-2017	US 2017029179 A1	02-02-2017
		US 2018141728 A1	24-05-2018
		US 2019248553 A1	15-08-2019
US 5379910 A	10-01-1995	NONE	
US 3989152 A	02-11-1976	NONE	
US 6065648 A	23-05-2000	NONE	
US 5992657 A	30-11-1999	NONE	
US 2018319555 A1	08-11-2018	CA 3066564 A1	08-11-2018
		CN 110831868 A	21-02-2020
		EP 3634874 A1	15-04-2020
		EP 4361062 A2	01-05-2024
		US 2018319555 A1	08-11-2018
		US 2021269203 A1	02-09-2021
		WO 2018204825 A1	08-11-2018