(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 085 835**
A2

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **83100208.4**

(22) Date of filing: **12.01.83**

(51) Int. Cl.³: **B 67 D 5/02**
B 67 D 1/02, B 67 D 1/10

(30) Priority: **04.02.82 US 345776**

(43) Date of publication of application:
17.08.83 Bulletin 83/33

(84) Designated Contracting States:
DE FR GB IT NL SE

(71) Applicant: **Food-Cone Corporation**
Oak Grove
Clackamas Oregon 97015(US)

(72) Inventor: **Frank, Dennis Benjamin**
3708 S.E. Oldercrest
Milwaukee, Oregon 97222(US)

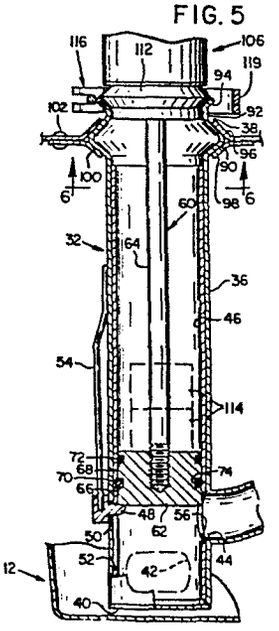
(72) Inventor: **O'Mealy, Todd Calef**
5140 N.E. 42
Portland, Oregon 97222(US)

(74) Representative: **Lehn, Werner, Dipl.-Ing. et al,**
Hoffmann, Eitle & Partner Patentanwälte
Arabellastrasse 4 (Sternhaus)
D-8000 München 81(DE)

(54) Dispenser for semi-liquid foods such as chili.

(57) A dispenser for viscous liquid or semi-liquid materials comprising a container (12) for the material and an upright hollow stationary cylinder (36) within the container (12) operatively closed at its bottom end (46), an intake opening (42) in the side of the cylinder (36) disposed upwardly from but adjacent said bottom end (40) and an elevated discharge opening (44) in the side of the cylinder (36) disposed upwardly from said intake opening (42), a sleeve (46) slideably mounted within the cylinder (36) having a lowered position and a raised position and constructed in said lowered position to close off the intake opening (42) and open up the elevated discharge opening (44) and in said raised position to open said intake opening (42) and to close off said elevated discharge opening (44), a vertically reciprocatable piston and rod assembly (60) including a piston (62) disposed within the cylinder (36) shiftable between lowered and raised positions disposed above said elevated discharge opening (44), and friction means (70, 72) interposed between the assembly (60) and sleeve (46) for producing movement of the sleeve (46) between its lowered and raised positions with shifting of the piston (62) between lowered and raised positions.

FIG. 5



EP 0 085 835 A2

0085835

DISPENSER FOR SEMI-LIQUID FOODS SUCH AS CHILI

Technical Field

This invention relates to dispenser apparatus, and to a pump assembly which may be incorporated with the apparatus and which is actuatable to pump measured volumes of material from the apparatus. The dispenser apparatus and pump assembly are particularly adapted for the handling of viscous liquid and semi-liquid food materials, such as chili, light stews, sauces, etc.

Background of The Invention

In recent years, considerable changes have occurred in connection wth the manner in which commercial eating establishments are operated. Because labor costs have increasingly become a major factor in the cost of prepared food, and the desire of the public is to be served with speed, cafeteria-style restaurants and fast-food distributors are becoming increasingly prevalent in public eating establishments. Many food items such as salads, beverages and sandwiches are even found dispensed on a serve-yourself basis. A major consideration bottoming the instant invention is the observation of a need for a practical and reliable dispenser apparatus for foods, such as chilies, sauces, stews, etc., which is capable of being actuated to provide, on demand, a measured quantity of the food dispensed. Such equipment would greatly facilitate the dispensing of viscous and semi-liquid foods in eliminating the need for open pots and ladles, and even providing, under proper circumstances, an opportunity for the customer to serve himself.

Disclosure of The Invention

The dispenser apparatus of this invention, and the pump assembly incorporated therein, provide a reliable and practical means for dispensing measured amounts of materials of the type herein-above indicated, and in particular, for the pumping of measured volumes of such materials. The equipment is relatively easily cleaned, an important consideration in equipment designed for the handling of foods. The apparatus contemplated has a relatively simple construction, and as a consequence may be produced and sold at a price which is acceptable to the usual edible food purveyor. The pump assembly is readily incorporated with existing kettles and warming equipment found in a restaurant, to produce dispenser apparatus as contemplated.

Thus, a general object of this invention is to provide a practical and reliable dispensing apparatus for dispensing measured volumes of viscous liquid and semi-liquid materials, and particularly food of this description, such as chili, stews, sauces, etc.

A further object is to provide such apparatus which is relatively easily disassembled and cleaned.

Yet another object is to provide appratus of this description which is simply constructed and relatively maintenance free.

Yet a further object of the invention is to provide a novel pump assembly actuatable to pump consistently a measured volume of material.

The pump assembly contemplated is particularly adapted for incorporation with a kettle, such as might be used to store a volume of food, featuring an intake opening adacent the base of the assembly for drawing material into the assembly, a discharge opening disposed above such intake opening and structure for producing a pumping action, and in particular a reciprocatable piston moveable in the assembly in a zone disposed above the intake and discharge openings described.

These, and various other objects and advantages, are attained by the invention, which will become more fully apparent from a reading of the following description, which is to be taken in conjunction with the accompanying drawings, wherein:

Brief Description of the Drawings

Fig. 1 is a perspective view illustrating a dispensing apparatus constructed in accordance with the invention, the apparatus illustrated including a receptacle or container and an elongate pump assembly extending downwardly into the interior of the container.

Fig. 2 is a cross-sectional view, somewhat enlarged, taken generally along the line 2-2 in Fig. 1.

Fig. 3 is a cross-sectional view taken generally along the line 3-3 in Fig. 1.

Fig. 4 (second sheet) is a side elevation, partly in cross section, illustrating in more detail the construction of the pump assembly.

Fig. 5 is a cross-sectional view, similar to portions of Fig. 4, but illustrating the pump assembly in a different position of adjustment.

Fig. 6 (first sheet) is a cross-sectional view, taken generally along the line 6-6 in Fig. 5.

Detailed Description of The Invention

Referring now to the drawings, and more particularly to Fig. 1, the apparatus therein illustrated includes a container or receptacle, indicated in dashed outline at 12. Such is open at the top, and includes a hollow interior, and is exemplary of a vessel such as might be employed in a cafeteria for holding a volume of material such as chili. The receptacle includes a shoulder shown at 14 adapting the receptacle for the mounting thereof in a heated well of the type found in the hot serving area of a cafeteria, whereby the contents of the vessel are kept warm. The top of the vessel is closed off by a removeable lid or cover 16, which includes an annular ridge 18 which supports the lid on an annular bead 20 defining the top of the container. As so far described, the container and lid resemble utensils found in a conventional restaurant or cafeteria where food is cooked and served.

Means may be provided for stirring the contents of the container. In the form of the invention illustrated, such includes a stirring unit 22 including a shaft 24, mounting blades 26, 28 adjacent the base of the shaft. A power-drive unit 30 of conventional form is detachably mounted on the top of lid 16. The top of shaft 24 extends upwardly through an accommodating hole in the lid to a detachable driving connection with the output of

an electric motor (not shown) which is part of the power-drive unit 30.

Material is dispensed in measured amounts from the interior of the container through actuation of an elongate pump assembly 32. Material travels from the pump assembly to a region outside the container through an elongate spout assembly 34 connected to an outlet port in the pump assembly.

Considering now details of the pump assembly, and referring now also to Figs. 4 and 5, such includes an elongate outer cylinder 36 which extends through an opening 38 provided in the lid vertically downwardly into the interior of container 12 to a bottom end which is closely adjacent the base of the container. In operative position, the cylinder is stationary. The bottom end of the cylinder is closed off, which may be accomplished by having the cylinder's bottom end against the floor of the container, but preferably is accomplished by including an end wall 40 which is joined to the base of the cylinder.

Closely adjacent the base of the cylinder, and in the side of the cylinder, is a port or opening 42 which constitutes an intake opening for the pump assembly. Adjacent the base of the cylinder but spaced upwardly from this intake opening is a port or opening 44 constituting a discharge opening in the assembly.

Slideably received within the cylinder and mounted for reciprocation relative to the cylinder is an elongate sleeve 46. The sleeve may be open at its top and bottom ends.

Maintaining the sleeve from rotating while accommodating up and down relative movement of the sleeve is a detent or finger 48 passing through an opening 50 in the cylinder and with its inner extremity received within a slot 52 provided in the sleeve. An elongate spring 54 with its upper end joined to the outside of the cylinder and its lower end mounted on the finger element 48 maintains the finger element properly inserted within slot 52, while yieldably accommodating outward movement of the element to permit separation of the sleeve and cylinder for cleaning purposes. The lower end of slot 52 defines the upper limit position for the sleeve, illustrated in Fig. 4, wherein the lower end of the sleeve is elevated above opening 42 and the side of the sleeve closes off opening 44. The upper end of the slot defines the lower limit position for the sleeve, illustrated in Fig. 5, and in this position the base of the sleeve closes opening 42 and lies directly adjacent end wall 40.

Sleeve 46 includes an opening 56 which registers with opening 44 in the cylinder with the sleeve in its lowered position. The opening is above opening 44, and facing the side wall of the cylinder, with the sleeve in its raised position, as illustrated in Fig. 4.

Illustrated at 60 is a piston and rod assembly which extends downwardly into the interior of cylinder 36. More specifically, this assembly includes a piston 62 snugly received within sleeve 46 and rod 64 having its lower end secured to the piston and with its upper end extending vertically upwardly out of the cylinder. Annular grooves or channels 66, 68 extend about the piston. These provide seats for "O" rings or annular elastomer rings 70, 72. These rings seal the outside of the piston to the interior of the sleeve and increase the

frictional resistance imparted to relative movement of the piston within the sleeve.

A shallow annular groove 74 may be provided around the interior of the sleeve in a region above opening 56. With the sleeve in its lowered position, and piston 62 also in its lowered position, as shown in Fig. 5, the outer extremity of lower ring 70 seats within groove 74. With this lower ring so seated, the frictional resistance to movement of the piston relative to the sleeve is increased, assuring that on upward movement of the piston from the position shown in Fig. 5, the sleeve will also follow the piston.

Spout assembly 34 earlier generally described includes a lower section 76 suitably secured to the cylinder with the interior of the section registering with discharge opening 44. Also part of the spout assembly is an upper section 78 which extends through an opening 80 in the lid and has its lower end telescopically received within an enlargement 76a of the lower section. The spout assembly may be broken down, with separation of the upper section from the lower section, and preferably the upper section passes loosely through lid opening 80 whereby the upper section may be also removed from the lid for cleaning purposes.

A plug 82 slideably mounted in the upper end of section 78 is moveable between the position shown in solid and dashed outline in Fig. 5. A yieldable finger 84 which is part of the plug has its outwardly projecting end riding in a slot 86 provided in the spout assembly. This inhibits rotation of the plug relative to the spout assembly. Depression of the finger permits removal of the plug. Wih the plug disposed inwardly on the spout

assembly, as shown in solid outline, ejection opening 88 in the spout assembly is closed. With movement of the plug outwardly on the spout assembly this ejection opening is opened.

Cylinder 36 adjacent its upper end includes an annular bulge region 90, an expanse 92 which is approximately a continuation of the major portion of the cylinder, and a radially outwardly flaring lip region 94. As can be seen in Fig. 4, lid 16 includes a flaring annular flange 96 defining opening 38. In its seated position, the cylinder is mounted with the upper part of its bulge region 90 resting against this flared flange 96 of the lid. The cylinder is secured in place, and with reference to Fig. 6, by moving a portion of its bulge region under a fixed shelf 98 secured to the underside of the lid. A pivoted clasp member 100 pivoted at 102 to the lid is wingable from the dashed position shown in Fig. 6 to the position shown in solid outline, wherein a shelf region 104 of the clasp member engages the underside of bulge 90 at a point spaced from fixed shelf 98. The construction described provides a detachable mounting for the cylinder in a stationary position.

Rod 64 of the piston and rod assembly may be moved up and down manually to produce a pumping action in the pump assembly, but preferably a power-operated means is provided, such as the fluid-operated ram unit shown at 106. Not shown, as being conventional, is a piston within this unit connected to the rod 64 moved up and down in the ram unit through the supply and exhaust of pressure fluid to the unit through conduits including conduit 108. The lower end of the stroke of this unit may occur when piston 62 is abutting finger 48. The upper end of the stroke may occur when the top part of the piston abuts collar 112

which forms the base of ram unit 106. If a shorter return stroke is desired in piston 62, a spacer or spacers such as the ones shown at 114 in dashed outline in Fig. 5 may be included. These take the form of annular members placed on top of the piston with rod 64 extending through them. With such spacers on retraction of the piston, upward movement of the piston stops when the upper part of the upper spacer comes against the collar, and the upper surface of the piston comes up against the lower surface of the lower spacer.

The ram unit is detachably mounted in place on top of cylinder 36. Thus, collar 112 includes a stem region 112a which fits within expanse 92 of the cylinder. Annular enlargement 112b of the collar, with the ram unit properly positioned over the cylinder, rests against flared lip 94. A detachable encircling clamp 116, with sections 117, 118 hinged together at 119 (see Fig. 2), detachably secures the collar and cylinder. Screw fastener 120 is tightened to join the sections 117, 118 firmly about the parts that they encompass.

Describing the operation of the apparatus, and assuming that the container is filled with material sufficient to cover inlet opening 42, and that the piston and rod assembly and the sleeve 46 have the position illustrated in Fig. 5, on retraction of the piston by operation of ram unit 106 the piston and sleeve move together upwardly within cylinder 36. As the inlet opening is opened with upward movement of the sleeve, outlet or discharge opening 44 closes. The sleeve and piston move together as a unit until the sleeve reaches the position shown in Fig. 4, with finger 48 against the base of slot 52.

With further upward movement of the piston, the piston moves upwardly independently of sleeve 46 and the parts assume the position illustrated in Fig. 4 with the piston at the upper end of the stroke. During this upper movement of the piston, material is pulled inwardly into the pump assembly, in a measured amount.

To dispense the material, unit 106 is actuated to shift the piston downwardly. On initial movement of the piston, the sleeve moves with the piston with opening up of port 44 and closing of port 42. With the discharge opening now open, and with further downward movement of the piston, material is pumped outwardly from the pump assembly into spout assembly 34.

Each time the pump assembly is actuated, a measured amount is discharged from the spout assembly. If it is desired to reduce the amount of material pumped, spacers are included, such as are shown at 114.

With the pump assembly extending downwardly into the container and with its bottom end adjacent the base of the container, and intake opening 42 directly adjacent the base of cylinder 36, pumping may be continued until the level of material in the container drops to adjacent the base of the container.

Material in the spout assembly remains warm, by reason of a major portion of this assembly lying within the confines of the container and lid.

The apparatus is readily cleaned, with separation of the spout sections and removal of the pump assembly from its mounting in the lid. The apparatus is readily incorporated with existing kettle structure, with

modification of the lid for such structure whereby such may mount the spout and pump assembly.

The inclusion of the stirring unit is advantageous as it enables a homogeneous consistency to be maintained in the material dispensed.

While a specific embodiment of the invention has been described, it should be obvious that variations and modifications are possible without departing from the invention.

CLAIMS:

1. A dispenser for viscous liquid or semi-liquid materials characterised by:

a container (12) for the material and an upright hollow stationary cylinder (36) within the container operatively closed at its bottom end (40),

an intake opening (42) in the side of the cylinder disposed upwardly from but adjacent said bottom end (40) and an elevated discharge opening (44) in the side of the cylinder (36) disposed upwardly from said intake opening (42),

a sleeve (46) slideably mounted within the cylinder (36) having a lowered position and a raised position and constructed in said lowered position to close off the intake opening (42) and open up the elevated discharge opening (44) and in said raised position to open said intake opening (42) and to close off said elevated discharge opening (44),

a vertically reciprocatable piston and rod assembly (60) including a piston (62) disposed within the cylinder (36) shiftable between lowered and raised positions disposed above said elevated discharge opening (44), and

friction means (70, 72) interposed between the assembly (60) and sleeve (46) for producing movement of the sleeve (46) between its lowered and raised positions with shifting of the piston (62) between lowered and raised positions.

2. The dispenser of claim 1, further characterised by a detachable lid (16) for closing the top of the container, and a mounting (18) for the upper end (20) of said cylinder in said lid.

3. The dispenser of claim 1, further characterised by a detachable lid (16) for closing the top of the container, a mounting (18) for the upper end of said cylinder in said lid, and an elongate spout (34) connected at one end to said discharge opening (44), said spout extending from said discharge opening upwardly and through said lid (16).

4. The dispenser of claim 2, characterised in that said cylinder (36) at its said upper end extends upwardly beyond said lid (16), and which further includes power-actuated means (106) for actuating the piston and rod assembly (60) detachably mounted on said upper end of the cylinder.

5. The dispenser of claim 1, characterised in that said sleeve (46) in its raised and lowered position extends upwardly in said cylinder (36) above said discharge opening (44), said piston (62) is disposed within said sleeve (46) and moves within said sleeve (46) in shifting between raised and lowered positions, and said friction means comprises a ring (70, 72) mounted on the piston (62) engaging the interior of said sleeve (46).

6. The dispenser of claim 1, further characterised by power-operated stirring means (22) within the container (12) adjacent said cylinder (36).

7. A dispensing pump assembly characterised by:

an elongate cylinder (36),

an elongate sleeve (46) disposed within said cylinder (36) and relatively reciprocatable with respect to the cylinder (36),

means (50, 52) limiting movement of the sleeve (46) within the cylinder (36) between one limit position where the sleeve is located adjacent one end of the cylinder (36) and another position wherein the sleeve is located toward the opposite end of the cylinder (36) from the cylinder's said one end,

a piston (62) mounted within the sleeve (46) relatively reciprocatable with respect to the sleeve (46),

a friction ring (70, 72) mounted on and encircling said piston (62),

an annular groove (66, 68) on the inner side of the sleeve (46) within which said ring (70, 72) seats with the sleeve (46) in its said one limit position and with the piston located adjacent one end of the sleeve (46) and adjacent one end of the cylinder (36), movement of the piston (62) to the opposite end of the cylinder (36) being effective first to shift said sleeve (46) to its said other limit position with said ring (70, 72) seated in said groove (66, 68) and further movement of the piston (62) being accommodated by said ring (70, 72) moving out of said groove (66, 68) and sliding along the inner surface of the sleeve (46), and

aperture means (42, 44) in said cylinder opened and closed by movement of the sleeve (46) between its said limit positions.

8. The dispensing pump assembly of claim 7, characterised in that said opposite end of the cylinder (36) is closed, said aperture means comprises an intake opening (42) in the side of said cylinder adjacent the closed end of the cylinder and discharge opening (44) in the side of said cylinder spaced towards one end of the cylinder from said intake opening (42),

said sleeve (46) having a port (56) therein, said sleeve (46) in its lowered position closing off said intake opening (42) and said port (56) registering with said discharge opening (44) and said sleeve (46) in its raised position opening up said intake opening (42) and closing off said discharge opening (44).

9. A dispenser for viscous liquid and semi-liquid materials, characterised by:

a container (12),

a lid (16) closing off the top of the container (12),

an elongate pump assembly (60) detachably mounted in the assembly with such extending downwardly through said lid into the interior of the container to adjacent the base of the container,

said pump assembly (60) including an outer stationary cylinder (36) and port means (42, 44) in said cylinder including an intake opening (42) adjacent the base of the container (12) and a discharge opening (44),

a spout (34) connected to said discharge opening (44) extending outwardly of the interior of said container through said lid (16), and

a piston (62) and sleeve (46) moveably mounted within said cylinder (36) with the piston (62) on movement within the cylinder (36) being operable to pump material and the sleeve (46) on movement within the cylinder (36) controlling flow through said port means (42, 44).

10. A dispenser as claimed in claim 9 characterised in that said discharge opening (44) is disposed above said intake opening (42), the sleeve (46) is moveable from a lowered position wherein said intake opening (42) is closed and said discharge opening (44) is opened, and a raised position wherein said intake opening (42) is opened and said discharge opening (44) is closed, said sleeve (46) in both positions extending in said cylinder (36) above said discharge opening (44), said piston (62) being mounted within said sleeve (46) and being mounted for raised and lowered positions within said sleeve (46) in a zone disposed above said discharge opening (44).

11. The dispenser of claim 9, further characterised by stirring means (22) detachably mounted in the assembly with such extending downwardly through said lid (16).

FIG.1

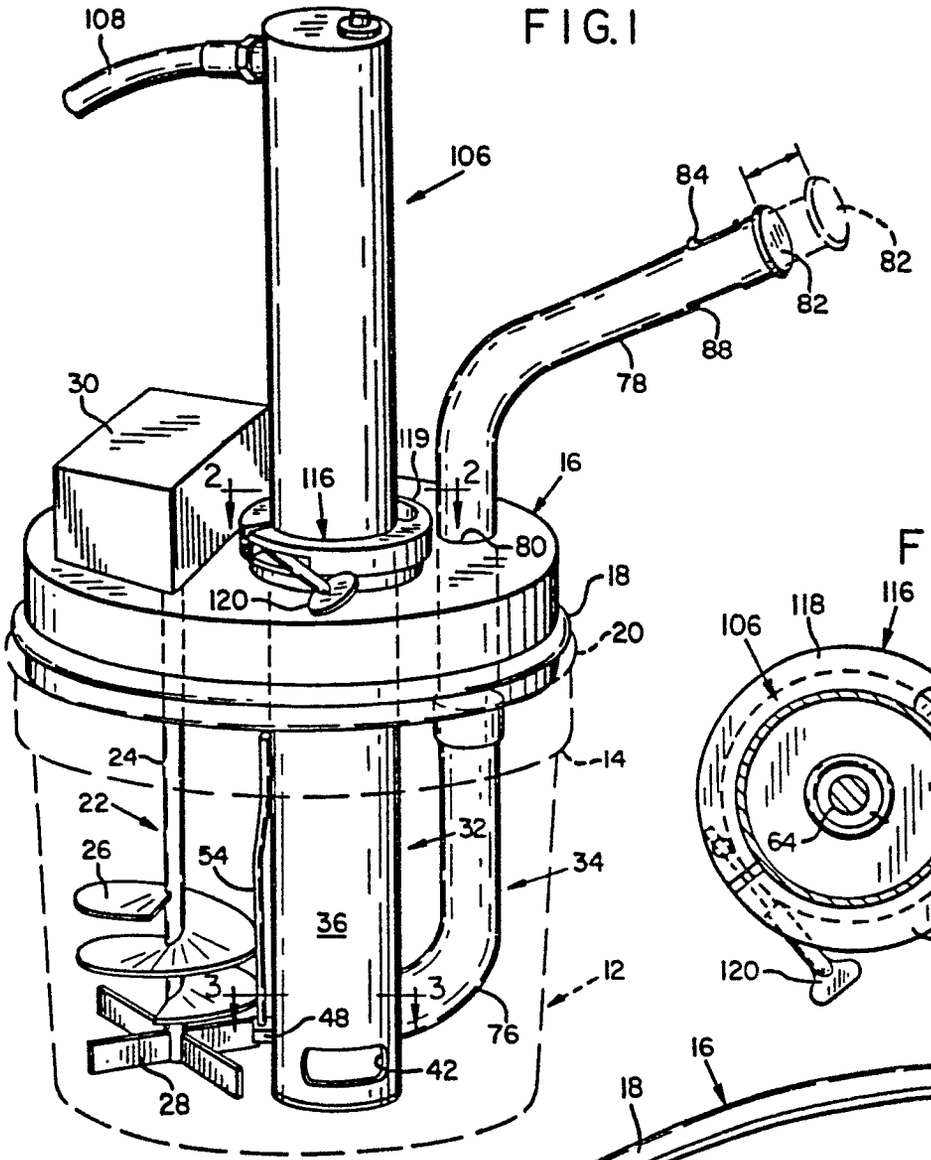


FIG.2

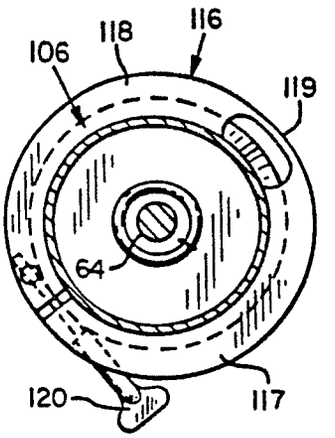
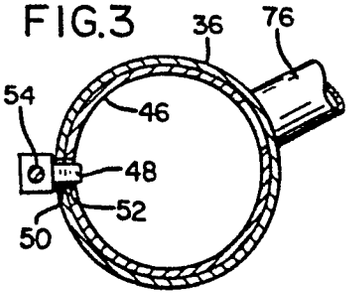


FIG.3



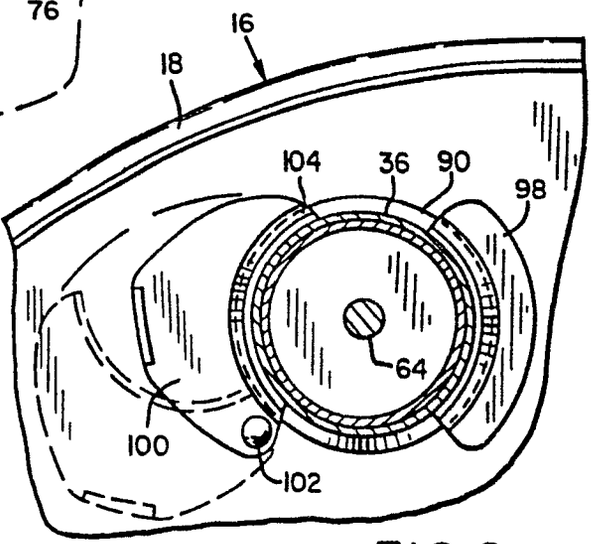


FIG.6

FIG. 4

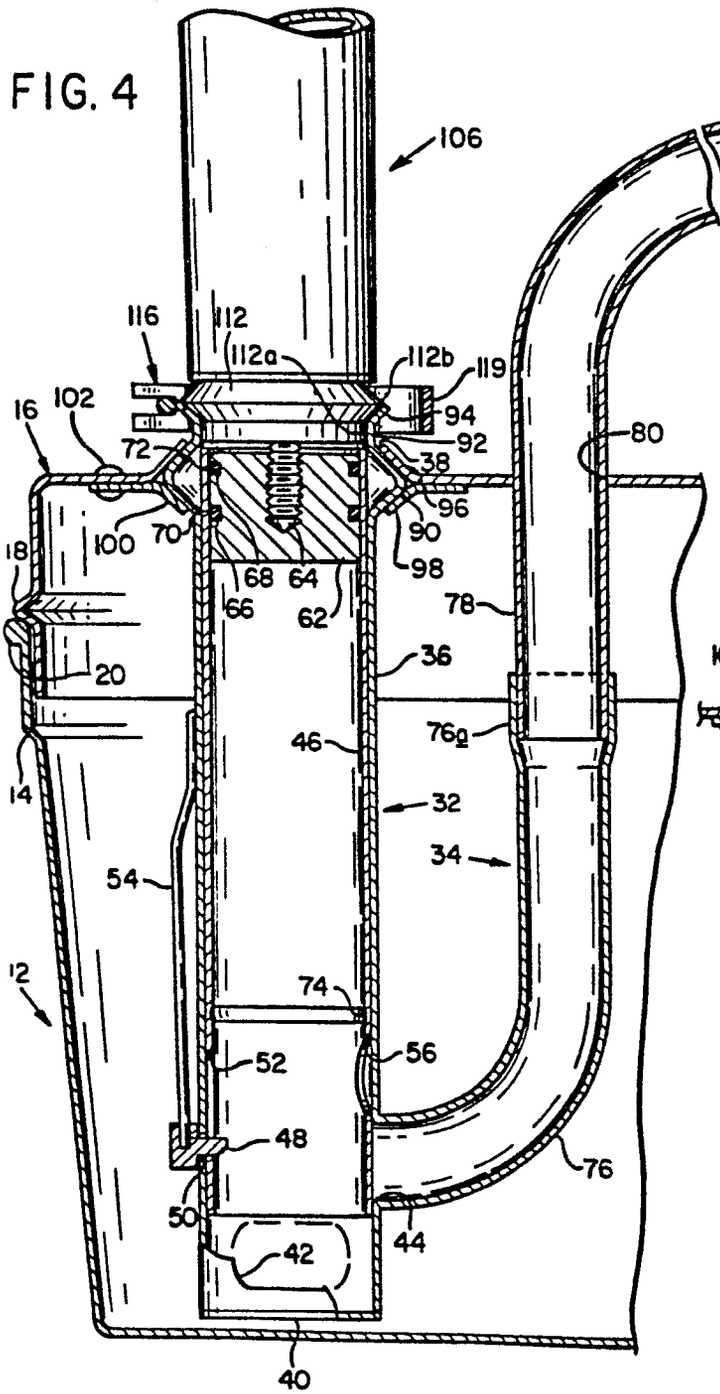
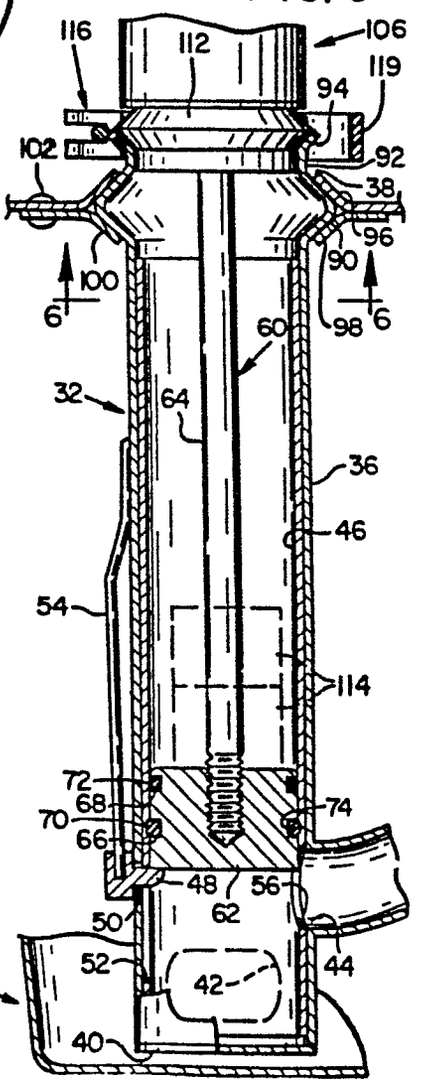

106
84
86
82
88
116
112
112a
112b
119
94
92
16
102
72
38
80
96
100
70
90
98
68
64
66
62
18
78
36
20
46
76a
14
32
34
54
12
74
56
52
48
76
50
44
42
40

FIG. 5


116
112
106
119
94
102
92
38
96
100
90
6
6
98
60
32
64
36
46
54
114
72
74
68
70
66
48
56
62
50
52
42
44
12
40