

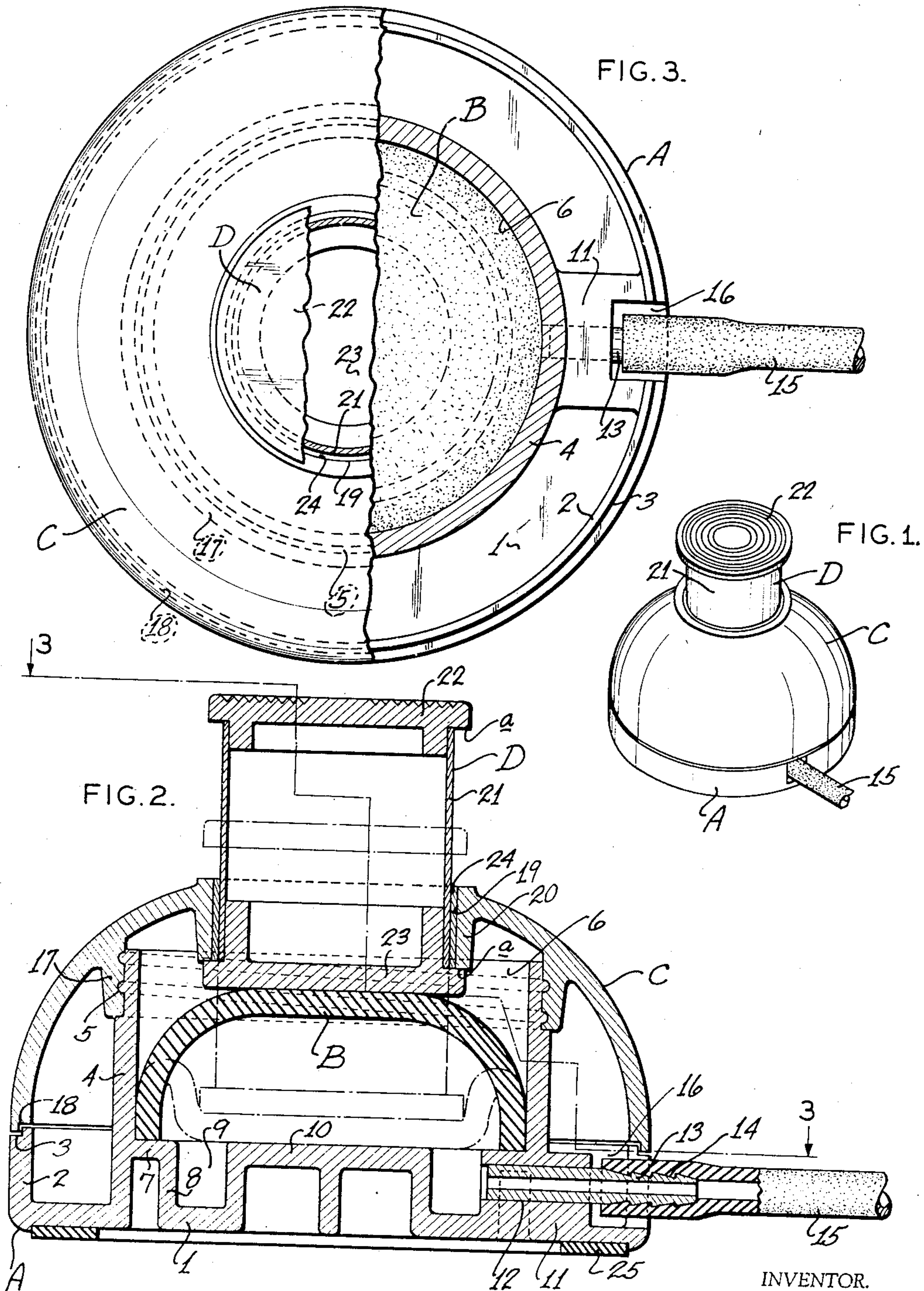
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FOOT PUMP

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FOOT PUMP

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This invention relates to a certain new and useful improvement in foot-pumps particularly, though not exclusively, adapted for use with liquid soap dispensers and analogous structures and has for its chief objects the provision of a foot-pump which is simple, durable, and compact in structure, which may be inexpensively and economically manufactured, which is conveniently operable, and which is efficient in the performance of its intended functions.

And with the above and other objects in view, my invention resides in the novel features of form, construction, arrangement, and combination of parts presently described and set forth and pointed out in the claims.

In the accompanying drawing,

Figure 1 is a reduced perspective view of a foot-pump constructed in accordance with and embodying my invention;

Figure 2 is a longitudinal sectional view of the pump; and

Figure 3 is a plan view, partly in section on the line 3—3, Figure 2, of the pump.

Referring now more in detail and by reference characters to the drawing, which illustrates a preferred embodiment of the invention, the pump includes a two-part shell which, in turn, comprises a rigid base A preferably molded or otherwise constructed of any suitable plastic material.

Base A is of circular contour and preferably integrally includes a bottom wall 1, laterally upstanding from the periphery of which is a flange or side wall 2 rabbeted on its upper margin, as at 3, for purposes presently appearing.

Also upstanding to a suitable height from bottom wall 1 and concentric with and suitably spaced diametrically from the side wall 2, as best seen in Figure 2, is a circular wall 4 threaded, as at 5, upon its outer face and at or adjacent its upper margin and providing or forming a relatively deep well, as at 6.

Within the well-forming confines of, and integral at its outer margin or periphery with, the wall 4 and disposed preferably on approximately the plane of the upper margin of said wall 2, is a flat annular wall or ring 7, which substantially forms part of the bottom wall 1 and provides a raised seat for the periphery or margin of a semi-spherical resilient or elastic member or cup B of a diametral size to somewhat snugly fit within the well 6, as best seen in Figure 2.

Also forming substantially a part of, and upstanding in spaced parallel relation to wall 4 from, the bottom wall 1 and integrally joined at its upper end to the inner margin of the ring 7,

is an annular wall 8, and co-operable with the wall 8 in the formation within the well 6 of a communicating annular recess or channel 9 and in like manner forming substantially a part of the bottom wall 1, is an annular raised central portion 10.

At any suitable location in the circumference of base A and integral with walls 2, 4, and 8, as best seen in Figure 2, is an enlargement or block 11 transversely bored, as at 12, for communication at its inner end with the channel 9 and for accommodating a permanent nipple 13 suitably threaded, as at 14, for engagement with a preferably flexible tube or hose 15 leading to the soap dispenser or other apparatus, not shown, the block 11 being suitably cut away, as at 16, for permitting convenient connection between the nipple 13 and tube 15.

Co-operable with base A, is a rigid body-member C; which is of semi-spherical contour and also preferably molded or otherwise constructed of any suitable plastic material, and which is formed at a suitable location upon its inner arcuate face with a depending collar 17 threaded upon its inner face for connection with the threaded end-portion 5 of wall 4 for detachably securing the base A and body C together in shell or housing formation about the resilient cup B, the body C being correspondingly rabbeted upon its peripheral margin, as at 18, for snugly abuttingly fitting the rabbeted margin 3 of base A, as best seen in Figure 2.

Axially body C is formed with an opening, as at 19, marginally flanked or rimmed by an annular depending wall 20 providing a way for the preferably metallic body-portion 21 of a tubular plunger or piston D, the one or outer end of the tube 21 being permanently closed by a preferably plastic closure-cap 22 roughened, as shown, for foot engagement, and the other or inner end of the tube 21 being permanently closed by an also preferably plastic closure-cap 23 smooth upon its under face for pressing engagement upon the housed resilient cup B, the caps 22, 23, being marginally extended, as at a, a, for engagement with the opposite margins of the wall 20 for limiting the reciprocations of the plunger D with respect to the body-member or dome C and housed resilient cup B and the wall 20 being preferably bushed for wear-reduction upon its inner face, as at 24.

In use and operation, and the parts or members A, B, C, and D being assembled as described and as best seen in Figure 2, as the plunger D is depressed or reciprocated inwardly under foot

pressure thereupon, the cup B will be yieldingly upset or deformed into the condition thereof indicated in dot-dash lines in Figure 2, thereby expelling the confined air outwardly through the channel 9, bore 12, nipple 13, and tube 15 and into the dispenser, as will be understood. On foot pressure upon the plunger D being removed, the cup B and therewith plunger D will be automatically returned or reciprocated to initial position under air pressure inrushing from the dispenser and reversely through the tube 15, nipple 13, and bore 12 into the channel 9 and communicating interior of the seated cup B.

The pump fulfills in every respect the objects stated, and it is to be understood that changes in the form, construction, arrangement, and combination of the several parts of the pump may be made and substituted for those herein shown and described without departing from the nature and principles of my invention. It will be observed that the base A, upon the outer or under face of its bottom wall 1, is suitably provided with a rubber ring or the like 25 to eliminate slippage, and it will be evident that, when and if renewal of the yielding cup B may be required for efficiency, replacement may be easily and conveniently effected on simple threaded separation of the shell-forming members A and C.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A pump including, in combination, a base circular in contour and having a peripheral upstanding flange and an upstanding well-forming wall concentric with said flange, a semi-spherical body having shell-forming connection with said wall and marginally fitting the upper margin of said flange, a cup-shaped yielding member disposed within said well and housed within the shell, the shell having an opening for connecting the interior of the yielding member to a device to be operated, and a plunger mounted upon the shell for reciprocatory depressible engagement with the yielding member.

2. A pump including, in combination, a base circular in contour and having a peripheral upstanding flange, an upstanding well-forming wall concentric with said flange, and a ring disposed within the confines of said wall, a semi-spherical body having shell-forming connection with said wall and marginally fitting the upper margin of said flange, a yielding semi-spherical cup disposed in said well and marginally seated on said ring, the shell having an opening for connecting the interior of the cup to a device to be operated, and a plunger mounted upon the shell for reciprocatory depressible engagement with the cup.

3. A pump including, in combination, a base

circular in contour and having a peripheral upstanding flange, an upstanding well-forming wall spaced from, and concentric with, said flange, and an annular ring within the confines of said wall, a semi-spherical body having a depending collar for engagement with said wall in shell-formation, said body having an axial opening and when in shell-formation marginally fitting the upper margin of the base flange, a semi-spherical yielding cup disposed within the well and marginally seated on said ring, the shell having an opening for connecting the interior of the cup to a device to be operated and a plunger mounted for reciprocation in said opening for depressible engagement with the cup.

4. A pump including, in combination, a base circular in contour and having a peripheral upstanding flange, an upstanding well-forming wall spaced from, and concentric with, said flange and threaded at its upper margin and upon its outer face, and an annular ring within the confines of said wall, a semi-spherical body having a collar depending from its inner face and outwardly threaded for engagement with said wall for securing the body and base together in shell-formation, said body having an axial opening and when in shell-formation marginally fitting the upper margin of said flange, a semi-spherical yielding cup disposed within the well and marginally seated on said ring, the shell having an opening for connecting the interior of the cup to a device to be operated and a plunger mounted for reciprocation in said opening for depressible engagement with the cup.

5. A pump including, in combination, a base circular in contour and having a peripheral upstanding flange, an upstanding well-forming wall spaced from, and concentric with, said flange and threaded at its upper margin and upon its outer face, and an annular ring within the confines of said wall, a semi-spherical body having a collar depending from its inner face and outwardly threaded for engagement with said wall for securing the body and base together in shell-formation, said body having an axial opening and when in shell-formation marginally fitting the upper margin of said flange, an annular wall on said body depending therein and forming a rim about said opening, a semi-spherical yielding cup disposed within the well and marginally seated on said ring, the shell having an opening for connecting the interior of the cup to a device to be operated, a plunger mounted for reciprocation in said opening for depressible engagement with the cup, and members on the plunger engageable with said annular wall for limiting the reciprocations of the plunger.

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