

M. K. MERMÖD.
 FLUID DISTRIBUTING APPARATUS.
 APPLICATION FILED AUG. 4, 1909.

961,785.

Patented June 21, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

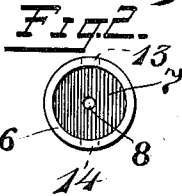
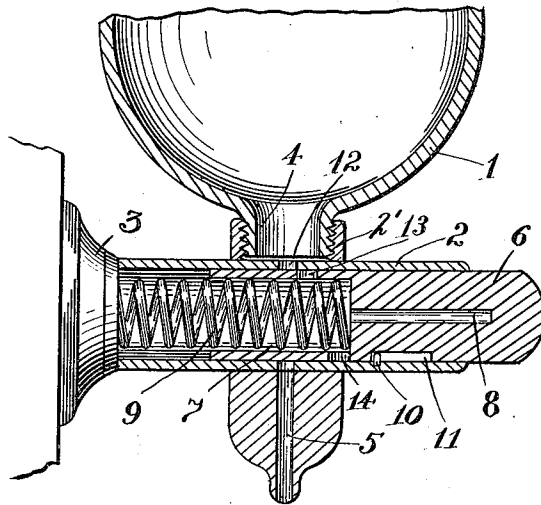
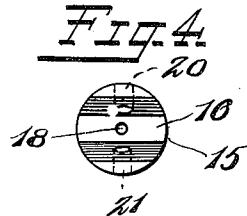
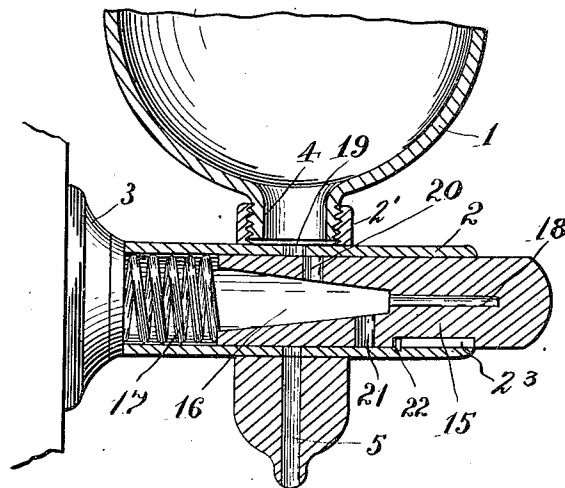


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 5

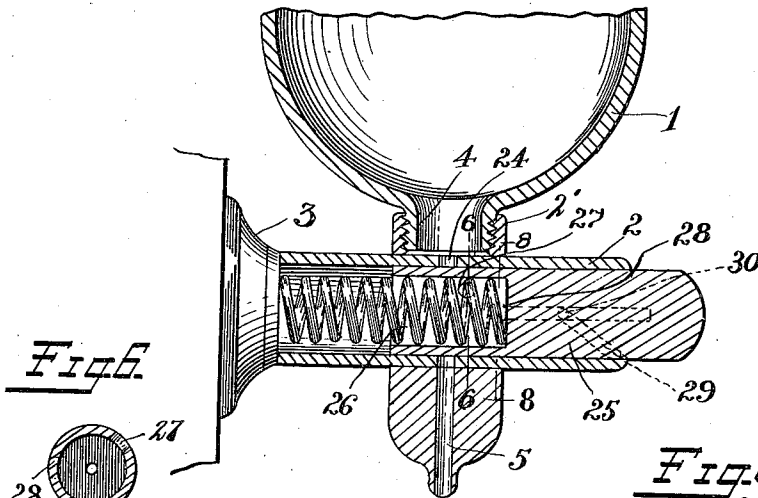


Fig. 6

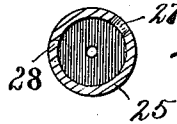


Fig. 8

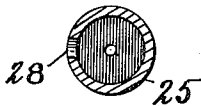


Fig. 9

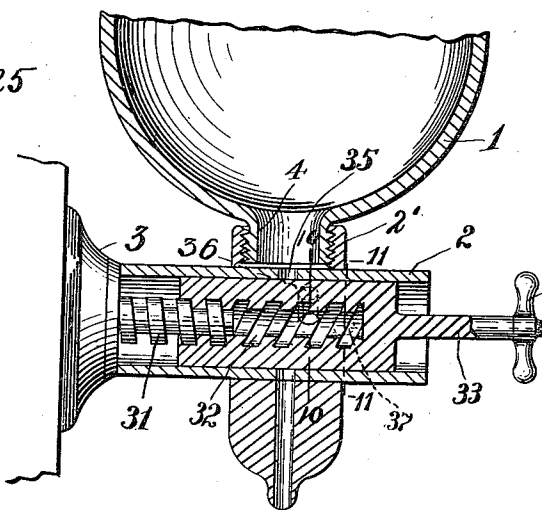


Fig. 7

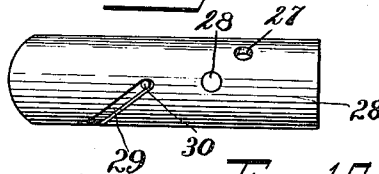


Fig. 10

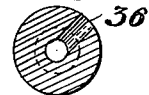
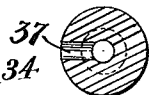


Fig. 11



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UNITED STATES PATENT OFFICE.

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FLUID-DISTRIBUTING APPARATUS.

961,785.

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To all whom it may concern:

Be it known that I, MARC K. MERMOD, a citizen of the Republic of Switzerland, residing at New York city, county and State of New York, have invented certain new and useful Improvements in Fluid-Distributing Apparatus, of which the following is a full, clear, and exact description.

My invention relates to apparatus for the distribution of fluid, and particularly liquid soap.

The object of the invention is to provide an improved construction for the manual control and distribution of fluids in quantities as desired.

The invention comprises broadly a fluid supply reservoir, an outlet and a manually operable plunger which controls the feed of the fluid from said reservoir to said outlet.

Preferred embodiments of my invention are illustrated in the accompanying drawings, in which,

Figure 1 is a vertical sectional view of the device embodying my invention; Fig. 2 is an end view of the plunger shown in Fig. 1; Fig. 3 is a view similar to Fig. 1 of a modified form of my invention; Fig. 4 is an end view of the plunger shown in Fig. 3; Fig. 5 is a view similar to Figs. 1 and 3 of a further modification; Fig. 6 is a transverse sectional view on the line 6—6 of the plunger shown in Fig. 5; Fig. 7 is a view of the plunger shown in Fig. 5 detached; Fig. 8 is a transverse sectional view of the plunger shown in Fig. 5 on the line 8—8 of said figure; Fig. 9 is a view similar to Fig. 1 of a further modification; Fig. 10 is a transverse sectional view on the line 10—10 of the plunger shown in Fig. 9; and, Fig. 11 is a transverse sectional view on the line 11—11 of said plunger.

In the embodiment of my invention illustrated in Figs. 1 and 2, the device comprises a reservoir 1 preferably made of glass, a plunger cylinder 2 which is provided with a base 3, by which the device may be secured to the wall adjacent a fixture such as a wash basin or the like. The cylinder 2 is provided with a boss 2' which is threaded to receive a threaded tubular portion 4 of the reservoir, by which the latter is attached to said cylinder. On the lower side of said cylinder, preferably opposite the point of attachment

of the reservoir, is an outlet 5. Within the cylinder 2 is mounted a plunger 6 recessed at 7 at its inner end to provide a fluid receiving chamber and having a small bore 8 communicating with said chamber for a purpose hereinafter to be described. Interposed between the plunger 6 and the base 3 is a spring 9, which normally holds the plunger in projected position. A stop pin 10 fixed to the cylinder 2 and working within a slot 11 of the plunger determines the extent of movement of the latter. In the wall of the cylinder 2 and opposite the tubular outlet 4 of the reservoir is an aperture or passage 12, which, when the plunger moves inward and outward, is adapted to register momentarily with a like aperture 13 in the wall of the recess 7 in said plunger. Also at the lower side of said plunger in the wall of the recess thereof is a second aperture or passage 14, which, when the plunger is moved to the full extent of its inward stroke, registers with the outlet 5. In the operation of the device, the reservoir is filled with the desired liquid, such, for example, as liquid soap. The plunger is then pushed inwardly, and while returning under the influence of spring 9 and when the aperture 13 registers with the passage 12 in the cylinder wall on the return stroke, the desired quantity of fluid will be drawn into the chamber 7 of the plunger, due to the suction caused by the partial vacuum produced in chamber 7 by the outward movement of the plunger and to the weight of the liquid in the reservoir. At the end of the inward movement of the plunger, the aperture 14 therein will be brought into alinement with the outlet 5, and at the end of the second inward stroke, after the chamber 7 has been charged with fluid, as above described, the fluid in said chamber will be more or less forcibly ejected out through said outlet 5 by reason of the compression of the air and fluid in the chamber formed within the plunger and also within the cylinder 2. Repeated pressures upon the plunger will serve to charge the chamber 7 and eject the corresponding quantities of the fluid as desired. The auxiliary chamber formed by the bore 8 in the plunger affords space for the compressed air within the chamber 7, and being above the bottom of said chamber, there will be no tendency

of such compressed air to escape through the outlet 5, thus interfering with the proper ejection of the fluid.

It will be noted from the above description that when the plunger is at rest in its projected position, the passage from the liquid reservoir to the chamber 7 is effectually closed, thereby preventing leakage at this point, and also the passage from the chamber 7 to the outlet 5 is likewise effectually closed, whereby all leakage is prevented here also.

In the modified form of my invention illustrated in Fig. 3, the parts 1, 2, 2', 3, 4 and 5 correspond in construction to the parts similarly indicated in Fig. 1. The construction of the plunger in this form, however, is somewhat modified, and comprises preferably the body portion 15 having a recess or chamber 16 formed therein either by drilling at the center, or by a transverse kerf, as indicated in Fig. 4. A spring 17 is interposed between the rear end of the plunger and the base 3. This plunger is also provided with an auxiliary chamber or bore 18 corresponding to the chamber 8 in Fig. 1. The wall of the cylinder 2 also is provided with a passage 19 corresponding to the passage 12 in Fig. 1, and the plunger 15 is provided with a passage 20 which lies just in advance of the passage 19 when the plunger is in projected position. Also at the lower side of the plunger is a passage 21 adapted to register with the outlet 5 when the plunger is in its innermost position. Movement of this plunger also is limited by the pin 22 working in the slot 23.

The operation of the construction just described is substantially similar to that heretofore stated, but the tapering form of the chamber 16 within the plunger serves to concentrate the fluid rather more effectually at a point opposite the outlet passage 21, whereby the liquid is more effectually ejected through the outlet 5.

In the modified form of the invention illustrated in Fig. 5, the parts 1, 2, 2', 3' and 4 and 5 correspond to parts similarly indicated in Fig. 1. In this form of the invention, however, the plunger, when moved inwardly, is given a simultaneous rotary movement to bring the various inlet and outlet passages in proper register. With this end in view, the cylinder is provided with the aperture 24 communicating with the reservoir 1; and the plunger 25 is provided with a chamber 26 in the wall of which is formed an inlet passage or aperture 27, which, when the plunger is in normal projected position, is in advance of the aperture 24 and is slightly displaced angularly with respect thereto. Likewise, the plunger is provided with an outlet aperture 28 adapted to align with the outlet 5 when the plunger is moved

to its extreme inward position, and which is also normally angularly displaced with respect to said outlet 5. The body of the plunger furthermore is provided with a spiral groove or slot 29, which engages a pin 30 projecting from the inner wall of the cylinder 2, whereby, when the plunger moves inward and outward, it will be given a rotative movement which will bring the aperture 27 in alinement with the aperture 24, communicating with the reservoir; and, upon further inward movement, will bring the aperture 28 into alinement with the outlet 5. In other respects the operation of this form of the invention is the same as that heretofore described.

In the form illustrated in Fig. 9, the parts 1, 2, 2', 3, 4, and 5 correspond to the parts similarly indicated in Fig. 1. In this case, as in the form illustrated in Fig. 5, the plunger is given a rotative movement to bring its various passages into communication with the reservoir and the outlet. In this construction, however, such rotative movement is effected by means of a screw stem 31, which engages a corresponding screw-thread 32 within the plunger and the outer end of the plunger is provided with a stem 33 having a cross-head or handle 34 for manual operation. In this form also, as in the form illustrated in Fig. 5, the cylinder is provided with a passage 35 communicating with the reservoir 1 and the plunger is provided with a passage 36, which, when the plunger is in normal position, is slightly in advance of the passage 35 and is angularly displaced with respect thereto. Such cylinder also is provided with an outlet passage 37 to afford communication with the outlet 5 and which, when the plunger is in normal position, is likewise angularly displaced with respect to said outlet 5. The plunger may be manually rotated to bring the passages 36 and 37 into alinement with the passage 35 and outlet 5 respectively to charge and discharge the plunger chamber as above described.

In all forms of the invention above described it will be seen that when the plunger is in normal projected position all communication between the supply reservoir and the cylinder, and between the cylinder of the outlet, is effectually closed, thus preventing any possibility of leakage.

While I have herein described the preferred embodiment of my invention, it is to be understood that the same may be altered in detail and arrangement of parts without departing from the spirit and scope thereof.

What I claim is:

1. In a fluid distributing apparatus, a fluid supply, a pressure chamber having a normally closed passage adapted to afford communication with said supply, a plunger

in said chamber having means adapted, when said plunger is moved, to open said passage, an outlet arranged to communicate with said chamber, and means to afford communication between said chamber and said outlet upon further movement of said plunger.

2. A fluid distributing apparatus comprising a fluid supply, a plunger chamber adjacent thereto having a passage adapted to afford communication between said supply and said chamber, a passage in said plunger arranged to cooperate with said first named passage to effect such communication upon movement of said plunger, an outlet communicating with said plunger chamber, and a passage in said plunger adapted to open communication between said chamber and said outlet upon further movement of said plunger.

3. A fluid distributing apparatus comprising a fluid supply, a plunger chamber adjacent thereto having a passage communicating with said supply, a plunger in said chamber having a chamber adapted to be placed in communication with said passage upon movement of said plunger, an outlet and means for placing said second named chamber in communication with said outlet upon further movement of said plunger.

4. A fluid distributing apparatus comprising a fluid supply, an outlet passage therefor, a plunger interposed across said outlet and having a chamber adapted to communicate with said outlet upon movement of said plunger, and a second outlet adapted to be placed in communication with said chamber upon further movement of said plunger.

5. A fluid distributing device comprising a fluid supply, a plunger cylinder adjacent said supply and having a passage communicating therewith, a plunger in said cylinder having a chamber normally out of communication with said passage and adapted to be placed in communication with said passage upon outward movement of said plunger, and an outlet adapted to be placed in communication with said chamber upon inward movement of said plunger.

6. A fluid distributing device comprising a fluid supply, a plunger cylinder adjacent thereto and having a passage communicating with said supply, a plunger in said cylinder having a chamber normally out of communication with said passage and adapted to be placed in communication with said passage upon outward movement of said plunger; said cylinder having an outlet passage adapted to be placed in communi-

cation with said chamber upon inward movement of said plunger, said chamber being so arranged as to be shut off from said first named passage when in communication with said outlet passage.

7. A fluid distributing apparatus comprising a fluid supply, a plunger cylinder adjacent thereto, having inlet and outlet passages, a plunger in said cylinder having a chamber normally out of communication with said passages, and constructed and arranged to be placed first in communication with the inlet passage upon movement of said plunger, and afterward in communication with said outlet passage upon inward movement of said plunger, and to be cut off from communication with said inlet passage when in communication with said outlet passage.

8. A fluid distributing apparatus comprising a fluid supply having an outlet passage, a plunger interposed across said outlet passage and having a chamber adapted to effect communication with said fluid supply upon movement of said plunger and to thereupon cut off such communication.

9. A fluid distributing apparatus comprising a fluid supply, a plunger cylinder adjacent said supply, having a passage adapted to communicate therewith, a plunger in said cylinder having a chamber arranged to be brought into communication with said passage upon outward movement of said plunger, and arranged to close said communication upon further outward movement of the said plunger, said cylinder having an outlet passage arranged to be brought into communication with said chamber upon inward movement of said plunger after communication with said supply has been closed.

10. A fluid distributing apparatus comprising a fluid supply having an outlet, a plunger cylinder arranged transversely of said outlet and having a passage communicating therewith, a plunger in said cylinder having a chamber normally out of communication with said passage and arranged to communicate with said passage upon outward movement of said plunger, said plunger cylinder having an outlet passage arranged to communicate with said chamber upon inward movement of said plunger, said chamber being so arranged as to be out of communication with said first named passage when in communication with said outlet passage.

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