May 21, 1963 R. ELLIS 3,090,528

MECHANICALLY OPERATED FLUID DISPENSING DEVICE

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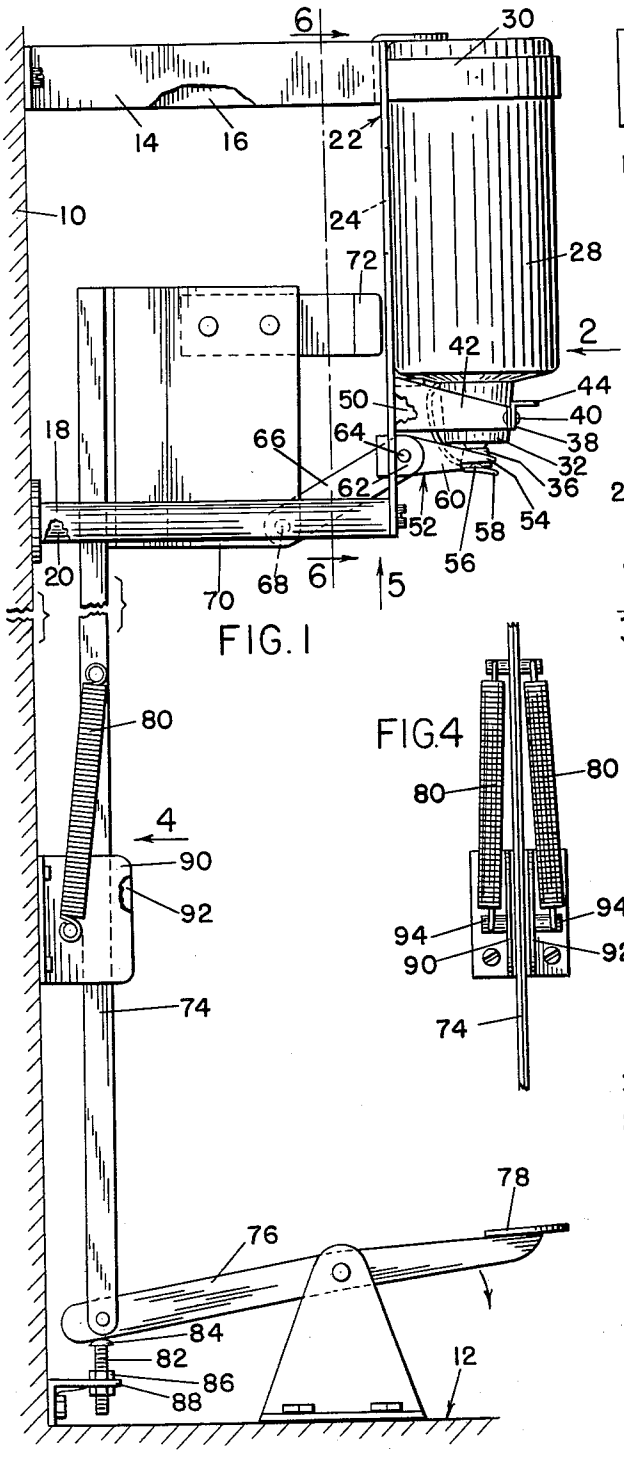


FIG. 1

FIG. 4

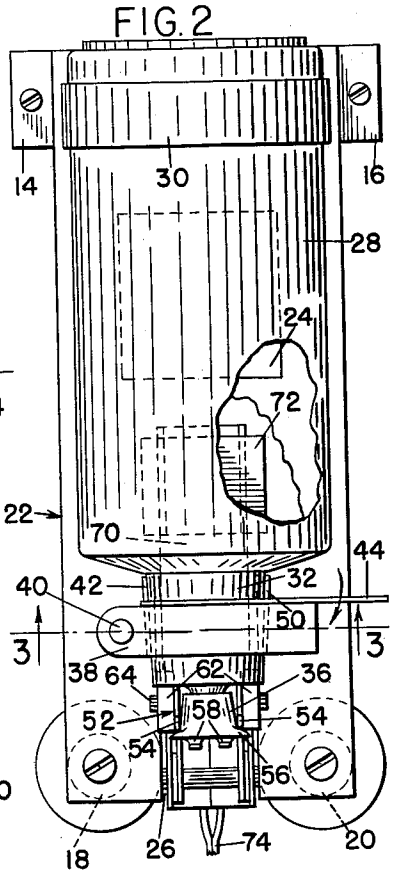


FIG. 2

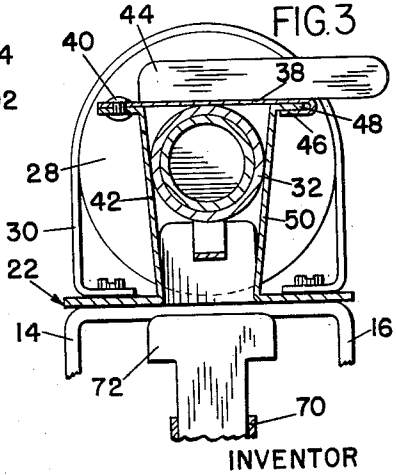


FIG. 3

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MECHANICALLY OPERATED FLUID DISPENSING DEVICE

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FIG.5

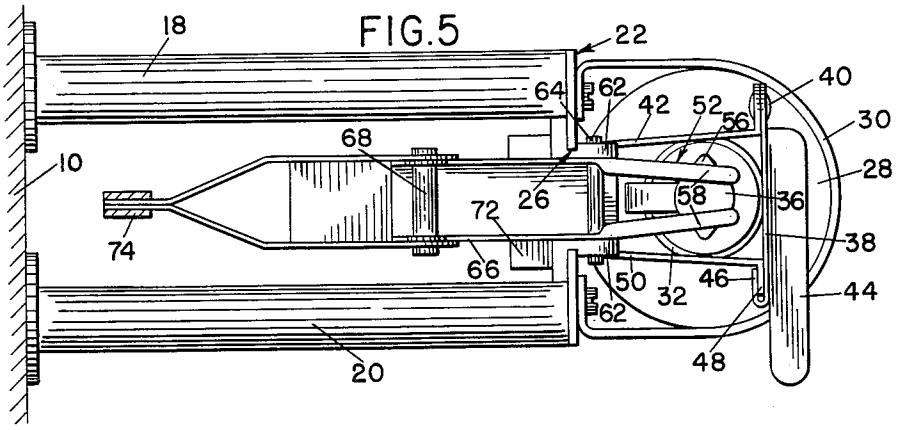


FIG.6

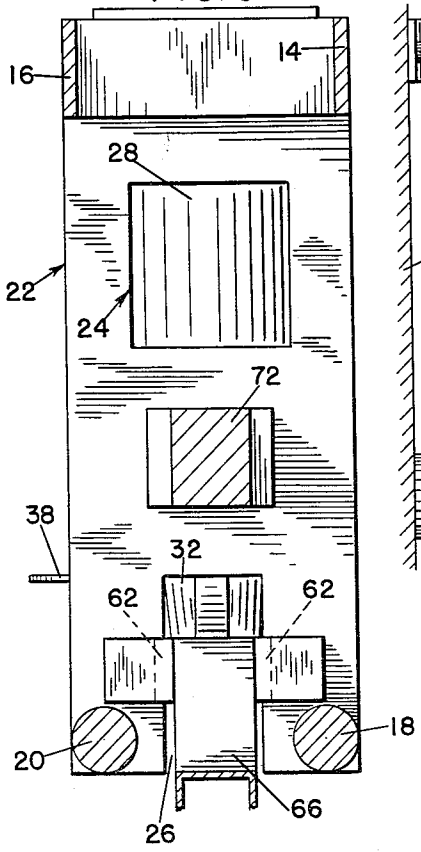
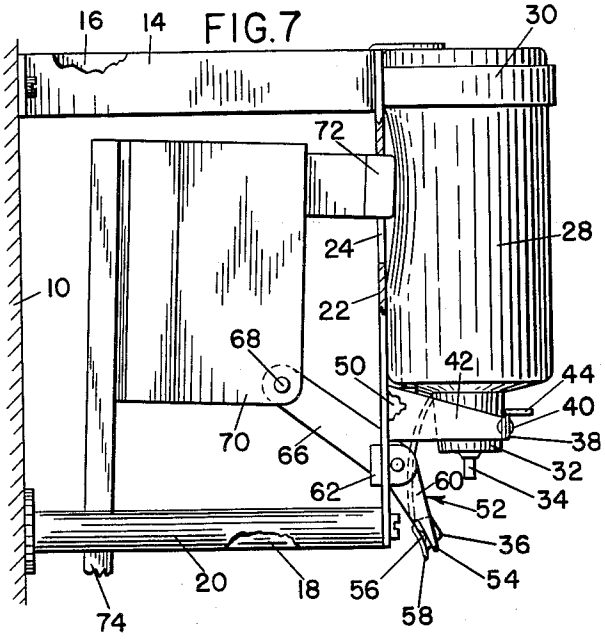


FIG.7



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MECHANICALLY OPERATED FLUID DISPENSING DEVICE

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It has been known for some time that foot-pedal operated dispensers are particularly desirable for dispensing fluids such as skin cleansing liquids; this is particularly true in the case of medical work, such as surgery, where the hands of the operator should be isolated as far as possible. The object of the present invention is to provide a food-pedal operated fluid dispenser which is readily applicable to use in medical work.

Other objects of the present invention reside in the provision of a dispenser which is mechanically operable in such a way as to completely avoid the necessity of touching the same by the human hand, and having a remote operated device which will uncap the dispenser, cause dispensing of fluid material therein in a predetermined location, and then cause the cap to be replaced correctly to again close the dispenser, all without manual contact by the operator, and including means for the remote operation as for instance a foot treadle or the like which may be pedally actuated in order to cause operation of the dispenser for the intended purpose.

Further objects of the invention include the provision of a support which may be standard mounted or wall mounted or in any way desired, such support providing means mounting a squeeze bottle type dispenser in vertical upside down position, with the closed cap thereof extending downwardly, in combination with means for operating the cap to open and close the bottle in relationship with an actuator to apply pressure to the squeeze bottle to cause expulsion of material therein in a desired location, together with remote operated means as for instance, e.g. a foot treadle or the like mounted in convenient position so that the operator may actuate the cap and bottle merely by pressing the treadle, or other means, without touching the same with the hands or using the hands in any way, whereby the hands are kept in the sterile condition desired but still supplied with the fluid.

The invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly set forth in the appended claims.

Reference is to be had to the accompanying drawings, in which

FIG. 1 is a view in side elevation showing the invention;

FIG. 2 is a view in front elevation on an enlarged scale, looking in the direction of arrow 2 in FIG. 1, parts being omitted;

FIG. 3 is a section on line 3—3 of FIG. 2;

FIG. 4 is a view in elevation, looking in the direction of arrow 4 in FIG. 1, illustrating the return spring;

FIG. 5 is a bottom plan view, looking in the direction of arrow 5 in FIG. 1, and on an enlarged scale;

FIG. 6 is a section on line 6—6 of FIG. 1, also on an enlarged scale; and

FIG. 7 is a view similar to FIG. 1 with parts removed and illustrating the device in operative condition.

In carrying out the invention, the reference character 10 indicates a wall or an upright standard of any kind desired on which the parts may be conveniently mounted, and the reference character 12 indicates the floor line. Mounted at a suitable height on the wall or standard 10, there is a bracket which may comprise if desired a pair of legs 14 and 16, these being spaced and parallel and outstanding in a horizontal direction from the wall 10. A

similar pair of legs 18 and 20 may also be provided in downwardly spaced relation from legs 14 and 16. These four legs mount at their outer ends a generally flat plate indicated at 22. This flat plate has an aperture therein at 24 generally in the upper portion thereof for a purpose to be described, and it also has a lower slot 26. This slot 26 accommodates a cap-gripping member for the dispenser squeeze bottle 28 which bottle is principally held in a band or other bracket 30 mounted on plate 22. The squeeze bottle is provided with a neck 32 and a spout 34, this spout being covered by a removable cap 36 which closes the spout in FIG. 1.

The neck of the container 32 may be removably clamped in position by a bar 38 mounted to pivot at 40 on a small upright member 42 also mounted on plate 22. The bar 38 is provided with a thumbpiece 44 and it has a portion which is reentrantly bent as indicated at 46, see particularly FIGS. 3 and 5, to engage with a turned-over portion 48 on a small upright 50, the latter also being mounted on plate 22 at the opposite side of the slot 26 from upright 42. By pivoting the piece 38 as indicated by the arrow in FIG. 2, the squeeze bottle may be released and a new one replaced and held in the bracket.

The cap 36 is removed by means of a piece generally indicated at 52. This piece has four spaced arms, one pair at 54 at one side of the cap flange or head 56, and the other pair of arms corresponding but opposite at 58 at the other side of the cap head or flange. These arms are all mounted on a standard or the like indicated at 60 and they surround the cap head or flange 56, holding it. Standard 60 is pivoted on upstanding ears 62 on a pivot 64, the ears 62 being conveniently mounted on plate 22 and the member 60 being in the form of a lever extending through the slot 26.

It will be seen that when this member 60 is pivoted as a lever in a clockwise direction in FIG. 1, i.e., downwardly, the cap 36 is removed, see FIG. 7, and when the lever 60 is moved in the opposite direction, the arms 54 and 58 will cause the cap to be repositioned on the dispensing spout 34, closing it.

The member 60 forms a part of a member 66, and member 66 is pivoted at its inner or lower end at 68 to a block 70 on which is mounted a bumper member 72 which may be conveniently made of any desired material but preferably rubber. The block 70 is mounted and supported on an elongated rod 74 which extends downwardly to a type of bell crank lever 76 having a foot-operated member 78. When the member 78 is stepped upon, the bell crank 76 moves in a clockwise direction in FIG. 1, as shown by the arrow which causes rod 74 to move upwardly, thus causing block 70 to move upwardly, and inwardly, as shown in FIG. 7, actuating member 60 to remove the cap 36, and thereafter, in timed relation, to extend through the aperture 24, contacting the under side of the squeeze bottle and expressing the contents therefrom through the now-open spout at 34. A spring construction of any desired means such as is indicated at 80 may be utilized to aid gravity in bringing the parts to the original closed position.

In the operation of the device, when the operator steps upon the lever 78, the cap is almost immediately removed due to the fact that the block 70 causes lever 60, 66 to move in a clockwise direction in FIG. 1, and taking with it the cap 36, this opens the spout. At an interval of time thereafter, the block 72 will extend through the aperture 24 and impinge upon the squeeze bottle to expel the part of the contents therethrough through the now-open spout, it being observed that the spout is clearly open and interval of time before the squeezing operation takes place. Conversely, when the operator removes the foot from pedal 78, the squeeze

bottle operating block will first be removed therefrom so that expulsion of the contents will be stopped and then the cap is thereafter re-applied to the spout due to spring 80.

An adjustable stop 82 is provided comprising an adjustment screw having a head 84 and a nut 86 mounted on a plate 88 so that the return action of spring 80 will cause the cap opening means 60, etc. to return the cap to the correct degree. In other words, the screw may be adjusted so that the springs will position the cap on the spout 34 in substantially the correct closing position therefor to avoid leakage from the bottle. Also guide-plates 90 and 92 may be utilized for the upright rod 74 and these guide-plates provide a convenient mount for the reaction point for the spring 80 indicated at 94.

It will be seen that this invention provides a dispenser which is operated without being touched by the hands in any way so that one may sterilize the hands and then obtain a desired amount of fluid material from the squeeze bottle for whatever purposes may be desired without touching anything with the hands but using only the foot.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:

1. A squeeze bottle dispenser comprising a support adapted to be mounted at a predetermined height from a floor, means on said support for attachment of a squeeze bottle thereto, a spout on the squeeze bottle in position to supply material from the bottle to the hands of the operator of the dispenser, with the bottle in position on the support, a removable cap for the spout, movable means for attachment to the cap, movable means for applying pressure to said squeeze bottle, and foot-operated means connected to said cap attachment means and said bottle pressure means and including means operating the latter in sequential operation with the cap attachment means to first open the spout and then apply pressure to the squeeze bottle to express a portion of the contents thereof onto the operator's hands, and means to release the pressure applying means from the bottle, and to return the cap attachment means to original position, closing the spout.

2. The squeeze bottle dispenser of claim 1 wherein the means on the support for attachment of the squeeze bottle holds the latter upside down, the spout pointing downwardly.

3. The squeeze bottle dispenser of claim 1 wherein the foot-operated means includes a pivoted lever adjacent the floor level.

4. The squeeze bottle dispenser of claim 1 wherein the means operating the cap attachment means includes a pivoted lever, the pressure applying means being connected thereto and operating the same.

5. The squeeze bottle dispenser of claim 1 wherein the operating means includes a member extending between the foot-operated means and the pressure applying means, the latter being connected to an actuating the cap attaching means.

6. The squeeze bottle dispenser of claim 1 wherein the means on the support for attachment of the squeeze bottle holds the latter upside down, the spout pointing downwardly and the operating means including a member connected to the foot-operated means and to the pressure applying means.

7. The squeeze bottle dispenser of claim 1 wherein the means on the support for attachment of the squeeze bottle holds the latter upside down, the spout pointing downwardly and the operating means including a member connected to the foot-operated means and to the pressure applying means, the cap attachment means being connected to and operating the cap attachment means.

8. A squeeze bottle dispenser comprising a support adapted to be mounted at a predetermined height from a floor, means on said support for attachment thereto of a squeeze bottle in upside down position, a squeeze bottle on the support, a spout on the bottle, said spout pointing downwardly, a removable cap closing the spout, means holding the cap, means for squeezing the bottle, and foot-operated means connected to said cap holding means and said bottle squeezing means and operating the latter in sequential operation with the cap holding means to first open the spout and then to apply pressure to the squeeze bottle to express a portion of the contents thereof downwardly with the spout open, and means for returning the cap to the spout after release of the pressure on the squeeze bottle.

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