

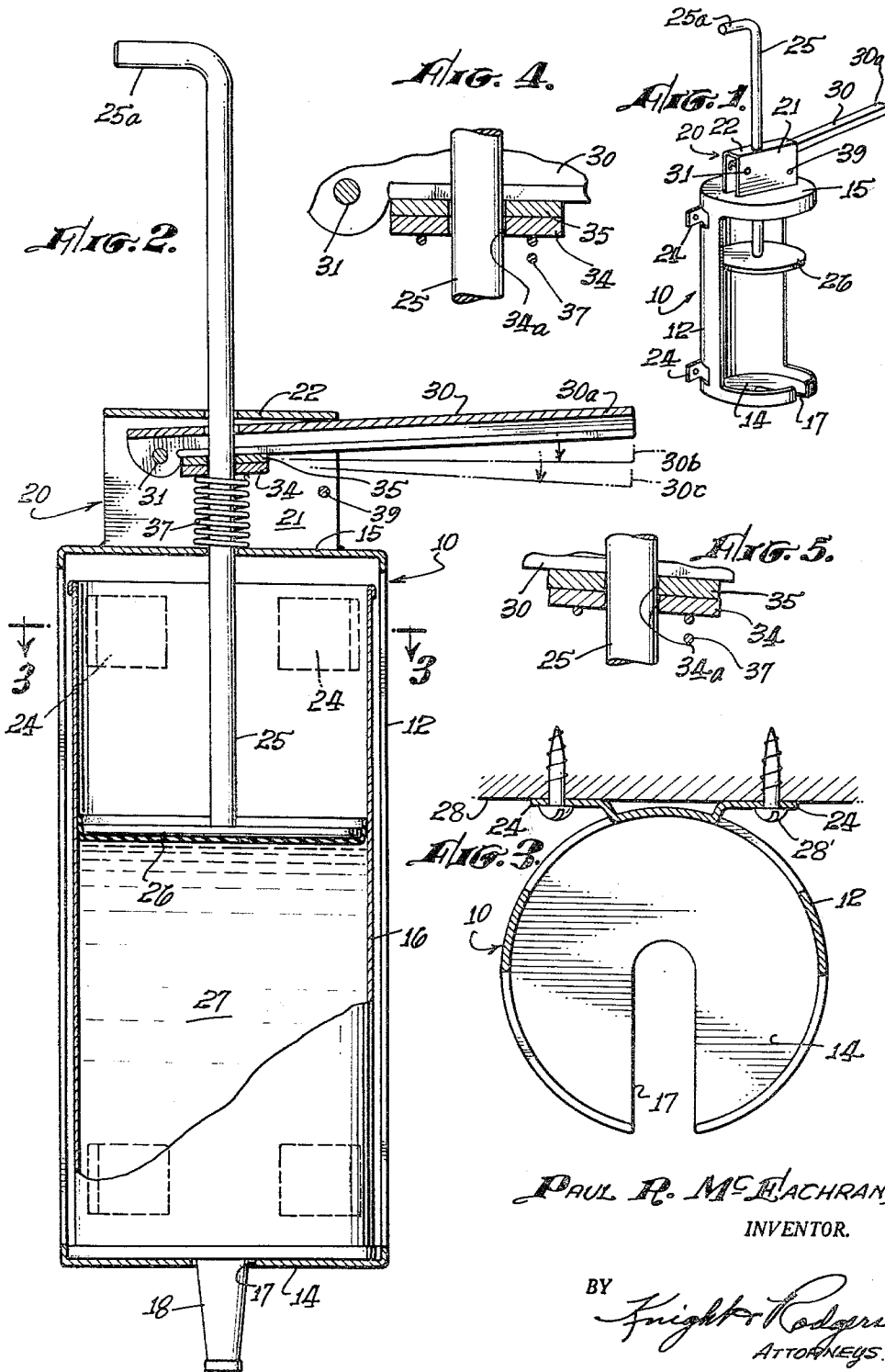
March 23, 1965

P. R. McEACHRAN

3,174,653

DISPENSER WITH PIVOTED OPERATING HANDLE

Filed Feb. 19, 1962



PAUL P. McEACHRAN,
INVENTOR.

BY
Knights & Rodgers
ATTORNEYS.

1

2

3,174,653
DISPENSER WITH PIVOTED OPERATING HANDLE

Paul R. McEachran, Downey, Calif., assignor to Mac-Millan Ring-Free Oil Co. Inc., Los Angeles, Calif., a corporation of Delaware
 Filed Feb. 19, 1962, Ser. No. 174,116
 5 Claims. (Cl. 222-181)

The present invention relates generally to dispensers, and more especially to hand operated dispensers for dispensing semi-fluid or paste-like substances such as, for example, a soft soap or a waterless hand cleaner.

A dispenser for this purpose is designed to hold a replaceable cartridge containing the material to be dispensed. The filled cartridge is placed in a holder and the dispenser has a piston which is forced down within the cartridge to dispense the material through a nozzle at the bottom. The quantity of material dispensed need not be carefully measured, although only a limited amount can be dispensed at a single operation.

It is a general object of the present invention to provide a simple, economical, and reliable dispenser of this character which is designed to be mounted on a wall or the like and which is adapted to dispensing semi-fluid materials.

A more particular object of the present invention is to provide a simple and reliable gripping means for driving the piston and piston rod assembly in a dispenser of this character, such gripping means operating to grip the piston rod in one direction only.

These and other objects of the present invention have been achieved according to my invention by providing a dispenser having a frame for receiving and holding a removable cartridge containing the material to be dispensed, a piston movable within the cartridge to force out material therefrom, and piston advancing mechanism of novel design. The piston advancing mechanism comprises an operating handle pivotally mounted on the frame to swing through a short, vertical arc; a smooth rod connected at one end to the piston, and at least one plate, and preferably a pair of parallel plates, extending generally transversely of the rod and having an aperture through which the rod passes with a loose sliding fit. The handle bearing against one face of the plate rocks the plate or plates to bring the edge of the aperture into engagement with the rod to move the rod in one direction, typically downwardly, to drive the piston forward and discharge material from the cartridge. Movement of the piston and rod in the reverse direction is effected by a return spring between the frame and said gripping plate which normally urges the plate and handle away from the piston.

How the above and other objects of my invention are attained will be more readily understood by reference to the following description and to the annexed drawing, in which:

FIG. 1 is a perspective of a presently preferred embodiment of the invention viewed from the front.

FIG. 2 is an enlarged vertical median section of the dispenser showing a cartridge in place within the dispenser.

FIG. 3 is a horizontal section on line 3-3 of FIG. 2 with the cartridge removed from the dispenser.

FIG. 4 is an enlarged fragmentary vertical median section through the rod and gripping plates showing the gripping plates in a neutral or non-gripping position.

FIG. 5 is a view similar to FIG. 4 showing the gripping plates tilted into a position in which they grip the smooth piston rod to drive it downwardly.

Referring now to the drawing and more particularly to FIGS. 1 and 2, it will be seen that the dispenser comprises a frame, generally indicated at 10, which consists of two principle parts. The lower part is a generally cylindrical body or cartridge receiver 12 having a bottom wall 14

and a top wall 15, these walls being generally circular in outline. The side walls of the receiver are cut away, as shown particularly in FIG. 3, for approximately half of the circumference of the body in order that the cartridge 16 may be inserted through the opening in the front of the body 12. The bottom wall 14 has a forwardly facing slot 17 which extends inwardly to the center of the wall in order to receive the dispensing nozzle 18 which is attached to the bottom wall of the cartridge centrally thereof.

Above top wall 15 is mounted bracket 20 which, as may be seen in FIG. 1, has a shape of an inverted U and is the upper part of the frame. Described in greater detail, the bracket 20 comprises a pair of parallel, horizontally spaced side walls 21 which extend upwardly from top wall 15 of the cylindrical body and are joined at their upper ends by horizontal wall 22 which is spaced vertically above body wall 15.

Cylindrical body 12 preferably has suitable bracket means by which the dispenser may be attached to the face of a general vertical wall or similar member with the axis of the cylindrical body 12 upright. While other suitable bracket means may be employed, it is convenient and economical to lance from the cylindrical body a pair of tabs 24, as shown in FIG. 3, at a position adjacent the bottom of the cylindrical body and a second pair at a position adjacent the upper end of the cylindrical body. Said tabs 24 are then pressed outwardly from the wall and flattened to bring flat outer faces of two tabs into a common plane which can bear against the face 28 of a wall, column, or similar structural member. Holes through tabs 24 receive screws 28' by which the dispenser is attached to such structural member.

Disposed axially of the cylindrical body 12 is piston rod 25 on the lower end of which is mounted piston 26. As illustrated particularly in FIG. 2, piston 26 can be inserted within the cartridge and moved downwardly therein to discharge through nozzle 18 the material 27 below the piston and within the cartridge. Piston rod 25 has a smooth external surface and is preferably bent or otherwise formed at its upper end to provide a handle 25a by which it can be lifted. The piston and piston rod assembly are movable axially within and relative to the body, being guided by the vertically spaced walls 15 and 22 of the frame which have openings through which the piston rod passes. As will be apparent from FIG. 1, the piston rod passes upwardly between the two vertically extending side walls 21 of bracket 20 on top of the body.

An operating handle 30 is pivotally connected at one end by pivot pin 31 to bracket 20, the operating handle being located between the two side walls 21 of the U-bracket and so disposed that it normally extends generally in a horizontal direction. Pivot 31 being horizontal, the operating handle is adapted to move through a short vertical arc as indicated in FIG. 2. The outer portion 30a of the handle constitutes a grip by which the user grasps and operates the handle; and it will be noted that the grip and pivot pin 31 are on opposite sides of piston rod 25.

A preferred form of rod gripping means comprises a pair of parallel plates 34 and 35 which are in sliding contact with each other at their opposing faces. Each of the plates has an aperture through which passes piston rod 25. Since the apertures are only slightly larger than the piston rod, it may be characterized as passing through the plate with a loose sliding fit. The underside of handle 30 bears against the upper face of top plate 35 so that downward movement of the handle, clockwise around pivot 31 as viewed in FIG. 2, causes plates 34 and 35 to be moved downwardly. In opposition to this downward movement, compression spring 37 bears against the underside of lower plate 34 and against the top face of fixed wall 15. Spring 37 normally bears against the plates to

3

urge the plates and handle 30 upwardly into the normal or upper position shown in FIG. 2.

Under the influence of spring 37, operating handle 30 is urged upwardly until either it comes into contact with top wall 22 of the bracket on top of the cylindrical body or the gripping plates are tilted sufficiently (they tend to parallel the operating handle), to grip the piston rod and so resist any change in position. This engagement with the fixed wall stops upward rotation of the handle. In this position (FIG. 2), the handle is tilted slightly upwardly away from pivot 31 and the two gripping plates 34 and 35, being in contact with the handle, are similarly tilted by pressure of the spring beneath them. From this normal position, an operating stroke of the piston is started, in order to dispense material 27 through nozzle 18, by downward pressure applied manually to the grip end 30a of the handle. It is now first moved downwardly to the substantially horizontal position 30b in which the two plates 34 and 35 are also brought by engagement with the handle to a horizontal position, as indicated in FIG. 4. Because central aperture in each plate is slightly larger than piston rod 25, when the parts are in the position of FIG. 4, the plates do not grip the piston rod and relative movement of the plates and rod is possible.

As handle 30 is rotated beyond this point to position 30c, the plates are tilted by the handle so that they are rocked from their original position to a new tilted position in which they are inclined downwardly and away from pivot 31. Rocking the plates thus by the handle causes the lower edges of the apertures in the plates to come into contact with the smooth side walls of the piston rod, gripping the piston rod to drive it downwardly as the handle is moved down. For this reason, at least the lower edges of the holes in the plates, as indicated particularly at 34a, are sharp in order to grip the smooth surface of rod 25. The downward operating stroke is limited by contact with stop pin 39.

After handle 30 is released, it moves upwardly under the influence of spring 37, the plates being moved upwardly also. However, rod 25 is not carried upwardly along with the handle and the gripping plates because the tendency of spring 37 is to slide the plates upwardly on the rod while keeping them in a substantially horizontal position (as in FIG. 4) rather than to tilt them with respect to the rod axis as is typical of movement by handle 30 during the operating stroke.

Two or more sliding plates 34 and 35 are preferred as a gripping means because their effectiveness is increased substantially by the sliding contact between them. A single plate is effective for this purpose but in practice its grip on the rod during the downward movement of handle 30 is often minimized by virtue of its contact with spring 37 which resists the lateral movement of the plate required to obtain a good gripping engagement with the piston rod. The two plates 34 and 35 slide with respect to each other during the downward movement of the operating handle with the result that at least one of the plates effects a secure gripping engagement with the piston rod. For the same reason, the number of plates could be increased beyond two although little real advantage is gained by so doing.

After the material 27 is dispensed from cartridge 16 by a plurality of downward strokes of piston 26 as a result of repeated oscillations in a vertical arc of handle 30, it will be desired to replace the cartridge. This can be effected simply by moving handle 30 downwardly to a mid-position as indicated by the broken lines 30b in FIG. 2, plates 34 and 35 then occupying the neutral position shown in FIG. 4. In this position of the rod gripping means, the piston rod can be withdrawn upwardly by grasping its upper end 25a. The piston rod is free of plates 34 and 35 and can be withdrawn upwardly in the body to bring the piston above the cartridge. The empty cartridge 16 can then be removed through the open side of the dispenser and a full one inserted, after which the piston is again moved

4

downwardly within the new cartridge by a series of short vertical oscillations of the operating handle 30.

From the foregoing description it will be understood that changes in the design and arrangement of the parts may occur to a person skilled in the art and may be made without departing from the spirit and scope of my invention. Accordingly, it is to be understood that the foregoing description is considered to be illustrative of, rather than limitative upon, the appended claims.

I claim:

1. In a dispenser having a frame receiving and holding a removable cartridge containing material to be dispensed and a piston movable within the cartridge to discharge material therefrom, piston advancing mechanism comprising:
 - an operating handle pivotally mounted on an upper portion of the frame to swing through an arc, said handle having a grip portion;
 - a smooth rod connected at one end to the piston and located between the pivotal mounting for the handle and the grip portion;
 - a plate extending generally transversely of the rod and having an aperture through which the rod passes with a loose, sliding fit, the handle bearing against one face of the plate and rocking the plate to bring the edge of the aperture therein into engagement with the rod to move the rod in the direction of the piston;
 - and a return spring between a lower portion of the frame and said plate normally urging the plate and handle away from the piston.
2. In a dispenser having a frame receiving and holding a removable cartridge containing material to be dispensed and a piston movable within the cartridge to discharge material therefrom, piston advancing mechanism comprising:
 - an operating handle pivotally mounted on an upper portion of the frame to swing through an arc, said handle having a grip portion;
 - a smooth rod connected at one end to the piston and located between the pivotal mounting for the handle and the grip portion;
 - rod gripping means comprising a plurality of parallel plates in sliding contact with each other and each having an aperture through which the rod passes, the handle bearing against the outer face of one of said plates to rock the plates relative to the rod to grip the rod;
 - and return spring means bearing against a lower portion of the frame and against another of said plates normally urging the plates and handle in a reverse direction away from the piston.
3. In a dispenser, the combination as claimed in claim 2 in which the plates all have sharp edges surrounding the apertures and brought into gripping engagement with the rod by the handle.
4. In a dispenser, the combination as claimed in claim 2 in which the frame includes a U-shaped bracket having side walls between which the handle is located, the end wall of the bracket inter-connecting the side walls engaging the handle to limit its movement under force exerted by the spring.
5. In a dispenser, the combination comprising:
 - a frame having a generally cylindrical portion open at one side to receive a cartridge containing material to be dispensed from the lower end of the cartridge;
 - bracket means formed from the wall of said cylindrical portion adapted to attachment of the dispenser to the face of a generally vertical wall with the axis of the cylindrical portion upright;
 - a piston and piston rod assembly movable axially of the cylindrical portion, said rod having a smooth surface and extending upwardly beyond the frame;
 - said frame having vertically spaced walls having openings through which the piston rod passes to guide its axial movement;

5

said frame also including a pair of upwardly extending, horizontally spaced walls extending between said vertically spaced walls;

an operating handle pivotally mounted near one end on and between the horizontally spaced walls to swing through a vertical arc and extending generally horizontally from the pivot;

rod gripping means comprising a pair of parallel plates in sliding contact with each other and each having an aperture through which the rod passes, the handle bearing against the top surface of the upper plate and and rocking the plates relative to the rod to bring the lower edge of the holes in the plates into gripping en-

6

agement with the rod to advance the piston downwardly; and return spring means bearing against one of the vertically spaced walls and against the lower plate normally urging the plates and handle upwardly.

References Cited by the Examiner

UNITED STATES PATENTS

608,323	8/98	Cypher	-----	222-391	X
2,134,141	10/38	Moore	-----	222-181	
2,786,604	3/57	Collins	-----	222-391	X

LOUIS J. DEMBO, *Primary Examiner.*