

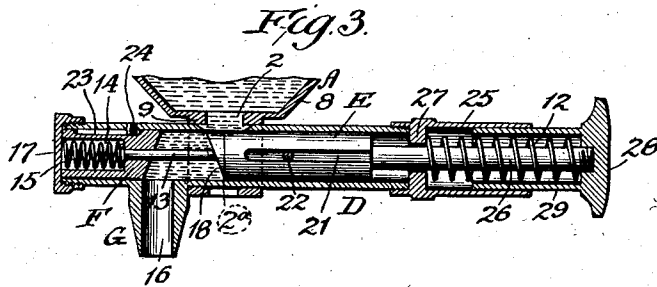
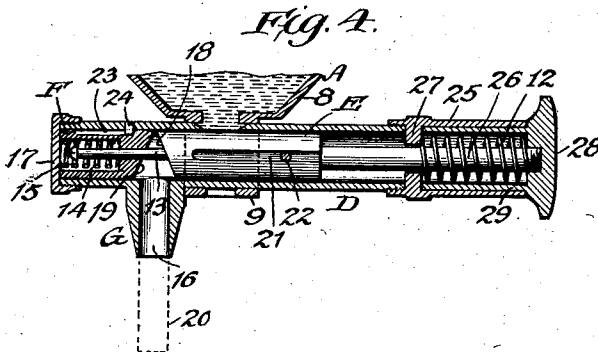
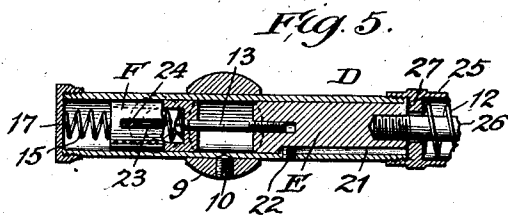
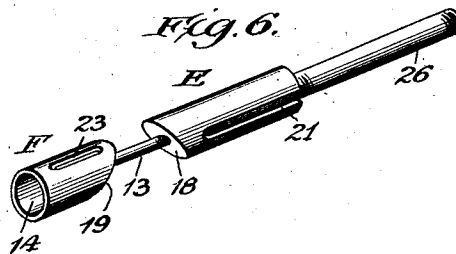
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PATENTED JUNE 2, 1908.

J. W. HOFFMAN & C. G. MUNSON.
SOAP DISTRIBUTER FOR TOILET USE.

APPLICATION FILED JUNE 11, 1907.

2 SHEETS—SHEET 2.



Witnesses
Harry R. L. White
Ray White

Inventors
John W. Hoffman
Charles G. Munson
By Chas. G. Page *Atty*

UNITED STATES PATENT OFFICE.

JOHN W. HOFFMAN AND CHARLES G. MUNSON, OF CHICAGO, ILLINOIS.

SOAP-DISTRIBUTER FOR TOILET USE.

No. 889,306.

Specification of Letters Patent.

Patented June 2, 1908.

Application filed June 11, 1907. Serial No. 378,423.

To all whom it may concern:

Be it known that we, JOHN W. HOFFMAN and CHARLES G. MUNSON, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Soap-Distributors for Toilet Use, of which the following is a specification.

Our invention relates to sanitary soap supply means or soap distributors for toilet purposes.

An object of our invention is to provide a sanitary soap supply device for ejecting at each action a given quantity of plastic soap, the quantity expelled by an ejecting action on the part of the device being suitable for the use of a person in making his or her toilet.

Further objects are to expel the plastic soap in stick form; to provide a practical and reliable device; to permit an action of the device to make a clean discharge of the required quantity of soap; to permit the storage of a quantity of plastic soap and the separation therefrom by each action of a suitable quantity to keep plastic soap within the distributor from hardening; to prevent the soap from leaking out by reason of jarring of the distributor on a train or from other causes; to provide simple, compact and durable means for the purposes aforesaid; to greatly economize in the use of soap in the wash rooms on trains and in other desired places; and to provide various details of construction serving to increase the general efficiency and utility of soap supply means.

In the accompanying drawings: Figure 1 is a side elevation of a soap distributor embodying our invention. Fig. 2 is a section through Fig. 1 on a vertical central plane. Fig. 3 illustrates the piston barrel or delivery chamber in longitudinal central section, the piston being mainly in elevation, and the movable abutment jaw being in section. In this figure the piston is in position to cut off the supply of soap from the supply chamber to the delivery chamber. Fig. 4 is a like view but showing the piston at the end of its forward stroke. Fig. 5 is a section on line 5-5 in Fig. 2. Fig. 6 is a detail view illustrating the piston and abutment jaw.

In said drawings, the cup or casing A serves to provide a supply chamber which when in use is filled to a suitable extent with

plastic soap. This cup or casing is provided with a screw cap 1 which can be removed to permit of the plastic soap to be filled into the space or chamber within the cup. The cup is also provided with a bottom outlet or education port 2 through which the soap is caused to feed out from the supply chamber by means of a piston or plunger B arranged for action within the cup and subject to the pressure of a spring C, which serves to press the face of the plunger downwardly against the mass of plastic soap. The plunger is fitted to slide up-and-down within the supply chamber, and to prevent back leak of the soap thus under compression, the plunger is provided with a cup washer 3, which fits against the inner side wall of the supply chamber, thereby preventing the soap from leaking between the plunger and the side wall of the supply chamber. The plunger is also constructed or provided with a stem 4, and the end of the cup formed by the cap is provided with an opening 5 through which the plunger stem extends and moves longitudinally. The plunger stem 4 is threaded to receive a nut 6 which is fitted to work thereon for the following purpose. In order to suitably fill the cup, as in Fig. 2, in which 7 indicates a body of plastic soap understood to have been filled therein, the operator will unscrew the cap 1 and then conveniently remove as a whole the cap, the plunger and stem thereof, and the spring. After or prior to having filled a suitable quantity of plastic soap into the cup as illustrated, the operator will turn the nut 6 in direction to bring it against the cap and thereby draw the plunger toward the cap so as to compress the spring between the cap and the plunger, it being understood that the spring can be thus compressed as in Fig. 2, either before or after the removal of the cap. After having thus compressed the spring, the cap can be again screwed onto the cup, whereby the plunger will then lie over or upon the top of the body or mass 7 of plastic soap, and by then reversing the adjustment of the nut so as to bring it into the position shown in Figs. 1 and 2, the spring will be left free to exert its expansive force against the plunger and cause the latter to press downwardly against the mass of plastic soap within the supply chamber.

In order to permit the pressure of this spring plunger to effectively expel the soap through the bottom outlet 2 of the cup, the

bottom portion 8 of the cup converges or tapers toward such port or outlet. If the cup were a straight cylinder having a flat bottom end with a central aperture, the lines of pressure would tend to compact the soap around a vertical central axis and prevent effective discharge, but by forming the lower part 8 of the cup tapered, such as cone-shaped, and forming the part 8^a above such bottom part straight, such as straight cylinder, no undesirable packing and opposition to the expulsion of the soap will occur.

The lower terminal of this tapered part of the cup or casing is provided with a downward projection 9 forming a bearing for a shell or casing D which extends through an opening formed transversely through such bearing. The casing D is preferably tubular and is desirably removably held in the bearing 9 by suitable means, such as by a screw 10. The shell or casing D provides a chamber for receiving a charge of plastic soap from the supply chamber, and to such end it is provided with a lateral aperture which registers with port 2 of the supply chamber, the said opening in the shell or tubular casing D being indicated by dotted line 2^a in Fig. 2. When therefore certain chamber space within the casing D at a point below the registering ports 2 and 2^a is in open communication with the supply chamber by way of said registering ports, the constant down pressure of the plunger will force a portion of the plastic soap into such chamber space in shell or casing D so as to provide therein a charge for ultimate ejection. This shell or casing D also contains and forms a guide-way or cylinder for means adapted for determining the quantity of the aforesaid charge and for ejecting such charge at a suitable point.

With reference to means for operating upon or manipulating a charge 11 (Fig. 2) of plastic soap which has been thus fed into a portion of the chamber space within casing D, a spring plunger or piston E is fitted for reciprocative action within the said chamber and is normally held by a spring 12 with its inner end at one side of the registering ports 2 and 2^a, and when in such position its said inner end or face forms one of two temporary end walls which define the area of chamber space for the charge 11. When the piston E is thus positioned to form one end wall of the charge receiving space, the opposite end wall of such space is defined and formed by the inner end of an abutment device F also fitted for longitudinal reciprocative action within the chamber of casing D and arranged in alinement with the piston E. When this piston and movable abutment are relatively spaced and positioned as in Fig. 2, the chamber space between them is in register with the ports 2, 2^a forming a passage and uniting to practically form an eduction port for discharging from the supply chamber into the

delivery chamber and hence plastic soap in quantity to form charge 11 will be forced down through said port into the chamber space between the piston and the abutment. While the members E and F are in such position, the member E is held by spring 12 in what is herein termed its retracted position, and the member F is held in a retracted position and against forward movement independent of the member E by a small rod 13 extending from one to the other. This rod has a sliding connection with one member, and a stop for limiting the extent of slide in a direction to permit the separation of the two members, as in Fig. 2. For example, the member forming the abutment F is recessed back from its outer end and provided through its solid inner end portion with a central bore for the rod 13 which has one end portion screwed or otherwise suitably attached to the inner end of the piston E, the opposite end portion of such rod being extended through the inner end of the abutment piece or member and provided at its terminal within the recess 14 therein with a head or stop which abuts against the inner wall of the recess 14 and thereby prevents lateral pressure of the charge 11 from forcing the abutment away from the piston when the latter is maintained by its spring in the position shown in Fig. 2.

The small chamber or recess within the abutment member F also contains a spiral spring 15 having one end abutting against one end of the casing D and having its opposite end abutting against the inner end wall of said recess 14, the spring in Fig. 2 being in an expanded condition. The object of this spring is hereinafter explained in connection with requirements which render its presence desirable.

In order to close the port 2^a and thereby cut off communication between the supply chamber and the piston chamber provided by casing D, the plunger or piston E can be pushed inwardly against the resistance of its spring 12. When the piston is thus pushed inwardly, it will cut off the port 2 and 2^a and also force the charge 11 toward and against the movable abutment piece, and this action will permit the forwardly moving charge to move said abutment member F in the direction the piston is moving. When the piston thus operated has reached a position to cut off communication between the supply chamber and the piston chamber, the abutment member will have been moved to an extent to compress its backing spring 15 and bring its inner end face from one to the other side of a lateral discharge port 16 preferably through a nipple or nozzle G on the piston shell or casing D, as in Fig. 3, it being observed that in Fig. 2 showing the first position, the inner end of the abutment member is at the right, while in Fig. 3 it is at the left of the bore of

nipple G. In this last mentioned figure, the abutment piece has been forced along until it is positively arrested by a stop, as for example, it has been moved as aforesaid until its outer end abuts against end 17 of the casing D. The foregoing described movement of the piston is however continued, and as it thus moves toward the now stationary abutment member, it will push rod 13 farther into the recess of the latter, the stop or head on the end of the rod in such case sliding along within the coiled spring 15. As the piston thus advances toward the abutment member, the space between them is contracted and hence the charge of plastic soap is forced out from the chamber into and through the nipple or nozzle bore to an extent proportional to the ultimate degree of closure between the opposing faces or ends of the abutment and the piston.

In order to effectively squeeze the plastic soap from the piston chamber into the nozzle bore, the opposing faces of the piston and abutment are beveled, the planes of such beveled faces being formed to converge upwardly from the nozzle bore so as to straddle the same when such members are in the position shown in Fig. 3, and obviously, when the piston and abutment are back in the position shown in Fig. 2, the planes of these faces will diverge downwardly from the port 2^a. By thus providing the piston and abutment with beveled faces 18 and 19, respectively, the relative closing action between these faces will have a shearing action on the mass of plastic soap between them, and cause a quick and effective discharge.

When the piston is released, it will be retracted by its spring 12 into the first position shown in Fig. 2, and before completing such retractive action it will draw back rod 13 along with it to an extent to draw the head on one end of such rod against the inner end wall of the recess in the abutment member and thereby ultimately draw such abutment member again into the position in said figure. But when the piston begins to retract and thereby move away from the nozzle aperture, the tendency to create a vacuum will tend to draw back the plastic soap which had been forced into the nozzle, and as the soap when forced into and through such nozzle projects therefrom in the form of a stick, indicated by dotted lines 20 in Fig. 4, the retraction of such material would cause the stick to curl up, and also shorten. This however is obviated by a light spring 15 which is under compression in Figs. 3 and 4, and which as soon as the piston begins to retract, forces the abutment member in direction to instantly follow the retracting piston and cut off the entrance to the discharge port 16. Thus considered therefore we also provide a cut off which cuts off the soap exit 16 from the piston barrel before the piston has

retracted to its first or normal position. By thus closing the port 16, the piston barrel is cut off from the outer air, and moreover, the charging space within the piston barrel is closed at one end by the sliding member F, and at the other end by the piston E, the space between said two members being normally below the port or passage between the supply chamber and the piston chamber. The plastic soap is therefore kept from exposure to the air, and as long as the members F and D are in the position shown in Fig. 2, the space between them will be filled by a charge of plastic soap forced downwardly into such space by the plunger of the supply chamber. By providing the piston member E with a beveled end face 18, said beveled end will rapidly and effectively close the port leading from the central portion of the bottom of the supply chamber into the discharge chamber, and when the piston is thus moved forward for such purpose; its beveled end will not force the charge in direction upwardly through said port, but will move the charge forward toward the lateral discharge port with which the discharge chamber is provided. When the discharge has been pushed forward to a point over the lateral discharge port 16, it will be effectively squeezed out through said port by the beveled jaw faces 18 and 19, while the member E having the beveled jaw face 18 is completing its forward stroke.

The members E and F are shown cylindrical and arranged for reciprocative action within a suitable piston casing or barrel, and to prevent them from turning so as to displace the proper relative arrangement of their beveled end faces, suitable guides are provided, as for example, the member E has a longitudinal slot or groove 21 for a guide pin 22 on the casing or barrel D, and the member F has a similar groove 23 for a guide pin 24, also on the said barrel.

The spring 12 and outer end portion of the piston can be constructed in any way suitable for the purpose for which they are intended. In the drawings a short sleeve or barrel portion 25 is screwed onto the barrel which contains the piston or piston head E, and the piston rod or stem 26 extends and works through an opening formed centrally through a partition 27 with which an end portion of shell or barrel section 25 is provided. The spring 12 is arranged on the stem and within said tube 25 with its inner end abutting against the end portion 27 of the section 25 thus referred to. On the end of the piston stem is a push knob 28 having a tubular stem 29 fitted to slide in or upon the barrel portion 25, the knob being desirably provided with the word "Push".

When the piston E and abutment F are back in the position shown in Fig. 2, the space between them for the charge enlarges

downwardly from the port communicating with the soap supply chamber, and hence— with a minimum area of port, ample chamber space is provided for a suitable quantity of soap which is fed into such space by reason of the constant pressure exerted downwardly on the mass of soap within the reservoir or supply chamber.

When the piston is first advanced to cut off communication between the piston chamber and the supply chamber, the beveled or inclined end of the piston rapidly cuts off such communication without tending to force the soap back into the upper supply chamber, and this action is also assisted by the yield of the movable abutment F which when the charge of soap is pressed against it, readily yields to such pressure since it is only backed by a light spring 15.

As soon as the movable abutment has reached the limit of such back movement, as in Fig. 3, continued forward movement of the piston will cause the plastic soap between said members E and F to begin to pass into the bore of nozzle G, and as the piston continues such movement until it meets the abutment as in Fig. 4, the opposing inclined and upwardly converging faces of the piston and abutment will act as a pair of beveled jaws operating to squeeze the soap from between them and force it into and through the nozzle G. The instant the piston is released it will be drawn back into its first position by spring 12, and at such time the spring 15 causes the abutment to closely follow the piston and cut off communication between the piston chamber and the nozzle bore, and at a suitable moment the rod 13 will have been drawn back to an extent to cause its head to engage the abutment and draw and maintain the latter in the position shown in Fig. 2.

As shown, the axis of the piston and hence the axis of the piston chamber which may also be termed the delivery chamber, is transverse to the axis of the combined supply and plunger chamber, the ultimate outlet port or bore 16 being at one side of the axis of the said supply chamber. When the abutment has been forced back into the position shown in Figs. 3 and 4 it is temporarily a stationary jaw at one side of port 16 and having its face inclining in direction upwardly and over said bore.

What we claim as our invention is:

1. In a soap distributor for toilet use, a supply chamber for containing a mass of plastic soap and having an outlet port; a piston chamber adapted for communication with the supply chamber port; means for subjecting the mass of soap in the supply chamber to pressure for feeding the soap from the latter into the piston chamber; a piston for opening and closing the supply chamber port, and a movable abutment opposite the piston, both being arranged within

the piston chamber; and means for normally and relatively spacing the piston and abutment in position to provide chamber space for receiving a charge of soap from the supply chamber, the piston being movable forward for closing the supply port and moving the charge against the abutment to a discharge duct or port connected with the piston chamber, and the abutment being movable under pressure of the advancing charge to an extent to cause it to pass the said discharge duct and form a jaw at one side thereof; the other jaw being formed by the advancing piston, and the plastic soap being squeezed into and through the discharge duct by the squeezing action of the jaws formed by the abutment and piston.

2. In a soap distributor for toilet use, a supply chamber having a removable cap; a plunger arranged within the supply chamber; a spring arranged between the plunger and the cap, the plunger being constructed with a threaded stem arranged to extend and move longitudinally through an opening in the cap, and being provided with an adjustable nut which can be adjusted for relatively drawing together the plunger and cap and then reversely adjusted so as to permit free and constant downward pressure on the part of the plunger; and means for receiving soap from the supply chamber successively in charges or portions and successively ejecting such charges or portions in stick form in position for the user.

3. In a soap distributor for toilet purposes, a piston chamber containing a piston and a shifting abutment member having its face opposite the piston face forming an abutment jaw; movable connection between the shifting abutment member and the piston permitting the two to relatively move apart to a limited extent, and in alternation therewith to relatively close together; stop means for limiting the extent of movement in one direction on the part of the abutment member; a spring backing the abutment member and having its expansive action in direction toward the piston; and means for supplying plastic soap between the piston and abutment when these members are in normal position.

4. In a soap distributor, a supply chamber for containing a mass of plastic soap; a delivery chamber for receiving soap from the supply chamber and having a discharge duct for the discharge of soap from the delivery chamber; a piston and an abutment within the delivery chamber with their relatively opposite faces inclined or beveled for forming jaw faces for squeezing soap between them out through the discharge duct of the delivery chamber when the piston is forced toward the abutment.

5. In a soap distributor, a piston chamber having an outlet duct and containing a pis-

ton and a reciprocating abutment forward of the piston face, the piston and the abutment being relatively movable apart to receive a portion of plastic soap between them, and relatively movable together to squeeze out the plastic soap when the same is over the outlet duct, and the relatively opposite abutment faces being inclined to converge upwardly from the outlet duct.

6. In a soap distributor, a supply chamber for containing a mass of plastic soap and having an outlet; a piston chamber having an outlet duct and connected with said outlet of the supply chamber; a spring backed piston normally held by the spring in position to temporarily maintain its face at one side of the connection between the two chambers; a movable abutment normally maintained by the piston with its face at the opposite side of the connection between the two chambers so as to leave between the piston and abutment faces a suitable extent of chamber space for receiving a portion of soap from the supply chamber; a spring opposed to but yielding to the advance of the abutment when the piston is moved forward to cut off connection between the two chambers and force the portion of soap in the piston chamber against the yielding abutment and forwardly to and over the outlet duct of the piston chamber; and stop means for limiting such forward yield on the part of the abutment when its face nearest the piston has reached the far side of the outlet duct in order to permit the advancing piston and abutment face to coact as jaws for forcing the soap out through said outlet duct.

7. In a soap distributor, a piston and a movable abutment; chamber space containing the piston and movable abutment and having an outlet for the discharge of soap in stick form; a limited sliding connection between the piston and movable abutment permitting them to relatively separate and to relatively close together in alternation; means for arresting the forward movement of the movable abutment in position to form a jaw at one side of said discharge duct, the piston being arranged for forward movement to cooperate with the abutment as an opposing jaw; and a spring for forcing the abutment back toward the piston and over the discharge duct when the piston is drawn back from its forward position.

8. In a soap distributor, a supply chamber having one end portion tapered toward a feed outlet and adapted for containing a mass of plastic soap; a spring plunger for pressing upon the mass of plastic soap in direction toward the feed outlet; a piston chamber connected between its ends with the feed outlet of the supply chamber, and having at one side of such connection a lateral duct for the ejection of plastic soap in stick form; and a pair of jaws for receiving be-

tween them a portion of soap fed into the piston chamber, and for squeezing such soap out through the discharge duct of the piston chamber, one of said jaws being arranged for forward movement to cut off communication between the supply and piston chambers, and the other jaw being arranged to yield and move forward under pressure of the advancing body of soap pushed forward by the other jaw; and means for arresting forward movement of the forward jaw at a point suitable for its cooperation with the other jaw.

9. In a soap distributor, a cup or casing forming a supply chamber for containing a mass of plastic soap and having a feed outlet; a piston barrel transverse to the axis of the feed opening; a spring backed piston and a movable abutment arranged in relative alignment within the piston barrel; the abutment and piston being relatively separable and relatively movable together, the relative separation of the two members being permitted by a rod attached to one and having a limited sliding connection with the other.

10. In a soap distributor for toilet use, a supply chamber adapted for containing plastic soap and having a bottom outlet port; a piston chamber connected with the outlet port of the supply chamber to receive a charge of plastic soap therefrom and having a lateral outlet for the ultimate discharge of plastic soap therefrom in stick form; a jaw member fitted to reciprocate within the piston chamber and arranged for closing the piston chamber outlet port when moved one way and for opening such port when reversely moved, and a piston having a beveled forward end and arranged for alternately opening and cutting off communication between the supply chamber and piston chamber and for pushing a charge of plastic soap toward the said movable member in order to force the latter in direction to open the outlet port of the piston chamber and assume the position of one of two jaws for squeezing soap through the lateral outlet of the piston chamber.

11. In a soap distributor, a supply chamber for containing a mass of plastic soap and having a downwardly tapered lower end portion ported for the downward ejection of the plastic soap; a spring plunger operative within the supply chamber to exert a constant downward pressure upon the mass of soap within such chamber; a piston chamber arranged transverse to the axis of the supply chamber and connected with the lower end thereof to permit the supply chamber to discharge by way of its bottom port into the transversely arranged piston chamber at a point between the ends of the latter; and a piston and a shifting abutment movable within the piston chamber into relative positions to temporarily provide between them space for receiving a charge of plastic soap

from the supply chamber, the piston being movable forward from such position to an extent to cut off the piston chamber from the supply chamber and move the charge therein
5 forward and to an extent to cause such charge to move the shifting abutment in like direction, said piston chamber having a side outlet through which plastic soap is squeezed

in stick form by two jaws provided by the piston and shifting abutment.

JOHN W. HOFFMAN.
CHARLES G. MUNSON.

Witnesses:

HARRY R. L. WHITE,
OTTILIE C. FREIBERG.