

June 25, 1946.

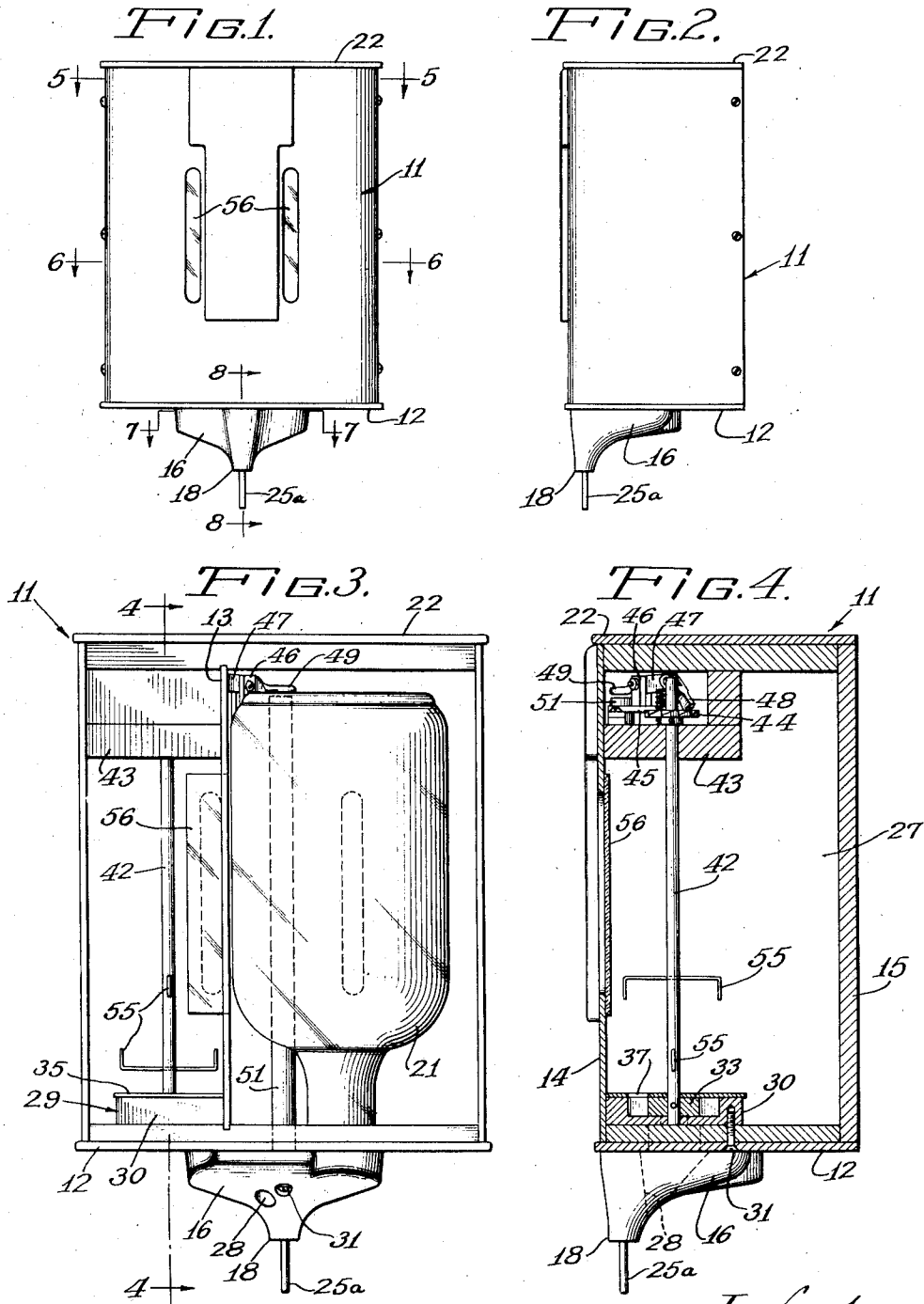
A. C. STEPAN, JR

2,402,707

DISPENSING APPARATUS

Filed Feb. 19, 1944

2 Sheets-Sheet 1



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FIG. 5.

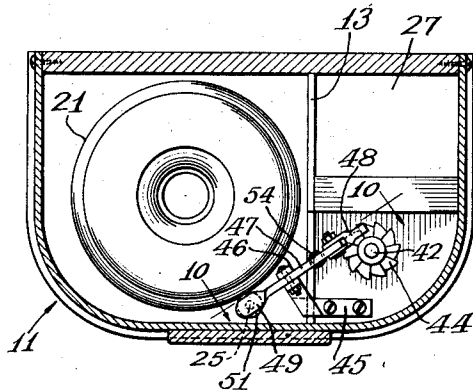


FIG. 6.

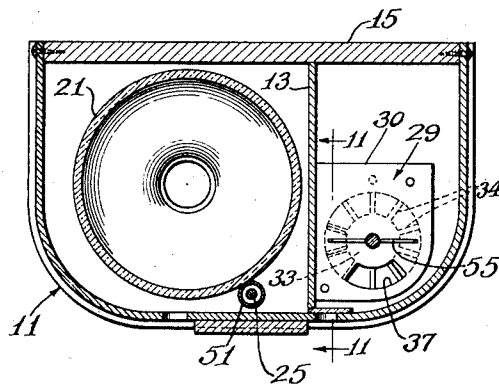


FIG. 7.

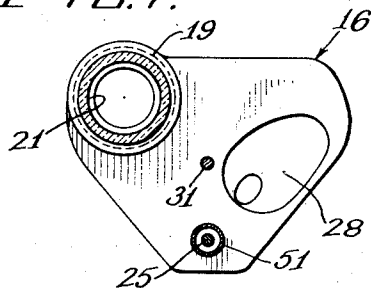


FIG. 10.

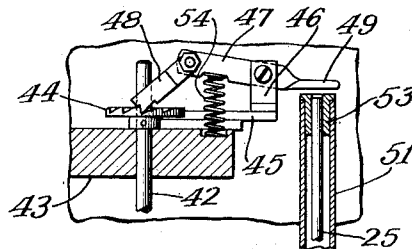


FIG. 8.

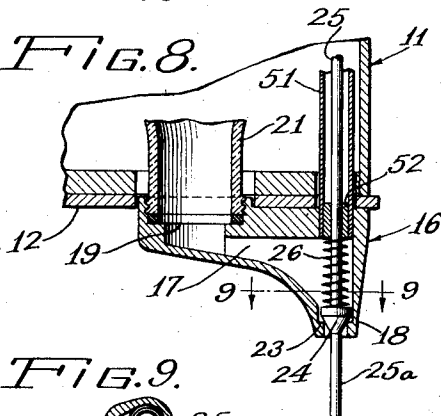


FIG. 11.

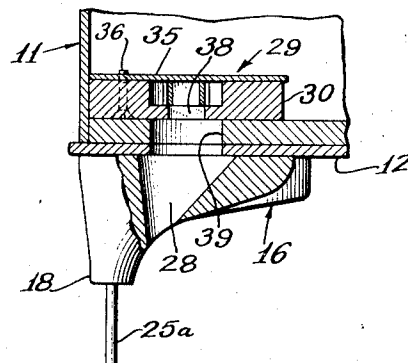
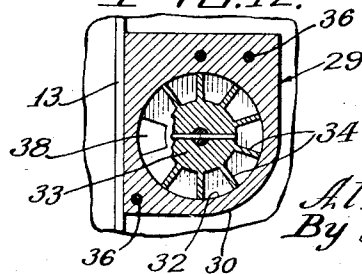


FIG. 9.



FIG. 12.



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UNITED STATES PATENT OFFICE

2,402,707

DISPENSING APPARATUS

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Application February 19, 1944, Serial No. 523,029

7 Claims. (Cl. 222-133)

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This invention relates to dispensing apparatus and is particularly concerned with the novel structural organization and operation of an apparatus especially constructed to dispense, simultaneously, a liquid detergent and a mild abrasive separately contained within the apparatus.

Dispensing apparatus of the kind to which this invention pertains is installed in a washroom and usually is of such construction as to dispense a measured quantity of a mild detergent such as, for example, liquid soap, directly into the hand of the operator. The use of such known types of dispensing apparatus by persons such as shop mechanics, etc., whose hands become excessively gritty, is not always satisfactory primarily because the detergent therein contained may be too mild to effect efficient cleaning of the hands. Moreover, it has been found that it is not satisfactory to admix a quantity of detergent with an abrasive because of the tendency of the abrasive to settle around the dispensing valve and thus clog the dispensing outlet or prevent tight closing of the valve, and in other instances, the presence of an adhesive in the detergent may cause objectionable wear in the apparatus due to the abrasive action of the abrasive. Therefore, washrooms have sometimes been equipped with a separate open receptacle for holding an abrasive, a quantity of which is gathered up and used in combination with the detergent dispensed from a suitable apparatus, but this practice is subject to numerous objections, not the least of which is the unnecessary wasting of the abrasive.

It is an object of the present invention to overcome the objectionable practices outlined hereinabove by providing a dispensing apparatus of the character referred to hereinabove which is constructed to hold a liquid detergent and an abrasive in separate compartments for simultaneous discharge upon operation of a single dispensing valve mechanism.

Another object of the invention is to effect the discharge of a measured quantity of a mild abrasive into the hand used by the operator to actuate the valve controlling the discharge of the liquid detergent.

Still other objects of the invention are to provide a dispensing device of the character referred to with novel actuating mechanism of a kind operative to effect simultaneous discharge of a liquid and a solid from separate containers, and which agitate the abrasive in such manner as to insure dispensing thereof from the apparatus; and to enable the contents of one compartment

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to be dispensed without there being a dispensing of the contents of the other compartment.

A further object is to provide a dispensing apparatus which is of simple and economical construction, positive and efficient in operation, and practical in use.

Other and further objects of the present invention will be apparent from the following description and claims and are illustrated in the accompanying drawings which, by way of illustration, show a preferred embodiment and the principle thereof and which I now consider to be the best mode in which I have contemplated applying that principle. Other embodiments of the invention embodying the same or equivalent principle may be used and structural changes may be made as desired by those skilled in the art without departing from the present invention and the purview of the appended claims.

In the drawings:

Fig. 1 is a front elevational view of a dispensing apparatus embodying the present invention;

Fig. 2 is a side elevational view of the apparatus;

Fig. 3 is a rear elevational view with the back wall of the apparatus removed;

Fig. 4 is a vertical sectional view taken substantially on line 4-4 on Fig. 3;

Fig. 5 is a horizontal sectional view taken substantially on line 5-5 on Fig. 1;

Fig. 6 is a similar horizontal sectional view taken substantially on line 6-6 on Fig. 1;

Fig. 7 is a horizontal sectional view taken substantially on line 7-7 on Fig. 1, and showing the valve body in plan;

Fig. 8 is a vertical sectional view of the valve body taken substantially on line 8-8 on Fig. 1;

Fig. 9 is a detail sectional view of the valve body discharge passageway taken substantially on line 9-9 on Fig. 8;

Fig. 10 is a detail sectional view taken substantially on line 10-10 on Fig. 5, and showing the measuring valve operating mechanism in elevation;

Fig. 11 is a detail sectional view of the measuring valve taken substantially on line 11-11 on Fig. 6; and

Fig. 12 is a horizontal sectional view of the measuring valve.

The apparatus embodying the present invention, as disclosed in the accompanying drawings, includes a cabinet 11 having a bottom wall 12 and an internal vertically disposed partition 13 disposed between the side walls and extending between the front wall 14 and back wall 15.

A hollow valve body 16 disposed beneath the bottom 12 has a chamber 17 therein which, as best shown in Fig. 8, terminates at one end in a spout 18 and which has an internally threaded inlet opening 19 at its other end communicating with the interior of the cabinet and arranged to receive in tight threaded engagement therewith the externally threaded mouth of a suitable container 21 which contains a quantity of liquid detergent such as, for example, liquid soap. The container 21 is located within the cabinet 11 on one side of the partition wall 13 and it is easily inserted or removed through the top of said cabinet upon removal of the cabinet cover 22. It is not essential, however, that a separate container be provided, although so to do is often convenient, since the portion of the apparatus within which the container 21 is located could be arranged to be a reservoir for the liquid detergent, in which event the opening 19 would communicate with the bottom of such reservoir.

The spout 18 has an internal circumferential shoulder 23 adjacent its outlet which affords a valve seat for a valve 24 secured on a vertical reciprocable stem 25. The stem 25 serves to guide vertical movement of the valve and also functions for a purpose to be described presently. The valve 24 is normally seated against the valve seat 23 by a compression spring 26 arranged around the stem 25 between the valve and a bearing sleeve 52, described hereinafter, and therefore the liquid detergent is prevented from flowing freely from the spout 18. When a quantity of detergent is desired, the operator places a hand against the free end of an extension 25a of the stem 25, such extension depending through the spout. When the extension 25a is pushed upwardly to overcome the tension of spring 26, the valve 24 is moved away from the valve seat 23 and the liquid detergent flows out the spout 18. When the extension 25a is released the valve closes under tension of the spring 26.

As mentioned hereinbefore, the present dispensing apparatus is constructed to hold a quantity of a suitable mild abrasive and dispenses such abrasive in measured quantities in conjunction with the dispensing of the liquid detergent. The abrasive, such as for example, corn meal or the like, is contained within a compartment 27 located within the cabinet 11 to one side of the partition 13, and is dispensed through a passageway 28 (Fig. 11) in the valve body 16 upon actuation of a measuring valve generally indicated at 29.

As best illustrated in Figs. 6, 11 and 12, the measuring valve includes a block 30 that is suitably fastened against the inside face of the cabinet bottom 12, as by screws 31. An annular recess 32 is formed in the top of the block 30 and a valve member 33, having a plurality of uniformly circumferentially spaced webs 34 radiating from its hub, is fitted snugly into the recess 32 and is retained for free rotation therein by a cover plate 35 secured to the block 30 as by screws 36. Upon referring to Fig. 6, it will be noted that the plate 35 has an arch shaped opening 37 in registering alignment with the circular path of the webs 34 so that the spaces between said webs are filled with the abrasive as they pass therebeneath when the valve member 33 is rotated in a manner to be described presently. The bottom wall of the circular recess 32 also has an opening 38 (Figs. 11 and 12), located out of registering alignment with the top plate opening 37, which communicates through an opening 39 with the discharge passageway 28 in the valve

body 16. As a consequence, the abrasive material contained within the pockets between adjacent radial webs 34 of the valve member 33 is discharged from these pockets when the valve is rotated to sequentially carry the pockets into registry with the bottom opening 38.

Although rotation of the circular valve member 33 may be accomplished in any suitable manner, the objects of this invention are best attained by the inclusion of suitable mechanism to effect step by step rotation of said valve member in timed relation to opening of the liquid dispensing valve 24 so that a measured quantity of abrasive is dispensed into the hand at the same time the liquid detergent is dispensed. Accordingly, the valve member 33 is axially secured, as by a pin 41, to the lower end of a rotatable shaft 42 which extends upwardly through the compartment 27 and which has the upper end thereof journaled in a frame 43 firmly mounted within the upper part of the cabinet 11. A ratchet 44, preferably having the same number of teeth as there are pockets between the webs 34, is secured to the upper end of said shaft above the frame 43. The frame 43 also provides a mounting surface for a bracket 45 having spaced upstanding ears 46 between which a rocker lever 47 is pivotally secured. One end of the lever 47 has a ratchet engaging pawl 48 pivotally connected thereto and its other end bridges the partition wall 13, as best shown in Fig. 5, and is suitably flattened at its end as at 49 for a purpose to be explained presently.

Referring now to Figs. 8 and 10, it will be noted that the liquid dispensing valve stem 25 extends upwardly through an upright tube 51, firmly secured at its lower end in the valve body 16. The stem is guided for free vertical reciprocation within said tube by a lower bearing sleeve 52 and an upper cap sleeve 53. The flattened end 49 of the rocker lever 47 is disposed directly above but normally spaced slightly from the top end of the stem 25. Hence, when the stem 25 is moved upwardly, upon the application of upward pressure on the free end of the stem extension 25a to open the liquid valve 24, said stem engages the flattened end 49 thus rocking the lever 47 sufficiently to cause the pawl 48 to rotate the ratchet 44 a distance equal to the spacing between adjacent ratchet teeth. Consequently, the rotatable abrasive dispensing valve 33 is moved sufficiently to locate one of the filled pockets directly over the discharge opening 38 so as to thereby discharge the contents thereof into the discharge passageway 28. When the stem 25 is permitted to return to its initial lowered position under the influence of spring 26, a spring 54 (Fig. 10) returns the rocker lever 47 to its original position of rest and the pawl 48 carried thereon drops into a position to co-act with the next successive tooth on the ratchet 44 when the stem 25 is again raised to repeat the dispensing operation.

Inasmuch as certain abrasive materials may tend to pack within the compartment 27, a plurality of radial agitator arms as 55 may be provided on the rotatable shaft 42 to agitate the contents of the abrasive storage compartment through which the shaft 42 is extended.

Since there may be instances when it will be desirable to dispense the liquid without dispensing the abrasive, it is desirable that the upper end of the stem 25 be spaced from the flattened end 49 of the rocking lever 47 when the valve 24 is engaged with the seat 23, this being shown best in Fig. 10. With the parts so arranged the extension 25a may be moved up slightly to unseat

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the valve 24 from the seat 23 and thereby permit dispensing of the liquid, but in such circumstances the rocking lever 47 will not be actuated unless the stem 25 is raised sufficiently to engage and move the lever 47 and if this lever is not moved, no abrasive will be dispensed.

Since it may be desirable to insure that a supply of liquid detergent and abrasive will always be contained in my novel apparatus, sight openings as 56 may be provided in the front wall of the apparatus in alignment with the compartments therein in which such products are stored so as to thereby facilitate visual inspection of quantity stored in the respective compartments.

It will be apparent that an apparatus arranged as above described will enable the hereinabove set forth and kindred objects of this invention to be realized. However, while I have illustrated and described a selected embodiment of my invention, it is to be understood that this is capable of variation and modification and I therefore do not wish to be limited to the precise details set forth but desire to avail myself of such changes and alterations as fall within the purview of the following claims.

I claim:

1. In an apparatus including a cabinet in which two dispensable materials may be stored, a body on said cabinet having two adjacent discharge openings therein, a valve for controlling flow of one of said materials through one of said discharge openings and including a part extended through such opening and beyond said body, a valve structure through which the other material may pass to the other discharge opening and including an outlet opening in communication with such discharge opening and inlet opening out of register with the outlet opening, a measuring valve member shiftably mounted in said valve structure and operable in a shifting movement to advance material to be discharged from said inlet to said outlet opening, and means for operating said shiftable valve member upon movement of said part to open the valve controlling flow of said one discharge opening.

2. In an apparatus including a cabinet in which two dispensable materials may be stored, a body on said cabinet having two adjacent discharge openings therein, a reciprocable valve for controlling flow of one of said materials through one of said discharge openings and including a part extended through such opening and beyond said body, a valve structure through which the other material may pass to the other discharge opening and including an outlet opening in communication with such discharge opening and inlet opening out of register with the outlet opening, a measuring valve member shiftably mounted in said valve structure and operable in a shifting movement to advance material to be discharged from said inlet to said outlet opening, and means for operating said measuring valve member through a shifting movement to effect discharge of material upon movement of said reciprocable valve to open position and when said part is moved toward said body.

3. In an apparatus including a cabinet in which two dispensable materials may be stored, a body on said cabinet having two adjacent discharge openings therein, a reciprocable valve for controlling flow of one of said materials through one of said discharge openings and including a part extended through such opening and beyond said body, a valve structure through which the other material may pass to the other discharge

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opening and including an outlet opening in communication with such discharge opening and inlet opening out of register with the outlet opening, a rotatable valve member in said valve structure and operable in a rotative indexing movement to advance material from the inlet to the outlet openings, and means for imparting rotative movement to said valve member to effect discharge of material upon movement of said reciprocable valve to open position and when said part is moved toward said body.

4. In an apparatus including a cabinet in which two dispensable materials may be stored, a body on said cabinet having two adjacent discharge openings therein, a reciprocable valve for controlling flow of one of said materials through one of said discharge openings including a stem extended through such opening and beyond said body and having a part thereof extended into said cabinet, a valve structure through which the other material may pass to the other discharge opening and including an outlet opening in communication with such discharge opening and inlet opening out of register with the outlet opening, a rotatable valve member in said valve structure and operable in a rotative indexing movement to advance material from the inlet to the outlet opening, a shaft on which said rotatable valve member is mounted, and means operable upon movement of said stem to open the valve associated therewith for operating said shaft to thereby impart rotative movement to said valve member to effect discharge of material upon movement of said reciprocable valve to open position and when said part is moved toward said body.

5. In an apparatus including a cabinet in which two dispensable materials may be stored, a body on said cabinet having two adjacent discharge openings therein, a reciprocable valve for controlling flow of one of said materials through one of said discharge openings including a stem extended through such opening and beyond said body and having a part thereof extended into said cabinet, a valve structure through which the other material may pass to the other discharge opening and including an outlet opening in communication with such discharge opening and inlet opening out of register with the outlet opening, a rotatable valve member in said valve structure and operable in a rotative indexing movement to advance material from the inlet to the outlet opening, a shaft on which said rotatable valve member is mounted, and ratchet means operable in the final portion of a valve-opening movement of said stem to impart a step-like indexing movement to said shaft to thereby rotate said valve member to effect discharge of material upon movement of said reciprocable valve to open position and when said part is moved toward said body.

6. In an apparatus including a cabinet in which two dispensable materials may be stored, a body on said cabinet having two adjacent discharge openings therein, a reciprocable valve for controlling flow of one of said materials through one of said discharge openings including a stem extended through such opening and beyond said body and having a part thereof extended into said cabinet, a valve structure through which the other material may pass to the other discharge opening and including an outlet opening in communication with such discharge opening and inlet opening out of register with the outlet opening, a rotatable valve member in said valve

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structure and operable to advance material from the inlet to the outlet opening, a shaft on which said rotatable valve member is mounted, and ratchet means operable upon movement of said stem to open the valve associated therewith for imparting a step movement to said shaft to thereby rotate said valve member to effect discharge of material upon movement of said reciprocable valve to open position when said part is moved toward said body, the material to be discharged through said rotatable valve member being stored in a compartment in said cabinet, said shaft being extended through such compartment, and means on said shaft for agitating material in said compartment upon movement of said shaft.

7. In an apparatus including a cabinet in which two dispensable materials may be stored, a body on said cabinet having two adjacent discharge openings therein, a reciprocable valve for controlling flow of one of said materials through one

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of said discharge openings and including a part extended through such opening and beyond said body, a valve structure through which the other material may pass to the other discharge opening and including an outlet opening in communication with such discharge opening and inlet opening out of register with the outlet opening, a rotatable valve member in said valve structure and operable to advance material from the inlet to the outlet openings, and means for imparting rotative movement to said valve member to effect discharge of material upon movement of said reciprocable valve to open position when said part is moved toward said body, the material to be discharged through said rotatable valve member being stored in a compartment in said cabinet, and means operable with said rotatable valve member for agitating material in said compartment upon movement of said valve member.

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