May 16, 1967 R. H. ENSIGN ETAL 3,319,835

LIQUID SOAP DISPENSERS

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Fig. 1.

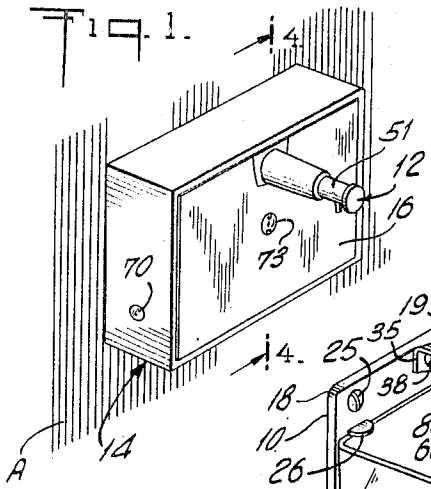


Fig. 2.

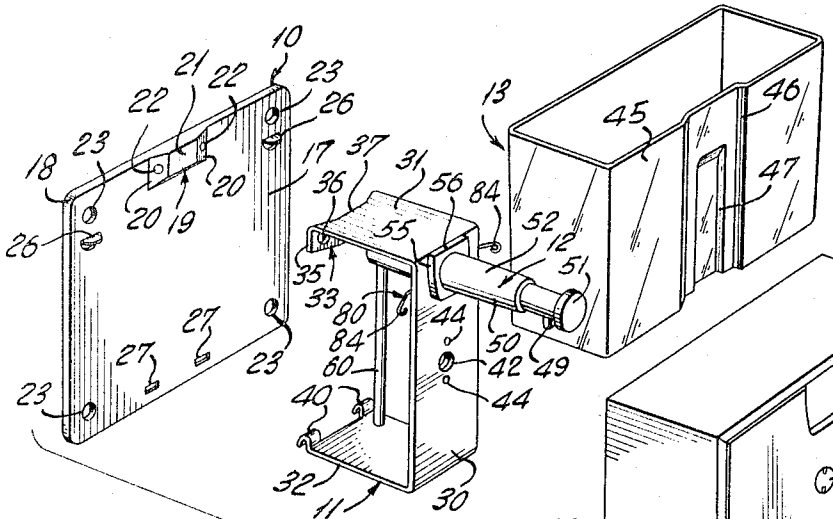


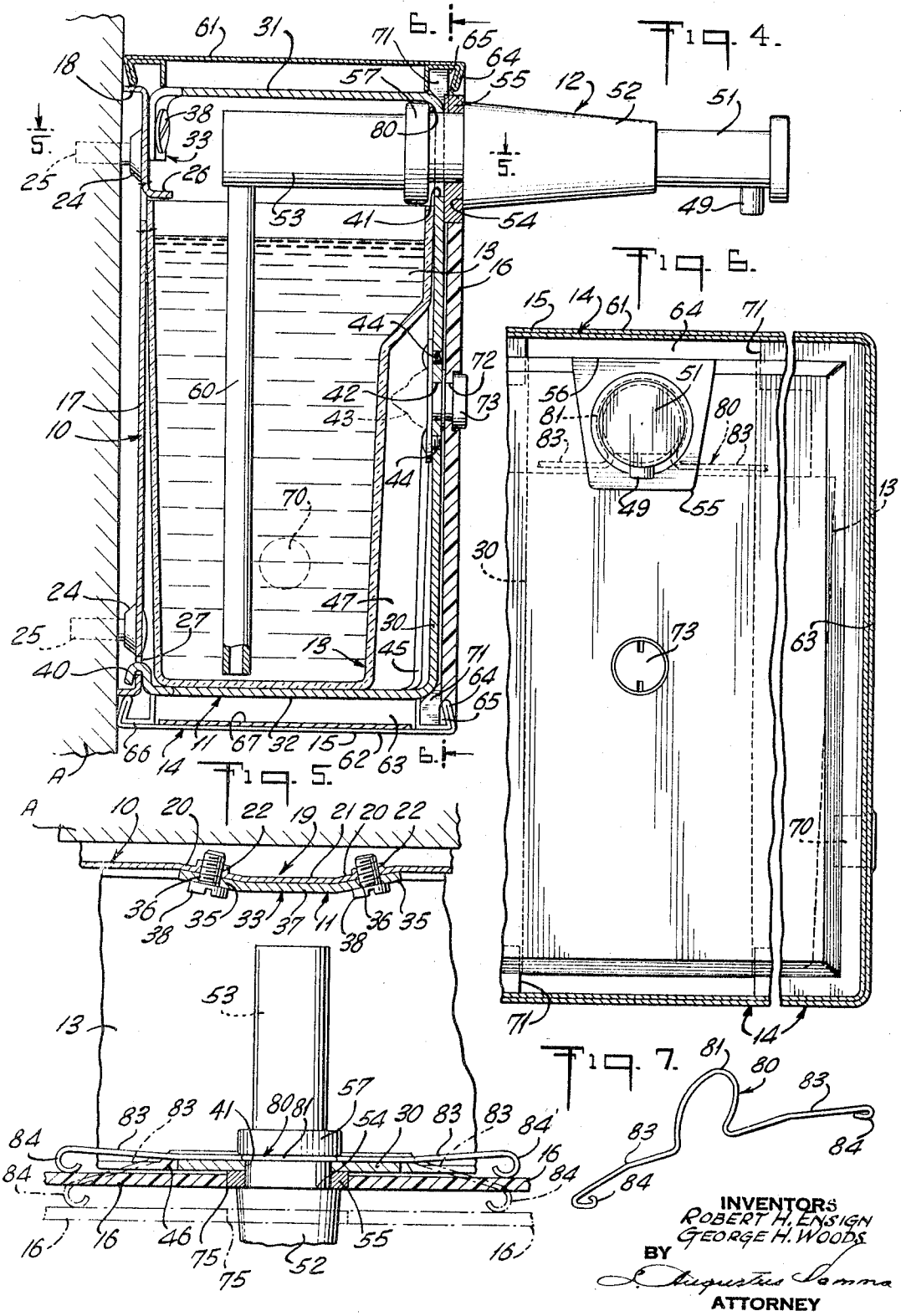
Fig. 3.

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LIQUID SOAP DISPENSERS

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LIQUID SOAP DISPENSERS

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The present invention relates to a liquid soap dispenser of the type adapted to be secured to a wall.

One object of the present invention is to provide a new and improved liquid soap dispenser of the wall-mounted type.

Other objects of the invention are to provide a new and improved soap dispenser, (1) which is comparatively simple and compact, (2) which has a housing enclosing a liquid soap tank and part of a soap dispensing valve of the plunger type and free from the pressures resulting from dispensing manipulations, thereby permitting the housing to be constructed with components of ornamental plastic or of material of lesser strength or gauge than would be otherwise required, (3) which is constructed to permit the use of a liquid soap tank of plastic or other non-metallic material, (4) which is constructed to permit its easy assembly and wall mounting and its easy disassembly for tank refilling purposes, and (5) which is constructed to permit the housing to be removed for refilling purposes without disturbing the dispenser valve.

Various other objects of the invention are apparent from the following description and from the accompanying drawings, in which

FIG. 1 is a perspective showing the assembled soap dispenser embodying the present invention mounted on a washroom wall;

FIG. 2 is an exploded perspective view showing the soap dispenser of the present invention partly assembled and ready to have the housing applied to complete the assembly;

FIG. 3 is an exploded perspective view of the main components of the soap dispenser of the present invention;

FIG. 4 is a vertical section of the soap dispenser taken on lines 4—4 of FIGS. 1 but on a larger scale;

FIG. 5 is a detail horizontal section of the soap dispenser taken on lines 5—5 of FIG. 4;

FIG. 6 is a vertical section of the soap dispenser taken approximately on lines 6—6 of FIG. 4, and

FIG. 7 is a perspective of a spring constituting a component of the soap dispenser of the present invention.

Referring to the drawings, the soap dispenser of the present invention comprises generally a wall mounting plate **10**, adapted to be secured to a vertical washroom wall A, a mounting bracket **11** in the form of a strap adapted to be secured to the mounting plate and carrying a soap dispenser valve **12** of the well-known plunger type, a tank **13** adapted to contain liquid soap and supported on the mounting strap, and a housing **14** for the mounting strap and the soap tank comprising an enclosure frame **15** and a face plate **16**. The assembly is substantially in the shape and form of a comparatively small rectangular box, as shown in FIG. 1.

The mounting plate **10**, desirably of stamped metal, comprises a vertical rectangular sheet **17** having a narrow rearwardly extending marginal flange **18**. The upper center section **19** of the sheet **17** is stamped with a dished configuration having forwardly converging side walls **20** connecting into an intervening flat wall **21** parallel to the main flat body of the sheet and provided with respective holes **22**. The sheet **17** has four holes **23** arranged near the corners thereof respectively of the sheet and formed by stamping or dimpling to provide rearwardly extending frusto-conical flanges **24** around said holes. Screws **25**

with conical heads pass through the holes **23** and are screwed into the wall A to mount the plate **10** on said wall.

Below the two upper holes **23** respectively, the sheet **17** is lanced and bent 90° forwardly to form two tabs **26** serving to hold the tank **13** down in position on the mounting strap **11**. The sheet **17** also has near the bottom thereof two latch holes **27** of horizontally elongated rectangular form for the mounting strap **11**.

The mounting strap **11**, desirably stamped of metal, is generally U-shaped, and comprises an intermediate vertical front wall section **30**, and two horizontal arms **31** and **32** at the top and bottom of said front strap section extending rectangularly therefrom. The upper strap arm **31** terminates at its rear end in a downwardly extending flange **33** shaped with a dished configuration having side forwardly converging walls **35** provided with respective holes **36** and connecting into an intervening flat wall **37**. The dished sections **19** and **33** in the mounting plate **10** and mounting strap **11** are conformably complemental and in assembled position of the soap dispensers are arranged in mating relationship with the holes **22** and **36** in alignment. The holes **22** are tapped to receive screws **38** passing freely through the holes **36** and threaded into the holes **22** to secure the mounting strap **11** to the mounting plate **10**. The reason for dishing the sections **19** and **33** of the mounting plate **10** and the mounting strap **11**, is to permit a screw driver to be held in a skewed position while turning the screws **38** without interference from the front wall strap section **30**.

The bottom strap arm **32** has formed at its rear end to latch hooks **40** adapted to be caught into the latch holes **27** on the mounting plate **10**. In attaching the mounting strap **11** to the wall mounting plate **11**, the latch hooks **40** are inserted into the latch holes **27** respectively with the mounting strap tilted forwardly, and the strap is then straightened out against the mounting plate to bring the two dished sections **19** and **33** together with their holes **22** and **36** in alignment. With the mounting strap **11** so positioned, the screws **38** are secured in the holes **22** and **36**.

The front wall strap section **30** has a hole **41** near its upper end to receive the dispenser valve **12**. The middle part of this front wall strap section **30** has a hole **42** to receive a latch **43** for the tumbler of a key lock to be described, and two small holes **44** by which said latch is secured to said strap section.

The liquid soap tank **13** is desirably formed of plastic material, such as polystyrene or cellulose acetate butyrate. The soap dispenser of the present inventor is so constructed, that the stresses manually applied to the soap dispenser valve **12** in the operation of pumping soap therethrough is not transmitted to the tank **13**. This feature permits the tank **13** to be made of plastic material, since these stresses are transmitted to the strong metal mounting strap **11** and not to the tank.

The tank **13** is supported on the bottom arm **32** of the mounting strap **11** and is generally in rectangular form with a front wall **45** provided with a vertical shallow recess **46** across the center of its front face, just slightly wider than the front wall section **30** of the mounting strap **11** to receive snugly therein in nested relationship said strap section **30**, and has a deeper recess **47** in said shallow recess **46** to clear the latch **43** secured to the mounting strap **11**. The height of the tank **13** is such, that the top of said tank reaches just below the tabs **26** on the mounting plate **10**, when the mounting strap **11** with the tank **13** supported thereon is secured in position to the mounting plate **10**. With the assembled construction described, the tank **13** is retained in proper position by and between the mounting plate **10** and the mounting strap **11**, while permitting said tank to be removed

from said mounting strap **11**, when said strap is removed from said mounting plate **10**.

The mounting strap **11** not only serves to support the tank **13** and to buttress manipulating pressure applied to the dispenser valve **12**, but also serves to support the valve in a manner to form a unit therewith. This dispenser valve **12** comprises a tubular casing **50** enclosing pumping elements designed and operable in the manner well known in the art, as for example, as shown in the U.S. Patent No. 2,619,914. The casing **50** has reciprocable therein a spring-pressed plunger **51** with a spout **49** and has a forepart **52** and a rear stem part **53** of reduced external diameter to define an axially facing shoulder **54** on the rear end of said forepart. A non-circular collar **55** having the general shape of an escutcheon and provided with a top straight horizontal edge **56**, embraces the rear stem part with a snug conforming keying non-rotatable fit and engages the shoulder **54** on the valve casing **50**. The rear stem part **53** of the valve casing **50** passes through the valve mounting hole **41** in the front wall section **30** of the mounting strap **11** with a snug fit, and with the collar **55** abutting the front face of said strap section. A knurled round nut **57** threaded onto the rear stem part **53** of the valve casing **50** abuts the rear face of the front wall section **30** of the mounting strap **11** to removably clamp the valve **12** to the mounting strap **11**.

A pipe **60** secured to the inlet side of the valve casing **50** extends downwardly in the liquid soap B in the tank **13** to a position near but above the bottom of the tank.

With the construction described, the mounting strap **11** with the dispenser valve **12** attached thereto can be handled as a unit for the purpose of assembly or disassembly and for the purpose of replenishing the tank when emptied.

The housing **14** for the mounting strap **11** and the tank **13** comprises the enclosure frame **15** and the face plate **16**. The enclosure frame **15** is desirably of metal and is rectangular in shape. This frame **15** comprises a top wall **61**, a bottom wall **62**, and side walls **63**. The front marginal sections of these walls **61**, **62** and **63** are turned inwardly and rearwardly and are folded to form a forwardly facing border rib **64** framing the face plate and a channel **65** behind said border rib for receiving the marginal section of the face plate **16** and thereby to retain said face plate on said enclosure frame **15**. These border rib and channel formations **64** and **65**, serve not only the purposes indicated but also serve to rigidize the enclosure frame **15**. To further rigidize the enclosure frame **15**, the rear marginal sections of the frame walls **61**, **62** and **63** are similarly turned inwardly and forwardly and are folded to form channel ribs **66**.

Because the facing plate **16** is permanently marginally set in the front channel **65**, the enclosure frame **15** is made of two similar parts which are slid over the face plate until they come together in end to end abutment with a joint therebetween and which are then secured together by means of a metal plate **67** seated on the bottom frame wall **62** across the joint and spot welded to said bottom wall.

One of the side frame walls **63** has an opening **68** with a headed plug **70** made of transparent plastic to serve as a window by which the level of the liquid soap in the tank **13** can be observed.

The face plate **16** may be made of metal presenting an attractive appearance, such as stainless steel, but is desirably made of an opaque plastic as shown, which is desirably colored to afford ornamental color contrast between the face plate and the metal enclosure frame **15**. This face plate **16** has its marginal edge section **71** offset rearwardly to permit said section to nest inside the border channel **65** with its front face substantially in the plane of the front face of the border rib **64**.

The face plate **16** is provided in the center and at its upper section with a notch **75** similiar in shape to the escutcheon collar **55** on the dispenser valve **12** but slightly larger to receive said collar in assembled condition of the soap dispenser. The collar **55** has a non-circular conformation, so that the housing **14** is keyed to said collar against rotation in locked position of said housing, and the housing is permitted to be slipped off the mounting strap **11** without interference from the dispensing valve **12** attached thereto.

Secured to the face plate **16** is a key lock **73** having a tumbler extending through a hole **72** in said plate and adapted to be turned by a key in the latch **43** secured to the front wall section **30** of the mounting strap **11**. In locked position of the housing **14**, the tumbler is locked in the latch **43**. When the proper key is inserted in the key lock **73** from the front of the face plate **16** and turned, the tumbler is released from the latch **43** thereby releasing the housing from the mounting strap **11**.

In order to make it apparent that the housing **14**, when unlocked, can be slipped off the mounting strap **11** without pulling on the dispenser valve **12**, a spring **80** is provided between the housing and the mounting strap, acting to push the housing forwardly along the dispenser valve and away from the escutcheon collar **55**. This spring **80** is a convoluted wire with a center stirrup loop **81** and two arms **83** radiating outwardly and forwardly from the ends thereof and terminating in bearing knuckle loops **84** respectively in a plane at right angles to the plane of said loop. The loop **81** is straddled over the valve casing **50** and locked between the nut **57** and the rear face of the front wall section **30** of the mounting strap **11** with the forwardly slanting arms **83** emerging from behind said strap section **30** and bearing forwardly at their looped ends **84** with biasing pressure against the rear of the face plate **16**. When the housing **14** is unlocked and released from the mounting strap **11**, the spring **80** will push the housing forwardly from the mounting strap and away from the escutcheon collar **55** on the valve casing **50**, while being supported by said valve casing. This action and condition will make it apparent to the operator that the only manipulation necessary to completely remove the housing is to simply pull it forwardly away from the mounting strap **11** and away from the dispenser valve **12**.

It is seen that the dispenser of the present invention has large soap capacity for its size. Also, the mounting strap **11** supporting the dispenser valve **12** independently of the housing permits this valve to be operated with a great deal of manual force, without transmitting this force to the housing. The mounting strap **11**, although small in size and gauge, is structurally well suited to withstand the heavy compressive forces thereon engendered by the operation of the plunger **51**.

The housing **14** is of simple construction and its removal does not disturb the dispenser valve **12** or the tank **13**. Since the housing **14** is not subjected to stresses during soap pumping action, it may be made of light gauge and may be provided with a plastic face plate **16** as described. Also, different face plates **16** of different coloration and facial design or appearance may be provided with the same basic dispenser components.

While the invention has been described with particular reference to a specific embodiment, it is to be understood that it is not to be limited thereto but is to be construed broadly and restricted solely by the scope of the appended claims.

What is claimed is:

1. A liquid soap dispenser comprising a mounting plate having means for attachment to a wall, a mounting bracket in the form of a U-shaped strap secured to said mounting plate and having an upstanding front wall section spaced from said mounting plate and upper and lower arms extending rearwardly to said mounting plate and connected thereto, a soap dispenser valve secured to the front wall section of said bracket and having a reciprocable plunger extending transverse to said mounting

plate, whereby the dispensing manipulating forces on said valve are transmitted to said mounting plate through said arms, a soap tank supported on said lower arm between said mounting plate and said front wall bracket section, a housing enclosing substantially the entire tank and said bracket and having a front wall with a hole through which said valve extends, and means removably securing said housing in position.

2. A liquid soap dispenser as described in claim 1, in which said front housing wall faces the front wall section of said bracket and is closely adjacent thereto, and said housing securing means comprises means removably connecting said front housing wall to said front wall bracket section.

3. A liquid soap dispenser as described in claim 1, in which said mounting bracket is substantially in rectangular form, said tank is substantially rectangular in shape, and said housing is of substantially rectangular form, whereby the soap dispenser is in the shape and form of a substantially rectangular box.

4. A liquid soap dispenser as described in claim 1, wherein said housing comprises an enclosure frame having a peripheral wall and open at its front end, and a face plate separate from said frame and covering its front end, said face plate constituting said front wall of the housing and being supported against the front wall section of said bracket in face to face relationship thereto.

5. A liquid soap dispenser as described in claim 1, wherein said housing comprises an enclosure frame of metal having a peripheral wall and open at its front end, and a face plate of plastic separate from said frame and covering its front end, said face plate constituting said front wall of the housing and being supported against the front wall section of said bracket in face to face relationship thereto, said mounting bracket being made of metal, and said housing securing means securing said face plate to the front wall section of said mounting bracket.

6. A liquid soap dispenser as described in claim 1, wherein said housing comprises a rectangular enclosure frame of metal having top, bottom and side walls with front marginal sections turned and folded inwardly and rearwardly to form a forwardly facing border rib and a channel behind said rib, and a face plate separate from said enclosure frame and closing the front end of said enclosure, said face plate constituting said front wall of the housing, the marginal section of said face plate extending into said channel, and said face plate being framed by said border rib, said face plate being supported again the front wall section of said bracket in face to face relationship thereto, said housing securing means

securing said face plate to the front wall section of said mounting bracket.

7. A liquid soap dispenser as described in claim 1, the front wall of said housing facing the front wall section of said mounting bracket and disposed closely adjacent thereto, said housing securing means including key-controlled means for releasably locking said housing to the front wall section of said mounting bracket, said dispenser comprising spring means between the front wall section of said mounting bracket and said front housing wall for moving said housing forwardly away from said bracket automatically upon the key-release of said locking means.

8. A liquid soap dispenser as described in claim 1, said mounting bracket being of metal and said tank being made of plastic.

9. A liquid soap dispenser as described in claim 1, said tank having a front wall with an upright shallow recess on its front side, the front wall section of said mounting bracket being nested in said recess and retaining thereby said tank in position against displacement across the front wall section of said mounting bracket.

10. A liquid soap dispenser as described in claim 1, said mounting bracket substantially of rectangular form being made of metal, said tank being substantially rectangular in shape and open at the top, said tank being of material other than metal, said housing being of substantially rectangular form, whereby the soap dispenser is in the shape and form of a substantially rectangular box, said housing comprising an enclosure frame of metal having a peripheral wall and open at its front end, and a face plate of plastic separate from said frame and covering its front end, said face plate constituting said front wall of the housing and being supported against the front wall section of said mounting bracket in face to face relationship thereto.

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