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DISPENSER OF SOLUTION AND APPLICATION THEREOF

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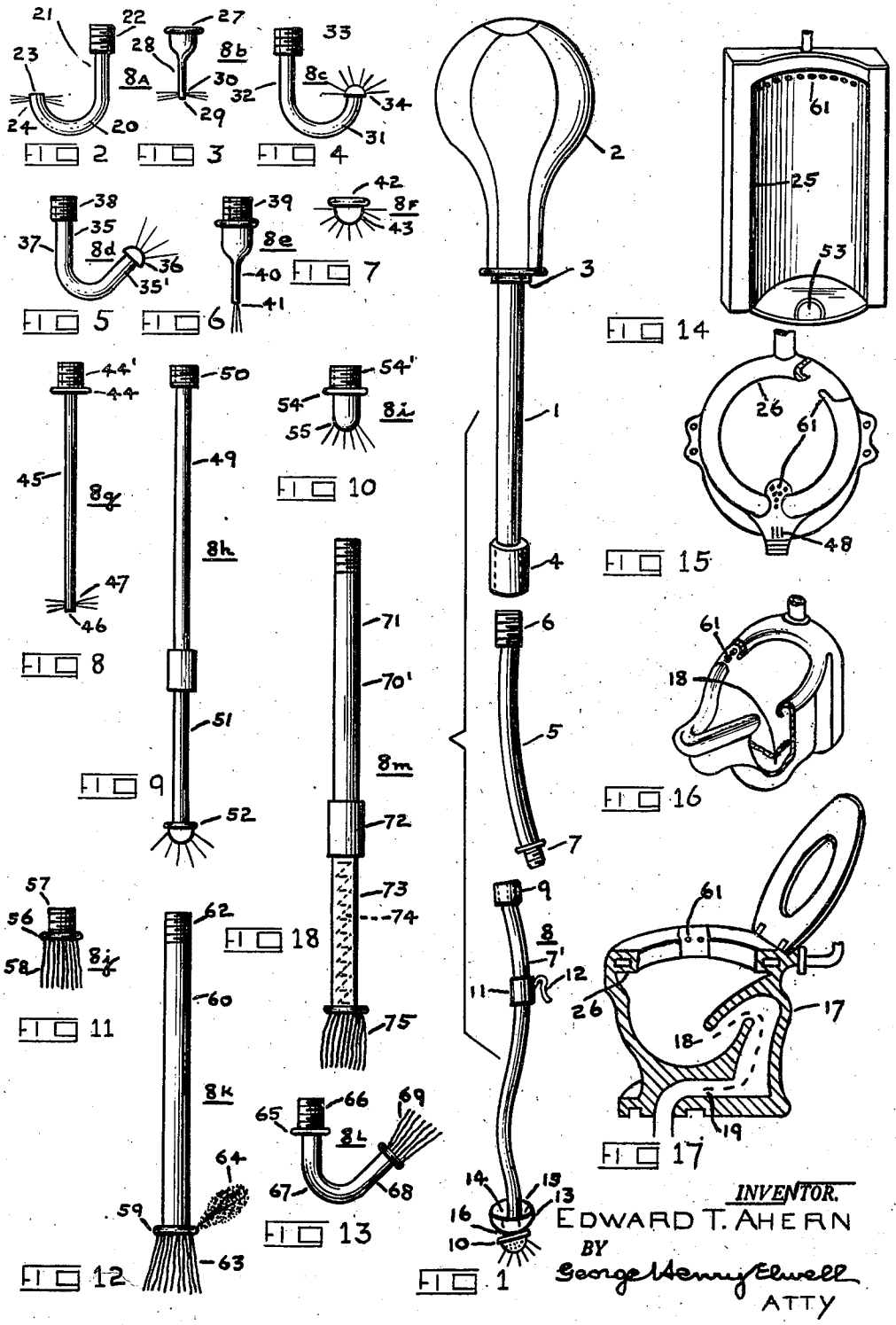

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DISPENSER OF SOLUTION AND APPLICATION THEREOF

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4 Claims. (Cl. 4—255)

This invention relates to dispensers of solution, and the like, and its application to toilet bowl fixture surfaces and to drain-pipe traps the access to which is confined to an opening of limited proportions and the passage therefrom to within the trap is considerably out of alignment therewith and ordinarily inaccessible.

The object therefore is to provide such an improved dispenser in rigid or flexible sections of tubular form of which one section is an appliance of such construction as to be adapted to a convenient approach to toilet bowl fixture surfaces and for insertion within openings ordinarily inaccessible, the said sections being adapted for separable inter-connections and also to the tubular outlet of a container provided with means for forcibly expelling its content to direct its flow through said sections for dispensing by means of said appliance.

Referring now to the accompanying drawing, the Figure 1 is an upright view of a dispenser of a bulb syringe type having disconnected parts provided with separable connecting means; the Figures 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 and 18 are several upright views of various modifications of a dispenser part; Figure 14 is an upright view of a floor urinal having grille opening leading to a trap; Figure 15 is an upright view of one type of wall urinal of which a wall is broken away to disclose small openings leading to a trap and water channels; Figure 16 is an upright view of a more modern type of wall urinal of which a wall is broken away to expose openings leading to a trap and water channels; and Figure 17 is an upright view of a toilet bowl with a wall broken away to expose openings leading to a trap and water channels.

With more particular reference to the accompanying drawing, especially to the Figure 1, the numeral 1 designates the hard rubber tubular body portion of the dispenser, as illustrated, and having the compressible rubber bulb 2 connected and internally communicating with the interior passage of the end 3 of the body portion 1, the opposite end of the portion 1 being provided with the internally threaded coupling member 4 for the separable attachment of the flexible tubular extension 5 having at one end the externally threaded coupling member 6 and upon the opposite end a reduced externally threaded coupling member 7 for separable attachment to the appliance 8 comprising a length of flexible tubing 7' having at one end the externally and internally threaded coupling member 9 for separable connection with the reduced coupling member 7 of the extension 5, or for the direct separable connection with the coupling member 4, and at the opposite end a circular-spray nozzle 10, and mounted upon the tubing 7' is the sleeve 11 supporting a metal clasp 12, and adjacent the spray nozzle 10 is provided the rubber cap 13 having the radial slits 14 in its edge 15 and the central opening 16 into which the tubing 7' is threaded and the cup 13 supported.

The Figure 1, when its several parts or sections are separably connected, constitutes the improved dispenser in one form.

With regard to the operation and use of the dispenser, as above described, the tubular body portion 1 is first filled with solution by means of compressing the bulb 2 and placing the coupling end 4 into the solution storage container so that the end 4 is submerged therein and then gradually releasing the pressure upon the bulb 2 to permit it to return to its normal condition whereby by partial vacuum the solution is drawn into the interior of the body portion 1 and into the bulb 2. The extension 5 is then separably connected with the body portion 1 by means of the coupling members 6 and 4, or if desired the extension 5 may be omitted and the appliance 8 separably connected directly with the body portion 1 by means of the coupling members 9 and 4, if however the extension 5 is to be included the appliance 8 is separably connected with the extension 5 by means of the internally threaded coupling member 9 and the coupling member 7. The dispenser being filled and assembled the free end carrying the nozzle 10 is placed within the toilet bowl, illustrated by the figure 17, and the clasp 12 is hung over the bowl rim to support the flexible tubing 7' then, upon flushing the water into the bowl, the cup 13 is thereby filled and is flushed down and carries the nozzle end of the flexible tubing 7' into the bowl trap to the floor depth, as at 19. The accumulated water within the toilet bowl above the floor depth 19 is, by some convenient method, removed and the dispenser slowly pulled up while manual pressure upon the bulb 2 causes the desired quantity of solution to be dispensed and sprayed all along the surface of the interior passage of the trap and its surroundings. In the event of the cup 13 becoming caught within the bowl trap while being pulled up, the slits 14 enable the cup to collapse and thereby it is more easily extricated.

The Figure 2 illustrates an appliance 8a, a modification of the appliance 8 and comprising the rigid hook-shaped tubular structure 20 with the integral straight tubular stem 21 having the

externally and internally threaded coupling portion 22 and the closed opposite end 23 directed substantially in a plane parallel to that of the stem 21 and the lateral wall at the free end having perforations 24 for a two-way spray. This modified appliance 8*a* is separably attachable directly to the coupling 4 of the body portion 1, or to the reduced coupling 7 of the extension 5, as a substitute for the appliance 8, which substitute in operation is used for spraying two ways within the water channel accessible through the perforations under the rim, as at 61.

The Figure 3 illustrates an appliance 8*b*, a modification of the appliance 8, and comprising a rigid tubular structure having the internally threaded coupling portion 27 for separable attachment to the extension 5 and at the opposite end a short straight tubular pencil-like terminal 28 having a closed end 29 and lateral wall perforations 30 for a two-way spray. This modified appliance 8*b* is separably attachable to the reduced coupling 7 of the extension 5 as a substitute for the appliance 8 and which in operation is used for insertion within small openings such as 61, illustrated by the Figures 14, 15, 16 and 17.

The Figure 4 illustrates an appliance 8*c*, a modification of the appliance 8, and comprising a soft rubber moulded flexible form of hook-shaped tubular structure 31 having the straight tubular stem 32 with the externally and internally threaded coupling portion 33 and the spray nozzle 34 at the opposite end directed in a plane substantially parallel to that of the stem 32. This modification of the appliance 8 is adapted for direct separable attachment to the body portion 1, or to the extension 5 in place of the appliance 8 and in operation is used for applying solvent under rims of fixtures and openings of some kind of traps, the flexible hook-shape 31 of the moulded structure is adapted to be distorted during the filling process when the opening of a supply container is limited in size, the portion 31 thereafterwards springing back to its mounded form.

The Figure 5 illustrates an appliance 8*d*, a modification of the appliance 8, and comprising a rigid tubular structure 35 with a hook-shaped portion 35′ having a free end 35″ directed divergently outward with regard to the straight tubular stem 37 with which the opposite end is provided, the stem 37 having the externally and internally threaded coupling portion 38 and the free end 35 having the spray nozzle 36 connected thereto. This modified form of the appliance 8 being adapted for either direct or indirect separable attachment with the body portion 1 and its uses are similar to that of the appliance 8*c* excepting that the nozzle 36 directs the spray at an angle with regard to the stem 37.

The Figure 6 illustrates an appliance 8*e*, a modification of the appliance 8, and comprising a rigid tubular structure 39 having at one end the externally and internally threaded coupling portion 39′ for direct or indirect separable attachment to the body portion 1, and at the other end with a reduced tubular pencil-like terminal 40 having a straight ahead spray outlet 41. This modified form, like that of the appliance 8*b* is adapted for insertion within small openings such as 61 shown in the Figure 15.

The Figure 7 illustrates an appliance 8*f*, a modification of the appliance 8, and comprising a nozzle having an internally threaded coupling portion 42 at one end and a circular spray perforation 43 at the opposite end. This modification 8*f* is adapted for separable attachment with the extension 5 for use in spraying surfaces more or less inaccessible, such as at 18.

The Figure 8 illustrates an appliance 8*g*, a modification of the appliance 8, and comprising a rigid tubular structure 44 having the externally and internally threaded coupling portion 44′ at one end and at the other end the long tubular pencil-like terminal 45 having the closed end 46 and lateral wall perforations 47 for a circular spray outlet. This modification is adapted for separable attachment directly or indirectly with the body portion 1 for use for insertion within small openings, such as 48, shown in the Figure 15, and leading to drain-pipes and traps.

The Figure 9 illustrates an appliance 8*h*, a modification of the appliance 8, and comprising a rigid tubular structure 49 having at one end the externally threaded coupling portion 50 and at the other end a fixedly connected flexible tubing 51 having at its free end a circular-spray nozzle 52. This modification 8*h* being separably attachable directly to the body portion 1 for use similar to that of the appliance 8*g* excepting that it is adapted for openings, like that of 53, where grilles are removable, as in the Figure 14, and will also extend to greater length in the curved passage of floor urinal bowl traps, Figure 14, than the rigid appliance illustrated by the Figure 8.

The Figure 10 illustrates an appliance 8*i*, a modification of the appliance 8, and comprising a tubular structure 54 having the externally and internally threaded coupling portion 54′ separably attachable directly or indirectly to the body portion 1 and at the other end a closed terminal 55 with the perforations 55′ providing a straight ahead directed spray. This modification being adapted for spraying surfaces such as toilet seats and other toilet fixture surfaces.

The Figure 11 illustrates an appliance 8*j*, a modification of the appliance 8, and comprising the tubular rigid structure 56 having at the attaching end the externally threaded coupling portion 57 and at the free end the brush-mop 58 with which the interior passage of the tubular structure 56 communicates. This modified appliance 8*j* is adapted for direct attachment to the body portion 1 and is intended for use in applying solution to surfaces of toilet bowl fixtures.

The Figure 12 illustrates an appliance 8*k*, a modification of the appliance 8, and comprising the tubular rigid structure 59 having at the attaching end a tubular rigid extension 60 of the structure 59, the extension 60 having at its end the externally threaded coupling portion 62 for a separable attachment to the body portion 1, and at the opposite end of the structure 59 is the brush-mop 63 in communication with the interior passage of the tubular structure 59. Laterally rigidly attached to the structure 59 is the side brush 64 extending divergently outward therefrom. This appliance is intended for a similar use as that of the appliance 8*j* with the added use of the side brush 64 for reaching the under surfaces of toilet seats, bowl-rims and the like. Also detached from the body portion 1, the extension 60 may be used as a handle in applying the brushes when no solution is needed to be dispensed therethrough.

The Figure 13 illustrates an appliance 8L, a modification of the appliance 8, and comprising the tubular rigid structure 65 having at the attaching end an externally threaded coupling

portion 66 and at the opposite end a tubular hook-shaped portion 67 having a divergently outward extending extremity 68 supporting the brush-mop 69. This appliance is intended for direct separable attachment to the body portion 1 for use similar to that of the side brush 64 of the appliance 8k in reaching the under surfaces of toilet seats, bowl-rims and the like excepting that in so doing the appliance 8L through the brush-mop 69 dispenses solution upon such surfaces.

The Figure 18 illustrates an appliance 8m, a modification of the appliance 8, and comprising a rigid tubular structure 70 having the extension 70', the extension having at its attaching end the externally threaded coupling portion 71 for direct separable attachment to the body portion 1 and at the opposite end a fixed coupling 72 connecting thereto a flexible tubing 73 having therein a helical reinforcement 74, and carrying at its free end a brush-mop 75 in communication with the interior passage of the flexible tubing 73. This appliance is intended for use within such openings as shown at 18 in the Figures 16 and 17 where the flexible tubing 73 is adapted to follow a curved course leading to a trap and the like. As in the instance of the appliance 8k illustrated by the Figure 12, this appliance 8m may be used when not attached to the body portion 1 and the extended structure 70 used as a handle, provided that no solution is needed to be dispensed therethrough.

This improved dispenser, as illustrated by the Figure 1, with its appliance 8 adapted for a separable attachment thereto, is intended to be given a more broad interpretation by means of several modifications of the appliance 8, each of which is adapted to be used in place of the appliance 8 to carry out the full intention of this invention whereby a solvent, disinfectant or other solution may be dispensed through a terminal best suited for insertion within openings and spaces contacted by the flushing water and sections leading to, and including, waste traps of urinals and toilet bowls ordinarily inaccessible for proper cleaning.

While a bulb syringe and a specific form of appliance is illustrated by the Figure 1 as one form of the improved solution container and dispenser, it is to be understood that it is the intention of this invention that it shall not be confined to such illustrative form. The broad intention of the invention herein disclosed must be understood to include any proper container adapted for a separable attachment thereto of sections of rigid or flexible tubular formation separably inter-connectible to establish a conduit therethrough for the flow of a solution to be applied through the agency of the appliance illustrated by the Figure 1 or of any one of the modified appliances illustrated by the Figures 2 to 13, both inclusive, or the appliance illustrated by the Figure 18, for insertion within openings such as illustrated by the Figures 14 to 17, both inclusive.

It is to be further understood that while it is herein shown that the improved dispenser is filled by means of a bulb syringe establishing a partial vacuum, and that the flow of the solution through the tubular passages of the connected sections by means of pressure manually applied to the bulb is shown to be the force employed, yet it is the intention of this invention to employ any proper means for filling the container to which this improvement may be attached, and any means, such as gravity, air or gas pressure, for forcing the solution through the connected tubular passages of the device.

I claim:

1. A dispenser of solution, the dispenser comprising a container having a tubular outlet; multiple sections of flexible tubing; separate separable connecting means with which said sections and said tubular outlet are connectible to establish an open passage therethrough; a circular-spray nozzle on the end of the section having a free extremity; a clasp slidingly carried upon the nozzled section; a rubber cup having radially slit edges and a central opening therethrough by which it is mounted on the section adjacent said nozzle; and means adapted to force solution from said container through said outlet and the tubular sections for dispensing from said nozzle; whereby the nozzle and rubber cup end of the dispenser may be flushed into and down the irregular course of a toilet trap by means of the water filled cup, the slit edges of the cup aiding its collapse in extricating from the trap.

2. A dispenser of solution, the dispenser comprising a container having a tubular outlet; multiple sections of flexible tubing; separate separable connecting means with which said sections and said tubular outlet are provided, the said means, carried by the same extremity of certain of said sections, comprising both externally and internally threaded couplings and thereby being made adaptable for alternate interconnection as the situation at the moment of use determines the character of the association of said sections; a dispensing terminal carried by the free end of the connected sections; a collapsible cup member mounted upon the last-named section adjacent said terminal; and means adapted to force solution from said container through said outlet and the connected sections for dispensing solution from said terminal.

3. A dispenser of solution, the dispenser comprising a container having a tubular outlet; multiple sections of tubing; separate separable connecting means with which said sections and said tubular outlet are provided, the said means, carried by the same extremity of certain of said sections, comprising both externally and internally threaded couplings adapting such section for ready alternate interconnections; a dispensing terminal carried by the free end of the connected sections; and means adapted to force solution from said container through said outlet and the connected sections for application by said dispensing terminal.

4. A dispenser of solution, the dispenser comprising a source of solution content having an outlet; multiple sections of tubing; separate separable connecting means with which said sections and said outlet are provided, the said means, carried by the same extremity of certain of said sections, comprising both male and female connections and thereby made adapted for alternate interconnections; a dispensing terminal carried by the free end of the connected sections; and means applied at said source to force the solution content by way of said outlet through the connected sections for application by said dispensing terminal.

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