

Aug. 13, 1957

LE ROY A. THOMAS

2,802,466

SYRINGE

Filed Feb. 7, 1955

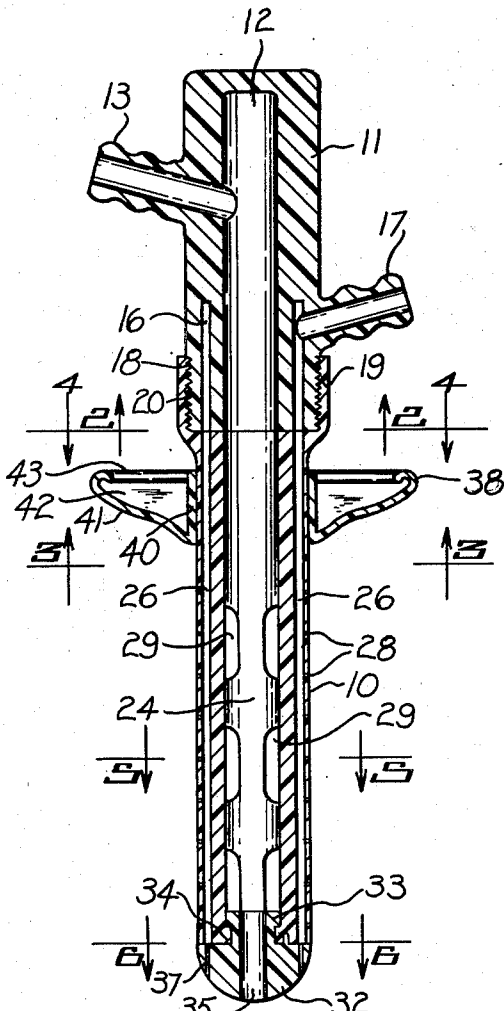


Fig. 1

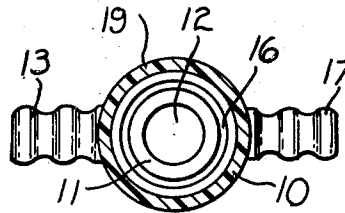


Fig. 2

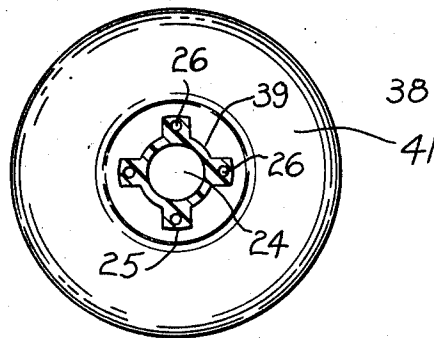


Fig. 3

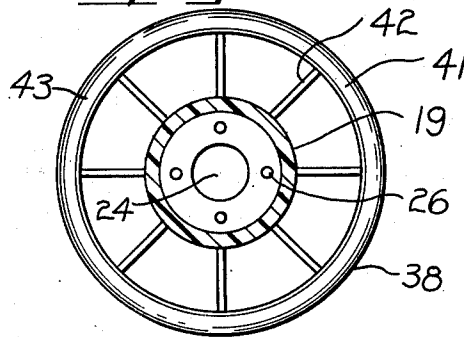


Fig. 4

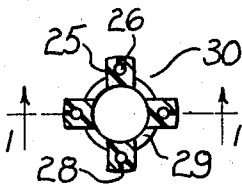


Fig. 5

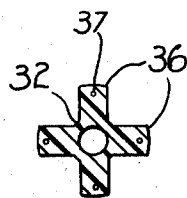


Fig. 6

INVENTOR.

LE ROY A. THOMAS

BY

Cook and Schermerhorn

ATTORNEYS

1

2,802,466

SYRINGE

LeRoy A. Thomas, Portland, Oreg.

Application February 7, 1955, Serial No. 486,659

2 Claims. (Cl. 128—241)

This invention relates to improvements in syringes, and more particularly relates to a syringe of the type adapted to convey liquid into a cavity of the body for hygienic purposes.

A principal object of the present invention is to provide a syringe having improved liquid discharge and return flow means.

A further object is to provide a syringe having a barrel or nozzle structure adapted to massage the interior walls of a body cavity and adapted to move and straighten out folds of body tissue so that cleansing liquid can reach all portions of the cavity walls.

A further object is to provide a syringe utilizing improved dam or shield means to limit insertion of the barrel into a body cavity and to prevent leakage of spent cleansing fluid from the body cavity when the syringe is in use. A further object is to provide said dam or shield means which will insure a positive seal with the exterior portion of the body cavity, and, at the same time, avoid injury to adjacent body tissue.

In general, the present invention resides in an improved syringe employing a barrel portion having longitudinal ridges for massaging the walls of a body cavity and for subjecting all portions of said cavity to the cleansing action of a fluid issued through a plurality of spray orifices. The barrel portion was improved drain means between said ridges for facilitating the return flow of spent cleansing fluid from the body cavity to the interior of the barrel and also has improved shield means to contact the user's body adjacent the body cavity and prevent leakage of cleansing fluid. The invention will be better understood and additional objects and advantages will become apparent from the following description taken in connection with the accompanying drawings which illustrate a preferred form of the invention. It is to be understood, however, that the invention may take other forms, and that all such modifications and variations within the scope of the appended claims which will occur to persons skilled in the art are included in the invention.

In the drawings:

Figure 1 is a longitudinal sectional view of the present syringe taken on the line 1—1 of Figure 5;

Figure 2 is a cross sectional view taken on the line 2—2 of Figure 1;

Figure 3 is a cross sectional view taken on the line 3—3 of Figure 1 and showing a bottom plan view of the dam or shield means;

Figure 4 is a cross sectional view taken on the line 4—4 of Figure 1 and showing a top plan of the dam or shield means;

Figure 5 is a cross sectional view taken on the line 5—5 of Figure 1, showing in particular the construction of the barrel portion of the syringe; and

Figure 6 is a cross sectional view taken on the line 6—6 of Figure 1 showing the tip structure of the syringe.

Referring to the drawing, the present syringe comprises a barrel or nozzle portion 10 and a handle portion 11.

2

Handle 11 has a central recess or bore 12 which communicates with an outlet 13 comprising a hollow stem adapted to receive a rubber waste tube, not shown. Formed at the inner end of the handle is an annular groove 16 which communicates with an inlet 17 comprising a hollow stem adapted to receive a rubber feed tube for connecting the inlet 17 to a source of fluid supply. The inner end of the barrel 11 is provided with external screw threads 18.

The barrel 10 is elongated and generally circular in shape, and has a bell-shaped end 19 provided with internal screw threads 20 engageable with screw threads 18 on the handle. Barrel 10 has a central bore 24 which communicates with the central bore 12 in the handle 10, this pair of bores comprising, in combination with the outlet 13, a part of the return flow means for spent cleansing fluid.

Barrel 10 has a plurality of longitudinal ridges 25 whereby the outer surface of the barrel assumes a fluted shape in cross section, as shown in Figure 5. Each of the ridges 25 has a longitudinal duct or passageway 26 for receiving the cleansing fluid. Ducts 26 are concentrically disposed around the central bore 24 so as to be in communication with annular groove 16 in the handle portion 11 whereby cleansing fluid which is admitted through inlet stem 17 will readily pass down through the ducts 26. Ducts 26 communicate with the exterior of the barrel by means of a plurality of minute orifices 28 which comprise fluid discharge nozzles.

Disposed in the barrel 10 between the ridges 25 are enlarged drain orifices 29 which receive spent cleansing fluid which may gather in channels 30 between the ridges 25. The drain orifices 29 communicate with the central bore 24 whereby spent cleansing liquid will flow into the handle portion and be discharged therefrom through the outlet stem 13.

The tip of the nozzle or barrel portion 10 is designated by the numeral 32 and comprises a flanged neck portion 33 adapted to engage behind an interior flange 34 in the barrel. Tip 32 is press fitted in place and is provided with a central enlarged opening 35 which communicates with the central bore 24 of the barrel. As seen in Figure 6, the tip 32 has ridges 36 whereby the tip assumes a fluted cross section similar to the barrel 10. Each of the ridges 36 has a duct or passageway 37 located in a predetermined position so as to communicate with a duct 26 in the ridges 25 of the barrel when the ridges 36 are in register with ridges 25.

The diameter of flange 33 is exaggerated on the drawing. In practice this flange is only very slightly larger than the opening in flange 34 whereby the plastic materials will deform slightly to permit flange 33 to be pressed forcibly through said opening in assembly. Once inside the larger bore 24, the flange 33 expands to lock the tip in place. If desired, the edge surfaces of one or both of these flanges may be tapered slightly to facilitate assembly.

Frictionally engaged on the barrel 10 is a dam or stop shield 38. The dam 38 has a fluted central opening 39 corresponding to the cross sectional configuration of the barrel 10 as seen in Figure 3, and comprises a central boss or sleeve portion 40, an annular thin-walled flange 41, and a plurality of radial ribs 42 between the boss 40 and flange 41 to buttress the latter. Flange 41 is formed of flexible material, preferably rubber, which will readily conform to the contour of the body around the body cavity to form a liquid-tight seal between the user's body and the syringe. Boss 40 fits snugly on the barrel 10 to provide a fluid-tight seal between the dam and the barrel. As a fluid-tight seal is formed between the user's body and the syringe and between the syringe barrel and the dam, the present device facilitates the giving of

3

douches to a bedridden patient without the necessity of a bedpan. The spent cleansing fluid is deposited in a receptacle on the floor by means of a flexible waste tube connected to the outlet 13. The peripheral edge of flange 41 is returned to provide a stiffening bead 43.

An important feature of the dam is that, due to the flexibility of the flange 41 and ribs 42, the boss 40 will not pull away from the barrel portion and permit leakage of cleansing fluid between the dam and the barrel when the flange is distorted by contact with the user's body. Furthermore, with the boss 40 always snugly engaging the barrel, body tissue and the like cannot be caught therebetween so as to cause discomfort to the patient.

In operation of the device, cleansing fluid is introduced through the inlet stem 17 from a suitable source of supply. The fluid is directed into annular groove 16 in the handle 11 and thence into ducts or passageways 26. The fluid is ejected with a gentle force through orifices 28 to cleanse the side walls of the cavity. Fluid is also discharged through the end of the barrel by means of small orifices 37 which communicate with the ducts 26 and which cleanse and treat tissues at the end of the cavity.

The present syringe has the important advantage of providing a thorough cleansing action to the body cavity. Such cleansing action is accomplished by the structure of the barrel 10 comprising the ridges 25 and the fluid discharge and return flow means. In the use of the device as fluid is being introduced thereto, it is repeatedly turned back and forth a partial revolution whereby the ridges frictionally engage the walls of the cavity and massage the tissue therein. The improved cleansing action is accomplished because the orifices 28 are on the outer edge of the ridges 25, and when the syringe is rotated the orifices eject cleansing jets of spray immediately behind the leading edge of the ridges so that as the walls of the cavity are massaged by the ridges the cleansing fluid is given access under folds and into hidden recesses and the like in the body tissue which ordinarily are not spread apart and cleansed by conventional syringes. The frictional engagement of the ridges 25 with the body tissue imparts no injurious effect thereto because of the lubricating action of the cleansing fluid.

4

The spent cleansing fluid which gathers in the channels 30 between the ridges 25 passes through the enlarged orifices 29 into the central bore 24 and thereupon is discharged through the outlet 13. Spent cleansing fluid at the end of the body cavity flows into the bore 24 through the enlarged opening 35 in the tip 32. The ridges 25 extend a sufficient radial distance outwardly from orifices 29 so that body tissues will not come into contact with the drain orifices 29 and impede the free return flow of the spent fluid.

Having now described my invention and in what manner the same may be used, what I claim as new and desire to protect by Letters Patent is:

1. In a return flow syringe having a barrel with discharge orifices for a cleansing fluid and drain openings for withdrawing said fluid, a flexible dam having a sleeve portion adapted to fit said barrel snugly, a thin walled flange extending outwardly and backwardly from the front end of said sleeve portion, and longitudinal radial buttress ribs interconnecting said sleeve portion and flange.

2. A syringe comprising a base portion having fluid inlet means for receiving a cleansing fluid, fluid outlet means for draining off said fluid, a barrel portion having a central bore communicating with said fluid outlet means and having a peripheral wall comprising alternate ridges and grooves, said barrel having fluid discharge orifices therein and having passageways communicating between said fluid inlet means and said discharge orifices for feeding fluid to said discharge orifices, and a shield mounted on said barrel, said shield comprising a sleeve portion having a central opening of a shape frictionally to fit said barrel, a flexible flange on one end of said sleeve and adapted to conform to the contour of the body at the body cavity, and longitudinally radial ribs interconnecting said sleeve and said flange.

References Cited in the file of this patent

UNITED STATES PATENTS

1,015,895	Kelley	Jan. 30, 1912
2,568,566	Sokolik	Sept. 18, 1951