

June 1, 1965

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3,186,410

CLOSED SYSTEM URINARY DRAINAGE SET

Filed Aug. 27, 1962

3 Sheets-Sheet 1

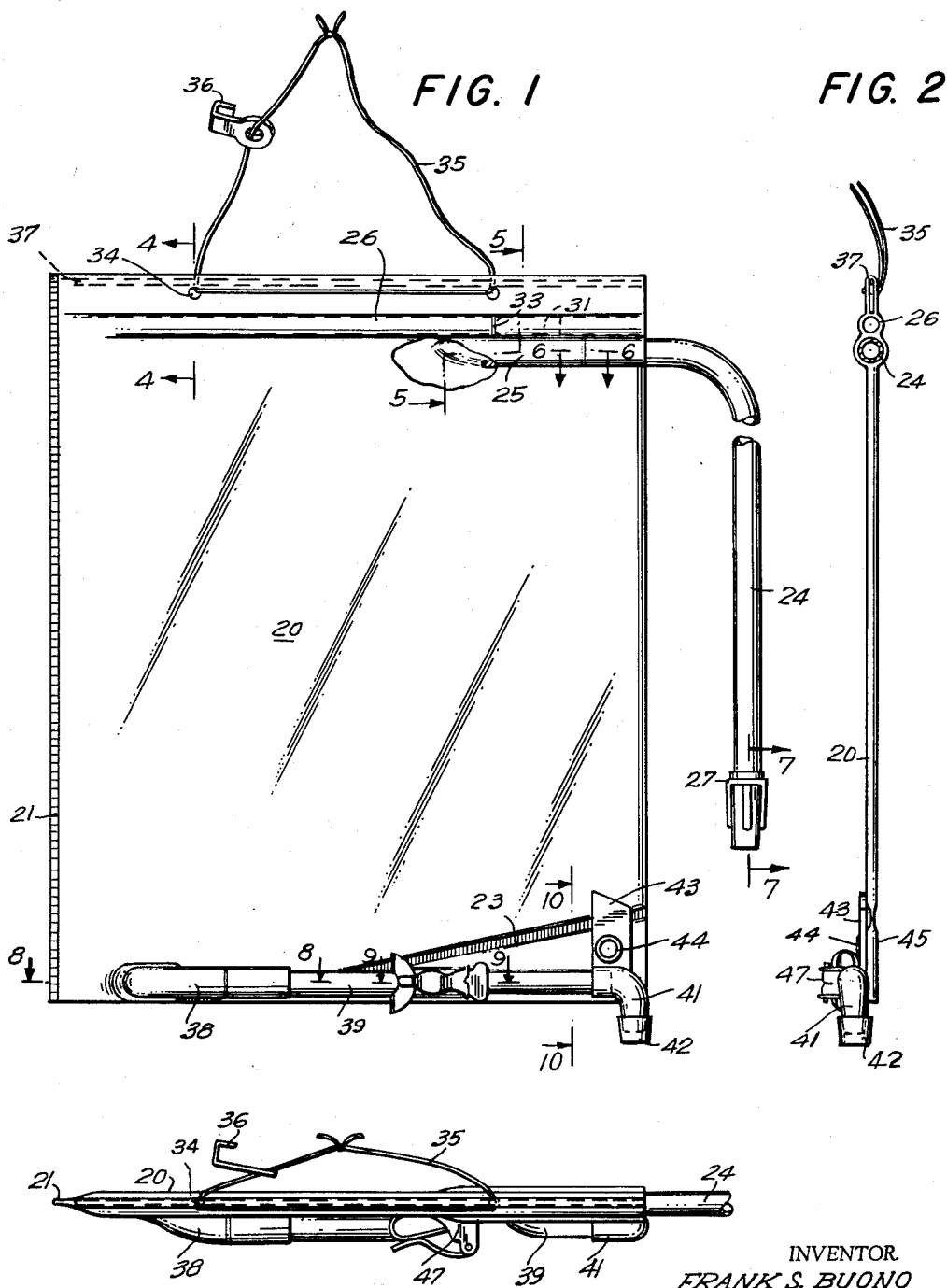


FIG. 3

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3 Sheets-Sheet 2

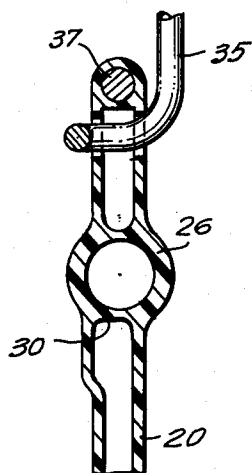


FIG. 4

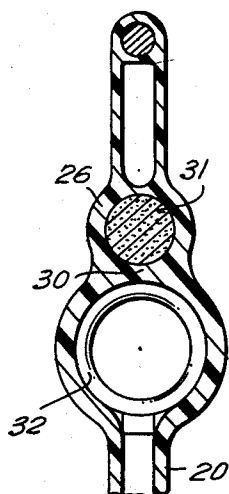


FIG. 5

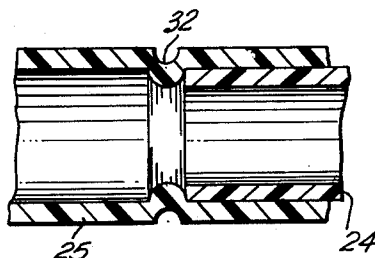


FIG. 6

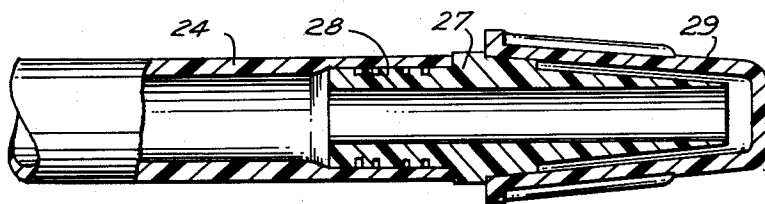


FIG. 7

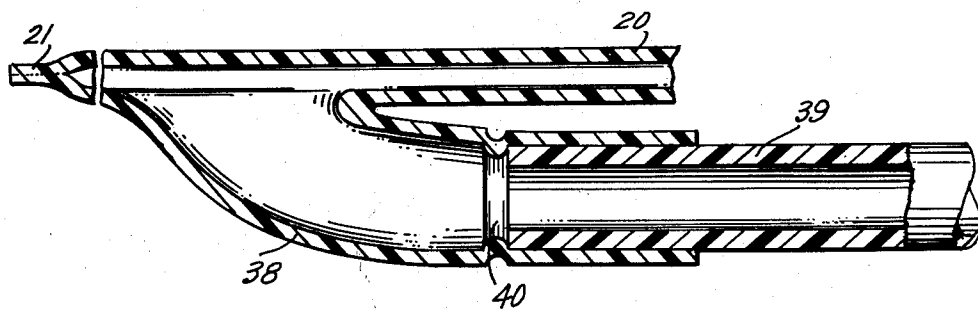


FIG. 8

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FIG. 9

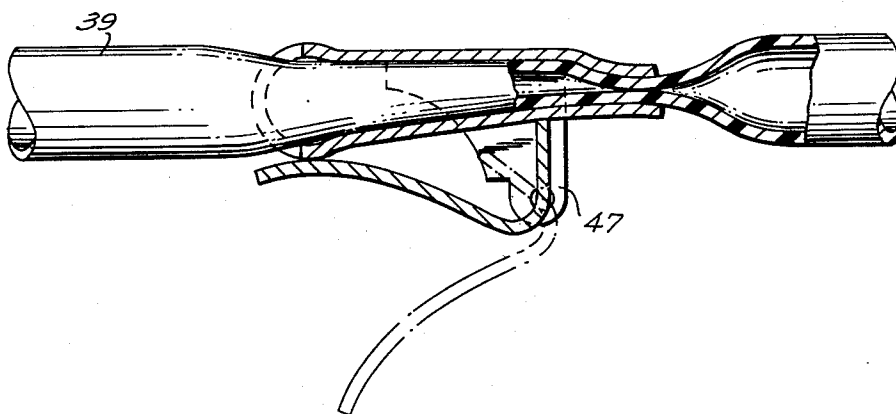


FIG. 10

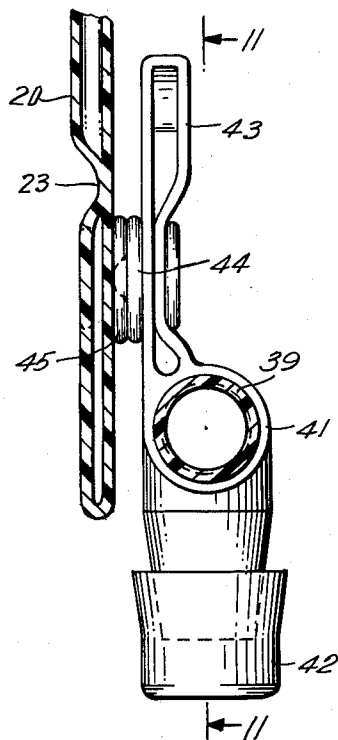
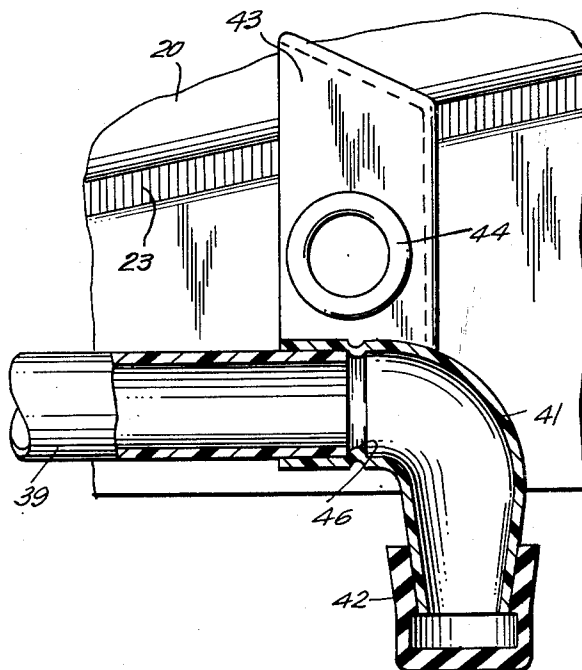


FIG. 11



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CLOSED SYSTEM URINARY DRAINAGE SET

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Filed Aug. 27, 1962, Ser. No. 219,495

6 Claims. (Cl. 128-275)

This invention relates to a structurally and functionally improved liquid receiving, retaining and dispensing assembly of particular utility where employed as a urinary drainage set.

It is a primary object of the invention to furnish a receptacle assembly which may be employed in numerous different associations, and especially those in which body fluids are involved. So employed, an assembly is furnished which will be compact and the various components of which will be connected to each other in manners such that they will not become accidentally detached. Moreover, the assembly may be advantageously used by relatively unskilled personnel, and even by a patient, without encountering difficulty in such use.

A further object is that of designing a structure of primary utility when employed as a closed system urinary drainage set, the set decreasing the possibility of infection due to contamination of the drainage bag or receptacle. Moreover, the assembly in use will effect a considerable saving of labor over sets as heretofore employed.

Among other objects of the invention, are those of furnishing an assembly which may readily be manufactured in accordance with quantity production methods and accordingly produced at minimum expense; the assembly having a relatively long life and capable of being readily sterilizable.

With these and other objects in mind, reference is had to the attached sheets of drawings illustrating one practical embodiment of the invention and in which:

FIG. 1 is a side elevation of the assembly;

FIG. 2 is an edge view thereof;

FIG. 3 is a plan view of the assembly;

FIGS. 4, 5, 6, 7, 8, 9 and 10 are transverse sectional views taken along the lines 4-4, 5-5, 6-6, 7-7, 8-8, 9-9, and 10-10, and in the direction of the arrows as indicated in FIG. 1; and

FIG. 11 is a fragmentary sectional view taken along the line 11-11 in the direction of the arrows as indicated in FIG. 10.

Referring primarily to FIG. 1, the numeral 20 indicates the front wall of the receptacle, which is preferably folded upon itself to provide a rear wall, the edges of which register with the edges of the front wall. It is preferred to form the receptacle body of a clear plastic such as vinyl. Obviously, separate sheets could be employed to provide the front and rear faces of the receptacle. However, as illustrated, the adjacent side edge zones at the free edges of the sheet are bonded together conveniently by the action of heat. This has been indicated at 21. The zone defining the upper end of the receptacle is similarly bonded. Likewise, a bonding zone 23 may extend throughout at least a part of the receptacle adjacent its lower edge. The inner face of the sheet, or sheets 20, may have a rough finish. This will prevent undesired adhesion of the receptacle layers to each other.

A drainage tube 24 has its inner end permanently bonded to a tubular portion 25 defined by the inner faces of the receptacle and communicates with the interior thereof. Above this, the receptacle provides an air passage 26 open to the atmosphere. The outer end of drainage tube 24 mounts, for example, a standard catheter adapter 27. A coupling is furnished between this adapter and tube conveniently by ensleeving the outer end of the

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latter over its reduced end portion 28. This has been shown in FIG. 7. Also, in that view a cap 29 conveniently of polyethylene has been shown as initially closing the bore of the adapter 27.

The zone of seal furnishing passageway 25-26 has been indicated by the numeral 30 in FIGS. 4 and 5. In the latter figure, a filter body 31 has been shown in a position short of the outer end of passage 26. This filter is conveniently formed of cotton and serves to filter out objectionable bacteria as air flows through the passageway to the bag interior to equalize pressure. As shown in FIG. 6, passage 25 has its bore conveniently deformed to provide a flange 32 against which the inner end of tube 24 abuts; the parts being subsequently adhered to each other by heat sealing, or otherwise. A similar flange indicated at 33 in FIG. 1 may prevent filter 31 from moving inwardly up passage 26 beyond a predetermined point.

With a view to properly supporting the bag, the upper edge zone of the latter at a point above passageway 25-26 is provided with openings 34. Through these a cord 35 is disposed. A hook member 36, including a shank, is arranged so that the cord passes through an opening of the latter. Between the upper edge zone of the receptacle and the aperture 34 a metallic stiffener rod 37 is arranged. This reinforces the assembly and prevents a pulling out of the cord. Such a supporting arrangement will enable carrying of the receptacle by an ambulatory patient and the suspension of the receptacle from any convenient supporting surface such as is found at bed side.

A discharge tube 38 is integrally bonded with the bag or receptacle adjacent its lower end. (See FIG. 8.) Also, it is bonded with a tube extension 39, the inner end of which conveniently bears against a stop flange, or bead 40, forming a part of tube 38. The inner end of the tubular extension 38 is connected with the interior of the bag adjacent the side edge opposite from that at which the downwardly inclined sealing zone 23 is disposed. Also, the intake end of the extension is adjacent the lower edge zone of the bag. Accordingly, liquid will drain into what might be termed as a pocket of the receptacle at a point beyond the sealing zone 23. At the outer end of tube 39, there is provided a preferably 90° fitting 41, which again is conveniently secured in position by sealing. A cap 42 closes the outer end of this fitting. The latter is normally maintained in the position shown in FIG. 1 by preferably providing it with an extension 43 carrying one part 44 of a snap fastener. As shown, especially in FIGS. 10 and 11, this part cooperates with a complementary snap fastener portion 45 secured to the receptacle within the zone 23. As also shown in FIG. 11, fitting 41 is conveniently formed with a flange, or bead 46, against which the outer end of tube 39 abuts; the parts again being conveniently heat sealed to each other. A cutoff clamp 47, as best shown in FIG. 9, is mounted upon tube 39 and serves in conventional manner to constrict the bore of the latter and prevent a flow therethrough. Preferably, this clamp will be of the type capable of one-hand operation.

In use, it will be apparent that if a filter plug is associated with fitting 41, this plug will be initially removed and cap 42 applied to the fitting. The bag may now be supported as desired, by employing the hook 36, or an equivalent thereof for this purpose. Drainage tube 24 will be connected with the patient in a standard manner.

To drain the bag, a bulk collection container will ordinarily be used. This may be positioned on the floor at bed side. Thereafter, the elements of the snap cover assembly 44-45 will be detached from each other. Cap 42 will be removed. Clamp 47 will be opened after fitting 41 is disposed over the mouth of the collection container. After completing the drainage, the clamp may again be

closed, and after cleaning the mating surfaces of fitting 41 and cap 42, the latter is seated. Following this, snap fasteners 44-45 may again be coupled to each other.

As will be understood with an assembly of this type, the possibility of infection due to contamination of the drainage bag is materially decreased. In this connection, it is to be appreciated that considerable difficulties have heretofore been experienced in the currently used open type drainage arrangements. In current type open system drainages the possibility of contamination is present due to the bag-tube juncture which is not permanent and usually open to air borne contamination. In order to empty the current bags, the tube must be removed and replaced either in the same bag after emptying or in a new bag.

In either case, the tube end and bag interior have been exposed to air borne contamination.

The advantage is especially attributable to the permanent bonding of the drainage tube to the receptacle so that it cannot be removed. The juncture at this point being permanent, contamination due to the inadequacies of the open system is eliminated. Also, it is apparent that with the present assembly, the burden on a nurse or other attendant will be materially reduced, having in mind that the bulk collection container will have a capacity such that it may be used to drain several bags. If desired, the face of the receptacle 20 may be engraved or otherwise suitably marked with indications of the volume, based upon cubic centimeters, or otherwise. This may be helpful, in the case of a given patient, to both the physician and technician.

Thus, among others, the several objects of the invention as specifically aforementioned are achieved. Obviously, numerous changes in construction and rearrangements of the parts may be resorted to without departing from the spirit of the invention as defined by the claims.

I claim:

1. In an assembly of the character described in combination, a receptacle comprising a pair of opposed walls being integrally connected together at their upper, side and base ends, the inside face of one of said walls being roughened to prevent adhesion of areas of one wall to opposed areas of the other, a drainage tube extending laterally through said walls between the receptacle ends and communicating with the receptacle interior, said receptacle having an upper edge zone adjacent the upper end and said zone being formed with a laterally extending passage between the receptacle ends and between the drainage tube and the upper receptacle end, said passage providing an airway communicating the receptacle interior with the outer atmosphere, and a discharge tube disposed at the lower end of the receptacle between the drainage tube and the base receptacle end and being disposed adjacent thereto and extending beyond said base receptacle end, said discharge tube providing a passageway to the receptacle interior, and both said drainage tube and discharge tube being integrally bonded with said re-

ceptacle to thereby permanently unite the tubes against separation therefrom and also provide a hermetic seal therewith.

2. In an assembly of the character described in combination, a receptacle comprising a pair of opposed walls being integrally connected together at their upper, side and base ends, said receptacle having an upper edge zone adjacent the upper end, a drainage tube extending laterally through said walls between the ends of said walls at said upper edge zone and communicating with the receptacle interior, said drainage tube at said upper zone being substantially parallel to the upper end, said zone being formed with a laterally extending passage between the receptacle ends parallel to and along the upper end and disposed between said walls to the outside to form an air passage between the interior of the receptacle and the outer atmosphere, the air passage and drainage being alongside each other, a longitudinal discharge tube integrally bonded to the lower end of said receptacle which is disposed between the walls of the base receptacle end to communicate with the remote bottom corner of the interior of the receptacle, said discharge tube and said drainage tube being hermetically sealed with said receptacle to form a drainage receptacle free from obstruction in its middle area, and a fitting extending downwardly from the end of said discharge tube to direct the effluent outwardly from said discharge tube.

3. A receptacle as claimed in claim 2 which is provided with an air filter in the passageway of the drainage tube.

4. A receptacle as claimed in claim 2 which is provided with a stiffening and reinforcing rod along the entire upper edge of said receptacle which adapts the receptacle to be suspended in an unfilled and partly filled condition.

5. A receptacle as claimed in claim 2 which is provided with attaching means for attaching said downward fitting to the exterior of the receptacle wall.

6. A receptacle as claimed in claim 2 which is provided with a slanted interior deflecting surface in the lower edge of said receptacle to deflect the liquid contents to the discharge tube.

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