

July 25, 1967

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VALVED ENEMA BAG MADE FROM MATERIALS HAVING DIFFERENT
SURFACE AFFINITIES
Filed Dec. 2, 1963

3,332,420

Fig. 1

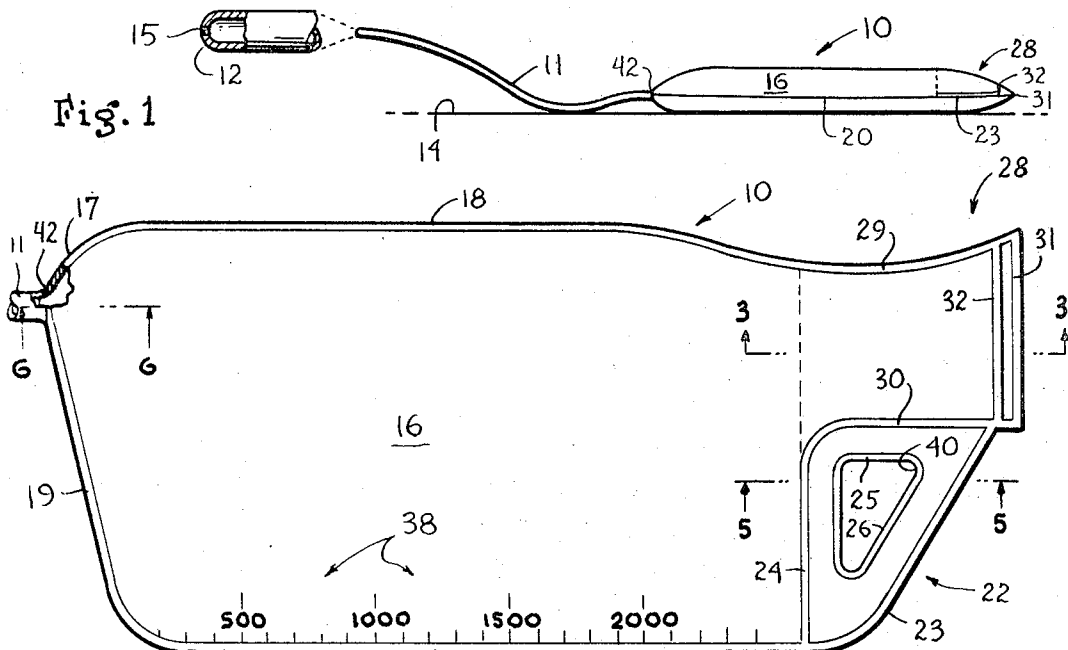


Fig. 2

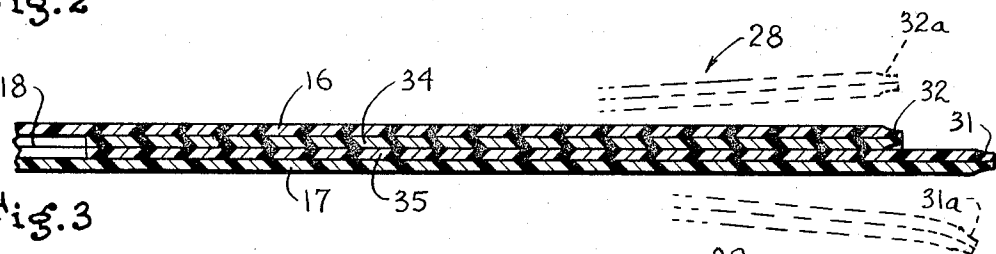


Fig. 3

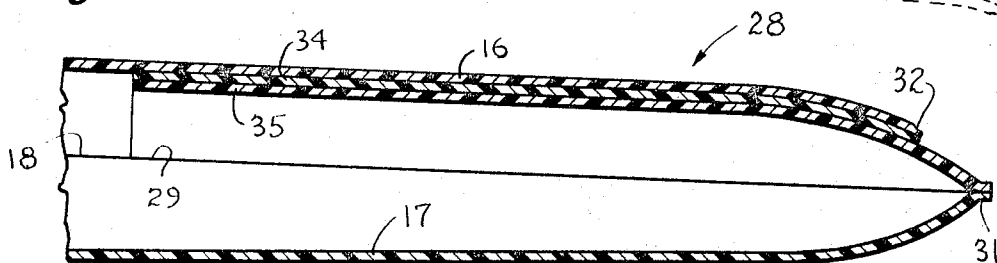


Fig. 4

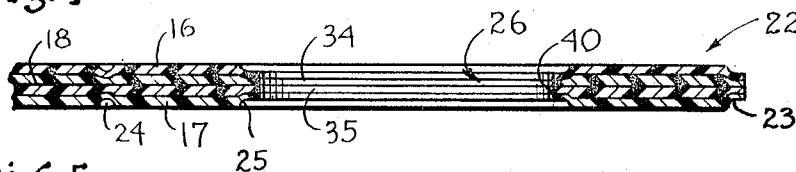


Fig. 5

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3,332,420 VALVED ENEMA BAG MADE FROM MATERIALS HAVING DIFFERENT SURFACE AFFINITIES

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Filed Dec. 2, 1963, Ser. No. 327,401

5 Claims. (Cl. 128—226)

The present invention relates to a new article of manufacture and more particularly, to a disposable pressurized-fluid bag, including a one-way valve fabricated in a new manner, and an outlet connection for draining the bag attached therewith.

The particular article of manufacture comprises a medical appliance in the form of a fluid bag which is adapted for the administering of enemas, and the like, in hospitals to patients, and is disposable after use. The article is characterized in that it is economical of manufacture. The article includes an inlet check valve, or the like, through which the bag may be filled with a suitable solution for application to a patient. The check valve will prevent leakage from the bag at the filling end thereof and the bag can be laid adjacent the patient on a bed or chair, or the like, and a catheter formed on the end of a tube for injecting the medication fluid inserted into the body of a patient.

In applying an enema, for example, there may be other appliances and receptacles present, and it is a particular advantage of the present invention that the bag can be laid adjacent the patient while the attendant positions the catheter end and other equipment.

An additional feature and advantage of the present invention is that the catheter end thereof may be perforated in such manner as to permit only a low volume of flow therethrough during a given period of time. With such structure, the catheter may be inserted into the body of the patient and the bag itself laid beneath the patient and the pressure of the patient's body will force the liquid into the patient's body. The medicine will be kept at body temperature by being adjacent the patient's body during this long-time application of the medication.

The device is further characterized in being formed in a relatively few number of operations for heat sealing different subassemblies of the same and thereafter assembling the subassemblies for completing an inlet check valve. The device has a further advantage in being sealed with a drainage tube to the plastic material comprising the walls of the bag.

Accordingly, it is a primary object of this invention to provide a disposable pressurizable plastic appliance.

A further object of the invention is to provide an appliance with a check valve comprising edges that are heat sealable and cooperating edges which are not sealed whereby to form a valve within a housing therefor.

Another object in keeping with each of the preceding objects is to provide a new pressurizable medical appliance for administering medication under pressure for predetermined variable periods of time and/or at a patient's body temperature.

The foregoing and other objects and advantages of the invention will be either obvious or pointed out in the following specification and claims read in view of the accompanying drawings in which:

FIG. 1 is a view of the article of manufacture in position for use; and is shown expanded and containing a fluid;

FIG. 2 is a side view of the article;

FIG. 3 is a view taken along the lines 3—3 of FIG. 2;

FIG. 4 is a view similar to FIG. 3 but showing the check valve in position for retaining a fluid within the article;

FIG. 5 is a view taken along lines 5—5 of FIG. 2 showing the handle portion of the article.

Referring now in detail to the drawing and first to FIG. 1, a medical bag 10 which may be filled with a suitable fluid is attached to an outlet tube 11 having its end shown enlarged for clarity, rounded to form a catheter 12 in which a hole 15 of suitable predetermined flow capacity is formed. The catheter 12 may be inserted into a patient while the bag 10 rests on a surface 14 of a bed or an adjacent chair or table. With this construction so long as the catheter 12 is above the level of the top of the bag 10 there will be no leakage out of the catheter 12. It is also contemplated in this invention that a body temperature solvent wax, or the like, be inserted into the openings 15 in the catheter to prevent leakage until the appliance is put into use and the wax melts due to body temperature of the patient.

Referring now to FIGS. 2—5, a side view of the article 10 is shown, FIG. 2, and it comprises a pair of bag forming sheets 16 and 17 which are secured together by heat seals 18 at the top of the view, 19 at the left end and at 20 at the bottom to form a pressurizable bag portion of the article. A handle portion 22 is formed by a heat seal 23, a heat seal 24, and a heat seal 25 surrounding perforations 26, FIG. 5, through all of the sheets of plastic material. A valve forming portion 28 of the bag 10 is shown at the right upper side of FIG. 2 and comprise heat sealed valve edge seams 29 and 30 at the upper and lower sides of the valve portion 28. An end seal, also forming a valve opening, is provided by a seal 31 and a seal 32 associated with the sheets 17 and 16, respectively.

A check valve is made up of a pair of substantially similarly shaped sheets of material 34 and 35. As shown, the sheet 34 is connected at its right-hand edge to the heat seal edge 32 of the sheet 16. The lower valve part 35 is connected by the heat seal edge 31 to the sheet 17. All four sheets of material are thereafter, in a secondary step in the method of fabricating the article, heat sealed along edge seams 29 and 30, forming the inlet check valve 28 for the article 10. As indicated in FIG. 3, the heat seal end 31 can be moved to the dotted position 31a by the fingers of a user to separate same substantially from the heat sealed end shown in dotted position 32a whereby the bag may be filled with medication.

It is to be noted that the heat seals 31 and 32 are spaced slightly from each other so that the parts forming the bag are not identical. It is not essential that they be so formed and the parts can be identical, and in such case the seams 31 and 32 will be in registry. However, such bags are not as easy to open as the presently disclosed bag; and the plastic material used preferably has a suitable surface affinity to keep the same closed until manually opened for use.

Referring to FIG. 4, the check valve portion 28 is shown substantially enlarged and expanded as same will be when filled with fluid in a predetermined amount as indicated by cubic centimeter indicia 38, FIG. 2. The valve forming sheets 34 and 35 are normally urged together by affinity, as well as by the very nominal pressure of fluid inside of the bag. The bag can resist substantial pressure, such as by being placed under the body of a patient, for example, for administering medication over a long period of time as mentioned briefly above; and as can be accomplished by providing a small capacity orifice 15 in the catheter 12, FIG. 1.

At least the check valve forming sheets 34 and 35 are made of a suitable plastic having surface affinity. By way of example, polyvinyl chloride plastic of substantially 14-gauge thickness has been used successfully in fabricating a valve of the kind herein disclosed. The material forming the valve parts 34 and 35 is preferably of that type having a smooth, or shiny, side and a relatively rougher,

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or dull, side. The shiny sides have a greater affinity to each other and there is a tendency of the shiny sides to cohere or to stick together, as mentioned briefly above. The dull sides do not exhibit this cohesion characteristic to as great an extent as the shiny sides.

In the arrangement of parts, the mating surfaces between the valve forming parts 34 and 35 are the shiny sides of the material. The interior surfaces of the bag forming sheets 16 and 17 may be the dull sides of the thicker material, for example 8-gauge polyvinyl chloride. Accordingly, there will be less tendency for the valve parts to stick to the bag parts than the tendency of the valve parts 34 and 35 to stick to each other. Such plastics are commercially available from Somers Plastic Company, Industrial Park, New Jersey, under the catalog listing "German Roller Patent." However, other plastics of similar nature having shiny and dull sides with the shiny side having a greater surface affinity than the dull side are deemed suitable for fabrication of the bag and the valve.

Referring in detail to FIG. 5, the handle portion 22 is shown in section and shows the four layers of material 16, 17, 34 and 35 having substantially identical pierced out portions 26 which are sized to receive two or three fingers of a user. It is to be noted that the high point 40 of the hole 26 is located so that, if same is placed on a hook, the bag will extend substantially vertically to completely drain the contents of same out through the tube 11. In certain operations, it is desired that the bag be so suspended at different heights to best facilitate emptying of the contents of the bag due to the force of gravity through the catheter 15. It is to be understood, however, that if the bag contains medication in the form of gas, manual pressure is applied to the surfaces of the bag to force the gas out of the orifice 15 in the catheter 12.

The article 10 is preferably fabricated in the following manner. A sheet of material 16 is sealed at the edge 32 with a valve forming sheet 34 as a first step in the fabrication operation. The second sheet 17 is sealed at the edge 31 with the second valve forming sheet 35. The parts are laid over each other with identical parts in registry and the heat seal seams 18, 19, 20, 23, 24, 25, 29 and 30 are made in a single die to complete the assembly of the bag and the inlet check valve portion of the article. Thereafter, the other end of the bag 10 is placed adjacent the end of the tube 11, a tool pierces a hole 42 in the end of the bag, and these parts are pressed and sealed together. The resultant article of manufacture comprises a bag having two openings, one being a filling opening in the form of an inlet check valve 28, and the other being an outlet opening comprising a connection to a tube 11 for draining the bag.

The bag thus fabricated is made of relatively inexpensive parts and is readily fabricated in equipment capable of producing high quantities and, accordingly, the resultant cost of the bag is such that the same may be disposable. Accordingly, the pressurizable bag can be used for the treatment of but a single patient and may be disposed of after treatment of the patient, rather than as in presently practiced conventional measures involving sterilization, and the like, which are expensive and time-consuming. It is not required, however, that an article 10 be disposed after each use but may be used several different times by a single patient.

While I have shown and described in detail a presently preferred embodiment of this invention including an article and apparatus and method for fabricating the same, obviously other modifications hereof will occur to others working in the art. Accordingly, I wish to be limited in my invention only by the scope of the following claims.

I claim:

1. A bag for administering enemas and the like and adapted to contain a fluid comprising walls defining a chamber, the chamber defining walls terminating in a fluid outlet at one end of the bag to provide a means for

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discharging fluid from the chamber, the chamber defining walls terminating in a fluid inlet neck portion at another end of the bag establishing communication between the chamber and the bag exterior to provide a means for introducing fluid into the chamber, the interior surface of the walls of the neck portion being formed from a plastic material having a relatively nonadherent dull finish, valve means in the neck portion of the bag to prevent the discharge of fluid introduced into the chamber of the bag back through the neck portion, the valve means comprising a pair of sheets of a plastic material, both surfaces of each of the sheets having a generally adherent shiny finish, the sheets spanning the internal walls of the portion of the bag defining the fluid inlet neck and positioned opposite each other and the dull finish interior neck walls, the edges of the sheets being sealed to the edges of the walls defining the inlet neck portion of the bag, the sheets in sealed opposed relation providing a closeable passage therebetween from the bag exterior to the bag chamber and forming pockets opening into the chamber whereby fluid in the chamber may enter a pocket opening therein and urge one of the facing shiny plastic sheets into fluid tight adherent engagement with the other of the shiny plastic sheets and whereby the adherence affinity of the shiny sheets for each other is greater than the adherence affinity of the dull finish interior walls of the bag forming the neck portion, and said fluid outlet is an elongated plastic discharge catheter adapted to be inserted into a body cavity sealed to said fluid outlet providing fluid communication with said chamber.

2. The bag of claim 1 wherein the fluid outlet includes a heat sealable plastic tubular member having an inlet and an outlet, the inlet of the tubular member being sealed to the outlet of the bag to establish communication between the outlet of the tubular member and the chamber of the bag and to provide a bag with an integral tubular outlet.

3. A bag for administering enemas and the like and adapted to contain a fluid comprising, walls defining a chamber formed from a plastic material, the walls terminating in a fluid outlet at one end of the bag to provide a means for discharging fluid from the chamber, the walls having portions terminating in a fluid inlet neck at another end of the bag to provide a means for introducing fluid into the chamber of the bag, one of the walls defining the inlet neck portion of the bag terminating in axially inwardly spaced relationship with respect to the other of the walls extending axially outwardly therefrom and defining the inlet neck portion of the bag to provide a means for readily separating the walls adjacent the inlet neck portion to permit introduction of fluid into the chamber of the bag, valve means in the inlet neck portion of the bag to prevent the discharge of fluid introduced into the chamber of the bag back through the neck portion, the valve means comprising a pair of sheets of a plastic material having generally adherent smooth finishes, the sheet abutting the extended wall of the inlet neck portion overlying and being sealed to the extended portion thereof to provide an exposed surface of one of the sheets to permit easy separation of the adherent smooth surfaces of the sheets forming the valve, each of the sheets spanning the internal walls of the portion of the bag defining the inlet neck and positioned opposite each other with adherent smooth surfaces in facing relation, the material of construction of said sheet material having a greater surface adherence for itself than for the material of the wall neck portion, the configuration of each of the sheets conforming generally to the configuration of the wall defining the neck portion of the bag adjacent which it is positioned and being sealed along its edges to the wall adjacent which it is positioned,

the sheets in sealed opposed relation providing a closeable passage therebetween from the bag exterior to the bag chamber and forming pockets opening into the chamber whereby fluid in the chamber may enter a pocket and urge one of the smooth plastic sheets into adherent engagement with the other of the smooth plastic sheets to close the neck and prevent the discharge of fluid from the chamber of the bag back through the inlet neck portion, and said fluid outlet means including an elongated plastic discharge catheter adapted to be inserted into a body cavity sealed to said fluid outlet providing fluid communication with said chamber.

4. The bag of claim 3 wherein the fluid outlet includes a heat sealable plastic tubular member having an inlet and an outlet, the inlet of the tubular member being sealed to the outlet of the bag to establish communication between the chamber of the bag and the outlet of the tubular member and to provide a bag with an integral tubular outlet, the inlet neck portion of the bag being positioned at an end of the bag remote from the tubular outlet.

5. The bag of claim 4 wherein means are provided adjacent the inlet neck portion of the bag for hanging the bag when required.

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