June 5, 1962 H. W. WALDEN ETAL 3,037,505

IRRIGATORS OR SPRAY DEVICES

Filed Jan. 13, 1958

FIG. 7.

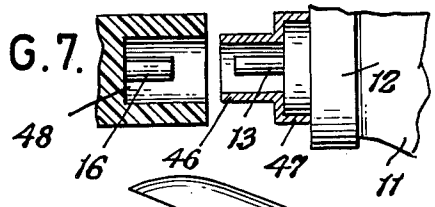


FIG. 1.

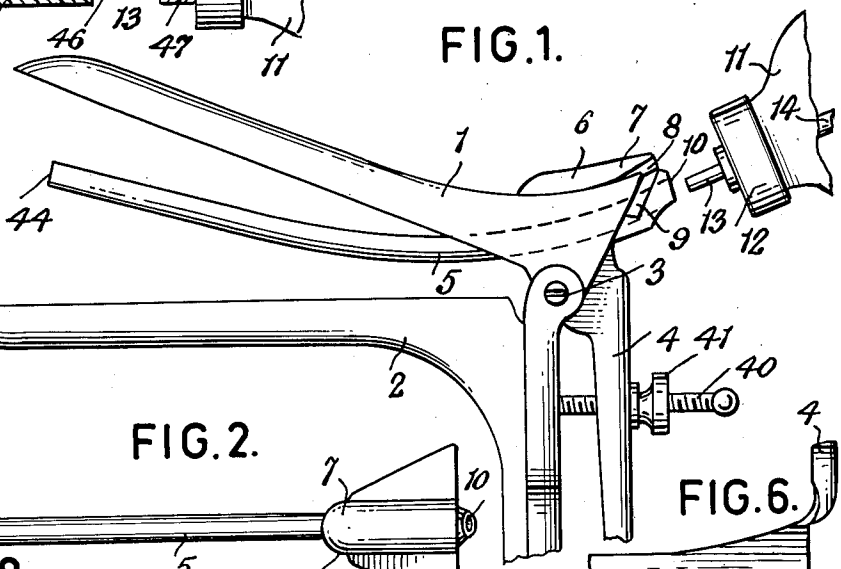


FIG. 2.

FIG. 6.

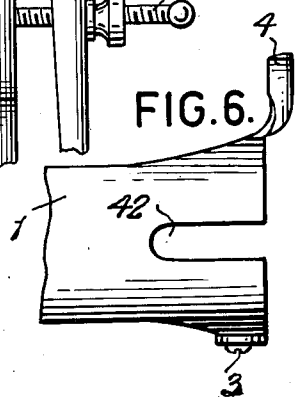


FIG. 8.

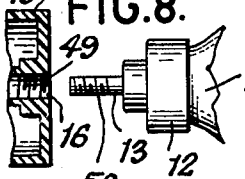


FIG. 3.

FIG. 4.

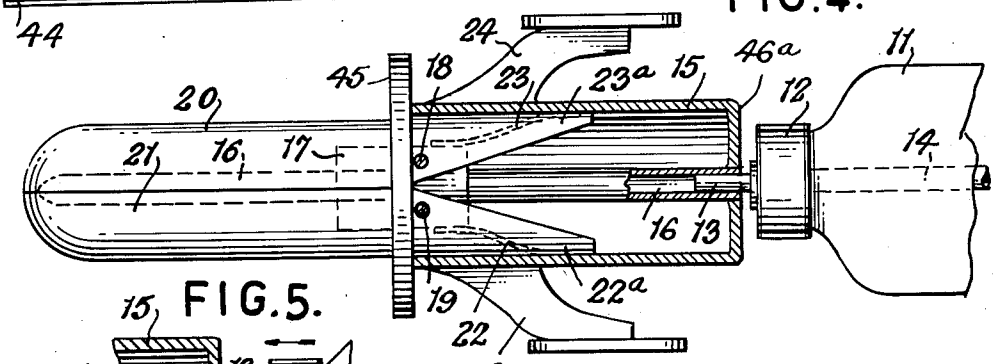
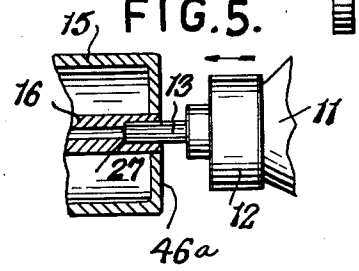


FIG. 5.



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3,037,505
IRRIGATORS OR SPRAY DEVICES

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1 Claim. (Cl. 128—244)

This invention relates to an irrigation or spray device, such as is used for the injection and distribution of medicaments, antiseptics, cleansing preparations and other materials in liquid, mist, spray or in other forms into body cavities. An example of the type of device to which the present invention relates will be found in our co-pending application Serial No. 653,462, filed April 17, 1957, now Patent No. 2,924,218.

It is one of the objects of the invention to provide a device of this character by means of which the preparation to be injected will be forced into the body cavity so that the preparation will reach all parts of the cavity for complete distribution therein. It is an object of the invention to provide an improved means by which a spray container may be coupled to a spraying tube and the flow of the material from the container and into the tube be completely under the control of the user.

It is an object of the invention to provide means by which a spray tube may be readily and detachably secured to a speculum of known construction and to provide means by which such a tube may be coupled to a spray container.

With these and other objects to be hereinafter set forth in view, we have devised the arrangement of parts to be described and more particularly pointed out in the claim appended hereto.

In the accompnaying drawing, wherein an illustrative embodiment of the invention is disclosed,

FIG. 1 is a side elevational view of a portion of a speculum of known construction, showing an embodiment of the improved spray device attached thereto.

FIG. 2 is a top plan view of the spray device;

FIG. 3 is a side elevational view of the spray device;

FIG. 4 is a side elevational view, with parts in section, of a speculum with another embodiment of the spray device incorporated in it;

FIG. 5 is a detail view of one end of the speculum of FIG. 4, showing how the valve stem of a spray container is fitted into it in position for the spraying operation;

FIG. 6 is a top plan view of one of the jaws or blades of the speculum of FIG. 1, showing the slot in the blade in which a portion of the head of the spray tube is fitted;

FIG. 7 shows another manner in which a wall-encircled valve stem is coupled to a spray tube; and

FIG. 8 shows a manner in which a valve stem of the flexible type is coupled to a spray tube.

Referring to FIGS. 1 and 6, there is therein shown a speculum of known construction, and of the type employed for dilating or spreading the walls of a body opening such as the vagina, for medical examination or treatment. The speculum of known construction, includes a pair of jaws or blades, shown respectively at 1 and 2, which are pivotally connected together at 3, whereby they may be either brought together for insertion into the body orifice or spread apart thereafter, which separation of the jaws or blades is partially shown in FIG. 1.

The blade or jaw 1 is provided with a lateral extension 4 through which a threaded rod 40 extends, said rod receiving the nut 41 for maintaining the jaws or blades in desired angular relationship for examination purposes.

At the rear end of the jaw or blade 1 is provided a central, longitudinal slot 42, and adapted for removable fitment in this slot is the head 6 of a spray tube 5. The head 6 is formed with a top portion 7 and lower flanges 9, providing a groove 8 with which the edges of the slot 42 engage. The spray tube extends through the head 6 and emerges at the rear end thereof, as shown at 10.

The manner in which the spray tube 5 is fitted in position on the blade 1 of the speculum, is clearly shown in FIG. 1, wherein it will be seen that the head 6 has its groove 8 engaged with the slot 42 by sliding the head 6 on the jaw or blade 1 from the rear thereof. When in position as above stated, the tube 5 will be carried by the jaw or blade 1 and will project forwardly between the blades with its front or outlet end 44 situated near the forward ends of the jaws or blades 1 and 2. This arrangement is such that the spray tube may be attached to the jaw or blade 1 either while the speculum is in inserted position or while the same is removed from the patient.

The spray container from which the liquid, powdered or other material is injected, consists of a bottle, capsule or other container of known construction, a portion of which is shown at 11. These containers, except in the case of so-called "squeeze bottles" are usually closed by a valve that is operatively opened in several different ways. In the form shown in FIG. 1, the valve terminates in a flexible stem 13 projecting through a closure cap 12 and extending beyond the same. This valve stem 13 is connected to the spray or siphon tube 14 that is located within the bottle. By pressure imposed sidewisely on the tip portion of the valve stem 13, the valve may be opened and a portion of the contents of the container, and which are under pressure, will be ejected through the stem 13. It will also be obvious that the same effect, i.e. opening of the valve, will be secured if the valve stem is held stationary and the container is tilted or moved laterally.

In the construction shown in FIG. 1 the stem 13 is inserted into the end portion 10 of the spray tube 5 and when it is desired to spray the inside of the body orifice, the spray container 11 is used as a lever and is moved sidewisely, thus opening the valve of which the stem 13 forms a part, and causing a portion of the contents of the container 11 to be sprayed into the body orifice.

In the embodiment of the invention shown in FIG. 4 is disclosed a speculum having similarity to that disclosed in our co-pending application Serial No. 653,462. In FIG. 4 is shown a housing 15, which may be of substantially cylindrical form, and is provided at its forward end with a disc-shaped or other suitably formed abutment 45, and with a rear wall 46*a*. Located centrally of the rear wall and secured therein and extending therethrough is one end of a spray tube 16 which extends forwardly through the housing 15 and between the pivoted jaws or blades 20 and 21. Secured on the spray tube 16 is a collar 17, and the pivot pins 18 and 19 for the respective jaws or blades 20 and 21 extend therethrough and through the wall of the housing 15. Leaf springs 22 and 23 are mounted on the collar 17 and these springs operate against the rear extensions 22*a* and 23*a* of the jaws or blades to normally hold the jaws or blades in their closed or abutting position shown in FIG. 4. The rear extension 23*a* carries a finger-piece 24 and a similar finger-piece 25 is carried by the rear extension 22*a*, these finger-pieces extending through slots not shown, but provided in the wall of the housing 15. The described arrangement is such that by pressure imposed on the finger-pieces 24 and 25, the jaws or blades 20 and 21 will be pivotally spread apart.

The bottle or spray container 11 has its valve stem

13 inserted in the rear end of the tube 16 as shown in FIG. 4, and by lateral or sidewise movement of the bottle or container the valve of the same will be opened and part of the contents of the container will be sprayed through the tube.

As previously stated, containers of this character are provided with valves of various kinds, one of which is opened as stated, by sidewise movement of the flexible valve stem or by such movement of the container relatively to the valve stem. Another form of known valve is that by which the valve is opened by inward depression of the valve stem. Such a container is shown in FIG. 5. In the embodiment therein shown, the valve stem 13 must be depressed to open the valve of which it forms a part, and when it is inserted within the end of the spray tube 16 it encounters an abutment 27 which may be in the form of a shoulder within the tube 16. To open a valve of this type, the container is held in the hand and forced inwardly or in the direction of the arrows shown in FIG. 5, and the pressure of the forward end of the valve stem 13 against the shoulder 27 will result in the opening of the valve and in the spraying of part of the contents of the container into the body orifice. It is, of course, understood that this manipulation of the container for spraying will take place while the jaws or blades 20 and 21 are distended by pressure imposed on the finger-pieces 24 and 25.

In the embodiment of the invention shown in FIG. 7, the valve stem 13 is of the type that is operated by inward depression and the same is shown as being protectively surrounded by an annular wall 46 which may be provided as a part of or instead of a secondary closure cap 47 fitted permanently or otherwise, over the conventional closure cap 12. This annular wall 46 affords protection for the valve stem, preventing it from being accidentally depressed during handling of the container and also while coupling it to the spray tube of the speculum. In this embodiment of the invention, the rear end of the spray tube 16 is shown as being located within a recess 48 which is of a diametrical size as to enable the wall 46 to fit snugly but slidingly within it. The coupling of the container 12 to the spray tube 16 is attained by insertion of the wall 46 within the recess 48 and this is preferably only partly done until the moment of injection is reached, whereupon the container is pushed inwardly; the end of the valve stem 13 will contact with the end of the spray tube 16, causing the valve stem to be depressed and the valve opened and a part of the contents of the container to be sprayed through the tube 16 and out of the forward end of the same.

In FIG. 8 is shown another arrangement by which the valve stem 13 is coupled to the spray tube 16. In this arrangement, the end portion of the valve stem is provided

with screw threads 50 for threadable engagement with the threads 49 provided on the interior of the spray tube 16. With this construction the valve stem may be of the flexible type which opens its valve by tilt or lateral movement of the stem or the container of which it forms a part. This threaded stem arrangement may also be employed when coupling the stem to the spraying tube with the construction that employs an annular wall around the stem as indicated at 13 and 46 in FIG. 7.

Various other means may be employed for coupling the container to a spray tube, and the requisite of any such means is that the valve of the container shall remain closed until it is desired that the injection of some of the contents shall occur, whereupon by movement, pressure or other force imposed on the container, its valve or other closure means shall be opened and a portion of its contents injected into and through the spray tube.

We have herein suggested that the contents of the container might be liquid and be under pressure, but it will be understood that the powdered material, or other material that can be ejected in any form, such as in a spray or mist might be used in the containers without departing from the spirit of the invention.

What we claim is:

A spray tube for detachable connection to the elongated narrow slot in the rear end of one of a pair of pivotally connected blades of a speculum, the blades being free from projections, in a manner to locate the tube between the blades with its forward end located adjacent to the front end of the blades and the rear end at the rear end of the speculum, comprising a tube open at both ends and attached at the rear end to an elongated tube-supporting head having on opposite sides thereof narrow slots engaging the sides of the elongated narrow slot of the blade over a sufficient distance to hold the tube firmly on the blade in a friction fit, the top surface of the head exteriorly of the blade being smoothly contoured and free from projections.

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