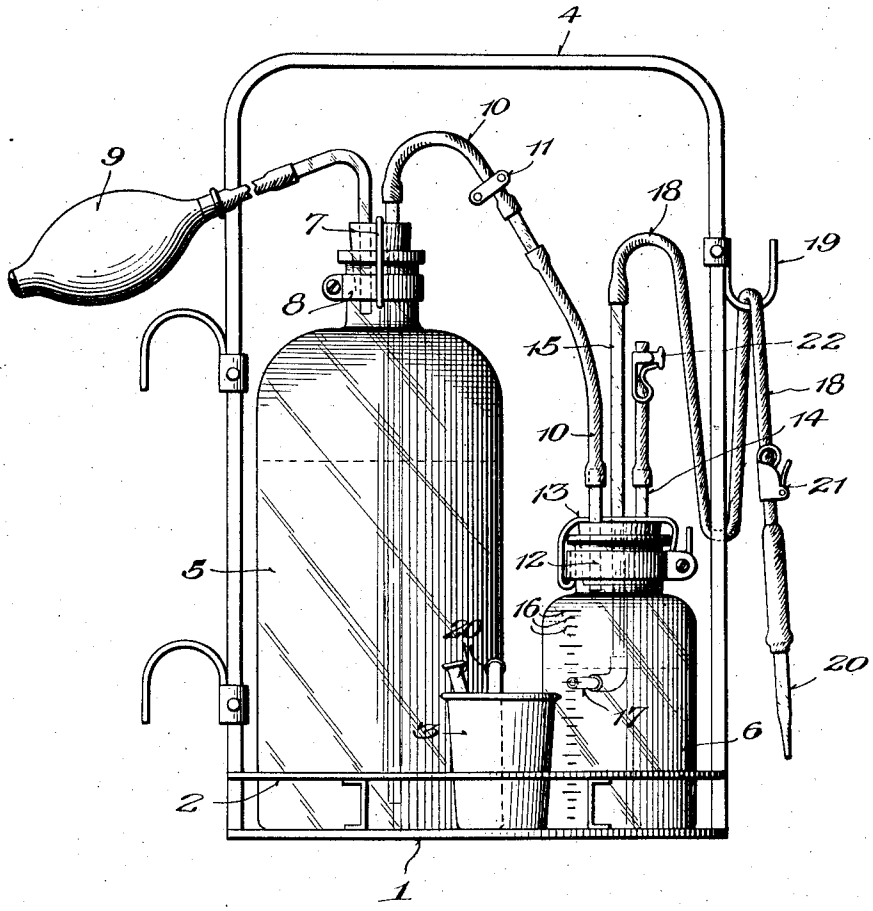
B. DOUGLAS.

SURGICAL APPLIANCE.

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SURGICAL APPLIANCE.

1,356,519. Specification of Letters Patent. Patented Oct. 26, 1920.

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To all whom it may concern:

Be it known that I, BEVERLY DOUGLAS, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Surgical Appliances, and do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to surgical appliances and more particularly to a portable apparatus for dispensing antiseptic solutions used in the treatment of infected wounds, incisions and the like.

The objects of the invention are to obviate the loss or waste of any of the solution such as occurs in the use of open bowls and hand syringes, due to spilling and evaporation; to facilitate the rapid and sterile handling of antiseptics in successive irrigations, and lastly to provide an apparatus adapted to contain a large quantity of antiseptic solution from which a predetermined quantity may be withdrawn for use during a particular irrigation.

The accompanying drawing illustrates, in perspective, the appliance of the present invention.

As the apparatus is especially designed for use in hospitals and must, therefore, be capable of being conveniently carried from one ward or room to another and from bed to bed, there is provided a tray comprising a circular base 1, and a plate 2 of substantially the same shape supported a short distance above the base. Plate 2 has four circular apertures therein of suitable sizes to permit two tip containers 3 and two solution containers 5 and 6 to extend therethrough and rest on base 1, container 6 being considerably smaller than container 5. A handle 4, in the form of an inverted U, is secured to the base 1 at diametrically opposite points, and attached to one of the upright portions of the handle is a pair of hooks by means of which the tray and apparatus can be suspended in any suitable position for a purpose which will hereinafter appear.

Container 5, which is preferably an opaque bottle, serves as a reservoir for a sufficient quantity of solution for a number of irrigations, and is closed at its mouth by a rubber stopper which has two apertures therethrough. Preferably the stopper is held in place by a wire strap 7, secured to a collar 8 surrounding the neck of the container. A short piece of rubber tubing connected with a glass tubing extending through one of the apertures in the rubber stopper is provided with a rubber hand bulb 9, and extending through the other aperture in the stopper to the bottom of the conainer 5 is a glass tube to the outer end of which is attached a length of tubing 10 which communicates with the container 6 so that when pressure is created in container 5 by means of the hand bulb the liquid is forced through the tubing 10 to the container 6, the flow of liquid between the containers 5 and 6 being controlled by a flat screw clamp 11 located on the tubing 10 at any desirable point.

The smaller container 6 is provided with a gage consisting of a vertically extending series of graduations 16, each graduation preferably indicating an ounce of solution, the container itself being transparent so that it can readily be determined what amount of solution has been delivered from the large container 5.

The closure for container 6 is secured in place by a collar 12 and strap 13 similar to collar and strap 7 and 8 and is provided with three apertures through which a glass tube attached to the tube 10, a vent pipe 14 and a glass gaging pipe 15, respectively, extend. The inner ends of the glass tube secured to tube 10 and vent pipe 14 preferably project below the closure only a short distance so that they will lie above the solution when the container has been filled to the uppermost graduation. The gage pipe 15, however, is slidably mounted in the closure so that, if desired, its lower end can be adjusted to any point on the series of graduations to permit only a predetermined quantity of solution to be withdrawn from the graduated container. A horizontally disposed tip 17 is connected to the lower end of the gaging pipe, whereby the aperture in the gage pipe can be accurately positioned with respect to the graduations 16, the connection between the tip and gage pipe being formed by a short piece of rubber tubing which prevents the tip being snapped off should the gage pipe be accidentally elevated against the closure or pushed down against the bottom of the container.

Attached to the gage pipe is a piece of rubber tubing 18 of sufficient length to reach

from the tray to the patient, this tubing when the apparatus is not in use, being conveniently wound on a hook 19 attached to the handle of the tray. Tubing 18 is provided at its outer end with a detachable sterile dropper tip 20 and intermediate its length it is provided with a small clamp 21 with which the discharge of the solution may be regulated.

In operation, the larger container is filled with Dakin's or bichlorid solution or other antiseptic, clamp 11 is opened and by pressure created in the container by hand bulb 9 the liquid is forced to flow into the smaller, graduated container 6 until the container is filled to the uppermost graduation. The apparatus may then be used either for a force feed irrigation or for a gentle or siphon feed irrigation.

In the former method, the vent pipe 14 is closed by a stop cock 22 and the tip 17 on the lower end of gage pipe 15 is positioned immediately below the level of the liquid in container 6. Then by pressing the bulb 9 liquid is forced from container 5 to container 6 and from the latter through gage pipe and tubing 18, the level in the container 6 remaining constant as long as any solution remains in container 5.

If in operation it is desired to inject, under pressure, a measured amount of solution, the hand bulb 9 is connected with the vent pipe 14 and the screw clamp 11 on tubing 10 shut so as to prevent back flow of solution from container 6 to container 5. The gage pipe 15 is then lowered to any point, as in the siphonic feed method described below and the irrigation accomplished, as in this method, except that the solution is expelled from sterile tip 20 under any desired pressure from the hand bulb 9.

For the siphonic feed method, the smaller container 6 is filled as described and the lower end gage pipe 15 positioned at any point on the graduations, depending upon the amount of solution to be used for the particular irrigation. The vent pipe 14 is then opened and the tray suspended above the patient and above the dropper tip 20 when the latter is in position to irrigate the wound. With the apparatus in this position the solution will be discharged from container 6 by siphonic action until the liquid in the container drops below the lower end of the gage pipe. The bubbles of air which will then rise in gage pipe 15 will immediately indicate to the operator that the desired amount of solution has been discharged so that he may instantly shut off the clamp 21, and may thus stop the flow of solution in tubing 18 before the siphonic action is destroyed by the ingress of too much air into tubing 18. With a change of the sterile tips 20, the apparatus will be ready for the next irrigation by this method. If for any reason it should be desired to momentarily interrupt the irrigation, the flow of liquid may be stopped by manipulation of clamp 22. The appliance is especially adapted for this character of work in that by adjusting the gage pipe before beginning the irrigation only the necessary amount of solution will be delivered, thereby preventing a great amount of waste that occurs in the use of bowls and hand syringes. Furthermore, any time the appliance is not in use the containers can be made air-tight, this also preventing the loss of solution by evaporation.

What I claim is:

1. In a surgical appliance of the character described, the combination of a small, graduated container, a closure for the graduated container having a plurality of openings therein, a relatively large container communicating with the graduated container through one of said openings, means for supplying liquid under pressure from the larger to the smaller container, a discharge tube extending through another of the openings in said closure and below the level of the liquid in the graduated container, a vent pipe positioned in one of the openings in said closure, and means for opening and closing said vent pipe whereby liquid may be discharged from the graduated container under pressure or by siphonic action.

2. In a surgical appliance of the character described, the combination of a relatively large container, a smaller, graduated container in communication with the larger container, means for supplying liquid from the larger container to the graduated container under pressure, a vent in the graduated container, means for opening and closing said vent, and a discharge tube extending below the level of the fluid and projecting from the top of the graduated container, said tube being adjustably secured in the container whereby its inner end may be positioned at any desired height in the container with respect to the graduations to deliver a predetermined quantity of liquid.

3. In a surgical appliance of the character described, the combination of a small, graduated container, a closure for the graduated container having a plurality of openings therein, a relatively large container communicating with the graduated container through one of said openings, means for supplying liquid under pressure from the larger to the smaller container, a discharge tube adjustably secured in another of the openings in said closure and extending below the level of the liquid in the graduated container, a vent pipe positioned in one of the openings in said closure, and means for opening and closing said vent

pipe whereby liquid may be discharged from the graduated container under pressure or by siphonic action.

4. In a surgical appliance of the character described, the combination of a relatively large container, a relatively small graduated container in communication with the larger container, means for supplying liquid from the larger container to the graduated container, and an adjustable discharge tube extending below the level of the fluid in the graduated container and having a horizontally disposed lower portion adapted to aid in adjusting the discharge tube relatively to the graduations on the container.

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