

United States Patent

[11] 3,613,685

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[45] Patented **Oct. 19, 1971**

[56]

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**[54] SURFACE-CONFORMING DISPOSABLE
SURGICAL PREPARATION APPLICATOR AND
TRAY THEREFOR
12 Claims, 9 Drawing Figs.**

[52] U.S. Cl..... 128/269,
401/9, 401/47, 401/120

[51] Int. Cl. A61m35/00

[50] **Field of Search**..... 401/118,
120, 17, 18, 25, 34, 35; 15/257.05, 257.06;
128/260, 269, 272

ABSTRACT: A combined surgical preparation compartmentalized applicator tray feeding solution to and individually storing therein ready for use hand-gripped surgical preparation applicators. Each of the surgical applicators is flexibly constructed to be surface conforming to the body areas being prepared for surgery. Each applicator after use is disposable.

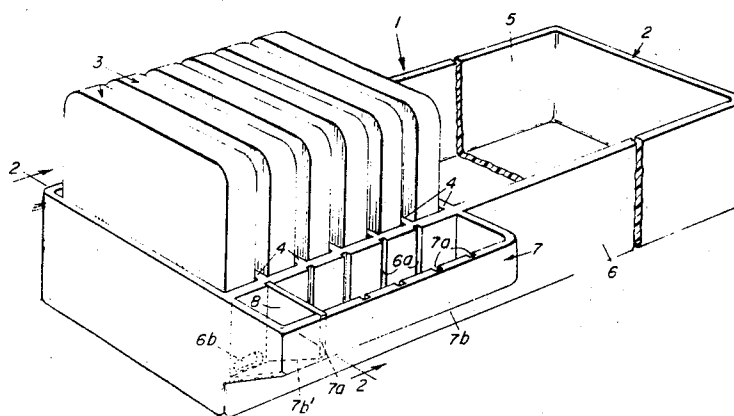


FIG. 1

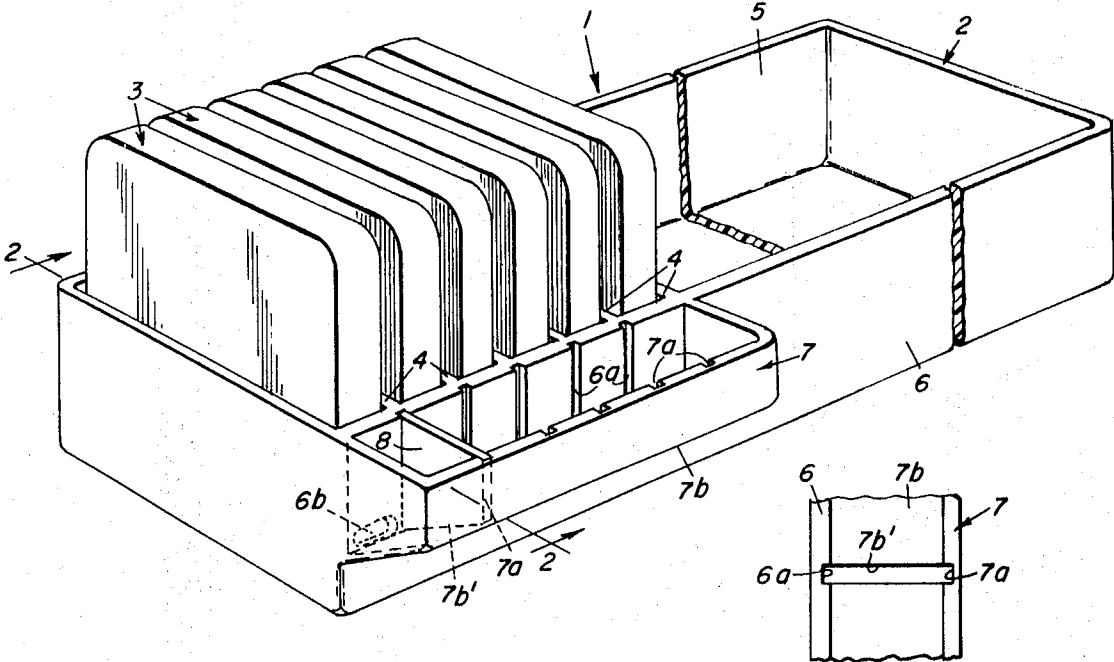


FIG. 3

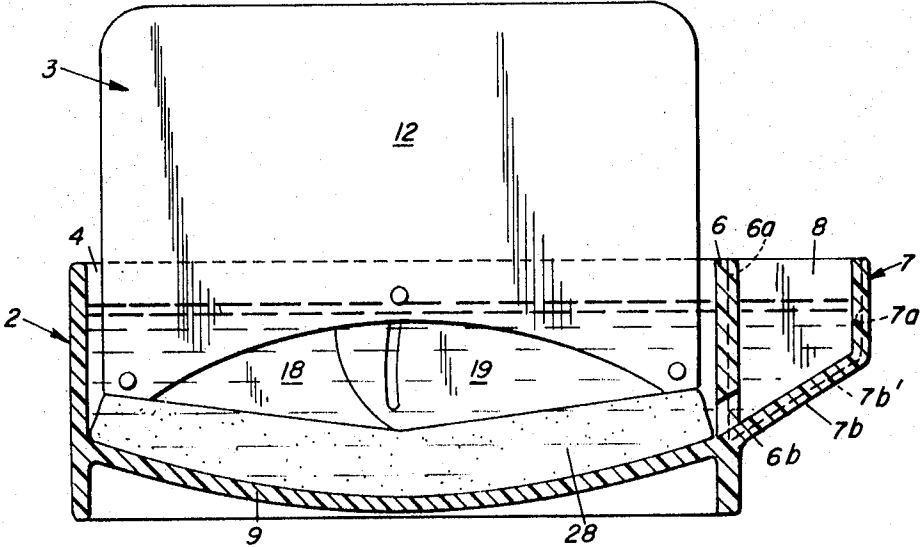


FIG. 2

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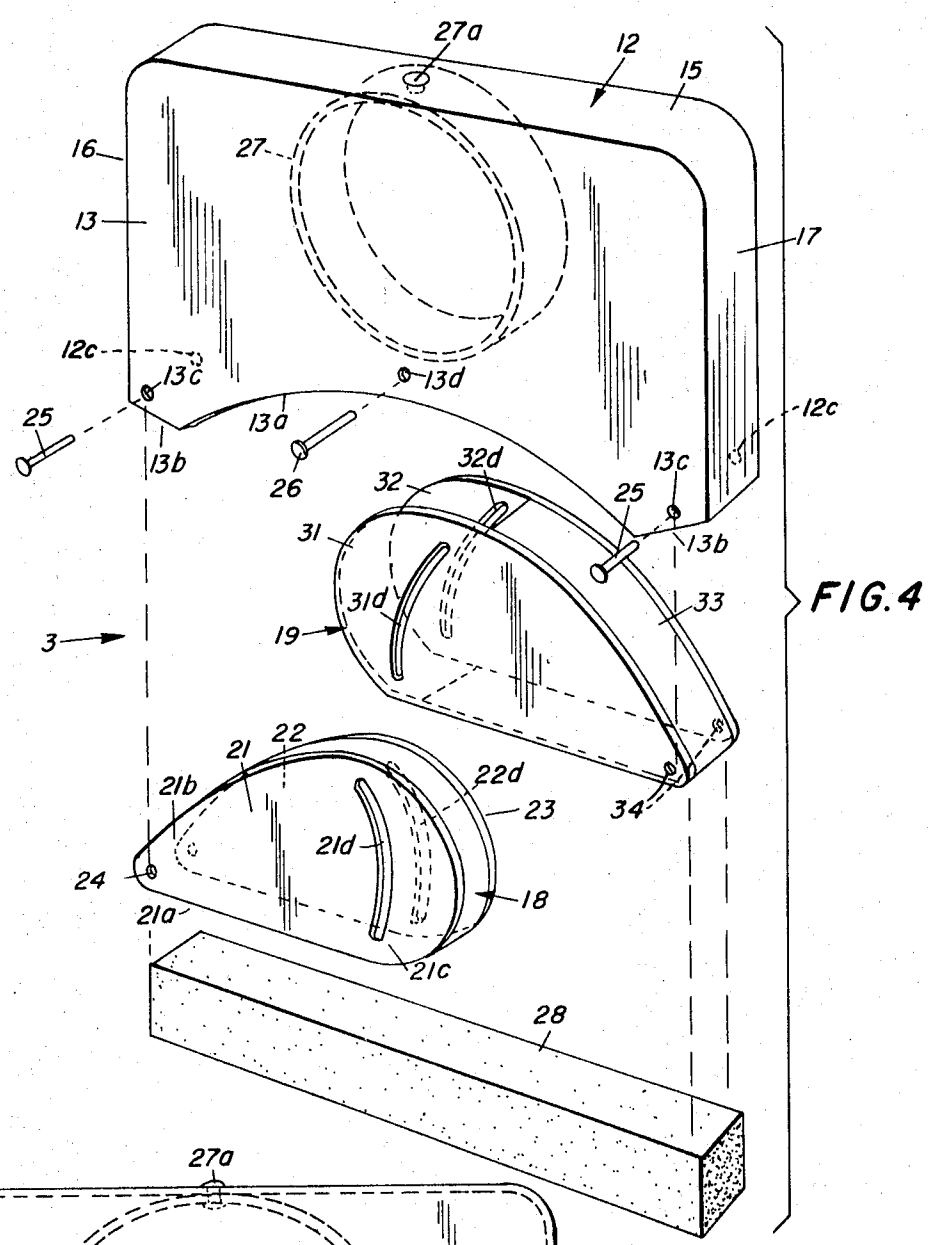


FIG. 4

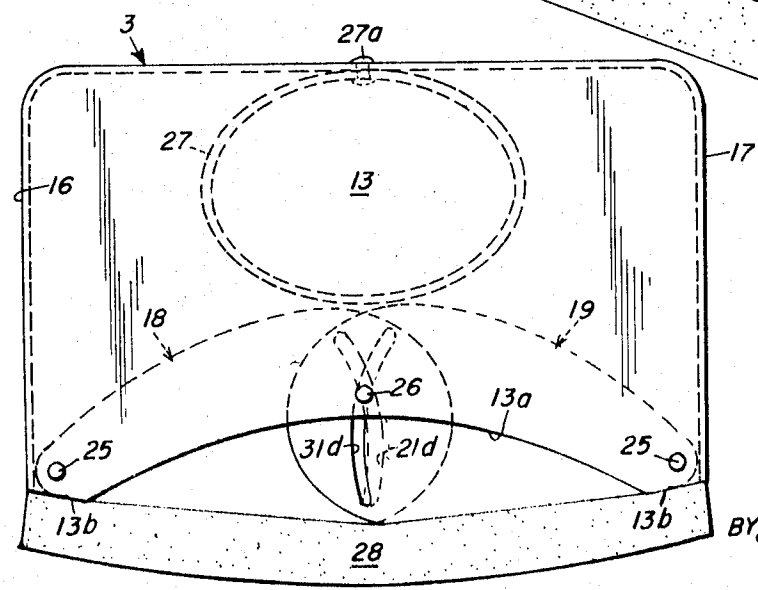


FIG. 5

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FIG. 6

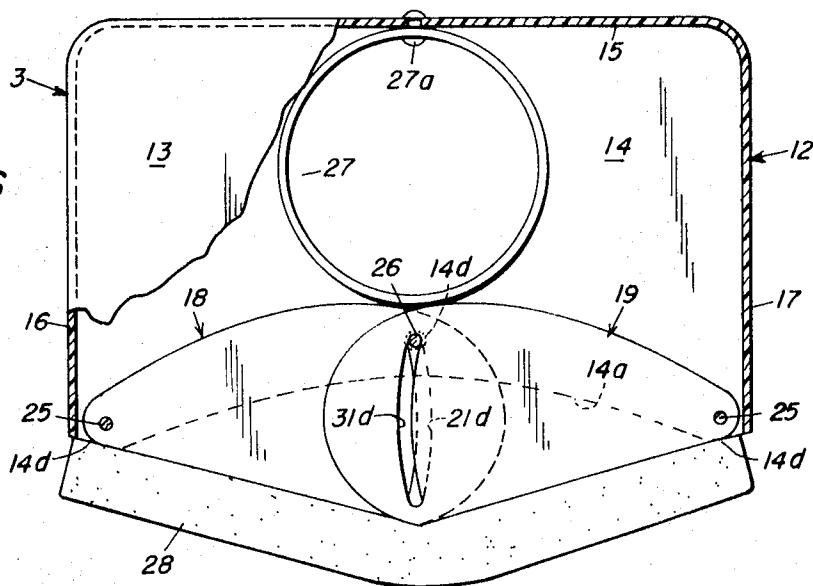


FIG. 7

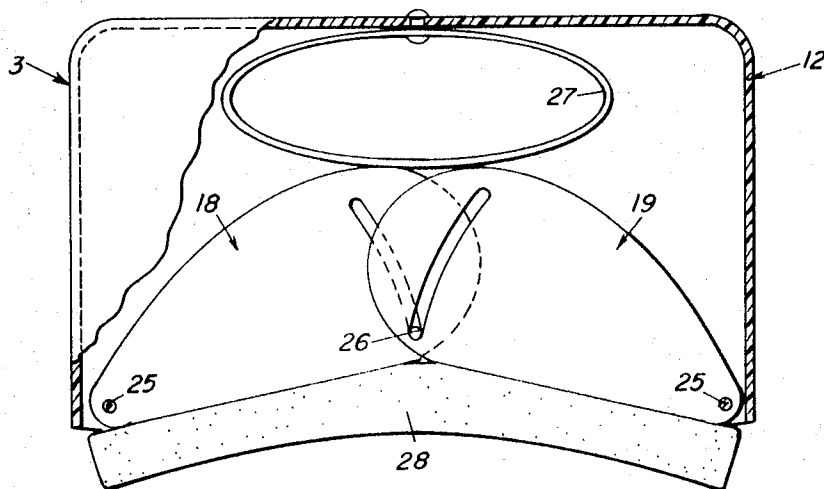


FIG. 8

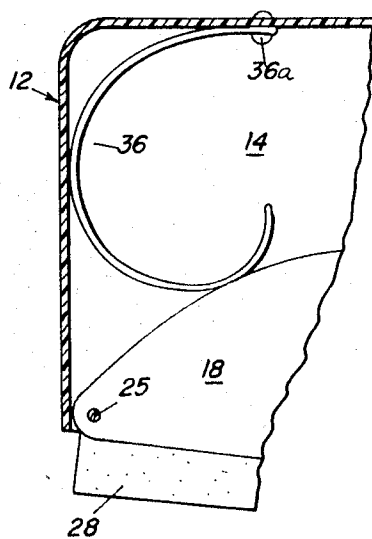
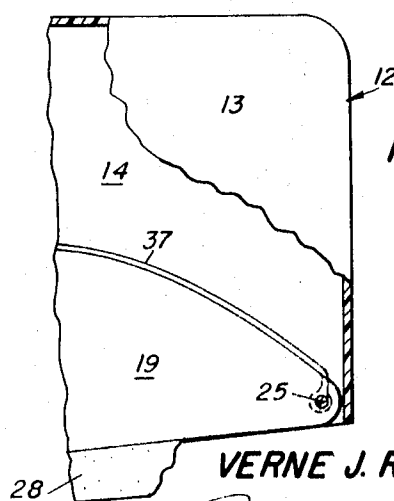


FIG. 9



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SURFACE-CONFORMING DISPOSABLE SURGICAL PREPARATION APPLICATOR AND TRAY THEREFOR

BACKGROUND OF THE INVENTION

1. Field of the Invention

The sponge is directed to surgical preparations equipment and implements for applying desired solutions to body parts being prepared for surgery.

2. The prior Art and Practices

Most surgical preparations of the surface being subjected to surgery are performed after the anesthesia is established. The method of preparation has been relatively unchanged for many years except to vary the solutions. The present methods are seen as wanting for real thoroughness. Whether the applications are gloved hand using gauze sponges, or by sponge forceps using cotton balls or gauze, the applicators do not fit the body contours nor do they have a smooth surface free of wrinkles, etc., with equal pressure at all points. The present methods are time consuming because of failure of the applicator to fit contours and make wide area applications. The present method is usually not a complete set up, but needs many steps and movements to set up in the operating or prep room.

SUMMARY OF THE INVENTION

It is an object of the invention to provide a solution dispenser tray with filling trough and separate compartments for storing and feeding solution to removable applicators having a yieldable dispensing solution carrier to conform to irregular surfaces to which solution is applied.

Another object of the invention is to provide a surface applicator that through varying pressure adjusts itself to flat; concave or convex surfaces with an approximate three to four inch evenly spread stroke.

For a more complete understanding of the nature and scope of the invention, reference is had to the drawings, the written description and the claims which follows.

In the drawings:

FIG. 1 is a perspective view of the solution tray and individual applicators stored therein;

FIG. 2 is a cross-sectional view of the tray and an applicator along line 2—2 of FIG. 1;

FIG. 3 is a top plan fragmentary view of the solution filling and feeding trough attached to one side of the tray;

FIG. 4 is a perspective exploded view of one of the applicators shown in FIG. 1;

FIG. 5 is a front elevational view of the applicator of FIG. 4 assembled;

FIG. 6 is a vertical view of the applicator in FIG. 5 with the front wall of the handle portion removed and the sponge portion in extended convex position with the biasing spring extended;

FIG. 7 is a view similar to FIG. 6 with the sponge portion pressed into a concave position with the biasing spring compressed;

FIG. 8 is a fragmentary side elevation showing another form of biasing spring; and

FIG. 9 is a further modified form that the biasing spring may take.

Throughout the description, like reference numbers refer to similar parts.

An assembly of a tray and applicator is shown at 1. The tray 2 is elongated and relatively shallow and carries the applicators generally indicated at 3.

The tray 2 has at one end spaced-apart transversely extending therethrough 4 that form individual compartments to receive the applicators 3. The other end or half of the tray at 5 is empty and provides a storage space for sterile gloves and instruments. The tray 2 may be molded of suitable plastic material and has an elongated sidewall which has a trough 7 extending therealong through the extend of the transverse partitions 4. The wall 6 has vertical slots 6a in the trough area and there are corresponding vertically extending slots 7a in the in-

side face of outer wall of the trough, and slots 7b' in the sloping bottom 7b of the trough. These slots receive removable partitions 8. The wall 6 of the tray has feed canals 6b therethrough leading from the trough 7 to the individual compartments in which the applicators 3 are stored. The various solutions as desired for the applicators are placed in the respective compartments of the trough 7 and feed through the canals 6b to the individual compartments in the tray 2. The bottom of the tray 2 has a concave surface 9 that conforms to the extended convex surface of the sponge portion of the applicators 3 to be described as they rest therein to absorb solution.

THE APPLICATOR

The applicator is generally indicated at 3 and it cooperates with the tray 2 for storing and receiving its charge of solution. The applicator is designed to be easily gripped by the hand of the user and to apply solution over an evenly spread stroke of 4 to 5 inches in width. It has pressure applied to the handle portion and the sponge portion conforms to the body areas covered. The hand grip on the applicator is at a good spaced relation away from the body portions being treated.

The applicator 3 has a hollow handle or hollow housing 12 of generally rectangular parallelepiped shape and open at its bottom edge. It has a front face 13 and a rear 14 with a top 15 and ends 16 and 17. It is about 4 to 4½ inches wide, about 2½ inches high and about three quarters inch thick. The lower edges 13a and 14a of the respective front and back are concave in shape with straight edge portions 13b and 14b at each end terminating at the sides 16 and 17. The handle 12 as well as the other parts may be made of plastic and the whole applicator is disposable after use.

Housed within the hollow handle 12 are two lever members 18 and 19. Lever member 18 is narrower and it fits within wider member 19.

Lever member 18 has a front 21 and a rear 22 spaced therefrom. The bottom of the front is straight and the left end, see FIG. 4, extends up to an acute angle 21b and curves in a convex manner while the right end extends up at an obtuse angle and curves back convexly to join the curved left-hand end. The back 22 is identically shaped to the front 21 and there is a peripheral wall joining the front 21 and back 22. A pivot-pin-receiving aperture 24 extends through the front 21 and back 22 in the left-hand end. An arcuate slot 21d is cut or formed in front 21 and a like slot 22d in alignment therewith is in the back 22. A pivot pin 25 extends through a pivot-receiving aperture 13c in the handle and passes through the pivot apertures 24 in lever 18 and on into the pivot-receiving aperture 12c in the back 14.

The other lever member 19 is like shaped to the lever member 18. It has a front 31 and a back 32 that are joined by a peripheral wall that extends at the bottom and along the top so that the end is left open in the lever to receive the other lever 18. Pivot apertures 34 receive another pivot pin 25 that passes through apertures 13c and 12c in the lower right-hand corner of the handle. Arcuate slots 31d and 32d are formed in the front 31 and back 32, respectively, of the lever 19. In assembled position, the arcuate slots have extending therethrough a common slot pin that is secured in apertures 13d and 14d in the handle 12.

In the form shown in FIGS. 4, 5, 6 and 7, a circular biasing spring 27 is housed within the hollow handle 12 where it is secured to the top 15 by a rivet 27a. This presses against the top walls of the levers 18 and 19 and biases them to downwardly pivoted position as shown in FIGS. 2, 5 and 6.

A sponge or foam rubber strip 28 that has high solution-absorbing properties is secured to the respective bottom portions of the peripheral walls of the levers 18 and 19 by suitable adhesive. This sponge or absorbing member assumes the convex position as shown in FIG. 2 in the housed position in the tray and butts the concave surface 9 in the tray bottom where it absorbs solution.

Various solutions may be selectively inserted in the respective divisions of the feed trough 7 and fed through the canals 6b to the individual compartments in the tray housing the respective applicators 3.

In FIG. 7, it will be observed that pressure has been applied to the handle 12 and the sponge portion 28 of the applicator has been pressed against a convex-shaped body portion (not shown) whereupon the sponge 28 assumes a concave-conforming shape through the pivoting of the respective levers 18 and 19.

In FIG. 8 a modified form of biasing spring 36 is illustrated which is of arcuate C-shape and is suspended from the inside top of the handle by a rivet 36a.

In FIG. 9, a still further type of biasing spring is shown as an electric band 37 that extends from one lever pivot pin 25 to the opposite pivot pin and rides against the top peripheral walls of the levers 18 and 19 urging them downwardly.

What is claimed is:

1. In combination,

a supporting base having an elongated tray portion with individual transversely extending solution-holding compartments open at their tops to receive individual solution applications for surgical preparation,

solution feed means portions for each respective compartment connected with the tray portion and communicating with and adapted to feed solution respectively to said individual compartments, and

at least one solution applicator for surgical preparation having a solution absorbing and dispensing means thereon received in an individual compartment of the tray and absorbing solution fed into the compartment of said tray, said solution absorbing and dispensing means on the applicator having yieldable support means allowing the absorbing and dispensing means to conform to the body surfaces being prepared for surgery and evenly apply thereto the carried solution.

2. Apparatus according to claim 1 wherein

said individual compartments in the tray portion have a bottom whose top surface is concave in cross section lying in the transversely extending direction of the compartment, said solution applicator has means biasing said solution absorbing and dispensing means into a convex position conforming to the concave bottom of said compartment in which it is stored and replenished with solution, said absorbing and dispensing means conforming to the body surfaces to which applied as pressure is applied thereto against said biasing means.

3. Apparatus according to claim 1 wherein

said elongated tray portion has a vertical wall extending in its elongated direction,

said solution feed means portion is positioned along said elongated vertical wall and comprises a trough open at the top and having an upwardly and outwardly extending bottom connecting at its outer edge with a vertically extending wall,

said elongated wall of the tray portion having canal openings therethrough extending from the trough to the individual compartment for feeding solution from the trough to the compartments.

4. In combination,

a supporting base having an elongated tray portion with individual transversely extending compartments open at their tops to receive individual solution applicators for surgical preparation,

a solution feed means portion connected with the tray portion and communicating with and adapted to feed solution to said individual compartments, and

at least one solution applicator for surgical preparation having a solution absorbing and dispensing means thereon received in an individual compartment of the tray and absorbing solution fed into the compartment of said tray, said solution absorbing and dispensing means on the applicator being adapted to conform to the body surfaces

being prepared for surgery and evenly apply thereto the carried solution,

said individual compartments in the tray portion having a bottom whose top surface is concave in cross section lying in the transversely extending direction of the compartment,

said solution applicator having means biasing said solution absorbing and dispensing means into a convex position conforming to the concave bottom of said compartment in which is stored and replenished with solution, said absorbing and dispensing means conforming to the body surfaces to which applied as pressure is applied thereto against said biasing means.

5. Apparatus according to claim 4 wherein

said solution applicator has a hollow handle portion open at its bottom,

said means biasing said solution absorbing and dispensing means comprising a pair of lever members mounted in said hollow handle adjacent said open bottom and a spring housed in the handle and pressing against said pivoted lever members tending to urge them outwardly through the open bottom,

said solution absorbing and dispensing means being a spongelike member attached to the protruding bottoms of said lever members.

6. Apparatus according to claim 5 wherein

said hollow handle has the general shape of a rectangular parallelepiped with a top, two ends, a front and a back, said front and back having a concave lower ledge for accommodating the levers and the solution absorbing and dispensing means when it is pressed into a concave position against the action of said biasing spring.

7. Apparatus according to claim 6 wherein said biasing spring is circular and is attached to the inside of said top of the hollow handle.

8. Apparatus according to claim 6 wherein said biasing spring comprises a pair of C-shaped springs each attached to the top of the hollow handle and respectively pressing against said levers.

9. Apparatus according to claim 6 wherein said biasing spring is an elastic band extending over the pivoted levers within the hollow handle and is attached to the outer pivoted ends of each lever urging the levers downwardly.

10. In combination,

a supporting base having an elongated tray portion with individual transversely extending compartments open at their tops to receive individual solution applicators for surgical preparation,

a solution feed means portion connected with the tray portion and communicating with and adapted to feed solution to said individual compartments, and

at least one solution applicator for surgical preparation having a solution absorbing and dispensing means thereon received in an individual compartment of the tray and absorbing solution fed into the compartment of said tray,

said solution absorbing and dispensing means on the applicator being adapted to conform to the body surfaces being prepared for surgery and evenly apply thereto the carried solution,

said elongated tray portion having a vertical wall extending in its elongated direction,

said solution feed means portion is positioned along said elongated vertical wall and comprises a trough open at its top and having an upwardly and outwardly extending bottom connected at its outer edge with a vertically extending wall,

said elongated wall of the tray portion having canal openings therethrough extending from the trough to the individual compartments for feeding solution from the trough to the compartments,

said elongated wall of the tray portion having vertically extending slots spaced therealong in alignment with the individual compartments in the tray portion,

said trough bottom and wall has slots therein in alignment with said slots in the tray portion wall, and removable partitions received in said slots so that compartments are formed in the trough corresponding to the individual compartments in the tray portion to receive solution and feed it therefrom.

11. An apparatus according to claim 10 wherein said elongated tray portion has said individual compartments in about half of its length and the remaining part of the tray portion serves as a receptacle for surgical gloves, instruments and the like.

12. In combination,

a supporting base having an elongated tray portion with individual transversely extending compartments open at their tops to receive individual solution applicators for surgical preparation,

a solution feed means portion connected with the tray portion and communicating with and adapted to feed solution to said individual compartments, and

at least one solution applicator for surgical preparation having a solution absorbing and dispensing means thereon received in an individual compartment of the tray and absorbing solution fed into the compartment of said tray,

said solution absorbing and dispensing means on the applicator being adapted to conform to the body surfaces being prepared for surgery and evenly apply thereto the

carried solution,

said elongated tray portion having a vertical wall extending in its elongated direction,

said solution feed means portion is positioned along said elongated vertical wall and comprises a trough open at its top and having an upwardly and outwardly extending bottom connected at its outer edge with a vertically extending wall,

said elongated wall of the tray portion having canal openings therethrough extending from the trough to the individual compartments for feeding solution from the trough to the compartments,

said elongated wall of the tray portion having vertically extending mounting means for removable partitions spaced therealong in alignment with the individual compartments in the tray portion,

said trough bottom and wall also having mounting means spaced therealong for receiving the removable partitions, and

removable partitions received in said mounting means therefor in the trough so that compartments are formed in the trough corresponding to the individual compartments in the tray portion to receive solution and feed it therefrom.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,613,685 Dated October 19, 1971

Inventor(s) VERNE J. REYNOLDS

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Claim 1, line 5, "applications" should be "applicators".

Signed and sealed this 21st day of March 1972.

(SEAL)

Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents