

Nov. 19, 1963

E. M. WARREN
SURGICAL CLIP APPLIER
Filed April 12, 1962

3,110,899

Fig. 1.

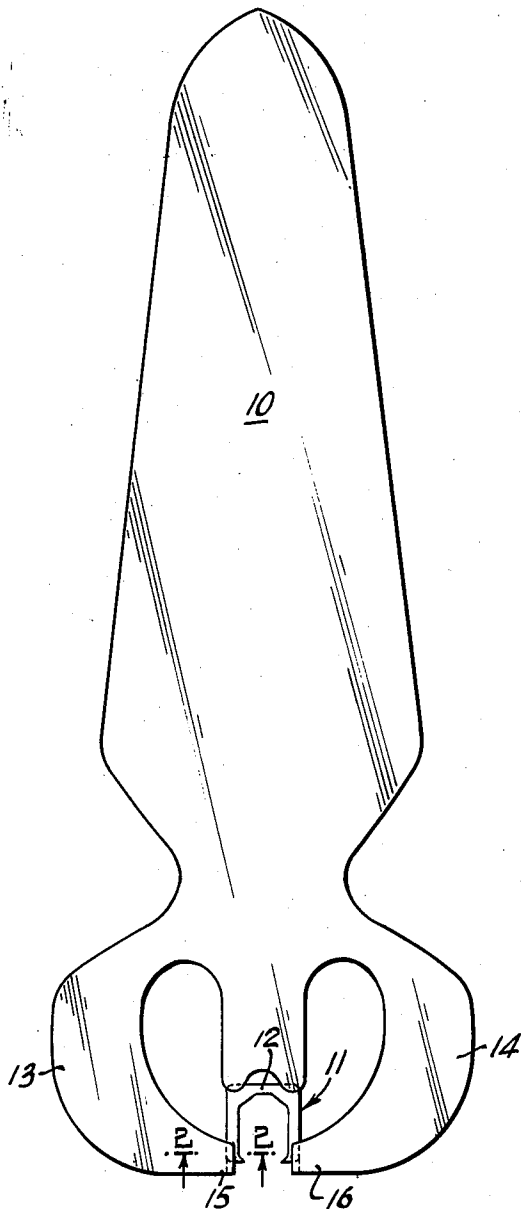


Fig. 2.

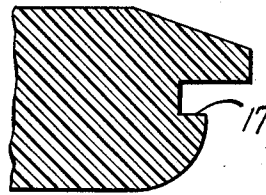


Fig. 3.



Fig. 4.

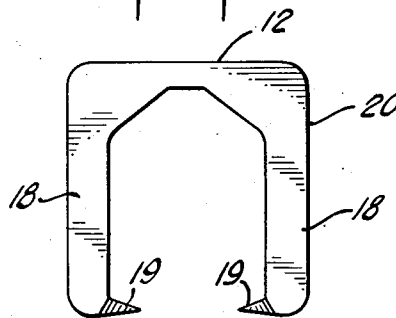
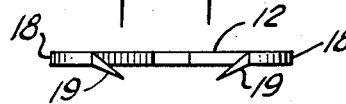


Fig. 5.



INVENTOR.
EVERETT MILO WARREN
BY *Robert W. Kell*
ATTORNEY

1

3,110,899

SURGICAL CLIP APPLIER

Everett Milo Warren, Meadville, Pa., assignor to

Ethicon, Inc., a corporation of New Jersey

Filed Apr. 12, 1962, Ser. No. 187,038

2 Claims. (Cl. 1—349)

This invention relates to a simplified instrument for applying clips to the surface of a wound whereby the separated edges of skin are drawn together and retained in an abutting position until healing can take place.

In the practice of medicine cuts in the skin, whether caused by accident or surgical incision, are closed by drawing together the cut edges of skin and holding them together until healing takes place. For many years this was accomplished by suturing with thread, such as cotton or silk. More recently, skin clips of metal have been applied to surface wounds with excellent results as such clips may be rapidly applied and will hold the cut sections together until healing takes place. The metal clips may then be easily removed and since such clips do not penetrate far below the surface of the skin, the discomfort to the patient is less than that caused by withdrawing thread.

It is an object of the present invention to provide an exceedingly simple suturing instrument that may be individually packaged and readily retained in a sterile condition until required for use.

Another object of the present invention is to provide an instrument for applying clips to close a wound, so inexpensive that it may be used once and then discarded.

These and numerous other objects and advantages of the invention will become apparent from the following detailed description of a preferred form thereof, and from an inspection of the accompanying drawings in which:

FIG. 1 is an enlarged plan view of a preferred form of skin clip applicator showing a skin clip in place.

FIG. 2 is a cross section through the jaw of the applicator along the line 2—2 of FIG. 1.

FIG. 3 is an enlarged end view of the applicator of FIG. 1.

FIG. 4 is an enlarged plan view of a sheet metal clip that is applied by the instrument.

FIG. 5 is an enlarged end view of a sheet metal clip.

Referring now to the drawings and particularly to FIG. 1 thereof, the numeral 10 indicates generally an elongated body that is preferably molded of a thermoplastic material. The body is recessed at one end 11 to receive and support the rear edge 12 of a clip which may be made of sheet metal. Integral with the elongated body 10 are the arms 13 and 14 which extend outwardly beyond the recessed end 11 and terminate in jaws 15 and 16. These jaws are recessed to form seats 17, as best shown in FIG. 2, that receive the front edge 18 of the skin clip. The thickness and width of the arms 13 and 14 are such that they will yield under pressure and bend the forward edges 18 of the clip inwardly when it is desired to apply the clip. The jaws 15 and 16 are positioned to bracket the clip and hold it securely in position against the recessed end 11.

An important feature to the understanding of the present invention resides in the clips that are used with the

2

applicator 10. As seen in FIGURES 4 and 5, the clip may be formed of sheet material, preferably metal, and in this particular embodiment the body of the clip is planar and generally U-shaped, with a rear bail portion 12 and forwardly extending leg portion 20. A pair of pointed tines 19 are inclined downward and toward each other from the front edge 18 of each clip. The center of the rear edge 12 is reduced in cross section. With this arrangement pressure on the sides of the clip by the jaws 15 and 16 sufficient to bend the leg portions 20 will cause the tines 19 to move toward each other. When the clip is pressed onto a wound, pressure on the front edges 18 of the clip causes the tines to penetrate the skin to bring the margins together.

The instrument of the present invention may be assembled with a single skin clip in place as illustrated in FIG. 1. Lateral movement of the clip is prevented by the shoulder 17 in the jaws 15 and 16. Vertical movement of the clip is prevented by the shoulders 11 and 17. Longitudinal movement of the clip is restricted in one direction by the end 11 of the instrument but is not so restricted in the opposite direction. This permits the clip to separate easily from the instrument after it has been applied to the wound.

The instrument with a clip in place may be sterilized either before or after packaging. It is most convenient to seal each skin clip and applicator in an individual package as the entire unit will then remain sterile until the package is opened just prior to use.

In applying a skin clip to close a wound, the instrument is placed against the wound with the points 19 of the clips properly positioned. Then pressure is exerted against the arms 13 and 14 in a direction to force the jaws 15 and 16 toward each other bending the legs 20 of the clip. The points 19 which are downwardly inclined and which extend toward each other penetrate the skin around the wound. Then when pressure on the arms 13 and 14 is removed, the jaws 15 and 16 move apart due to the resilience of the material of which the instrument is constructed. This leaves the clip embedded in the skin to hold the wound margins together, and the instrument may easily be withdrawn from the clip.

The fact that the points 19 of the clip are downwardly inclined from the body of the clip and the instrument, see FIGURES 3 and 5, is important because when the instrument is used to applying clips to the wound, the instrument need only be held at a comparatively small angle with the surface of the wound. This substantially eliminates pressure on the wound which might otherwise be necessary if the points were generally in the plane of the body of the instrument so that the instrument would have to be applied to the wound at a substantial angle, e.g., in excess of 45°.

The invention may be embodied in other forms without departing from the spirit or essential characteristics thereof as set forth in the claims. The present embodiment is therefore to be considered as illustrative and not restrictive, and it is intended to include all changes which come within the scope and range of the claims.

What is claimed is:

1. An instrument for applying clips comprising an elongated body recessed at one end to receive and support the rear edge of a sheet metal clip; yieldable arms extending divergently outwardly beyond said recessed end;

3

inturned jaws formed at the forward ends of said arms and normally positioned to bracket the ends of said clip, said jaws having seats for receiving and supporting the front edge of said clip; and said jaws being movable inwardly upon compression of said arms thereby applying the clip.

2. An instrument for applying clips of U-shape having a rear bail portion and a pair of spaced parallel side arms extending forwardly from said bail with spicules extending inwardly and downwardly from the forward

4

edge portion of the spaced parallel side arms, said instrument comprising an elongated body, one end of said body engaging and slidably supporting the rear bail portion of a clip, and means for retaining the clip including jaws integral with said body and extending beyond said end a distance substantially equal to the length of a clip to receive and support the forward edge portion of the spaced parallel arms of said clip.

No references cited.