# United States Patent

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[54] **SURGICAL CLAMP**
**3 Claims, 3 Drawing Figs.**


[52] **U.S. Cl.** ..... **128/337,** 24/263, 128/346
[51] **Int. Cl.** ..... **A61b 17/08**
[50] **Field of Search** ..... 128/337, 335, 330, 346; 46/23, 24, 25, 26, 27, 28, 31; 24/87, 263 PJ, 20 TT, 263 FC



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**ABSTRACT:** An adjustable clamp comprising a pair of substantially U-shaped clamp members having the edge of one leg formed with serrations and a continuous longitudinal groove formed in the other leg, a connector extending between the clamp members into the grooves and continuous longitudinal teeth formed on surfaces of the grooves and on surfaces of the connector to hold the clamp members in the desired position.

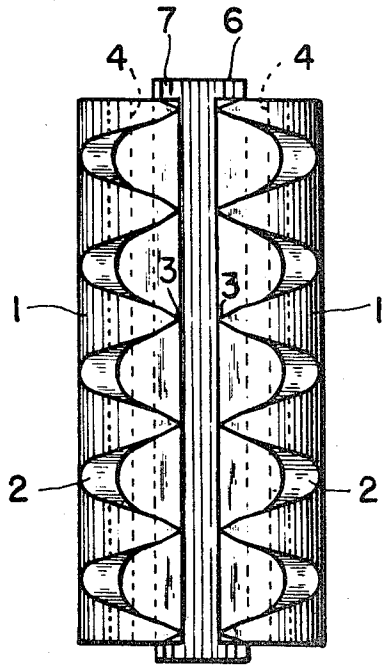
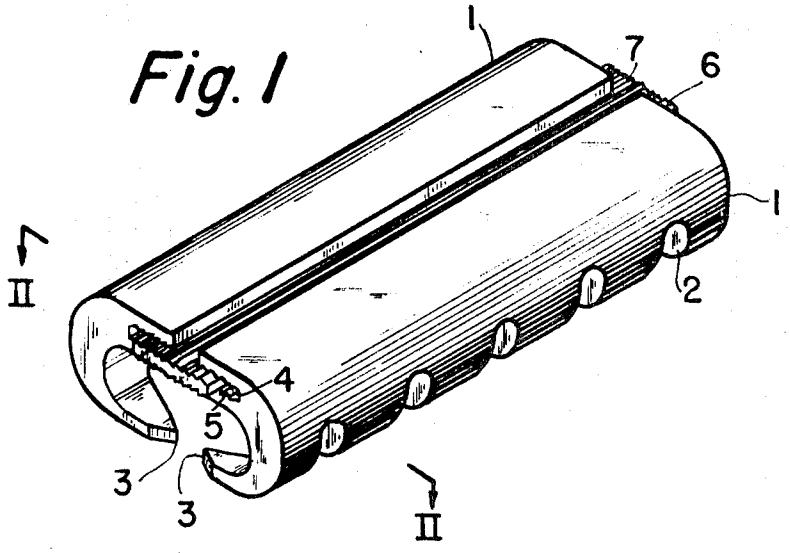



Fig. 1



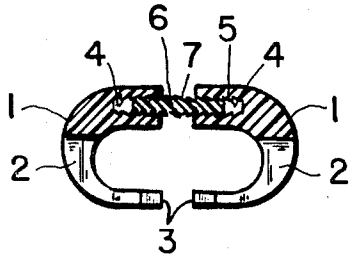




Fig. 2

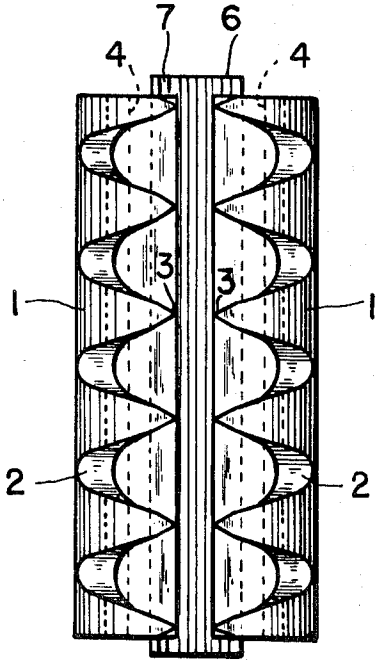



Fig. 3

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## SURGICAL CLAMP

This invention relates to a surgical clamp and more particularly to an adjustable clamp for rapidly closing wounds without the use of sutures.

An important consideration in both surgery and emergency work is the element of time since it is desirable that a wound be closed as rapidly as possible. Additionally, the wound must be closed completely and efficiently so that it will heal properly. Normally, wounds are closed with sutures although occasionally some type of metal clamp is used.

My invention provides an adjustable clamp which is easily and quickly closed with only one hand and may be rapidly applied to close a wound. The clamp may also be easily and quickly removed from a wound. Additionally, the clamp is inexpensive and may be discarded after use. The clamp is made of a plastic material so that it may be readily cut to various lengths depending upon the size of the wound to be closed. Furthermore, by using my novel clamp, it is possible to close wounds in an emergency room without the use of either a local anesthetic or a dressing.

In the accompanying drawings, I have shown a preferred embodiment of my invention in which:

FIG. 1 is an isometric view of the clamp in a partially closed position;

FIG. 2 is a section on line II—II of FIG. 1; and

FIG. 3 is a bottom view of the clamp shown in FIG. 1.

Referring to the drawings, it will be seen that my novel clamp includes a pair of substantially U-shaped clamp members 1. The edge of one leg of each clamp member is formed with a plurality of serrations 2 extending along its length, and the outer portion of each serration is formed with points 3 for contact with the skin on opposite sides of a wound. Since these surfaces contact the skin on opposite sides of the wound, they are pointed so that they will puncture the skin upon application of sufficient force, if such is desired. The center lines of each point 3 should be spaced at least about 7 or 8 millimeters along the edges of the clamp members since if they are too close together, the blood supply to the edges of the wound will be cut off, and hence, the wound will not heal properly. Alternatively, the center lines of points 3 must not be too far apart or the skin at the edges of the would will not be held firmly in place along the length of the wound. A maximum spacing of about 12 millimeters is desirable.

Each clamp member 1 is also formed with a continuous groove 4 extending along the length of the leg opposite to the leg formed with the serrations. The grooves have longitudinal teeth 5 formed in their parallel surfaces. The teeth in each groove have a straight face and an angular face, and the angular faces are directed away from the open end of the groove toward the base of the groove for a reason to be described hereinafter.

A connector 6 extends between clamp members 1 and fits into grooves 4. The connector is formed with longitudinally extending teeth 7 which have a straight face and an angular face, and the angular faces are directed opposite directions on opposite sides of the longitudinal center line of the connector toward the longitudinal edges of the connector. The teeth 7 are directed in the same direction as teeth 5 within the grooves for cooperation with the teeth in the manner shown in FIGS. 1 and 2. As a result of the direction of teeth 4 and 7, the straight faces of the teeth cooperate to hold clamp members 1 in the desired position on connector 6.

When the clamp is initially assembled, the two clamp members are fitted onto the connector at the outer edges of the connector so that teeth 5 of the clamp members engage with teeth 7 along the edge of the connector. When the clamp is to be closed, it is placed upon the skin in a manner so that points 3 are on opposite sides of the wound and clamp members 1 are



squeezed together. As members 1 are squeezed together, teeth 5 and 7 cooperate so that the clamp members are maintained at the desired spacing for closing the wound and cannot be forced apart. When removal of the clamp is desired, the connector 6 is withdrawn longitudinally from grooves 4 and clamp members 1 are lifted from the wound edges.

Clamp members 1 and connector 6 of my clamp are made of a plastic material, and any plastic may be used so long as it is sufficiently rigid to maintain force on the skin on opposite sides of the wound and yet sufficiently resilient to exert a springlike action on the skin adjacent to the sound. Additionally, it is important that the plastic be soft enough to permit the assembled clamp to be cut without excessive force so that it can be cut to the length necessary for the wound being repaired. My clamp may be made in any reasonable length, but I have found that approximately 6 to 8 inches is sufficiently long to close most wounds. While I prefer to make the elements of my clamp from plastic, it will be apparent to those skilled in the art that metal may also be used so long as it has the characteristics set forth above for a plastic clamp. A metal clamp may be scored at increments to facilitate cutting to the desired length.

In operation, the edges of the wound are held together by a surgical instrument, and the clamp is placed over the wound in the open or spread position so that the contact points lie on opposite sides of the wound. Then with the wound held together, the clamp members 1 are squeezed together until the contact points firmly hold the skin together along the edges of the wound. Upon release of clamp members 1, they will not separate because teeth 5 and 7 cooperate to maintain members 1 in position. To remove the clamp the connector is moved longitudinally until its end is clear of clamp members 1.

The clamp of my invention has numerous advantages including a considerable saving of time in application and removal and is easy to operate. Additionally, since the clamp is made of inexpensive plastic material, it is disposable when its use is completed and may also be easily cut to the length necessary to close wounds of different lengths. Another advantage of my clamp is that there is no glove damage to surgeons as often takes place with metal clamps or normal suture procedures. Furthermore, the utilization of my clamp makes it unnecessary to locally anesthetize wounds of a minor nature and in emergency situations.

While I have shown and described a preferred embodiment of my invention, it should be understood that it may be otherwise embodied within the scope of the appended claims.

I claim:

1. A surgical clamp comprising two substantially U-shaped clamp members, each of said clamp members having a plurality of serrations formed along the edge of one leg to define contact points and a continuous longitudinal groove formed in the other leg, a plurality of teeth formed in the parallel surfaces of each of said grooves; a connector extending between said U-shaped members into said grooves, and a plurality of longitudinally extending teeth formed on the surfaces of said connector for cooperation with the teeth in said grooves, whereby said teeth on said connector cooperate with said teeth in said grooves to hold said U-shaped clamp members in a desired position relative to each other.

2. A surgical clamp as set forth in claim 1 wherein the center lines of adjacent contact points are spaced at least about 7 mm.

3. A surgical clamp as set forth in claim 1 wherein said teeth in said grooves have a straight face and an angular face directed away from the open end of the grooves and said teeth on said connector have a straight face and an angular face directed in opposite directions on opposite sides of the centerline of said connector toward the longitudinal edges of said connector.