

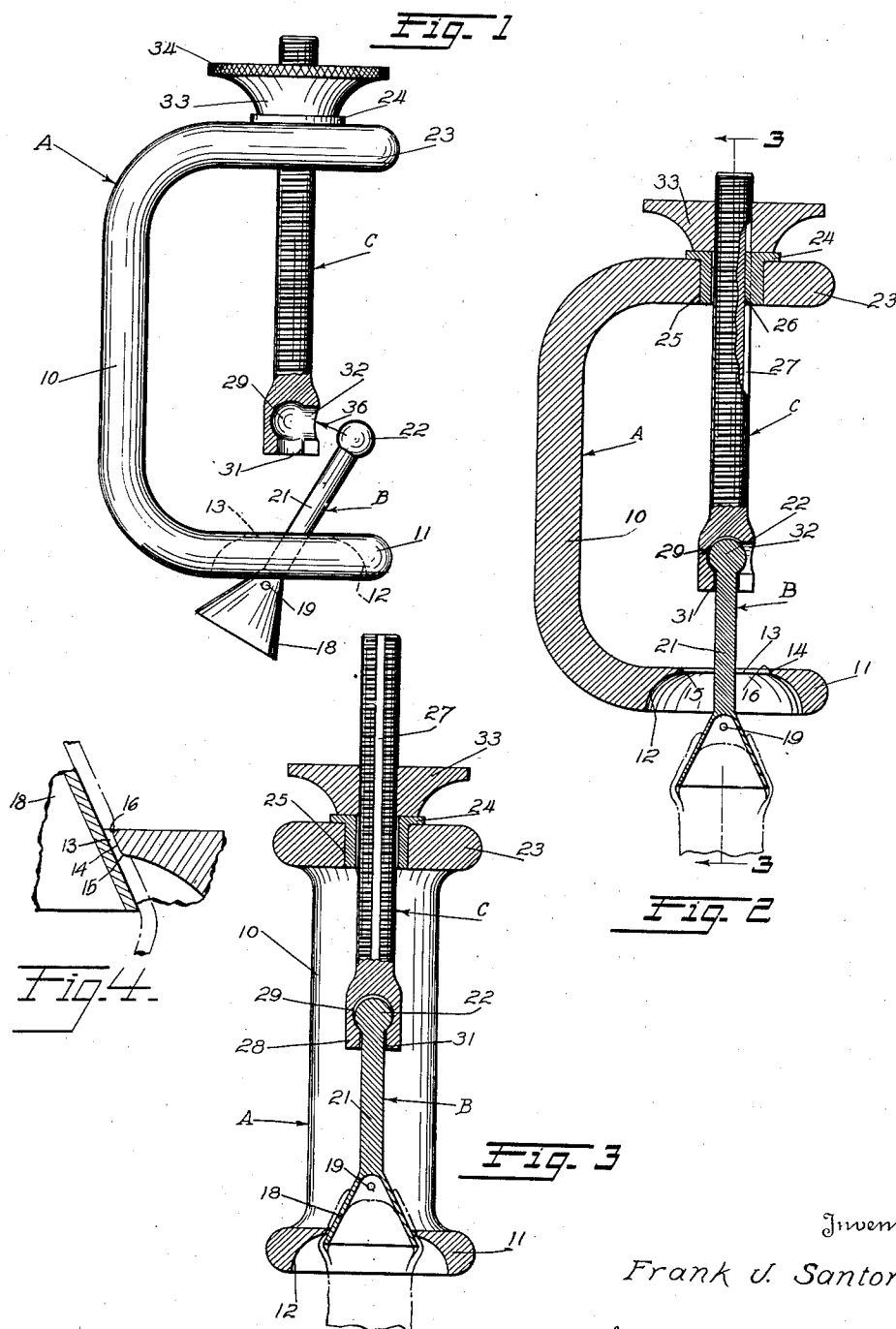
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SURGICAL INSTRUMENT

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SURGICAL INSTRUMENT

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The present invention relates to surgical instruments and more particularly instruments for use in performing circumcisions.

Although at least one instrument for this purpose has been heretofore proposed, it is not satisfactory and has not gone into general use because it is a heavy, cumbersome device, which is difficult to manipulate, is of complicated design and is not capable of achieving a neat clean circumcison.

It is accordingly the major object of this invention to provide a novel circumcison instrument which embodies no rocking parts, is of simple and durable design, is easy to manipulate and enables a neat and clean circumcison to be effected.

A further important object is to provide a novel circumcison instrument which will firmly and uniformly apply a clamping pressure to a definite circumferential area of the prepuce of sufficient magnitude to permit a clean cut to be made and to enable haemostasis to be readily controlled, and yet which will not subject the prepuce to a rupturing action.

A further object is to provide a circumcison instrument embodying a rigid body member, clamp means cooperating with the body member, and means for directly applying a clamping force to the clamp means acting in a straight line, so as to effect an even and uniform clamping action.

Another object is to provide a novel circumcison instrument of simple durable construction, embodying a coupling permitting it to be readily disassembled for cleaning and sterilizing, the coupling also functioning as a universal joint for permitting the clamping member to undergo a self-aligning action in use.

Further objects will become apparent as the specification proceeds in connection with the annexed drawing, and from the appended claims.

In the drawing:

Figure 1 is a side elevational view of an instrument embodying my invention, the clamping member being shown as it appears just prior to assembly with the traction member.

Figure 2 is a vertical sectional view showing the instrument of Figure 1 in assembled condition.

Figure 3 is a view taken substantially along the line 3—3 of Figure 2, but shows the parts in a slightly different relationship.

Figure 4 is an enlarged sectional view of a portion of the lower part of the instrument.

With continued reference to the drawing, wherein like reference characters have been em-

ployed to designate like parts throughout the several views thereof, my device comprises a comparatively rigid body member A, which has a central portion 10 forming a hand-grip portion and adapted to be grasped by the hand of the operator.

Referring to Figure 3, member 10 is provided with an arm 11 which projects from one side thereof and a recess 12 is formed in its lower side. A preferably circular opening 13 is formed in arm 11 and it is provided with a frusto-conical wall 14. The latter constitutes a clamping edge or seat and merges into recess 12 along a curved surface 15 and merges into the upper surface of arm 11 along a curved surface 16. Rounded or curved surfaces are preferably provided at these points to avoid rupturing or severing the prepuce when it is gripped or clamped against surface 14 by the means to be now described.

A clamp member B cooperates with clamping surface 14 and it may be made of any suitable material, such as "Duralumin," stainless steel, Bakelite, hard rubber or the like. The lower end 18 of member B is hollow and is formed as the frustum of a cone. The outer surface of member 18 is preferably formed with the same inclination as surface 14, so that when they are brought into clamping engagement with the prepuce the latter will be engaged by parallel walls and rupture or cutting thereof is avoided. Rounded edges 15 and 16 also assist in achieving a firm but non-tearing clamping action. Cup 18 is also preferably provided with a pair of apertures 19 adjacent the small end thereof, which serve to carry away any blood that may develop within the cup during the operation.

The central or stem portion 21 of the clamp member terminates in a ball-shaped end 22, which is detachably secured to a traction or force applying member C.

I preferably employ a traction member which directly applies forces to the clamp in a rectilinear direction, or in other words subjects the clamp member to a "straight pull," so that it will evenly and uniformly grip the prepuce and maintain it under a uniform pressure throughout the operation.

To this end, an arm 23 is provided on member 10 and a bushing or bearing member 24 is frictionally fitted or otherwise secured in an aperture 25 in arm 23. Member C is threaded the greater part of its length and is slidably guided in bushing 24 for movement toward and away from arm 11. Rotation of member C is prevented by means of a key 26 provided on bushing

24, which slidably cooperates with a keyway 27 in member C.

The lower end of member C is provided with an enlargement 28 in which a recess 29 is formed of a size to receive head 22 of clamp member B. A second recess 31, of a size to receive stem 21, and a third recess 32, of a size to receive head 22, communicate with recess 29 and extend transversely of member C, so that the clamp member may be readily detached from the traction member by moving it forwardly, so as to withdraw head 22 from socket 29.

When the parts are assembled as seen in Figure 3, clamping pressure is applied by turning a thumb-nut 33, which bears against bushing 24 and is knurled at 34 to facilitate turning it.

The instrument is preferably manipulated as follows: Clamp member B is uncoupled from the traction member and cup portion 18 is applied over the glans penis, the prepuce being fitted over the outside of the cup portion, as illustrated in phantom lines in Figures 2 and 3. The parts are then brought into the relationship shown in Figure 1 and clamp member B is rocked relatively to the body member in the direction indicated by the arrow 36 in that figure to bring head 22 into socket 29. When this operation is completed the parts appear as seen in Figure 2. Since key 26 and keyway 27 constantly maintain the traction member with recess 32 facing forwardly, as shown in Figures 1 and 2, the coupling operation may be effected in a minimum time.

With the parts in the position shown in Figure 2, as just described, nut 33 is turned to force traction member C, and its coupled clamp member B, upwardly into the relationship shown in Figure 3, with the prepuce firmly clamped between the external wall of the cup and clamping seat 14. It should be observed that this operation results in a straight pull being applied to the clamp member, and as the latter is directly aligned with the clamping seat pressure is uniformly applied around the entire clamped area of the prepuce, and there is no tendency for the parts to move into misalignment or apply a greater pressure at one point than another. The connection between the traction and clamp members also functions as a universal joint, so as to allow the clamp member to automatically move into a uniform pressure-applying position with respect to the body member.

Therefore, with the parts in the position shown in Figure 3 as just described, the prepuce is firmly clamped and may be cut off flush with the upper surface of arm 11, using rounded surface 16 as a cutting guide. Any blood finding its way inside the cup is drained away through openings 19, which also serve to avoid pressure or suction effects incident to applying or removing the cup. I have discovered that if the clamp is removed three to five minutes after the prepuce is cut off haemostasis occurs, the use of suture material is avoided and the wound heals cleanly and rapidly.

The device may be readily disassembled for cleaning and sterilizing by removing clamp member B as previously described, and, if desired, the traction member may be removed from the body member by threading off nut 33, and withdrawing it through opening 13. It is to be understood that the device is made in a convenient size or sizes, to suit the particular needs.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present

embodiment is therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

What is claimed and desired to be secured by United States Letters Patent is:

1. In a surgical instrument, a body member having a pair of spaced substantially parallel arms projecting to one side thereof; one of said arms having an opening providing a clamping seat; a clamping element extending through said opening and having a portion cooperating with said clamping seat; and means cooperating with the other arm of said body member for pulling said clamping element rectilinearly in such direction as to draw the clamping portion thereof evenly toward said clamping seat, said means comprising a threaded member projecting through an aperture in the other arm of said body member; means for coupling said threaded member to said clamping element; and a nut threaded on said threaded member.

2. In a surgical instrument, a body member having a central hand-grip portion of a length sufficient to enable it to be firmly gripped by an operator; said member also having an arm portion rigidly supported at each end of said hand-grip portion, said arm portions being substantially parallel to each other and each being disposed substantially normal to said hand-grip portion; one of said arm portions having an opening therein providing a clamping seat; a clamp element cooperating with said seat and having a stem projecting through said opening; said other arm portion having an aperture therein; a threaded member extending through said aperture, means for detachably coupling said threaded member to said stem, comprising an enlargement on the end of said stem and a socket provided in said threaded member for receiving said enlargement; means threaded upon said threaded member for urging the latter away from said first arm portion and urging said clamp element toward said seat, said enlargement and recess forming a ball-and-socket joint; whereby said clamp element may automatically center itself with respect to said seat.

3. In a surgical instrument, a body member having a central hand-grip portion of a length sufficient to enable it to be firmly gripped by an operator; said member also having an arm portion rigidly supported at each end of said hand-grip portion, said arm portions being substantially parallel to each other and each being disposed substantially normal to said hand-grip portion; one of said arm portions having a circular opening therein and a concave depression aligned with the axis of the opening, said depression facing away from said other arm and merging into the wall of said opening to provide a clamping seat; a clamp element cooperating with said seat and having a stem projecting through said opening; said other arm portion having an aperture therein; a threaded member extending through said aperture; means for detachably coupling said threaded member to said stem; and means threaded upon said threaded member for urging the latter away from said first arm portion and urging said clamp element toward said seat.

4. In a surgical instrument, a body member having a central hand-grip portion of a length

sufficient to enable it to be firmly gripped by an operator, said member also having an arm portion rigidly supported at each end of said hand-grip portion, said arm portions being substantially parallel to each other and each being disposed substantially normal to said hand-grip portion; one of said arm portions having an opening therein providing a clamping seat; a clamp element cooperating with said seat and having a portion projecting through said opening; said other arm portion having an aperture therein aligning with said opening; a threaded element extending through said aperture; means for detachably coupling said threaded element to said clamp element, comprising a head provided on the end of one element and fitting in a recess provided in the other element, said recess having a transversely disposed portion of a size to enable said head to be removed from coupling relationship therewith; means threaded upon said threaded member for urging the latter away from said first arm portion and urging said clamp element toward said seat.

5. The instrument defined in claim 4, wherein said recess is provided in said threaded element and the latter is provided with means preventing it from rotating in said other arm portion, thereby facilitating coupling of said elements.

6. In a surgical instrument, a body member having a pair of spaced, substantially parallel arms rigidly carried thereby; one of said arms having an opening providing a clamping edge; a clamp member cooperating with said clamping edge and having a stem projecting through said opening; said other arm having an aperture therein aligning with said opening; a bushing rigidly mounted in said aperture; a threaded member mounted for guided sliding movement in said bushing; means on said bushing and said threaded member for preventing relative rotation thereof; means for coupling said stem to said threaded member, comprising an enlarged head

on said stem and a recess in said threaded member for receiving said enlarged head; said recess extending transversely of said threaded member, whereby said stem and threaded member may be uncoupled by moving them transversely with respect to each other, and a nut threaded on said threaded member for forcing the latter and said clamp element in a direction to urge the latter toward said clamping edge.

7. In a surgical instrument, a body member having a pair of spaced substantially parallel arms rigidly carried thereby; one of said arms having an opening providing a clamping edge; a clamp member cooperating with said clamping edge and having a stem projecting through said opening; said other arm having an aperture therein aligning with said opening; a bushing rigidly mounted in said aperture, a threaded member mounted for guided sliding movement in said bushing; means on said bushing and said threaded member for preventing relative rotation thereof; comprising a longitudinally extending groove provided in said threaded member and a projection on said bushing fitting in said groove; means for coupling said stem to said threaded member, comprising an enlarged head on said stem and a recess in said threaded member for receiving said enlarged head, said recess extending transversely of said threaded member, whereby said stem and threaded member may be uncoupled by moving them transversely with respect to each other, and a nut threaded on said threaded member for forcing the latter and said clamp element in a direction to urge the latter toward said clamping edge.

8. The surgical instrument defined in claim 1, wherein said portion of said clamping element cooperating with said clamping seat is of conical form and is provided with a drain aperture adjacent the apex thereof for allowing the egress of liquids.

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