

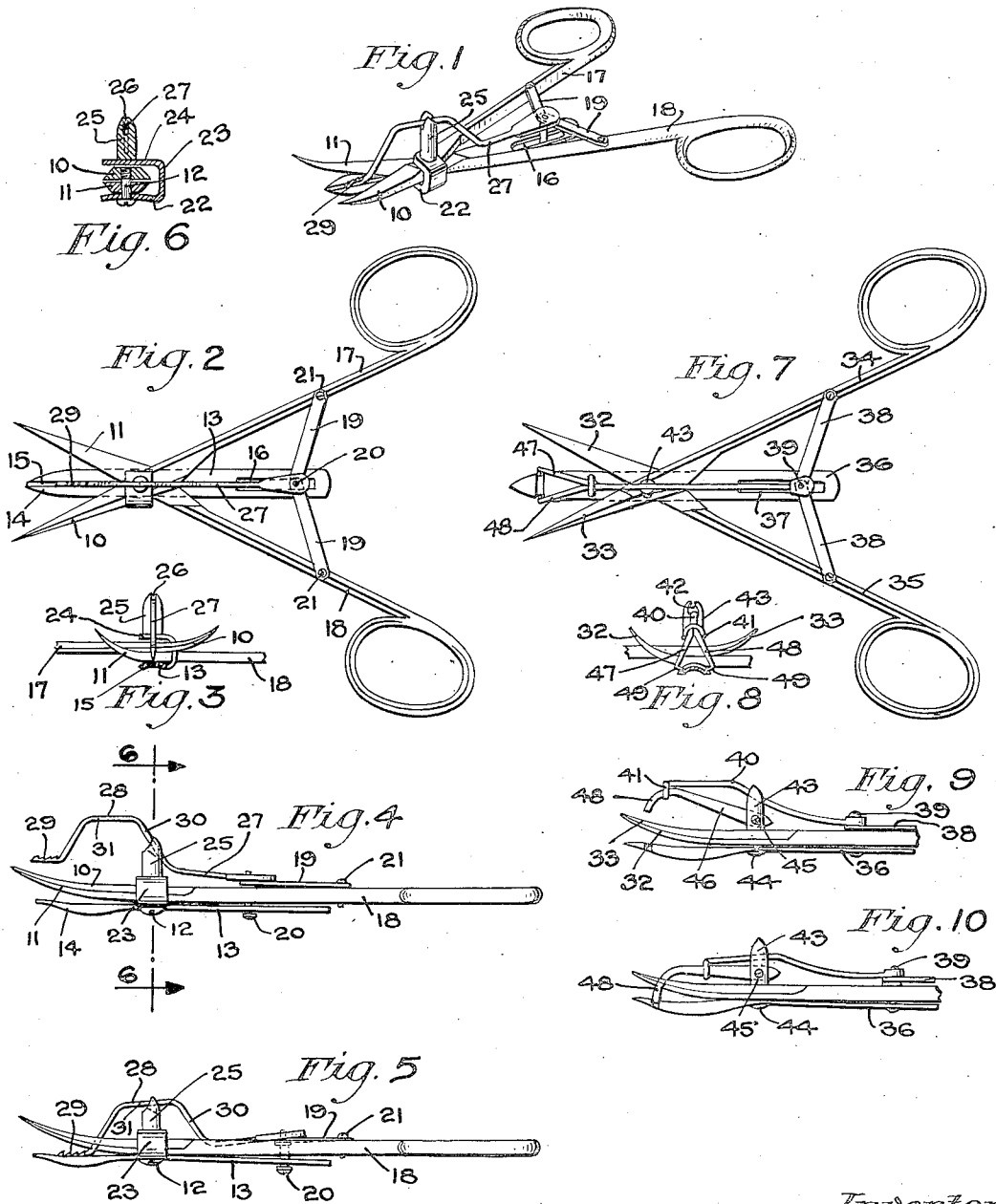
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SURGICAL INSTRUMENT

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SURGICAL INSTRUMENT

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This invention relates to surgical appliances and more particularly to an instrument adapted for use in performing surgical operations, such as that of circumcision, it being among the principal objects of this invention to provide an instrument which facilitates the ease with which such operations may be made and which lessens considerably the usual dangers attending the same.

The invention consists substantially in the combination, construction, location and relative arrangement of parts, as will appear more fully hereinafter, as shown in the accompanying drawing and as finally pointed out in the appended claims.

In the said accompanying drawing:—

Figure 1 is a perspective view of a preferred embodiment of an instrument constructed in accordance with the present invention;

Figure 2 is a plan view of the instrument with the scissors shown opened;

Figure 3 is a view looking toward the opened end of the instrument as shown in Figure 2;

Figure 4 is a side elevational view of the instrument with the scissors closed;

Figure 5 is a side elevational view of the instrument with the scissors opened;

Figure 6 is a transverse sectional view of the instrument taken on the line 6—6 of Figure 4;

Figure 7 is a plan view of a modified construction of the instrument;

Figure 8 is a view looking toward the front end of the instrument shown in Figure 7; and

Figures 9 and 10 are partial side elevational views of the instrument respectively showing the scissors closed and open.

Referring now to the drawing and more particularly to Figures 1 to 6 thereof which illustrates one preferred embodiment of the present invention, it will be seen that the instrument as constructed in accordance with the principles of the present invention essentially comprises a scissors having upwardly curved cutting blades 10 and 11, the cooperating members of the scissors being pivoted together by means of a stud 12 which serves not only as a pivot for the blades 10 and 11, but also as the element for securing in operative relation to the scissors the appertinent parts of the instrument to be presently described.

Carried by the scissors and secured in position by the pivot stud 12 is a longitudinally extending relatively narrow member 13, the forward end of which projects to a point immediately beneath the points of the scissors blades 10 and 11, the said forward end of the member 13 being provided

with a rounded point 14 and a longitudinally extending groove 15 in its upper surface.

The portion of the member 13 which projects rearwardly of the pivot stud 12 is longitudinally slotted, as at 16, it being observed, as is shown most clearly in Figure 2, that the member 13 occupies a position such that the operating arms 17 and 18 of the scissors are symmetrically disposed to either side thereof. Pivotaly secured to each of the shanks 17 and 18 of the scissors is a link 19, the inner ends of these links being commonly secured to a pivot pin 20 which projects through and is adapted to move longitudinally along the slot 16 in the member 13. The outer extremities of the links 19—19 are pivotaly secured to the arms 17 and 18, respectively, by the pins 21—21.

Formed as an integral part of the underlying member 13 in the immediate vicinity of the main pivot pin 12 is a laterally extending element 22 having an upstanding branch 23 terminating in a section 24 extending across the pivoted connection between the cutting blades 10 and 11 of the scissors. This transversely extending section 24 of the member 13 serves as a support for an upstanding bearing element 25, it being observed that this latter element is substantially coaxially disposed with respect to the pivot pin 12. The upper extremity of the bearing element 25 is notched, as at 26, for a purpose which will appear immediately hereinafter.

Arranged to extend longitudinally of the device and more particularly of the member 13, is a work lifting finger 27, the rear end of this finger being pivotaly secured to the pivot pin 20 which slides longitudinally within the slot 16 of the member 13. The finger 27 is of the shape most clearly shown in Figures 1, 4 and 5 wherein it will be observed that it is provided with a humped section 28 in the forward portion thereof. The forward extremity of the finger 27 is substantially coaxial with the rear portion thereof and is serrated in its upper surface, as at 29. The intermediate humped section 28 of the finger 27 rests within the notch 26 of the bearing element 25, the opposed upper extremities of the notch being turned inwardly to definitely confine the finger within the notch to prevent its vertical displacement therefrom.

The notched bearing element 25 serves in effect as a cam member for effecting the desired action of the finger 27, it being observed that when the scissors is closed, as shown in Figure 4, the links 19—19 are caused to assume a substantially parallel relation in consequence of which

the pivot pin 20 is shifted forwardly along the slot 16, thus effecting a corresponding forward movement of the finger 27. In this forward movement of the finger 27, the inclined section 30 thereof rides upon the bearing element 25 in such manner as to lift the serrated forward end 29 thereof well above the grooved surface of the member 13.

On the other hand, when the scissors is opened, as shown in Figures 1, 4 and 5, the links 19—19 are expanded and so draw the finger 27 rearwardly with the result that the section 31 of the humped portion of the finger coacts with the slotted bearing member 25 to depress the finger to such extent as to seat the serrated end 29 thereof within the groove 15 of the member 13.

In the operation of the device, the scissors is first opened as shown in Figures 1 and 2, so as to cause the serrated end 29 of the finger to be seated within the groove 15 of the member 13. The pointed end of the member 13 is then introduced beneath the tissue which is to be removed, it being understood that in this operation the serrated end 29 of the finger also lies beneath the tissue to be removed. Thereupon, the operator closes the scissors with the result that the finger 27 is lifted into the position shown in Figure 4. As the finger lifts, the serrated extremity thereof carries with it that portion of the tissue which is to be removed, the tissue being lifted away from its supporting body an extent substantially equal to the distance between the raised finger extremity 29 and the pointed end 15 of the underlying member 13. Simultaneously as the serrated extremity 29 of the finger 27 is lifted, the blades 10 and 11 of the scissors are closed, it being understood, however, that the arrangement of the device is such that the blades of the scissors are not brought into cutting relation one with the other until just after the serrated extremity 29 is raised above the cutting plane. In other words, the several parts of the device are so operatively associated that by a single manipulation of the device, the tissue to be removed is lifted away from its supporting body and then severed by the cutting blades 10 and 11 of the device.

Figures 7 to 10, inclusive, illustrate a modified form of the instrument. In this modified construction, a scissors is again employed having the cutting blades 32—33 and the operating shanks 34—35. Also, there is employed the longitudinally extending underlying member 36 which serves essentially the same function as the member 13 of the above described instrument, this member 36 being provided with an elongated slot 37 in the rear portion thereof. Links 38—38, joined together by a pivot pin 39, have their opposite ends respectively connected to the shanks 34—35 of the scissors.

Secured to the pivot pin 39, which is adapted for sliding movement within the slot 37, is a forwardly extending member 40 of the shape best shown in Figures 9 and 10, the forward extremity of this member 40 being provided with an integrally formed downwardly presenting yoke 41. The member 40 rides within a slot 42 formed in the upper end of an upstanding post 43 which is secured in position by the main pivot pin 44 of the scissors. It is this pivot pin 44 which also maintains the slotted member 36 in operative relation to the scissors. It will be understood that the member 40 operates essentially in the manner of the finger 27 of the arrangement shown in Figures 1 to 5 in that as the scissors is closed,

the member 40 is projected forwardly (see Figure 9), while as the scissors is opened, the member 40 is drawn rearwardly into the position shown in Figures 7 and 10.

Pivotally secured to the post 43, as at 45, is a claw 46, this claw being provided with a pair of jaws 47—48 (see Figures 7 and 8) which normally tend to spring outwardly and away from each other. These jaws are respectively provided with inturned teeth 49—49 which coact to engage the tissue which is to be lifted from its supporting body and then severed by the scissors blade. The yoke 41 at the forward extremity of the member 40 embraces the claw 46 and coacts therewith to raise or lower the said claw as the scissors is closed or opened.

In the operation of the modified device, it will be seen that as the scissors is opened (as shown in Figures 7, 8 and 10), the member 40 is withdrawn rearwardly with the result that the yoke 41 thereof is shifted rearwardly of the claw 46 sufficiently to permit the jaws 47—48 of the latter to spring into separated relation. At the same time, the yoke 41 is depressed due to the camming action of the slotted post 43 upon the member 40, thereby depressing the claw 46 into such position that the teeth 49—49 of the claw jaws engage opposite sides of the pointed forward extremity of the member 36. As the scissors is closed, the member 40 is shifted forwardly with the result that the yoke 41 rides forwardly along the spring pressed claw jaws to cause the latter to close against one another, at the same time lifting the closed jaws upwardly to a point above the cutting plane of the scissors blades 32—33. It will thus appear that the operation of the modified structure is essentially the same as that of the instrument first described, the principal difference between the two being that whereas in the first described structure the finger 27 is provided with a serrated point 29 which engages beneath and so lifts the tissue to be removed, in the second described instrument, the spring pressed jaws 47—48 of the claw 46 grasp and so lift the tissue to be severed by the cutting blades 45 of the instrument.

It will be understood, of course, that the invention may be modified in other ways than herein disclosed without departing from the general principles or real spirit thereof and it is accordingly intended to claim the invention broadly, as well as specifically, as indicated in the appended claims.

What is claimed as new and useful is:

1. In a surgical instrument of the character described, in combination, a pair of cutting elements pivotally secured together, a longitudinally extending member positioned beneath said cutting elements, tissue lifting means extending longitudinally of said member and adapted to coact therewith to separate tissue to be severed from its supporting body, and means operative automatically upon manipulation of the cutting elements to raise said tissue lifting means from a point beneath the cutting plane of said cutting elements to a point above said cutting plane.

2. In a surgical instrument of the character described, in combination, a pair of cutting elements pivotally secured together, a longitudinally extending member extending longitudinally of and arranged symmetrically between said cutting members, the forward extremity of said member being disposed immediately beneath the cutting blades of the cutting members, and means shiftable longitudinally of said member upon manipu-

lation of said cutting members for movement into and out of engagement with said member and operative, as the cutting members move into cutting position, to lift the tissue to be severed upwardly from said member to a point above the cutting plane of the cutting members.

3. In a surgical instrument of the character described, in combination, a pair of members pivotally secured together and provided in their forward extremities with coacting cutting blades, a member extending longitudinally of said pivotally secured members and disposed symmetrically with respect to said cutting blades, the forward extremity of said member being disposed beneath the cutting plane of the blades, tissue lifting means operatively associated with said member, and means operative automatically to raise said tissue lifting means from said member to a point above the cutting plane of said cutting blades whereby to present the tissue to be removed between the said cutting blades.

4. In a surgical instrument of the character described, in combination, a pair of surgical scissors, a member extending forwardly of the scissors and disposed in substantially symmetrical relation with respect to the cutting blades of the scissors, said member being adapted for insertion between tissue or other matter to be removed and its supporting body, means operatively associated with said member for engaging the tissue to be removed, said tissue engaging means being in close proximity to said member while said scissors is open, and means operative automatically upon closing the scissors to lift said tissue engaging means above said member whereby to present the

tissue to be removed between the cutting blades of the scissors.

5. In a surgical instrument of the character described, in combination, a pair of scissors having pivotally secured manipulating shanks and coacting cutting blades, a member underlying said cutting blades and arranged symmetrically with respect thereto, the upper surface of said member being longitudinally grooved, a tissue engaging finger operatively associated with said member and having a forward extremity adapted for seating engagement within said groove when said cutting blades are in separated or open relation, and means operative automatically upon the closing of said cutting blades to raise said forward extremity of the tissue engaging finger upwardly between the cutting blades to a point above the cutting plane thereof.

6. In a surgical instrument of the character described, in combination, a pair of scissors having pivotally secured manipulating shanks and coacting cutting blades, a member underlying said cutting blades and arranged symmetrically with respect thereto, a tissue engaging claw having spring pressed jaws adapted to engage the upper surface of said member when said cutting blades of the scissors are in separated or open relation, and means operative automatically upon manipulation of the scissors shanks to close the blades thereof to simultaneously close the jaws of said tissue engaging claw and raise the latter to a point above the cutting plane of the said cutting blades.

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