

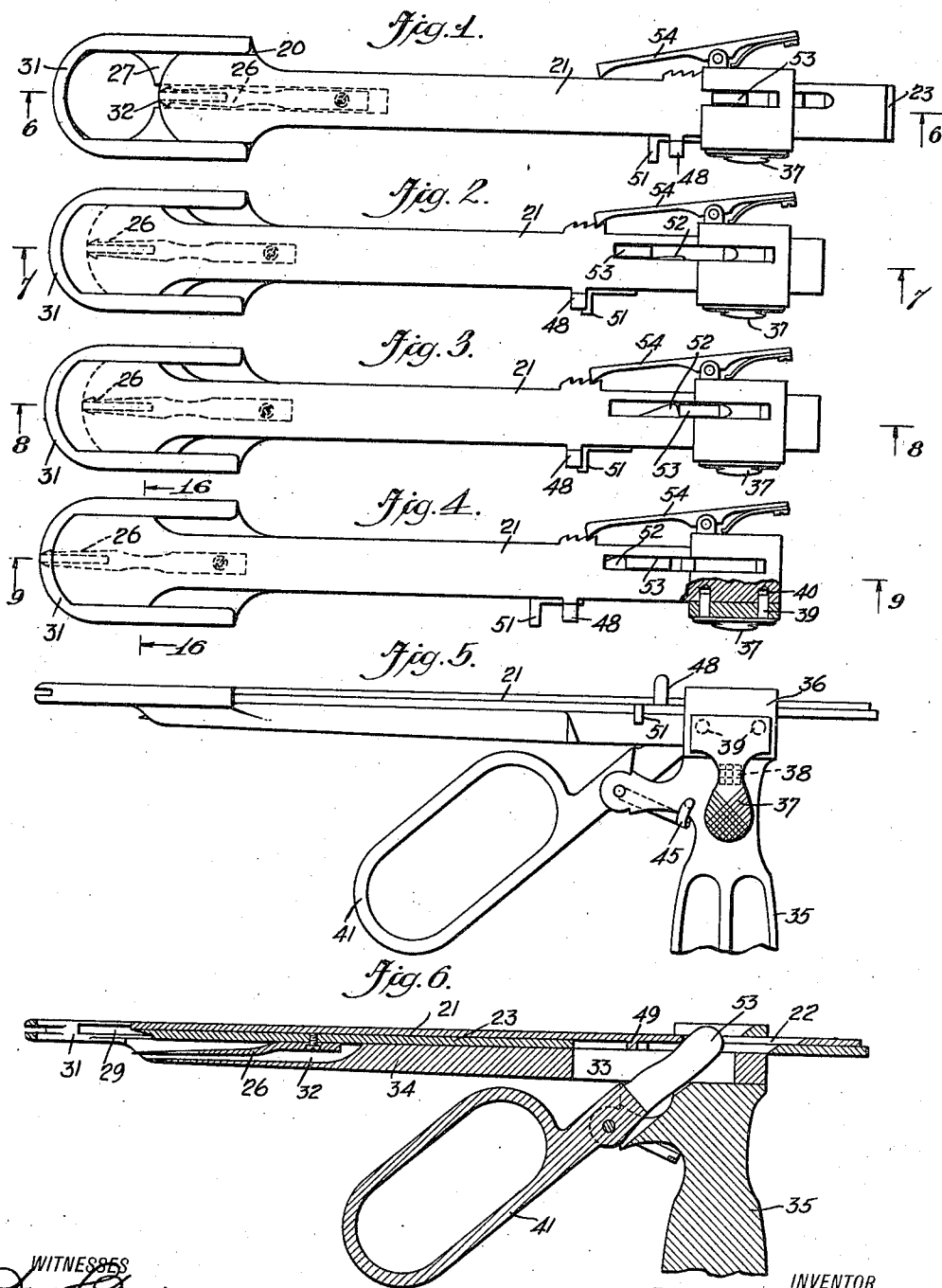
May 1, 1923.

1,453,934

D. LO GIUDICE
SURGICAL INSTRUMENT

Filed May 3, 1921

2 Sheets-Sheet 1



WITNESSES
Frank J. Saggiani
A. H. Smith

INVENTOR
DOMENICK LO GIUDICE
BY *Mum Co*
ATTORNEYS

May 1, 1923.

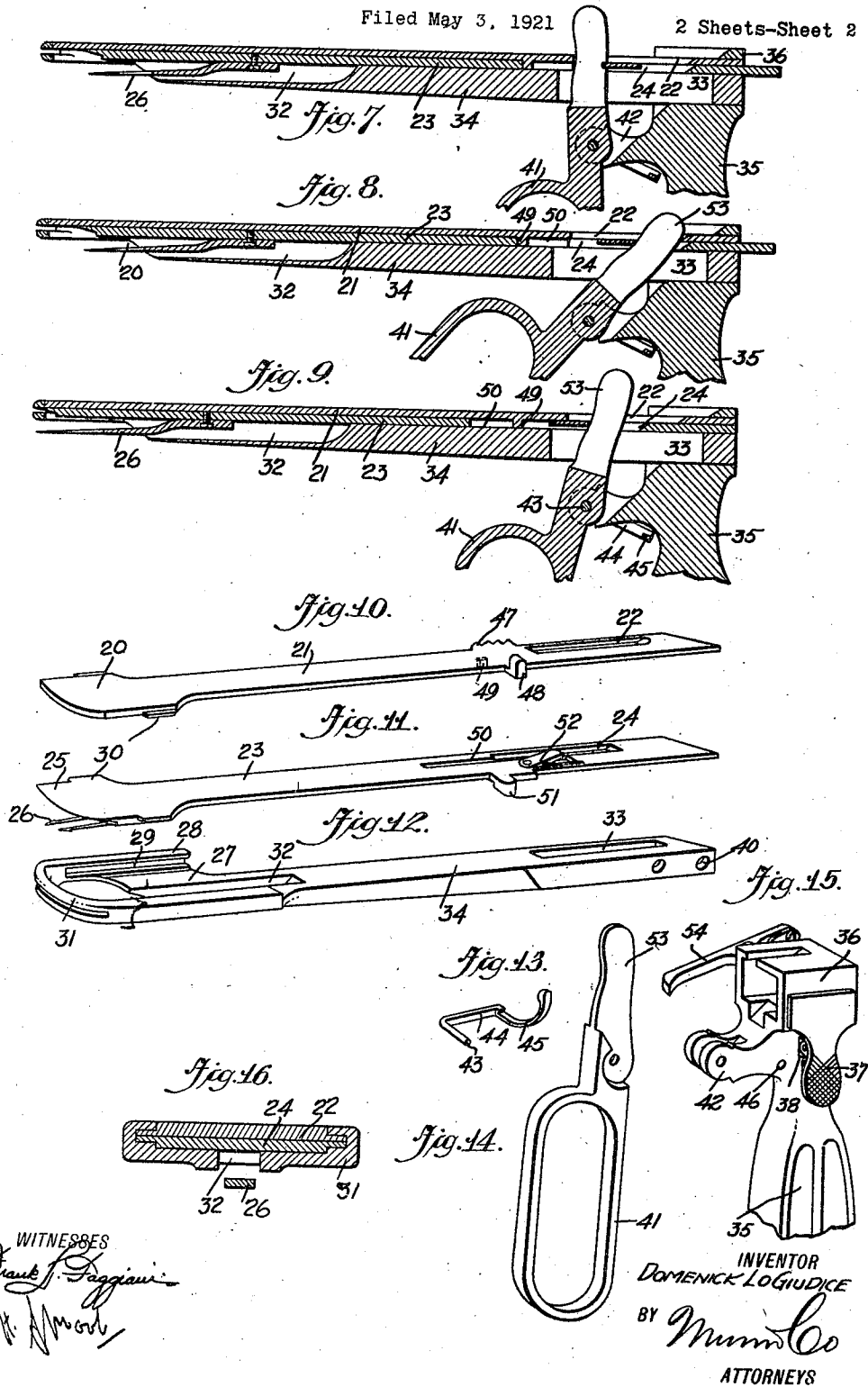
1,453,934

D. LO GIUDICE

SURGICAL INSTRUMENT

Filed May 3, 1921

2 Sheets-Sheet 2



WITNESSES
Frank J. Faggiani
A. K. Mow

INVENTOR
DOMENICK LO GIUDICE
BY *MumCo*
ATTORNEYS

Patented May 1, 1923.

1,453,934

UNITED STATES PATENT OFFICE.

DOMENICK LO GIUDICE, OF BROOKLYN, NEW YORK, ASSIGNOR TO GEORGE TIEMANN & COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

SURGICAL INSTRUMENT.

Application filed May 3, 1921. Serial No. 466,506.

To all whom it may concern:

Be it known that I, DOMENICK LO GIUDICE, a subject of the King of Italy, and resident of the city of New York, borough of Brooklyn, county of Kings, and State of New York, have invented a new and Improved Surgical Instrument, of which the following is a full, clear, and exact description.

My invention relates to a surgical instrument and aims to provide a device of this character which shall present certain improved construction over instruments of the class to which it relates, now upon the market.

In connection with the removing of tonsils, it is a well appreciated fact that numerous instruments have been proposed, and utilized with a view of accomplishing the severance of the tonsils from the tissues with which they are associated.

Entirely aside from the foregoing it is well understood among physicians, that a danger is always present at the time of the removal of the tonsils, in that the severed tonsil is liable to drop into the passages extending from the mouth to the stomach and lungs. An accident of this nature often results in the death of the patient, and is hence to be guarded against with the greatest of precaution.

Also it is well understood that severance of the tonsils often results in hemorrhages, which has sometimes proven fatal due to the inaccessibility of the tissues severed.

Having the foregoing in mind, I have invented a surgical instrument which shall primarily be capable of insertion to the mouth of the patient with a minimum of discomfort, as well as being capable of having its parts disassembled with a minimum of ease, whereby the same may be cleansed.

A still further object of my invention is the construction of a surgical instrument by means of which the tonsil may be removed from the mouth of the patient without any danger of its becoming lodged in the throat, aside from the fact that a severance of the tissue is permitted by means of my device in a more rapid manner than has been heretofore proposed.

Another object of my invention is the provision of a surgical instrument which shall effect a severance of the tissues in such

a manner that the danger of a hemorrhage resulting will have been reduced to a minimum.

Further objects of my invention will appear in the annexed specification and drawings, which latter present one practical embodiment of my invention, and in which:

Figure 1 is a plan view of the instrument and showing the parts of the same in their initial position.

Figure 2 is a view similar to Figure 1 and showing the first stage in the operation of the parts.

Figure 3 is a similar view and showing the second stage of operation.

Figure 4 is still another view and showing the parts in their third or final position.

Figure 5 is a side view of the device as illustrated in Figure 1.

Figure 6 is a sectional side view similar to Figure 5.

Figures 7, 8 and 9 are sectional views corresponding to Figure 6 and showing the stages illustrated in Figures 2, 3 and 4.

Figures 10 to 15 are perspective views of each of the elements which go to provide the finished instrument and showing these elements disassembled, and

Figure 16 is a transverse sectional view taken along the line 16-16 of Figure 4.

Referring now more particularly to Figures 10 to 15 it will be seen that my instrument preferably comprises six units which when assembled provide the completed instrument.

The first unit illustrated in Figure 10 is a member which provides adjacent its outer end a crushing blade 20, a shank 21 forming a rearwardly extending continuation of this blade, the rear end of the shank being formed with longitudinally extending slots 22 for a purpose hereinafter more fully specified.

The second unit shown in Figure 11 also includes a shank 23 formed with a longitudinally extending slot 24, the outer end of this shank terminating in a severing blade 25 below which is arranged a harpoon 26 having its rear end fixedly secured to the shank 23.

With reference to the element illustrated in Figure 12 it will be seen that the same provides a base 27 capable of slidably supporting the units shown in Figures 10 and 11, which when in use are superposed upon

each other. With a view of properly retaining these latter units the base 27 is formed adjacent its outer end with side walls 28 providing a longitudinally extending groove 29 in their side faces, which grooves are adapted to receive fins 30 positioned adjacent the side edges of both the blades 20 and 25 so that the latter are slidably retained by the base. It is also to be noted in this connection that the side walls 28 extend beyond the end of the base 27 and are preferably connected together adjacent their outer ends by means of a bridge portion 31 which in use acts as a stop for limiting the movement of the units illustrated in Figures 10 and 11.

Further the base 27 is formed adjacent its outer end with a groove 32 capable of slidably accommodating the harpoons 26, and a longitudinally extending slot 33 in the rear end of the shank 34 of this base is adapted to underlie the longitudinal openings 22 and 24 of the units aforementioned.

With a view of providing means which will serve to support the element aforementioned in a most convenient manner, and permit of their efficient co-operation I preferably employ a handle 35 as in Figure 15, which handle provides what might be termed a "pistol grip." Furthermore the upper end of this handle is constructed so as to suspend a guide block 36 capable of slidably receiving the rear ends of each of the units shown in Figures 10, 11 and 12, the latter unit being normally held in fixed position by any suitable means such as a plate 37 pivotally connected as at 38 adjacent the block 36 and formed with prongs 39 adapted to project into corresponding recesses 40 forming a part of the base unit.

Finally my invention contemplates the use of the elements shown in Figures 13 and 14 the latter being in the nature of a trigger 41 which is pivotally supported between the lugs 42 of the handle 35, the element illustrated in Figure 13 serving as a fulcrum member and having its shank 43 passing through the openings in the trigger 41 and lugs 42, its body 44 extending rearwardly from these openings, the arm 45 thereof passing preferably around the lugs and detachably engaging a recess 46 positioned adjacent the upper end of the handle.

It will now be noted, referring to the unit illustrated in Figure 10 that in addition to the aforescribed construction, a ratchet 47 is provided adjacent one of the side edges of the shank and inner end of the slot 22, and an outwardly extending lug 48 is formed upon the opposite side edge, a centrally positioned downwardly extending pin 49 being secured to the shank 21 at a point preferably adjacent the two last named portions.

The unit illustrated in Figure 11 has a slot 50 provided in addition to the slot 24 and the slot 50 forms a continuation of the

inner end of the slot 24 and is of sufficient width to accommodate the pin 49, it being also noted that a lug 51 corresponding to the lug 48 is provided and that a spring pressed pawl 52 is pivotally secured adjacent the slot 24 and normally has its rear end extending into the same.

Assuming now that the units shown in Figures 10, 11 and 12 have been superimposed, the large plate 37 having been swung outwardly and the rear ends of all of the units aforementioned having been positioned in the opening provided for this purpose in the block 36, it will be seen that the base will be retained in applied position as aforementioned by means of the prongs 39 co-operating with the recess 40 thereof, and the bridge portion 31 of the base members will in turn limit the movement of both the crushing and severing members.

Upon the trigger now having its shank 53 extended through the slots 33, 24 and 22, and having its body associated with the lugs 42 by means of the member illustrated in Figure 13 it will be appreciated that the device will appear as has been shown in Figures 1, 5 and 6, assuming that the units shown in Figures 10 and 11 have been moved to their fully retracted position.

The device may now be applied to a ton- sil or other member to be removed, and it will be obvious that a pull upon the trigger 41 will primarily result in this element engaging the upper end of the slot 22 and accordingly move the crushing blade 20, as in Figure 2 forward to a point at which it will lie adjacent the bridging portion 31 this operation of the parts also having been illustrated in Figure 7.

In this connection it will be seen that any return of the crushing blade is precluded by virtue of the fact that the ratchet 47 associated with the shank 21 thereof will be engaged by a spring pressed pawl 54 secured adjacent the upper end of the handle 35 for this purpose. Furthermore the severing blade 25 will remain stationary for a certain length of time during the projection of the crushing blade by virtue of the fact that the pin 49 of the shank 21 rides in the slot 50 of the shank 23. Thus the crushing blade will, during this stage of the operation, remain in advance of the severing blade. Upon a further movement of the crushing blade the pin 49 will reach the inner end of the slot 50 and this will result in a synchronous traveling of the severing blade with the crushing blade for a certain distance. The crushing blade will now have effected a pinching off of the member to be removed by having crushed the tissues which connect it. Thus any danger of hemorrhages will have been avoided. To now effect a complete detachment of the member the trigger is again swung to its normal posi-

tion as in Figures 3 and 8 from the position shown in Figures 2 and 7. In thus swinging the shank 53 will pass the spring pressed pawl 52 and upon the trigger again being actuated it will be obvious that the shank thereof will be caused to engage the pawl 52, which blocks its passage through the slot 24 and thus the severing blade 25 will be projected forward to the position shown in Figures 4 and 9, and by virtue of the harpoon 26 it will be seen that the thus completely severed member is engaged by a flange which will absolutely prevent any danger of its dropping so that a subsequent removal of the instrument will result in a movement of the severed member.

In re-setting the device the pawl 54 is primarily swung so as to move out of engagement with the ratchet 47 and this will permit of the crushing blade 20 being retracted by means of the lug 48 to its normal position. In this connection it is to be noted that the pin 49 serves a double purpose in that the same will now press against the pawl 52 and swing the same inwardly to permit of a subsequent retraction of the severing blade 25 by means of the lug 51 without the pawl 52 engaging the shank 53.

The device may thus be readily and quickly used to effect an operation without any of the resulting dangers which are now experienced, and it will be obvious that the device may also quickly be re-set for a subsequent operation if this is desired, a ready intervening cleansing of all of the portions thereof being permitted by virtue of the ready disassemblage which is allowed by the construction specified.

Thus I have provided a surgical instrument by means of which all of the objections enumerated in the preamble of this specification will have been avoided aside from the fact that a device thus constructed embraces a minimum of parts and is capable of being manufactured at a nominal figure.

Obviously numerous modifications of structure might readily be resorted to without in the least departing from the spirit of my invention, which I claim as:

1. A surgical instrument including a base, a crushing blade, a severing blade and means for sliding the blades on the base, said means including a single lever to be manually actuated a plurality of times to operate the blades for a single crushing and severing operation, controlling means for automatically causing the first actuation of the lever to project the crushing blade a predetermined distance and thereupon to further project the crushing blade while projecting both blades, detent means for holding the blades projected as just described while permitting a retraction of said lever, and secondary controlling means formed in part by the first mentioned controlling means for automati-

ically causing a second actuation of said lever to move the severing blade relative to the crushing blade to further project the severing blade.

2. A surgical instrument including a base, a crushing blade, a severing blade and means for sliding the blades on the base, said means including a single lever to be manually actuated a plurality of times to operate the blades for a single crushing and severing operation, controlling means for automatically causing the first actuation of the lever to project the crushing blade a predetermined distance and thereupon to further project the crushing blade while projecting both blades, detent means for holding the blades projected as just described while permitting a retraction of said lever, and secondary controlling means formed in part by the first mentioned controlling means for automatically causing a second actuation of said lever to move the severing blade relative to the crushing blade to further project the severing blade, both controlling means having co-acting parts, all of which are carried by the lever and the two blades.

3. A surgical instrument including a base, a crushing blade, a severing blade, and means for sliding the blades on the base, said means including a single lever to be manually actuated a plurality of times to operate the blades for a single crushing and severing operation, controlling means for automatically causing the first actuation of the lever to project the crushing blade a predetermined distance and thereupon to further project the crushing blade while projecting both blades, detent means for holding the blades projected as just described while permitting a retraction of said lever, and secondary controlling means formed in part by the first mentioned controlling means for automatically causing a second actuation of said lever to move the severing blade relative to the crushing blade to further project the severing blade, and a harpoon carried by one of the blades, the harpoon, the crushing blade and the severing blade being always arranged in close overlapping relation.

4. A surgical instrument including a handle, a base member, a crushing and a severing blade slidably mounted upon said base member, a trigger for projecting said blades, said base member, crushing blade and severing blade being formed with slots, a shank secured to and forming a continuation of said trigger, said trigger being pivotally mounted and having a shank extending through said slots and a spring pressed pawl secured to said severing blade and normally having its outer end extending into the slot forming a part thereof.

5. A surgical instrument including a handle, a base member, a crushing and a sev-

ering blade slidably mounted upon said base member, a trigger for projecting said blades, said base member, crushing blade and severing blade being formed with slots, a shank secured to and forming a continuation of said trigger, said trigger being pivotally mounted and having a shank extending through said slots, a spring pressed pawl secured to said severing blade and normally having its outer end extending into the slot forming a part thereof, and means for effecting a retraction of said pawl during the resetting of said parts.

6. A surgical instrument including a handle, a base member, a crushing and a severing blade slidably mounted upon said

base member, a trigger for projecting said blades, said base member, crushing blade and severing blade being formed with slots, a shank secured to and forming a continuation of said trigger, said trigger being pivotally mounted and having a shank extending through said slots, a spring pressed pawl secured to said severing blade and normally having its outer end extending into the slot forming a part thereof, and a pin secured to the under side of said crushing blade and being adapted to ride in a slot forming a continuation of the slot of said severing blade.

DOMENICK LO GIUDICE.