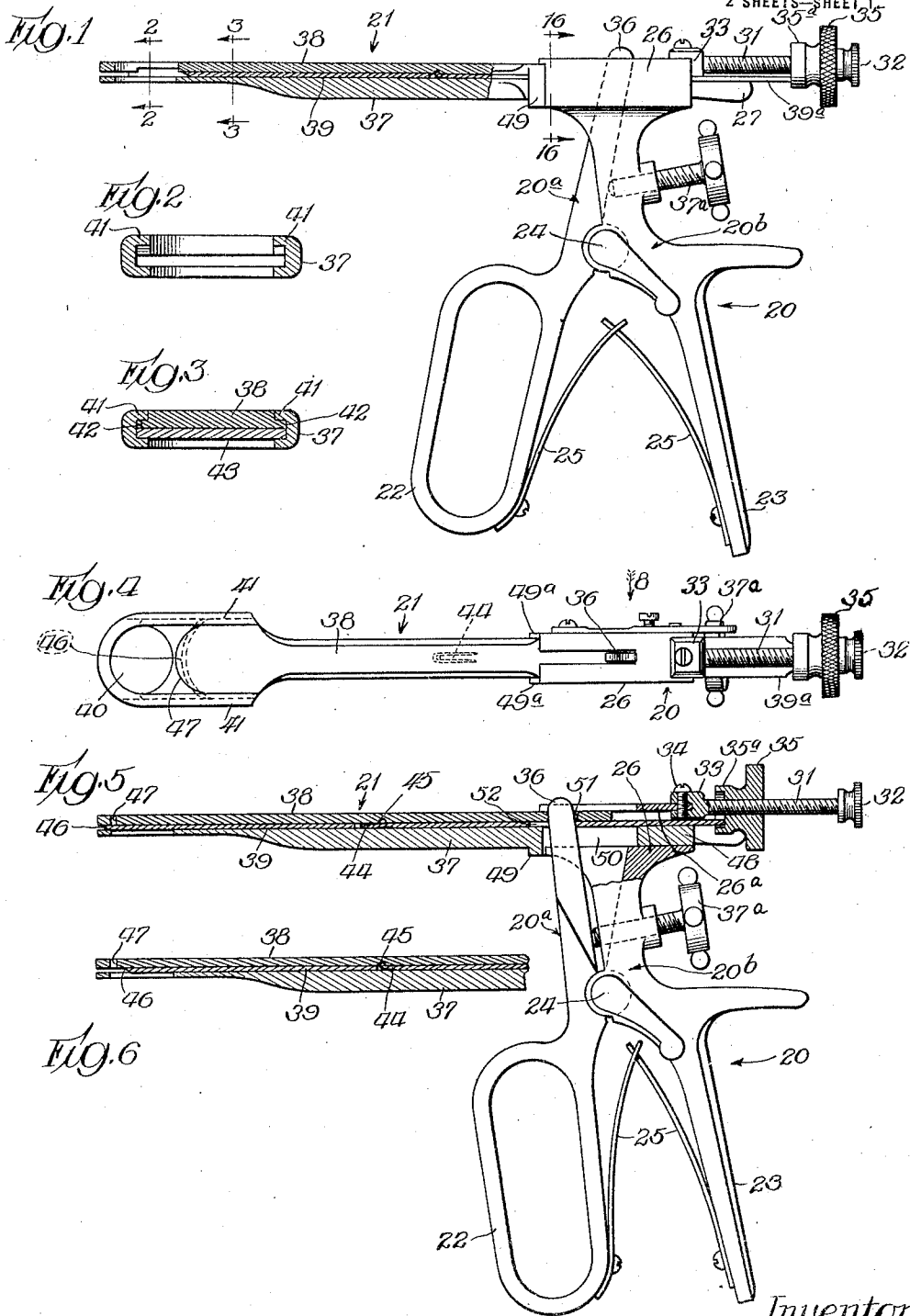


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TONSILLOTOME.
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1,397,677.

Patented Nov. 22, 1921.

2 SHEETS-SHEET 1

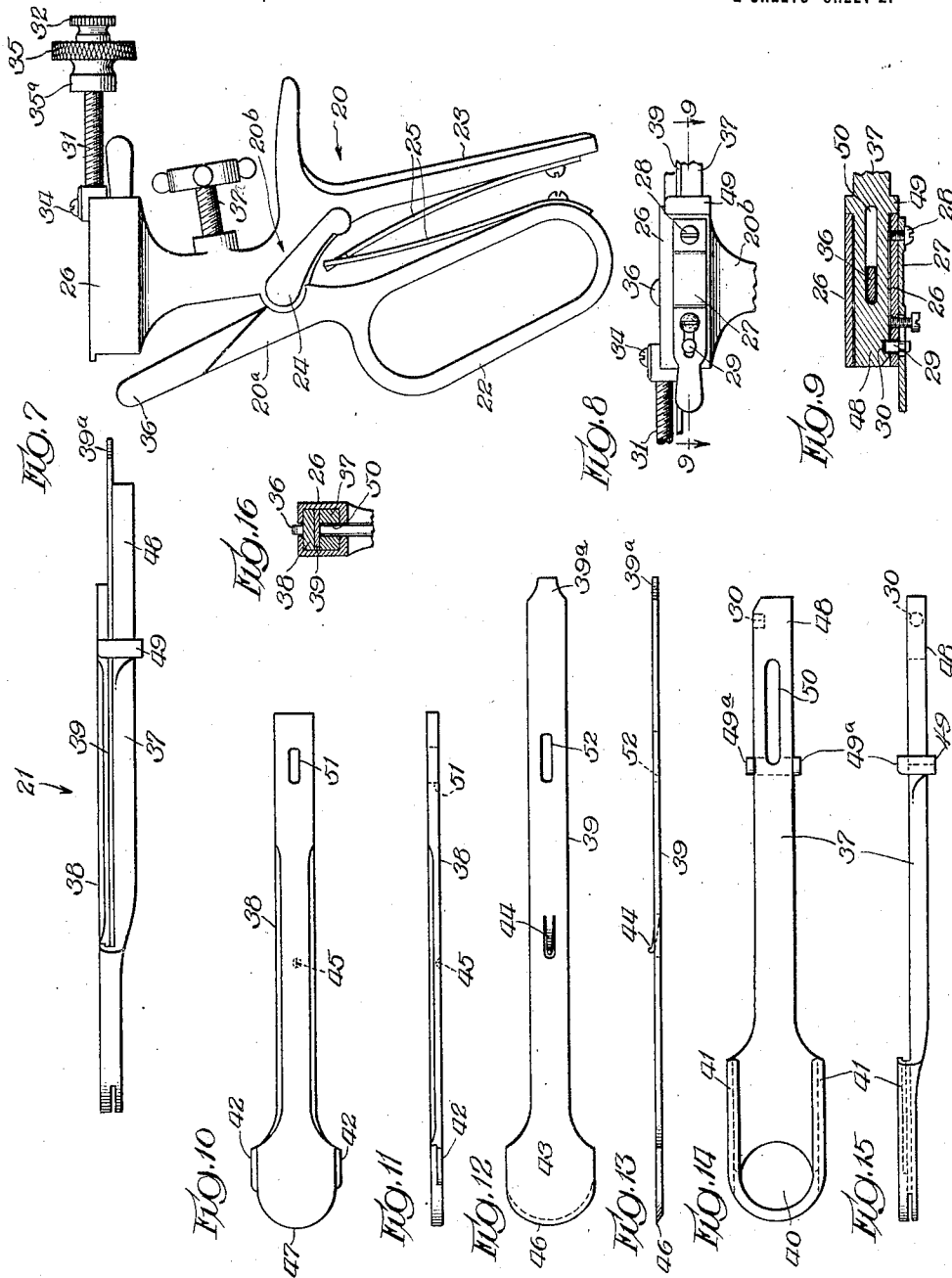


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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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TONSILLOTOME.

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To all whom it may concern:

Be it known that I, HERBERT H. CARSTENS, a citizen of the United States, and a resident of Chicago, Cook county, and State of Illinois, have invented certain new and useful Improvements in Tonsillotomes, of which the following is declared to be a full, clear, and exact description.

This invention relates to tonsillotomes and among its objects are to simplify, to reduce the cost of manufacture and to otherwise improve upon instruments of this character. Another object is to provide an instrument which combines a crushing member for crushing or macerating the arteries, with a cutting member, thereby minimizing the danger of hemorrhage which is usually attendant with severance of a tonsil by a knife. Another object is to provide a tonsillotome, the parts of which are readily and quickly assembled for use or disassembled for cleaning and sterilizing purposes. Another object is to provide a tonsillotome which is positive in action, is easy to manipulate, is not liable to get out of order and is of substantial but comparatively light construction. With these and other objects in view, this invention consists in the several novel features of construction, arrangement and combination of parts, hereinafter fully set forth and claimed.

The invention is clearly illustrated in the accompanying drawing, in which:—

Figure 1 is a side elevation, partly broken out, of a tonsillotome embodying a simple form of the present invention; Fig. 2 is a detail cross section taken on line 2—2 of Fig. 1; Fig. 3 is a detail cross section taken on line 3—3 of Fig. 1; Fig. 4 is a plan of the instrument; Fig. 5 is a view, partly in side elevation and partly in central longitudinal section of the instrument, showing the parts in operative locked position; Fig. 6 is a fragmental, longitudinal section of a certain frame member, hemostat bar and knife, and showing a certain detent connection between the hemostat bar and knife; Fig. 7 is a side elevation of the instrument with the frame member and associated parts detached from the handle portion, the handles being shown in a position occupied when re-assembling the parts; Fig. 8 is a fragmental side elevation showing a certain latch for locking the frame member and handle portion together, the view being

taken in the direction of the arrow 8 in Fig. 4; Fig. 9 is a detail, longitudinal section taken on line 9—9 of Fig. 8; Fig. 10 is a plan of the hemostat bar; Fig. 11 is a side elevation thereof; Fig. 12 is a plan of the knife; Fig. 13 is a side elevation thereof; Fig. 14 is a plan of the frame member; Fig. 15 is a side elevation thereof, and Fig. 16 is a detail, cross section taken on line 16—16 of Fig. 1.

Referring to said drawings, the reference character 20 designates the handle portion and 21 a unit consisting of a frame member 37, a hemostat bar 38 and a knife 39, which unit is connectible with and disconnectible, as a whole, from the handle portion. The handle portion comprises two handle members 20^a and 20^b, pivotally secured together at 24 by a suitable pivot pin, as is customary in surgical instruments of this character. Abutting springs 25 secured to said handle members 20^a, 20^b, act to yieldingly spread said members apart. The handle members are formed with grip or grasping portions 22, 23, and one of the handle members 20^b is formed at one end with an elongated, rectangular, lengthwise slotted socket member 26, in which the frame member is removably secured by a latch, here shown as comprising a flexible latch plate 27 (see Figs. 8 and 9) secured to the side of the socket member 26 by a screw 28 and having a pin 29 adapted to enter a hole 30 in the frame member 37.

Projecting rearwardly from the socket member 26 is a screw threaded stem 31, which is fixedly connected with the socket member 26 and has a knob 32 secured upon its outer end. Conveniently, and as a matter of economy of construction, the screw threaded stem 31 is attached to a forked block 33 which straddles the rear end of the top member or wall 26^a of the socket member 26 (see Fig. 5) and is fastened thereto by a screw 34. On the stem 31 is threaded a knife actuating and locking nut 35, which, in the operation of the instrument, is moved up against the adjacent end of the knife.

The handle member 20^a is formed with an actuating arm 36 that is rocked back and forth in the socket member 26 and actuates the hemostat bar 38 and knife 39 as will be explained later, and a thumb screw 37^a is threaded in the handle member 20^b and is adapted to bear against said handle member

20^a to hold it in any position of adjustment with respect to its companion handle member, assumed when the grips 22, 23, are brought toward each other.

- 5 Preferably the threaded pin 31 and the thumb screw 37^a are each provided with multiple threads, to facilitate speed in adjusting them.

The removable unit 21 comprises the frame member 37, and the hemostat bar 38, and knife 39, slidably and removably mounted thereon. These individual parts are best seen in Figs. 10 to 15, inclusive. The frame member 37 has a fenestra 40 at its forward end into which the hemostat bar 38 enters, during the crushing operation, and said frame member is formed at said fenestra with overhanging flanges 41 in which travel guide lugs 42 that are formed on the sides of the hemostat bar 38. Between the hemostat bar 38 and frame member 37 is interposed the knife 39, the blade 43 of which fits between the flanges 41 and is guided thereby to move in a lengthwise direction. Said knife is made of comparatively thin material and is formed with a flexible detent 44 that engages in a hole 45 in the hemostat bar, these parts being so located that when the detent is engaged in the hole, the cutting edge 46 of the knife blade is held behind the crushing edge 47 of the hemostat bar (see Figs. 1 and 6) and the knife and hemostat bar are thereby kept in this relative position while they are reciprocated by the handle member 20^a, but are moved out of such relative position by the nut 35 when the knife is moved relative to the hemostat bar during the cutting operation. Said detent also aids in positioning the hemostat bar and knife on the frame member during the assembling of the unit 21 with the handle portion 20.

The frame member 37 has a shank 48 on the end opposite the fenestra, which shank is adapted to be inserted into the socket portion 26, and secured therein by the pin 29 of the latch 27. The corner of the shank adjacent the hole 30 is beveled to facilitate the assembly of the parts. A shoulder 49 on the frame member 37 abuts against the forward edge or end of the socket member 26 when the parts are fully assembled and affords a solid connection between the frame member and socket member. Said shoulder projects above the frame member 37 at both sides thereof in the form of lugs 49^a which act as guides for holding the hemostat bar and knife in alinement with the frame member when assembling the parts.

The frame member 37 is formed with a lengthwise extending slot 50 through which the actuating arm 36 of the handle member 20^a plays, and the hemostat bar and knife are formed with lengthwise extending slots 51, 52, in which the actuating arm 36 engages

with said hemostat bar and knife to effect their reciprocation. The slot 52 of the knife is considerably longer than the slot 51 of the hemostat bar to permit of independent movement of the knife with respect to said bar, which takes place during the cutting action of the knife. Said knife is somewhat longer than the frame member 37 and when the parts are assembled, projects beyond the rear end of the socket member 26, as at 39^a, where its reduced end lies in a position in front of, or enters a recess in a hub portion 35^a of the nut 35. (See Figs. 1 and 5.)

In the operation of the instrument, the grip, or grasping parts 22, 23, of the handle portion are grasped and pressed together against the action of the springs 25. The actuating arm 36 is thereby swung forward from the position seen in Fig. 1 to that seen in Fig. 5 and the hemostat bar and knife are thereby moved forward along the frame member through the engagement of the actuating arm with the forward end of the slot 51, the cutting edge of the blade 43, as above set forth, following behind the crushing edge of the hemostat bar. When the hemostat bar has been moved as far as it will go, the thumb screw 37^a is screwed down against the back of the actuating arm 36, thereby locking it and the hemostat bar against retraction. The nut 35 is thereupon screwed up against the end 39^a of the knife, and the latter then moved forward independently of the hemostat bar, by further turning the nut 35 on the stem 31. As the independent movement of the knife takes place, the detent becomes disengaged from the hole in the hemostat bar. The crushing and cutting operation of the tonsil is well understood by those skilled in the art to which this invention pertains, and requires no detailed explanation so far as this specification is concerned. To release and retract the parts, the nut 35 is turned back to the knob 32, and the thumb screw 37^a partly unscrewed, the springs 25 then acting to restore the handle members and therewith the hemostat bar and knife to their former position, except that the knife blade edge is now forward of the crushing edge of the hemostat bar. By pressing the grip parts 22, 23, together slightly, the detent will snap into the hole in the hemostat bar, thereby connecting the knife and bar so that they move in unison.

To disconnect the unit 21 from the handle portion 20 the latch plate 27 is swung out to retract the pin 29 from the hole 30 of the frame member, and the unit 21 is withdrawn from the socket member 26. The hemostat bar and knife are then detached from the frame member by sliding them out from the overhanging flanges 41 and separating them.

To reassemble the instrument, the knife and hemostat bar are replaced on the frame member, with the slots 51, 52, in register

with the slot 50, the grips 22, 23, pressed together, and the shank 48 and end 39^a of knife inserted into the socket member. When the slots 50, 52, 51, coincide with the end of the

5 actuating arm 36, the handle member 22 is released and the unit 21 pushed back into the socket, until the shoulder 49 engages the end of the socket member 26 and the pin 29 snaps into the hole 30 in the shank 48.

10 More or less variation of the exact details of construction is possible without departing from the spirit of this invention; I desire, therefore, not to limit myself to the exact form of the construction shown and described, but intend, in the following claims,

15 to point out all of the invention disclosed herein.

I claim as new, and desire to secure by Letters Patent:

20 1. A tonsillotome comprising a pair of pivoted together handles, one handle member of which is provided with an actuating arm, and the other handle member with a socket member, a screw threaded stem stationarily secured to said socket member and

25 projecting rearwardly therefrom, a knife actuating and locking nut, threaded on said stem, a frame member detachably secured in said socket member and having a fenestra at its forward end, a hemostat bar and a

30 knife slidably mounted on said frame member, there being slots in said hemostat bar and knife in which said actuating arm operatively engages said hemostat bar and

35 knife to reciprocate them, and said nut being adapted for actuating said knife independently of the hemostat bar.

2. A tonsillotome comprising a pair of pivoted together handles, one handle member of which is provided with an actuating arm, and the other handle member with a socket member, a screw threaded stem stationarily secured to said socket member and projecting rearwardly therefrom, a knife

45 actuating and locking nut, threaded on said stem, a thumb screw, threaded in one handle member and adapted to bear against the other handle member, a frame member detachably secured in said socket member and

50 having a fenestra at its forward end, a hemostat bar and knife slidably mounted on said frame member, there being slots in said hemostat bar and knife in which said actuating arm operatively engages said

55 hemostat bar and knife to reciprocate them, said thumb screw being adapted to lock the handle member against which it bears, and therewith the hemostat bar, in projected position, and said nut being adapted for actuating said knife independently of the hemostat bar.

3. A tonsillotome comprising a pair of pivoted together handles, one handle member of which is provided with an actuating

65 arm, and the other handle member with a

socket member, a screw threaded stem stationarily secured to said socket member and projecting rearwardly therefrom, a knife actuating and locking nut, threaded on said stem, a frame member having a shank at one

70 end detachably secured in said socket member and having a fenestra at its forward end, a hemostat bar and a knife slidably mounted on said frame member, there being slots in said hemostat bar and knife in which

75 said actuating arm operatively engages said hemostat bar and knife to reciprocate them and said nut being adapted for actuating said knife independently of the hemostat bar, and said frame member, hemostat bar

80 and knife being disconnectible from the socket member as a unit.

4. A tonsillotome comprising a pair of pivoted together handles, one handle member of which is provided with an actuating

85 arm, and the other handle member with a socket member, a screw threaded stem fixedly secured to said socket member and projecting rearwardly therefrom, a knife actuating and locking nut threaded on said stem, a

90 frame member detachably secured in said socket member and having a fenestra at its forward end, a hemostat bar and a knife slidably mounted on said frame member, there being slots in said hemostat bar and

95 knife in which said actuating arm operatively engages said hemostat bar and knife to reciprocate them, a flexible detent connection between said knife and hemostat bar, for causing simultaneous movement of one

100 with the other, but permitting of independent relative movement, and said nut being adapted for actuating said knife independently of the hemostat bar.

5. A tonsillotome comprising a pair of

105 pivoted together handles, one handle member of which is provided with an actuating arm, and the other handle member with a socket member, a screw threaded stem fixedly secured to said socket member and projecting

110 rearwardly therefrom, a knife actuating and locking nut threaded on said stem, a frame member detachably secured in said socket member and having a fenestra at its forward end, a hemostat bar and a knife slid-

115 ably mounted on said frame member, there being slots in said hemostat bar and knife in which said actuating arm operatively engages said hemostat bar and knife to reciprocate them, a flexible detent on said knife

120 engaging in a socket in the hemostat bar for causing simultaneous movement of one with the other, but permitting of independent relative movement, and said nut being adapted for actuating said knife independ-

125 ently of the hemostat bar.

6. In a tonsillotome, the combination with a handle portion having a socket member thereon and an actuating arm, a screw threaded stem stationarily secured to said

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socket member, and a knife actuating and locking nut threaded on said stem, of a unitary structure connectible with and disconnectible as a whole from said socket member of the handle portion, and comprising a frame member and a hemostat bar and a knife slidably and detachably connected to said frame member, said hemostat bar and knife having operable connection with said actuating arm.

7. In a tonsillotome, the combination with a pair of pivoted together handles, one handle member of which is provided with an actuating arm, and the other handle member with a socket member, a screw threaded stem stationarily secured to said socket member, and a knife actuating and locking nut threaded on said stem, of a unitary structure connectible with and disconnectible from said socket member, and comprising a frame member and a hemostat bar and knife slidably and detachably secured thereto, said hemostat bar and knife having an operable connection with said actuating arm.

8. In a tonsillotome, the combination with a pair of pivoted together handles, one han-

dle member of which is provided with an actuating arm, and the other handle member with a socket member, a screw threaded stem stationarily secured to said socket member, a knife actuating and locking nut threaded on said stem, and a thumb screw threaded in one handle member and adapted to bear against and lock the other handle against retraction, of a unitary structure connectible with and disconnectible from said socket member and comprising a frame member and a hemostat bar and knife slidably and detachably secured thereto, said hemostat bar and knife having an operable connection with said actuating arm.

9. A tonsillotome comprising a handle member, a frame member supported thereby, a hemostat bar and a knife slidably mounted on said frame member, a flexible detent connection between said knife and hemostat bar for causing simultaneous movement of one with the other, but permitting of independent relative movement, hemostat bar operating means and independent knife operating means.

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