

March 2, 1948.

O. C. DANIELS, SR

2,436,989

TONSILLECTOME

Filed May 29, 1947

2 Sheets-Sheet 1

Fig. 1.

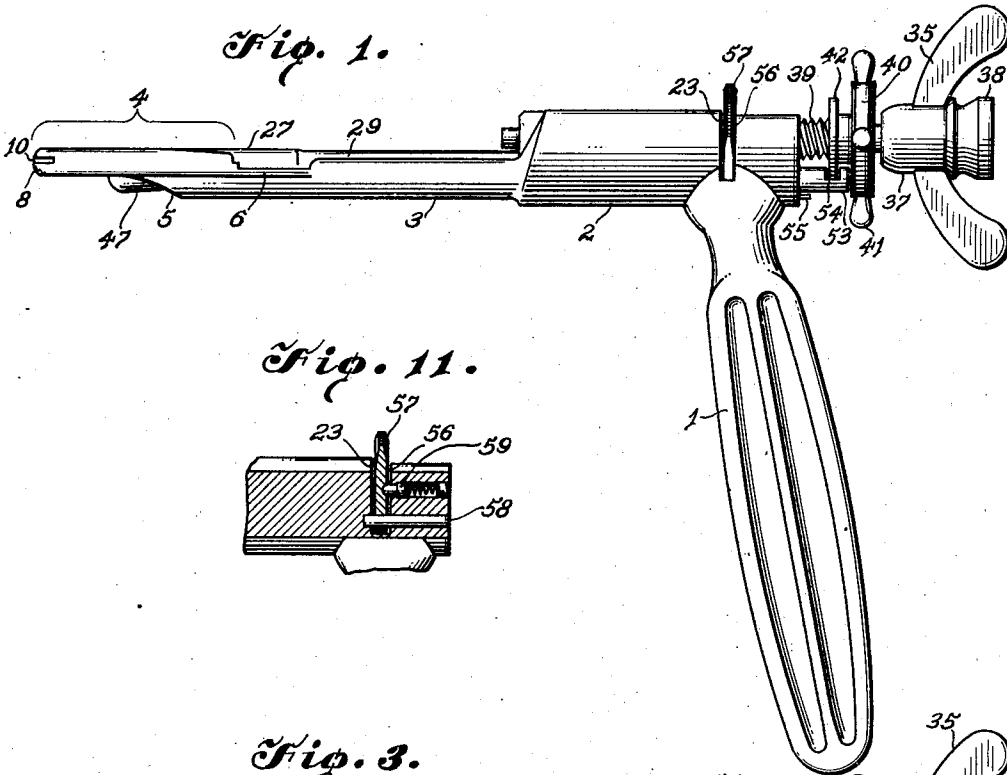


Fig. 11.

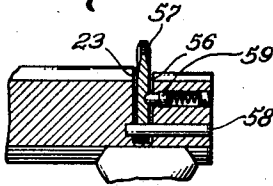


Fig. 3.

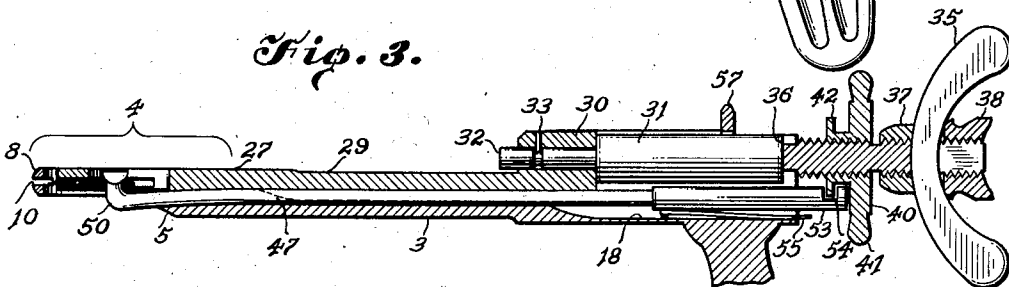
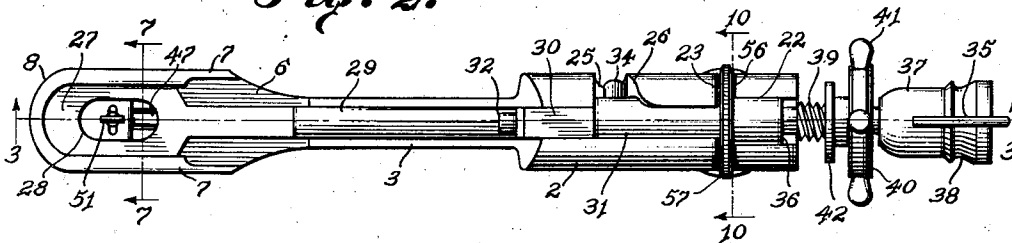


Fig. 2.



INVENTOR.
Oscar C. Daniels, Sr.

BY

Wm. H. Liddy, Clarence R. Rich
Attys.

March 2, 1948.

O. C. DANIELS, SR

2,436,989

TONSILLECTOME

Filed May 29, 1947

2 Sheets-Sheet 2

Fig. 4.

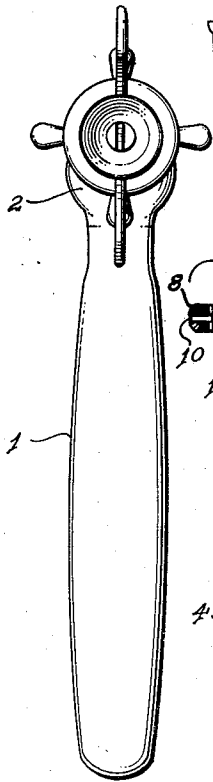


Fig. 9.

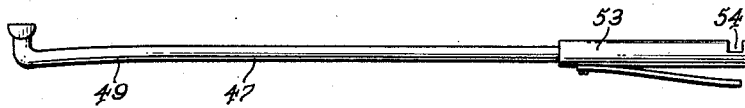


Fig. 5.

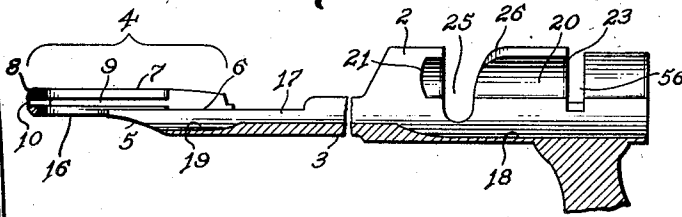


Fig. 8.

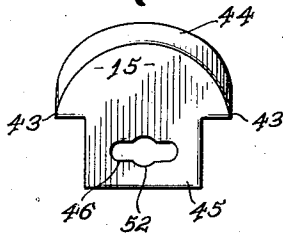


Fig. 7.

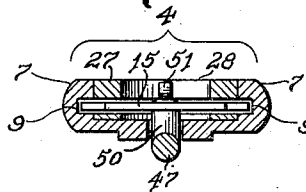


Fig. 6.

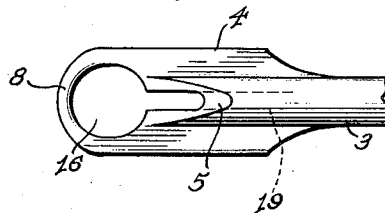
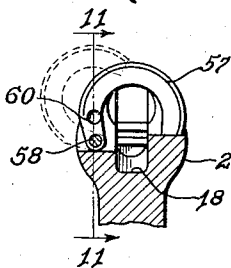


Fig. 10.



INVENTOR.
Oscar C. Daniels, Sr.
BY
Mumford, Glaccum & Rich
Attys.

UNITED STATES PATENT OFFICE

2,436,989

TONSILLECTOME

Oscar C. Daniels, Sr., Oriental, N. C.

Application May 29, 1947, Serial No. 751,252

6 Claims. (Cl. 128—309)

1

My present invention has for its object to provide a surgical instrument adapted particularly for the use of members of the medical profession in the removal of tonsils comprising an arrangement of parts capable of insertion into a patient's oral cavity for engagement with and separation of the tonsil from the surrounding tissue of the throat and applying a hemostat thereto and while the tissues are so held to sever the enucleated tonsil therefrom, at the same time lessening the possibility of hemorrhage.

My invention has for its further object to provide in an instrument of the character described certain novel arrangements in the construction of the pillory and its hemostatic blade together with the cutting blade and the respective operating members of said blades, the first being arranged for a quick forceful operation, the other a comparatively slower succeeding movement, said operating members being slidably mounted on a suitable handle and readily removable therefrom to permit sterilization of the instrument.

To these and other ends my invention comprises further improvements and advantages as will be further described in the accompanying specification, the novel features thereof being set forth in the appended claims.

In the drawings:

Figure 1 is a view showing in side elevation a surgical instrument embodying my invention.

Figure 2 is a top plan view thereof the hemostatic blade being shown in the closed or operative position, the guillotine being in the retracted position.

Figure 3 is a central longitudinal view taken on the line 3—3 of Fig. 2 the hemostatic blade and knife being each shown in their operated position.

Figure 4 is a rear view of the instrument as seen when looking toward the right hand end of Fig. 1.

Figure 5 is a longitudinal cross sectional view, similar to Fig. 3 but showing the barrel of the instrument stripped of the movable parts.

Figure 6 is a bottom plan view of the forward or distal end of the instrument frame, shown in Fig. 5.

Figure 7 is an enlarged cross sectional view taken on the line 7—7 of Fig. 2.

Figure 8 is a plan view of the cutting blade.

Figure 9 is a side of the operating rod for the cutting blade.

Figure 10 is a cross sectional view taken on the line 10—10 of Fig. 2 showing the transversely movable pivoted locking member on the barrel

2

for retaining the sliding parts thereon in operative position, and

Figure 11 is a detail sectional view taken on the line 11—11 of Fig. 10 showing the manner of journaling the locking member and providing a snap latch for holding it in the closed position.

Similar reference numerals, in the several figures, indicate similar parts.

For the purpose of performing tonsillotomy operations with the minimum damage and subsequent physical inconvenience to the patient, at the same time lessening the danger of hemorrhage at the point of severage of the tonsil I have provided an instrument capable of being used in either the right or left hand of the surgeon having a frame adapted to be inserted in an oral cavity and provided at its extremity with a window in which a tonsil may be pilloried and subsequently guillotined by independently adjustable longitudinal members capable of being manipulated at the rear end of the frame.

In carrying out my invention I provide a frame carried at its rear end on a handle 1 disposed at a slight angle thereto. The frame is of a suitable length so that when inserted in a patient's oral cavity its inner end will conveniently reach the sides of the throat while its outer end is free of the patient's lips. At its rear or outer end the frame has a cylindrical portion 2 from the center of the lower forward edge of which is a smaller cylindrical extension 3 carrying at its extremity a head 4. The latter is substantially the equal in width to the diameter of the cylinder 2 and extends laterally across the upper portion of the extension 3 and projects beyond it, the extension on its lower side being beveled, as indicated at 5 to provide clearance. On its upper side the head has a flat face 6 which lies slightly below the plane of the upper edge of the extension 3 and along its two edges are guide rails 7 which merge into the semi-circular forward or distal end of the instrument, as indicated at 8. On their proximate sides the rails are provided with longitudinal slots 9 (Fig. 7) and extending across the end of the head is a transverse slot 10. The slots 9 receive and guide the edges of a cutting blade 15 (Fig. 8), the forward sharpened edge of which is projected at the proper time through the slot 10 and cooperates with one of the edges thereof to sever tissue as will be later explained.

A circular aperture 16 is provided in the head 4, bounded on its forward side by the rail 8, and it is through this window or fenestra that the surgeon manipulates the tonsil to cause it to be

3

enucleated with reference to the tissue in which it is embedded.

In the upper side of the parts 2 and 3 of the frame I provide a longitudinal slot having parallel side walls and a semi-circular bottom. This slot in the part 3, as indicated at 17, (Fig. 5) is about half the depth thereof, but within the part 2 it is deepened, as indicated at 18, and where it extends into the head 8 it is also depressed and of substantially one-half the width in the portion lying below the face 6, as indicated at 19. In the cylinder 2 extending inwardly from its rear end, in a plane above the top of the extension 3, there are formed arcuate cutouts 20 the inner ends of which form shoulders 21. For a distance inwardly from the rear end of the cylinder 2 the top of the slot therein is widened slightly as indicated at 22 forming shoulders 23, (Fig. 2). At this point the frame is slotted transversely, as indicated at 24, to accommodate the locking element shown in Figs. 10 and 11 and located in a position forward of said slot, the cylinder is cut away on its right hand side to provide a recess 25, the rear edge of which is curved to form a cam surface 26.

Mounted on the above described frame and lying in the longitudinal recesses therein are the operating members for projecting and retracting the two tools which are operated successively. The element or tool which is used to first apply a hemostat to the tissues also serves in conjunction with the fenestra 16 of the frame to enucleate a faucial tonsil. It comprises a slide in the form of a flat plate 27 lying within the rails 7 on the head 4 having a rounded end fitting the inner curved edge of rim 8 of the head. This flat plate 27 is provided with a central elongated opening 28 and is supported on a rod 29 which lies in the groove of the part 3 of the frame and has at its rear end an upwardly extending rectangular boss 30 which lies in the forward end of the slot in the cylindrical enlargement 2 of the frame and serves to resist any twisting movement of the plate 27.

In operating the instrument the rod 29 is manipulated from a point in rear of the frame its first movement for the greater portion of its travel to engage the tissues in the operating area being effected by hand or thumb pressure and its final movement to compress said tissues being completed by a rotary movement of the manipulating element. These results are accomplished by journaling on the outer end of the boss a cylindrical extension 31 rotatable on an axis lying above the plane of the rod 29 formed by a journal pin 32 which is locked in the boss 30 by a pin 33 extending across an annular recess in the pin. The cylindrical member 31 fits in the arcuate recess 20 of the frame piece 2 and is therefore normally prevented from displacement on the frame. At the inner end of the member 31 is a stud 34 which defines the upper side of said member in that the stud is freely movable lengthwise of the rear end of the longitudinal slot of the frame and is positioned to cooperate with the cam surface when the pressure plate has partly closed the fenestra 16.

Manipulation of the hemostat element just described is effected by the butterfly wings 35 secured in a crosswise slot at the extremity of the rotatable extension 31. The latter is reduced in cross section providing the part 31 with an inner shoulder 36. Strengthening of the union of said parts is accomplished by threading on said extremity a nut 37 which is likewise slotted and securing it together with said wings by a lock nut

4

38. In the area between the nut 37 and the shoulder 36 is a screw thread 39 carrying the nut 40 which operates the guillotine and to this end is provided with studs 41 on its rim and on its forwardly extending hub is provided with an annular recess forming a circular flange 42.

The guillotine is the knife blade 15 (Fig. 8) carried in a transverse slot in the plate 27. It is slightly wider than the plate 27 so that its edges 43 fit in the guide channels 9 of the head 4. Thus the blade is guided and the plate 27 prevented from being dislodged from the head 4 of the frame. The forward sharpened edge 44 of the knife is curved and when moved forwardly it enters the transverse slot 10 in the head. At its rear side the blade has a tongue 45 provided with a transverse slot 46 which lies in the area of the opening 28 of plate 27.

Extending lengthwise of the frame and riding in the slotted portions 19, 17 and 18 thereof is a guillotine push rod 47 and since this underlies the rod 29 I also provide said rod on its lower side with a groove in order to make the parts of the instrument as compact as possible. The forward end of the guillotine push rod is bent downwardly slightly as indicated at 48 (Fig. 9) to pass beneath the tongue 45 of blade 15 and its extremity 50 projects upwardly through the blade slot 46. An interlock is provided for these parts by forming the extremity 50, above the blade, with ears 51 which lie in the plane of the axis of the rod 47 and are preferably created by upsetting the metal from opposite sides. The blade slot is purposely narrower than the diameter of the rod extremity 50 but is provided at its center with an enlargement 52 so by this arrangement it will be seen that the blade and rod may be disconnected by a relative right angular adjustment of the parts when they are removed from the frame.

At the outer end of rod 47 is a cylindrical enlargement 53 (Fig. 9) having a groove 54 embracing the flange 42 on nut 40. The length of the guillotine rod is such that when the nut 40 is backed off on screw 39 into engagement with the inner face of nut 37 the inner end of the rod will hold the cutting edge 44 of the blade 15 retracted behind the curved end of the plate 27. Likewise the plate is advanced so as to apply a hemostatic action on tissues said knife having been moved bodily forward with the plate may be subsequently advanced further to sever the tissues by turning up the nut 40 on its screw.

In an instrument of this character it is desirable to fit the parts somewhat loosely to facilitate their being disassembled for sterilization and subsequent assembly by a nurse or doctor's assistant. This, however, introduces a disadvantage because the surgeon usually operates upon a patient who is lying in a prone position and as he holds the instrument by the handle he introduces the frame into the oral cavity in a vertical position. Hence this looseness of the parts will permit the parts thereon to gravitate and close the fenestra 16. It is essential to prevent such accidental occurrences and I have found in practice that there are two ways to avoid this interruption to a surgeon's technique. One of these is to bend or distort the rod 47 sufficiently to create a slight friction against the walls of the groove in the frame, and the other, which I deem preferable, is to provide a leaf spring 55 on the lower side of the part 53, which frictionally engages the bottom 18 of the frame groove. This spring is pinned at its outer end to the part 53 and also serves an additional function of holding

5

the slot 54 in engagement with the flange 42 on nut 40.

An additional feature on the instrument is a locking device which restrains the rearward travel of the operating elements, yet may be released when the parts are to be disassembled. The shoulders 23 on the cylindrical part 2 of the frame define one side of a transverse slot 56 in which lies a curved finger 57 normally extending across the top of slot in the frame and lying in the path of the stud 34. This member is so positioned on the frame that the engagement of the stud therewith serves to position the hemostat plate 27 and the knife thereon in rear of the fenestral opening 16 at the inner end of the frame. The finger 57 is pivoted on a journal pin 58 inserted in a bore hole which extends inwardly from the rear end of part 2 of the frame. In a second parallel bore hole I provide a spring pressed latching stud 59 (Fig. 11) which cooperates with a countersunk depression 60 (Fig. 10) to restrain the finger against accidental movement into a released position, as shown in dotted lines in Fig. 10.

The nicety and practicability of this instrument will best be appreciated from a brief description of its use in performing a tonsillectomy. With the patient lying on his back the frame 3-4 is inserted in the mouth with the plate 27, or hemostatic blade, facing the tonsil that is to be removed. The distal end 8 is inserted between the tonsil and the posterior pillar and taking in the lower pole or base of the tonsil. The shaft or frame may extend diagonally across the oral cavity and even be pressed against the opposite side thereof thus providing an unobstructed view of its inner end. In this position the instrument may be manipulated slowly to dip or lift the tonsil out of its bed in the sinus tonsillar and cause it to pass into the fenestra 16 of the instrument which may be aided by a manual pressure against the tonsil to fully press it through the fenestra. At this stage pressure of the thumb, on the hand holding the handle 1, against the end of nut 38 will advance the plate 27 sufficiently to break the tonsil from its bed, care being taken to release any tissue that may be caught, after which the plate 27 is advanced by turning the wing nut 35. The force required at this stage of the operation is accomplished by the stud 34 riding across the cam surface 26 and applies the hemostat to the tissues before they are severed. At the same time enucleation of the tonsil occurs. Thereupon by turning nut 40 advancement of rod 47 pushes the knife forward in the plate 27 into the slot 10 in the extremity or bow 8 of the frame. The instrument is released from tissue held by the hemostat by reversing the direction of movement of the wing nut 35.

To disassemble the instrument it is merely necessary to swing the curved finger 54 into the dotted line position shown in Fig. 10 when all of the movable parts may be retracted into release position on the frame. By this movement the inner end of the cylindrical extension 31 passes beyond the shoulders 23 and is free of the arcuate recesses 20 so that the plate 27 and knife 15 are disengaged from their guides. The rods 29 and 47 being then released at both ends may be lifted clear of the slot in the frame pieces 2 and 3.

I claim:

1. In a hemostatic tonsillectome, the combination with a frame for insertion in the oral cavity comprising a shaft carrying at its outer end an enlargement and at its inner end a flat transverse head provided with an aperture, said frame being

6

slotted longitudinally on its upper side, a marginal rail surrounding the end of the head and extending at the sides thereof and provided with undercut guide ways, of a push rod lying in said frame slot having a hemostat plate located between the rail sides which is provided with a slot extending rearwardly from its forward end in the plane of the rail guide ways, an operating rod underlying the push rod in the frame slot, a knife blade lying in the slot of said plate with its edges engaging the rail guide ways and attached to the operating rod, and means at the outer end of the frame for advancing and retracting said rods on the frame.

2. In a hemostatic tonsillectome, the combination with a frame for insertion in the oral cavity comprising a shaft carrying at its outer end an enlargement and at its inner end a flat transverse head provided with an aperture, said frame being slotted longitudinally on its upper side, a marginal rail surrounding the end of the head and extending at the sides thereof and provided with undercut guide ways, of a push rod lying in said frame slot having a hemostat plate located between the rail sides, said plate being provided with an aperture and also slotted transversely, an apertured knife blade lying in the plate slot having lateral edges engaging in the rail guide ways, an operating rod located in the frame slot beneath the push rod and having its forward end extending below the knife blade and upwardly into engagement with the aperture therein, and means at the rear end of the frame for advancing and retracting said rods thereon.

3. In a hemostatic tonsillectome, the combination with a frame for insertion in the oral cavity comprising a shaft carrying at its outer end an enlargement and at its inner end a flat transverse head provided with an aperture, said frame being slotted longitudinally from the rear side of the head aperture to the rear side of its enlargement, a marginal rail surrounding the end of the head and extending at the sides thereof and provided with undercut guide ways, of a cylindrical push rod lying in the frame slot having at its forward extremity a hemostat plate located between the rail sides, said plate being provided with an aperture and also slotted transversely and said push rod being provided on its lower side with a guide slot, a knife blade located in the plate slot with its lateral edges resting in the rail guide ways and provided with an elongated aperture, an operating rod located beneath the push rod in the longitudinal frame and rod slots, a forward end on said operating rod extending upwardly through the blade slot and having a projection extending over said blade, and means at the rear end of the frame for advancing and retracting said rods thereon.

4. In a hemostatic tonsillectome, the combination with a frame for insertion in the oral cavity comprising a shaft carrying at its outer end an enlarged portion and at its inner end a pillory head and guillotine, said frame enlargement being slotted lengthwise on its upper side and having cutaway portions in the walls of said slot, a push rod lying in the frame slot having a hemostat plate at its forward end cooperating with the head, and at its outer end a cylindrical stem, the sides of which extend into said cutouts, of a knife blade on said plate, a rod for operating it underlying the push rod, a spring thereon engaging the bottom of the frame slot and providing frictional resistance to the movement of both rods, and means at the rear end of the

7

frame for advancing and retracting both rods thereon.

5. In a hemostatic tonsillectome, the combination with a frame for insertion in the oral cavity comprising a shaft carrying at its outer end an enlarged portion and at its inner end a pillory head and guillotine, said frame enlargement being slotted lengthwise on its upper side and having cut out portions at the sides of the slot, said enlargement being also slotted at one side at a point forward of said cut outs and provided with a transverse slot substantially midway of the cut outs, push rods superimposed in the frame slot, the upper rod carrying at its forward end a hemostat plate cooperating with the frame head, and having at its rear end a cylindrical stem lying in the cutouts, a stud thereon projecting above the upper edge of the frame enlargement, a curved finger pivoted at one side of the latter in the transverse slot therein and extending into the path of said stud, a guillotine knife carried on the hemostat plate and connected to the other push rod, and means at the rear end of the frame for advancing and retracting both rods.

6. In a hemostatic tonsillectome, the combination with a frame for insertion in the oral cavity comprising a shaft carrying at its outer end an enlarged cylindrical portion and at its inner end a pillory head and guillotine, an angularly dis-

8

posed handle on the under side of the cylinder, the latter being provided on its upper side with a longitudinal slot the side walls of which are undercut, said cylinder having at the forward end of the undercuts a lateral slot and also provided on its side in alignment with the handle a transverse slot, push rods superimposed in the frame slot the upper rod carrying at its forward end a hemostat plate cooperating with the frame head, a guillotine knife on said plate connected to the other rod, a cylindrical stem journaled on the outer end of the upper rod and lying in said cutouts, a stud on the upper side of the cylinder projecting above the top of the cylinder, a curved finger pivoted at one side of the latter and normally lying in the transverse slot thereon in the path of retractive movement of said stud and capable of being tripped into inoperative position by the thumb of the operator's hand grasping the handle, a spring on the lower push rod engaging the bottom of the slot in the cylinder normally providing resistance to lengthwise movement of said rods relatively to the frame and also serving to elevate them thereon when the cylindrical stem is retracted out of engagement with said cutouts, and means at the rear end of the frame for advancing and retracting said rods.

OSCAR C. DANIELS, SR.