

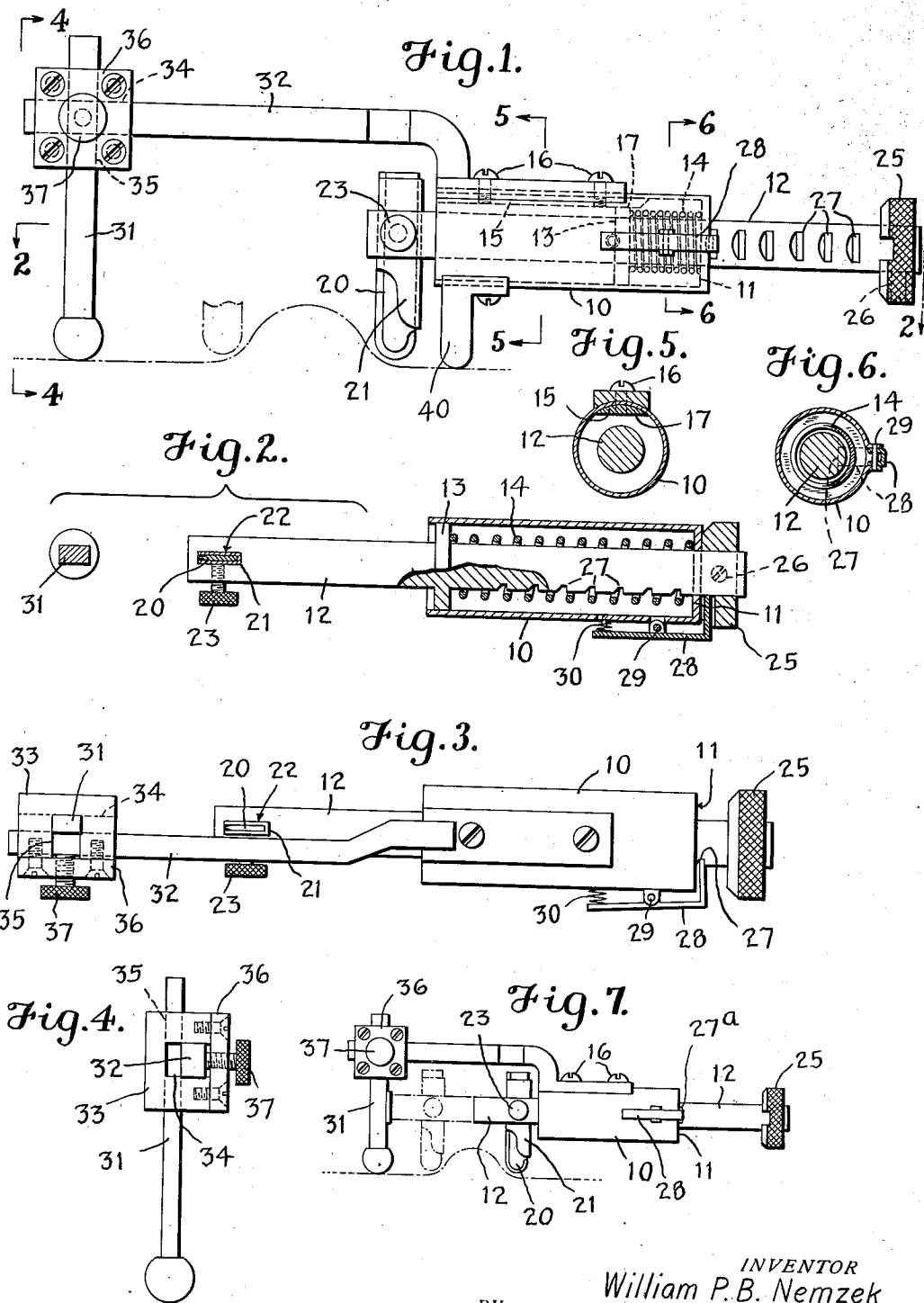
Sept. 14, 1937.

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2,092,812

AUTOMATIC SCALPEL

Filed March 10, 1936



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2,092,812

AUTOMATIC SCALPEL

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Application March 10, 1936, Serial No. 68,021

8 Claims. (Cl. 128—314)

The invention relates to an automatic scalpel to be used by physicians in lancing certain types of infection such as boils, abscesses, etc.

One of the objects of the invention is to provide a device of extreme simplicity. A further object is to provide a device which is easily manipulated and is most efficient in operation.

It is a well known fact that a patient will view with alarm the knife or scalpel in the doctor's hand and will thus become nervous and make a simple lancing operation most troublesome for the doctor. In using the present invention the patient practically does not see the scalpel. The apparatus is placed over the infection to be lanced and the operation is done so expeditiously and rapidly the patient is hardly aware of it before it is completed. Thus the doctor's work is greatly simplified and the wear and tear on the patient's nerves is eliminated. In lancing most infections it is necessary to inject some local anesthetic, freeze them or give a general anesthesia before cutting. In using the present invention the work is done so quickly and painlessly one can avoid any type of anesthetic.

Other objects and advantages will become apparent as this specification proceeds. Referring to the drawing forming a part thereof:

Fig. 1 is a side elevation, the parts being in the position they would assume before the blade has been released;

Fig. 2 is a sectional plan view taken on line 2—2 of Fig. 1, the parts being in the position they would assume after the blade has been projected through the infection;

Fig. 3 is a top plan view;

Fig. 4 is an end elevation of the adjustable rest and its supporting bar;

Figs. 5 and 6 are detail cross sectional views taken on the lines 5—5 and 6—6, respectively, of Fig. 1; and

Fig. 7 is a side elevation of another form of the invention.

Referring again to the drawing, and more particularly to Figs. 1 to 6, the reference numeral 10 designates what may be termed a holder. As illustrated, this holder is tubular in form and has a closed end 11 which forms a bearing for a longitudinally movable member or plunger 12.

At its intermediate portion the plunger 12 is provided with a flange 13. The flange 13 has a sliding contact with the interior surface of the tubular holder 10. This bearing, in addition to the bearing formed in the closed end 11 of the holder, causes the plunger to travel in a straight line and insures against the possibility of the

plunger canting or wobbling. A spring 14 is interposed between the flanges 13 and the closed end 11 of the holder and this spring normally urges the plunger in what is termed, only for reasons of orientation, a forward direction.

Suitable means are provided for preventing any rotation of the plunger. As illustrated this means comprises a key or strip 15 which is secured to the inner wall of the holder by screws 16 and engages a flattened side or slabbed off portion 17 of the flanges 13.

The forward end of the plunger 12 carries a blade or knife 20. This blade is made of extremely thin high grade steel and its forward edge and rounded lower part are sharpened. The blade is preferably provided with a sheath 21 and the blade and its sheath pass through and are vertically adjustable in a rectangular hole 22 in the plunger. A thumb screw 23 is threaded into the plunger and its inner end impinges on the sheath 21. After the knife or blade has been properly adjusted as to position and the thumb screw 23 is tightened the blade is firmly held against vertical movement. The shape of the aperture 22 prevents any possibility of a rocking movement.

The rear end of the plunger 12 is provided with a knob or handle 25 which is secured in position by a set screw 26. The knob 25 is utilized to draw the plunger rearwardly and compress the spring 14.

The plunger 12 is provided with a plurality of notches 27 any one of which may be engaged by a trigger 28 pivoted at 29 in ears struck up from the holder 10. The trigger is normally urged toward the plunger by a light spring 30. It will thus be apparent that the throw of the knife may be controlled.

The doctor will determine the amount of throw of the blade in accordance with the size of the infection to be lanced. The plunger will be withdrawn and the trigger engaged with the desired notch. After the device has been positioned over the infection with the blade properly adjusted the forward part of the trigger is pressed and the blade is instantaneously projected through the infection.

An adjustable rest 31 is positioned forwardly beyond the limit of movement of the blade. This rest is adjusted both vertically and horizontally. In lancing a small boil or abscess the rest is advantageously moved rearwardly or closer to the blade. The opposite would be true in the lancing of a large sized infection. The vertical adjustment is used in conjunction with the ver-

tical adjustment of the blade to control the depth of the cut.

The vertical and horizontal adjustment of the rest 31 may be accomplished in various manners. As illustrated the rest is carried by an overhanging arm 32 secured to the holder 10 by the screws 16. A block 33 is provided with a horizontal slot 34 to accommodate the guide arm 31 and a vertical slot 35 in which the stem of the rest 31 is guided. A plate 36 is suitably secured over the open ends of the slots 34 and 35 and a thumb screw 37 is threaded into the plate. The thumb screw 37 engages the guide arm 32 which in turn is pressed against the stem of the holder 31 and the stem is confined against the bottom of the slot 35. It will be apparent that by loosening the thumb screw 37 the rest may be adjusted horizontally or vertically.

If desired an additional rest 40 may be secured to the forward portion of the holder 10 and this rest may be adjustable vertically and horizontally if desired.

Fig. 7 illustrates a somewhat different form of the invention. In this form the throw of the plunger 12 is controlled by positioning the rest 31. The plunger is provided with only one notch 27a which is engaged by the trigger 28. If only a small amount of movement of the blade is desired the rest 31 is moved closer to the holder 10 and acts as a stop for the plunger. In this form the auxiliary rest 40 has been omitted.

Changes in details of construction and arrangements of parts such as would occur to one skilled in the art are to be considered as coming within the spirit of the invention as set forth in the appended claims.

I claim:—

1. An automatic scalpel having in combination a holder, a longitudinally movable member carried by said holder, a blade carried by said longitudinally movable member, resilient means normally urging said longitudinally movable member in one direction, means carried by said holder for releasing said longitudinally movable member after said resilient means has been compressed and cause said longitudinally movable member and the blade carried thereby to be rapidly projected from said holder, and a rest positioned beyond the limit of movement of said blade, said rest extending away from said holder in substantially the same direction as said blade so as to act as a support while said blade is being projected.

2. An automatic scalpel having in combination a holder, a longitudinally movable member carried by said holder, a blade carried by said longitudinally movable member, means whereby said blade may be raised or lowered, resilient means normally urging said longitudinally movable member in one direction, means carried by said holder for releasing said longitudinally movable member after said resilient means has been compressed and cause said longitudinally movable member and the blade carried thereby to be rapidly projected from said holder, a rest positioned beyond the limit of movement of said blade, and means whereby said rest may be raised or lowered and adjusted in a longitudinal direction.

3. An automatic scalpel having in combination a holder, a longitudinally movable member carried by said holder, a blade carried at the forward end of said longitudinally movable member, resilient means normally urging said longitudinally movable member in a forward direction, means carried by said holder for releasing said longi-

tudinally movable member after said resilient means has been compressed and cause said longitudinally movable member and the blade carried thereby to be rapidly projected in a forward direction and a rest carried by said holder and positioned forwardly beyond the limit of movement of said blade, said rest extending away from said holder in substantially the same direction as said blade so as to act as a support while said blade is being projected.

4. An automatic scalpel having in combination a holder, a longitudinally movable member carried by said holder, a blade carried at the forward end of said longitudinally movable member, means whereby said blade may be raised or lowered, resilient means normally urging said longitudinally movable member in a forward direction, means carried by said holder for releasing said longitudinally movable member after said resilient means has been compressed and cause said longitudinally movable member and the blade carried thereby to be rapidly projected in a forward direction, a rest carried by said holder and positioned forwardly beyond the limit of movement of said blade, and means whereby said rest may be raised or lowered and adjusted in a longitudinal direction.

5. An automatic scalpel having in combination a holder, a plunger slidably mounted in said holder, a blade carried by the forward end of said plunger, means whereby said blade may be raised or lowered, spring means normally urging said plunger in a forward direction, a trigger carried by said holder for releasing said plunger after said spring means has been compressed and cause said plunger and the blade carried thereby to be rapidly projected in a forward direction, an overhanging arm carried by said holder, a rest carried by said arm and positioned forwardly beyond the limit of movement of said blade, and means whereby said rest may be raised or lowered and adjusted longitudinally.

6. An automatic scalpel having in combination a holder, a plunger slidably mounted in said holder, a blade carried by the forward end of said plunger, means whereby said blade may be raised or lowered, a spring encircling said plunger and normally urging said plunger in a forward direction, means for preventing said plunger from rotating, a trigger carried by said holder for releasing said plunger after said spring has been compressed and cause said plunger and the blade carried thereby to be rapidly projected in a forward direction, an overhanging arm carried by said holder, a rest carried by said arm and positioned forwardly beyond the limit of movement of said blade, and means whereby said rest may be raised or lowered and adjusted longitudinally.

7. An automatic scalpel having in combination a holder, a plunger slidably mounted in said holder, a blade carried at the forward end of said plunger, means whereby said blade may be raised and lowered, spring means normally urging said plunger in a forward direction, means carried by said holder for releasing said plunger after said spring means has been compressed and cause said plunger and the blade carried thereby to be rapidly projected in a forward direction, a rest carried by said holder and positioned forwardly beyond the limit of movement of said blade, said rest being adapted to act as a stop for said plunger in its forward movement, and means whereby said rest may be raised and lowered and adjusted in a longitudinal direction.

8. An automatic scalpel having in combination:

a holder, a plunger slidably mounted in said holder, a blade carried at the forward end of said plunger, means whereby said blade may be raised and lowered, spring means normally urging said
5 plunger in a forward direction, means carried by said holder for releasing said plunger after said spring means has been compressed and cause said plunger and the blade carried thereby to be

rapidly projected in a forward direction, a rest carried by said holder and positioned forwardly beyond the limit of movement of aid blade, means whereby said rest may be raised and lowered and adjusted in a longitudinal direction, and an auxil-
5 iary rest carried by said holder.

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