June 1, 1948. J. D. REESE 2,442,436

DERMATOME

Filed Oct. 23, 1945

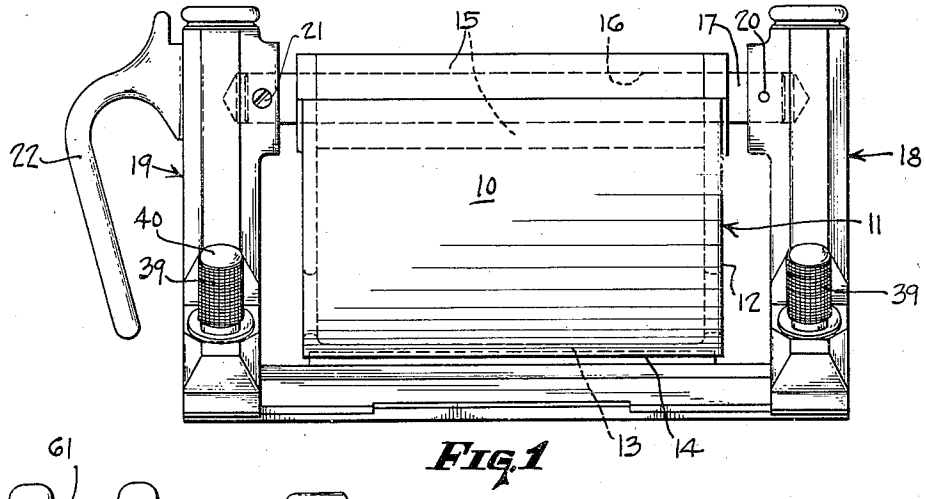


FIG. 1

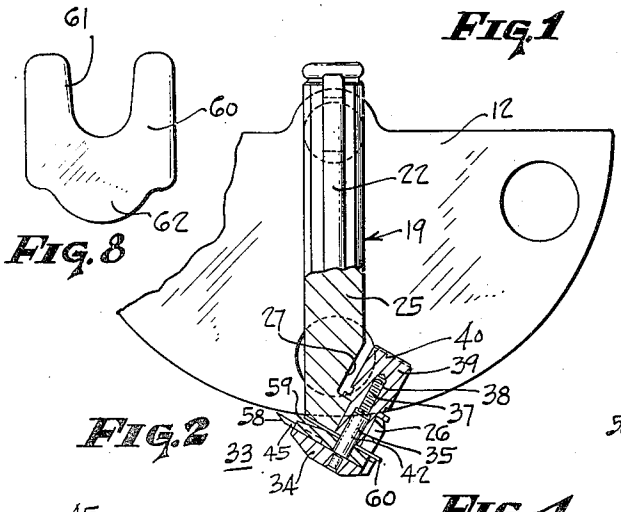


FIG. 8

FIG. 2

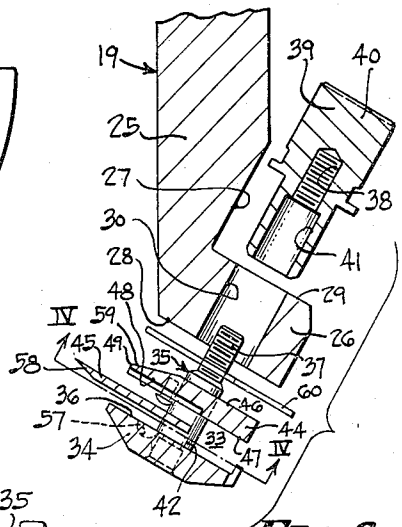


FIG. 3

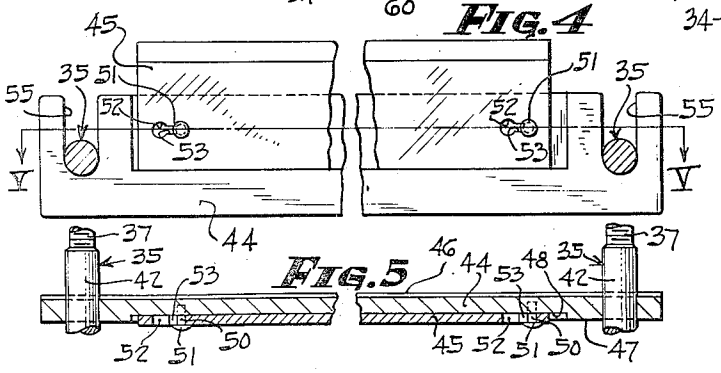


FIG. 4

FIG. 5

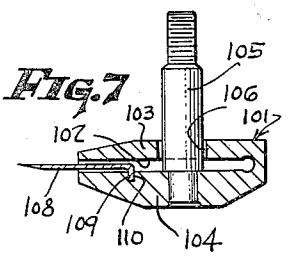


FIG. 7

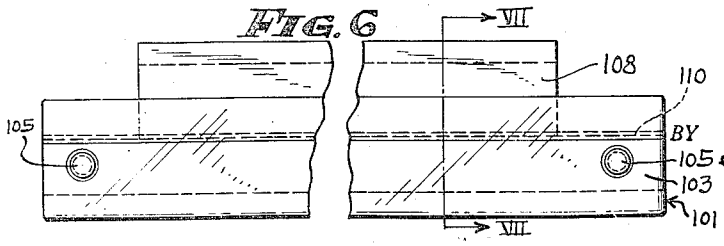


FIG. 6

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DERMATOME

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2 Claims. (Cl. 128—305.5)

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This invention relates to dermatomes, more particularly to the blade-holding mechanism thereof, and has for an object to provide improved mechanism of this character.

Another object of the invention is to provide, in a dermatome, an expendable blade, together with novel means for holding the blade during use.

Yet another object of the invention is to provide, for use in a dermatome, a novel holder for an expendable blade.

A further object of the invention is to provide, in a dermatome, a readily removable holder for an expendable blade.

While the improvements of the present invention may be incorporated in various types of dermatomes, they are of particular advantage in the type comprising a body member having a convex surface, a pair of posts at opposite sides of the body member, blade-supporting structure carried by one end of the posts, and means supporting the posts at their other ends from the body member for movement of the blade parallel to, and at a predetermined distance from, the body member convex surface.

In prior dermatomes of this type, it has been customary to use a relatively expensive blade and to resharpen and rehone the blade whenever necessary, usually after cutting a half dozen grafts or less. While to one who has never cut a graft with a dermatome, it might seem that such a blade should cut a large number of grafts before requiring resharpening, it should be realized that, in cutting a normal graft, the blade splits a piece of skin approximately four inches wide and eight inches long, in a direction parallel to the surface of the skin. This is the equivalent of a scalpel making incisions which total over 130 feet. It is a matter of simple arithmetic that, in cutting six grafts (the normal life of a dermatome blade for one sharpening), the blade does the equivalent cutting of a scalpel making over 750 incisions each a foot in length. Obviously, frequent resharpening of these blades is necessary.

This frequent resharpening produces a further problem in that each resharpening moves the cutting edge of the blade back a few thousandths of an inch, and what is worse, it usually moves it back more at one end of the blade than at the other. As a result, it is necessary for the operator to reset or readjust the blade-supporting structure relative to the body member and its convex surface, to obtain a graft of uniform thickness.

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A solution to this problem is offered in applicant's copending application, Serial No. 618,523, filed September 25, 1945, wherein there is disclosed a dermatome whose posts are longitudinally adjustable, each independently of the other, to take care of changes in the blade-cutting edge, resulting from resharpening. In addition, the blade-carrying bar can be adjusted toward and away from the posts by which it is supported, to vary the thickness of the graft to be cut.

The present invention provides a greatly simplified solution to this problem by providing an expendable blade, so that no resharpening is required, and the means for longitudinally adjusting each post independently of the other (disclosed in applicant's copending application, supra) can be omitted.

In order to render a dermatome blade expendable, a minimum of the necessary high grade steel must be used, which results in a relatively flexible blade, requiring special holding means. An object of the present invention is to provide such a blade holder.

These and other objects are effected by the invention as will be apparent from the following description and claims taken in accordance with the accompanying drawings, forming a part of this application, in which:

Fig. 1 is a front elevational view of a dermatome embodying the novel features of the present invention;

Fig. 2 is a side elevational view of the left-hand end of Fig. 1, with a portion thereof in section;

Fig. 3 is an enlarged exploded view of the sectioned portion of Fig. 2;

Fig. 4 is a sectional view, taken along the line IV—IV of Fig. 3, looking in the direction indicated by the arrows;

Fig. 5 is a sectional view, taken along the line V—V of Fig. 4, looking in the direction indicated by the arrows;

Fig. 6 is a bottom plan view of a modified form of blade holder and blade;

Fig. 7 is a sectional view, taken along the line VII—VII of Fig. 6, looking in the direction indicated by the arrows; and

Fig. 8 is a plan view of one of the spacing shims, shown in Figs. 2 and 3.

Referring now to the drawings more in detail, the reference character 10 indicates, in its entirety, a dermatome comprising a body member 11 consisting of a pair of semi-cylindrical side walls 12 joined along their curved edges by a

concave-convex wall 13 having an outer convex surface 14. The opposed side walls 12 carry a handle 15 bridging the space therebetween and by which the operator may rock the body member 11 on the donor area of the patient's body. The handle 15 has a bore 16 therethrough constituting a bearing in which is journaled a shaft 17 for rotary and reciprocatory movement relative to the body member.

The shaft 17 carries on its terminal portions a pair of posts 18 and 19. Preferably, both posts are threaded on the terminal portions of the shaft 17, the post 18 being secured by a pin 20 and the post 19 being adjustably fastened by a set screw 21.

Inasmuch as the posts 18 and 19 are identical except that the latter carries a handle 22, by which the shaft, posts and associated blade-supporting structure may be reciprocated relative to the body member, the structure of only one post will be described in detail. Each post comprises an arm portion 25, preferably solid in section, extending radially of the shaft 17 and provided at its free end with a head 26, formed by provision of a notch 27 in one side of the post.

The outer end of the post is flat, as at 28, in a plane parallel to the bottom side 29 of the notch 27, and a cylindrical opening 30 extends through the head 26 perpendicular to the surfaces 28 and 29.

Carried by the two post heads 26, and bridging the space therebetween, is a blade-supporting structure, indicated in its entirety by the reference character 33, and comprising a backup bar 34 having a pair of studs 35 projecting perpendicularly from the upper face 36 thereof. Each stud 35 has a threaded terminal portion 37 of reduced diameter adapted to be received in a mating internally-threaded bore 38 of an adjusting nut 39 having a knurled finger piece 40. The threaded bore 38 has a guide portion 41 of larger diameter for close reception of the mating portion 42 of the stud 35. The adjusting nut 39 has a lower cylindrical portion 43 adapted to be rotatably received in the mating cylindrical opening 30 of the post head 26. It will be apparent that, as the adjusting nuts 39 are turned clockwise (assuming the stud terminal portions 37 are threaded right hand), the backup bar 34 will be drawn towards the outer end surfaces 28 of the post heads 26 to clamp between the latter surfaces and the upper surface 36 of the backup bar, a blade holder 44 carrying a blade 45.

As best shown in Figs. 4 and 5, the blade holder 44 is in the form of a flat bar having parallel top and bottom faces 46 and 47, respectively. The bottom face 47 is provided with an elongated recess 48 opening through the front edge 49, the recess being of greater length than the blade 45 removably secured therein by suitable means, such as the pair of pins 50 having heads 51. The blade 45, which is longitudinally slidable in the recess 48, has a pair of buttonhole-shaped slots adapted, when the blade is at one extremity of its sliding movement in the recess, to have their enlarged portions 52 vertically aligned with the headed pins 50, said enlarged portions 52 of the slots being of a size to pass the heads 51 of the pins for vertical movement of the blade into and out of the recess. When the blade has been positioned in the recess with the pins extending through the slot's enlarged portions 52, it may be slid longitudinally of the recess to the other extremity of its movement, when the pins will be disposed in the narrow portions 53 of the slots

which are narrower than the heads 51 of the pins, with the result that the heads overlie the blade and prevent its accidental removal from the recess.

The holder 44 is provided with notches 55 in the terminal portions thereof adapted to closely embrace the studs 36 of the backup bar 34, when assembled therewith in the manner illustrated in Figs. 2 and 3.

Preferably, depth of the blade holder recess 48 is a few thousandths of an inch less than the thickness of the blade 45, with the result that when the blade, its holder and the backup bar are completely assembled, as in Fig. 2, the blade 45 is actually gripped by, and clamped between, the backup bar and the holder, the latter being clamped against the heads of the posts by the action of the adjusting nuts 39. The upper surface 36 of the backup bar 34 is provided with a pair of recesses 57 into which fit the heads 51 of the pins 50 when the entire blade-supporting structure 33 is assembled, (Fig. 3).

It is preferred that the blade holder upper surface 46 be beveled, as at 58, adjacent the front edge 49 from which the blade-cutting edge 59 projects, to provide ample clearance between the blade holder and the convex outer surface 14 of the dermatome body member 11, (Figs. 2 and 3).

Adjustment of the spacing of the blade-cutting edge 59 with respect to the body member convex surface 14 is obtained by insertion of shims 60, of the desired thickness, between the blade holder and the post heads 26, (Figs. 3 and 3). Preferably, the shims have notches 61 adapted to embrace the studs 36, and finger tabs 62 serving as handles.

It will be apparent that the structure described provides for use of a relatively thin and inexpensive blade, which can be used until dull, and then discarded and replaced. The rigid clamping action provided for the blade by the backup bar and the blade holder affords suitable support for a blade as thin and flexible as must result from the use of material intended to be expendable.

In Figs. 6 and 7 there is illustrated a modified construction differing from that just described in that the separate blade holder is omitted entirely, and the backup bar 101 is provided with a deep slot 102 rendering the top and bottom portions 103 and 104, respectively, flexible relative to each other. The pair of studs 105 are secured in the bottom portion 104 and pass freely through openings 106 in the top portion 103, with the result that tightening of the adjusting nuts 39 to draw the backup bar 101 toward the post heads 26 forces the top and bottom portions 103 and 104 toward each other to clamp in the slot or recess 102 an expendable blade 108. The latter may be positioned in the slot or recess 102, relative to the front edge of the slot, by a flange 109, at the rear edge of the blade, received in a groove 110 formed in the bottom portion 104 of the backup bar 101. In this construction, the blade 108 is assembled in the bar by sliding it longitudinally into the recess 102 and groove 110 from an end of the bar.

While I have shown the invention in several forms, it will be obvious to those skilled in the art that it is not so limited but is susceptible of various other changes and modifications without departing from the spirit thereof.

What is claimed is:

1. A blade holder for use with a dermatome of the type comprising a body member having a

convex surface, a pair of posts at opposite sides of the body member, blade-supporting structure carried by the posts at one end thereof, a blade supported by the blade-supporting structure, and means supporting the posts at their other ends from the body member for movement of the cutting edge of the blade parallel to, and at a predetermined distance from, the body member convex surface; said blade holder comprising a bar having a recess therein of a length greater than the length of the blade to be held thereby, and blade-securing means carried by said bar and so disposed with respect to said recess that a blade positioned in said recess at one extremity of the latter is freely removable therefrom and when disposed in said recess at the other extremity thereof is retained against free removal therefrom.

2. A blade holder as specified in claim 1, wherein

said blade-securing means comprises a headed stud adapted to be received in a mating slot of the buttonhole type formed in the blade, said stud being disposed in the larger portion of the slot when the blade is at said one extremity of the recess, and in the smaller portion of the slot when the blade is at said other extremity of the recess.

JOHN D. REESE.

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The following references are of record in the file of this patent:

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