

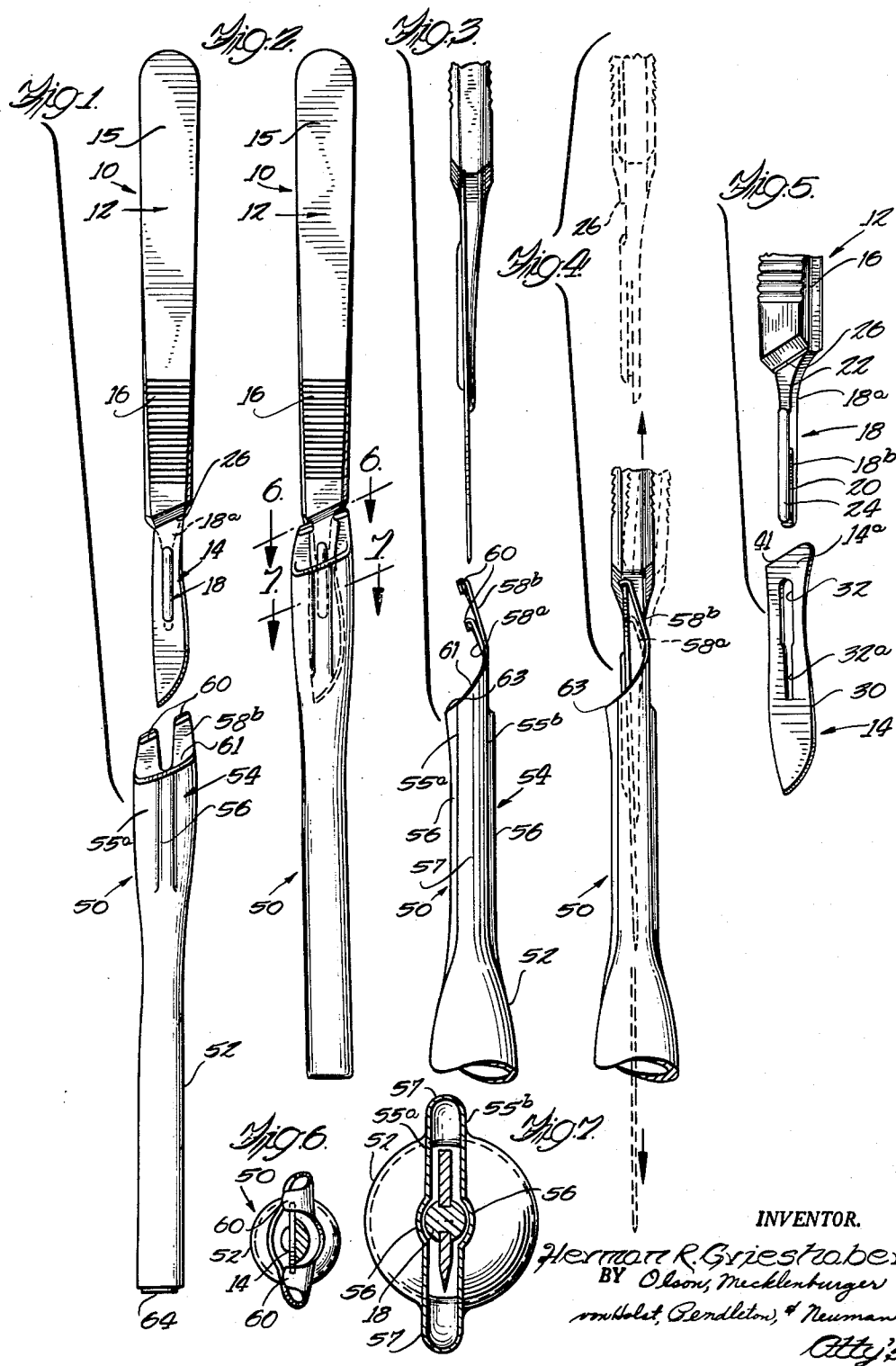
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BLADE-REMOVING TOOL

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BLADE-REMOVING TOOL

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This invention relates to a tool for rapidly removing in complete safety a disengageable blade from a scalpel handle or the like.

One type of scalpel commonly employed in surgical work comprises a handle to which a detachable blade is securely locked in place at one end thereof. In view of the great importance attached to each surgical operation, the scalpel blades must always be in optimum condition both as to sharpness and cleanliness. Old blades must be continuously removed from the handle, therefore, in the normal course of use either for sharpening, replacement or cleansing purposes.

Thus, following surgical use, the blade must be disengaged from the handle portion for disposal, if the same is not to be used again. If the blade is yet serviceable it is cleaned, and sharpened if necessary, prior to subsequent reuse.

In a common scalpel construction, a thin slotted blade is disposed in interlocking engagement with a slender finger portion which projects from and is formed integrally with one end of a handle section.

Although assembly of the blade on the finger portion is a rather easy matter, the blade has heretofore been disengaged therefrom only with difficulty. Not only must a portion of the blade be flexed a small amount to disengage from the finger portion, but in addition, an axial thrust must be given the flexed blade to effect complete disengagement of the blade from the handle. The simultaneous flexing and axial movement of the blade which has a sharp cutting edge is obviously a dangerous manipulation. The danger is even more pronounced if the blade has been employed in the cutting of diseased tissue and has infectious organisms on the cutting edge thereof.

Accordingly, it is an object of this invention to provide a tool for disengaging a blade from a handle for a scalpel or the like in a ready and facile manner.

It is another object of this invention to provide a tool for safely disengaging a blade from a scalpel handle which requires no manual contact with the blade during the entire course of disengagement.

It is a still further object of this invention to provide a surgical blade-disengaging tool which is adapted to accommodate blades which may vary in size and shape over a wide range.

It is a still further object of this invention to provide a blade-disengaging tool which is of sturdy construction, effective in operation, and inexpensive to produce.

The above and other objects of this invention will become more apparent from the following detailed description when read in the light of the accompanying drawing and appended claims.

In one embodiment of this invention a tool which may be formed from tubing is provided having an elongate handle. One end of the handle is flattened somewhat so as to provide flat opposed surfaces in which are formed opposed channel-like grooves which function as guide tracks for the finger portion of the scalpel when said tool and the scalpel finger portion are in assembled relation. The grooves are disposed substantially parallel to the longitudinal axis of the handle.

Extending longitudinally from one (bottom) flat surface of the flattened end portion of the handle are two spaced-apart prongs which are inclined upwardly a slight amount. The spacing between the prongs is such as to permit the slender finger portion of the scalpel handle to

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pass therebetween. The free end of each prong is offset upwardly.

In the course of disassembling a blade from a scalpel handle with the improved tool, the blade end of the scalpel is initially inserted longitudinally through the open flattened end of the tool between the channel-like grooves. The offset ends of the tool prongs slidably engage the undersurface of the blade until they engage behind the innermost edge of the blade adjacent the scalpel handle. The inclination of the prongs cause the innermost edge portion of the accommodated blade to be flexed upwardly so that such edge portion thereof will clear the slender finger portion of the scalpel, which accommodates the blade, when the scalpel is withdrawn longitudinally from the flattened end of the tool. The blade of the scalpel is held in place by the offset ends of the prongs during withdrawal of the scalpel handle.

For a more complete understanding of the invention, reference will now be made to the drawing wherein:

FIGURE 1 is a front elevational view of a scalpel having a detachable blade, and one form of the improved tool; the tool and scalpel are shown in relative positions prior to telescopic engagement with one another.

FIG. 2 is similar to FIG. 1 but showing the tool and scalpel in fully assembled relation with respect to one another.

FIG. 3 is an enlarged fragmentary right side elevational view of FIG. 1;

FIG. 4 is an enlarged fragmentary side elevational view similar to FIG. 3 but showing the tool and scalpel in fully assembled relation; the scalpel handle and disengaged blade therefor are shown in dotted lines in their relative positions subsequent to withdrawal of the scalpel handle from the tool end;

FIG. 5 is an enlarged fragmentary perspective view of a scalpel showing the slender finger portion of the scalpel handle and the blade therefor in disassembled relation;

FIG. 6 is a sectional view taken along line 6—6 of FIG. 2; and

FIG. 7 is an enlarged sectional view taken along line 7—7 of FIG. 2.

Referring now to FIGS. 1 and 5, a scalpel 10 is illustrated having a handle 12 and blade 14 the latter being detachably mounted on one end thereof. Handle 12 has a smooth surfaced upper portion 15, see FIG. 1, which is adapted to comfortably rest in the palm of the surgeon; a roughened central portion 16, which is adapted to be readily grasped by the fingers of the surgeon; and a slender finger-like lower portion 18. The blade 14 is adapted to be removably accommodated by end portion 18 of the handle, in manner to be described more fully hereinafter.

The blade-holding portion 18 is provided with a peripheral slot 20, see FIGS. 5 and 7, for the purpose of accommodating the narrowed lower portion 32a of a slot 32 formed in blade 14. The upper end 18a of portion 18, which is adjacent the central handle portion 16, is enlarged and flattened so as to form a planar surface 22 on at least one side thereof. The segment 18b of portion 18, disposed downwardly from surface 22, see FIG. 5, forms a protruding rib or boss 24. Surface 22 terminates at its upper end at an abrupt shoulder 26 formed by central portion 16.

Blade 14 which is more clearly seen in FIG. 5 possesses a keen cutting edge 30 and an elongated centrally disposed slot 32, the lower end 32a of which is reduced in width as shown. The slot 32 is substantially aligned with the longitudinal axis of the blade.

In the normal course of assembling blade 14 on the blade-holding portion 18 of handle 12, the blade is initially placed so that the peripherally slotted end of portion

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18 is inserted in the wide end of slot 32 and then the blade pushed in a direction toward shoulder 26 until the upper end of slot 32 snaps-in behind the upper end of boss 24. The slotted periphery of blade-holding portion 18 is of such size as to readily accommodate the slot forming segments of blade 14 and thus prevents lateral as well as endwise adjustment of the blade with respect to the scalpel handle. As seen in FIGS. 1 and 5, the upper edge 41 of blade 14 is of diagonal configuration so that the blade will conform to the configuration of shoulder 26.

The flexing of the blade which was occasioned in the course of assembly on blade-holding portion 18 produces a snap-in action, and thus the blade is effectively locked against accidental disengagement.

Following normal use of the scalpel the blade thereof must be readily removed from the handle to facilitate thorough cleaning thereof and any resharpening of edge 30 which might be required.

It is apparent from FIG. 3 that if the blade 14 were manually removed from blade-holding portion 18 without the improved tool 50, it would require the upper end portion 14a of the blade being flexed away from handle surface 22 so as to clear boss 24 and then the blade while so flexed being withdrawn from blade-holding portion 18; such manipulations could be most hazardous as well as awkward.

Tool 50 readily overcomes these problems. The tool, as illustrated, is preferably formed of metallic tubing and includes a handle section 52 and a flattened enlarged head section 54 formed at one end thereof. Formed in opposed flat surfaces 55a and 55b of the head section are elongated grooves or tracks 56 which, as is more clearly seen in FIG. 3, define elongate protuberances on the exterior of the tool. The grooves 56 are disposed substantially opposite one another and parallel to the tool longitudinal axis. The grooves are adapted to accommodate the blade-holding portion 18 of the scalpel handle and guide the direction of relative movement of the tool and scalpel into and out of the fully inserted positions shown in FIGS. 2 and 4.

The flat surfaces 55a and 55b have corresponding side edges thereof interconnected by curve segments 57. By reason of this construction the flattened end of the tool encompasses the blade 14 when the scalpel is inserted in the tool to the position shown in FIG. 2.

Extending longitudinally from the back surface 55b of the flattened end of tool 50 as seen in FIG. 1 are a pair of relatively spaced elongated prongs 58a and 58b. As seen in FIGS. 3 and 4, prongs 58a and 58b are angularly inclined toward the plane of the front surface 55a and have the free ends 60 thereof offset. The angle of offset of ends 60 is substantially normal to the longitudinal axis of the tool. The prongs are also disposed in straddling relationship relative to the central longitudinal axis of the tool and the elongated sides of blade-holding portion 18. The prongs are relatively inflexible as compared to blade 14. The lengths of the prongs are such that the offset ends 60 thereof will contact blade edge 41, see FIG. 4, when the tool and scalpel are telescoped to their fullest extent with respect to one another. It is conceivable that one prong 58 may suffice for flexing blade portion 14a from surface 22 and then axially moving the flexed blade from assembled relation with portion 18.

In the normal course of tool use, the blade 14 and blade-holding portion 18 of the scalpel are telescopically inserted into opening 61 formed in the flattened end of tool 50. In the course of such insertion, the planar surface 22 and boss 24 of the blade-holding portion 18 of the scalpel are disposed away from the prongs 58. The interval between the tracks 56 (or if no tracks are employed between the surfaces 55a and 55b) is preferably sufficient to allow a slight relative movement between the tool and scalpel in a plane trans-

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verse to the longitudinal tool axis. Such relative dimensioning will allow the tool prongs to slide upwardly against the surface of the blade 14 and cause the upper end 14a of the latter, see FIG. 4, to flex up relative to surface 22 as portion 18 slidably moves between grooves 56. The exposed end 63 of the groove formed on surface 55a is flared outwardly a slight amount so as to facilitate the insertion of the scalpel blade between the surfaces 55a and 55b. The scalpel blade 14 and accommodating portion 18 may be inserted into the tool end until the prong ends 60 abut against shoulder 26 of the handle central portion 16. When the prong ends 60 engage shoulder 26 they will have cleared the blade edge 41 whereupon the ends 60 will snap-in behind the blade end. The prongs because of their arcuate configuration flex blade end 14a so that the latter is raised above the plane of boss 24 and thus permits the blade-holding portion 18 to be moved endwise relative to blade 14 and effect disassembly of the blade and blade-holding portion 18.

Once the blade 14 has been detached from blade-holding portion 18, it is free to fall into the lower portion of the tool handle 52. If desired, a plug 64 illustrated in FIG. 1, may be inserted in the lower end of handle 52 to prevent dropping out of the disengaged blade from the lower end of the hollow handle. The tool 50, therefore, may accumulate a plurality of blades from a number of scalpels in the handle 52 before the plug 64 is removed and the blades placed in a cleansing bath or otherwise processed or discarded.

It is seen, therefore, that a novel tool construction has been provided which readily enables the blade member to be disengaged from a scalpel handle by the mere insertion of such blade and handle within one end of the tool. The mere act of first inserting the scalpel into one end of the tool as far as it is possible to go and then moving the handle outwardly from the same end of the tool effects complete disassembly of the scalpel blade and handle without the blade in any way being contacted by the hand of the surgeon or his assistant.

It should be appreciated that the guide grooves 56 formed in the flat tool surfaces 55a and 55b may be omitted if desired.

Furthermore, the shape and size of the tool handle and prongs may be varied from that shown, if desired, so as to accommodate blades of a size and shape different from that shown. Furthermore, it is to be understood of course that while the tool has been described in relation to a scalpel, its function is not to be restricted to such use. It is deemed obvious that such structural changes will not remove the resulting construction from the scope of this invention. This invention is to be limited only by the scope of the appended claim.

I claim:

A tool for removing a slotted, detachable blade from a blade-holding portion of a scalpel, said blade having a proximal portion urged in locking engagement about a boss portion of said blade-holding portion, said blade being removable from said boss portion by lifting the proximal end thereof and axially urging the same away from the scalpel handle; said tool comprising a handle, opposed guide means connected to said handle and having a fixed interval therebetween in which at least the scalpel blade-holding portion and the blade connected thereto are adapted to be received, spaced prongs for flexing the scalpel blade; said spaced prongs extending endwise from one of the guide means and being slightly inclined toward the other guide means and disposed in offset relationship with said scalpel boss portion when inserted in said tool; the blade-flexing prongs traversing at least a portion of the interval between said guide means, said blade-flexing prongs being adapted to slidably engage a longitudinal surface portion of said blade in the course of inserting said blade and blade-holding portion of said scalpel into said tool, said blade-flexing prongs having projections at their free ends extending substan-

tially normal to the plane of said guide means and adapted to engage the terminal end edge of said blade portion disposed on said scalpel blade-holding portion when said blade and blade-holding portion of the scalpel are fully inserted into said tool whereby said blade may be axially urged and removed from said scalpel boss upon withdrawal of said scalpel from said tool.

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