

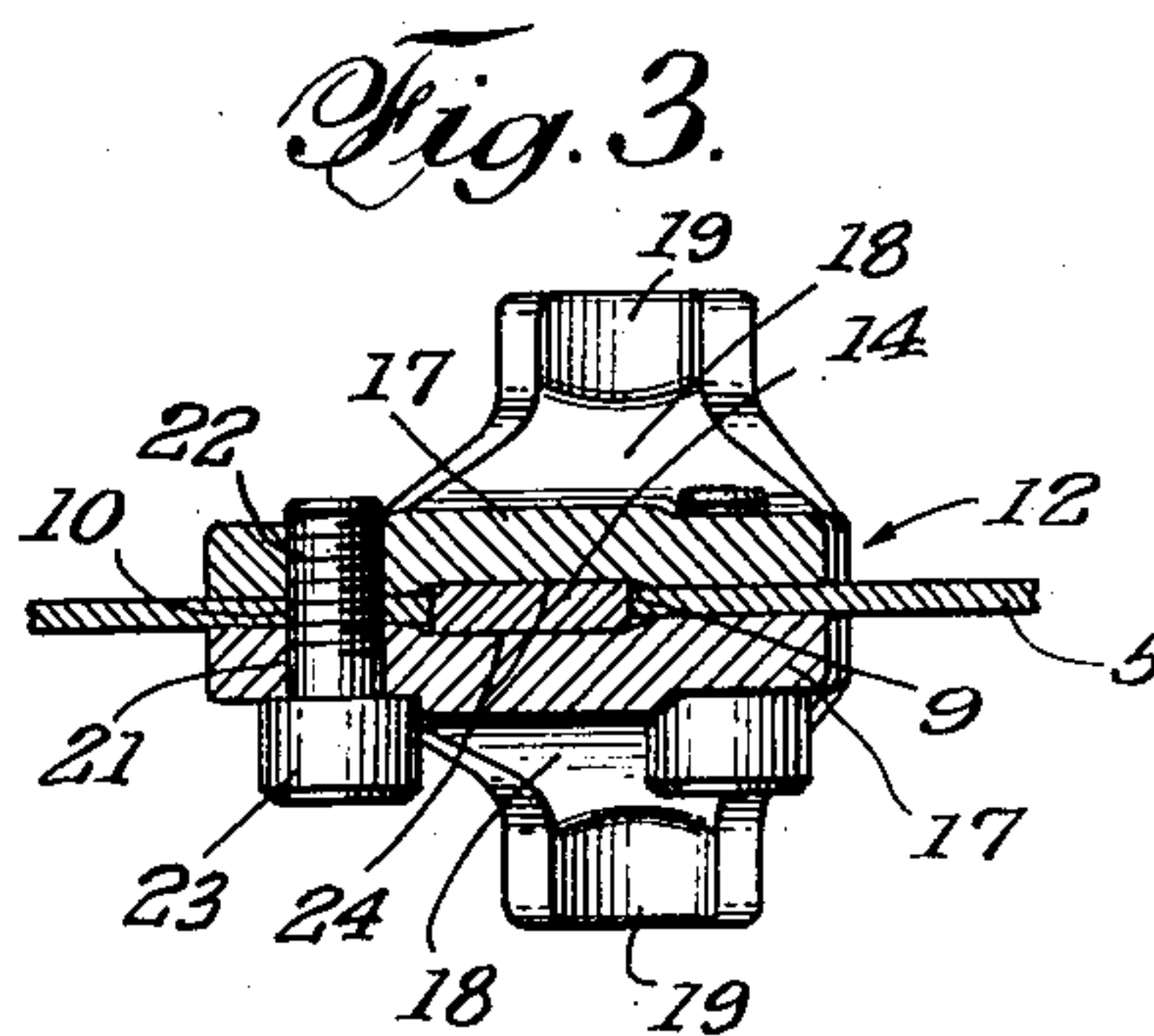
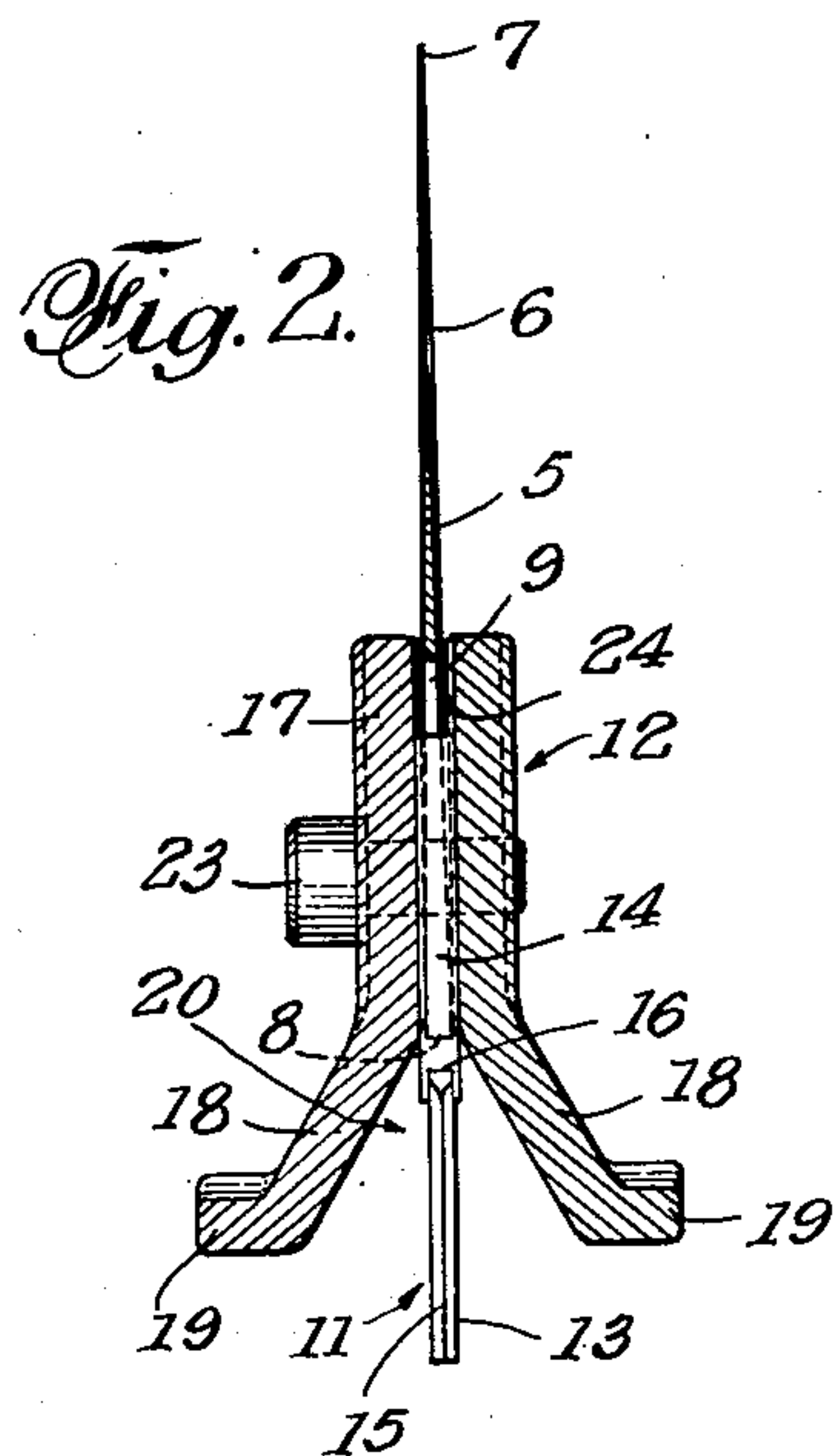
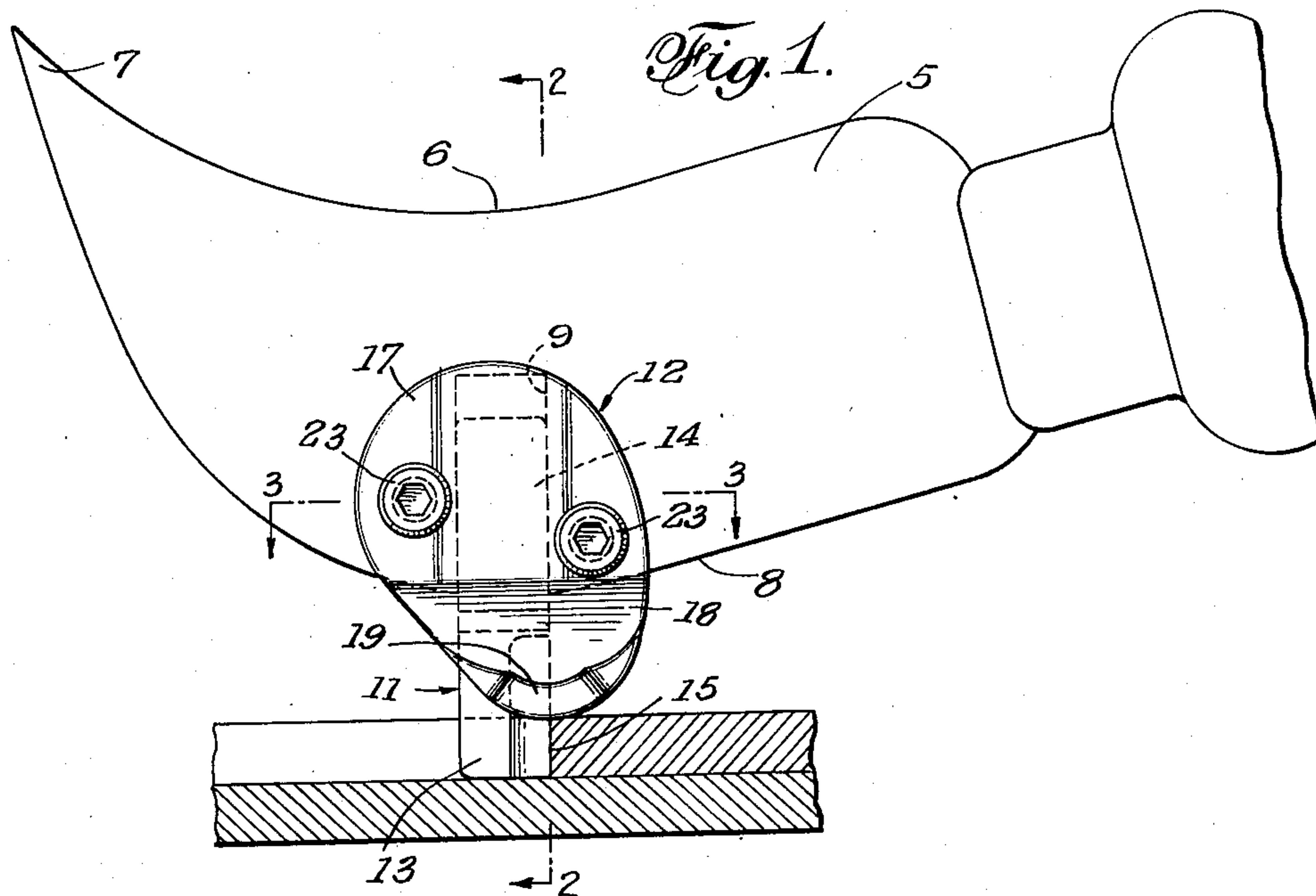
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COMBINATION KNIFE

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COMBINATION KNIFE

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8 Claims. (Cl. 30—299)

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This invention relates to a combination knife and deals more particularly with a knife structure of the type used by roofers to cut sheet roofing materials. The present knife structure may also be used to cut linoleum as well as other sheet materials. This application deals with a combination knife that is an improvement of the roofing knife disclosed in my pending application, Serial No. 149,227, filed March 13, 1950.

As explained in said pending application, conventional roofing knives quickly dull because of the attritive nature of the material cut thereby. Such knives are provided with relatively thin blades that, moreover, have a cross-sectional wedge form that tapers uniformly from a thicker heel part to a thin cutting edge. In said prior application, there are disclosed several forms of holder for a cutter mounted on the blade of a roofing knife. Whereas such forms depend on impinging engagement of a clamp screw against the blade to hold the cutter in place, the present invention contemplates and has for an object to provide clamping means, rather than a mount, to clamp a cutter in adjustable position on the knife blade.

Inasmuch as the cutter herein contemplated to be used is an alloy of tungsten, carbon and cobalt, a material sold under the trade name "Carboloy" and relatively expensive, it is another object of the invention to mount a relatively short length of said cutter material in a holder and, in turn, clamp the holder in position.

Another object of the invention is to provide novel clamp elements which retain assembly with the knife blade while adjustment of the cutter is effected, thus facilitating such adjustment and/or replacement of the cutter.

A further object of the invention is to provide clamp elements that are formed with diverging portions that define a throat in which the cutter is centrally disposed so that ravelings and fibers displaced by the cutter from the material being cut may be accommodated in said throat and not interfere with proper operation of the knife.

The invention also has for its objects to provide such means that are positive in operation, convenient in use, easily installed in a working position and easily disconnected therefrom, economical of manufacture, relatively simple, and of general superiority and serviceability.

The invention also comprises novel details of construction and novel combinations and arrangements of parts, which will more fully appear in the course of the following description.

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However, the drawings merely show and the following description merely describes one embodiment of the present invention, which is given by way of illustration or example only.

In the drawings, like reference characters designate similar parts in the several views.

Fig. 1 is a side elevational view of a generally conventional roofing knife provided with a cutter according to the present invention, the handle of the knife being broken away.

Fig. 2 is a vertical sectional view as taken on line 2—2 of Fig. 1.

Fig. 3 is a cross-sectional view as taken on line 3—3 of Fig. 1.

The blade 5 of the roofing knife has a cutting edge 6 that is concavely formed to terminate in a hook 7. Opposed to edge 6 is the dull back edge 8 and, as will be best seen from Fig. 2, the blade has a wedge form. According to the present invention, from the back edge 8 inward, the blade is provided with a preferably rectangular notch 9. Flanking said notch, there are provided holes 10. In this manner, blade 5 is initially prepared to receive the cutter 11 and the clamping means 12 therefor.

The cutter 11 comprises a short length of Carboloy tool 13 and a holder 14 forming an upper extension of said tool. The tool is provided with a sharp edge 15 that extends along one longitudinal side edge and its upper end extends into a bifurcation 16 formed in the lower end of the tool holder 14. The tool and holder are brazed together to insure retention of assembly thereof. The width of the holder 14 is such as to have a sliding fit in notch 9 whereby the same is freely adjustable in said notch. The thickness of said holder is somewhat greater than that of the thickset portion of blade 5 as clearly illustrated in Figs. 2 and 3. Edge 6 of blade 5 and edge 15 of cutter 11 are coplanar.

The clamping means 12 comprises two similar but oppositely formed plates 17 that, at their lower ends, are each provided with an outwardly angularly directed leg 18 that terminates in a laterally directed foot or gauge part 19. The two legs 18 of plates 17 diverge to define a throat 20 through the middle of which cutter 11 extends as depicted in Fig. 2. One plate 17 is provided with holes 21 and the other with tapped holes 22 to register with holes 10 in blade 5 for clamp screws 23 that fasten said plates to opposite sides of said blade.

Each plate 17 is formed with a vertical channel 24 that is quite shallow, the channels of both plates cooperating to engage the opposite

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sides of cutter holder 14, as suggested in Figs. 2 and 3. In practice, these channels are of such shallowness that with the holder engaged between them, the lateral portions of plates 17 are clear of the faces of blade 5. It will be clear, then, that when screws 23 are tightened, plates 17 will have limited transverse flexure to insure tight clamping of the cutter holder. One or two backing turns on screws 23 will effect release of the clamping pressure on said holder to enable adjustment, as desired, of cutter 11. Tightening of the screws will hold the adjustment.

The above-mentioned adjustment of the cutter is to obtain projection of tool 13 below the feet 19 so that said tool will cut to a desired depth as guided by said feet. Thus, as shown in Fig. 1, the upper of two sheets may be cut without cutting into the lower sheet. It will be realized that reasonable accuracy of the depth of cut is desired even under conditions wherein the knife handle is presented at different angles relative to the plane of the material being cut. To insure reasonable uniformity of cutting depth, the cutting edge 15 of the cutter 13 is arranged to bisect the middle of feet 19. In other words, said feet are arranged to be symmetrical relative to edge 15 rather than to the tool itself. Consequently, such small rocking of the knife that may occur during a cutting stroke will immaterially change the effective depth of cut.

By offsetting the feet 19 to align with tool edge 15, the plates 17 assume an elliptical shape that has a somewhat offset form presenting a trim, generally stream-lined appearance.

The non-clogging property of throat 20 should be clear, since gravel, stone, etc. coating the sheet being cut and also displaced fibers of the sheet that may accumulate during a cutting stroke, are cleared without any tendency to raise the knife upward and disturb the depth of cut.

It will be noted that the cutting edge 6 and hook 7 are not interfered with by the present novel improvement and that the same may be used when desired.

It will be seen that the end edge of the tool 13 has substantial width and is normal to cutting edge 15. This width of the tool is utilized as in cutting a sheet that varies in thickness, such as a shingle that has a wedge-shaped cross-section. In such work, the cutter is moved to its most projected position so that gauge feet 19 are most remote from the end of the cutter. Since the corner of the blade that is opposite edge 15 constitutes a heel on which the tool may be rocked, it will be evident that said edge 15 is raised or lowered relative to the heel so as to cut through thinner thicknesses when raised and thicker ones when lowered. Thus the cutter heel replaces the gauge feet 19 as the depth-gauging means of the tool.

While the invention that has been illustrated and described is now regarded as the preferred embodiment, the construction is, of course, subject to modifications without departing from the spirit and scope of the invention. It is, therefore, not desired to restrict the invention to the particular form of construction illustrated and described, but to cover all modifications that may fall within the scope of the appended claims.

Having thus described the invention, what is claimed and desired to be secured by Letters Patent is:

1. The combination with a knife blade having

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a slot formed therein and extending from the back edge thereof, of an elongated cutter adjustably extending into said slot and projecting beyond said back edge, the width of the cutter fitting said slot and the cutting edges of the blade and cutter being coplanar, and members on opposite sides of the blade and engaged with the opposite sides of the cutter to clamp the latter in adjusted position.

2. The combination with a knife blade having a slot formed therein and extending from the back edge thereof, of a cutter adjustably extending into said slot and projecting beyond said back edge, members on opposite sides of the blade and engaged with the cutter to clamp the same in adjusted position, and laterally and oppositely directed portions on said members and constituting gauge means guiding the depth of cut of the cutter.

3. The combination with a knife blade having a slot formed therein and extending from the back edge thereof, of a cutter adjustably extending into said slot and projecting beyond said back edge, members on opposite sides of the blade and engaged with the cutter to clamp the same in adjusted position, laterally and oppositely directed portions on said members and constituting gauge means guiding the depth of cut of the cutter, and each member being provided with an outwardly angularly directed portion from the ends of which the oppositely directed portions extend, said angularly directed portions defining a throat in which the cutter is centrally disposed.

4. In a knife of the character described having a blade formed with a slot extending inwardly from the back edge of said blade, an elongated cutter adjustably positioned in said slot to extend beyond said back edge, the width of the cutter fitting said slot and the cutting edges of the blade and cutter being coplanar, and a pair of clamp members mounted on opposite sides of the knife blade and in clamping engagement with the opposite sides of that portion of the cutter that extends into the mentioned slot.

5. In a knife of the character described having a blade formed with a slot extending inwardly from the back edge of said blade, a cutter adjustably positioned in said slot to extend beyond said back edge, said cutter being thicker than said blade, a pair of clamp members on opposite sides of the knife blade, and clamp screws extending through the clamp members and knife blade on each side of the slot to tighten said members into clamping engagement with that portion of the cutter that extends into the slot.

6. In a knife of the character described having a blade formed with a slot extending inwardly from the back edge of said blade, a cutter adjustably positioned in said slot to extend beyond said back edge, and a pair of clamp members mounted on opposite sides of the knife blade and in clamping engagement with that portion of the cutter that extends into the mentioned slot, said cutter having a longitudinal cutting edge, and said clamp members being each provided with a laterally directed portion, said portions constituting a gauge to limit the depth of cut of the cutter.

7. In a knife of the character described having a blade formed with a slot extending inwardly from the back edge of said blade, a cutter adjustably positioned in said slot to extend beyond said back edge, and a pair of clamp members mounted on opposite sides of the knife blade and in clamping engagement with that portion of the cutter

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that extends into the mentioned slot, said cutter having a longitudinal cutting edge, and said clamp members being each provided with a laterally directed portion, said portions constituting a gauge to limit the depth of cut of the cutter, said gauge portions being arranged in symmetrical relation to said cutting edge of the cutter.

8. An elongated cutter tool comprising a shank of elongated form and of uniform width and of thickness, said shank having a longitudinal bifurcation along one end thereof, and a cutter blade comprising a length of hard wear-resistant material having substantially the same width as the shank and of a uniform thickness with one end of the blade fitted into said bifurcation, the end of the blade that resides in said bifurcation

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being brazed to the shank, and one longitudinal edge of the blade being sharpened.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,068,731	Blum -----	July 29, 1913
1,434,047	De Bats -----	Oct. 31, 1922
2,244,053	Comstock -----	June 3, 1941
2,497,482	Wilson -----	Feb. 14, 1950

FOREIGN PATENTS

Number	Country	Date
38,936	Norway -----	Feb. 11, 1924