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54 **Grinding jig for knives.**

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Description

This invention relates to a grinding apparatus for knives in accordance with the preamble of claim 1. It is for instance intended for use with grinding machines provided with grind-stones and equipped with a fixed support of the type described in Swedish application 8306325-5.

It is not so easy to grind knives on a grind-stone. A great deal of practice is required to hold the knife steadily against the stone in order to obtain an even grinding phase and the best sharpness. Moreover, there is a great risk for the knife cutting in the stone.

Besides, the knives are different not only in respect of length and width but also in form which can be quite straight to more or less bent. Further more, the thickness of the knives varies and they have different cross-sectional forms. Last but not least important is that the knives have different edge angles due to different uses.

Through FR-A-1 182 060 a grinding apparatus is known in the form of a flat support body, which is guided along a support extending parallel to the axis of the grinding disc and to which a knife to be grinded is to be clamped. The flat, elongated body and then the knife can only be rotated around the axis of the support and not in any other direction. This means that the knife has to be clamped in an exact position in relation to the grinding surface of the disc. Further, once clamped to the body it is not possible to easily adjust the distance of the knife edge to the support, which adjustment is necessary to be able to get the right angle of the knife edge when grinding.

This means that it is not possible to use the known carrier with the great number of varying forms of knives mentioned above. By the present invention, as it is apparent from the characterizing portions of the claims, it is however possible to adjust and move the knife edge across the grind-stone by means of a carrier or grinding apparatus so that the best possible results are obtained, independently of the form of the knife and the knife edge. The grinding apparatus of the invention also allows an unexperienced person to grind all types of knives easily and quickly.

The invention will be described in greater detail in the form of an example with reference to the drawing, wherein Fig. 1 shows a grinding apparatus according to the invention in section and in a position for grinding a knife, Fig. 2 is a lateral view of the grinding apparatus in section, Fig. 3 shows the grinding apparatus turned 90° relative to Fig. 2 and Fig. 4 shows a section of the grinding apparatus as seen in a direction transversely to the length of the knife-blade.

In Fig. 1 1 designates the grinding stone. 2

designates a support in the form of a clamp fixedly secured to the grinding machine and having an arm 3 extending in parallel with the axle of the grindstone. The grinding machine with support and arm is known per se and is not part of the invention, and therefore this will not be described more closely but it is referred in this connection to said Swedish application 8306325-5.

The grinding apparatus consists of a first clamping plate 4 and a second clamping plate 5 as well as a shaft 6 circular in section and fixedly secured to the first clamping plate. This shaft is threaded along part of the end 7 turned away from the first clamping plate 4. This extends in a bore 8 made in a handle 9 which in turn is provided with a radially extending stop 10, in this case in the form of a collar. The bore 8 can either be completely threaded or have a threaded inset 11 fixed to the handle 9, as shown on the drawing.

In Fig. 3 an example of the embodiment of the clamping plate 5 as seen in a top plan view is shown, and it is to be understood that the clamping plate 4 has the corresponding form except for the means of attachment 12 of the shaft 6. The clamping plates 4 and 5 are mounted to each other by means of a screw 13, which in the example shown extends through the clamping plate 5 and is screwed into the threads of a busing 14 attached to the clamping plate 4. The head of the screw 13 has a partly spherical inside which rests in a corresponding partly spherical seat of the clamping plate 5. The distance between the plates 4 and 5 can be optionally adjusted by the aid of the screw 13 in dependence on the thickness of the knife 15 to be ground. Thanks to the partly spherical form of the inside of the screw head and its cooperating seat of the clamping plate 5 the plates can place themselves obliquely relative to each other and consequently adapt themselves to various forms of knives.

It is shown clearly in Fig. 4 how the clamping plates 4 and 5 have adapted themselves to a knife with a blade 15 tapering towards the point. The clamping plate is further provided with a threaded hole 16, in the example shown made in a bushing 17 attached to the clamping plate. A screw 19 provided with a wheel 18 engages the threads in the threaded hole 16 and bears with its free end on the clamping plate 4. In comparison with the edge portions of clamping plates 4 and 5 engaging the knife the threaded hole 16 is arranged on the other side of the screw 13 and, more specifically at a distance from this being greater than the distance between the edge portions and the screw 13. By screwing the locking screw 19 towards the clamping plate 4 the screw will tend to turn the plates from each other with the screw 13 as turning point and lock a knife 15 arranged between the edge

portions of the clamping plates 4 and 5. It is possible to obtain very great locking forces for the knife by this "lever principle".

In order to guide the plates 4 and 5 relative to each other in a simple way a pair of guide pins 20 - see Fig. 4 - are attached to the plate 5. The pins 20 extend freely movably through the corresponding openings in the plate 4. Moreover, a helical compression spring 21 is arranged around the respective pin 20 and between the plates 4 and 5. The springs 21 tend automatically to separate the plates 4 and 5 from each other which makes it easier to adapt the knife between the edge portions of the plates.

By adjusting the screw 23 the apparatus can be adapted to the thickness of the current knife and the knife is clamped in the apparatus when the locking screw 19 is tightened. The clamping plates 4 and 5 will thus adapt themselves automatically to the form of the relative knife independently whether this is conical in cross-section or in longitudinal direction. The knife is locked in the apparatus and both sides of the knife edge can be ground by simply turning the jig 180°. A low built-in type of adjusting screw 13 and locking screw 18 allows grinding of small edge angles (cf. Fig. 1).

At grinding the stop 10 of the handle 9 is held so that it will rest against the arm 3, as shown in Fig. 1, and the distance to the stone is constant all the time, an exact grinding angle being obtained in this way. By turning the handle 9 the distance between stop and knife edge can be changed meaning that different edge angles can be adjusted. It is possible by means of the invention to adjust this edge angle rapidly in the grinding operation, also.

By the embodiment of the clamping plates 4 and 5 it is possible also to grind thin knives, so-called fillet knives, which are easily bent at grinding by hand. The thin knife is stiffened up effectively by means of the invention and can be ground with precision.

It is to be understood that the grinding apparatus can be varied in several ways within the scope of the invention and the placement of the locking screw 19 can of course be varied. The threads of the shaft 6 can instead also be disposed in the means of attachment of the first clamping plate 4.

Claims

1. A grinding apparatus for grinding the edges of a knife (15), the apparatus comprising a grinding disc (1) rotatably drivable about its axis, a fixedly secured support (3) extending parallel to the axis of the grinding disc, a means of attachment (4, 5) for clamping the knife and adapted to be moved along the support,

characterised by a shaft (6) which with one of its ends is mounted to the means of attachment and which on its other end carries a handle (9), the one end of the shaft threadably engaging either the means of attachment or the handle, respectively, the other end being fixedly connected with the handle or the means of attachment, respectively, such that the means of attachment and the handle can be moved towards and away from each other by turning the handle, further characterised in that the handle has a radially extending stop (10) which surrounds the shaft and which, during grinding, abuts against the support.

2. A grinding apparatus as claimed in claim 1, **characterized** in that the means of attachment consists of a first clamping plate (4) connected with the shaft (6) and a second clamping plate (5), the back portion of the knife (15) to be ground being intended to be clamped between edge portions of the clamping plates (4, 5), and that the clamping plates (4, 5) are connected to each other by means of a screw (13) adjusting the mutual distance of the plates.

3. A grinding apparatus as claimed in claim 2, **characterized** in that a locking screw (19) is arranged so that it can be screwed in a threaded hole (16) extending through the plates (5) and located on the opposite side of the adjusting screw (13) relative to the knife (15) to be ground and that the locking screw (19) engages the other plate (4) by its end.

4. A grinding apparatus as claimed in claim 2 or 3, **characterized** in that the adjusting screw (13) is provided with a head, the underside of which has a partly spherical form and cooperates with a partly spherical seat of one plate (5).

5. A grinding apparatus as claimed in any one of claims 2-4, **characterized** in that the distance between the locking screw (19) and the adjusting screw (13) is greater than between this (13) and the edge portions.

6. A grinding apparatus as claimed in any one of claims 2-5, **characterized** in that one of the plates (5) has at least one fixed guide pin (20) cooperating with an opening arranged in the other plate (4) and that a compression spring (21) is arranged between the plates (4, 5) in connection with the guide pin (20).

7. A grinding apparatus as claimed in any one of claims 2-6, **characterized** in that the shaft (6)

is fixedly secured in the first plate (4) and has threads at its outer portion which engages threads in a bore (8) arranged in the handle.

Revendications

1. Dispositif d'affûtage pour affûter les tranchants d'un couteau (15), le dispositif comprenant un disque d'affûtage (1) pouvant être entraîné de manière rotative autour de son axe, un support (3) fixé de manière fixe s'étendant parallèlement à l'axe du disque d'affûtage, un moyen d'attachement (4, 5) pour serrer le couteau et destiné à être déplacé le long du support, caractérisé par un arbre (6) qui est monté par l'une de ses extrémités au moyen d'attachement et qui à son autre extrémité porte une poignée (9), une extrémité de l'arbre venant en prise par vissage soit avec le moyen d'attachement ou la poignée, respectivement, l'autre extrémité étant reliée de manière fixe à la poignée ou au moyen d'attachement, respectivement, de façon que le moyen d'attachement et la poignée puissent être déplacés vers et éloignés l'un de l'autre en tournant la poignée, caractérisé en outre en ce que la poignée possède une butée s'étendant radialement (10) qui entoure l'arbre et qui, pendant l'affûtage, bute contre le support.
2. Dispositif d'affûtage selon la revendication 1, caractérisé en ce que le moyen d'attachement est constitué d'une première plaque de serrage (4) reliée à l'arbre (6) et une deuxième plaque de serrage (5), la portion arrière du couteau (15) à affûter étant destinée à être serrée entre des portions de bord des plaques de serrage (4,5), et que les plaques de serrage (4, 5) sont reliées l'une à l'autre au moyen d'une vis (13) susceptible de régler la distance mutuelle entre les plaques.
3. Dispositif d'affûtage selon la revendication 2, caractérisé en ce qu'une vis de blocage (19) est arrangée de façon qu'elle puisse être vissée dans un trou taraudé (16) s'étendant à travers les plaques (5) et située sur le côté opposé de la vis de réglage (13) par rapport au couteau (15) à affûter, et que la vis de blocage (19) vient en prise dans l'autre plaque (4) par son extrémité.
4. Dispositif d'affûtage selon la revendication 2 ou 3, caractérisé en ce que la vis de réglage (13) est pourvue d'une tête dont la face inférieure possède une forme partiellement sphérique et coopère avec un siège partiellement sphérique d'une plaque (5).

5. Dispositif d'affûtage selon l'une des revendications 2 à 4, caractérisé en ce que la distance entre la vis de verrouillage (19) et la vis de réglage (13) est plus grande qu'entre celle-ci (13) et les portions de bord.

6. Dispositif d'affûtage selon l'une des revendications 2 à 5, caractérisé en ce qu'une des plaques 5 possède au moins une broche de guidage fixe (20) coopérant avec une ouverture disposée dans l'autre plaque (4) et qu'un ressort de compression (21) est disposé entre les plaques (4, 5) en connexion avec la broche de guidage (20).
7. Dispositif d'affûtage selon l'une des revendications 2 à 6, caractérisé en ce que l'arbre (6) est fixé de manière fixe dans la première plaque (4) et possède des filets à sa portion externe qui vient en prise dans des filets d'un alésage (8) pratiqué dans la poignée.

Patentansprüche

1. Eine Schleifvorrichtung zum Schleifen der Schneiden eines Messers (15), wobei die Vorrichtung eine um ihre Achse drehbar antreibbare Schleifscheibe (1), eine sich parallel zur Achse der Schleifscheibe erstreckende, unbeweglich befestigte Halterung (3) und eine zum Einspannen des Messers vorgesehene Spanneinrichtung (4, 5) umfaßt, die so ausgebildet ist, daß sie längs der Halterung bewegt werden kann, **gekennzeichnet** durch einen Schaft (6), der mit einem seiner Enden an der Spanneinrichtung befestigt ist und der an seinem anderen Ende einen Handgriff (9) trägt, wobei das eine Ende des Schaftes entweder mit der Spanneinrichtung oder dem Handgriff in Gewindeeingriff steht und das andere Ende unbeweglich mit dem Handgriff bzw. der Spanneinrichtung verbunden ist, so daß die Spanneinrichtung und der Handgriff durch Drehen des Handgriffs aufeinander zu und voneinander weg bewegt werden können, ferner dadurch gekennzeichnet, daß der Handgriff einen sich radial erstreckenden Anschlag (10) aufweist, der den Schaft umgibt und der während des Schleifens an der Halterung anliegt.
2. Eine Schleifvorrichtung nach Anspruch 1, **dadurch gekennzeichnet**, daß die Spanneinrichtung aus einer ersten, mit dem Schaft (6) verbundenen Spannplatte (4) und einer zweiten Spannplatte (5) besteht, wobei vorgesehen ist, den Rückenteil des zu schleifenden Messers (15) zwischen Randbereichen der Spannplatten (4, 5) einzuspannen, und daß die Spannplatten

(4, 5) durch eine den gegenseitigen Abstand der Platten einstellende Schraube (13) miteinander verbunden sind.

3. Eine Schleifvorrichtung nach Anspruch 2, **dadurch gekennzeichnet**, daß eine Feststellschraube (19) so angeordnet ist, daß sie in eine Gewindebohrung (16) eingeschraubt werden kann, die sich durch die Platte (5) erstreckt und auf der dem zu schleifenden Messer (15) abgewandten Seite der Einstellschraube (13) angeordnet ist, und daß die Feststellschraube (19) mit ihrem Ende mit der anderen Platte (4) im Eingriff steht.

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4. Eine Schleifvorrichtung nach Anspruch 2 oder 3, **dadurch gekennzeichnet**, daß die Einstellschraube (13) mit einem Kopf versehen ist, dessen Unterseite eine teilweise sphärische Form aufweist und mit einem teilweise sphärischen Sitz einer Platte (5) zusammenwirkt.

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5. Eine Schleifvorrichtung nach einem der Ansprüche 2 bis 4, **dadurch gekennzeichnet**, daß der Abstand zwischen der Feststellschraube (19) und der Einstellschraube (13) größer als zwischen dieser (13) und den Randbereichen ist.

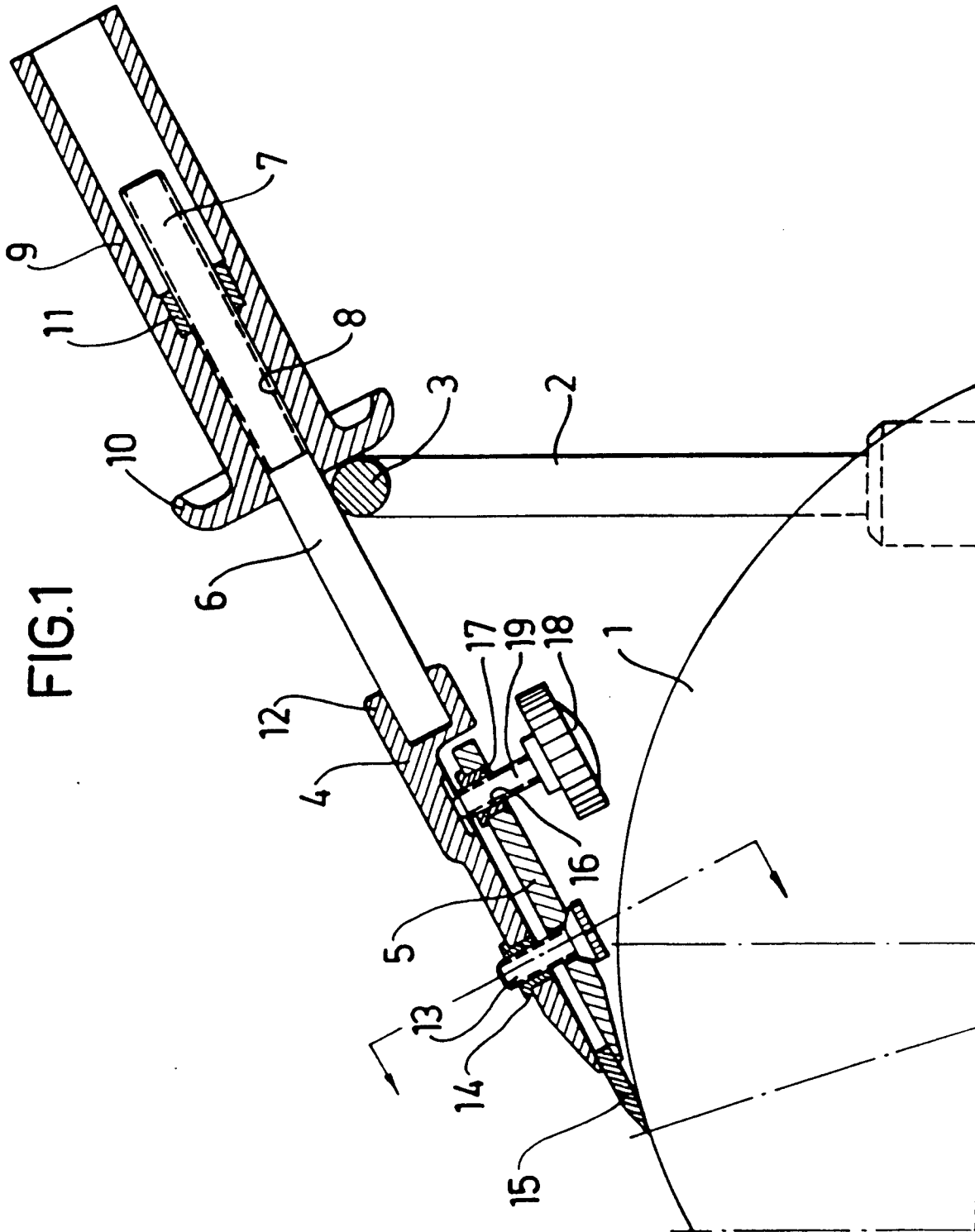
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6. Eine Schleifvorrichtung nach einem der Ansprüche 2 bis 5, **dadurch gekennzeichnet**, daß eine der Platten (5) wenigstens einen unbeweglichen Führungsstift (20) aufweist, der mit einer in der anderen Platte (4) angeordneten Öffnung zusammenwirkt, und daß eine Druckfeder (21) zwischen den Platten (4, 5) in Verbindung mit dem Führungsstift (20) angeordnet ist.

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7. Eine Schleifvorrichtung nach einem der Ansprüche 2 bis 6, **dadurch gekennzeichnet**, daß der Schaft (6) unbeweglich in der ersten Platte (4) befestigt ist und an seinem äußeren Abschnitt ein Gewinde aufweist, das mit einem Gewinde in einer im Handgriff ausgebildeten Bohrung (8) im Eingriff steht.

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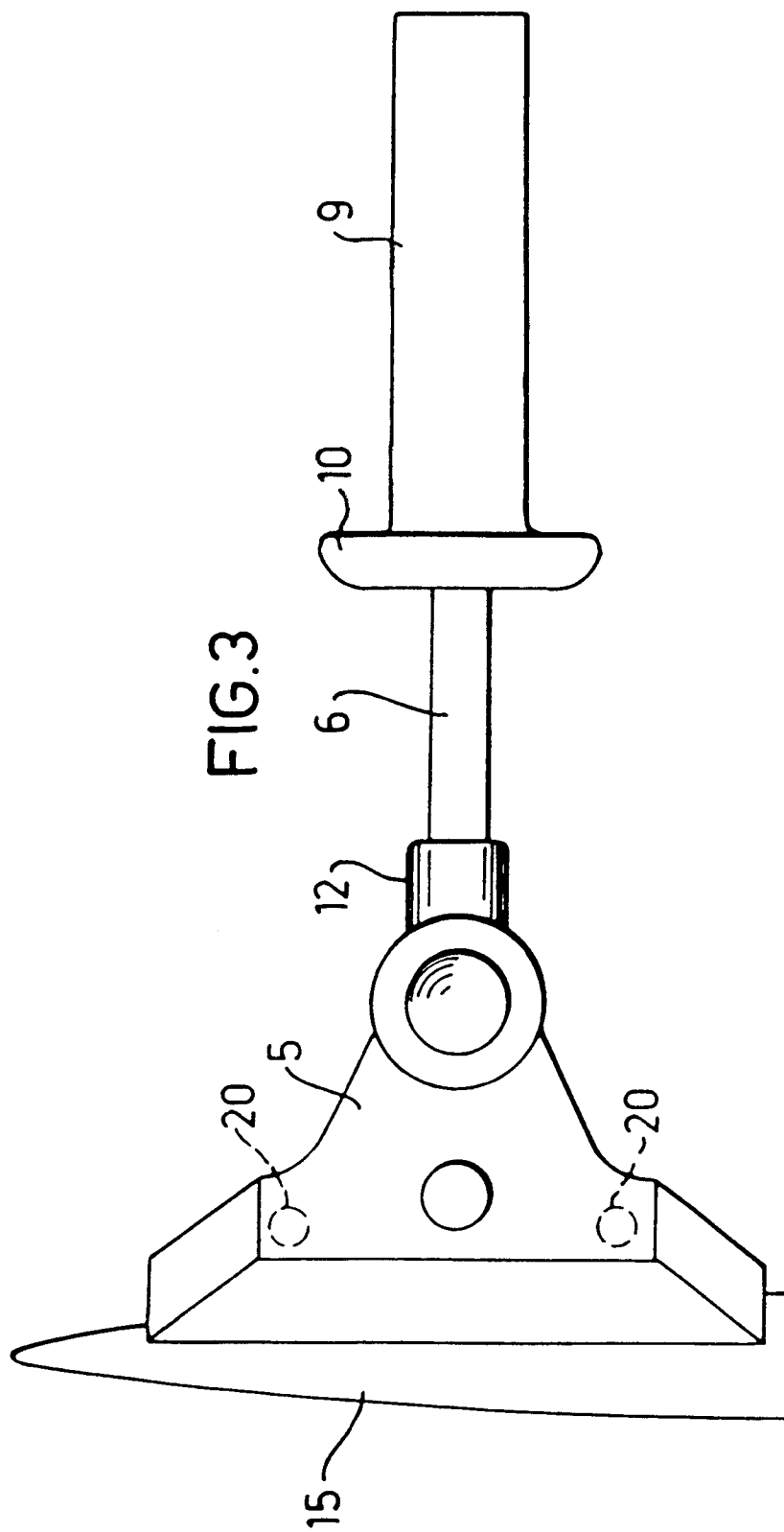
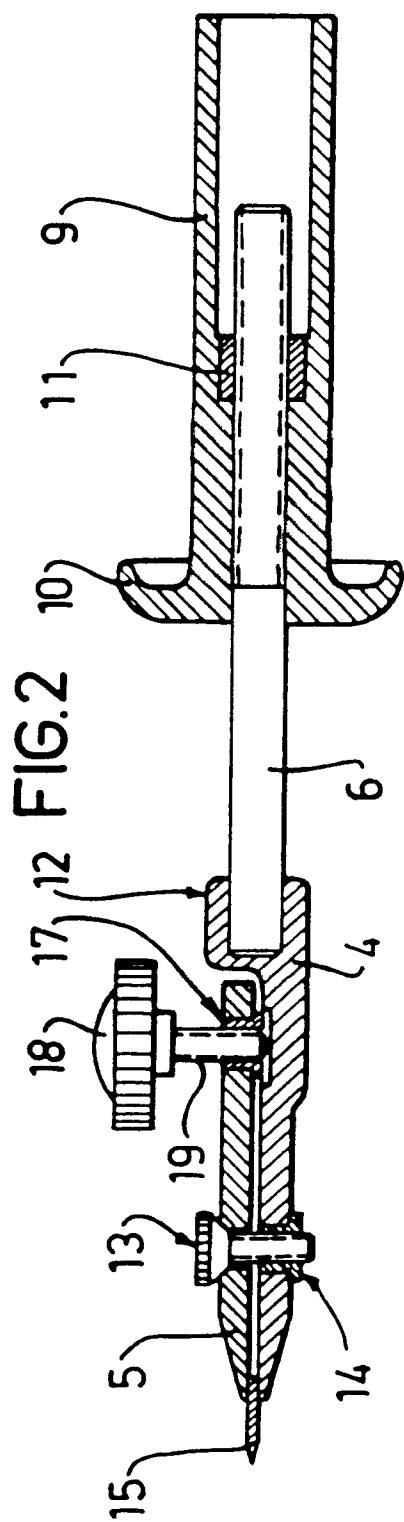


FIG. 4

