(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 214 943**
A2

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **86850280.8**

(22) Date of filing: **27.08.86**

(51) Int. Cl.[4]: **B 24 B 3/54**

(30) Priority: **02.09.85 SE 8504072**

(43) Date of publication of application:
18.03.87 Bulletin 87/12

(84) Designated Contracting States:
AT BE CH DE FR GB IT LI NL

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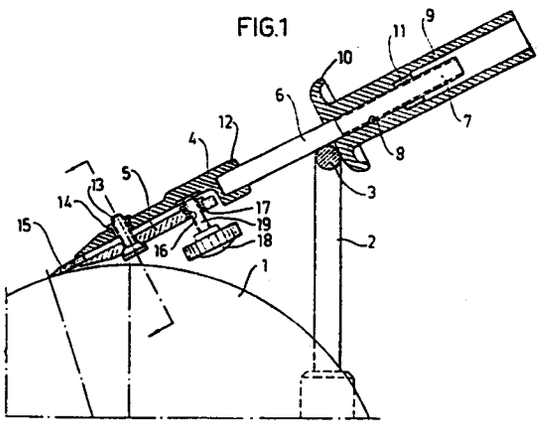
(54) Grinding jig for knives.

(57) Grinding jig for knives provided with a means of attachment (4, 5) intended for the knife (15) and adapted to abut movably on a support (3) fixedly secured to a grinding means upon grinding of a knife, characterized by a shaft (6) provided with threads and a handle (9) having a radially extending stop, the shaft being arranged to join the means of attachment (4, 5) to the handle (9) so that they can be moved towards and away from each other.

FIG.1



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Description

Grinding jig for knives

This invention relates to a grinding jig for knives in accordance with the preamble for claim 1. It is for instance intended for use with grinding machines provided with grindstones 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 grindstone. 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.

Thus, said Swedish application teaches a grinding jig or universal carrier for knives which partly make the grinding work with knives easier. However, it is not possible to use the known carrier with the great number of varying forms of knives touched upon 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 grindstone by means of a carrier or grinding jig so that the best possible results are obtained, independently of the form of the knife and the knife edge. The grinding jig 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 draw ing, wherein Fig. 1 shows a grinding jig according to the invention in section and in a position for grinding a knife, Fig. 2 is a lateral view of the grinding jig in section, fig. 3 shows the grinding jig turned 90° relative to Fig. 2 and fig. 4 shows a section of the grinding jig as seen in a direction transversely to the length of the knife-blade.

In Fig. 1 1 designates the grindig 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 jig 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 plane 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 13 the jig can be adapted to the thickness of the current knife and the knife is clamped in the jig 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 longitunidal direction. The knife is locked in the jig 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 is will rest against the arm 3, as swown 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 jig 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. Grinding fixture for knives provided with a means of attachment (4, 5) intended for the knife and adapted to abut movably on a support (3) fixedly secured to a grinding means upon grinding of a knife (15), for grinding the edges of the knife (15) against a grinding disc (1) rotatably driven in the grinding means, **characterized** by a shaft (6) provided with threads and a handle (9) having a radially extending stop (10) intended to support the grinding fixture movably against the fixedly secured support (3), the shaft being arranged to join the means of attachment (4, 5) to the handle (9) so that they can be moved towards and away from each other.

2. Grinding fixture 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. Grinding fixture 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. Grinding fixture 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 part ly spherical seat of one plate (5).

5. Grinding fixture 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. Grinding fixture 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. Grinding fixture 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.

FIG.1

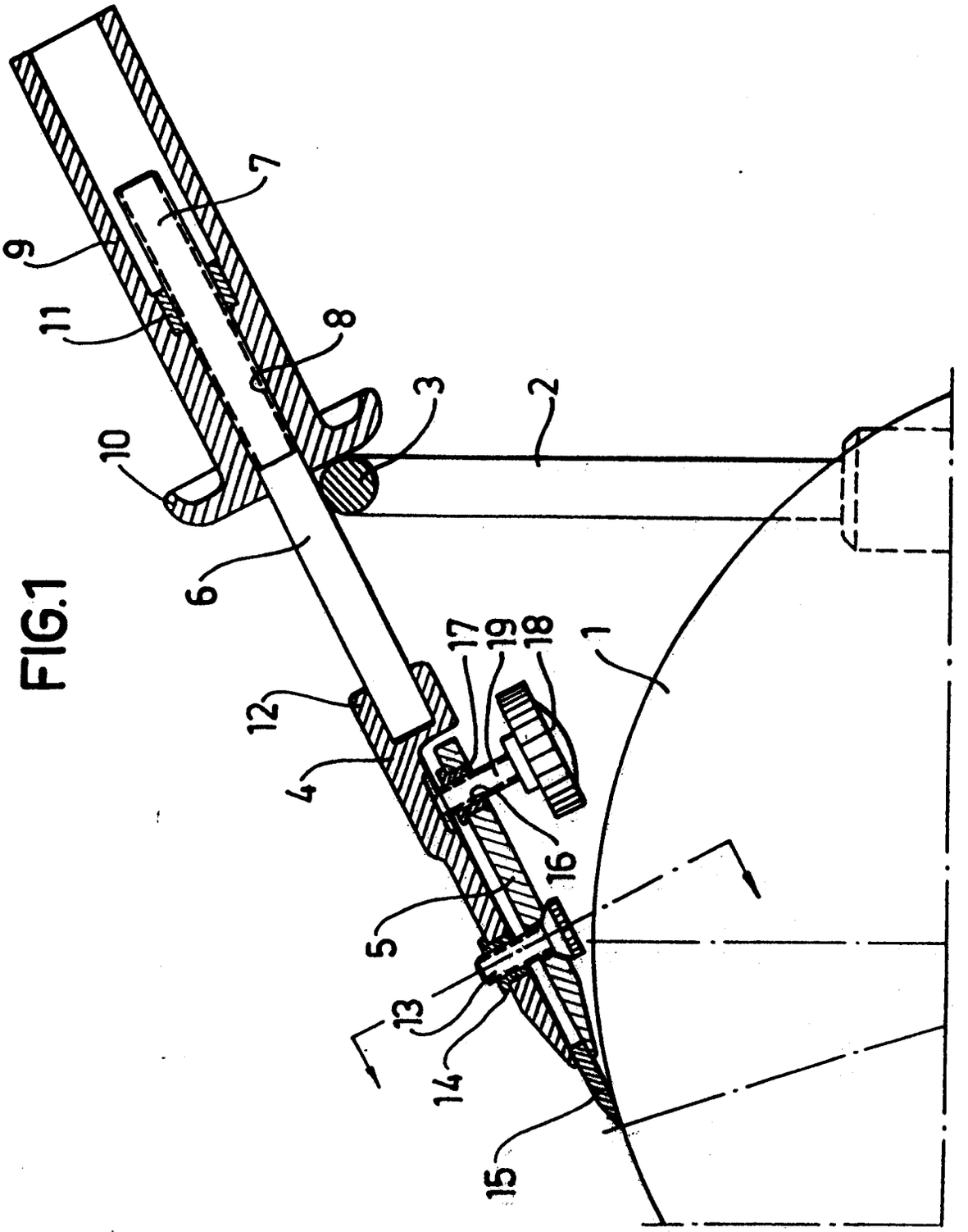

FIG.2

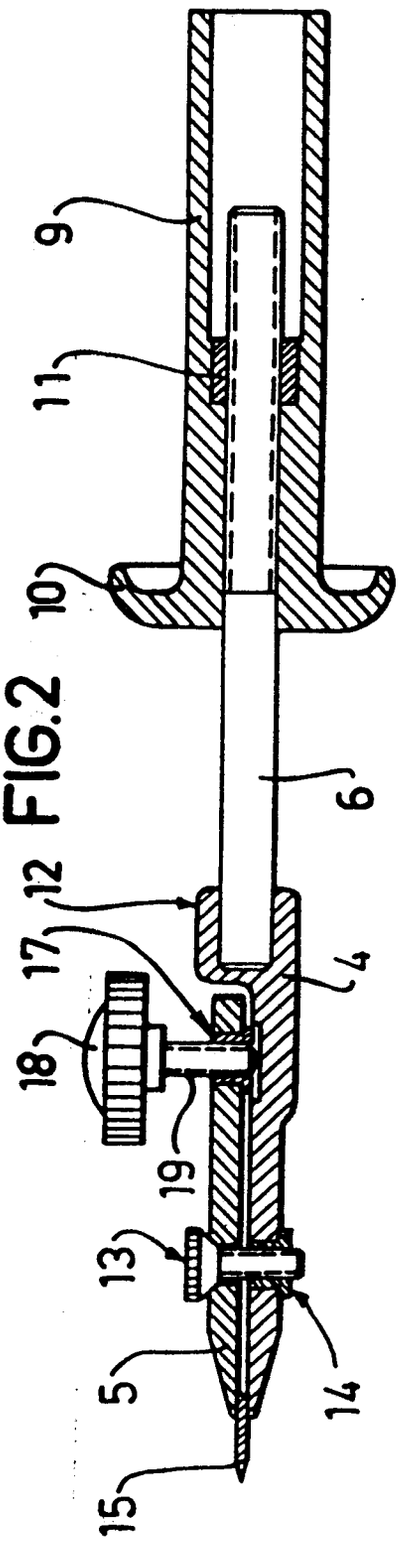

FIG.3

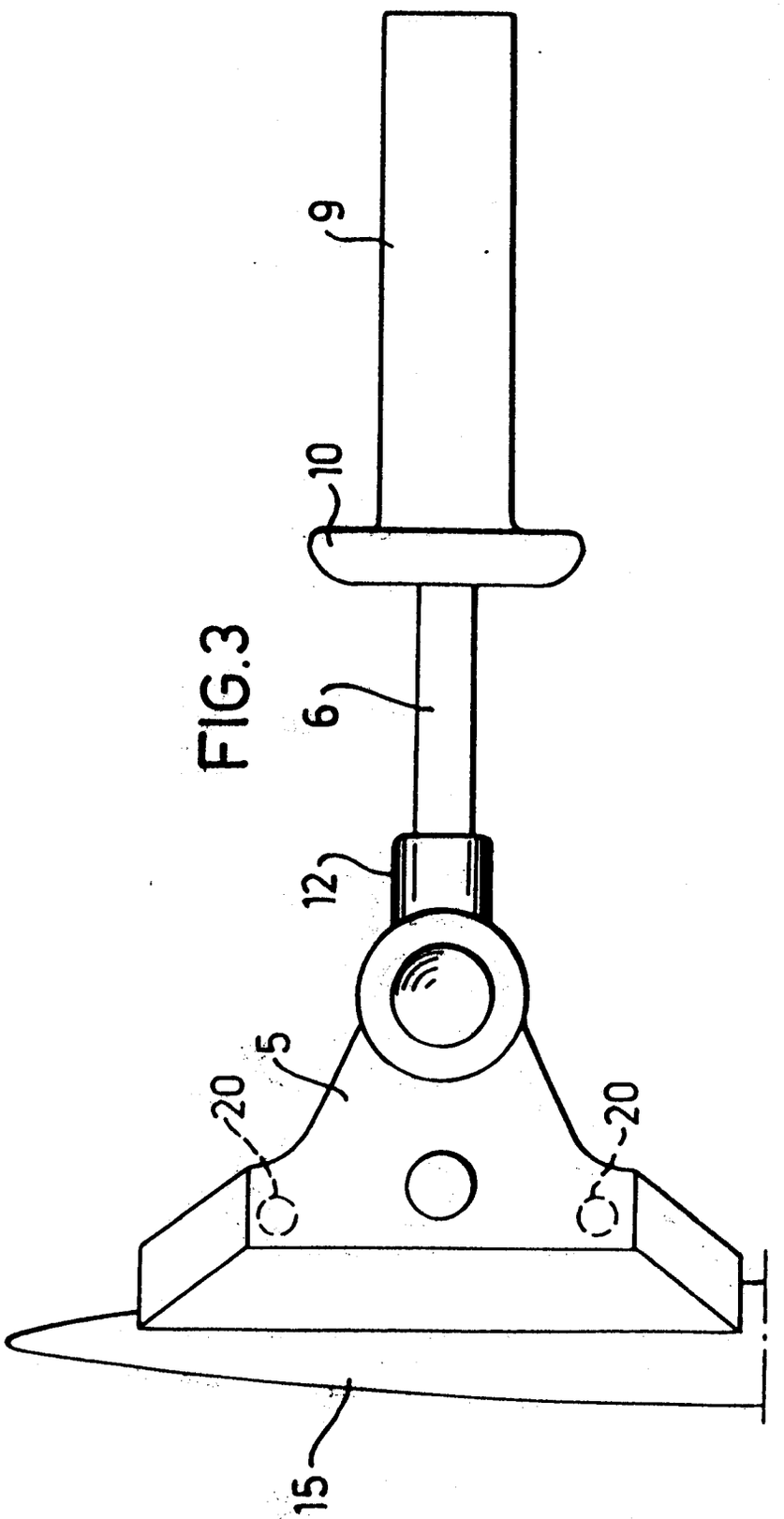

FIG.4