

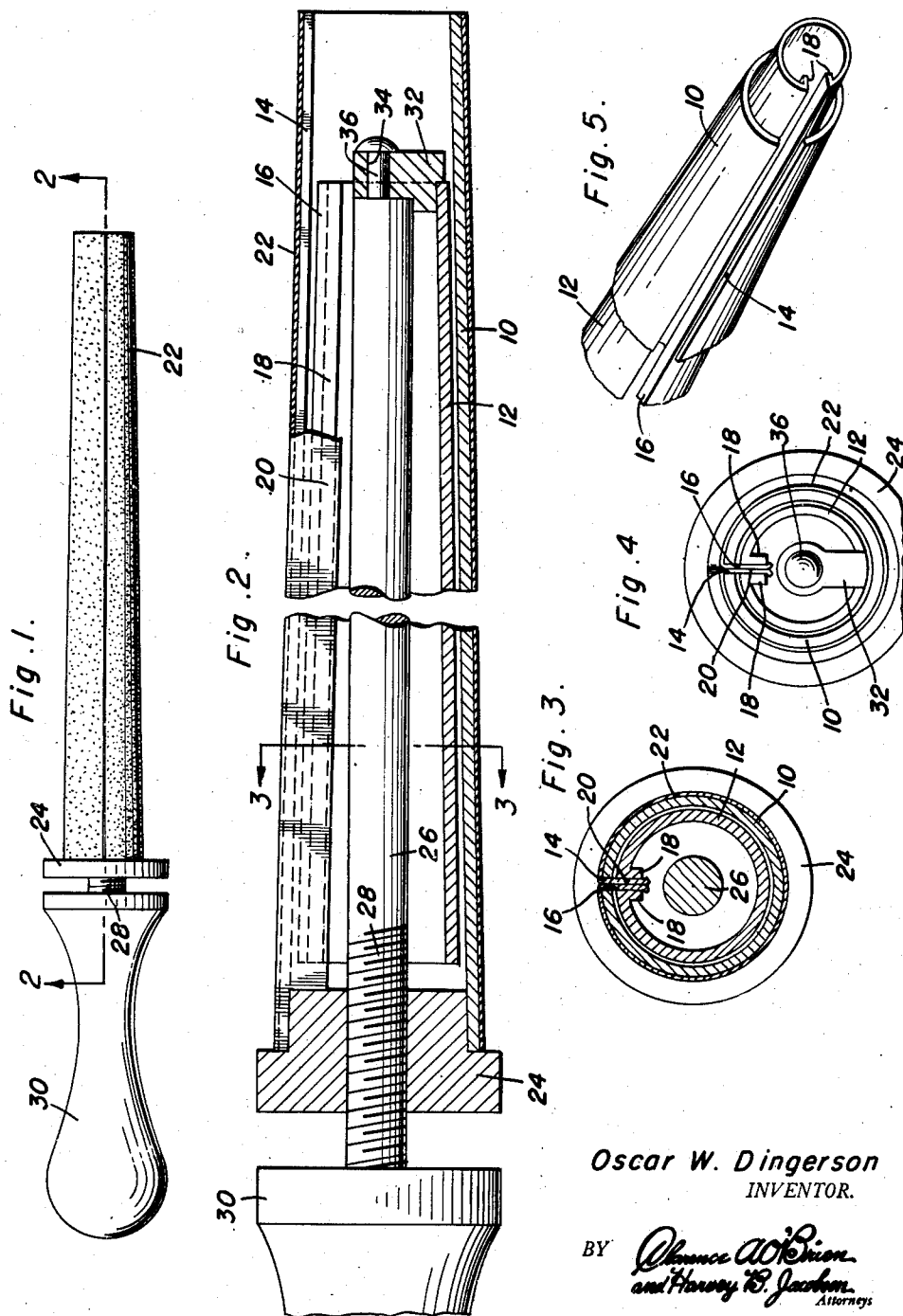
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KNIFE SHARPENER

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KNIFE SHARPENER

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4 Claims. (Cl. 51-187)

1

This invention relates to a knife sharpener and more particularly to a knife sharpener having an abrasive surface which may be renewed.

The primary object of the invention is to clamp a flexible sheet bearing abrasive material on its outer surface, and support it in a position for use as a knife sharpener.

Another object is to facilitate the rapid renewal of the abrasive face of the material when it becomes unserviceable.

Among its features the invention embodies a pair of telescopic frusto-conical tubes having aligned longitudinal slots extending therethrough, a flexible sheet bearing an abrasive material on its outer surface encircling the tubes with opposite side edges entering the slots between the tubes, and means for advancing the inner tube toward the reduced end of the outer tube to cause the inner tube to contract and force edges of the slot therein against the inturned edges of the flexible sheet to clamp said sheet in encircling relation about the tubes.

In the drawings:

Figure 1 is a plan view of a knife sharpener embodying the features of this invention.

Figure 2 is a fragmentary enlarged sectional view taken substantially along the line 2-2 of Figure 1.

Figure 3 is a transverse sectional view taken substantially along the line 3-3 of Figure 1.

Figure 4 is an end view of the knife sharpener, and

Figure 5 is a fragmentary perspective view of the inner and outer tubes, showing portions of the outer tube in section.

Referring to the drawings in detail this improved knife sharpener comprises outer and inner frusto-conical tubes 10 and 12 respectively having aligned longitudinal slots 14 and 16 respectively which extend through their respective tubes. Longitudinally inturned flanges 18 border the opposite edges of the slots 16 of the inner tube 12 to form clamp jaws for the inturned portions 20 of a sheet of flexible material 22 carrying on its outer surface a suitable abrasive substance such as is applied to emery cloth.

Fixed in the enlarged end of the outer tube 10 is an internally screw threaded nut 24, and extending through said nut in axial alignment with the tube 10 is a shaft 26 a portion 28 of which is externally screw threaded to cooperate with the threads in the nut 24. Fixed to the outer end of the shaft 26 is a handle 30 by which the shaft 26 may be rotated within the nut 24.

Fixed to the small end of the inner tube 12 is a

2

radial inwardly extending arm 32, the inner end of which is pierced with an opening 34 which aligns axially with the shaft 28 and receives a stud 36 which is fixed to the shaft in any suitable manner, in order to establish a swivel connection between the shaft and the arm 32. It will thus be seen that as the shaft 26 is rotated within the nut 24 and the tube 10, the inner tube 12 will be advanced or retracted with relation to the smaller end of the tube 10. Obviously as the inner tube is advanced toward the smaller end of the tube 10, its outer face will move into contact with the inner face of the tube 10, thus producing a wedging action which will tend to collapse the inner tube, thus moving the jaw members 18 into clamping engagement with the inturned portions 20 of the flexible material 22, thus firmly clamping the flexible material in encircling relation with the tubes.

From the foregoing it is obvious that when it is desired to renew the abrasive surface the only operation necessary is to rotate the handle 30 relative to the nut 24 so as to retract the inner tube 12 from the smaller end of the outer tube 10, thus releasing the clamping effect of the jaws 18 on the sheet of abrasive material. A new sheet may readily be substituted by folding the opposite edges into the slots 14 and 16 and again rotating the handle 30 to advance the smaller end of the inner tube toward the smaller end of the outer tube until the wedging action of the tubes against one another causes the jaws 18 firmly to clamp the flexible material.

While in the foregoing there has been shown and described the preferred embodiment of this invention it is to be understood that minor changes in the details of construction, combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as claimed.

Having described the invention, what is claimed as new is:

1. In a knife sharpener, a pair of telescopic frusto-conical tubes having aligned longitudinal slots extending therethrough, a flexible sheet bearing abrasive material on its outer surface encircling the tubes with opposite side edges entering the slots between the tubes and means for advancing the inner tube toward the reduced end of the outer tube to cause the inner tube to contract against the inturned edges of the flexible sheet and clamp the sheet in encircling relation about the tubes.

2. In a knife sharpener, a pair of telescopic frusto-conical tubes having aligned longitudinal

3

slots extending therethrough, a flexible sheet bearing abrasive material on its outer surface encircling the tubes with opposite side edges entering the slots between the tubes, a nut fixed within the larger end of the outer tube, a shaft extending axially through and threadedly engaging the nut and means swivelly coupling the smaller end of the inner tube to the shaft so that by turning the shaft in one direction the inner tube may be advanced into wedging engagement with the outer tube to clamp the edges of the flexible sheet in the slot in inner tube.

3. In a knife sharpener, a pair of telescopic frusto-conical tubes having aligned longitudinal slots extending therethrough, a flexible sheet bearing abrasive material on its outer surface encircling the tubes with opposite side edges entering the slots between the tubes, a nut fixed within the larger end of the outer tube, a shaft extending axially through and threadedly engaging the nut and means swivelly coupling the smaller end of the inner tube to the shaft so that by turning the shaft in one direction the inner tube may be advanced into wedging engagement with the outer tube to clamp the edges

4

of the flexible sheet in the slot in inner tube and a handle on the end of the shaft remote from that which is connected to the inner tube.

4. In a knife sharpener a frusto-conical outer tube having a longitudinal slot extending therethrough, a nut fixed in the larger end of said outer tube, a shaft extending through said nut into the outer tube, said shaft threadedly engaging the nut, an inner frusto-conical tube concentric about the shaft within the outer tube, said inner tube having a longitudinal slot extending therethrough in alignment with the slot in the outer tube, inturned flanges on the inner tube bordering the longitudinal slot therein and forming clamp jaws, an arm fixed to the smaller end of the inner tube and swivelly connected to the inner end of the shaft, a handle fixed to the outer end of the shaft, a flexible sheet bearing abrasive material on its outer face encircling the tubes and angular extensions along opposite side edges of said sheet entering the slots for clamping by the clamp jaws.

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