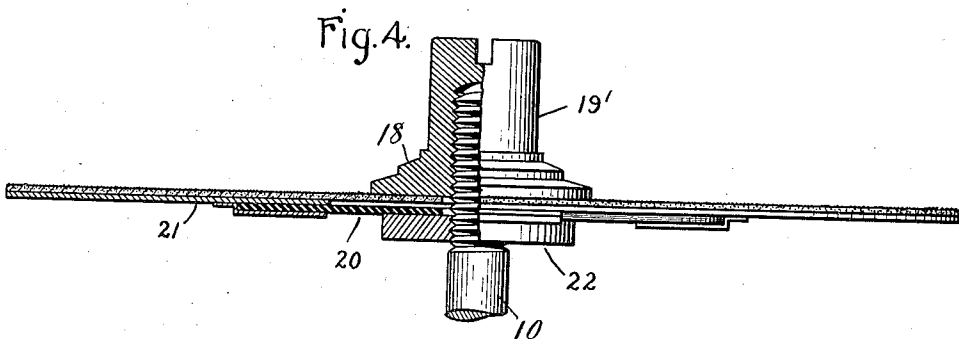
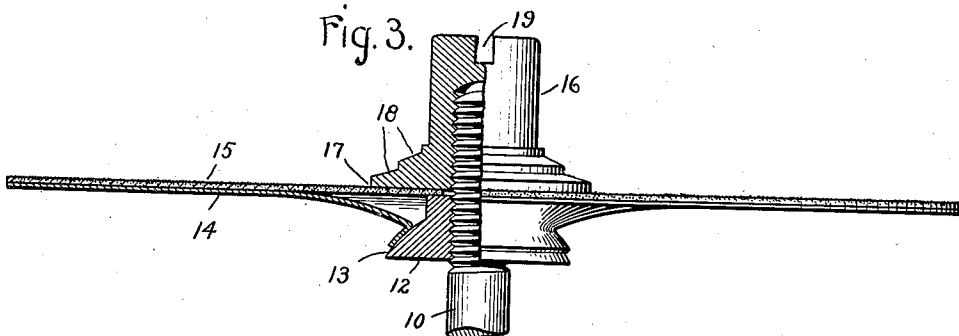
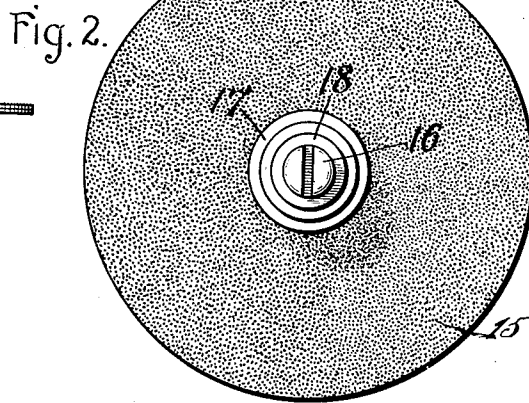
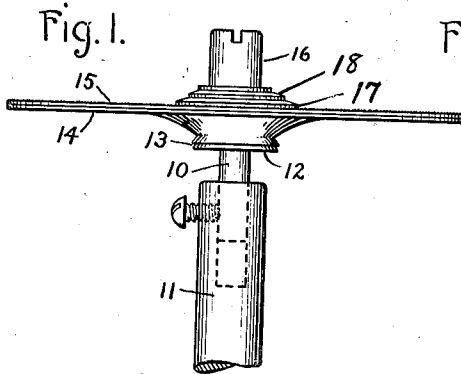


W. S. HANNAN.
GRINDING DEVICE.
APPLICATION FILED APR. 22, 1908.

915,430.

Patented Mar. 16, 1909.



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM S. HANNAN, OF SCHENECTADY, NEW YORK.

GRINDING DEVICE.

No. 915,430.

Specification of Letters Patent.

Patented March 16, 1909.

Application filed April 22, 1908. Serial No. 428,479.

To all whom it may concern:

Be it known that I, WILLIAM S. HANNAN, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Grinding Devices, of which the following is a specification.

This invention relates to grinding or abrading devices and has for its object the provision of means whereby a grinding operation may be performed in a simple, accurate and reliable manner.

My invention relates more specifically to devices for grinding knives and the like.

In carrying out my invention I employ a grinding wheel or disk having an abrading surface on the flat portion instead of on the edge or periphery of the wheel. The disk which I employ is flexible having a solid or rigid outer portion and a flexible inner portion so that the abrading surface will yield under the pressure of the knife to produce a uniform result in a very simple manner. In connection with this disk I also provide a guiding or resting device so arranged that the knife may be held at a definite angle with the abrading surface by an unskilled hand. I also employ means for securing the parts of the disk in place, which may be operated to release the parts by the use of the knife itself.

My invention therefore comprises the features of construction and the arrangement and combination of elements hereinafter set forth and particularly pointed out in the claims annexed hereto.

In the accompanying drawing in which I have shown my invention embodied in concrete form, Figure 1 is an elevation of a grinding disk embodying my invention; Fig. 2 is a plan view of the same; Fig. 3 is an enlarged elevation, partly in section, of the device; and Fig. 4 is a similar view of a modified form of my invention.

Referring to the drawing, 10 is the central supporting stud of the disk provided with screw threads and adapted to be driven by the rotating element 11 of a grinding machine as shown in Fig. 1. Secured upon this stud is a bearing collar 12 having a curved portion 13 which may be approximately spherical in shape. A supporting plate 14, preferably of metal, is adapted to fit over the stud and engage the curved portion of the collar 12. This plate has a flat outer portion in the shape of a ring and its

inner portion is curved downward, its extreme inner end being bent to conform to the shape of the surface 13. A sheet 15, preferably of some flexible material such as sand-paper or emery cloth, is mounted upon the plate and extends beyond the ring portion and into close proximity with the stud 10 so as to rest upon the collar 12. A clamping nut 16 is screwed on to the stud so as to secure the abrading disk in place by clamping it to the collar so that the sheet 15 will rotate with the stud.

The supporting plate 14 is loosely mounted upon the collar and will not necessarily rotate therewith until pressure is applied to the surface 13. By making the supporting plate 14 loose the disk, as a whole, is rendered flexible since as the plate and sheet are forced downward on one side of the stud the flexible sheet bends on the opposite side at the point 17 or between the outer clamping surface of the nut 16 and the flat portion of the plate. The clamping nut 16 is provided with beveled portions 18 adapted to receive the back of the knife and hold the same in definite relation with the abrading surface. By having a plurality of beveled surfaces the knife may be ground at different angles as desired. The nut 16 is provided with a slot 19 for unscrewing it. This arrangement is very convenient since it is possible to remove the nut without the use of any tools as the back of the knife may be placed in the slot to act as a lever as shown. When the stud 10 is rotated the abrading sheet 15 will be likewise positively rotated but as the supporting ring 14 is loose it will not rotate until the sheet is pressed in contact with the plate and the latter engages the collar 12. The curved or spherical engaging surface between the bearing collar and supporting plate has the effect of keeping the collar centered and likewise provides a good bearing surface and reduces the wear of these parts. By making the disk flexible in this manner less power will be required to turn the disk since less pressure will be applied to the disk and there is less danger of destroying the knife by drawing the temper because of excessive pressure.

In Fig. 4 I have shown a modified form of my invention in which the disk is made flexible by means of a sheet or plate of elastic material 20, such as rubber or the like. This rubber center is secured in clips on the plate 21 and is clamped to the grinding sheet between the nut 19' and the collar 22. The es-

5 sential features of the disk, however, remain the same in this case as it is rigid at its outer and central portions and is flexible intermediate these portions for purposes above described.

10 While I have illustrated my invention in connection with specific structural details and arrangement of parts it should be understood that I do not limit my invention in these particulars except in so far as it is limited by the scope of the claims annexed hereto.

What I claim as new and desire to secure by Letters Patent of the United States, is,

15 1. A grinding disk comprising a flexible inner portion, a rigid ring having a flat surface surrounding said portion, and abrasive material on the flat side of said ring.

20 2. A grinding disk comprising a flexible inner portion, a rigid ring having a flat surface surrounding said portion, and abrasive material upon the ring and said inner portion.

25 3. A grinding disk comprising a support including a rigid outer ring, a sheet of flexible abrasive material mounted thereon so as to extend within the same, a clamping device engaging the sheet and separated therefrom to leave the intermediate portion of the sheet unsupported.

30 4. A grinding disk comprising a flexible sheet of abrasive material, a rigid plate forming an outer supporting ring for the sheet, and means within the ring for securing the sheet and plate together, said means being

separated from the supporting ring to leave the intermediate portion of the sheet unsupported.

5. A grinding disk comprising a supporting outer ring, a sheet of flexible abrasive material mounted thereon and extending within the ring so as to have an inner unsupported portion, a central stud passing through the plate and sheet, and a slotted nut on said stud for securing the parts in place.

45 6. A knife grinding disk comprising a supporting plate having a flat outer ring portion, a sheet of flexible abrasive material mounted thereon and extending within the ring, a central stud passing through the plate and sheet, and a clamping device for the sheet having a plurality of beveled surfaces for supporting a knife at different grinding angles with the sheet.

55 7. A knife grinding disk comprising a supporting plate having a flat outer ring portion, a sheet of flexible abrasive material mounted thereon and extending within the ring, a central stud passing through the plate and sheet, a clamping device for the sheet having a beveled surface for supporting a knife at a fixed grinding angle with the sheet, and a securing nut slotted to receive the knife.

In witness whereof, I have hereunto set my hand this 14th day of April, 1908.

WM. S. HANNAN.

Witnesses:

CHARLOTTE SECOR,
F. J. SEABOLT.