

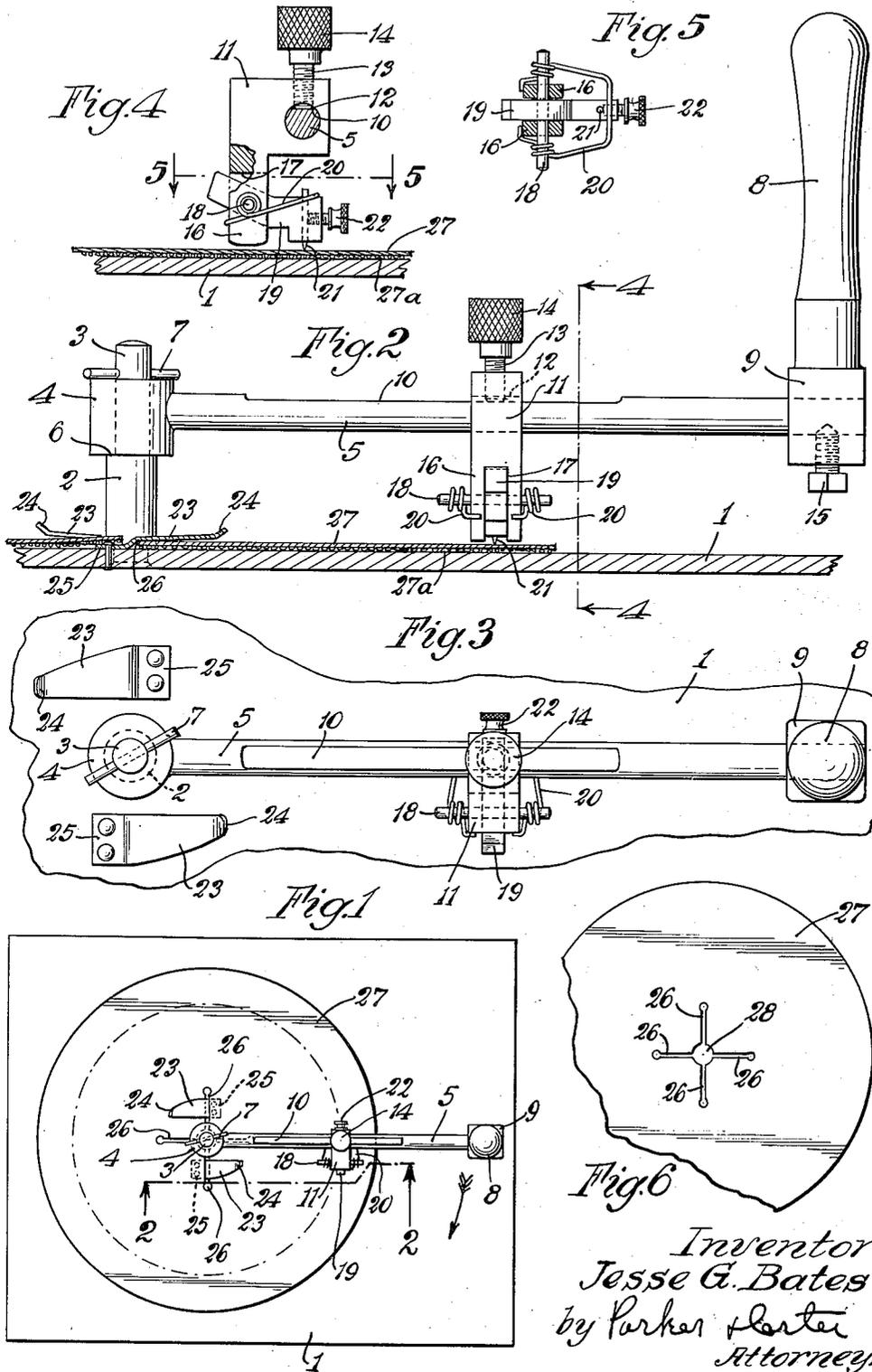
Jan. 13, 1942.

J. G. BATES

2,269,510

DISK CUTTING MACHINE

Filed Jan. 21, 1941



Inventor
Jesse G. Bates
by Parker & Hartel
Attorneys.

UNITED STATES PATENT OFFICE

2,269,510

DISK CUTTING MACHINE

Jesse G. Bates, Chicago, Ill.

Application January 21, 1941, Serial No. 375,305

7 Claims. (Cl. 164—71)

My invention relates to an improvement in cutters and has for one purpose the provision of means for cutting or trimming the edges of abrasive disks and the like.

Another purpose is the provision of means for readily trimming off the used edge portion of an abrasive disk.

Another purpose is the provision of a readily operable manual tool for trimming circular articles, and particularly abrasive disks having a central aperture with radial slots extending outwardly therefrom.

Other purposes will appear from time to time in the course of the specification and claims.

I illustrate my invention more or less diagrammatically in the accompanying drawing wherein:

Fig. 1 is a plan view;

Fig. 2 is a section on an enlarged scale on the line 2—2 of Fig. 1;

Fig. 3 is a partial plan view on an enlarged scale, with the disk omitted;

Fig. 4 is a section on the line 4—4 of Fig. 2;

Fig. 5 is a section on the line 5—5 of Fig. 4; and

Fig. 6 illustrates a disk for the trimming of which my invention is adapted.

Like parts are indicated by like symbols throughout the specification and drawing.

Referring to the drawing, 1 generally indicates any suitable base member, which may for example be a metal plate, but it will be understood that any suitable size, shape or material may be employed. Upstanding from the base 1 is a central pin 2, having an upper reduced portion 3, which receives a hub 4, carrying a trimming arm 5. The hub is supported upon any suitable ledge 6 between the main portion of the pin 2 and the reduced portion 3. It is normally held against upward movement as by any suitable removable pin 7, or any other suitable removable securing means. At the outer end of the arm 5 is a manual handle 8, herein shown as upwardly extending from any suitable block 9, which may be secured to the end of the arm 5. Slidable along the arm 5, for example along the flattened portion 10, is a block 11, apertured as at 12 to receive the arm 5 and provided with any suitable locking means 13, herein indicated as a set screw having a manually operable portion 14.

It will be understood that the set screw 13 may be employed to lock the block 11 in any suitable position along the flattened portion 10 of the arm 5. When it is removed it is also possible to slide the block 11 off the arm 5 in the block 9, which has a similar locking screw 15 which is also re-

movable. The set screw 13 is also effective to prevent rotation of the block 11 about the arm 5, and when set holds it firmly in the position in which it is shown in Fig. 4.

The block 11 has a downwardly extending arm 16, which is slotted as at 17 to form a fork. Passing through the arms of the fork is a pin 18, which serves as a pivotal connection for the cutter support 19. The cutter support is normally urged into cutting position as by any suitable yielding means herein shown as the coil spring 20. The cutter support may carry a cutting member 21, which may for example be a needle type cutter. It may be adjusted and locked in position as by any suitable set screw 22.

Located adjacent the pin 2 are disk locking clips 23, each having upwardly inclined terminal tips 24, and base portions 25, which may be riveted or otherwise secured to the upper surface of the base 1. The clips are so positioned as to penetrate radial slots 26 of the disk 27, having also a central aperture 28 from which the slots 26 radiate.

It will be realized that, whereas I have described and illustrated a practical and operative device, nevertheless many changes may be made in the size, shape, number and disposition of parts without departing from the spirit of my invention. I therefore wish my description and drawing to be taken as in a broad sense illustrative or diagrammatic, rather than as limiting me to my precise showing.

For example, it will be realized that, whereas in the present embodiment of my invention, I have shown a stationary disk and a moving arm, it is possible to reverse the situation and have a fixed arm and a moving disk. It will also be understood that, whereas I have shown a manual device, it may be practical and convenient to have a motor-driven device whereby either the arm or the disk is moved by some non-manual means. In such a case it would be preferable to employ a stationary arm and a motor-driven disk or disk support. The use and operation of my invention are as follows:

In disks of this type, in many or most uses, the maximum wear or even almost the only wear on the abrasive surface is about the edge of the disk. Therefore, users of the disk can make substantial savings by re-cutting or trimming the edges of the disk, thus renewing the life of the disk. This operation may then be repeated several times on the same disk.

When the user wishes to trim a disk he threads the disk on the pin 2, which is proportioned to re-

ceive the central aperture 28 of the disk. The disk may be of fiber or any other suitable material and is positioned with the abrasive face down against the base 1. Otherwise the abrasive substance on the disk would dull the cutter. The disk is then rotated in such fashion as to cause the wings or clips 23 to pass through a pair of slots 26. The parts are so proportioned that the clips firmly hold the disk face down against the base 1. Thereafter the hub 4 is threaded on the reduced shaft portion 3, and a downward pressure is exerted against the spring 20 until the top of the hub is below the aperture which receives the pin 7. The pin is then inserted in the hole, and it is effective thereafter to maintain a constant pressure or thrust of the spring 20 and thereby of the cutter point 21 against the back of the disk.

The cutter head 11 may be adjusted at any suitable position along the arm 5, or the flattened portion 10 thereof. Adjustment may be made if desired before the arm is put in position, since otherwise the spring thrust will make it difficult or impossible to move the cutter across the back of the disk. Then the user by means of the handle 8 rotates the arm 5, and with it the cutter head 11 and the cutter 21, around the disk in a direction opposed to the points of the clips 23, so that there is no tendency of the disk to slip.

All that the operator has to do is to rotate the handle, and the spring thrust of the spring 20 is effective to hold the point of the cutter 21 with sufficient pressure against the back of the disk to score the disk deeply, or even to cut it through. After generally one revolution, or more if necessary, the disk is so deeply scored as to have its outer edge severed or at least easy of removal. The user then removes the pin 7, removes the arm 5, and lifts the trimmed disk off the pin 2.

I find it advisable to so adjust the spring thrust that the cutter will penetrate the fiber only and will, therefore, not become blunted by contact with the abrasive.

I claim:

1. In a trimming device for disks having a central aperture with slots extending radially therefrom, a disk support, a centering pin adapted to penetrate the central aperture of such a disk, clip members located on said support adjacent said pin, and adapted to penetrate the radial slots of such a disk, a cutter supporting arm mounted for rotation concentric with said disk, a cutter on said arm, and means for imparting relative movement to cutter and disk and for thereby circumferentially cutting said disk.

2. In a trimming device for disks having a central aperture with slots extending radially therefrom, a fixed base, a centering pin on said base adapted to penetrate the central aperture of the disk, clip members located on said base adjacent said pin and adapted to penetrate the radial slots of such a disk a cutter arm rotatably mounted on said pin for rotation concentrically with said

disk, a cutter on said arm, and means for rotating said arm and for thereby circumferentially cutting said disk.

3. In a trimming device for disks having a central aperture with slots extending radially therefrom, a fixed base, a centering pin on said base adapted to penetrate the central aperture of the disk, clip members located on said base adjacent said pin and adapted to penetrate the radial slots of such a disk, a cutter arm rotatably mounted on said pin for rotation concentrically with said disk, a cutter on said arm, means for yieldingly urging said cutter against the face of said disk, and means for rotating said arm and for thereby circumferentially cutting said disk.

4. In a trimming device for disks having a central aperture with slots extending radially therefrom, a fixed base, a centering pin on said base adapted to penetrate the central aperture of the disk, clip members located on said base adjacent said pin and adapted to penetrate the radial slots of such a disk, a cutter arm rotatably and removably mounted on said pin for rotation concentrically with said disk, a cutter on said arm, and means for rotating said arm and for thereby circumferentially cutting said disk.

5. In a trimming device for disks having a central aperture with slots extending radially therefrom, a disk support, a centering pin adapted to penetrate the central aperture of such a disk, clip members located on said support adjacent said pin, and adapted to penetrate the radial slots of such a disk, a cutter supporting arm removably mounted on said centering pin, a cutter on said arm, and means for imparting relative movement to cutter and disk and for thereby circumferentially cutting said disk.

6. In a trimming device for disks having a central aperture with slots extending radially therefrom, a fixed base, a centering pin on said base adapted to penetrate the central aperture of the disk, clip members located on said base adjacent said pin and adapted to penetrate the radial slots of such a disk, a cutter arm mounted on said pin, a cutter on said arm, and means for imparting relative rotary movement to arm and disk and for thereby circumferentially cutting said disk.

7. In a trimming device for disks having a central aperture with slots extending radially therefrom, a fixed base, a centering pin on said base adapted to penetrate the central aperture of the disk, clip members located on said base adjacent said pin and adapted to penetrate the radial slots of such a disk, a cutter arm removably mounted on said pin, a cutter head longitudinally adjustable on said arm, a cutter carrier pivoted on said head, a cutter mounted on said carrier, yielding means for rotating said carrier in relation to said head and for thereby urging said cutter against the face of the disk, and means for imparting relative rotation to said arm and disk for thereby circumferentially cutting said disk.

JESSE G. BATES.