Sept. 10, 1940. C. F. SCHLEGEL 2,214,351

POLISHING DISK

Filed June 5, 1937

Fig. 1

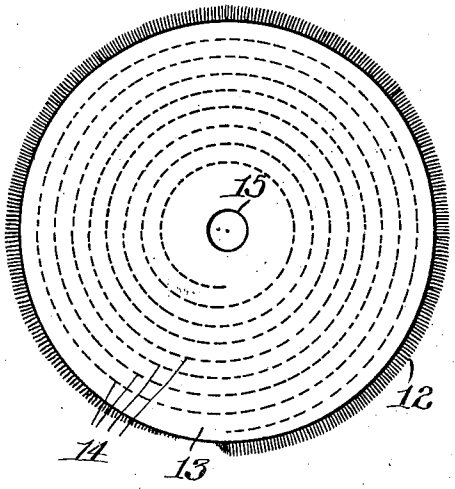


Fig. 2

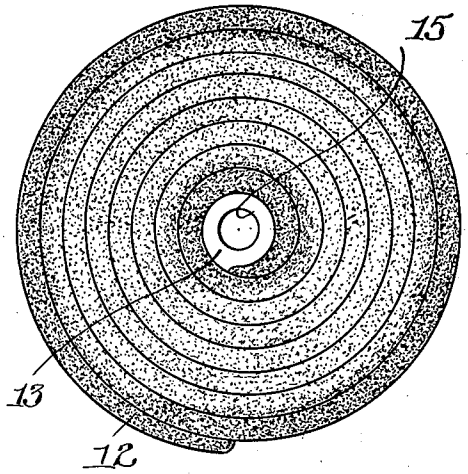


Fig. 3

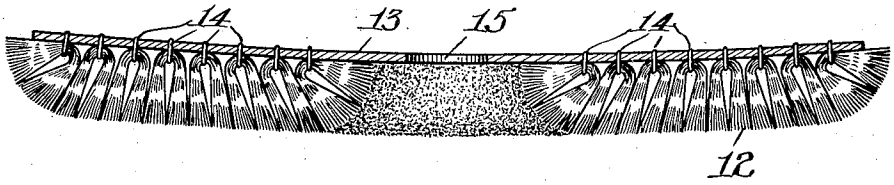
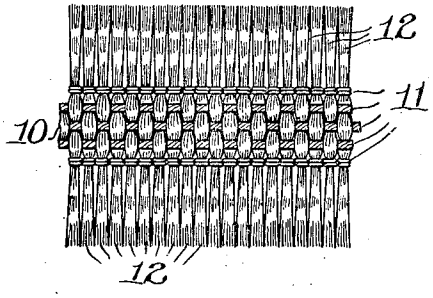


Fig. 4



INVENTOR.
Carl F. Schlegel
BY Cumpston & Shepard
his ATTORNEYS

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POLISHING DISK

Carl F. Schlegel, Brighton, N. Y., assignor to The Schlegel Manufacturing Company, Rochester, N. Y., a corporation of New York

Application June 5, 1937, Serial No. 146,659

4 Claims. (Cl. 15—230)

This invention relates to a polishing disk or wheel, and particularly to a disk or wheel of the type intended to be rotated by a suitable source of power while in contact with the work to be polished.

One object of the invention is the provision of a generally improved and more satisfactory polishing disk, simple and relatively inexpensive to build, and sturdy and effective in use.

Another object of the invention is the provision of an improved polishing disk in a flexible, round and balanced type of construction suitable for rotation at high speed and adapted for polishing both even and uneven surfaces.

Still a further object is the provision of an improved polishing disk of the character described in which the polishing material may be variably assembled during manufacture so as to afford a predetermined density in the finished article.

To these and other ends the invention resides in certain improvements and combinations of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawing:

Fig. 1 is a rear face view of a polishing disk according to this invention;

Fig. 2 is a front face view thereof;

Fig. 3 is a section taken centrally through the disk; and

Fig. 4 is a face view of a fragment of textile material which may be used in constructing the disk.

The same reference numerals throughout the several views indicate the same parts.

The preferred embodiment of the invention herein disclosed, by way of illustration, preferably comprises a strip of textile material wound in spiral fashion, with the successive coils, or convolutions, arranged adjacent one another, as shown, and suitably secured to a flexible backing member in the form of a disk of flexible supporting material.

The spirally coiled strip preferably comprises a supporting body portion for attachment to the backing disk, and one or more unwoven or fringed edges presenting a multiplicity of closely arranged free strands projecting away from the backing, to form together a polishing surface having a degree of softness and density predetermined by the construction to correspond with the character of the work for which the disk is intended. The center of the backing disk is preferably provided with a central opening for attaching it to a rotarily driven spindle.

Referring more particularly to the drawing, the textile strip of polishing material is shown in Fig. 4 as comprising, preferably, a central woven portion indicated generally at 10, with a fringe of polishing strands projecting laterally from each edge. This construction is obtained by the use of longitudinal or warp strands 11 interwoven with transverse or weft strands 12 which latter are extended substantially beyond the body portion to provide the polishing fringes or strands. Either the warp or the weft strands, or both, may be made of any suitable textile material, such as cotton, linen, wool, flax, jute, hemp, silk, rayon, or the like. Ordinarily some inexpensive textile material, such as cotton strands, is used for both the warp and weft of the strip. If a greater degree of stiffness is desired than afforded by any of the above materials, some or all of the warp strands may be made of metallic wire, and some of the weft strands may be made of metallic wire, particularly if some abrasive effect upon the article being polished is desired. In most cases, however, it has been found preferable to make the warp and weft strands of some of the non-metallic materials referred to above.

Usually, but not necessarily, such strips are woven together in multiple, parallel lengths, and then cut apart along longitudinal lines to provide the finished strip with a free fringe or strand portion on each edge, as shown in Fig. 4. The polishing strands may obviously be made to extend to any practicable length beyond the body portion 10 of the strip so as to give the mass of polishing strands any suitable depth. Strands having a free length of one quarter to one half inch or more have been found satisfactory for most purposes.

The flexible backing member, as shown in Figs. 1 and 3, preferably comprises a round disk 13 of leather, or strong and relatively stiff fabric, or like flexible material, depending upon the type of polishing to be accomplished. One end of the above described polishing strip is secured to the backing disk 13, adjacent its center, as, for example, by means of stitching 14 running lengthwise along the center of the body portion 10 of the strip, the center of the strip 10 and the stitching being arranged to extend in spiral convolutions around and around the backing disk, as shown. As each successive convolution of the strip is stitched to the disk, the edge fringes or strands on opposite sides of the strip are bent upwardly to extend approximately perpendicu-

larly to the plane of the backing disk 13, thus forming the strip into U-shape, sewn to the backing disk by longitudinal stitching along the bottom of the U-shape.

Successive spiral convolutions of the textile strip are preferably crowded more or less closely against the previously stitched convolutions during assembly, so that when the disk is completed, the convolutions all lie relatively close to one another. Each of the inner convolutions receives lateral support from the adjacent convolutions, to hold the fringe portions of the convolutions in upstanding relationship generally perpendicular to the plane of the disk, as shown in Fig. 3. The free ends of the fringe form the effective working surface of the polishing disk. As shown, the backing disk is formed with a central opening 15 so that it can be received on and attached to the driving spindle by any known or suitable attaching means, and the spiral convolutions of the polishing fringe are wound, as shown, concentrically around such central opening.

With the body portions of the successive layers of textile material held in this manner the fringe portions lie against each other and form a relatively thick and substantial mass of fringe, the strands of which are laterally supported to some extent by adjacent strands in the mass. The outer surface of this mass of fringe is formed by the ends of the individual strands constituting the mass so that the strands are presented endwise to the outer surface and thus the strands come into substantially endwise bearing relationship with the work to be polished. The fringe strands at the inner and outer peripheries of the mass, having no lateral support on one side, will bend over and provide what may be termed a mushroom effect, as readily apparent from Fig. 2.

It will be apparent from the above description, in connection with the drawing, and particularly Figs. 2 and 3 thereof, that the spiral convolutions of the folded body portion 10 of the strip, secured or stitched to the backing disk 13, may be given a spacing from one another, to crowd the fringe edges more or less closely together, as predetermined by the desired density of the polishing body which they together form. It will also be noted that the polishing disk, as a whole, has a substantially round shape, without corners, or other projecting portions, so that it is adapted for rotation at high speed on a machine spindle in smooth contact with surfaces to be polished. Furthermore, the substantially concentric and symmetrical arrangement affords a disk which is substantially dynamically balanced for such high speed rotation.

The foregoing construction affords a type of polishing disk capable of being produced with a predetermined degree of softness of polishing surface and of flexibility as a whole, depending upon the character of work to be accomplished, and so adapted to a variety of polishing uses.

While certain embodiments of the invention have been disclosed, it is to be understood that the inventive idea may be carried out in a number of ways. This application is therefore not to be limited to the precise details described, but is intended to cover all variations and modifications thereof falling within the spirit of the invention or the scope of the appended claims.

I claim:

1. A flexible, rotatable polishing disk comprising a substantially circular supporting and backing disk of flexible material, and a textile strip having a woven body portion and a fringed edge portion, said strip having said body portion arranged and secured to said disk in convolutions extending substantially spirally about the center of said backing disk, with said fringe portion projecting away from said disk to form a substantially round polishing body, said strip convolutions having a spacing from one another predetermined by the desired density of said polishing body, and said disk having centrally disposed means for attachment to a machine spindle for rotation at high speed.

2. A flexible, rotatable polishing disk comprising a substantially circular supporting and backing disk of flexible fabric, and a textile strip having a woven body portion and a fringed edge portion, said strip having said body portion arranged and stitched to said disk in convolutions extending substantially spirally about the center of said backing disk, with said fringe portion projecting away from said disk to form a substantially round polishing body, said strip convolutions having a spacing from one another predetermined by the desired density of said polishing body, and said disk having centrally disposed means for attachment to a machine spindle for rotation at high speed.

3. A flexible rotatable polishing disk comprising a substantially circular supporting and backing disk of flexible material, and a textile strip having a woven body portion fringed at its opposite edges, said strip having said body portion folded upon itself with said fold arranged and secured to said disk in convolutions extending substantially spirally about the center of said backing disk and with said fringed edges projecting away from said disk to form a subsantially rounded polishing body, said convolutions having a spacing from one another predetermined by the desired density of said polishing body, and said disk having a central opening therein for the recepton of means for attaching the same to a machine spindle for rotation at high speed.

4. A flexible rotatable polishing disk comprising a substantially circular supporting and backing disk of flexible fabric, and a textile strip having a woven body portion fringed at its opposite edges, said strip having said body portion folded upon itself with said fold arranged and stitched to said disk in convolutions extending substantially spirally about the center of said backing disk and with said fringed edges projecting away from said disk to form a substantially rounded polishing body, said strip convolutions having a spacing from one another predetermined by the desired density of said polishing body, and said disk having a central opening for the reception of means for attaching the same to a machine spindle for rotation at high speed.

CARL F. SCHLEGEL.