

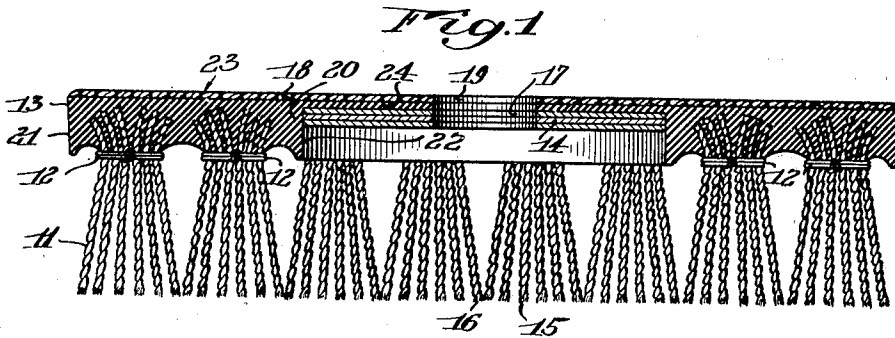
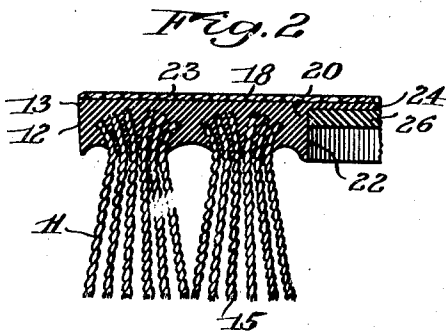
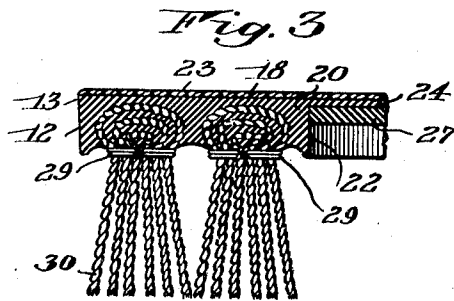
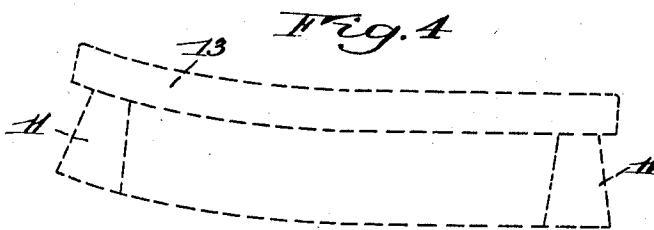
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POLISHING DISK

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2,332,936

POLISHING DISK

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Original application February 11, 1939, Serial No. 255,920. Divided and this application March 17, 1942, Serial No. 435,056

3 Claims. (Cl. 15-239)

This application is a division of my parent application for United States Letters Patent, Serial No. 255,920, filed February 11, 1939.

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

An object of my invention is to provide a generally improved and more satisfactory polishing disk of simple construction which is relatively inexpensive to build, and sturdy and effective in use.

Another object of my invention is the provision of a polishing disk comprising a multiplicity of separate polishing fibers or strands, secured to a flexible support or backing, by means affording a ready control of the density or compactness of the mass of strands so as to vary the softness of the body of strands and the disk as a whole.

Other objects and advantages of my invention will be particularly pointed out in the claims and will be apparent from the following description, when taken in connection with the accompanying drawing, in which:

Fig. 1 is a sectional view taken through the polishing disk of my invention;

Fig. 2 is a sectional view, similar to Fig. 1, showing a modified form of the invention;

Fig. 3 is a sectional view, similar to Fig. 1, showing another modified form of my invention, and

Fig. 4 is a view illustrating how the disk may be flexed in use.

The polishing fibers or strands 11 of the polishing disk of my invention may be of any suitable material, although I preferably employ one or more of the textile fibers such as cotton, linen, wool, flax, jute, hemp, silk, or rayon. Of these, for example, I have found that cotton and wool fibers are quite satisfactory where a soft texture is desired, as for imparting a gloss finish to a painted, lacquered, or polished surface.

Preferably in making the disk a number of fibers or strands are tied together by any suitable material, as indicated at 12, to provide a grouped bunch or tuft of strands or fibers. The tufting or bunching of the strands facilitates handling of the fibers during manufacture of the disk, and also confines the strands adjacent their anchored ends while permitting them to bush out and form a thick and substantial mass of fringe adjacent the polishing face. The outer polishing face of this mass of fringe is formed by the

ends of the individual strands. The strands are thus presented endwise and come into endwise bearing relationship with the work to be polished. The individual tufts are carried by a body portion or disk, generally indicated by the numeral 13, a number of tufts being secured to the disk substantially in the form of an annulus around a central attaching hub 14.

One of the advantages of my invention is that the tufts may be spaced as desired so as to vary the density of the mass of the fibers at the polishing face for the particular work to be accomplished. Preferably the tufts are spaced in close enough relation that in the outer polishing face 15 the strands of adjacent tufts are closely packed together, as shown at 16. The polishing face of the disk thus appears substantially as a densely packed mass of polishing elements.

The hub 14 may be of any suitable material, but is preferably of a material which is sufficiently rigid to provide an attaching hub for the spindle of a rotatable driver, but sufficiently pliant to enable it to bend when subjected to an appreciable deflecting force. For example, the attaching hub 14 may be of layers of cardboard, compressed hemp, or semi-hard rubber. The disks of the attaching hub are provided with apertures 17 for the reception of the driving spindle.

The body portion of the disk also has a backing or anchoring section 20 for the tufts which may be of a material which is flowable, but which upon curing or hardening is somewhat flexible and serves to bond the individual fibers together and the tufts to each other. I have found latex to be very suitable for this purpose.

Bonded to the outer surface of the disk by the latex backing section 20 is a backing sheet 18 of a tough, strong, preferably fabric material such as canvas or buckram. By using a softer or stiffer backing sheet 18 or by using several layers of backing material the strength and rigidity of the polishing disk may be varied to suit the conditions of use to which the disk is to be applied. In addition, the backing sheet 18 serves to give greater strength to the disk and hold the latex backing section in position when subjected to the high centrifugal force caused upon rotation of the disk at high velocity. The backing sheet is provided with an aperture 19 registering with the apertures 17 in the attaching hub.

One method by which the disk may be conveniently made is to provide a mold or form having sides to confine the latex at the surfaces 21, 22, and 23. The backing sheet 18 is placed adjacent

the bottom of the mold and the apertures 17 in the attaching hub and 19 in the backing sheet placed in alignment. The tufts of polishing fiber may then be fed through tubes and held in the desired position while the latex is flowed around and between the tufts and between the strands 11 for a substantial distance as shown and between the attaching hub 14 and the backing sheet 18, as indicated at 24. Thus the entire polishing disk unit including the attaching hub, the backing sheet 18, and the tufts are bonded together through the latex backing section. After curing the latex by any well known method, the polishing disk may be removed from the mold and appears as shown in Fig. 1.

In Fig. 2 I have shown a modified form of my invention wherein the tufts are not tied together. In this modification I have shown the attaching hub as being formed of a single preferably semi-hard rubber disk 25. In Fig. 3 I have shown another modified form of my invention wherein the attaching hub 27 is made of semi-hard rubber. Also in this modification instead of each strand of each tuft being separate as shown in Figs. 1 and 2, the strands are tied, as indicated at 29, so that the center of the strands is anchored in the latex backing section while the ends 30 form the polishing face. This method of forming the tufts provides a somewhat better anchorage for the tufts.

The polishing disk of my invention may be inexpensively fabricated. Because of its flexibility, as illustrated in Fig. 4, it is admirably adapted to reach in between angularly disposed sections or crevices and for curved surfaces. For this reason it is particularly adapted for polishing automobile bodies. Moreover, the use of individual tufts makes it very easy to control the density of the mass of the polishing fibers at the polishing face by varying the spacing of the tufts.

While I have shown the preferred forms of my invention, it will be apparent that various other variations and changes may be made, particularly in the form and relation of parts, without departing from the spirit of my invention as set forth in the appended claims.

I claim:

1. A relatively soft, flexible polishing disk comprising a circular backing and reinforcing sheet of strong flexible fabric, a layer of flexible latex material on one face of said sheet, and a mul-

tiplicity of separate tufts each composed of a multiplicity of unwoven, twisted strands of relatively soft fibrous material embedded at one end in said layer and having their opposite free ends forming a polishing face, said strands being tenaciously bonded together and to said backing sheet by said latex layer to form a durable unitary structure, said sheet and layer having a central opening therethrough to receive a rotary driving spindle for said disk, and said tufts having a predetermined spacing from one another and from said opening to afford a desired density of strands at said polishing face and an untufted area for the reception of disk clamping means on said spindle.

2. A relatively soft, flexible polishing disk comprising a circular backing and reinforcing sheet of strong flexible fabric, a layer of flexible latex material on one face of said sheet, a supporting ring of flexible material concentric with said sheet, and a multiplicity of unwoven, twisted strands of relatively soft fibrous material embedded at one end in said layer about said supporting ring and having their opposite free ends forming a polishing face, said latex layer penetrating for a substantial distance between said strands and serving to tenaciously bond said strands and said sheet and supporting ring together and said sheet, layer, and ring having a central opening therethrough spaced from said strands for the reception of clamping means on a rotary driving spindle for said polishing disk.

3. A relatively soft, flexible polishing disk comprising a circular backing and reinforcing sheet of strong flexible fabric, a layer of flexible latex material on one face of said sheet, a supporting ring of flexible material concentric with said sheet and a multiplicity of separate tufts each composed of a multiplicity of unwoven twisted strands of relatively soft fibrous material embedded at one end in said layer about said supporting ring and having their opposite free ends forming a polishing face, said latex layer serving to tenaciously bond said strands and said sheet and supporting ring together, and said sheet, layer, and ring having a central opening therethrough spaced from said tufts for the reception of a rotary driving spindle provided with means for clamping said polishing disk.

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