Oct. 6, 1936. M. I. DOYLE 2,056,716

BUFFING WHEEL

Filed June 14, 1934

FIG. 1.

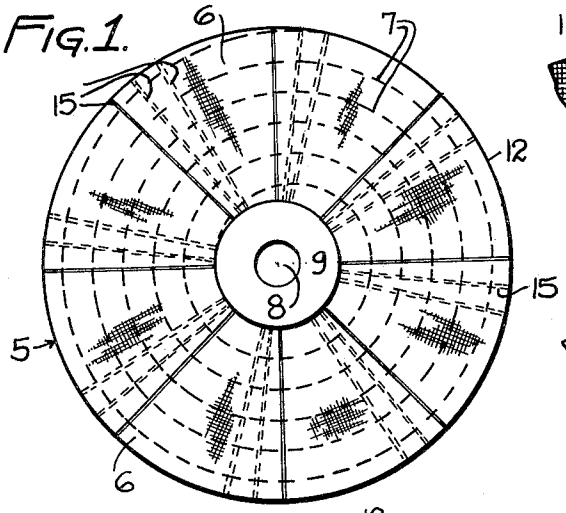


FIG. 3.

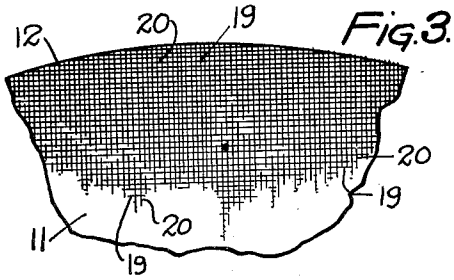


FIG. 4.

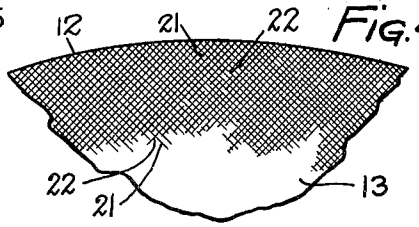


FIG. 2.

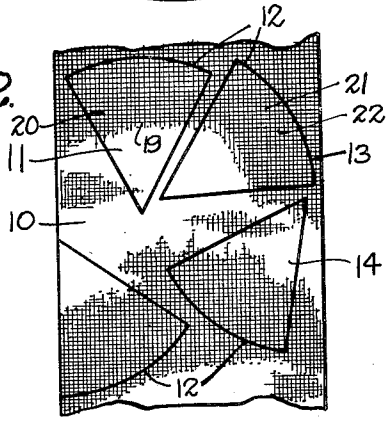


FIG. 5.

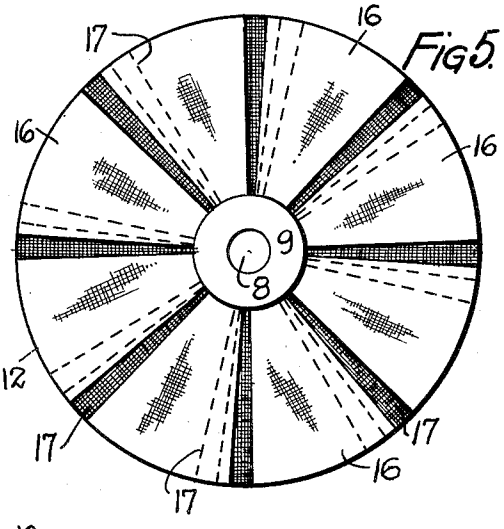


FIG. 7.

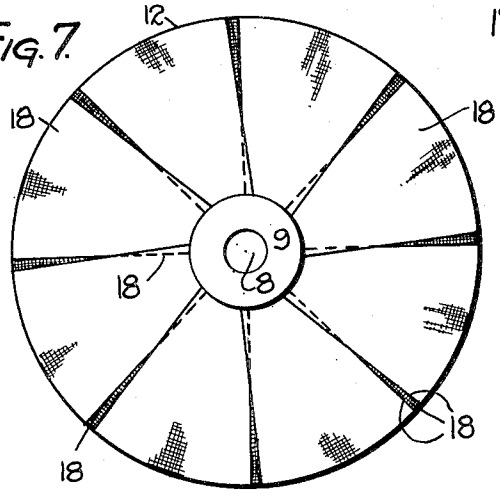
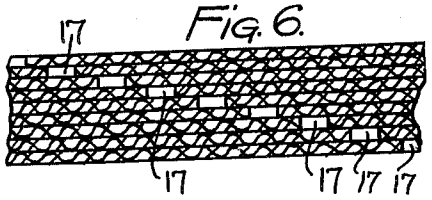


FIG. 6.



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BUFFING WHEEL

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1 Claim. (Cl. 51—278)

This invention relates to buffing wheels and in particular to a type made from pieces of fabric, cloth or other textile material, and to the method or process of cutting and assembling the pieces so that wheels of varying hardness may be manufactured.

One important object of my invention is to arrange for the cutting of pieces of fabric in such a manner that all may be cut simultaneously from a pile of material whereby the angle between the threads of each piece will be the same and the pieces, when laid down in wheel formation will have the threads disposed at the same angle with the result that the hardness or softness of the polishing or buffing face of the wheel may be accurately controlled.

A further object of my invention is to provide a wheel in which the pieces overlap to leave a space therebetween so that the flexibility of the wheel construction is controlled, that is, when the pieces are close together, a substantially solid wheel is obtained and when the pieces are further apart, a relatively softer wheel is produced.

A still further object of my invention is to overlap the pieces at the center of the wheel so that in the small diameter wheel a stiff edged wheel is obtained, yet the face of the wheel is itself soft and permits working on small or intricate work.

It is well known that various kinds of material to be buffed require different conditions of the face of the buffing wheel. Some require a hard face and others a soft face, with various degrees between these two extremes. For this purpose sheetings or muslins of different texture have been used and it has been necessary for buff manufacturers to keep in stock, from four to six different kinds of material to meet the demands of the trade. By cutting the pieces of a buff material so that in each piece, one of the threads extends parallel to the periphery of the wheel and the other thread extends at right angles to said periphery, it is possible to make a wheel having a very soft face because the parallel threads fray out inwardly from the periphery of the wheel and the exposed ends of the other threads present a soft buffing face. The opposite condition is obtained by cutting the pieces of fabric from which the wheel is made so that the threads thereof are disposed at oblique angles to the periphery of the wheel to provide a buffing face which is hard and one that is known as a fast cutting buff. By varying the angular relation of the threads with the periphery of the wheel it is possible to obtain a buff of any degree of hardness between the two extremes above referred to. A buff manufacturer can, therefore, meet practically all the demands of the trade by keeping in stock a single medium grade of textile instead of a larger number as heretofore.

Changes and variations may be made in the construction shown and described without departing from the principles of the invention or sacrificing its chief advantages; hence such invention is not to be confined to the specific illustrations shown in the accompanying drawing, in which;

Figure 1 is a plan view of one form of my invention, showing the use of segmental shaped pieces used in a buffing wheel structure.

Figure 2 is a fragmentary view of a section of pile material from which may be cut, the pieces used in the manufacture of a buffing wheel in accordance with my invention.

Figure 3 is an enlarged view of a fragment of the periphery of a wheel showing the arrangement of threads to provide a soft face for the wheel.

Figure 4 is a view similar to Figure 3 showing a hard faced wheel thread arrangement.

Figure 5 is a plan view of a modified form of method of assembling the segments of material, the same being shown spaced apart.

Figure 6 is a view in elevation, the view being exaggerated to show the relative positions of the openings left between the pieces of material as seen in Fig. 5, and,

Figure 7 is a plan view of a wheel in which the pieces are overlapped at the center only to provide for the small rigid wheel construction.

Referring to the drawing in detail, 5 indicates a buffing wheel which is made up of individual pieces 6 of fabric material. These pieces are shown as segmental in shape, but it is to be understood that my invention is applicable to any shape of piece that can be employed. These pieces are laid around layer on top of layer until the desired thickness of wheel is attained after which they are secured together by the spiral stitching 7. A central opening 8 is usually used to mount the wheel in the machine and at the center there may also be employed the discs 9, or the material may be impregnated with a sizing or stiffening agent to form a relatively hard center to effectively hold the wheel between the clamping disks employed in the machine.

The first step in the manufacture of my wheel is to pile layers of fabric as at 10 so that the threads of each piece in the pile extend in the same direction and then employ a cutting means to cut down through the pile to produce, for in-

stance, the segments 11, one of the threads of which are parallel to the peripheral edge 12 of the piece and the other threads perpendicular thereto. These pieces when assembled in wheel formation produce a soft surface wheel. The other pieces 13 and 14 illustrate how the pieces would be cut out of the pile 10 so that the threads of each piece, while being identically arranged would be at different angles to each other in the pieces 13 and 14 so that a wheel made from the pieces 13 would differ in edge texture from one made from the pieces 14. The method of cutting the pieces therefore, would enable the manufacturer to make wheels of different degrees of hardness by cutting from the pile, pieces for the wheel in accordance with the angle of the threads.

The next step is to lay the pieces 11 down to form a circle, the size of the segment would govern the size of the wheel, and then as seen in Figure 1, lay the next layer of pieces down so that each piece slightly overlaps the meeting edges of the pieces in the layer beneath, and continuing thus until the desired thickness of wheel is produced. The meeting edges of the pieces are indicated as at 15.

As illustrated in Figure 5, the pieces 16 are laid around so that a space 17 is provided between each piece. By varying the size of this space 17, flexibility of the wheel is obtained which may be varied to produce a relatively hard or soft wheel. These spaces also serve as air pockets which help ventilate the buff and keep it cool and also act as reservoirs for small quantities of polishing fluid which seeps into the spaces and is later given off as the wheel wears down. The staggering of these spaces uniformly makes a wheel of even thickness throughout, and the positions of the openings are illustrated in Figure 6.

In Figure 7, the pieces 18 are shown as overlapping at the center of the wheel only, so that a wheel of greater thickness at the center is provided.

Referring to Figure 3, it will be noted that the threads 19 extend substantially parallel to the periphery of the piece itself while the threads 20 are at right angles to the threads 19. This arrangement permits the ravelling of the threads 19 leaving the ends of the threads 20 to provide a soft periphery on the wheel. In Figure 4, the threads 21 and 22 are at an oblique angle to the periphery of the piece 13 and at right angles to each other and provide a wheel having a hard periphery and practically non-fraying.

It is evident therefore, that by my improved method of making a buffing wheel a manufacturer is relieved of the necessity of stocking several different textures of fabric, can vary the hardness of his wheel in accordance with demand, and can produce at smaller cost and more quickly a wheel having longer wearing qualities and of more even texture.

My invention is particularly directed to the method of laying the pieces of fabric material that go to make up a wheel so that the threads of each piece, or substantially all of the pieces, are in the same relative position with respect to the periphery of the wheel. This arrangement is not left to random selection or random laying of the segments but is carefully carried out so that the wheel is particularly adapted for the use to which it is to be put and the hardness or softness of its periphery is accordingly varied by this selective laying of the pieces.

My invention is not to be restricted to the precise details of construction shown since various changes and modifications may be made therein without departing from the scope of the invention or sacrificing the advantages derived from its use.

What I claim is:

A step in the process of making buffing wheels of varying peripheral hardness from the same material which consists in arranging fabric pieces in a main pile so that the threads of each piece in the pile extend in the same direction, then cutting down through the main pile to produce a plurality of individual segmental piles, the cutting being done so that the relative angles of the threads with the peripheral edge of each of the segmental piece piles is different.

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