

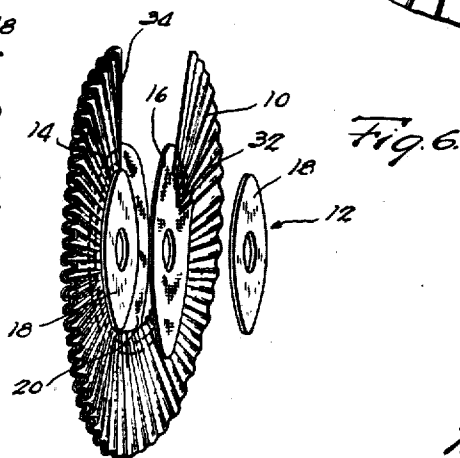
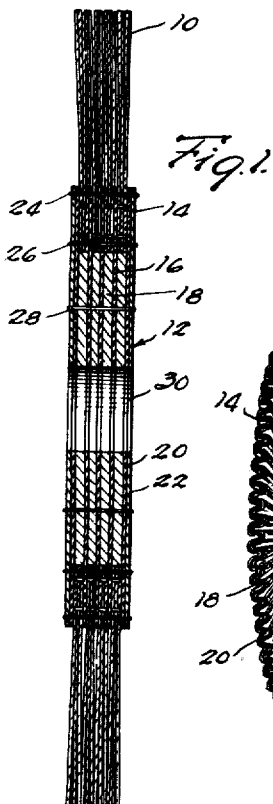
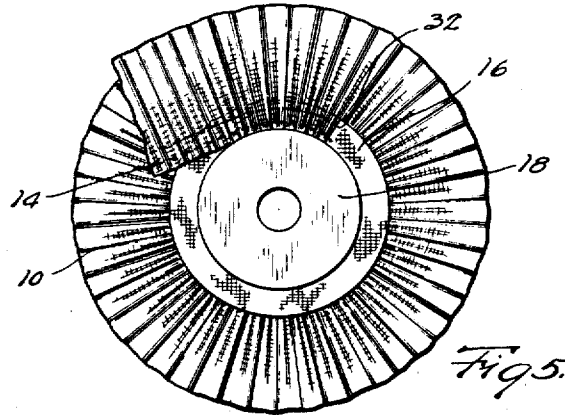
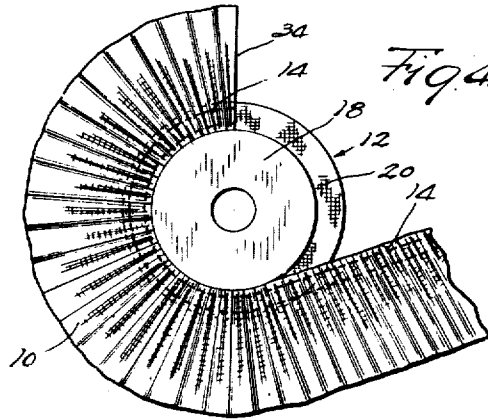
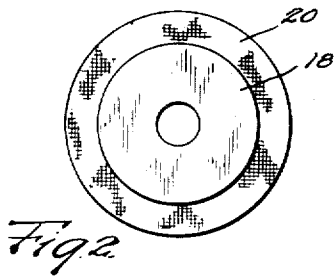
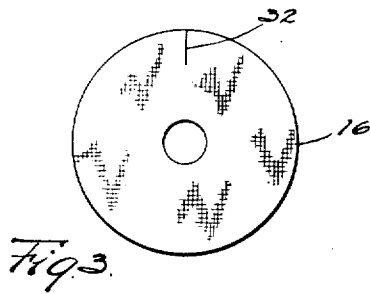
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BUFFING WHEEL

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BUFFING WHEEL

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7 Claims. (Cl. 51—193)

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This invention relates to a buffing wheel and a process of assembling same, and more particularly this invention relates to a buffing wheel of the bias buff type.

Buffing wheels suitable for use in polishing and grinding operations are well known in the art. Satisfactory buffing wheels have been prepared from various textile fabrics by a number of different methods and various means have been proposed for arranging the textile material and mounting it on a hub section of the wheel. In the preparation of buffing wheels of this type it is important that they be constructed in such a manner that they will stand up during use in high speed buffing operations. Accordingly it is one object of this invention to provide a buffing wheel which may be easily constructed and which will stand up well under all conditions of use.

A further object of this invention is the provision of a buffing wheel of the bias buff type in which the textile material providing the grinding or polishing surface is firmly anchored to the hub section of the wheel in such a manner that it will not be pulled loose by centrifugal force when the wheel is rotated at high speeds.

A further object of this invention is the provision of a buffing wheel having a solid hub section but which is firmly secured to the textile material which forms the polishing or grinding surface for the buff.

A still further object of this invention is the provision of a process for readily assembling a buffing wheel which may be inexpensively and readily carried out.

Further and additional objects will appear from the following description, the accompanying drawing and the appended claims.

In carrying out this invention in one form, a buffing wheel is provided which comprises a strip of textile material wound in the form of a flat spiral. Between the several convolutions of the resulting spiral are placed a plurality of fabric discs, each of which are slit radially in order to receive the strip of textile which passes from one convolution to a succeeding convolution. In addition there is provided a plurality of separator discs between the fabric discs which correspond to the thickness of textile material between each fabric disc and which in combination with the fabric discs serve to build up a solid hub section for the buffing wheel. The resulting hub assembly is secured together by a suitable adhesive and by stitches or other securing means extending through the spirally wound textile strip and the fabric discs and between the fabric discs and

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the separator discs. Thus there is provided a buffing wheel having a unitary structure in which the strip of textile or buffing material is firmly secured to a solid built up hub section of the wheel. The hub of the resulting wheel may be enclosed between two heavy fabric discs stitched or otherwise secured to opposite sides thereof. The strip of textile material is preferably cut on the bias, as is well known in the art, to minimize fraying during use.

The feature of having the fabric discs provided with radial slits is important in accordance with the herein disclosed invention. The slit provides means for passing the sheet of buffing material from one convolution to the next and also provides a structure which will permit the ready assembly of the buffing wheel in a manner to be hereinafter more fully described.

For a more complete understanding of this invention, reference will now be made to the accompanying drawing, wherein

Fig. 1 is a sectional view of a buffing wheel constructed in accordance with one embodiment of this invention;

Fig. 2 is a plan view of a fabric disc and a separator disc adhesively secured together in face-to-face relationship which are used in the assembly of the buffing wheel shown in Fig. 1;

Fig. 3 is a plan view of a radially slit fabric disc employed in the construction of the buffing wheel shown in Fig. 1;

Fig. 4 is a plan view showing a method of applying a strip of textile material or buffing fabric onto the disc assembly shown in Fig. 2;

Fig. 5 is similar to Fig. 4 except that it shows the wheel in a somewhat more advanced state of formation with a slit fabric disc and a second separator disc in position and showing in addition further winding of the buffing material about the separator disc; and

Fig. 6 is an exploded view which indicates both the method of assembly and the various interrelationships of the several elements which go to make up parts of the buffing wheel of this invention.

With more particular reference to the drawings, a buffing wheel constructed in accordance with one embodiment of this invention comprises an elongated strip 10 of a buffing fabric comprising a suitable textile material, such as muslin, shirting, denim, etc., which is wound in the form of a flat spiral around a hub section 12 of the buffing wheel. The strip 10 is preferably cut on the bias and is gathered along its inner edge by means of suitable stitching 14 as shown most

clearly in Fig. 4 so as to permit the formation of a circular but wavy peripheral surface by the outside edge of the strip when wound around the hub section in the manner to be described.

The hub section 12 of the buffing wheel comprises a plurality of radially slit fabric pieces 16 preferably in disc form which are of somewhat greater diameter than the opening formed by the spiral of the convolutely wound strip of textile material. Thus, as shown clearly in Fig. 1, the outer peripheral faces of each of the discs 16 are positioned between the inner peripheral faces of the spirally wound strip 10. These fabric pieces or discs 16 may be formed of any suitable material but are preferably formed from a stiff highly sized fabric, such as blind cloth. Between each of the fabric pieces or discs 16 are positioned a plurality of separator discs 18 which may be formed of cardboard or any other suitable material which may be built up to form a relatively solid hub section for the buffing wheel. The separator discs 18 are of substantially the same diameter as the opening formed by the spiral winding of the strip of buffing material and their thickness generally corresponds to the thickness of the gathered edge of the strip. The hub section 12 of the buffing wheel built up from the fabric discs 16 and the separator discs 18 and the inner face of the flat spiral formed by the textile strip 10 are enclosed between a pair of fabric discs 20 which may or may not be formed of the same material as the fabric discs 16. The completed assembly is secured between a pair of heavy duck or canvas discs 22 (Fig. 1) and the entire unit is stitched together by circular stitching 24, 26 and 28. It will be noted that stitching 24 and 26 which extends circumferentially around the hub section serves firmly to secure the strip of buffing material 10 to the various fabric discs 16, 20 and 22 of the hub section and that circular stitching 28 serves firmly to secure the various fabric discs and the separators 18 in assembled relationship. As will be apparent from the following description, the various discs, separators and convolutions of the buffing material are further secured together by a suitable adhesive which tends to strengthen and stiffen the hub section of the buffing wheel and which tends to anchor the buffing material 10 more firmly in place on the hub section 12 of the wheel. The hub section 12 is provided with a central aperture 30 to permit the finished wheel to be mounted on a suitable spindle for use in a desired polishing operation. In actual use several of these buffing wheels are secured to a spindle by means of a suitable clamping device.

In order to assemble the buffing wheel above described, a fabric disc 20 is adhesively secured in face-to-face relationship coaxially with a separator disc 18 and an adhesive is applied to the annular surface of the disc 20 which is not actually covered by the disc 18 (see Fig. 2). Thereafter, as most clearly shown in Fig. 4, the strip of textile material 10 gathered at one edge by stitching 14 is adhesively secured around and to this annular area on the disc 20. After about one winding of the textile material in the manner indicated, then a fabric disc 16 is adhesively secured coaxially in face-to-face relationship to the separator disc 18 and to the opposite face of the inner edge of the textile material already secured to the disc 20 whereby said textile material is embraced between the disc 20 and the disc 16 and is adhesively secured thereto. As above indicated, the disc 16 is provided with a slit or slot 32 which extends radially from the peri-

phery of the disc at least to the opening formed by the spiral winding. When securing the disc 16 to the separator disc 18 and the fabric material 10, the slit 32 is positioned adjacent the end edge 34 of the strip which has already been secured to the disc 20. After the fabric disc 16 has thus been applied, then the strip 10 is passed through the slit 32 and thereafter a second separator disc 18 is adhesively secured to the face of the fabric disc 16 in the same manner as indicated above. An adhesive is then applied to the annular area on the disc 16 which projects beyond the periphery of the separator disc 18. Winding of the fabric 10 is then continued with the insertion of slit fabric discs 16 and separator discs 18 until the end of the strip 10 has been reached. Thereafter a second disc 20 is adhesively secured to the resulting built up hub section on the opposite side of the original disc 20 which was in position at the time that the spiral winding was commenced. A pair of heavy fabric discs 22 may then be placed on either side of the composite hub section, such discs having substantially the same diameter as the discs 16 and 20. Thereafter circular stitching 24, 26 and 28 is applied through the built up hub section firmly to hold the various component parts in assembled relationship.

In the particular modification shown, it is indicated that the central aperture 30 is built up from several discs during the assembling operation. However, it is usually preferred that the finished aperture be formed by a suitable punching operation after the buffing wheel has been completely formed.

It will be apparent from the foregoing description that an exceedingly strong and durable buffing wheel has been prepared in accordance with the process herein disclosed. The several slit fabric discs are a part of the composite hub section which is built up during the process. At the same time these discs embrace the inner edges of the several convolutions of the buffing material and hold them firmly both by the adhesive employed and by the stitching 24 and 26. In addition the separator discs and the fabric discs are firmly held in assembled relationship both by the adhesive employed and the circular stitching. The slits provided in the several fabric discs 16 are particularly useful for permitting the winding of the buffing material 10 around the hub section. Likewise the separator discs 18 are useful in the assembly process since their outer peripheral edges define the line around which the inner edge of the strip 10 is wound to provide a truly circular wheel. It will be apparent that the slits 32 may be of varying width and in fact may be sufficiently wide to take the form of slots or notches through which the inner edge of the strip 10 may pass. By the term "slit" as employed in the accompanying claims it is intended to include slots and notches or other radially extending discontinuities in the outer surface of the fabric disc 16 which will permit the winding of the strip 10 in the manner indicated.

While a particular embodiment of this invention is shown above, it will be understood, of course, that the invention is not to be limited thereto, since many modifications may be made, and it is contemplated, therefore, by the appended claims, to cover any such modifications as fall within the true spirit and scope of this invention.

I claim:

1. A buffing wheel comprising a strip of textile material wound in the form of a spiral, a fabric

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sheet having a slit positioned between two convolutions of said textile material, said textile material extending through said slit, and means for securing said textile material to said fabric sheet.

2. A buffing wheel comprising a strip of textile material wound in the form of a spiral, a plurality of fabric discs each having a substantially radially extending slit and positioned between several convolutions of said textile material, said textile material extending through each of said slits, and means for securing said textile material to said fabric discs.

3. A buffing wheel comprising a strip of textile material wound in the form of a spiral to provide a ring having a substantially circular opening, a plurality of fabric discs positioned within said opening having a diameter greater than said opening and extending around their peripheral edges for a substantial distance between the several convolutions of said textile material, each of said fabric discs having a substantially radially extending slit from the outer periphery thereof to said opening, said textile material extending through each of said slits, and means for securing said textile material to said fabric discs.

4. A buffing wheel comprising a strip of textile material wound in the form of a flat spiral to provide a ring having a substantially circular opening, said strip being gathered along the inner edge adjacent said opening, a plurality of fabric discs positioned within said opening each having a diameter greater than said opening but less than the outside diameter of said ring, each of said fabric discs extending for a substantial distance between the several convolutions of said textile material and having a substantially radial slit extending from the outer periphery to said opening, said textile material extending through each of said slits, a plurality of separator discs within said opening positioned between said fabric discs, and means for securing said textile material, said fabric discs and said separator discs in assembled relationship.

5. A buffing wheel comprising a strip of textile material wound in the form of a flat spiral to provide a ring having a substantially circular central opening, said strip being gathered along the inner edge adjacent said opening, a plurality

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of fabric discs positioned within said opening each having a diameter greater than said opening but less than the outside diameter of said ring, each of said fabric discs extending for a substantial distance between successive convolutions of said textile material and having a substantially radial slit extending from the outer periphery thereof to said opening, said textile material extending through each of said slits, a plurality of separator discs also within said opening having diameters substantially the same as the diameter of said opening and positioned between each of said fabric discs, stitching means for securing said fabric discs and said separator discs together in assembled relationship, and additional stitching means for securing said textile material and said fabric discs together in assembled relationship.

6. The buffing wheel recited in claim 5 wherein said textile material, said fabric discs and said separator discs are also adhesively secured together in assembled relationship.

7. A buffing wheel comprising a strip of textile material wound in the form of a spiral to provide a ring having a substantially circular opening, a plurality of fabric sheets positioned within said opening having their peripheral edges extending between the several convolutions of said textile material, each of said fabric sheets having a discontinuity in an edge thereof extending inwardly to the outer peripheral edge of said opening, said textile material extending through each of said discontinuities, and means for securing said textile material to said fabric sheets.

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