

Oct. 5, 1948.

E. W. HALL
ABRADING ELEMENT

2,450,792

Filed March 14, 1945

2 Sheets-Sheet 1

Fig. 1.

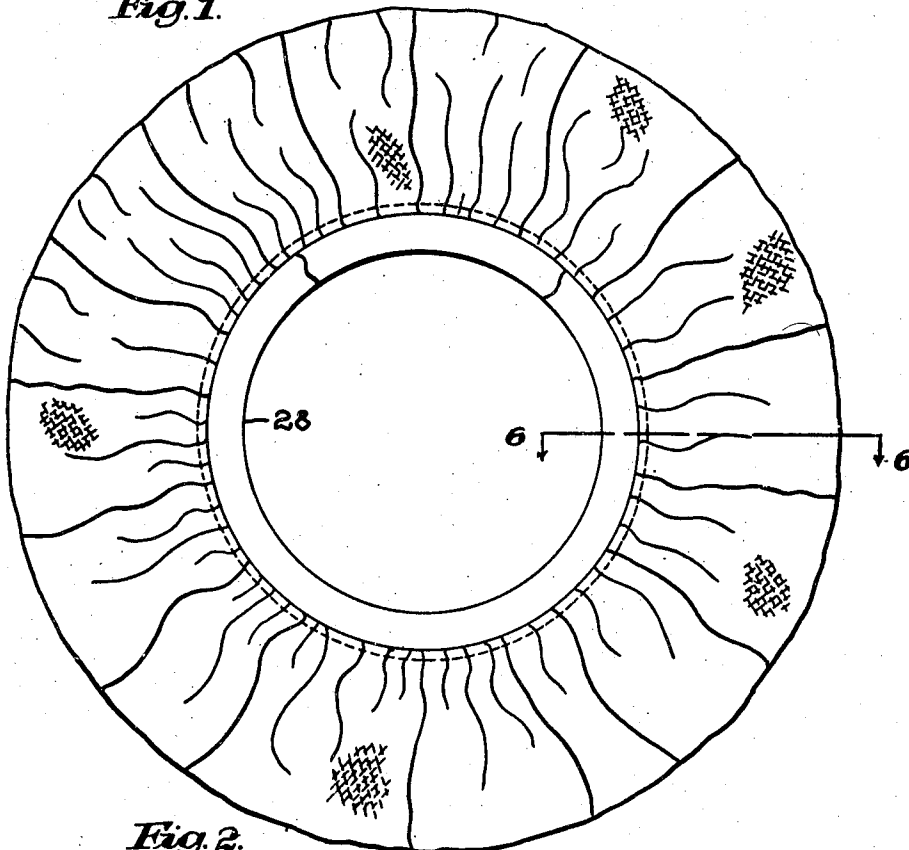
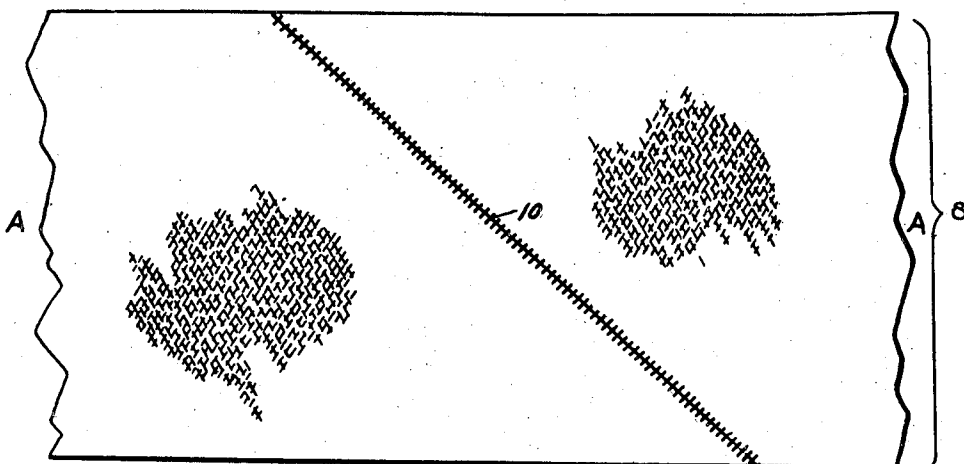


Fig. 2.



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Fig. 3.

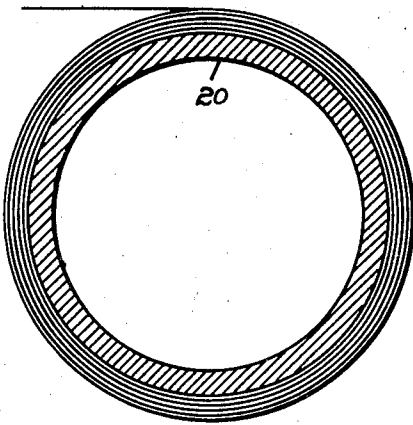


Fig. 4.

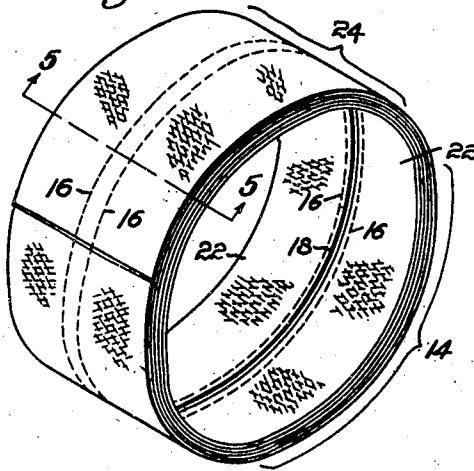


Fig. 5.

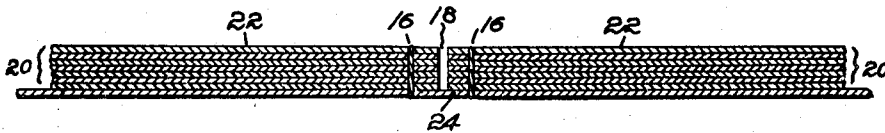
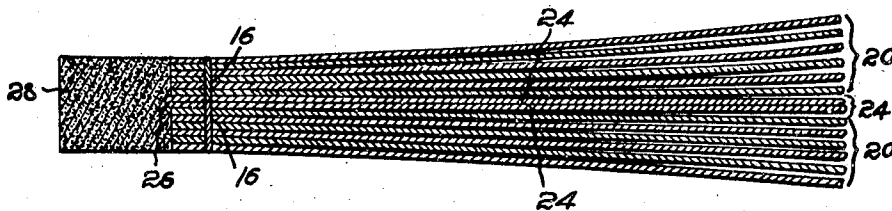


Fig. 6.



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UNITED STATES PATENT OFFICE

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ABRADING ELEMENT

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8 Claims. (Cl. 51-193)

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This invention relates to an abrading element of the class comprising plies of abrading material such as cotton cloth. The invention is more particularly concerned with a ring-like disk constituting a wheel section intended to be combined with other like sections to form a rotary cylinder abrading wheel. The invention aims to provide a novel and improved construction and method of manufacture to achieve reduction or elimination of bulkiness toward the center and yet with no loss of material, thus producing a better wheel at lower cost. The invention will be understood by reference to the following description when taken in connection with the accompanying drawings, while its scope will be pointed out more particularly in the appended claims.

In the drawings:

Fig. 1 is an elevation of a wheel section embodying the invention;

Fig. 2 is a plan of a portion of a pieced strip of cloth of indefinite length to be used in making the abrading element;

Fig. 3 is a view illustrating the spiral winding of the strip upon a drum to provide several plies;

Fig. 4 is a perspective view of the multi-ply, spirally wound ring provided with two rows of stitching at opposite sides of the median line, and with all but one of the plies slit along the median line of the strip;

Fig. 5 is a sectional view on an enlarged scale on line 5-5 of Fig. 4; and

Fig. 6 is a sectional view on an enlarged scale on line 6-6 of Fig. 1.

Referring to the drawings and to the embodiment of the invention illustrated therein by way of example, and having reference at first to Fig. 2, there is shown a strip 8 of cloth, preferably bias-cut and of indefinite length, conveniently made so by being made of pieces joined by diagonal seams 10. The first step is to wind the strip spirally (like a clock spring) upon and about a drum 12 to provide multi-ply rings 14. The second step is to slip the ring off the drum and to provide the same with two parallel rows of stitches 16 at opposite sides, respectively, of and rather close to the median line of the strip. The third step is to slit all but one of the plies at 18 along the median line, i. e., leaving one ply intact (herein the outer ply, Fig. 4).

This produces an annular band in which there are two groups 20 of plies of distinct strips 22, the two groups being joined together by a remaining unslit ply 24 of the strip 8. As seen in Fig. 4, all plies have edges coinciding in planes which are the end faces of the ring. The slit

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18 is at the inner circumference and the ply 24 is at the outer circumference.

The fourth step is to fold the ply 24 at 26 (see Fig. 6) along the median line by bringing the outer edges of the ply 24 (see Fig. 6) toward each other, so that the ply is folded upon itself, the fold being at the inner circumference and the annular edges of all the plies being presented at the outer circumference to constitute the working surface. All these edges come together squarely and produce a cylindrical work surface with no subsequent trimming at the periphery, with consequent waste of material. Another saving of waste is achieved because it is unnecessary to cut openings in the plies to prevent bunchiness toward the center of the assembly as in former methods. There is, therefore, a double economy as well as compactness of the assembly.

The resulting ring-like disk (see Fig. 1) may be utilized in various ways as a wheel section. Without further provision several of them may be assembled face to face coaxially on and about a hub and clamped by end plates. Another and preferred way is to provide each disk with its own hub 28 which may be a narrow, ring-like affair suitably united with the fabric disk by being molded of adhesive plastic bonded to the raw edges of the several plies.

Having thus described one embodiment and one method as examples of the invention, what I claim is:

1. An abrading element comprising a ring-like disk including two distinct strips of abrading material, each being wound to present a plurality of plies, and a folded strip between and connecting the two groups of plies and having its fold at the inner circumference, all of said strips having annular edges presented at the outer circumference of the disk and constituting the working surface.

2. An annular abrading element comprising a ring-like disk including two distinct strips of abrading material, each being wound to present a plurality of plies, a folded strip between the two groups of plies and having its fold at the inner circumference, all strips having annular edges presented at the outer circumference of the disk and constituting the working surface, and means attaching the several plies of each of the first two strips to the two plies of the folded third strip.

3. An endless abrading body comprising a relatively wide band and two relatively narrow bands, each of the latter comprising a group of

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plies, the wide band being folded along a line between said groups.

4. An endless abrading body comprising a relatively wide band and two relatively narrow bands, each of the latter comprising a group of plies, two rows of stitches attaching said wide band to said narrow bands, respectively, the wide band being foldable along a line between said rows of stitches.

5. An endless abrading body comprising two annular, coaxial bands each comprising a group of plies, and an annular band of sheet material connecting said groups of plies and folded along a line between them.

6. The method of making an abrading element which comprises the steps of winding a strip spirally to produce a multiple ring, fastening the plies together at opposite sides, respectively, of the median line of the strip, slitting several of the plies along the median line leaving at least one ply connecting two groups of plies at opposite sides, respectively, of the median line, and folding such remaining ply or plies along the median line and bringing its edges together so that all plies have outwardly directed edges at the periphery.

7. The method of making an abrading element which comprises the steps of winding a strip spirally to produce a plural ply ring, sewing the plies together by rows of stitches along

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parallel lines at opposite sides, respectively, of the median line of the strip, severing a plurality of the plies between said parallel lines, leaving at least one unsevered ply connecting two groups of plies at opposite sides, respectively, of the line of severance, and folding such remaining ply or plies along the median line and bringing its edges together.

8. The method of making an abrading element which comprises the steps of winding a strip of bias-cut cloth spirally to produce a plural ply ring, fastening the plies together, severing a plurality of plies lengthwise leaving at least one unsevered ply connecting two groups of narrow plies at opposite sides, respectively, of the line of severance, and folding such remaining ply or plies along the line of severance and bringing its edges together.

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