July 13, 1937. E. W. HALL 2,087,105

BUFFING WHEEL SECTION

Filed May 28, 1936

Fig. 1.

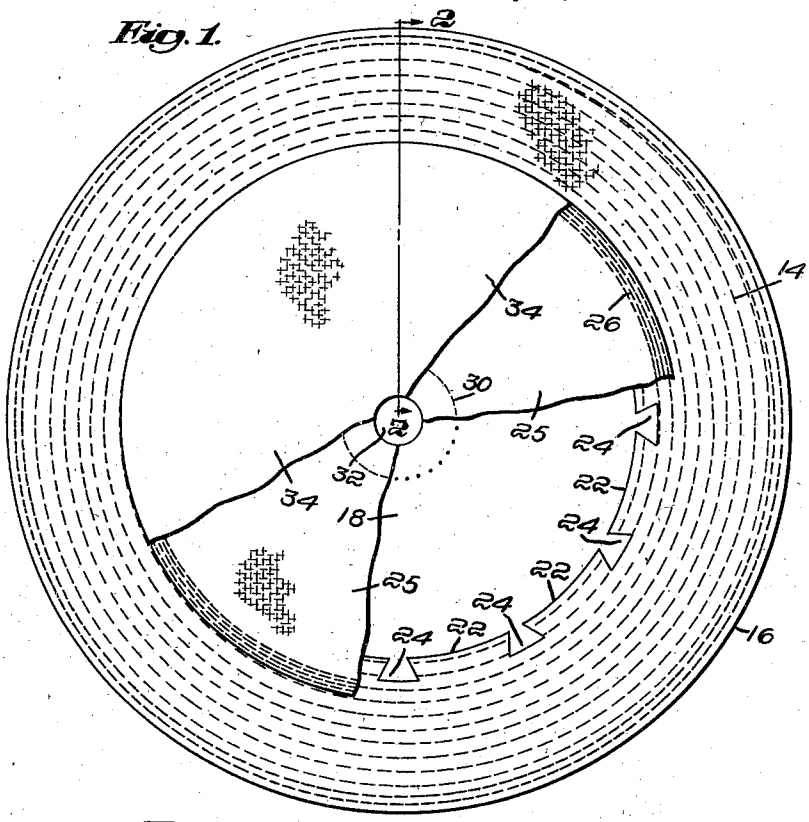


Fig. 2.

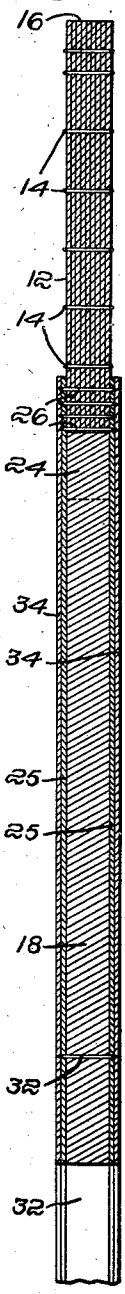


Fig. 3.

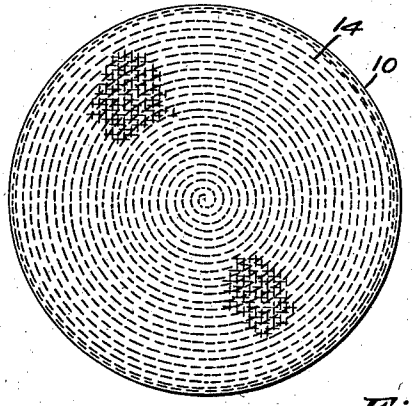


Fig. 4.

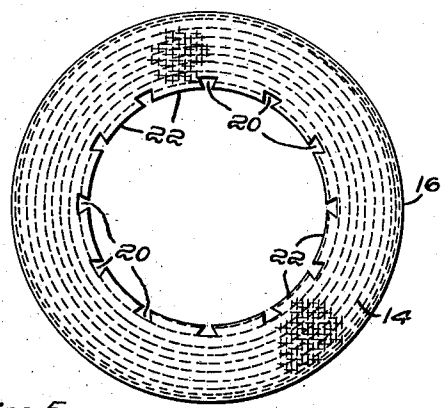


Fig. 5.



Inventor:
Elisha W. Hall,
by Emery, Booth, Townsend, Miller & Weidner
Atty's

Patented July 13, 1937 2,087,105

UNITED STATES PATENT OFFICE

2,087,105

BUFFING WHEEL SECTION

Elisha W. Hall, Scituate, Mass.

Application May 28, 1936, Serial No. 82,218

5 Claims. (Cl. 51—193)

This invention relates to rotary abrading tools of the class in which the abrading is done by the peripheral surface of the tool, and is more particularly concerned with a tool of the laminated type, comprising a series of layers of yielding abrading material such as cloth. The invention is especially concerned with a buffing wheel section intended to be assembled with other like sections on an arbor, and clamped together by and between clamping plates and nuts threaded onto the arbor to force the sections firmly together.

In the use of a buffing wheel of this class, the character of the work determines the linear speed of the periphery of the wheel. For high linear speed, it is customary to use a wheel which has a large diameter, and for low linear speed it is usual to employ a wheel of smaller diameter. When, through use, a wheel section originally of large diameter becomes so worn that its diameter is too small to give the desired peripheral speed, it is customary to discard the wheel section. If the wheel section is composed entirely of cloth, the waste of material is considerable. Sometimes, the user attempts to sell the sections of reduced diameter to another user whose requirements call for a lower linear speed, but usually, also such other user's requirements call for the use of a much finer grade of abrasive material on the cloth. If, therefore, the wheel section in the hands of the first user was treated with a coarse abrasive, it is unsafe for later use calling for a fine abrasive because some of the coarse abrasive remaining on the cloth is likely to scratch the work.

To obviate these objections, my invention contemplates assembling layers of cloth of the full area of the disk, sewing these together from a point near the center to a point near the periphery, then punching out a circular piece which can be sold for use in a small diameter buffing wheel, and using the remaining, large diameter ring in making up a wheel section in which the ring is attached to a central disk which may be made of relatively inexpensive material such as chip board. The assembly and the attachment of this disk to the cloth ring is accomplished without the use of metal which is regarded as dangerous in a buffing wheel, and yet the construction is such that there is a positive driving connection between the disk and the ring, and there is no need of using clamping plates of large diameter, in fact, plates having a diameter much less than the diameter of the central disk of the wheel section may be employed.

The invention will best be understood by reference to the following description of a wheel section embodying the invention, while its scope will be pointed out more particularly in the appended claims.

In the drawing:

Fig. 1 is an elevation of a wheel section embodying the invention, with certain parts broken away, the better to illustrate the invention;

Fil. 2 is a sectional view on an enlarved scale on line 2—2 of Fig. 1;

Fig. 3 is an elevation, at a reduced scale, illustrating a laminated cloth disk whose layers are sewed together in readiness for punching out its central portion;

Fig. 4 is an elevation, also at a reduced scale, illustrating the cloth ring with its internal, circumferential margin prepared for attachment to the central disk; and

Fig. 5 is a sectional view, also at a reduced scale, illustrating the mode of assembling the central disk with the cloth ring.

Referring to the drawing and to the embodiment of the invention illustrated therein by way of example, and having reference at first to Fig. 3, there is shown a disk 10 composed of a plurality of layers 12 of cloth firmly united by stitching them together, as for example, by stitches 14, which may be and herein are arranged in the form of a spiral extending from a point near the center to a point near the periphery. The next step is to punch out a central, circular area, leaving a ring 16 (see Fig. 4) of suitable dimensions for a large diameter wheel. The disk removed from the center may then be sold for use as a part of a small diameter wheel.

The resultant ring 16 is to be attached to a disk 18 (see Fig. 5) preferably of relatively inexpensive material such as what is known as chip board whose cost is about one eighth of the cost of an equal bulk of cotton cloth. This chip board is usually made of inexpensive raw material such as corn stalks made into thin sheets several of which are built up to provide the desired thickness of the disk, in this case approximately the thickness of the ring 16. The layers of chip board are adhesively secured together as by silicate of soda and constitute a firm, unitary body.

The best way now known to me to attach the ring 16 and the disk 18 together, so that the latter will drive the former, is to cut the ring to provide notches 20 alternating with teeth 22, and to cut the disk 18 to provide corresponding

teeth **24** to fit into the notches **20**, and so that the disk can be assembled with the ring by relative axial movement (see Fig. 5). Thus it will be evident that the disk and the ring, of substantially equal thickness, are interlocked between their faces so that relative rotation is impossible, and yet without the use of metallic fastenings which are regarded as dangerous because they are likely to break and fly out of a wheel.

Either before or after assembling the disk and the ring, the inner margin of the latter is preferably treated with latex which makes it firm and facilitates the sewing which is to follow and which will presently be described. To hold the disk and the ring against relative axial movement after they have been assembled, two disks **25** of appropriate material such as canvas are applied to opposite faces, respectively, of the central disk **18**, and the diameter of the canvas disks is sufficient so that they overlie the ring **16** to a substantial extent, they cover the interlocking teeth and notches, and there is sufficient overlap to enable the canvas disks to be secured to the intervening portion of the ring **16**, as by stitches **26**. Also, if desired, a row of stitches **30** may be placed about a central opening **32** for the spindle, though these stitches are not at all necessary and may be omitted if desired.

Preferably, before applying the canvas disks, they are coated with latex to make them adhere firmly to the central disk and to the ring, and the assembly is placed in a press under high pressure for a short time before proceeding with the stitching. Finally, to avoid exposure of the stitches to wear which might occur in the event of accidental relative rotation of sections, I prefer to apply protective disks **34** of cotton cloth adhesively secured, as by animal glue, to the outer faces of the canvas disks, the diameter of the protective disks being, of course, sufficient to cover the stitches **26**.

The wheel section is now complete and may be assembled with other like wheel sections on an arbor and clamped by the usual clamping plates and nuts, using relatively inexpensive, small diameter clamping plates with the full assurance that the interlocking of the central disk and the surrounding ring is sufficiently strong to transmit the power. To resist any possible tendency of the ring to expand radially and to interrupt the interlocking, driving connection, the teeth **22** and **24** may be and herein are given a dove-tail formation as shown in Figs. 1 and 4.

Having thus described one embodiment of the invention but without limiting myself thereto, what I claim, and desire by Letters Patent to secure is:

1. A buffing wheel section comprising, in combination, a central disk having a hole for a shaft and a continuous, unitary ring about said disk and composed of a plurality of annular layers of fabric, said disk and said ring being provided, each with alternating teeth and notches, the teeth of one being received in the notches and arranged for assembly and disassembly by relative axial movement of said disk and said ring, and fibrous retaining elements applied to opposite sides of said disk and ring along said teeth and notches and secured to said disk and ring.

2. A buffing wheel section comprising, in combination, a fibrous central disk having a hole for a shaft, a continuous, unitary ring about said disk and composed of a plurality of layers of fabric disposed in planes perpendicular to the axis of said disk and ring, said disk and said ring being provided with mutually interengaging teeth and notches, one set on the outer, circumferential surface of the disk, and the other on the inner, circumferential surface of said ring, and arranged for assembly by relative axial movement of said disk and said ring, and fibrous retaining disks applied to opposite sides of said disk and ring and overlying said teeth and said notches.

3. A buffing wheel section comprising, in combination, a fibrous central disk having a hole for a shaft, a continuous, unitary ring about said disk and composed of a plurality of layers of fabric disposed in planes perpendicular to the axis of said disk and ring, said disk and said ring being provided with mutually interengaging teeth and notches, one set on the outer, circumferential surface of the disk, and the other on the inner, circumferential surface of said ring, and arranged for assembly by relative axial movement of said disk and said ring, second fibrous retaining disks applied to opposite sides of said disk and said ring and overlying said teeth and said notches, and fastening means extending through said retaining disks and through said ring, radially outwardly beyond said teeth and said notches.

4. A buffing wheel section comprising, in combination a fibrous central disk having a hole for a shaft, a continuous, unitary ring about said disk and composed of a plurality of layers of fabric disposed in planes perpendicular to the axis of said disk and ring, said disk and said ring being provided with mutually interengaging teeth and notches, one set on the outer, circumferential surface of the disk, and the other on the inner, circumferential surface of said ring, and arranged for assembly by relative axial movement of said disk and said ring, fibrous retaining disks applied to opposite faces of said disk and ring and overlying said teeth and notches, stitches extending through and fastening said layers together, stitches extending through said retaining disks and said ring radially outwardly beyond said teeth and notches, and fibrous protective disks applied to the outer faces of said retaining disks and overlying the last-named stitches.

5. A buffing wheel section comprising, in combination, a fibrous central disk having a hole for a shaft, a continuous, unitary ring about said disk and composed of a plurality of layers of fabric disposed in planes perpendicular to the axis of said disk and ring, said disk and said ring being provided with mutually interengaging teeth and notches, one set on the outer, circumferential surface of the disk, and the other on the inner, circumferential surface of said ring, and arranged for assembly by relative axial movement of said disk and said ring, fibrous retaining disks applied to opposite faces of said disk and ring and overlying said teeth and notches, stitches extending through and fastening said layers together, stitches extending through said retaining disks and said ring radially outwardly beyond said teeth and notches, and fibrous protective disks adhesively secured to the outer faces of said retaining disks and overlying the last-named stitches.

ELISHA W. HALL.

CERTIFICATE OF CORRECTION.

Patent No. 2,087,105. July 13, 1937

ELISHA W. HALL.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, second column, line 25, claim 3, strike out the word "second"; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 21st day of September, A. D. 1937.

Henry Van Arsdale

(Seal) Acting Commissioner of Patents.