Sept. 12, 1950 G. R. CHURCHILL 2,522,093

BUFFING WHEEL

Filed April 29, 1948 2 Sheets-Sheet 1

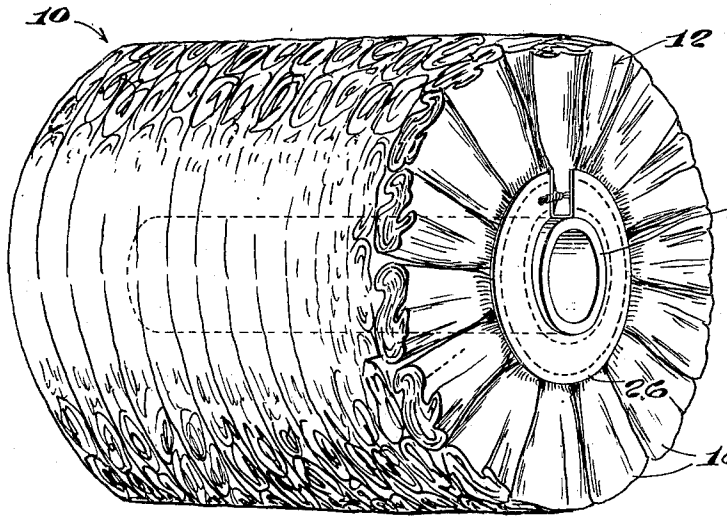


Fig. 1

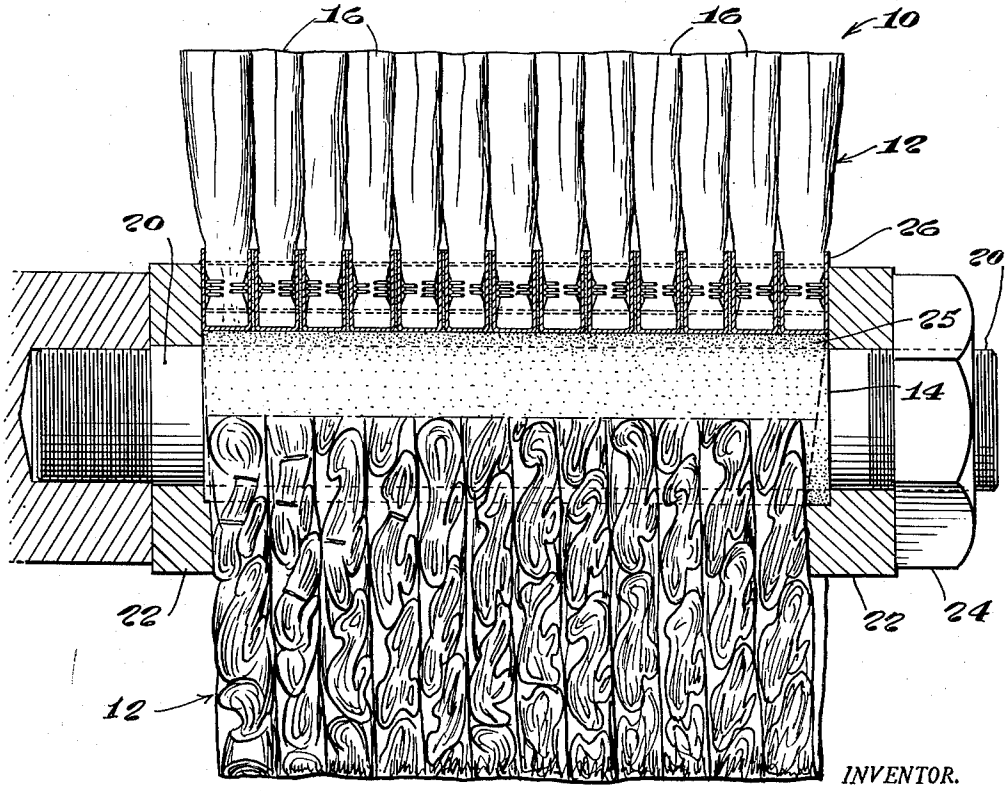


Fig. 2

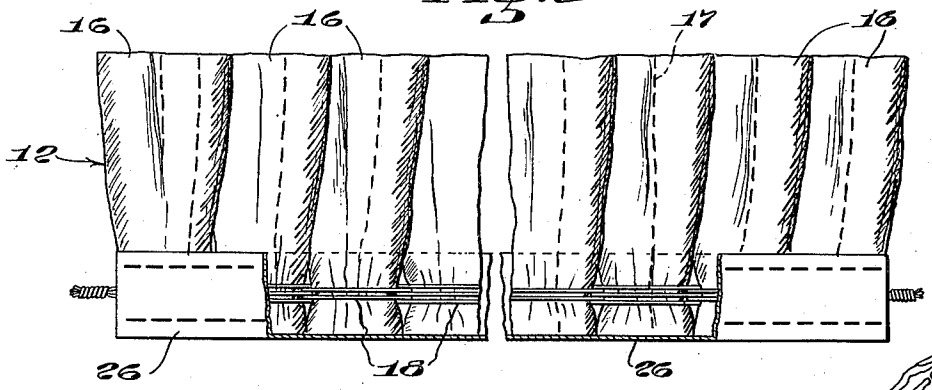
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Filed April 29, 1948 2 Sheets-Sheet 2

Fig. 3



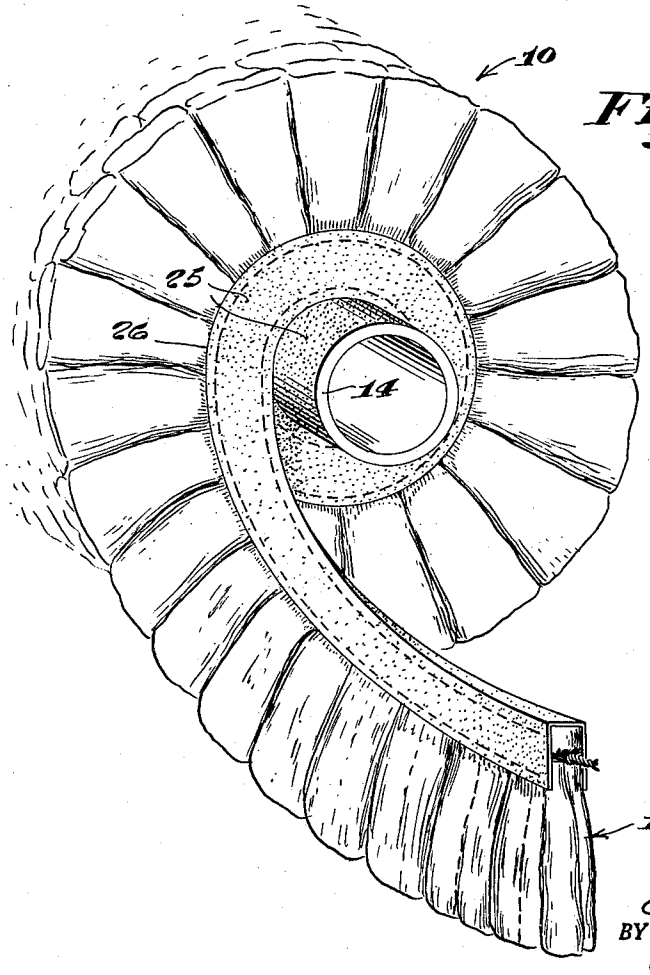


Fig. 5

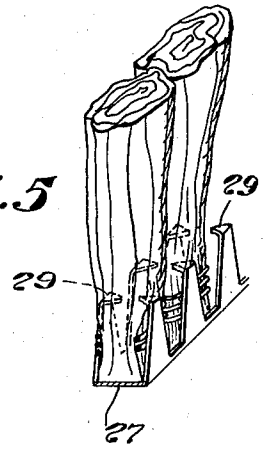


Fig. 4

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BUFFING WHEEL

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5 Claims. (Cl. 51—193)

1

This invention relates to a buffing wheel or roll.

The invention has for an object to provide a novel and improved buffing wheel or roll which is of simple construction, may be economically manufactured, and which is highly efficient in use.

With this general object in view and such others as may hereinafter appear, the invention consists in the buffing wheel hereinafter described and particularly defined in the claims at the end of this specification.

In the drawings illustrating the preferred embodiment of the invention, Fig. 1 is a perspective view of a buffing wheel or roll embodying the present invention; Fig. 2 is a side elevation, partly in cross section showing the present buffing wheel or roll assembled on an arbor; Fig. 3 is a side elevation, partly broken away, illustrating a preferred form of buffing material embodied in the present invention; Fig. 4 is a perspective view of a length of buffing material in the process of being wound about a central hollow core member and Fig. 5 is a perspective detail of a modified form of buffing strip for use in producing a buffing wheel or roll to be referred to.

In general, the present invention contemplates a cloth buffing wheel unit of the type adapted to be mounted upon a rotary arbor. Heretofore, such buffing wheels have been made up of a plurality of individual buffing wheel sections, each section comprising a relatively narrow closed ring with the buffing material extending radially from and substantially perpendicular to the axis of rotation, such sections being clamped together on the arbor side by side in parallel relation to form a buffing wheel of the desired width.

One of the disadvantages of this type of buffing wheel is that although the individual sections are closely associated, each section is likely to be denser at the medial portion of its buffing surface than at its outer edges so that streaking and ridging of the work is likely to occur where the medial portions of the sections engage the work.

In accordance with the present invention the buffing wheel unit is preferably constructed by winding a continuous length or strip of buffing material spirally about an arbor or core so that the relatively narrow strip of radially extended buffing material forms a substantially helical buffing surface. Thus, during the buffing operation the relatively dense medial portions of the strip and the less dense or softer edge portions of the strip tend to counteract each other because of the angular disposition of the strip produced by

2

such winding so as to provide a more uniform buffing action on the work and reducing to a minimum any tendency of the buffing unit to cause streaking or ridging of the work.

Referring now to the drawings, 10 represents a buffing wheel embodying the present invention and which comprises a strip of buffing material indicated generally at 12 spirally wound about a hollow core or tube 14.

The strip of buffing material may take any usual or preferred form such as a strip made up of multiple layers of cloth buffing material, the preferred form being herein illustrated as comprising an elongated and relatively narrow strip of connected buffing fingers 16, each finger preferably comprising a plurality of folded lengths of cloth connected together at their lower ends preferably by weaving wires 18, as illustrated in Fig. 3, and which may and preferably will comprise the strip of buffing material illustrated and described in my United States Patent No. 2,146,284 issued February 7, 1939. The folded layers of cloth comprising each finger may be secured together such as by stitching indicated generally at 17, or, where a softer buff is desired, the stitching or other securing means is preferably omitted, the fingers being held in their assembled form by the weaving wires 18 connecting their lower ends, as illustrated in Figs. 1 and 4.

In one embodiment of the present invention the strip of buffing material thus formed may be spirally wound about the buffing wheel arbor 20 and securely clamped thereto, the number of turns taken depending on the width of buffing surface desired. In the commercial form of the buffing wheel herein illustrated it is preferred to wind the strip about a hollow arbor or core member such as a cardboard tube 14, and to adhesively secure the strip to the tube in the manner illustrated in Fig. 4, to form a unitary buffing wheel of the desired width which may be slipped over the buffing wheel arbor 20 and clamped thereto between collars 22 by a nut 24. The collars 22 may and preferably will have their inner faces shaped to correspond to the offset position of the overlapping ends of the spirally wound unit, as indicated in Fig. 2, or suitable fillers may be employed.

The adhesive employed may comprise any suitable glue or cement satisfactory for this purpose and in practice, the outer surface of the tube and the butt ends of the buffing fingers and sides of the buffing fingers adjacent the ends or both may be provided with a coating of adhesive

indicated at 25 prior to the winding operation whereupon the wound strip may be compressed longitudinally of the hollow tube 14 and maintained under compression until the adhesive is firmly set. The above described manner of adhesively uniting the strip and the tube is merely illustrative it being understood that the strip may be mechanically or otherwise secured together and to the hollow core or arbor.

In practice it has been found that efficient results may be obtained by providing the inner or butt ends of the strip 12 with a binding tape, such as a relatively heavy piece of bias tape 26 wrapped about the bottom and sides of the butt ends of the buffing material strip 12 and stitched or otherwise attached thereto, as shown in Fig. 3, the tape preferably extending beyond the weaving wires 18, as illustrated. The outer surface of the bias binding tape 26 may then be provided with a coating of adhesive 25 immediately prior to winding the strip upon the arbor or hollow core 14. The bias binding tape 26 or other material used may and preferably will be of a character such as to provide a firm adhesive bond with the tube and between adjacent coils of the spiral when compressed. Instead of the binding tape 26, I may prefer to employ a metal binding strip 27 of general U-shape having prongs 29 capable of being forced into the lateral surfaces of the strip 12 of buffing material as indicated in Fig. 5.

It is desirable in some instances to provide a space between adjacent convolutions of the spiral in order to produce a buffing wheel of less density, and, in the illustrated embodiment of the invention the side wall thickness of the bias binding tape 26 or the metal binding strip 27 may constitute the spacing member between adjacent convolutions, or, if desired, an auxiliary spacing member either separate from or attached to the buffing strip may be wound about the core with the strip for this purpose.

While the preferred form of the invention illustrated herein comprises an elongated strip of buffing material spirally wound and adhesively secured to a hollow core, it will be understood that the invention may be embodied in other forms within the scope of the following claims, and in which the denser and less dense portions of the buffing wheel are so arranged as to tend to counteract each other to prevent ridging and streaking of the work. A variation of the continuously wound strip may, for example, comprise a plurality of individual single coil helically formed sections, each coil fitted in nesting relationship with an adjacent coil to form a buffing wheel of the width desired.

Having thus described the invention, what is claimed is:

1. A cylindrical buffing roll of substantial length adapted in use to be rotated about its axis, said roll comprising an arbor and a continuous elongated strip of connected cloth buffing elements wound helically and with a substantial lead about the arbor equal at least to the normal uncompressed thickness of the strip, each element comprising a relatively narrow multi-ply assembly, said strip presenting the buffing elements in a radial direction to form the cylindrical buffing roll, and means for securing said strip to the arbor including end collars shaped to correspond to the ends of the buffing roll for causing the strip to assume a helical shape as it is being wound around the arbor and for maintaining the strip in such shape, whereby during the buffing operation the work is successively brought into contact with portions of the surface of the roll of varying density, thus eliminating streaking of the work.

2. A cylindrical buffing roll of substantial length adapted in use to be rotated about its axis, said roll comprising an arbor and a continuous elongated strip of connected cloth buffing elements wound helically and with a substantial lead about the arbor equal at least to the normal uncompressed thickness of the strip, each element comprising a relatively narrow multi-ply assembly, said strip presenting the buffing elements in a radial direction to form the cylindrical buffing roll, and means for securing said strip to the arbor including end flanges having inclined and offset inner surfaces corresponding to the overlapping ends and adjacent surfaces of the ends of the buffing roll for causing the strip to assume a helical shape as it is being wound around the arbor and for maintaining the strip in such shape, whereby during the buffing operation the work is successively brought into contact with portions of the surface of the roll of varying density, thus eliminating streaking of the work.

3. A cloth buffing wheel comprising an elongated hollow supporting member, and a helically wound strip of buffing cloth, said strip comprising a series of connected radially extended buffing elements, each element comprising a multi-ply assembly imparting to the wheel a buffing surface of varying density, the helical winding of said strip having a pitch substantially equal to the normal uncompressed thickness of the strip so as to overcome the normal tendency of the inequalities in density to streak the work being buffed, and means for securing the strip to the supporting member to form a unit therewith including end flanges having inclined and offset inner surfaces corresponding in shape to the overlapping ends and adjacent surfaces of the strip for causing the strip to assume the helical form as it is wound upon the supporting member and for maintaining the strip in such form, adjacent convolutions of said helically wound strip being adhesively secured to said hollow supporting member.

4. A cloth buffing wheel comprising a hub member and a helically wound strip of buffing cloth, said strip comprising a series of connected radially extended buffing elements, each element comprising a multi-ply assembly imparting to the wheel a buffing surface of varying density, the helical winding of said strip having a pitch substantially equal to the normal uncompressed thickness of the strip so as to overcome the normal tendency of the inequalities in density to streak the work being buffed, and means for securing the strip to the hub including end flanges having inclined and offset inner surface corresponding in shape to the overlapping ends and adjacent surfaces of the strip for causing the strip to assume its helical shape as it is wound around the hub and for maintaining the same in such shape, said strip having a cloth binding tape secured to the lower end portion thereof.

5. A cloth buffing wheel comprising a hub member and a helically wound strip of buffing cloth, said strip comprising a series of connected radially extended buffing elements, each element comprising a multi-ply assembly imparting to the wheel a buffing surface of varying density, the helical winding of said strip having a pitch substantially equal to the normal uncompressed

thickness of the strip so as to overcome the normal tendency of the inequalities in density to streak the work being buffed, and means for securing the strip to the hub including end flanges having inclined and offset inner surfaces corresponding in shape to the overlapping ends and adjacent surfaces of the strip for causing the strip to assume its helical shape as it is wound around the hub and for maintaining the same in such shape, said strip having a U-shaped cloth binding tape attached to and extended about the lower end portion thereof.

GEORGE R. CHURCHILL.

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