Sept. 12, 1950 G. R. CHURCHILL 2,522,092

BUFFING WHEEL

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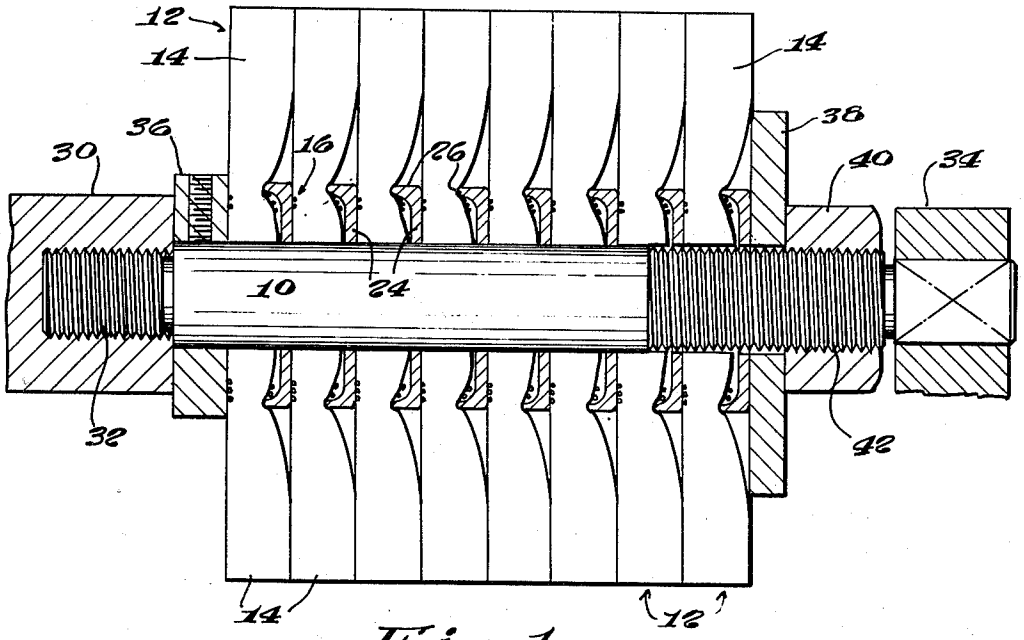


Fig. 1

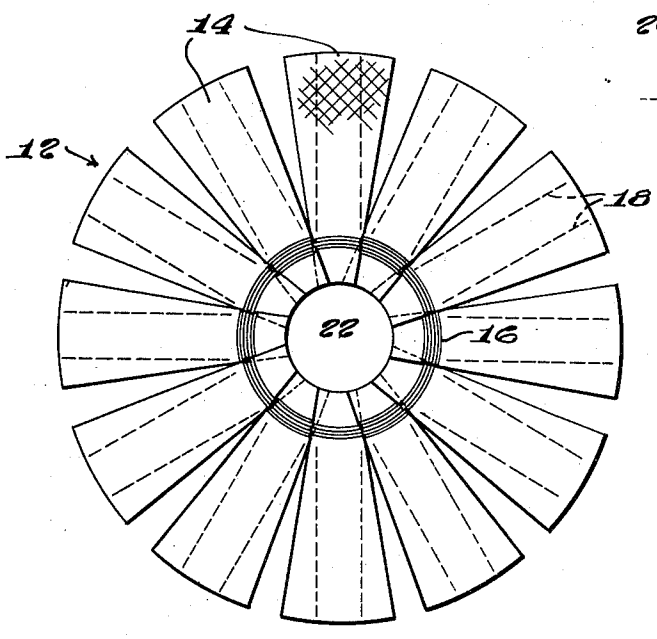


Fig. 2

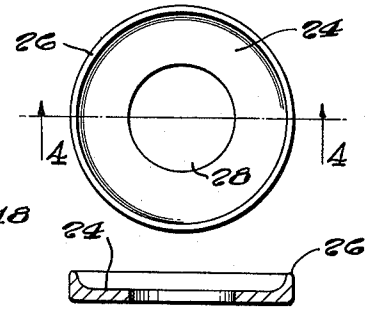


Fig. 4

Fig. 3

INVENTOR.
George R. Churchill
BY
J. Stanley Churchill
ATTORNEY

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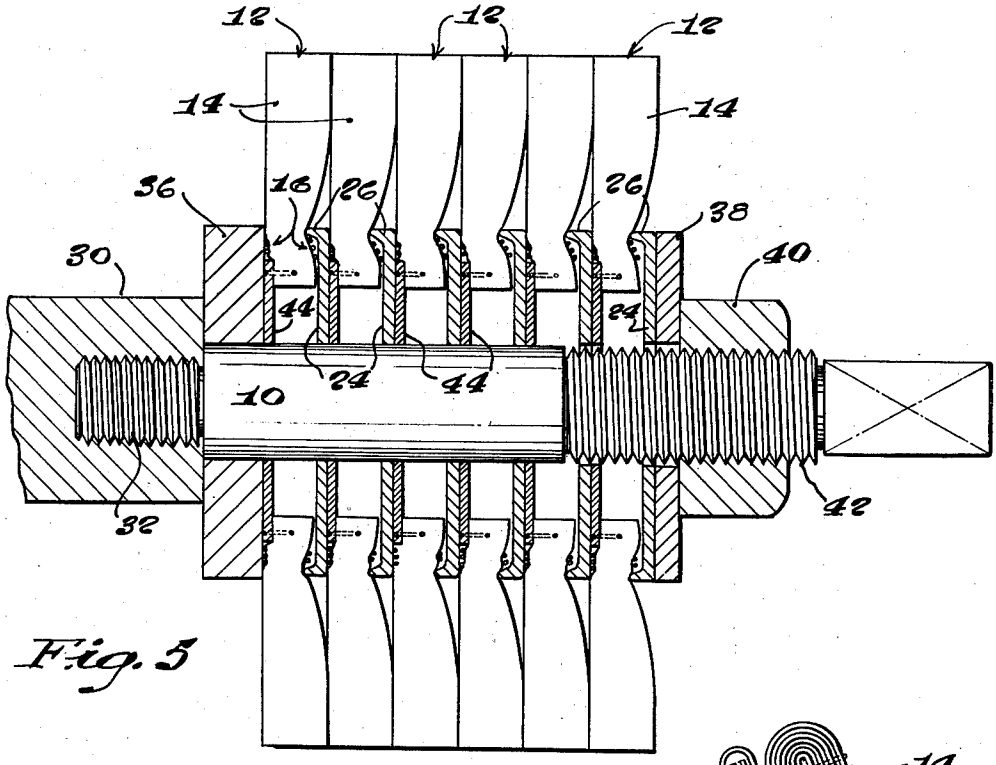


Fig. 5

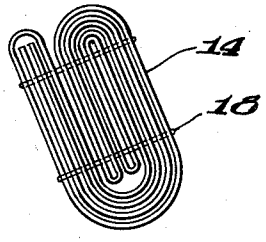


Fig. 7

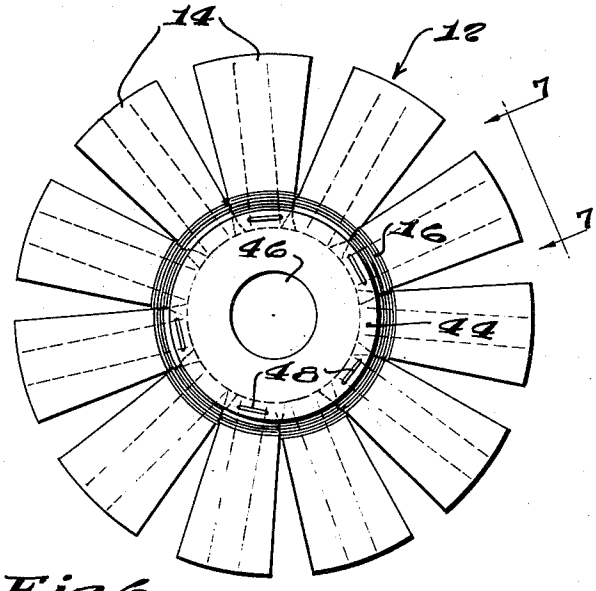


Fig. 6

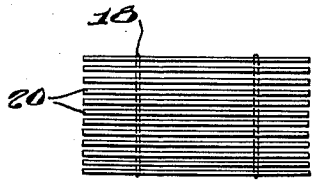


Fig. 8

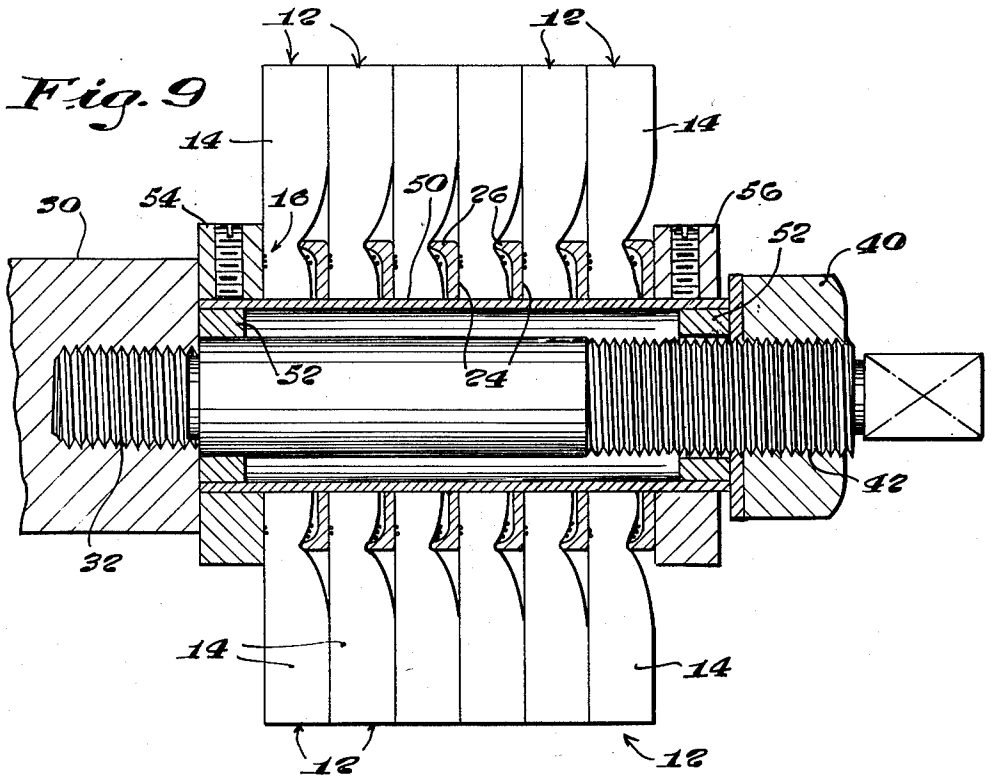
INVENTOR.
George R. Churchill
BY
J. Stanley Churchill
ATTORNEY

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Fig. 9



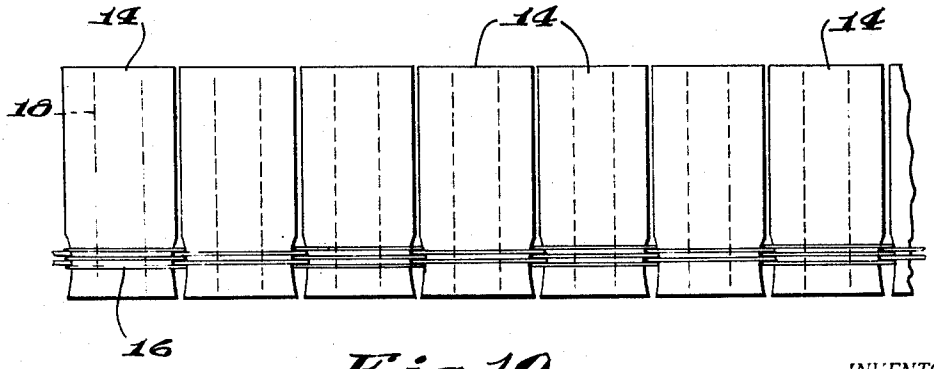


Fig. 10

INVENTOR.
George R. Churchill
BY
J. Stanley Churchill
ATTORNEY

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2,522,092

BUFFING WHEEL

George R. Churchill, Hingham, Mass.

Application April 29, 1948, Serial No. 24,057

3 Claims. (Cl. 51—193)

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This invention relates to a buffing wheel.

The invention has for an object to provide a novel and improved buffing wheel of the type comprising a plurality of individual sections adapted to be mounted on an arbor and clamped together to produce a buffing wheel of the desired width and in which provision is made for firmly retaining the sections in assembled relation on the arbor in an efficient and superior manner.

With this general object in view and such others as may hereinafter appear, the invention consists in the buffing wheel and in the various structures, arrangements and combinations of parts 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 side elevation in cross section of a buffing wheel embodying the present invention; Fig. 2 is an end view of a preferred form of buffing wheel section embodied in the buffing wheel shown in Fig. 1; Fig. 3 is a plan view and Fig. 4 a cross sectional view on the line 4—4 of Fig. 3 of a clinching collar embodied in the present buffing wheel; Fig. 5 is a side elevation in cross section of a modified form of buffing wheel embodying the present invention; Fig. 6 is an end view of a modified form of buffing wheel section embodied in the buffing wheel shown in Fig. 5; Fig. 7 is an enlarged end view, as seen from the line 7—7 of Fig. 6 illustrating one form of buffing element employed in the present buffing wheel sections; Fig. 8 is a similar view illustrating a modified form of buffing element to be referred to: Fig. 9 is a side elevation in cross section of another modified form of buffing wheel embodying the present invention; and Fig. 10 is a front elevation of a strip of connected buffing elements from which the individual buffing wheel sections are produced.

In general, in its preferred form the present invention contemplates a buffing wheel of the general type illustrated and described in my United States Patent No. 2,146,284, issued February 7, 1939. A plurality of individual wheel sections may be mounted on an arbor and clamped together to form a buffing wheel having a face of any desired width.

As further illustrated in my United States Patent No. 2,350,216 issued May 30, 1944 it has been the practice in making individual wheel sections to secure the closed ring of radially extended buffing elements to a flat metal disc or centering member, having a central hole for mounting upon the arbor preferably by means of staples, the

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latter serving to further secure adjacent elements together to assist in preventing the buffing elements from being displaced from the ring section during use. Such individual ring sections were then placed on an arbor and clamped together face to face, the compression of adjacent sections serving to prevent relative rotary displacement of the several ring sections. While the above construction provides a rigid and efficient buffing wheel, it will be apparent that a great deal of time and labor is involved in the stapling operation and adds a substantial amount to the cost of producing the buffing wheel.

In accordance with the present invention provision is made for securely binding the sections in assembled relation on the arbor by means of separate clinching collars interposed between successive buffing ring sections and which are arranged to engage the inner ends of the buffing elements of the ring sections to clinch and retain the sections securely in place on the arbor when the sections are clamped thereon.

Referring now to the drawings, and particularly to Fig. 1, a buffing wheel embodying the present invention comprises an arbor 10 on which a plurality of individual circular buffing sections indicated generally at 12, are mounted, each buffing section comprising a plurality of connected and radially extended cloth buffing elements 14. In practice, the cloth buffing elements may be held together at or near one end thereof by wires 16 woven around the individual buffing elements to form a chain of connected elements, as shown in Fig. 10. The requisite length of such a chain of connected buffing elements may be formed into a circular shape and joined at its ends to form a closed ring comprising a buffing section. The cloth buffing elements 14 may be of the folded type as illustrated in Fig. 7, either with or without the stitching indicated at 18, or, the elements may comprise a plurality of superimposed layers or strips of cloth, and the assembly may be stitched together as shown at 20 in Fig. 8 if desired.

In the embodiment of the invention shown in Fig. 1 the diameter of the opening 22 formed in the ring section 12 may and preferably will correspond to the diameter of the arbor 10 on which the sections are mounted, and, in accordance with the present invention, a clinching collar comprising a disc 24 having a laterally extended and preferably tapered flanged portion 26 at its peripheral edge and provided with a central opening 28 arranged to slidingly fit over the arbor 10, is interposed between adjacent ring sections 12.

The clinching collars may and preferably will be of an outside diameter such as to present the flanged portion 26 outside or beyond the circle defined by the weaving wires 16 connecting the ends of the buffing elements of a buffing wheel section.

As shown in Fig. 1, the arbor 10 may be secured to a rotary driven member 30 in any usual or preferred manner, the arbor being herein shown as provided at one end with a threaded portion 32 arranged to be received in a tapped hole formed in the driven member 30. The other end of the arbor may be supported in a detachable bearing member indicated generally at 34. In assembling the present buffing wheel on the arbor, a supporting collar 36 is first secured to the attached end of the arbor and thereafter ring sections 12 and clinching collars 24 are alternately placed upon the arbor with the flanged portions 26 extended in the direction of the attached end of the arbor. A washer 38 preferably of a size larger than the collar is then placed over the assembled group of buffing wheel sections 12 and the interposed clinching collars 24 and the entire unit is compressed laterally on the arbor by a clamping nut 40 which cooperates with an intermediate threaded portion 42 of the arbor. With this construction it will be seen that upon clamping of the ring sections as described and under substantial pressure the flanged portions 26 of the interposed clinching collars will press into the buffing material and clinch it between the flange and the back face of an adjacent collar to firmly hold the buffing elements from being withdrawn and to prevent rotary displacement of adjacent sections.

The embodiment of the invention illustrated in Fig. 5 comprises a similar construction particularly designed to produce a buffing wheel of a relatively large outside diameter and wherein the inside diameter of the closed ring section is substantially greater than the diameter of the arbor. In such cases, each buffing wheel ring section 12 may be provided with a centering disc 44 of cardboard, metal or the like having a central opening 46 corresponding to the diameter of the arbor and attached to the inner marginal edge of the ring section by a few relatively small staples 48 sufficient to temporarily support the ring sections concentrically on the arbor during the clamping and clinching operation. The clinching collars 24 are also made correspondingly larger in diameter to dispose the flanged portions 26 beyond the line of the weaving wires, as shown in Fig. 5. The buffing wheel is assembled on the arbor in a manner similar to that above described, the interposed flanged collars 24 serving to clinch and retain the ring sections in assembled relation on the arbor when firmly compressed and clamped by the clamping nut 40.

Fig. 9 illustrates another embodiment of the invention wherein the inside diameter of the closed ring section is substantially greater than the diameter of the arbor. As herein shown, the ring sections 12 may be mounted and clamped on a hollow cylinder or tube 50 having an outside diameter corresponding to the inside diameter of the enlarged ring sections and the clinching collars. The tubular member 50 is provided with bushings 52 arranged to slidingly fit over the arbor 10, and, in practice, the ring sections 12 and the interposed clinching collars 24 may and preferably will be mounted and compressed on the hollow cylinder 50 between retaining collars 54, 56 to form a unitary buffing wheel adapted to be slipped onto the arbor as a unit and secured thereon by the clamping nut 40.

From the above description, it will be observed that the present buffing wheel provides an efficient and superior construction for clamping and retaining individual buffing wheel sections in assembled relation on an arbor and in a manner such as to prevent withdrawal of the buffing elements or rotary displacement of the sections with relation to one another without the use of staples or equivalent fastening means. Although the individual ring sections herein illustrated and described comprise a plurality of connected and radially extended buffing fingers, it will be apparent that the sections may comprise the usual continuous cloth rings if desired. It will be understood that worn buffing wheel sections 12 may be replaced by new sections using the same spacing and clinching collars 24 to make up the new buffing wheel.

While the preferred embodiment of the invention has been herein illustrated and described, it will be understood that the invention may be embodied in other forms within the scope of the following claims.

Having thus described the invention, what is claimed is:

1. As a new article of manufacture, a buffing wheel comprising an arbor, a plurality of individual buffing wheel sections mounted upon the arbor, each section comprising a closed ring of connected and radially extended cloth buffing elements, separate clinching collars interposed between adjacent buffing wheel sections on the arbor, and means for clamping the assembled unit upon the arbor to clamp the sections between adjacent collars, each of said clinching collars comprising a flat circular disc having a laterally extended continuous flange at its outer periphery arranged to press without piercing into the buffing material beyond the line of connection of said buffing elements, said individual buffing elements being detached and free to flex with relation to one another during the buffing operation at all points beyond the periphery of said circular disks.

2. A cylindrical buffing roll made up of a plurality of circular sections, each circular section comprising a plurality of radially extended cloth buffing elements each of multi-ply structure, and a plurality of binding strands woven in and about all of the buffing elements in the section at near the hub end of said buffing elements, separate clinching collars interposed between adjacent buffing wheel sections engaging the sections beyond the line of said binding strands and leaving the individual buffing elements making up each section free to flex with relation to one another during the buffing operation, each of said clinching collars comprising a flat circular disk having a laterally extended continuous flange on one side at its outer periphery and arranged to press without piercing into an adjacent buffing section.

3. A buffing wheel comprising an arbor, a plurality of individual buffing wheel sections mounted upon the arbor, each section comprising a closed ring of connected and radially extended cloth buffing elements, separate clinching collars interposed between adjacent buffing wheel sections on the arbor, and means for clamping the assembled unit upon the arbor to clamp the sections between adjacent collars, each of said clinching collars comprising a flat circular disk having a

laterally extended continuous flange on one side at its outer periphery arranged to press without piercing into the buffing material beyond the line of connection of said buffing fingers, all of said clinching collars being mounted on the arbor with the flanged portions extended in the same direction whereby each buffing wheel section is clamped between the flanged side of one collar and the flat side of an adjacent collar.

GEORGE R. CHURCHILL.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
247,171	Coy	Sept. 20, 1881
1,152,180	Jarvis	Aug. 31, 1915
1,573,961	Zucker	Feb. 23, 1926
2,146,284	Churchill	Feb. 7, 1939