May 10, 1927. 1,627,969

R. E. HARRISON

BUFF SECTION FOR BUFFING WHEELS

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Fig. 1.

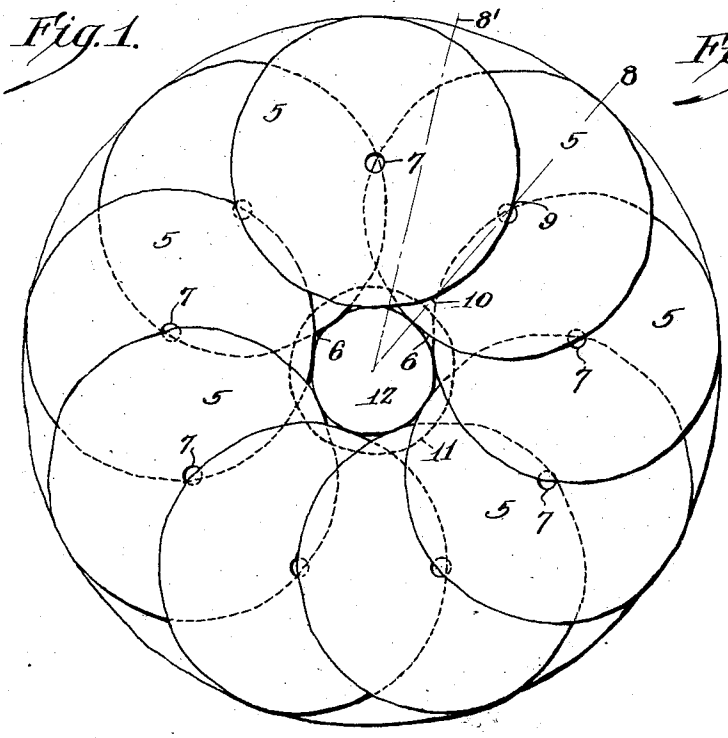


Fig. 2.

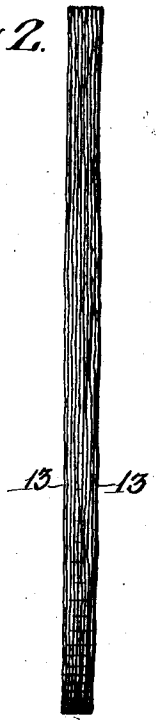


Fig. 3.

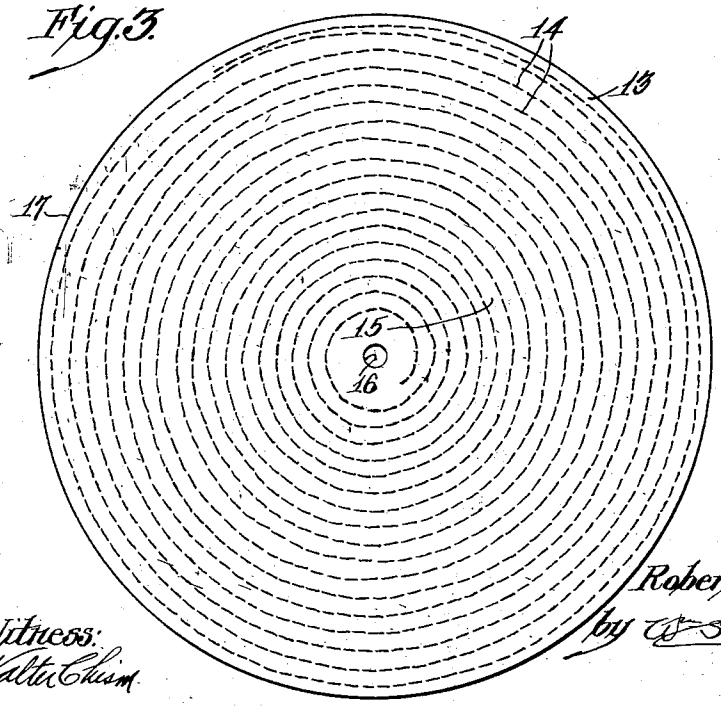


Fig. 4.

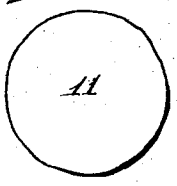
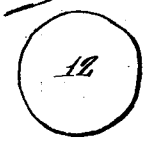


Fig. 5.



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UNITED STATES PATENT OFFICE.

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BUFF SECTION FOR BUFFING WHEELS.

Application filed August 9, 1924. Serial No. 731,011.

My invention relates to the construction of individual buff sections such as are mounted upon shafts in varying numbers to form buffing wheels.

One purpose is to arrange discs of fabric from the stubs of worn-out buffing wheels in an annulus about a center with their interlapping inner edges at a greater distance from the center than is required to receive the buffing wheel shaft and to fill in the space between the discs and the shaft by fabric inserts some of which interlap with the discs.

A further purpose is to arrange discarded buffing wheel discs in an annulus about the center spacing in the same layer by an arc approximately equal to the radius, to obtain regularity and balance of using the arbor holes in the discs as a spacing guide and at the same time to avoid excessive thickening of the inner edge of the annulus by overlapping.

A further purpose is to arrange overlapped annularly-placed sheets of material with reversing directions of the overlap in different layers.

A further purpose is to space annularly arranged overlapping sheets of buffing material excessively from the center with respect to the support intended and to balance and support them upon the shaft by center material filled in along with the overlapped material and interlapped therewith.

Further purposes will appear in the specification and in the claims.

My invention relates to the buff sections themselves as well as to the manner of construction of these sections.

I have preferred to illustrate my invention by a single form only, selecting a form which has proved to be practical, highly efficient and unusually economical and which at the same time well illustrates the principles involved.

Figure 1 is a side elevation of a section as partly constructed.

Figure 2 is an edge view of the structure seen in Figure 1.

Figure 3 is a side elevation similar to Figure 1 but showing the completed buff section.

Figures 4 and 5 are side elevations of center filling members used.

A certain class of buffing wheels is made up of buff sections mounted along and axially clamped about the shaft by which the wheels are to be rotated. New sections for such wheels are made up of full size sheets of new fabric.

When these buffing wheels are worn down the supposedly worn out sections have generally been thrown away. A proposal has been made to use the "stub" discs of these sections in annular arrangement about a very small opening intended to fit the buffing wheel shaft, but this structure proved unsatisfactory through the excessive overlapping of the inner portions of the discs about the small opening provided, which made the interior of the buff formed excessively thick as compared with the outer part of it in dimensions parallel with the axis so that the proper clamping of the buffs in the buffing wheel was prevented by excessive compression of the inner portions of the buffs before the outer portions were clamped. This construction further provided no reasonably accurate means for distributing the stub discs about the annulus and no relief or correction for lack of proper balance with the result that the discs were apt to be irregular in distribution and the finished section displayed all of the vice of lack of balance which was inherent to the initial annulus.

I have discovered that buff discs can be successively mounted in annular arrangement while obviating these objections if the discs be spaced from the center a greater distance than the size of the intended opening and the center be filled in by center pieces interlapping sufficiently with the inner edges of the buff discs to give this portion of the annulus approximately the same thickness, and hence weight distribution for balancing purposes as the rest of the annulus and at the same time tying fast the center pieces with the rest of the buff. This makes the density of the annulus substantially uniform throughout its entirety balancing it well throughout independently of the exact point selected for the center. I also provide a firm supporting edge about the center opening.

The buff lap is thus balanced even if the center opening be not exactly in the center of the circle of discs. The outer edge is trimmed concentrically with the inner opening.

In the formation of the buff section I lay the individual sheets 5 in an annulus so that their inner edges 6, define an opening larger than the normal arbor hole provided

for the shaft to which the buff section 5 had previously been fitted.

In my care to avoid excessive overlap at the inner edges of the ring of discs, I find it desirable not only to space the ring of discs from the intended inner opening but also to separate the individual discs while in their overlapping progression to form a ring. For this latter purpose I find that their spacing from center to center is most desirably approximately equal to their radius. This affords me an easy and reliable guide for spacing them so as to maintain good balance in the completed buff section by utilizing the arbor hole 7 in each discarded buff disc as the gage to which or to a predetermined part of which the next disc is overlapped.

I find that I am able to secure better balance of the completed buff sections and avoid thick spots in them better by overlapping some of the layers in a clockwise direction and others in a counter clockwise direction, securing the best results by reversing the direction of the progression in adjoining layers. As a further means of protection against unbalancing I mark my starting point for the first layer as along some such radial line as 8 and then stagger my starting points for successive layers by using a different line for each layer, spaced each from the others, at least from the last, by a distance not a multiple of the spacing of mutually overlapping discs.

Whether the buff sections made from salvaged materials be made from new scraps or from discarded buff stubs the unequal thickness of the material used and the difficulty in securing proper balance of the buff sections as finished have proved real difficulties.

The unequal thicknesses of parts of individual sections has not only been objectionable in itself, because cumulative in the complete wheel but it has frequently been off center so as to unbalance the wheel and thus cause it to turn and buff unequally. Both of these objections are overcome by my invention.

It will be noted that the extreme inner edges 6 of the buff discs as laid in each layer do not overlap and that there is a short distance only in my buff section where there is more than double the thickness of the disc material to a layer. As illustrated this takes place between the points 9 and 10 but by slightly greater spacing can be avoided altogether if desired.

Within the opening I interleave section by section, core inserts 11 and 12. The inserts 11 extend in between the inner edges of the discs of the successive layers just far enough to be interleaved reliably with and thus fastened to the discs for support of the inserted core pieces by the combined sewing of the sections and the clamping of the sections together to form the buffing wheels. Since the major part of each layer of discs represents a single overlap only, a double thickness, I apply additional core insert of smaller size, preferably to each layer to maintain in this core within the discs 5 the average thickness of the layer.

Where the distribution of the discs 5 about the annulus or the differing thickness of the discs and the core inserts make it desirable, additional core inserts may be used or some omitted to maintain the desired uniformity of thickness with care that there shall be sufficient interlapping of the core inserts and discs in their entireties to give the support to the discs which their manner of clamping into the finished wheel requires; also that the cross section in the central portion inside the annulus shall be of substantially the same weight per unit as the cross section average through the sections. This can be secured by a little care and by using substantially circular or uniformly polygonal inserts.

The sections as thus formed preferably comprise overlapping discs arranged in annuli with an opening larger than the shaft, overlapping in alternate directions of laying and filled in at the center with inserts, some of which interlap with the discs 5. For these sections I provide facings 13 of material in one piece, a single piece or several pieces sewed together, and sew the sections through these facings and preferably along spiral lines shown at 14. The sewing should cover nearly all of the radial depth as shown in Figure 2, if the main duty of the sections be cutting, or a part of the radial depth from the inside outwardly, stopping at any desired point 15 if the intended duty be polishing. The extent of sewing between these limits is determined largely by the character of work intended to be done by the buff.

When the buff has been made up it will be noted that the arbor hole 16 for the shaft may be cut without the same requirement of care as to its centering with respect to the ring of discs as would otherwise be required because I have filled the interior opening within the buffs with material of uniform density and of approximately the same density as the average density per unit of the buff section throughout.

The outer edge at 17 is trimmed to a circle concentric with the arbor hole 16 for the shaft, thus producing a well balanced thoroughly united section of uniform thickness.

It will be evident that the same advantage pointed out in regard to the construction of my buff sections would be present though of less degree, if the annular layers of discarded buff discs be interspersed with layers

of other discarded material, the improvement in balance being effective in proportion to the number of annularly overlapped discs used which have been laid in accordance with my invention and to the regularity of distribution of the other material.

The edges of the buff stub discs utilized are impregnated with the lubricating and abrasive materials which have been applied to the buffing wheel during the buffing operations and my invention is of special value in making more practical the use of this desirable material. Moreover the overlapping buff discs present a rapid succession of changes of direction of fibres in the fabric used, presenting a greatly increased number of "corners" of firm material free from ravelling as compared with new fabric discs extending each completely to the circumference. The material of the discarded buff discs is thus both cheaper and better adapted to buffing than new material would be.

It will be obvious that in view of my disclosure modifications and changes will occur to others skilled in the art, which secure a part of the invention by similar though not identical means and it is my purpose to include herein all such modifications and changes as come within the reasonable spirit and scope of my claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A buff section adapted to be mounted upon a buffing wheel shaft, and comprising a plurality of uniformly arranged overlapping discs in annular arrangement spaced across the center of the annulus by a distance considerably greater than the diameter of the shaft to prevent bunching of the overlapping close to the shaft and filling material for the space about the shaft, some of which overlaps the inner edges of the discs.

2. In a buffing section adapted to be mounted upon a buffing wheel shaft, the combination of a plurality of discs from discarded buffing wheel stubs annularly arranged to overlap about a central opening larger than the shaft and having some of the layers overlapping in opposite directions from other layers, in combination with a fabric filling for the opening about the shaft firmly secured to the interior of the annular layers of discs.

3. The method of building up a buff section from the discarded discs of buff stubs which consists in placing the discs in overlapping relation to form annuli spaced at the inner edges of the discs across the center to a considerably larger diameter than that of the shaft to prevent bunching of the overlapping of the discs close to the shaft and filling in the center with fabric material in part at least interlapping with the inner edges of the discs.

4. The method of building up a buff section from the discarded discs of buff stubs which consists in placing the discs in overlapping relation to form annuli spaced at the inner edges of the discs across the center to a larger diameter than that of the shaft, forming successive annuli of discs overlapping in opposite directions, and filling in the center with fabric material interlapping with the edges of the discs.

ROBERT E. HARRISON.