

Sept. 26, 1933.

H. ZIMMERMAN

1,927,862

BUFFING WHEEL

Filed Jan. 31, 1931

3 Sheets-Sheet 1

Fig. 1.

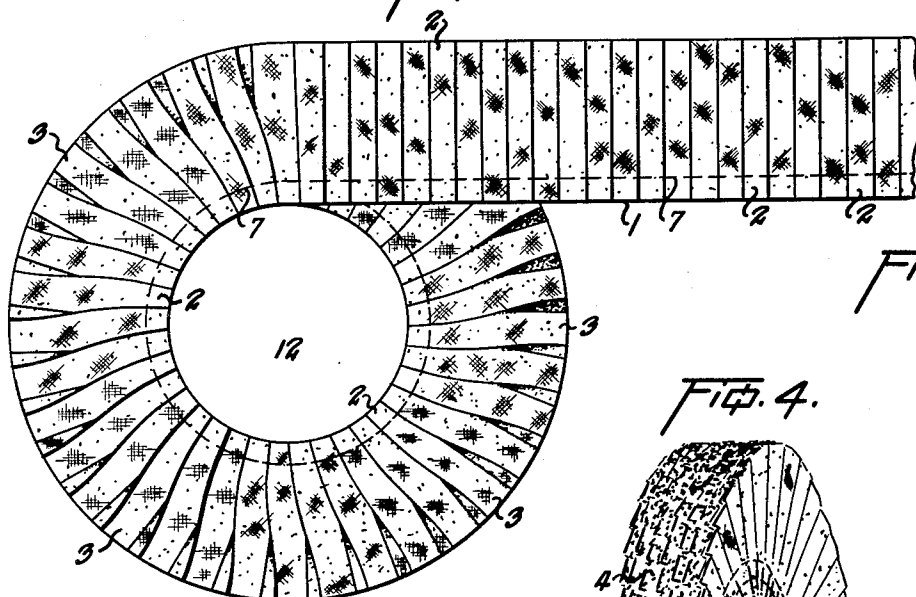


Fig. 2.

Fig. 4.

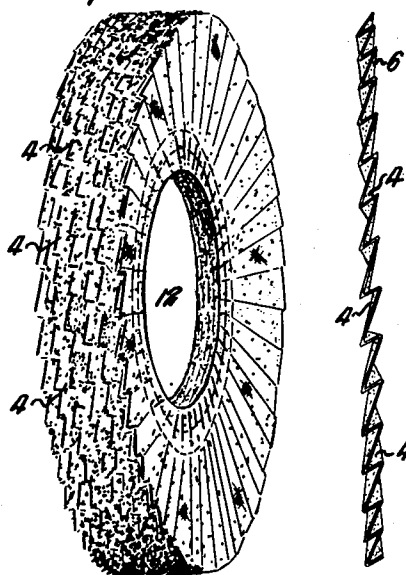
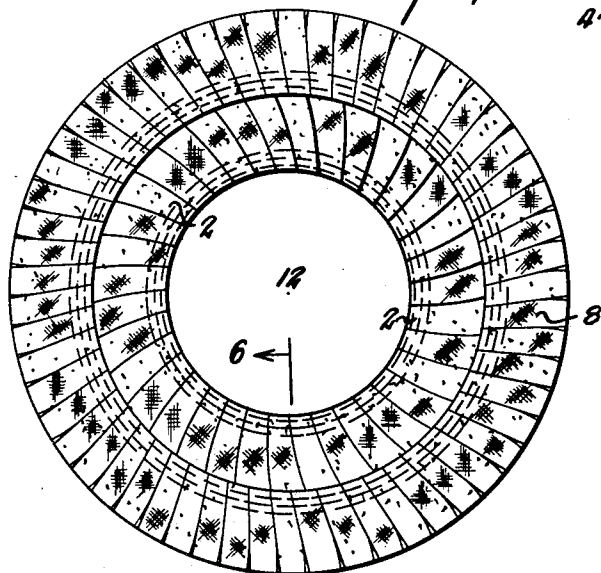


Fig. 3.



Fig. 5.



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Inventor

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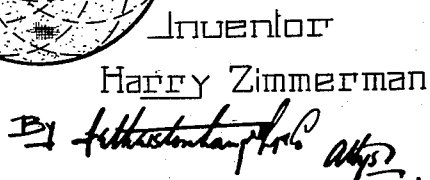
By Hetherington & Co. Attys.

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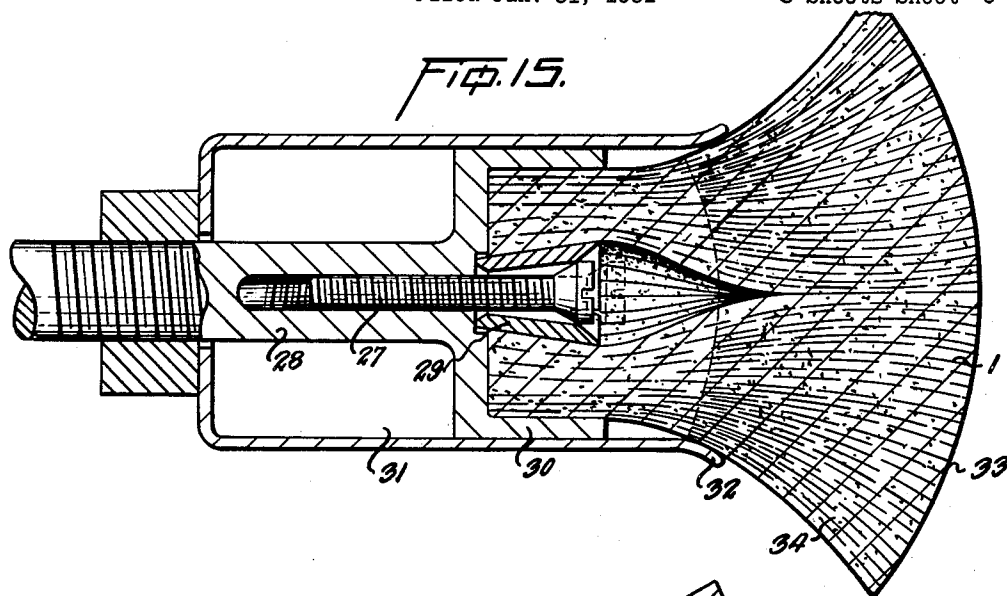
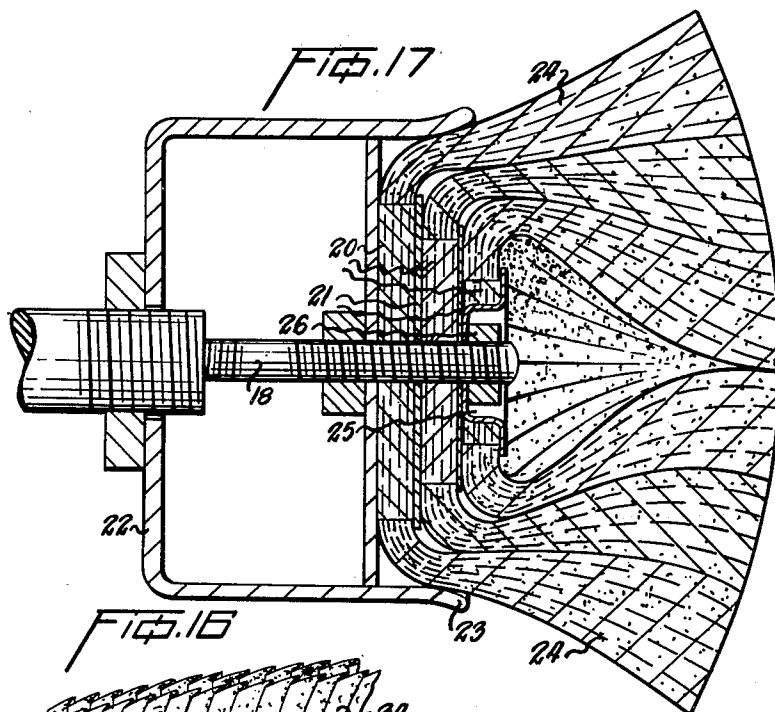
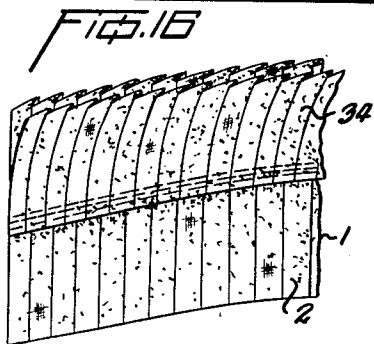
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BUFFING WHEEL

Filed Jan. 31, 1931

3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

1,927,862

BUFFING WHEEL

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Application January 31, 1931. Serial No. 512,569

3 Claims. (Cl. 51—193)

My invention relates to improvements in buffing or polishing wheels and the object of my invention is to provide a buffing wheel formed of a plurality of layers of pleated material in which the partially distended pleats at the periphery of the wheel form air pockets between the folds and layers of material.

A further and particular object of my invention is to utilize strips of pleated material which can be used in formation of wheel buffs of the standard type in which the material radially extends from the buff supporting spindle at substantially right angles thereto, or for the formation of an end buff or a semiend buff in which the pleated material initially extends around or parallel to the buff supporting spindle.

Another object of my invention is to furnish a buff forming strip with a supplementary strip in the vicinity of its outer or buffing portion, so that in cases where necessary the working portion of the buff can be built up to a greater width or thickness, and a further and more particular object of my invention is to so form my buffs that they do not directly rest upon the buff supporting spindle, but are formed with a comparatively large detachable hub or core piece which detachably fits about the spindle so that in this manner the hub or core piece can be repeatedly used with replaced buffs.

My invention consists of a buffing or polishing wheel constructed and arranged all as herein-after more particularly described and illustrated in the accompanying drawings in which:—

Fig. 1 is an elevational view of my pleated strip showing it partially wound into a circular buff layer.

Fig. 2 is an elevational view of the edge of layer such as shown in Figure 1.

Fig. 3 is a magnified view of a fragmentary edge portion of my pleated strip, showing the strip formed of two layers of material.

Fig. 4 is a perspective view of a buff formed of a plurality of layers as illustrated in Figure 2, or a single spirally wound strip as illustrated in Figure 1.

Fig. 5 is a plan view of a buff of the same form as illustrated in Figure 4, showing the provision of a supplementary buffing strip secured to the working portion of the buff in order to give it additional thickness.

Fig. 6 is an enlarged cross sectional view taken through the line 6—6, Figure 5.

Fig. 7 is an elevational view of the form of buff illustrated in Figure 4, showing concentric rows of stitching extending around the buff.

Fig. 8 is a similar view to Figure 7 showing curved rows of stitching extending from the vicinity of the inner periphery to the outer periphery of the buff.

Fig. 9 is a reduced elevational view of a buff such as illustrated in Figure 8, showing the curved rows of stitching intersecting each other.

Fig. 10 is a perspective view of a detachable hub or core piece which is insertable into the buff centre.

Fig. 11 is a cross sectional view through a fragmentary portion of an assembled buffing wheel, showing the buffs mounted upon a single core instead of a plurality of cores as illustrated in Figure 10.

Fig. 12 is a perspective view of a fragmentary portion of a buff section, showing a lip formed therein for the retention of an inserted core piece.

Fig. 13 is a cross sectional view through a chuck mounted upon a buff supporting spindle, and which contains a semiend buff formed of a coiled strip.

Fig. 14 is an end elevational view of the centre arbor of my chuck as illustrated in Figure 13, showing the pleated strip partially wound thereon.

Fig. 15 is a cross sectional view through another form of chuck, showing it containing my pleated strip which is wound thereon to form an end buff, such strip being built up in the vicinity of its working portion by the provision of a secondary strip which is sewn thereto.

Fig. 16 is a perspective view of a portion of the pleated strip and secondary strip as used in the form illustrated in Figure 15, and

Fig. 17 illustrates the use of a chuck for turning over buff sections such as illustrated in Figure 4 in order that an end buff or semiend buff may be formed.

Like characters of reference indicate corresponding parts in the different views in the drawings.

My invention broadly contemplates the use of a pleated strip of fabric or other flaccid material in which the pleats are formed in the strip before it is wound into buff form, and in which such pleats extend from the inner to the working edge of the buff, so that such pleated strip as well as providing a simply formed buff also furnishes through the partially distended pleats a plurality of substantially uniform zigzag edges of fabric forming air pockets in the buff, which of course tend to keep the buff cool when in use as well as forming pockets for buffing compound. I am aware that heretofore in the art buffs have been

made of strips of material which were gathered around a central hub as the strips were laid in place, but it is obvious that such gathering was only resorted to in order to fit the material strips about the central hub.

As illustrated in Figures 1 and 4 of my drawings the strip of material 1 of which my buffs are made, is of pleated form, such pleats 2 extending from edge to edge of the material, and when the strip is wound into a buffing ring the outer portions 3 of the pleats are partially distended so that a plurality of air compound receiving pockets 4 are formed between such distended pleats.

In the pleated strip as illustrated in Figure 3 I utilize two thicknesses of material 1 and 5 which are laid one on top of the other and pleated. A buffing ring section such as illustrated in Figure 4 may be either made up of a plurality of separate layers 6 as illustrated in Figure 2 or formed of a continuous spirally wound strip as illustrated in Figure 1.

For the handling of my pleated strip 1 I have found it preferable to run a row of stitching 7 or other securing means along its inner edge which prevents the pleats opening when the strip is being handled and also ensures that the pleats uniformly spread apart when the strip is wound into circular form. This winding is of course carried out through the placing of the strip around the centre of the correct diameter. As the pleated strip is wound around the centre the layers of wound strip are sewn together so that when the section is complete the layers are secured together and the section can be bodily lifted off the centre, and is substantially of the form illustrated in Figure 4.

As the pleats must necessarily be increasingly distended, as they extend from the inner to the outer edge of the buff it necessarily follows that in the buff section the thickness of material in the buff decreases from the centre to the outer edge. The amount of decrease is so small that in most cases it is a negligible factor, especially in the case of what is known as the loose buff. If, however, an added thickness of the buff at its working edge is required, this can be attained through the provision of a secondary pleated strip 8, which is of less width than the pleated strip 1, and is wound around and sewn to the ring intermediately of the width of the strip 1, as clearly illustrated in Figures 5 and 6.

The buff sections illustrated in Figures 7, 8 and 9 are formed in the same manner as that illustrated in Figures 2 and 4, but in these cases are sewn to form what are known as cutting buffs. In the buff illustrated in Figure 7 the rows of stitching 9 are concentric with the buff. In the form illustrated in Figure 8 the rows of stitching 10 are of curved form and extend from the vicinity of the inner edge of the buff to its outer edge so that there is a large proportion of air pocket space extending inwardly from the working edge of the buff, and in the form illustrated in Figure 9 the rows of stitching 10 are intersected by opposed similar rows of stitching 11.

My buffing rings as illustrated in Figures 4, 5, 7 and 8 are in themselves complete and are formed with comparatively large orifices 12 which receive detachable hubs or core pieces upon which the rings are carried. By forming the buffs in this manner a greater saving of material is effected as the greater percentage of the material in the ring sections can be used for buffing so that when the used rings are discarded the hub or core pieces of course can be used again.

These hub or core pieces which of course form an essential part of the buff assembly can be either formed of individual core sections each adapted to receive or be insertable within the ring section, or one core can be of sufficient width to carry a plurality of sections.

The core section as illustrated in Figure 10 is adapted to be inserted into one ring section, and I have found it particularly satisfactory to form such core section of fabric material consisting of layers of fabric 13 which are secured together by crisscross rows of stitching 14. Such core section is formed with a central orifice 15 through which the buff spindle is inserted in the usual manner. In order that the core sections as illustrated in Figure 10 may be retained in the buffing ring sections for handling purposes in making up the buffing wheel, I have formed the buff sections with an inner lip or shoulder 16 such as illustrated in Figure 12 and against which the edge of the core section rests. The lip or shoulder 16 as illustrated has of course been greatly magnified in the drawings, and in practice is formed from the first convolution of layer of the strip, which is made of slightly smaller diameter than the succeeding convolutions or layers.

When the buffing wheel is being made up the ring and core sections are placed side by side upon the buffing spindle of the type illustrated in Figure 11 and the buffing ring sections tightly squeezed together by means of a draw plate assembly such as illustrated.

In the construction illustrated in Figure 11 instead of furnishing an individual core section for each ring section I provide a single core piece upon which a plurality of ring sections are carried. Such core piece 17 is preferably made of rigid material such as wood and is carried upon a buffing spindle 18, and is preferably formed with a peripheral shoulder 19 at one end which prevents the end buff section from slipping off the core when the buff sections are being assembled thereon.

In the form of semiend buff illustrated in Figure 17 I use a plurality of ring sections of decreasing internal diameter and carried upon core sections 20 which are necessarily of different diameters to fit their respective buffing rings. The ring sections are secured together by a draw plate assembly upon the spindle 18, the inner diameter of the ring sections increasing from the outer end of the spindle. Between adjoining ring sections I furnish spacing plates 21 which are of slightly larger diameter than the core pieces upon which such adjoining ring sections are mounted in order to prevent the ring sections from slipping off their core pieces on to the smaller adjoining core pieces.

In the construction as illustrated in Figure 17 the buff spindle assembly carries an open ended cylindrical member 22 which rotates therewith, and the open end 23 of such cylindrical member bears against the ring sections 24 whereby they are bent into the form illustrated. The outer plate 25 of the draw plate assembly is recessed into the end core section which has an enlarged central orifice, such recessed plate 25 being formed for the reception of the nut 26 so that such nut does not project beyond the outer face of the outer buff. In this manner any possibility of the nut 26 rubbing against the article being buffed is obviated.

In the type of buffs illustrated in Figures 13, 14 and 15 my pleated strip is coiled into ring form

around the member supported by the buffing spindle so that the wound strip lies substantially co-axial with the spindle. Any suitable form of buff retaining chuck can be used such as the type illustrated in Figure 15, wherein a central screw 27 is threaded into the central spindle 28 of the chuck and has its head bearing against an expandable inner jaw 29, so that when the screw 27 is threaded inwardly the jaw 29 moves outwardly and presses the layers of fabric against each other, and also against the outer jaws of the outer portion 30 of the chuck. The chuck carries an adjustably mounted cylindrical member 31, the outer end 32 of which bears against the flared buff fabric so that the tightness of the outer portion of the buff can be adjusted at will, and when worn can also be adjusted for a new length.

The type of buff as illustrated in Figure 15 is what is known as an end buff and is used for buffing the inside of concave articles such as headlight reflectors, and it is therefore essential that the buff present an unbroken surface across its end 33, so that a complete buffing of the article is attained, it being readily perceived that the fabric of the buff will have a decided tendency to move radially under centrifugal force, as the buff rotates at a high speed, such movement tending to leave the face 33 of the buff open about its centre of rotation.

In order to compensate for this and also to furnish a well filled buff I attach a secondary strip of pleated fabric 34 to the buffing portion of the strip 1, of which the buff is formed, as illustrated in Figure 16.

From the foregoing description it will be apparent that I have devised a very simple and efficient way of building various types of buffing or polishing wheels from pleated fabric strips, in which such pleats permit the ready formation of the strips into any desired curvature and also

provide air and buffing compound retaining pockets within the buffs, which are so necessary in keeping the buffs cool when in use, and although I have shown my pleated strips put together in various forms it is to be understood that I can make such changes and alterations in my buffs, as I may deem necessary without departing from the spirit of my invention as set forth in the appended claims.

What I claim as my intention is:

1. A buffing wheel comprising a buffing ring portion, a central hub portion detachably contained within the ring portion, said ring portion comprising a plurality of layers of pleated fabric strip in which the pleats extend from the inner periphery to partially distended form at the outer periphery of the ring portion, and a shoulder formed upon one edge of the orifice in the buffing ring portion whereby the ring is retained against lateral movement in one direction on the hub.

2. A buffing wheel comprising a buffing ring portion, a central hub portion upon which the ring portion is mounted, said ring portion comprising a plurality of layers of pleated fabric strip in which the pleats extend from the hub to the working face of the ring, and an open ended cylindrical member mounted for rotation co-axially with the hub and having its open end bearing against one end layer of the buffing ring portion.

3. A buffing wheel comprising a plurality of layers of pleated fabric strip in which the pleats are substantially uniform and extended from the inner periphery to the outer periphery of the wheel, the pleats being initially secured in place in the vicinity of the inner peripheral edge of the strip and partially distended at the outer periphery of the wheel to present an unbroken zigzag edge.

HARRY ZIMMERMAN.