Jan. 11, 1949. L. J. WALLING 2,459,055

BUFF AND METHOD OF MAKING THE SAME

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Fig. 1.

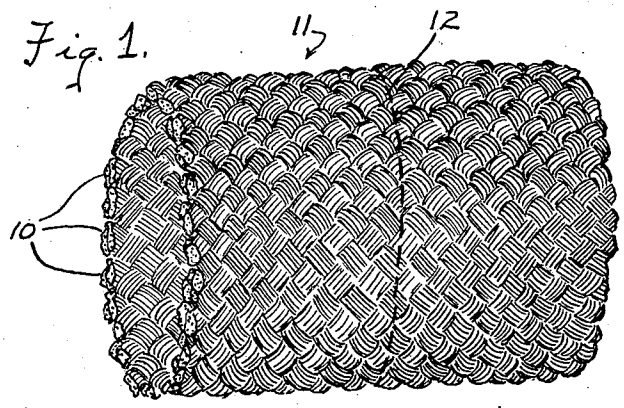


Fig. 2.

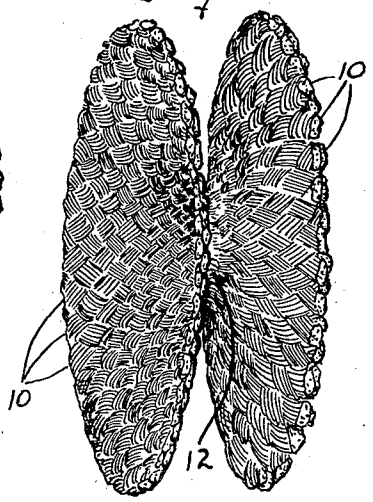


Fig. 3.

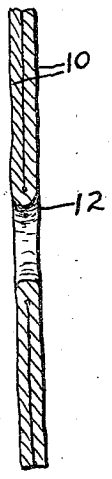


Fig. 4.



Fig. 5.



Fig. 6.



Fig. 7.

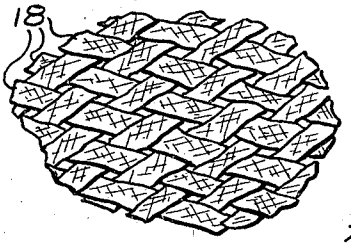


Fig. 8.

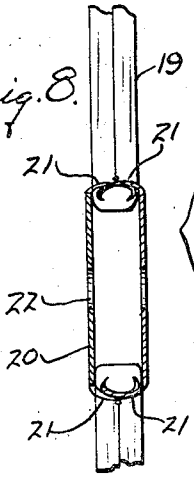


Fig. 9.

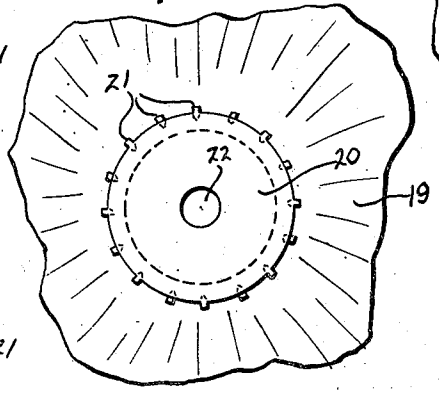
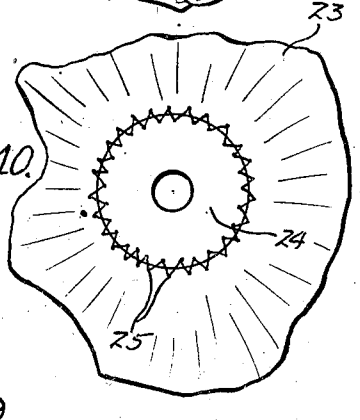


Fig. 10.



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Fig. 11.

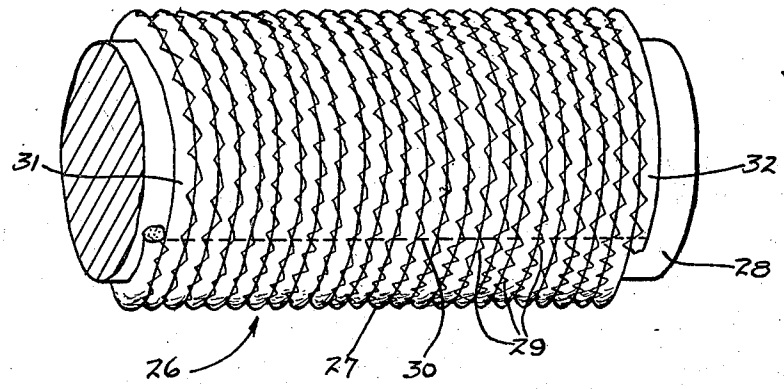


Fig. 12.

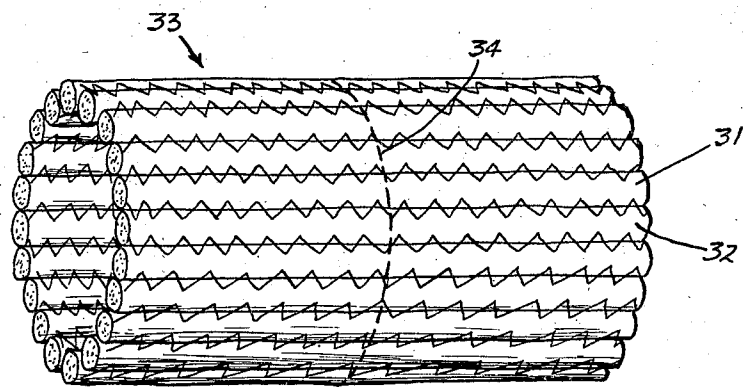
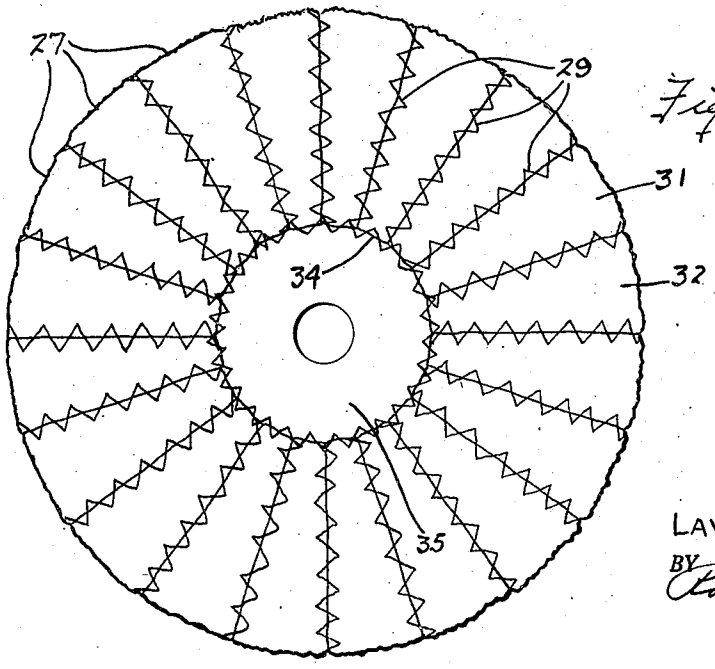


Fig. 13.



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UNITED STATES PATENT OFFICE

2,459,055

BUFF AND METHOD OF MAKING THE SAME

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Continuation of application Serial No. 158,598, August 11, 1937. This application April 28, 1947, Serial No. 744,356

10 Claims. (Cl. 51—193)

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This invention relates to the art of buffing and is a continuation of my prior filed application, Ser. No. 158,598, now abandoned. The invention has for its principal object to provide a buff which may be easily and inexpensively constructed and which will have a much more uniform and efficient buffing action than buffs heretofore used.

Another object of the invention is to provide a buff which may be dynamically balanced and which will maintain such balance throughout the useful life thereof.

Still another object of the invention is to provide a buff the active surface of which is composed substantially solely of the ends of the strands of which the buff is made.

Another object of the invention is to provide a method of making a buff in which all waste is eliminated.

A further object of the invention is to provide a buff which may be worn down to the center in use without any change in the character of the effective buffing surface.

Still another object of the invention is to provide a construction for buffs by means of which all the strands making up the buff may be anchored at the center and may extend out to the circumference.

Other objects of the invention, as well as objects relating to the interweaving, stitching, and attaching together the various elements of the buff will be apparent as the description of the invention proceeds.

The invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a perspective view of a tubular piece of webbing showing a step in the process of constructing one form of my improved buff;

Fig. 2 is a perspective view of the same piece of webbing illustrating a further step in the process;

Fig. 3 is a sectional elevational view of the finished buff after the step illustrated in Fig. 2 has been completed;

Figs. 4, 5, 6, and 7 show enlarged views of modified forms of strands which may be used in constructing the buff of the invention;

Figs. 8 and 9 are a front sectional elevational view and a side view respectively of a larger diameter buff than that shown in Figs. 1 and 2, showing one manner of attaching the buff to an additional center element;

Fig. 10 is a side elevational view of one of my improved buffs showing a modified form of center therefor;

Fig. 11 is a perspective view illustrating a primary step in the process of constructing another form of my improved buff;

Fig. 12 is a perspective view of another step in the process of constructing the buff; and

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Fig. 13 is a side view of the finished buff.

Referring now more specifically to the drawings, the buff of Figs. 1, 2, and 3 may be preferably constructed of strands 10, braided, woven, or otherwise interlaced to form a seamless tube 11. These individual strands 10 may be made of cotton or other suitable buffing material and are preferably arranged so that they run from end to end of the tube, the interlacing or weaving being such that the tube is completely seamless, the interlacing of the strands being uniform and continuous around the tube. Such a tube of webbing may be easily made on machines which are well known in the art for forming the woven covering on insulated wires or the like, or in the manufacture of canvas hose, and a continuous tube may thus be manufactured and cut off at the proper lengths for the buffs.

When a suitable length of the tubing has been cut off, as shown in Fig. 1, I may prefer to gather the center on a line, indicated at 12, so that the diameter of the tube at the center is decreased. This operation may be carried out on any well known type of sewing machine equipped with a gathering attachment. I prefer to accomplish this step by machine rather than by hand so that the gathers may be uniform as this may affect the dynamic balance of the buff after it is completed; but it may be done by hand, if desired. In some cases I may dispense with the gathering machine and draw the center of the tube in with a string or cord.

With the tube gathered in the center, the ends of the tube may then be expanded and brought towards each other, as shown in Fig. 2, to form the completed buff, shown in section in Fig. 3. If desired, the sides of the buff may then be stitched together in any desired manner to make a firm structure, but this stitching may be omitted, especially with the smaller buffs, and has not been shown.

The strands making up the buff may be made in a great variety of ways, depending on the desired thickness of the finished buff and the use intended for it. Single linear threads have been indicated in Figs. 1 and 2. Fig. 4 shows an enlarged fragmentary view of a single strand 13 made up of a plurality of thinner threads or filaments 14, twisted into a cord or rope. In Fig. 5 I have shown the strand 15 composed of a plurality of smaller strands or threads 16 braided together. In Fig. 6 a single strand 17 is shown formed in a chain stitch. In Fig. 7 a fragmentary portion of the tube of Fig. 1 is shown with the interlaced strands 18 made of strips of cloth preferably cut on the bias. These strips may be woven flat, as indicated, or twisted before the interlacing is done.

It will be understood that any of the strands shown by way of example in Figs. 1 to 7 inclu-

sive, may be used to form the tube of Fig. 1, or various combinations of two or more of these strands may be used for a single strand. Also, while a simple weave is shown in Fig. 1, the invention is intended to cover any desired weave or braid which may be used to form a seamless tube.

After the buff has been completed, it may be placed on a shaft and secured thereon by suitable washers, and driven at the desired speed for the particular work on which it is to be used. In many instances it may be preferable to mount a number of these buffs side by side on the shaft to form a buffing wheel of the desired thickness.

Where small buffs are made it may be practicable to reduce the diameter of the tube of webbing to the diameter of the shaft with which the buff is to be used. However, with larger buffs the concentration of material at the center might make the buff too thick at this point, especially where several of the buffs are to be clamped together on the same shaft. In such a case I may prefer to leave the central opening considerably larger than the shaft, and to fill in the center of the buff with a suitable circular support to which the buff may be attached and which itself may be clamped on the shaft. In Figs. 8 and 9 the center of the buff 19 is made of two metal discs 20 which may be provided at their peripheries with extending teeth or claws 21. These discs may then be placed one on each side of the buff with the teeth or claws engaging the inner edge of the buff, and then the discs may be pressed together so that the teeth or claws are clenched in the material of the buff. The discs may be provided with holes 22 through the center thereof of suitable diameter to fit the shaft on which it is to be used.

In Fig. 10 I have shown another type of center for a large buff 23. In this figure the buff 23 is shown sewed to a plurality of discs 24 of canvas or other suitable material which may be piled one upon the other to produce the desired thickness and sewed together. I prefer to use a zig-zag stitch 25 for such purpose. Other suitable materials may be used for the center of the buff, and the buff may be attached thereto in other ways, as by cementing.

The above buff makes a very simple structure, easily formed on well known machines and without any waste whatsoever. In operation the buff produces remarkable and highly desirable results. Inasmuch as the weave of the material may be made extremely uniform, by the use of the well known machines already mentioned, the weight of the buff may be evenly distributed, with the result that the buff is dynamically balanced, and because of the novel formation wherein each strand starts at the periphery of the buff, passes through the center, and then out to the periphery again, centrifugal force has no tendency to pull the strands out of their uniform position, so that the balance of the buff is not disturbed through use, and it will continue to run true until it is worn down to the center.

An extremely important advantage of the buff of the invention, however, is the fact that the working surface of the buff is composed entirely of the ends of the strands with which it is made, and there are therefore no hard spots or cutting edges present, the entire working surface having a soft efficient texture for buffing and polishing. Moreover, this same surface is maintained until the buff is completely worn down to the center thereof.

The form of the invention just described may be preferred as the simplest and easiest manner of carrying out the invention. However, in Figs. 11 to 13 I have shown another form of construction which may be found desirable, under certain conditions, and which will produce the advantageous results of the invention. In this modification of the invention I first form a tube 26 by winding a single continuous strand 27 around a cylindrical form 28. As this strand is wound, I prefer to stitch it to the strand adjacent to it, and for this purpose I prefer to use a zig-zag stitch 29, for a reason to be hereinafter explained.

When a certain length of tube has been formed in this manner the strand may be cut off. Then all of the strands may be cut on a line 30, parallel to the axis of the tube, thus forming a rectangle of strands 27 all parallel to each other and each one stitched to the strands adjacent to it.

This rectangle may then be rolled in the other direction about an axis perpendicular to the axis about which it was previously unrolled, and the two end strands 31 and 32, thus brought together, may be stitched together with the same zig-zag stitch which held the other strands together. Thus a tube 33 is again formed, but this time with the strands running parallel to the axis of the tube, instead of spirally around the circumference. Inasmuch as the stitching is the same between any two adjacent strands of the tube thus formed, the tube will be as uniform as the tube of Fig. 1, so that it is practically a seamless tube, and may then be treated in exactly the same way as that tube, by gathering the material at the center on the line indicated at 34 to form a smaller diameter, and expanding the ends and bringing them towards each other to form the flat buff disc. The two sides of the buff may then be stitched together, if desired, to form a more rigid unit, as in the case of the buff already described in connection with Figs. 1 to 10.

The construction just described may preferably be used for a large buff in which case I may prefer to use a center 35 made of discs of canvas or other material. This center may be stitched to the center edge of the buff, as already described in connection with the constructions of Figs. 8, 9, and 10. When the buff shown in Fig. 13 is rotating at high speed it will be apparent that centrifugal force will tend to pull the strands of the buff towards the periphery. Inasmuch as the stitching 29 in zig-zag from the center of the buff to the circumference, the stitching is free to stretch on a radial line, and in so stretching will draw the strands closer together. The buff therefore becomes more closely knit under operating conditions.

In the figures a small number of strands have been shown for clearness; this number, however, may be increased in actual practice, so that the strands may be compressed at the center and slightly expanded at the circumference.

In making the buff of Figs. 11 to 13 the single strand may be any of the strands shown and described in connection with Figs. 1 to 7 inclusive, either alone or in combination. It will be seen that the strands are all anchored at the center and pass radially to the circumference where the ends thereof form the working surface of the buff. The same advantages and other desirable results may therefore be obtained with the buff of Figs. 11 to 13, as the buff already described in connection with the previous figures.

The buff of the invention lends itself to economical manufacture as it may be made in almost a continuous process with the interlacing or

winding and the stitching being done with well known machines and with substantially no waste.

In making the buff of the invention, the most practical way appears to be to contract the center of the tube of woven or sewed material and then to expand the ends and to bring them together to form two closely positioned discs. Under certain conditions I may prefer not to contract the center at all, but to expand the ends twice as much to obtain the same result, or not to expand the ends at all, but to obtain the necessary movement of the strands by a greater contraction of the center.

It is also not necessary to have the two discs formed by the several steps already described, as a single disc may also give good results. Thus a tube, similar to that shown in Fig. 1, may have one end contracted and the other end expanded to form a single disc, and the ends may then be fastened at the center by any suitable means. This method may not be preferred, as it may be more difficult to secure the inner ends of the strands, but is intended to come within the spirit of the invention.

Any of the strands shown and described may be impregnated with any suitable polishing or abrasive compound, if desired, or strands of such material may be mixed with the other strands or otherwise incorporated herewith.

Modifications may be made in the arrangements shown and described without departing from the spirit of the invention, and I do not therefore wish to limit myself to the construction shown and described except by the limitations included in the appended claims.

What I desire to claim and secure by Letters Patent is:

1. The method of making a buff which comprises interlacing a plurality of strands of buffing material to form a seamless tube, contracting the center of said tube to decrease the diameter thereof, and expanding the ends of said tube and bringing them together to form a substantially flat disc.

2. The method of making a buff which comprises the steps of interlacing a plurality of strands of buffing material to form a seamless tube, and expanding the ends of said tube and bringing the ends together to form a substantially flat disc.

3. The method of making a buff which comprises attaching a plurality of parallel strands together in a single layer to form a substantially seamless tube with all of said strands lying substantially parallel to the axis of said tube, contracting the center of said tube to decrease the diameter thereof, and expanding the ends of said tube and bringing said ends together to form a substantially flat disc with the material uniformly distributed in the plane of the disc.

4. A buff comprising a plurality of strands of buffing material each doubled upon itself, the said strands arranged about a center with the doubled portions towards the center and the ends thereof away from the center, one portion of each of said strands lying substantially in a single plane and interlaced with the same portions of all the other strands, and the other portions of each of said strands lying substantially in another plane substantially parallel to said first mentioned plane and interlaced with the same portions of all the other strands.

5. A buff comprising a plurality of strands of buffing material lying substantially in the same plane and loosely interlaced with each other, the strands being evenly distributed about the center with each stand extending from a point adjacent the center to an outer point, the said outer points being equidistant from said center.

6. A buff comprising a plurality of strands of buffing material, each of said strands formed of a plurality of interlaced threads, means to position said strands in two closely positioned substantially parallel planes with a portion of each strand in one plane and another portion of each strand in the other plane, the said strands being uniformly distributed about a center, means to secure together the portions of the strands in one plane, and means to secure together the portions of the strands in the other plane.

7. A buff comprising a plurality of strands of buffing material, each of said strands formed of a plurality of interlaced threads, means to position said strands in two closely positioned parallel planes with a portion of each strand in one plane and another portion of each strand in the other plane, the said strands being uniformly distributed about a center, means to secure in interlaced relation all those portions of said strands lying in one plane, and means to secure in interlaced relation all those portions of said strands lying in said other plane.

8. A buff comprising a plurality of strands of buffing material, means to position said strands in two closely positioned parallel planes with a portion of each strand in one plane and another portion of each strand in said other plane, the said strands being uniformly distributed about a center, and a plurality of stitches securing each of said strands to the strands adjacent to it.

9. A buff comprising a plurality of strands of buffing material, said strands lying in two closely positioned substantially parallel planes, a portion of each strand lying in one plane and another portion of each strand lying in the other plane, said strands being uniformly distributed about a central point and each extending radially therefrom, and a plurality of zig-zag stitches connecting each of said strands to the strands adjacent to it.

10. A buff comprising a plurality of strands of buffing material, each doubled upon itself, the said strands arranged about a center with the doubled portions towards the center and the ends thereof away from the center, so that the ends only of the strands form the working surface of the buff, one portion of each of said strands lying substantially in a single plane and the other portion of each of said strands lying substantially in another plane substantially parallel to said first mentioned plane, and means for securing each portion of each strand to those portions adjacent to it all the way along the said portion from the center to the outer end thereof.

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