Nov. 21, 1950 J. D. BLAIR ET AL 2,531,249

BUFF CONSTRUCTION

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Fig. 1

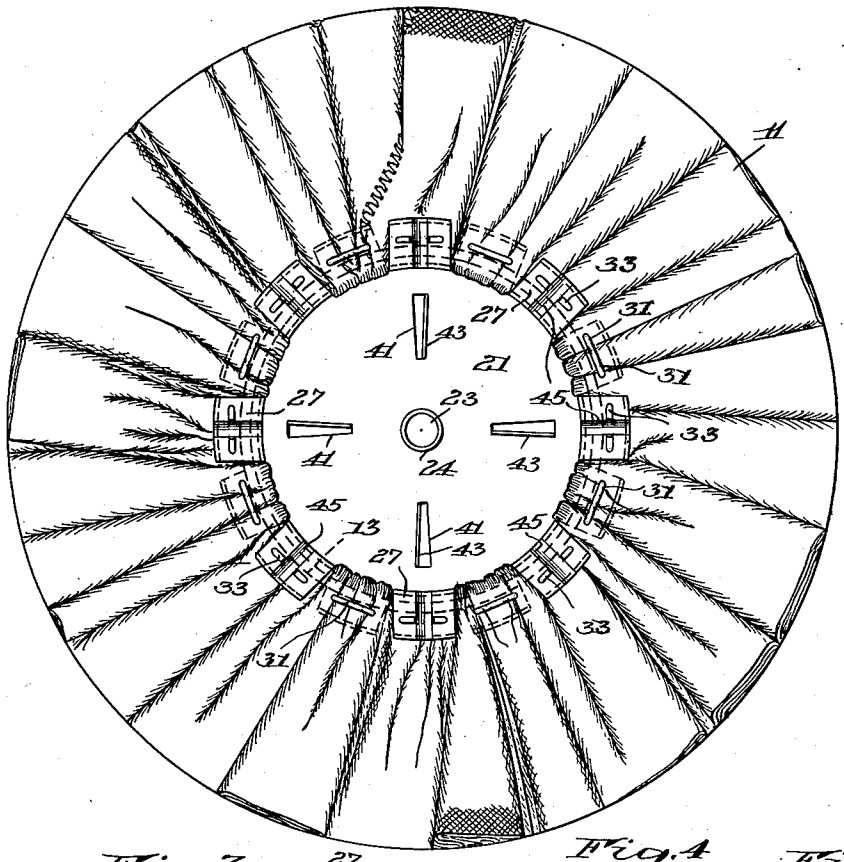


Fig. 2



Fig. 3

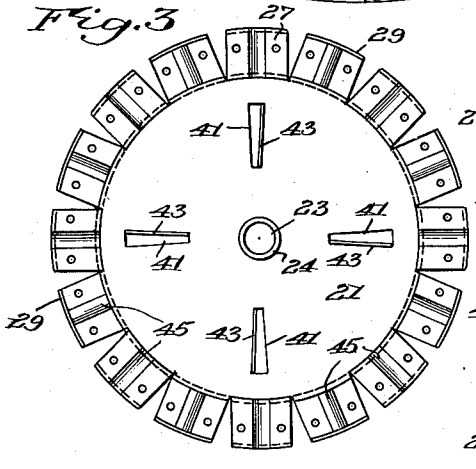


Fig. 4

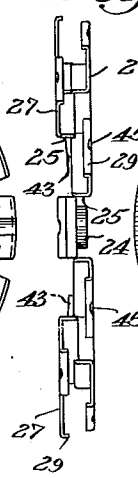
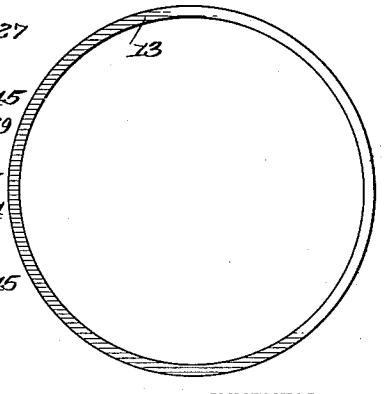


Fig. 5



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Fig. 6

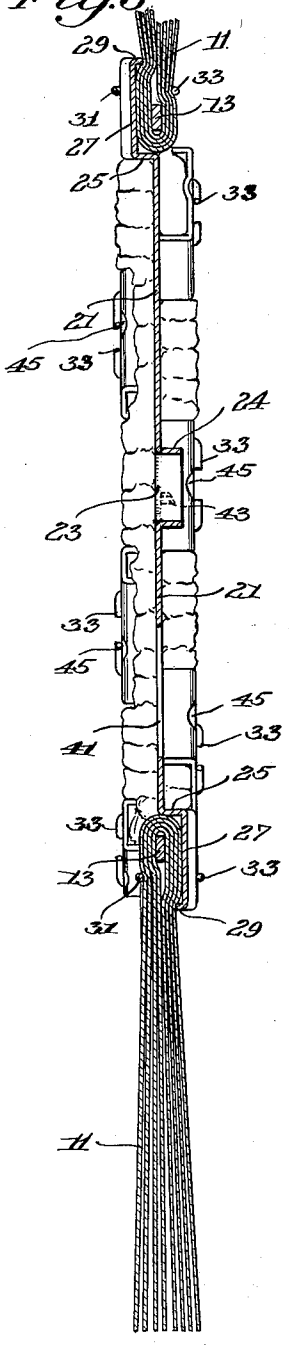


Fig. 7

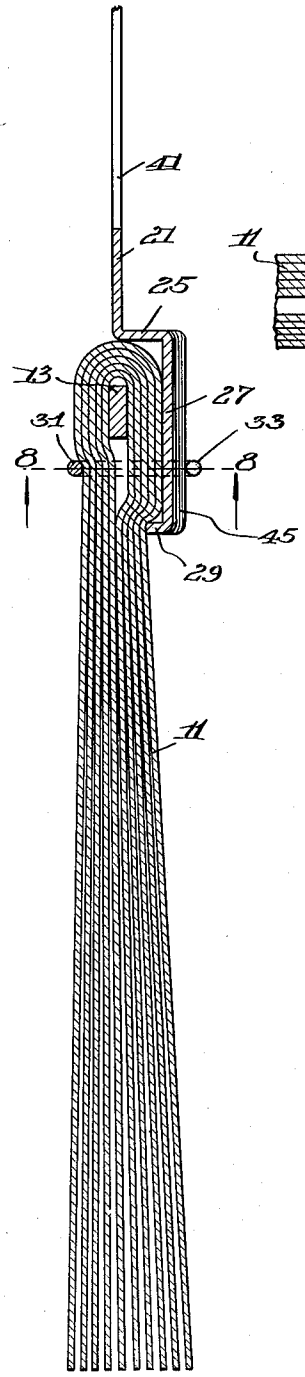
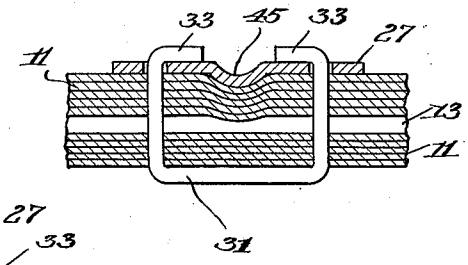


Fig. 8



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BUFF CONSTRUCTION

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2 Claims. (Cl. 51—193)

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The present invention relates to the construction of a buff, and has for one of its objects the provision of a buff of generally improved and more satisfactory and economical form, particularly a buff which can be manufactured relatively cheaply.

Another object of the invention is the provision of a buff so constructed as to have a relatively high degree of safety in operation at high speeds, with relatively slight chance of disintegration or explosion of the buff even when operating at very high speed.

Still another object is the provision of a buff so designed as to be well adapted to modern production methods.

These and other desirable objects are accomplished by the construction disclosed as an illustrative embodiment of the invention in the following description and in the accompanying drawings forming a part hereof, in which:

Fig. 1 is a side elevation of a buff in accordance with a preferred embodiment of the invention;

Fig. 2 is a diagrammatic edge view thereof;

Fig. 3 is a side elevation of the metal center or core of the buff;

Fig. 4 is an edge view thereof;

Fig. 5 is a side elevation of a stabilizing ring used in the buff;

Fig. 6 is a radial cross section through a fragment of the buff;

Fig. 7 is a similar radial cross section through a fragment of the buff, on a larger scale; and

Fig. 8 is a section taken approximately on the ing 8—8 of Fig. 7.

The same reference numerals throughout the several views indicate the same parts.

The construction comprises, in general, a core or center portion of metal, and a body portion or working portion in the form of an annular ring extending around the central portion, this body portion or working portion being usually made of woven fabric although leather, paper, synthetic fabric, or other materials may be employed if desired. A stabilizing ring is preferably employed in conjunction with the body portion, for added safety. The body portion itself may conveniently be of known form, the present invention being directed more particularly to the central portion or core portion, and the manner in which it is fastened to and cooperates with the body portion.

Referring first to the body portion, although it may be of various forms as above indicated, its preferred form comprises a long strip of textile fabric cut on the bias with relation to the warp and weft strands thereof and wound in several

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convolutions, of cylindrical form, one on top of the other, the cylindrical convolutions then being compressed at a point midway of the length of the cylinder while maintaining the full diameter of the convolutions at both extreme ends of the cylinder, with the result that the two ends of what was originally the cylinder are brought against each other approximately into annular or disk form, each layer of fabric being doubled upon itself and, except in the case of what was originally the outermost layer of the cylinder, upon other intervening layers also, as seen in Fig. 7. The inward radial compression of the layers of fabric midway of the length of the original cylinder causes considerable wrinkling or "gathering" of the fabric, especially at points radially inwardly from the outer peripheral edge of the finished buff, as indicated diagrammatically in Figs. 1 and 2. After the layers 11 have been compressed radially inwardly in this manner, a stabilizing ring or holding ring 13 is inserted in the center of the folds, which ring is preferably strongly formed as a sheet metal stamping. It may be inserted before final assembly of the article by compressing one-half of the folds on one side of the center crease line to a diameter smaller than that of the ring 13, then slipping the ring endwise or axially onto the compressed folds, and then expanding the folds again to their radially or annularly extending shape.

As will be readily seen in Figs. 6 and 7, each layer of fabric, when viewed in radial cross section, is folded around the stabilizing ring 13, approximately at the midpoint of each layer, so that all of the layers are firmly held by this stabilizing ring and thus the diameter of the inner edge of the buff body cannot possibly expand, without breaking the ring 13. This ring 13 is, of course, made strong enough to prevent any possibility of breaking it under normal conditions of use.

The core portion or central portion for supporting the annular ring of fabric or other material, comprises in general a metal plate 21 having an arbor hole 23 at its center and a drawn collar 24 around it, to give a better bearing on the arbor shaft. The plate 21 has at its periphery or margin ears 25 of staggered form, one ear being bent to the right of the central plane of the metal disk 21, the next ear being bent to the left, the next one to the right, and so on, as will be apparent from Figs. 3 and 4. The lateral extending ears 25 collectively have a diameter making a snug fit with the inside diameter of the body portion or section 11.

From the lateral edge of each ear 25, the metal

is then bent radially outwardly as at 27. Since the ears 25 extend alternately on opposite sides of the central plane of the metal disk 21, it follows that alternate radial ears 27 will lie on opposite sides of the body section 11, when the body section is assembled on the ears or lug portion 25. For ease of assembly, one set of radial ears 27, on one side of the plane of the metal disk 21, is preferably not bent up in radial form until after the body section 11 has been assembled on the lugs or ears 25. Then when the last set of ears 27 has been bent into the radial form shown in Fig. 4, it is seen that the alternate ears 27 grip the body section 11 on both sides, holding it firmly against axial displacement relative to the metal disk 21.

Two different sets of holding means are preferably provided for holding the body section 11 of the buff firmly on the seating lugs or ears 25, against any possibility of radial displacement therefrom. Of course, the alternate ears 27 on opposite sides of the body maintain the body against axial displacement, and since these ears extend radially outwardly far enough for the maintenance against axial displacement, the body should be firmly anchored merely by these ears in cooperation with the stabilizing ring 13 included within the body portion. But when buffs are rotated at extremely high speeds, strange and unexpected things happen, and the record of accidents which have occurred during industrial uses of buffs shows that additional anchoring means should be provided in order to have an additional factor of safety. Consequently, two additional sets of anchoring means are provided in the preferred construction, although either one of them may be omitted if it is felt that less secure anchoring will be adequate under the intended conditions of use.

The first set of anchoring means comprises inturned ends 29 at the outer ends of the ears 27, these ends 29 being turned in toward the body 11 (that is, approximately parallel to the axis of rotation with relatively sharp ends which dig into and firmly grip the fabric or other material of which the body section 11 is made. Alternate ears 27, extending from opposite sides against the body portion 11, come sufficiently close to the median plane of the section 11 so that the thickness of the stabilizing ring 13 and the overlying layers of fabric or other material wrapped around this ring, cannot move radially outwardly past the inturned ends or ears 29, quite aside from the tension effect of the ring 13. In other words, if the ring 13 should break at one point, and no longer supply a tension effect holding the inner edge of the body section to a given diameter, the thickness of the ring 13 and the layers of material wrapped around it is still too great to pass radially outwardly between the alternate ears 29 on opposite sides of the material.

The second set of anchoring means comprises staples 31, one extending through each of the ears 27 in a direction approximately parallel to the rotary axis of the buff, and terminating in ends 33 which are clinched over as shown. This construction is readily seen in Fig. 8. It is to be noted from Fig. 7 that the staple is placed in each ear radially outwardly beyond the stabilizing ring 13. Hence the staple also serves to anchor the stabilizing ring 13 and prevent radial outward movement thereof under centrifugal force produced by high speed rotation, even if the ring 13 should prove defective and should break at one point. The staples 31—33 are heavy duty staples made of strong metal of ample size to hold with great strength. Each ear is provided with such a staple, the staples in one set of ears extending through from one side and the staples in the alternating ears extending through from the other side, as will be seen from Fig. 1. For best results, the staples are inserted first through the fabric or fibrous material and then finally pass through the metal ears 27 (the legs of the staples punching their own holes through the metal ears) and then the ends 33 are clinched over on the far side of the metal ear, as shown especially in Fig. 8.

With this construction above described, it is seen that an extremely safe buff is provided, having ample factor of safety even for running at high speed.

Buffs have frequently been made with body portions similar to that above described, but with mounting or central portions made of canvas and cardboard or fiberboard. The present metal center construction is more economical from a cost-of-production standpoint as well as being in many cases lighter in weight and more satisfactory in use. Other metal center portions have heretofore been proposed for buffs, but in most cases the metal center portions have been removable rather than being permanently affixed to the body portion of the buff, and in any case, whether removable or not, the prior metal center sections have not had the anchoring features and safety features provided by the present construction. Since safety is an extremely important factor in a buff intended for high speed rotation, it is evident that even what seems like a minor increase in the factor of safety may be of major importance in saving lives or accidental injuries, and the present construction constituting a major increase rather than a mere minor increase in the factor of safety, is believed to be a major advance in the art.

A buff constructed as above described may also be provided with ventilation features if a ventilated buff is preferred. This is done in the present instance, by providing suitable holes in the central portion of the metal mounting disk 21 and suitable radial passageways in the ears 27, so that air may enter the buff axially through the holes in the disk 21 and may pass outwardly in approximately radial directions between adjacent buff sections. It is understood, of course, that several of these buff sections are usually mounted closely adjacent each other on a common arbor shaft.

The ventilating holes in the metal disk 21 are preferably of radially elongated form as indicated at 41, with the metal stamped out of each hole being turned up to form an ear or vane 43 on one side of the hole, these ears or vanes 43 extending approximately radially and constituting miniature fans to assist in the circulation of air. The several buff sections, when used as ventilated buffs are, of course, mounted between end plates or end flanges which have holes therein for entrance of air in a direction parallel to the axis of rotation. The radially elongated form of air hole results in less weakening of the metal plate, for a given area of hole, than holes of circular or square shape or of circumferentially elongated shape, so such shape is preferred for reasons of safety.

To permit radial egress of the air between adjacent buff sections, each ear 27 may be provided with a depressed channel 45, stamped radially in the ear, as indicated particularly in Figs. 4

and 8. Adjacent buff sections will be spaced from each other on the arbor shaft by means of the staples **31**, so that air may flow out radially in the spaces between the staples and also in the radial channels **45** formed in the ears **27** themselves.

It is seen from the foregoing disclosure that the above-mentioned objects of the invention are admirably fulfilled. It is to be understood that the foregoing disclosure is given by way of illustrative example only, rather than by way of limitation, and that without departing from the invention, the details may be varied within the scope of the appended claims.

What is claimed is:

1. A buff construction characterized by a relatively high degree of safety and resistance to disintegration by centrifugal forces during high speed rotation, said buff construction comprising an annular body of woven textile material formed from a plurality of layers all wrapped around substantially a common fold line near the inner edge of said annular body, a stabilizing ring of metal extending integrally and continuously around said body approximately at said fold line in such position that each of said layers of textile material is wrapped around said ring, a metal mounting plate having a main plane located substantially midway of the thickness of said annular body and having at its periphery a series of integral marginal ears alternately bent laterally in opposite directions from said main plane to form collectively a seat for the inner edge of said annular body and thence bent radially outwardly along a face of said annular body to prevent axial displacement of said annular body from said seat, the outer ends of said outwardly extending ears being located outwardly beyond the outer edge of said stabilizing ring, and metal staples anchored in said outwardly extending ears and extending through said ears and through the thickness of said annular body in positions outwardly beyond the outer edge of said stabilizing ring.

2. A construction as defined in claim 1, in which the outer ends of said outwardly extending ears are bent laterally toward the central plane of said body of textile material, to tend to grip said body to provide further strength of attachment of said body to said mounting plate in addition to the strength of attachment provided by said staples.

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