Aug. 20, 1957 S. C. MOCKIEWICZ 2,803,096

BUFFING WHEEL

Filed Nov. 30, 1954

Fig. 1.

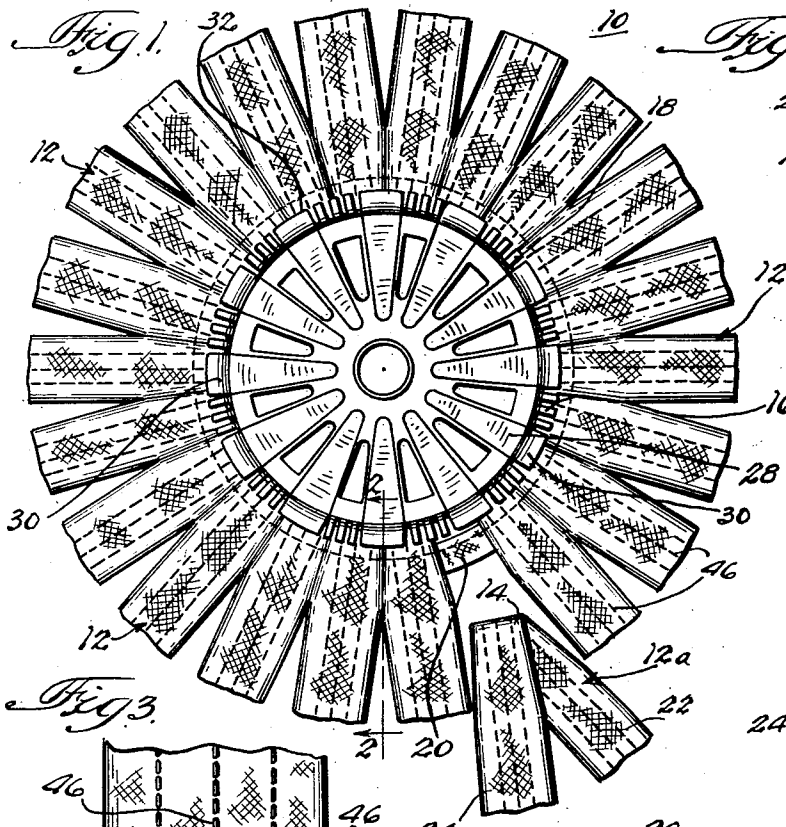


Fig. 2.

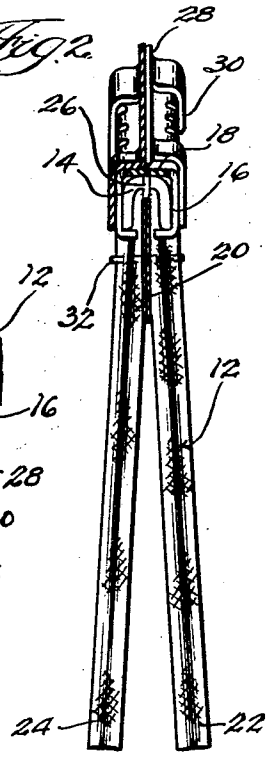


Fig. 3.

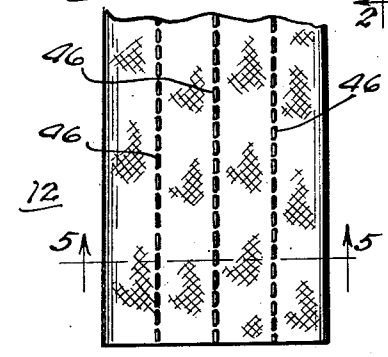


Fig. 4.

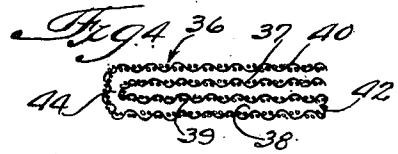


Fig. 5.

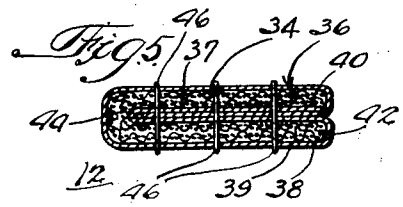


Fig. 6.

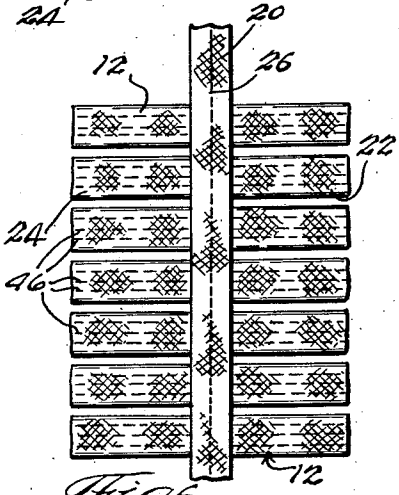
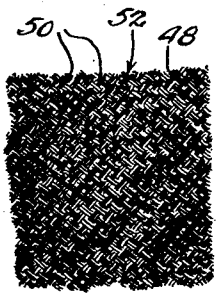


Fig. 7.



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BUFFING WHEEL

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5 Claims. (Cl. 51—193)

This invention relates to buffing wheels and more particularly to an improved buffing wheel constructed of a plurality of radial units or fingers having combined cloth and sisal laminations.

In general, metal products must be prepared for plating or finishing by first polishing the article to remove heavy burs and smooth the metal finish, after which a buffing wheel is employed to provide a luster on the surface and to remove any slight imperfections therein. Buffing wheels have heretofore been constructed primarily of a cotton cloth material. Such material is soft and is usually employed as a vehicle for a buffing compound which performs the cutting and buffing operation. It has been proposed that a buffing wheel be constructed of a coarse material such as sisal to provide a harder, more rapid cutting operation. Wheels formed of the sisal type of material have been constructed in which a plurality of annular discs are cut and sewn into an integral hard annular structure to which a buffing compound may be applied. Such buffs have characteristics of high cutting speed and long life, but are frequently unable to impart to the finished product the desired luster or color and thus must generally be followed by a subsequent soft buffing. Also, such buffs generally lack the desired flexibility for use on irregular or contoured surfaces.

It is therefore one particular object of this invention to provide an improved buff which is capable of both high cutting rates and a finished product of high luster and color.

It is another object of this invention to provide an improved buff combining the desirable features of a cloth buff and a sisal buff.

It is still another object of this invention to provide an improved buff having a high degree of flexibility whereby it is adapted for use on irregular and contoured surfaces.

It is still another object of this invention to provide a buff having a plurality of unitary fingers radially disposed in such a manner that the resulting buff is capable of substantial flexibility and cool operation.

It is a further object of this invention to provide an improved buff utilizing a plurality of radially extending fingers each having a coarse core portion and a soft peripheral portion.

It is still another object of this invention to provide an improved buff in which the materials employed therein are formed into finger-like units extending radially from the buff center, each of said units including cloth and sisal laminations positioned whereby the work engaging surface thereof is on a bias with respect to the weave of said materials.

It is still a further object of this invention to provide an improved unit buff which may either be of the centerless variety or have a permanent center secured thereto.

Further and additional objects of this invention will become obvious from a consideration of this specification, the accompanying drawings and the appended claims.

In one form of this invention a plurality of units or fingers are formed by the interfolding of laminations of cotton and sisal fabric in such a manner that the cotton completely surrounds the sisal fabric and both of said fabrics are cut on the bias whereby the work engaging edges thereof comprise fiber ends of both the warp fibers and the woof fibers. A plurality of such units are assembled in a circular configuration, each of said units extending radially from the buff center.

For a more complete understanding of this invention reference will now be made to the accompanying drawings, wherein:

Figure 1 is a plan view of one embodiment of this invention with one unit removed therefrom;

Fig. 2 is a partial sectional view of the embodiment of Fig. 1 taken on the line 2—2 thereof;

Fig. 3 is a partial enlarged view of one of the units of the embodiment of Fig. 1;

Fig. 4 is a sectional view illustrating the disposition of the various laminations of sisal in one unit of the embodiment of Fig. 1;

Fig. 5 is a sectional view illustrating the combined laminations of the cloth and sisal fabrics included in a single unit in the embodiment of Fig. 1 and taken on the line 5—5 of Fig. 3;

Fig. 6 illustrates the manner in which the plurality of units are assembled into a single integral construction during manufacture; and

Fig. 7 diagrammatically illustrates the weave of the sisal laminations and its angular disposition with respect to the work engaging surface thereof.

Referring now to the drawings and more particularly to Fig. 1, a buff **10** is illustrated incorporating the teaching of this invention. The buff **10** includes a plurality of units **12**, each constructed of several laminations of cotton fabric and sisal and folded into a U-shaped configuration whereby the center portion **14** thereof may be secured between the clamping lugs **16** of a centerless ring **18**. A fabric supporting annulus **20** extends about the clamping ring **18** between the two fingers of the folded units **12**. The unit **12***a* having fingers **22** and **24** is illustrated as removed from the entire group to better illustrate the manner in which the various units are constructed and assembled.

The preliminary assembly of the units **12** on the fabric strip **20** is shown clearly in Fig. 6. The units **12** are cut to length and positioned in side by side relationship. The fabric strip **20** is then placed transversely of the units **12** along the centers thereof, and the strip **20** and units **12** are secured together by stitching **26**. A sufficient number of units are assembled in this manner to fill the entire periphery of the clamping ring **18**. The units are then placed on the ring **18** and the clamping lugs shaped into place, whereby the fingers **22** and **24** are forced outwardly in side by side relationship. The lugs **16** of the metal clamping ring **18** are closed to rigidly engage the central portion of the units **12** with the annular fabric strip **20** centrally disposed whereby an integral assembly is formed. The metal center **28**, illustrated in Fig. 1, may then be inserted if desired. A plurality of lips **30** extending outwardly from the periphery of the center **28** are formed parallel to the axis of the buff and, upon being positioned as illustrated in Fig. 1, these lips are formed outwardly to engage the clamping ring **18**, making the center **28** an integral part of the buff structure. The manner in which the lips **30** of the center **28** engage the clamping ring **18** is clearly shown in the sectional view of Fig. 2.

Also clearly shown in Fig. 2 is the manner in which the fabric strip **20** is secured to the central portion **14** of each of the units **12**. In addition to the stitching **26**, which forms the original set of units illustrated in Fig. 6,

the units may be secured by stitching **32** to insure the side by side relationship of the fingers **22** and **24**.

The construction of each individual unit is an important part of this invention. To provide the desired degree of flexibility and controlled metal cutting, the units are constructed as illustrated in Figs. 3, 4 and 5. As

terials may be employed in the described embodiment. "Sisal" in this application is used in its broad sense to include many types of sisal, hemp, burlap, and the like. The following table will indicate certain coarse fibers, all of which are well adapted to use in the above described invention:

Fiber	Trade Name of Cloth	Botanical Name	Origin of Fiber	Country Producing Cloth
1. Henequen	Sisal or Henequen	*Agave fourcroydes*	Mexico (and Cuba)	Mexico.
2. Sisal	Sisal	*Agave sisalana*	Dominican Republic, Haiti, Kenya, Tanganyika, Uganda, So. American Countries.	Dominican Republic, Haiti, England, S. Africa, Venezuela.
3. Hemp	Hemp	*Cannabis sativa*	Italy (and Yugoslavia and Chile).	Italy.
4. Caroa	Caroa	*Neoglazovia variegata*	Brazil	Brazil.
5. Istle (or Ixtle, Palma, Pita, Tula, Jaumave).	Istle	*Yucca carenosana, Agave lophantha* var. *Poselgaeri.*	Mexico	Mexico.
6. Manila Hemp or Abaca	Manila Hemp or Abaca.	*Musa textilis*	Philippine Islands, Sumatra, Borneo, Central America.	Philippine Islands, Japan, et al.
7. Flax	Linen	*Linum usitatissimum*	Holland, Belgium, Peru, Ireland, et al.	Various.
8. Jute	Burlap (Hessian)	*Corchorus capsularia* and *corchorus olitoria.*	India, Pakistan	India, Pakistan, U. K., U. S. A., Various European Countries.

illustrated in Fig. 4, an elongate strip **36** of sisal is cut on the bias and folded to form a core for a unit having four overlying laminations **37**, **38**, **39** and **40**. A fabric cover **34** completely surrounds the sisal core **36** and no free ends of either the fabric or sisal portions are externally exposed as shown in Fig. 5. A single soft fabric sheet surrounds the sisal core **36** and extends into the central portion thereof between the sisal laminations **37** and **39** to insure complete enclosure of the sisal core and also the internal disposition of the soft fabric edges.

The sequence of steps by which the unit is constructed is apparent from the cross-sectional configuration of the unit **12**, as illustrated in Fig. 5. The sisal core is first folded along the bight portion **42** and then completely surrounded by the soft fabric cover **34**. The assembly of sisal and fabric is subsequently folded along the bight portion **44** to form the finished unit of the desired width and thickness with the sisal laminations **37**, **38**, **39** and **40** and free edges of the soft fabric cover **34** completely enclosed by the soft fabric. Stitching **46** is longitudinally applied to the units to maintain the laminar construction and to insure a tightly formed assembly having the desired characteristics of flexibility, softness and cutting ability.

It is important in this invention that the laminations of each unit be so disposed that the work engaging edges thereof are bias edges of the sisal and soft fabrics. A typical sisal fabric is illustrated in Fig. 7. Therein it can be seen that both the woof fibers **48** and warp fibers **50** are disposed at a substantial angle to the work engaging surface **52**. This produces several important advantages. The ability of the sisal fabric to hold together in use is accordingly increased and the detrimental effects of centrifugal force minimized. Furthermore the ends of the warp and woof fibers have excellent cutting characteristics and an ability to absorb large amounts of buffing compound. Therefore the efficiency and life of the buff is increased by the use of a biased construction.

The utilization of a unit construction provides excellent flexibility as each individual finger is free to shift in accordance with the forces acting thereon and to conform to any unusual shape or contour. Also, as already indicated, the bias sisal portion of the buff described has excellent cutting characteristics and in many instances the use of this compound buff will eliminate the customary initial polishing operation. The outer cotton cover on each unit provides a soft work engaging surface which will impart the desired color and luster to the finished product.

While the terms "sisal" and "cotton" have been used herein to indicate the distinction between the coarse internal fabric and the soft cover laminations, it is believed clear from this description that various substitute ma-

Without further elaboration, the foregoing will so fully explain the character of my invention that others may, by applying current knowledge, readily adapt the same for use under varying conditions of service, while retaining certain features which may properly be said to constitute the essential items of novelty involved, which items are intended to be defined and secured to me by the following claims.

I claim:

1. In a buffing wheel having a plurality of radially extending buffing fingers, the improvement which comprises constructing each finger of an elongate strip of coarsely woven sisal fabric, said strip being cut on the bias and longitudinally folded to form a core, a tightly woven soft fabric cover, said cover being cut on the bias and transversely enfolded around the sisal core, said enfolded core and cover being longitudinally folded along a central bight portion in such a manner that all longitudinal edges of both the soft fabric and sisal fabric are internally disposed, said finger being longitudinally stitched to maintain said sisal core and said soft cover in juxtaposed integral relationship.

2. In a buffing wheel having a plurality of radially extending fabric buffing fingers, the improved process for making one of said buffing fingers which comprises cutting an elongate strip of sisal on the bias, longitudinally folding said strip along a central bight portion to form a core, completely surrounding the folded core by a soft fabric cover, longitudinally folding the assembly of sisal and soft fabric along a central bight portion, and longitudinally stitching the folded assembly to maintain said sisal and soft fabric in a tight laminar construction.

3. In a buffing wheel, the improvement which comprises a plurality of radially extending buffing fingers, each finger constructed of an elongated strip of coarsely woven sisal fabric, said strip being cut on the bias and longitudinally folded to form a core, a tightly woven soft fabric, cover, said cover being cut on the bias and transversely enfolded to enclose the sisal core, said enfolded core and cover being longitudinally folded along a central bight portion in such a manner that all longitudinal edges of both the soft fabric and sisal fabric are internally disposed, said finger being longitudinally stitched to maintain said sisal core and said soft cover in juxtaposed integral relationship.

4. In a buffing wheel, a central circular rigid supporting ring, and a plurality of radially extending buffing fingers, each finger constructed of an elongate strip of coarsely woven sisal fabric, said strip being cut on the bias and longitudinally folded to form a core, a tightly woven soft fabric cover, said cover being cut on the bias and transversely enfolded to enclose the sisal core,

said enfolded core and cover being longitudinally folded along a central bight portion in such a manner that all longitudinal edges of both the soft fabric and sisal fabric are internally disposed, said finger being longitudinally stitched to maintain said sisal core and said soft cover in juxtaposed integral relationship.

5. In a buffing wheel, a central circular rigid supporting ring, and a plurality of fabric buffing fingers extending from said ring, each of said fingers comprising a web of coarsely woven sisal and a tightly woven soft fabric coextensive with and enclosing said sisal web to form a unit, said unit being folded along a central longitudinal axis whereby all longitudinal edges of both said sisal web and said soft fabric are internally disposed, said folded fingers being stitched longitudinally to maintain said web and said fabric in juxtaposed integral relationship.

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