Nov. 30, 1937. S. W. LIPPITT 2,100,340

BUFFING WHEEL

Filed Feb. 3, 1937

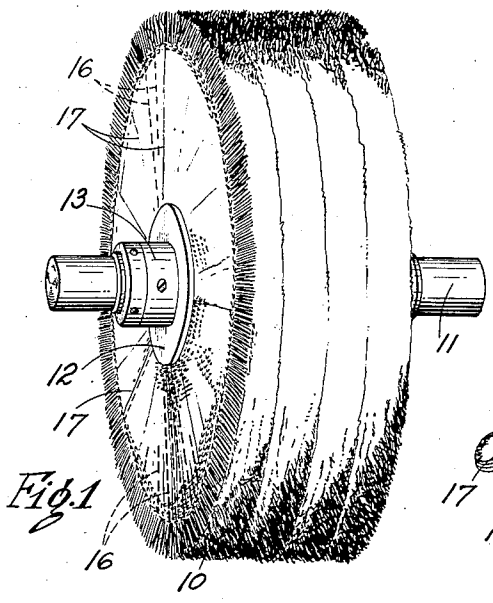


Fig. 1

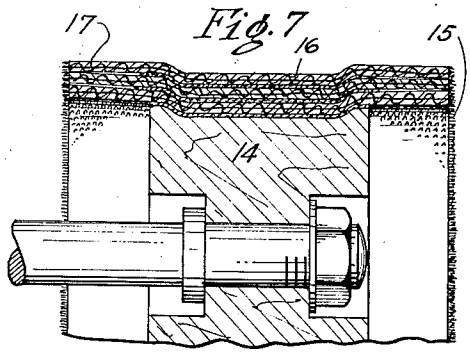


Fig. 7

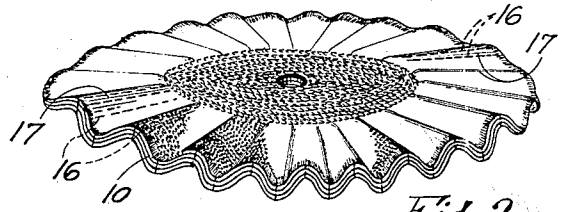


Fig. 2

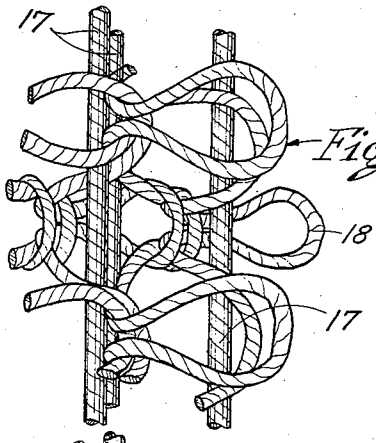


Fig. 4

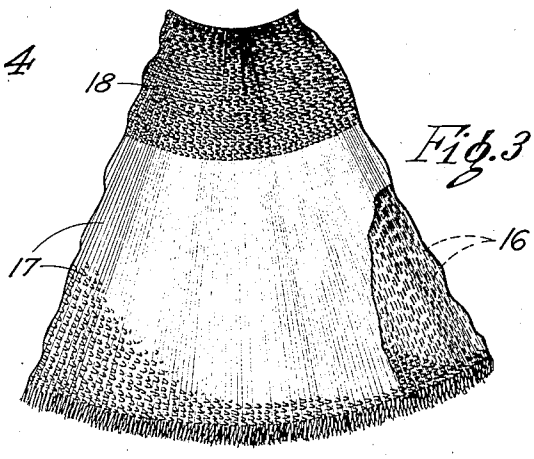


Fig. 3

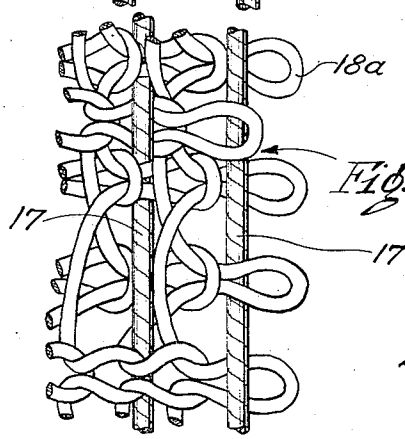
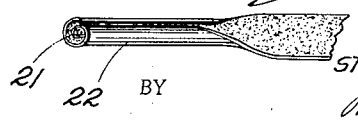


Fig. 5



Fig. 6

Fig. 8



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Patented Nov. 30, 1937 2,100,340

UNITED STATES PATENT OFFICE

2,100,340

BUFFING WHEEL

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Application February 3, 1937, Serial No. 123,897

14 Claims. (Cl. 51—193)

This invention relates broadly to buffing wheels and pertains more specifically to the materials employed in the construction thereof and to the structural organization of such materials in the buffing wheel.

In my co-pending applications, Serial No. 62,142, filed February 3, 1936, Serial No. 117,569, filed December 24, 1936 and Serial No. 117,570, filed December 24, 1936, I have disclosed types of buffing wheels in which one or more textiles were knitted to form a circular disc wherein the textiles were arranged to prevent raveling thereof about the peripheral edge of the disc and also arranged to resist the deleterious effects of the centrifugal force imposed upon the fabric during the operation of the buffing wheel.

My present invention comprehends the use of an improved form and type of material for use in such buffing wheels and a new combination of the improved material embodied herein with the textiles and knitted fabric disclosed in the co-pending applications aforesaid.

One of the objects of the invention is the provision of a material which will absorb an abrasive compound and structure which will retain such abrasive in a more effectuous manner than has been possible in buffing wheels heretofore constructed and now in common use.

Another object of the invention is to provide a structure which will eliminate the rapid disintegration of the buffing wheels constructed from an unfabricated stock of the type employed herein.

Another object of the invention is to construct a buffing wheel which is pliable, radially contractile and extensible though fabricated from a material of antithetic characteristics.

Further objects of the invention embrace a construction which is economic of manufacture, with respect to fabrication and the cost of the stock employed therein and a buffing wheel which is efficient of operation, adaptable for diversified application and durable.

Other objects more or less ancillary of the foregoing and the manner in which all the various objects are realized will appear in the following description which, considered in connection with the accompanying drawing, sets forth the preferred embodiment of the invention.

As illustrated in the accompanying drawing, Fig. 1 is a perspective view of a buffing wheel of the sectional disc type embodying the present invention;

Fig. 2 is a view in perspective illustrating an alternate form of construction for a buffing wheel embodying the present invention;

Fig. 3 is an elevational view of a fragmentary portion of a buffing wheel disc section illustrating the application of a composite form of fabric.

Fig. 4 is an elevational view of a fragmentary portion of the knitted fabric shown upon a greatly enlarged scale;

Fig. 5 is a similar view to that illustrated in Fig. 4 but showing in detail the composite form of fabric;

Fig. 6 is a view in perspective of a fragmentary portion of the twisted paper cord embodied in the present invention;

Fig. 7 is a sectional view shown somewhat diagrammatically of a knitted fabric of the type embodying the present invention as adapted for use upon a stub arbor where an overhanging edge of the material constitutes the buffing surface of the polishing device;

Fig. 8 is a view in perspective of a paper cord of tubular form having an abrasive core therein.

Buffing wheels now in commercial use may be divided roughly into two classes, first, the cloth or fabric wheels which include a woven or knitted material formed from textiles such as cotton and various other fibers of the type generally employed in the manufacture of clothing and similar goods.

The second class is the paper buffing wheels which comprise a plurality of superposed layers of paper, cardboard or similar sheet stock blanked in configuration of an annulus to form a disc or cylindrical polishing wheel.

In the first group, that is the cloth or woven type of fabric as distinguished from knitted textiles, the fabric is unsatisfactory because the strands of the material are too closely woven to permit the entry and retention of the abrasive material applied to the buffing wheel during the operation thereof. Such buffing wheels are further objectionable due to the inherent repellent characteristics of the fibers to absorption of the grease or similar materials employed to support the abrasive. The latter characteristic is also present in the knitted textile buffing wheels, though as will be readily recognized such a fabric may be loosely knitted to provide voids or interstices which receive and retain the abrasive laden grease or polishing material applied to the cutting face or perimeter of the buffing wheel. Both of the above types of buffing wheels are further objectionable for certain types of stock due to the soft texture of the cotton commonly employed in the construction of the fabric.

The second type of polishing wheels, that is buffing wheels of the paper disc form, are objectionable because of the rapid disintegration of the paper during use. Such wheels though efficient in operation with respect to their cutting characteristics break down, shred and fly to pieces so fast that little if any economy can be attributed to their use. Moreover, such wheels when revolved at the high rate of speed normally applied to polishing or buffing wheels of this character are too rigid radially to accomplish in a satisfactory manner the various operations demanded of a buffing wheel in normal operation and upon diversified work. The present invention contemplates a buffing wheel made of a paper tape or strand which may be twisted or otherwise formed into a cord, then knitted so as to define voids or openings for the reception of the abrasive material.

The invention further contemplates a buffing wheel made from paper cords sized with glue or similar adhesives, which produce a hard and rigid fabric yet a fabric which is pliable due to the knitted structure thereof.

As disclosed in my co-pending applications the fabric is knitted in the form of a helical band which is cut and sewed to form the buffing wheel sections 10 as illustrated herein in Figs. 1 and 2. These sections or discs are adapted to be mounted upon the arbor 11 of a buffing machine and may be retained thereon in any conventional manner as by flanges 12 and lock nuts 13, which are threaded upon the shouldered portion of the arbor 11. The fabric embodied in the present invention may also be formed in bands 14 adapted to be wound upon a cylinder or stub arbor with the marginal edges overhanging the ends thereof to form a polishing wheel of the end cutting type.

The fabric for either the disc or cylindrical form of buffing wheels is knitted in courses which are arranged for engagement with the work at substantially right angles thereto, thus in the buffing wheel shown in Figs. 1 and 2 radial courses 16 are substantially normal to the work applied against the periphery of the wheel, while as shown in Fig. 7 the courses 16 are disposed for engagement with the work at right angles thereto. The advantage of such construction resides in an arrangement of loops in which the cords are restrained from raveling when the peripheral edge of the buffing wheel is in contact with the work.

The construction of the fabric in the present invention, comprehends the use of a twisted paper cord of a diameter which may be suitably handled in a knitting machine, and also secondary cords of a greater diameter which may be employed as a reinforcement for the fabric and as a supplementary polishing medium. As illustrated in the enlarged fragmentary views of the fabric shown in Figs. 4 and 5 and also in the portion of the disc wheel shown in Fig. 3, the paper reinforcing cords 17 are arranged in contiguous relation, being entwined with and surrounded by the paper cords 18, which form the body of the fabric. In the knitting operation the cords 17 are fed through the knitting mechanisms of the machine so that the loops of the cords 18 will fall thereover and also form the ribs or courses 16 of the knitted fabric.

In the embodiment illustrated in Fig. 4 both the cords 17 and 18 are formed of twisted strands of paper, of a tough, fibrous character, which are sized and twisted to form a hard, strong cord. In forming such cords a sizing material having abrasive characteristics is preferably employed, though obviously the abrasive attributes of the sizing material may be varied to suit the type and character of the work for which the buffing wheel is intended to be used. The paper or similar fibrous material contemplated herein is preferably of an absorbent nature, particularly with respect to the grease or other agent which forms the vehicle for the supports of the abrasive.

Although specific reference is made herein to the twisted paper cords 17 and 18, it is to be understood that flat strips of paper or an untwisted tape of fibrous material such as designated by the reference character 19 in Fig. 6 is contemplated as falling within the scope and spirit of the present invention. It will be further understood that the use of such material anticipates requisite modification of the knitting machine and knitting needles therein.

In Fig. 5 the fabric is of a composite type of construction. Here the reinforcing cords 17 are formed of twisted paper of the character described above while the cords 18*a* surrounding the paper strands and forming the body of the fabric are made from a soft cotton textile or a similar material. As in the structure of Fig. 4 the cords 18*a* are adapted to retain the position of the paper strands 17 which are arranged within the buffing wheel for engagement with the work in a plane at right angles thereto.

The cord illustrated in Fig. 6 is constructed from a flat strip of paper 19 twisted upon itself to form the cord 17 of circular transverse section, such a structure is desirable as it is readily adaptable for use in a knitting machine without modification thereof. However, as heretofore described the transverse sectional form of the tape is not essential to the successful operation of the buffing wheel as a cord of any cross sectional configuration may obviously be employed without impairing the function thereof within the buffing wheel. In the manufacture of a paper cord of cylindrical form, such as the tube shown in Fig. 8 the cementitious material applied to the skelp during the forming operation may be laden with an abrasive, which if desired, may be applied in such generous quantities as to provide a core 21 of abrasive material within the tube 22. In such construction the grade or quality of the abrasive may be varied concomitant with the nature of the work or the demands anticipated for the buffing wheel.

The buffing wheel illustrated in Fig. 2 comprises a corrugated side wall disc formed of a fabric of the type heretofore described. The fabric may embody the construction of Fig. 4 or the composite fabric of Fig. 5. In Fig. 7 the fabric may be made entirely of paper cords or paper and textiles, the essential feature of this embodiment is that either of the fabrics is arranged on the polishing wheel with their binding courses 16 and the reinforcing cords 17 disposed for engagement with the work in a plane normal the surface thereof.

Although the foregoing description is necessarily of a detailed character, in order that the invention may be completely set forth, it is to be understood that the specific terminology is not intended to be restrictive or confining, and that various rearrangements of parts and modifications of detail may be resorted to without departing from the scope or spirit of the invention as herein claimed.

I claim:

1. A buffing wheel comprising a fabric formed from cords of twisted strands of paper.

2. A buffing wheel comprising a plurality of superposed layers of paper fabric, said fabric being formed of strands of paper knitted in parallel courses, said courses being disposed in the buffing wheel for engagement with the work at right angles thereto.

3. A paper buffing wheel comprising a fabric of knitted twisted paper cords, certain of said cords being disposed radially in said buffing wheel.

4. A buffing wheel comprising a fabric formed of knitted paper cords.

5. A buffing wheel comprising a fabric made of twisted paper cords, the fabric comprising a knitted structure having the interlooped cords therein disposed in spaced relation which define voids for the reception of the abrasives used in polishing operations.

6. A paper buffing wheel comprising a pliable fabric knitted from twisted strands of paper impregnated with a sizing material having an abrasive characteristic.

7. A disc buffing wheel comprising a knitted fabric formed of paper cords and textile cords, said paper cords being radially disposed in said buffing wheel and retained by said textile cords.

8. A buffing wheel comprising a knitted fabric formed of textile cords and twisted paper cords, said textile cords being knitted in parallel courses certain of which are entwined about and contain said paper cords.

9. A buffing wheel comprising a knitted fabric formed of textile cords knitted in courses arranged for engagement with the work at right angles thereto, said textiles being looped about and retaining strands of paper.

10. A buffing wheel comprising a knitted fabric formed of textile cords knitted in courses arranged for engagement with the work at right angles thereto, said textiles being looped about and retaining strands of paper of a character which will absorb and retain an abrasive.

11. A buffing wheel comprising a knitted fabric formed of textile cords loosely knitted to define voids for the reception of abrasive material, and twisted paper cords surrounded by and knitted in said fabric and arranged for engagement with the work at right angles thereto.

12. A buffing wheel comprising a knitted fabric formed from a paper tube having a core of abrasive material therein.

13. A buffing wheel comprising a knitted fabric formed from a paper cord coated with an abrasive laden adhesive.

14. A buffing wheel comprising a knitted fabric formed from cords coated with an abrasive.

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