(No Model.)

H. CARMICHAEL.

BUFFING WHEEL.

No. 550,942. Patented Dec. 10, 1895.

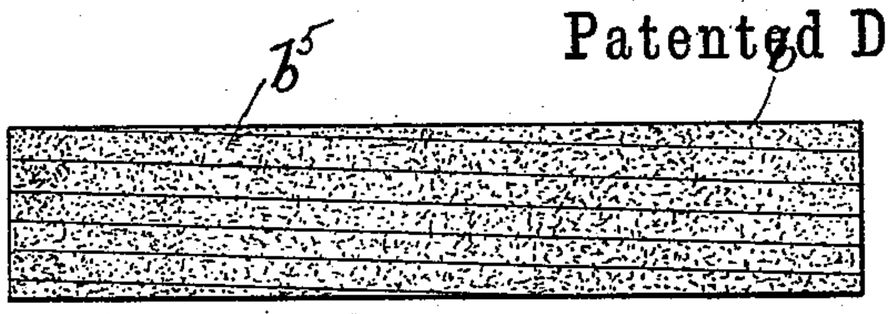

Fig. 1.

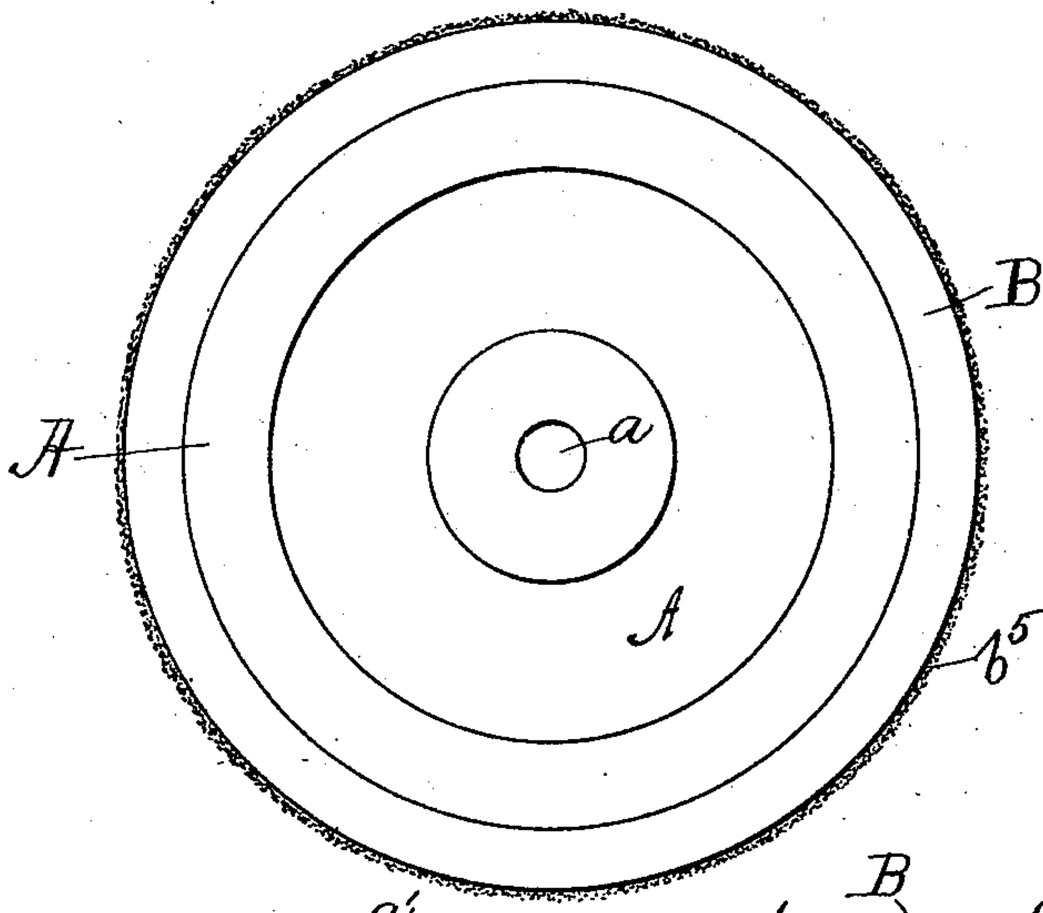

Fig. 2.

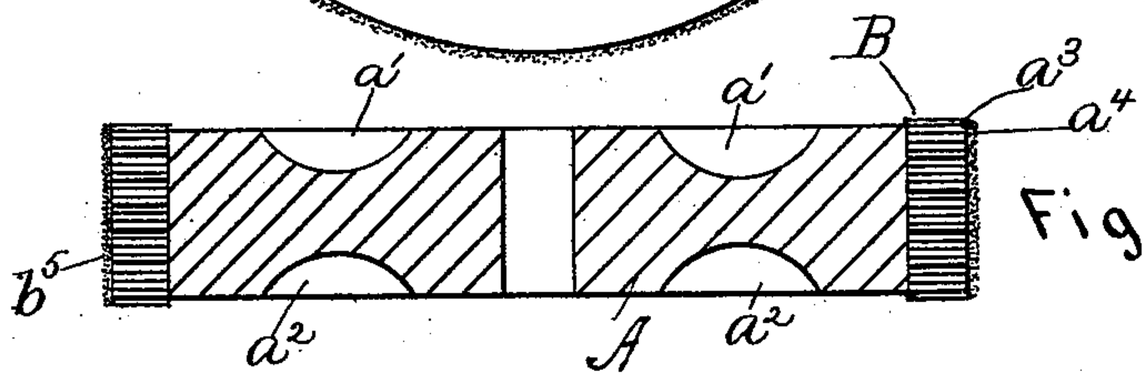

Fig. 3.

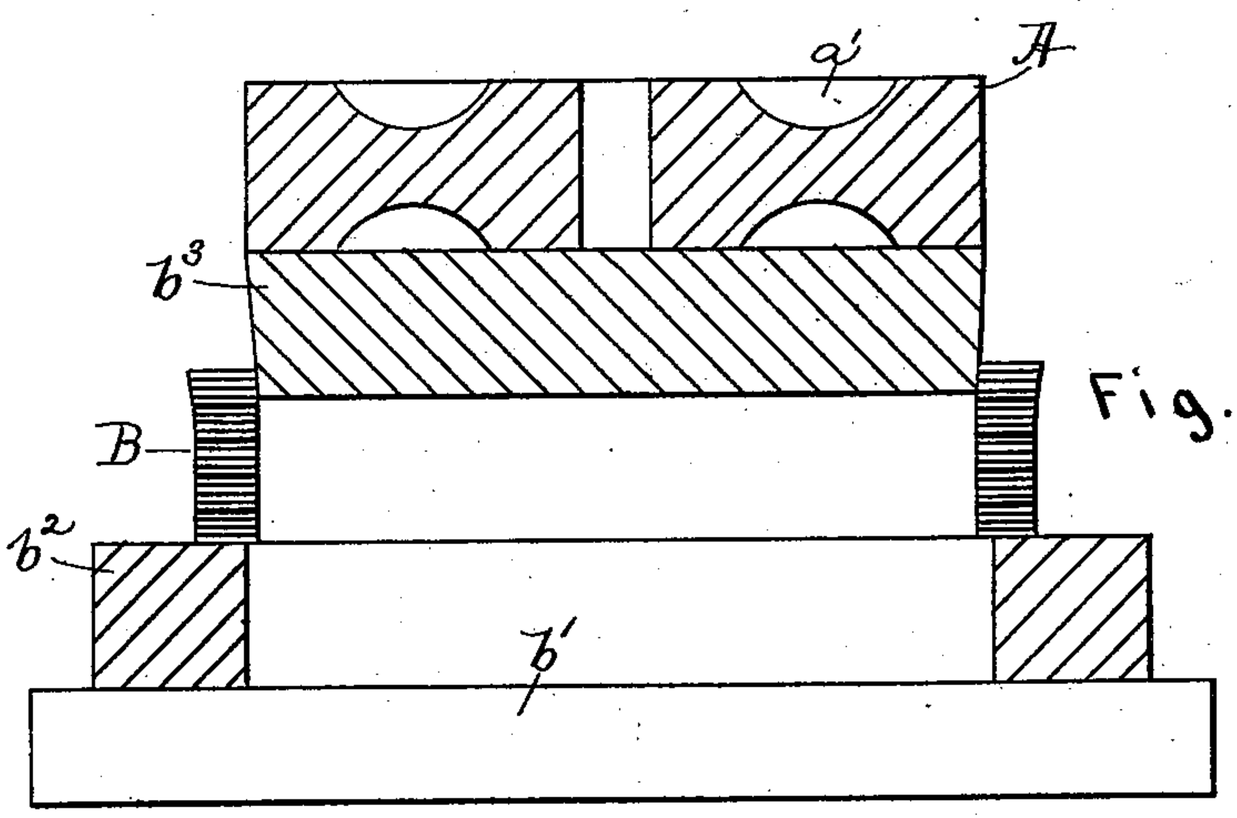

Fig. 4.

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HENRY CARMICHAEL, OF MALDEN, MASSACHUSETTS.

BUFFING-WHEEL.

SPECIFICATION forming part of Letters Patent No. 550,942, dated December 10, 1895.

Application filed July 13, 1892. Renewed April 15, 1895. Serial No. 545,821. (No model.)

To all whom it may concern:

Be it known that I, HENRY CARMICHAEL, of Malden, county of Middlesex, and State of Massachusetts, have invented an Improvement in Buffing-Wheels, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to polishing and buffing wheels, and has for its object to improve and simplify the construction of the same.

Prior to my present invention I am aware that buffing and polishing wheels have been made of a wooden center and a periphery or band of leather, which is usually secured to the wooden center by pegs.

Buffing and polishing wheels constructed as described are defective in that the wooden center or core is affected by moisture and heat and is liable to become warped and get out of true, and the leather band is also liable to become detached from the wooden center, oftentimes resulting in serious injuries to the workman using the wheel.

My present invention has for its object to provide a buffing and polishing wheel in which the defects and objectionable features of the old form of wheels are avoided.

In accordance with my invention the center or core of the wheel is made in one piece from an indurated molded mass of pulp fiber interlocked in all directions and which is unaffected by heat or moisture and is light, strong, homogeneous, and permanently retains its correct form and balance. The core or center of indurated fiber has applied to it a circular band or covering composed of cloth or like textile material and elastic material, preferably rubber, interlaminated, the laminations being applied to the periphery of the core substantially at right angles to the axis of rotation—that is, parallel to the plane of rotation. The band is secured to the periphery of the core or center by distending the said band and forcing the center or core into it, as will be described. The layers of cloth and rubber comprising the band are wound spirally to break joints and thereby avoid furrowing or grooving the work. The combination of the cloth with the elastic cementing material or rubber produces an endless band of sufficient strength to resist the disruptive force of rotation and possessing the elasticity requisite for a good buffing material. The layers of cloth being exposed at their edges afford a good holding-surface for the glue commonly used to affix the corundum or like abrasive material commonly used on wheels of this class.

The particular features in which my invention consists will be pointed out in the claims at the end of this specification.

Figure 1 is a top or plan view of a buffing or polishing wheel embodying my invention; Fig. 2, a side or front elevation of the wheel shown in Fig. 1; Fig. 3, a diametrical section of the wheel shown in Fig. 2, and Fig. 4 a section of the wheel and the apparatus by which the core or center is forced within its band.

A represents the core or center of a buffing or polishing wheel, which in accordance with my invention is composed of an indurated mass of pulp fiber interlocked in all directions, it being made in one piece and provided with a center hole or opening *a*.

The core or center A is preferably provided on its opposite sides or faces with substantially wide annular grooves a' a^2 for a purpose as will be described.

The core or center A has applied to it, as will be described, a band B, preferably consisting of layers a^3, of cloth or like textile material, and layers a^4, of rubber or like elastic material, interlaminated with the layers a^3 and penetrating the textile material, thereby forming a solid and more perfect union which is promoted by heat. The layers a^3 a^4 are assembled together to form a continuous strip, which is wound spirally, as represented in Fig. 1, so as to break joints and thereby avoid furrowing or grooving of the work treated. The band B may and preferably will be made substantially as follows, viz: A number of sheets of cloth and rubber are laid one upon the other and cemented together by heat, and the sheets are then cut up into strips, each composed of layers of textile material and rubber, and each strip is then wound spirally upon a mandrel, (not shown,) so that the layers of cloth and rubber are at an angle to the periphery of the mandrel rather than parallel thereto, and when so wound the coils of the spirally-wound strip are vulcanized or cemented together to form a cylindrical tube of less di-

ameter than the diameter of the wheel, which tube is then cut up into sections or bands of substantially the width of the core or center of the wheel to which the band is to be applied. The endless band B thus formed and composed of a single strip spirally wound is then applied to the core or center A, which may be accomplished with the apparatus shown in Fig. 4, in which b^2 represents an annular ring of greater diameter than the core or center A, the said ring resting upon a suitable base b'. The band B is placed upon the ring b^2, as represented in Fig. 4, and is distended or stretched by means of a suitable device, (herein represented as a conical-shaped block b^3,) upon which the core or center A rests. The conical block b^3 is forced into and through the band B and distends or stretches the same sufficiently to permit of the entrance of the core or center A, and when the said core or center has been forced into its proper place within the band B the distending block or device b^3 at such time will have been forced through and out of the said band, leaving the latter firmly applied to the said core or center.

The endless band B has applied to its outer surface the usual abrasive or polishing material, such as corundum, which is represented by b^5 in Fig. 3, and which is fixed on the band by glue or like adhesive material.

The buffing or polishing wheel, as above described, possesses many advantageous features over those now commonly made. The core or center A being made of an indurated mass of fiber interlocked in all directions is unaffected by moisture and heat and can be turned mechanically true, and permanently retains its correct form and balance. It is also light, strong, homogeneous, and comparatively inexpensive. It is sufficiently strong to dispense with the metal sleeve or bushing usually inserted into the central hole or opening *a* of wooden wheels. Its surface or side can be grooved or otherwise channeled, thereby permitting the wheel to be used on machines having parts which would otherwise strike the sides of the wheel and prevent the polishing-surface of the same to be brought into angles on the work being treated. The band or covering B, being made of texile material and elastic material, permits the same to yield somewhat, and thereby prevents portions of the band from skipping upon the work being treated. Furthermore, the band or covering may be made of any desired thickness—that is, it may be made substantially thin—to take the place of the ordinary thin leather band when firmness is required, or it may be made of considerable thickness to take the place of the expensive leather band made from walrus-hide when great elasticity and softness are required.

I prefer to construct the buffing and polishing wheel as herein described; but I do not desire to limit my invention in this respect, as the indurated-fiber core or center may be used to advantage with other forms of bands or coverings, and so, also, the band herein described may be used to advantage with a core or center other than indurated fiber.

The interior surface of the band B is preferably covered with glue or like adhesive material as an additional safeguard for retaining the band on its core or center.

I claim—

1. In a buffing and polishing wheel, a core or center, and a band or covering composed of a continuous strip spirally wound into a plurality of coils, the said strip being composed of layers of textile material and elastic material lying in planes at an angle to the periphery of the core, substantially as described.

2. In a buffing and polishing wheel, a core or center composed of an indurated molded mass of pulp fiber capable of being bored or turned as described, and a band or covering encircling said core and consisting of a continuous strip composed of layers of textile material and rubber vulcanized together and spirally wound into a plurality of coils with the layers of textile material and rubber at an angle to the periphery of the core or center, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY CARMICHAEL.

Witnesses:

JAS. H. CHURCHILL,

ANNIE L. ELDRIDGE.