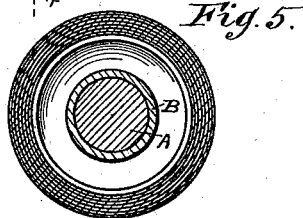
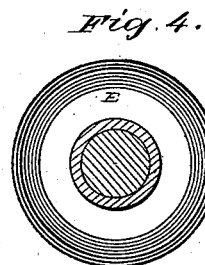
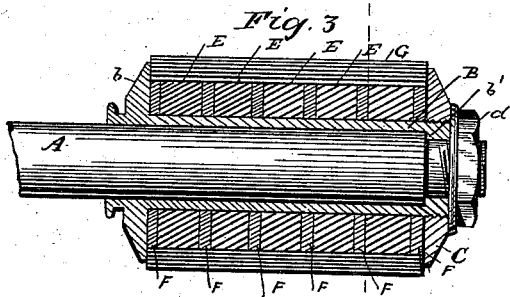
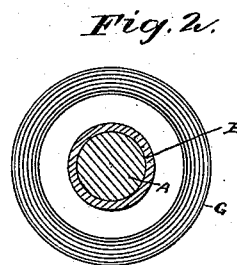
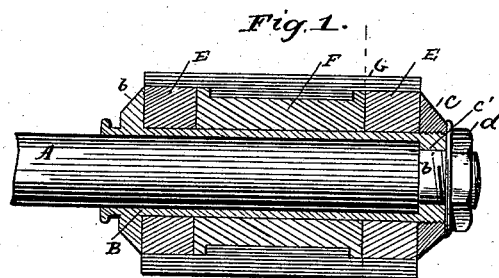


(No Model.)

T. E. KEAVY.
BUFFING ROLL.

No. 417,730.

Patented Dec. 24, 1889.



Witnesses
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UNITED STATES PATENT OFFICE.

THOMAS E. KEAVY, OF CLEVELAND, OHIO, ASSIGNOR OF ONE-HALF TO A. A. TILLOTSON, OF SAME PLACE.

BUFFING-ROLL.

SPECIFICATION forming part of Letters Patent No. 417,730, dated December 24, 1889.

Application filed January 23, 1888. Serial No. 261,628. (No model.)

To all whom it may concern:

Be it known that I, THOMAS E. KEAVY, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Buffing-Rolls; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in buffing-rolls; and the object of the invention is to provide a roll that is automatically expandible when revolved, all as hereinafter described, and more particularly pointed out in the claim.

In the accompanying drawings, Figures 1 and 2 represent a roll having rubber rings or disks at its ends and an intermediate spool of wood. Figs. 3 and 4 illustrate a form of roll having alternate rings of rubber and wood, respectively. Fig. 5 shows a form of roll in which sectional rubber rolls or rings are employed with flanged holders at the ends of the sections.

The distinguishing feature of this invention is automatic expansion of the rolls or wheels when the same are revolved. Hitherto, as far as I am aware, all rolls and wheels employed in buffing boots and shoes were expanded by hand after the sand-paper cover had been placed thereon. When the ordinary elongated roll was used, a sand-paper tube or sleeve was slipped over the roll at its free end, after which the roll was forcibly distended by compression from its ends until the sand-paper tube or sleeve was stretched to fit tightly upon the roll. This being done, the roll was considered ready for work; but it will be observed that both time and labor were required to fasten the paper sleeve on the roll, as well as to remove it therefrom when worn out—a result which occurred many times a day with the old machines, and necessarily consuming in the aggregate much valuable time. By my construction the rolls, when once set up, can work on for an indefinite time without any hand adjustment or change whatever in the mechanism, and when a paper sleeve is found no longer serviceable it can be removed and

replaced by another in a moment and by the most unskilled workman.

The spirit of the invention resides in this fact: The roll being so constructed that normally it has less diameter than the sleeve, so that when it is at rest it is smaller in cross-section than the hollow of the sleeve, and when at work swells out and expands so as to fill the sleeve to its capacity, and thereby fastens it as tightly as the work requires, it follows, therefore, that when the roll is at rest the paper sleeve is loose upon it and gradually tightens thereon as the speed of the roll runs up to working velocity. The invention therefore will be seen to comprise a roll adapted to operate as here indicated, and capable of automatic expansion by the force of its velocity or the centrifugal force exerted when the roll is under motion. It will be understood that these rolls are frequently run at a rate of speed amounting to three thousand revolutions or over per minute, in which case the centrifugal tendency is very great and the roll must be firmly constructed not to fly from its holdings.

I have shown in the drawings several forms of roller and wheel in which the principle of my invention is illustrated. From the scope of these it will be obvious that many other analogous forms might be suggested to perform the same function; but it is thought that these will suffice to guide those skilled in the art in the construction of a roll or wheel of the character embraced in the invention.

Referring first to the form of roll shown in Figs. 1 and 2, A represents the arbor, and B a sleeve flanged at *b* to form a backing, against which the roll is more or less tightly clamped by a flanged nut C and nut *d* at the opposite extremity of the roll and at the free end of the arbor. The sleeve has a shoulder *c'* at its outer extremity, which bears against a shoulder *b'* on the arbor, formed by reducing its end, which is screw-threaded for the tightening of nut *d*. This construction serves to fix the sleeve and roll firmly on the arbor, and enables me to clamp the parts together as firmly as may be needed. Of course the means of clamping may be widely varied and

serve my purpose; but the method here shown serves my purpose and answers to illustrate this part of my construction. The same means are common to the forms of roll shown

5 in Fig. 3 and with slight modification in Fig. 5.

Referring again to Fig. 1, E represents two rubber disks or rings fitting upon the sleeve B and separated by a wooden spool F. It will be observed that the spool F is reduced 10 in cross-section, so as to sink below the periphery of the rubber more or less, except at its ends, which extend out flush with the rubber, or nearly so. Then around the whole rubber and spool I place a covering of felt or 15 other soft fabric—such as woolen stockings—cut to a suitable length and narrow enough to fit somewhat closely on the roll. Several layers of covering may be used, so as to cushion the roll materially and give it such yielding surface as is best adapted to give the 20 work the desired action and finish. The construction of this roll, Fig. 1, is, however, peculiar in this, that it is capable of action or work having, say, two qualities—that is to 25 say, the action of the roll immediately over the rubber is different from that over the body of the spool where the solid surface of the spool lies underneath and the padding or cushioning is deeper. This gives softness to 30 the touch and produces a handsome velvety finish, while the action of the roll over the rubber is more harsh and severe. The first part of the work on a heel may, therefore, be done over the rubber and the finishing over 35 the spool toward or about its center.

It may be further stated that in carrying out my invention I employ a quality of rubber of such softness and elasticity that it will swell out and expand around its entire periphery as the roll attains its working velocity in such manner as to tighten the sand-paper tube or sleeve G thereon. The fact that 40 the rubber is fitted closely on the sleeve surrounding the arbor holds it in its place alike at all points upon the arbor, and enables it to swell or expand evenly around its periphery. If it were not so held or were removed from the arbor with mere side supports, and if it were elastic enough to expand, the high velocity of

the roll would cast it off at a tangent. I overcome this effect by supporting the rubber upon 50 the arbor, as shown, and then by clamping laterally and with moderate elasticity get the desired expansion, but no more. Then when the machine is at rest the rubber contracts to 55 its normal size, and the sleeve or sand-paper cover, which was tight when at work, becomes loose and can be easily slipped off, if desired. The flexible cushioning upon the cover partakes of the expansion of the rubber under 60 high velocity, thus at all times giving the needed resistance to the pressure brought upon it in the process of buffing—a resistance that at no time need be great, but always necessarily even and yielding. 65

In Fig. 3 is shown a form of roll in which are employed a series of rubber rings E, alternated by a series of wooden rings or disks F, and in Fig. 5 I employ two rubbers, supported 70 in the center by a T-shaped ring H, the flanges h of which engage the ends of the rubber sections. Short flanges are also employed at the extremities for a like purpose, thus preventing expansion of the rubber sections at the ends as well as their displacement, and throw- 75 ing the swell toward the center.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In a buffing-machine, a roll on a shaft having a cylindrical bearing fitting closely upon 80 the shaft, angular flanges at the end of the sleeve serving as end supports for the roll, elastic expansible material closely surrounding the sleeve within the flanges, a cushion of 85 flexible material built upon the elastic expansible material, and a sleeve covered with an abrading material and of greater diameter than the cushion, whereby when the roll is at rest the sleeve will be loose on the roll, and 90 when the roll is at work it will be tightened by the expansion of the elastic and flexible material, substantially as set forth.

THOMAS E. KEAVY.

Witnesses:

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