(No Model.)

H. A. WEBSTER.

BUFFING ROLL.

No. 493,001. Patented Mar. 7, 1893.

FIG. 1.

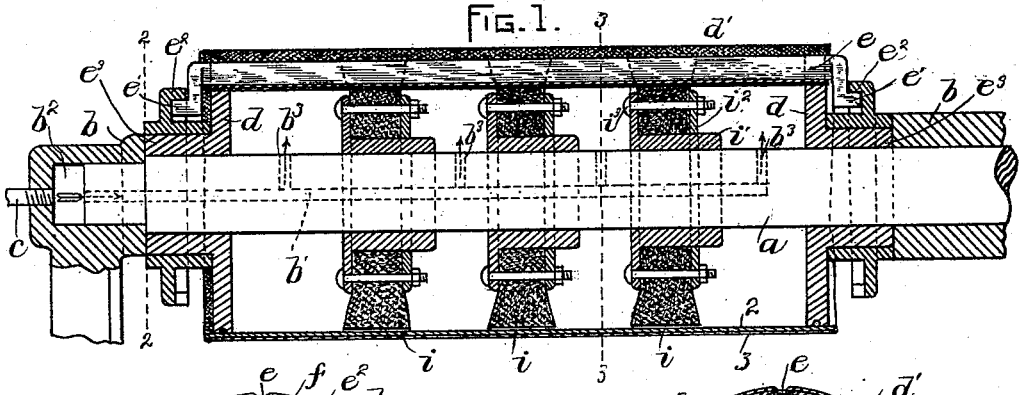


FIG. 2.

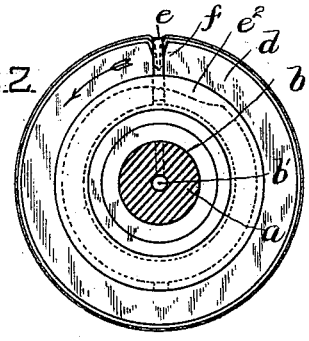


FIG. 3.

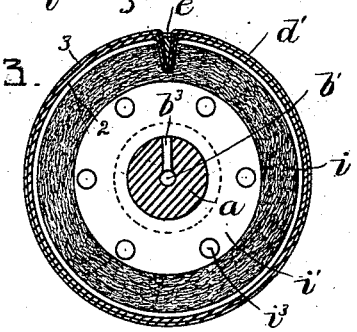
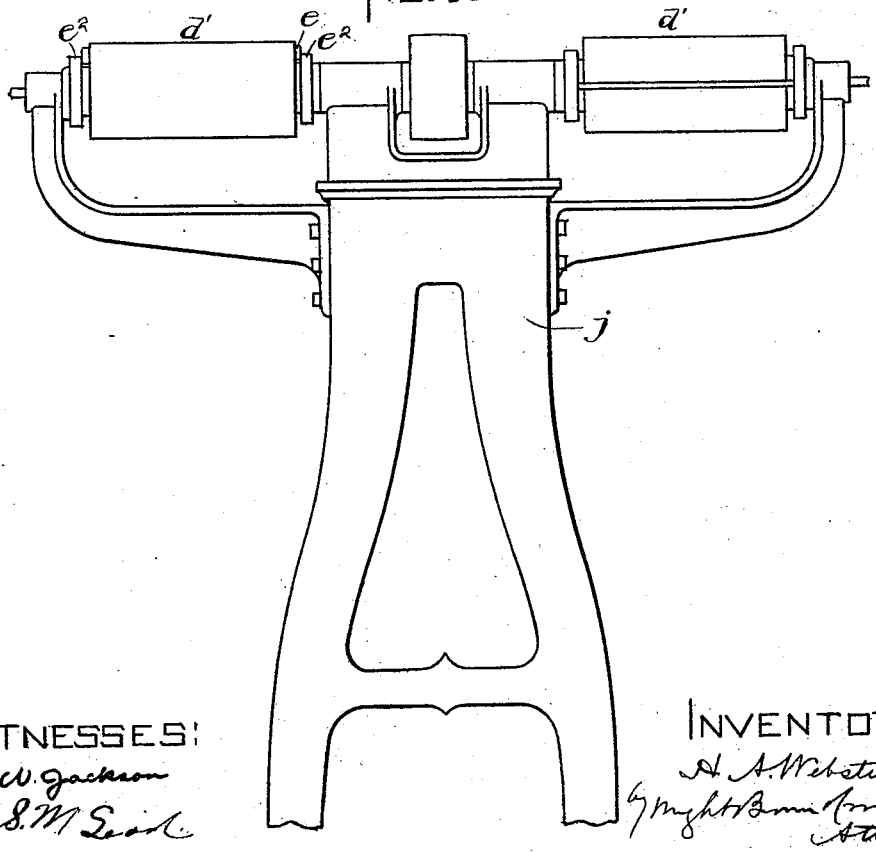


FIG. 4.



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UNITED STATES PATENT OFFICE.

HAROLD A. WEBSTER, OF HAVERHILL, ASSIGNOR TO GEORGE H. P. FLAGG, OF BOSTON, MASSACHUSETTS.

BUFFING-ROLL.

SPECIFICATION forming part of Letters Patent No. 493,001, dated March 7, 1893.

Application filed October 18, 1892. Serial No. 449,217. (No model.)

To all whom it may concern:

Be it known that I, HAROLD A. WEBSTER, of Haverhill, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Buffing Rolls or Cylinders, of which the following is a specification.

This invention has for its object to provide a buffing roll or cylinder having an abrasive periphery yieldingly supported by a constantly maintained air cushion; and it consists in a buffing roll or cylinder composed of a rotary shaft having an internal air passage and peripheral rings or collars, and a yielding covering supported by said collars, the said covering and the end collars constituting an air chamber, which receives compressed air from an air pump or forcing apparatus, and keeps the yielding covering suitably distended and yieldingly supported, the yielding covering having a facing or coating of a suitable abrasive material, such as sand-paper.

Of the accompanying drawings, forming part of this specification: Figure 1 represents a longitudinal section of a buffing roll embodying my invention, showing the bearings which support the shaft of the roll. Fig. 2 represents a section on line 2—2, Fig. 1, looking toward the right. Fig. 3 represents a section on line 3—3, Fig. 1. Fig. 4 represents a side elevation of an organized machine embodying my invention.

The same letters and numerals of reference indicate the same parts in all the figures.

In the drawings: *a* represents a rotary shaft, which is journaled in suitable bearings *b b*, and is provided with a longitudinal air channel *b'*, which may be connected in any suitable way with an air pump or forcing apparatus. I have here shown a pipe *c*, communicating with a chamber b^2 in one of the bearings *b*, said chamber communicating with the air passage *b'*. The pipe *c* extends from a suitable air pump, not shown. Said pump may be driven by the power that rotates the shaft *a*, so that, when the shaft and cylinder are in operation, there will be a constant supply of air to keep the buffing surface of the cylinder properly supported.

d d represent collars or heads, preferably of rigid material, affixed to the shaft, and *d'* represents a flexible covering, which is affixed to said heads and held by the latter in cylindrical form surrounding the shaft, the heads *d* and covering *d'* constituting an air chamber, which receives air from the passage *b'* through one or more outlets b^3. I prefer to make the flexible covering *d'* in two parts or thicknesses 2 3, the inner part being of canvas or other suitable textile or flexible material and permanently secured to the heads *d d*, while the outer thickness *d'* is of some suitable abrasive material, such as sand-paper. Means are provided for detachably securing the abrasive sheet or layer 3, said means, as here shown, being a wedge-shaped bar *e*, extending lengthwise of the cylinder and formed to fit in notches *f* formed in the heads *d*. The inner thickness 2 of the flexible covering is permanently pressed into the notches *f*, the portion thus displaced constituting a V-shaped trough, extending lengthwise of the roll. In securing the outer abrasive layer 3, the bar *e* is first removed and the sheet of abrasive material is wrapped around the permanent inner layer 2, and then tightened and secured by forcing the bar into the said trough, portions of the abrasive sheet being forced into the trough with the bar, as indicated in Figs. 1, 2 and 3. The ends of the bar are offset and provided with ears or lugs *e' e'*, which are engaged with cams e^2, which are adapted to rotate on collars e^3 formed on the heads *d*. By turning said cams in one direction, the bar *e* is drawn inwardly, while by turning said cams in the opposite direction the bar is released and its removal is permitted. It will be seen that, when air under pressure is forced into the air chamber thus formed, it presses outwardly on the flexible covering, and thus constitutes a yielding and constantly-maintained cushion supporting the abrasive material.

When the roll is of considerable length, so that the pressure of the article to be buffed or treated upon the yielding periphery of the roll would tend to unduly sink or displace said periphery, I provide one or more yielding supports for the said periphery, at points between the end collars or heads *d d*. Said yielding supports are preferably disks *i i*, of felt or other similar material, secured to the

shaft *a* by means of flanged collars *i' i'*, and clamping plates i^2 secured by bolts i^3. The yielding disks *i* are of such diameter that they do not extend out to the inner surface of the yielding covering when the latter is in its normal position, and particularly when it is distended by the internal air pressure, the object of said disks being to furnish a yielding support for the abrasive material in the event of extreme displacement of the latter by external pressure.

It will be seen that, by providing a buffing roll with an air cushion which is constantly maintained when the roll is in operation, I greatly simplify the construction of the roll and make it more durable and effective for buffing purposes than rolls made as heretofore in which the abrasive material is cushioned wholly by felt or other like material.

In Fig. 4, I show the improved buffing rolls mounted upon a central shaft, which is journaled in bearings in a supporting-frame *j*. The air pump which supplies the internal pressure in the buffing rolls may be affixed to said frame, if desired.

I do not limit myself to the described details of construction, and may vary the same without departing from the spirit of my invention.

I claim—

1. A buffing roll, comprising a rotary shaft having an air passage, heads or collars affixed to said shaft, and a yielding or flexible cylindrical covering affixed to said heads and provided with an abrasive coating, said heads and flexible covering inclosing an air space communicating with air passage in the shaft, combined with means whereby air under pressure may be admitted into said passage to press outwardly and yieldingly support the flexible covering, as set forth.

2. A buffing roll comprising a rotary shaft having an air passage, heads or collars affixed to said shaft, a yielding cylindrical covering affixed to said heads, said covering and heads constituting an air chamber communicating with the passage in the shaft, and one or more yielding supports affixed to the shaft within said chamber, as set forth.

3. A buffing roll comprising a rotary shaft having an air passage, heads or collars affixed to said shaft, an inner flexible covering permanently attached to said head, and means for detachably securing an abrasive covering to said inner covering, as set forth.

4. A buffing roll comprising a rotary shaft, heads or collars affixed thereto and provided with notches, a flexible covering affixed to said heads and entering said notches, a wedge-shaped bar formed to enter said notches as a means for detachably securing an abrasive covering, and rotatable cams engaged with the ends of said bar, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 15th day of October, A. D. 1892.

HAROLD A. WEBSTER.

Witnesses:
C. F. BROWN,
M. W. JACKSON.