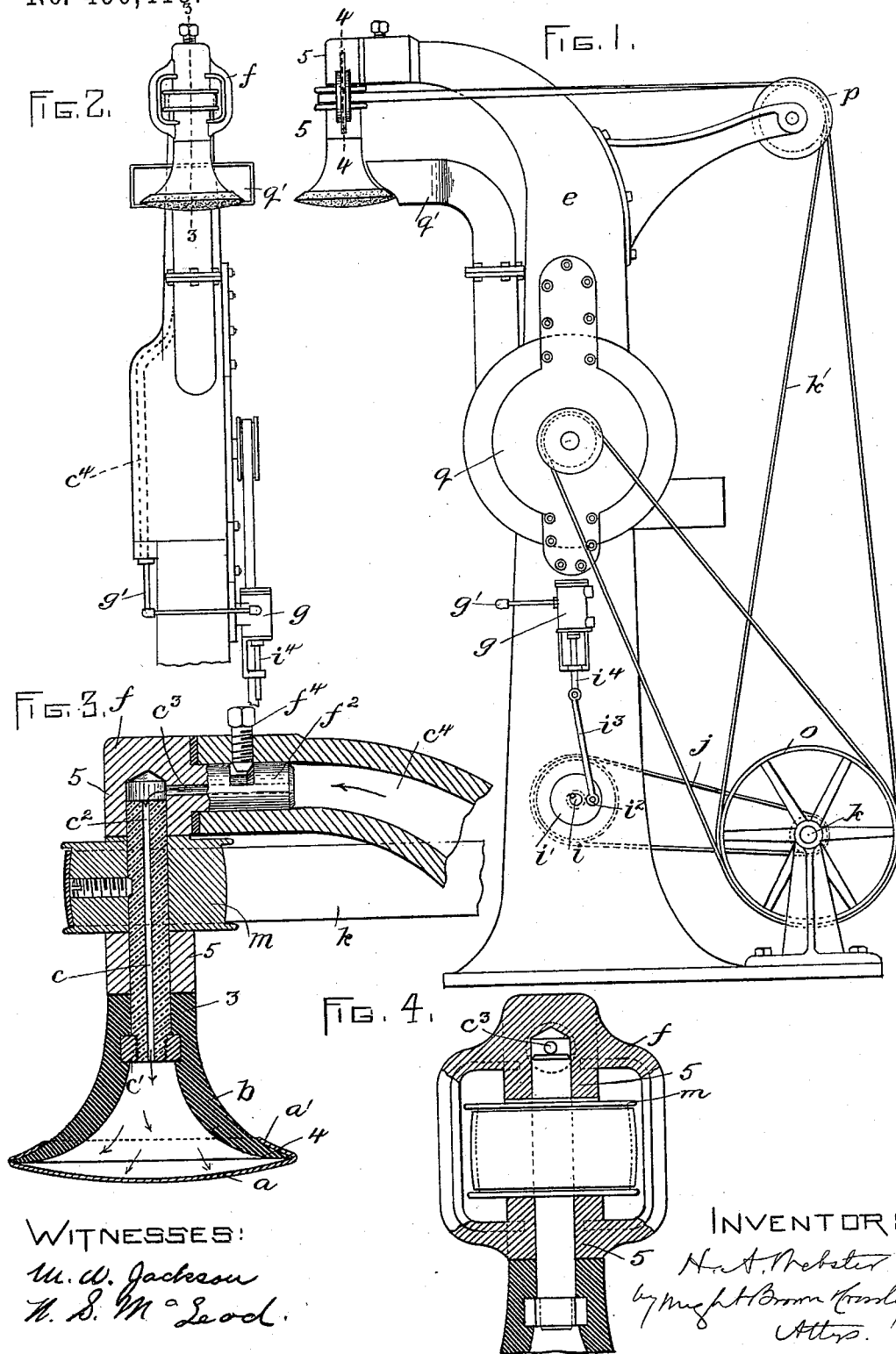


H. A. WEBSTER.  
BUFFING MACHINE.

No. 490,419.

Patented Jan. 24, 1893.



WITNESSES:  
W. W. Jackson  
H. S. M<sup>c</sup>Leod.

INVENTOR:  
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FIG. 5.

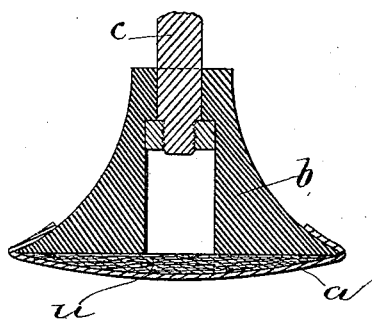


FIG. 6.

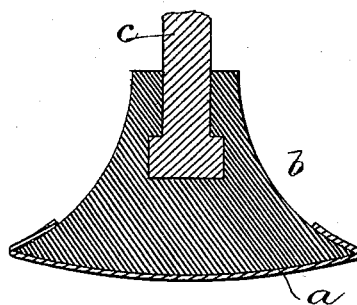


FIG. 7.

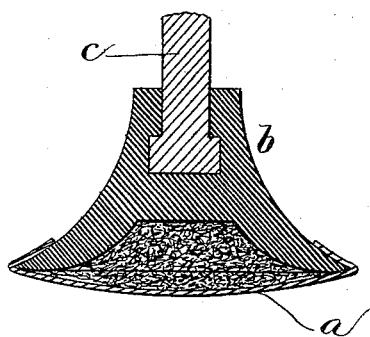


FIG. 8.

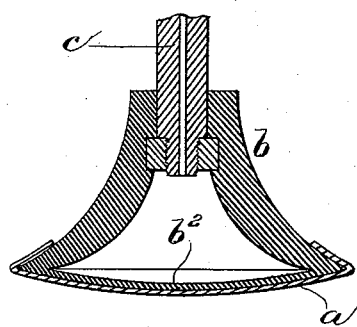


FIG. 9.

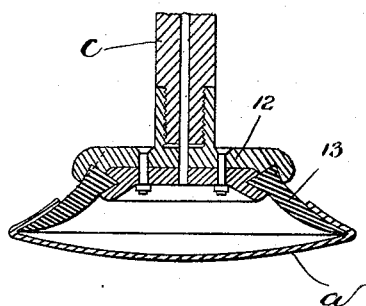
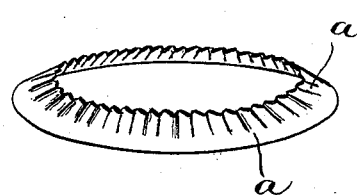


FIG. 10.



WITNESSES:

*W. C. Jackson*  
*H. S. McLeod*

INVENTOR:

*H. A. Webster*  
*by Wright Brown Corroly*  
*Att'y.*

# UNITED STATES PATENT OFFICE.

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

## BUFFING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 490,419, dated January 24, 1893.

Application filed October 14, 1892. Serial No. 448,821. (No model.) Patented in Canada October 25, 1892, No. 40,792.

*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  
5 and useful Improvements in Boot or Shoe Buffing Machines, (for which I have obtained Canadian Letters Patent No. 40,792, dated October 25, 1892,) of which the following is a specification.

10 This invention relates to machines for buffing or abrading the bottoms of boot or shoe soles, employing a tool consisting of a disk of abrasive material, secured to a holder which is rotated on an axis substantially at right  
15 angles with the plane of the abrasive disk, so that the entire surface is presented to the article to be acted upon. In tools of this class, the abrasive material is rapidly worn out, so that the disk has to be frequently removed  
20 and a new one substituted for it.

My invention has for its object, first, to provide an improved tool or disk holder, adapted not only for the quick and convenient removal and application of the disk or  
25 pad, but also to furnish a yielding support for the margin of the pad, so that said margin can conform closely to the curved surfaces presented to it.

The invention also has for its object to provide a machine comprising a pad and its  
30 holder and means for yieldingly supporting the pad against the article upon which it acts, by pneumatic or fluid pressure.

To these ends the invention consists in the  
35 several improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming part of this specification: Figure 1 represents a side elevation of a buffing machine embodying my invention. Fig. 2 represents a  
40 front elevation of a portion of the same. Fig. 3 represents a section on line 3—3; Fig. 2. Fig. 4 represents a section on line 4—4, Fig. 1. Figs. 5, 6 7, 8 and 9 represent sectional  
45 views of the buffing tool, showing modifications hereinafter referred to. Fig. 10 represents a perspective view of a suitable construction of the disk or pad.

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

In the drawings: *a* represents a disk or pad

of abrasive material, such as the well-known emery-cloth of commerce; and *b* represents the holder, which supports said pad when the latter is in use. The holder is externally of  
55 tapering or flaring form, and comprises a hub or neck 3, and a margin 4, which is preferably of considerable larger diameter than the said neck and is brought down to a comparatively thin edge, which is preferably circular in  
60 form. The holder is composed of a suitable elastic material, such as rubber vulcanized to a suitable degree of elasticity, the described form, in connection with the elasticity of the material of which the holder is made, ena-  
65 bling the pad to be very readily applied to and removed from the holder, the pad being provided with a permanently formed in-turned flange *a'*, formed to bear upon the tapering  
70 external surface of the holder, as clearly shown in Fig. 3. The thin edge 4 of the holder readily yields at any desired point, to permit the flange to be withdrawn from or applied to the holder, as will be readily seen. And, owing to the holder being slightly larger  
75 than the interior of the pad, the latter will be firmly and securely held on the former.

By my improved construction of holder, the pads may be secured to the holder by simply first contracting the margin of the holder and  
80 then allowing it to spring outwardly under the flange *a'*, the elasticity of the holder being sufficient to maintain the flange in engagement with the holder. The flange on the pad may be formed in any suitable way. I prefer  
85 to make it by crimping or plaiting the margin of a circular piece of material, in such manner as to turn said margin inwardly over one side of the piece, as shown in Fig. 10. The flange thus formed will, in most cases,  
90 be sufficiently stiff and permanent to maintain it in the desired position and in engagement with the holder; but, if desired, the plaits or folds may be positively secured together, by stitching, gluing or otherwise.  
95

The holder *b* is suitably attached at its hub or neck portion to a shaft or spindle *c*, which is journaled in bearings 5 5 on a supporting-frame *e*, the attachment of the holder to the spindle being effected in any suitable  
100 manner. I have here shown the neck of the holder provided with an orifice to receive one

end of the shaft, the shaft being provided with a nut or collar  $c'$  within the holder, formed to secure the holder to the shaft.

I prefer to make the holder hollow or chambered, as shown in Fig. 3, in order that it may contain a yielding cushion.

In Figs. 1, 2, 3 and 4, I show means for forcing air under pressure into the interior of the holder, and thus furnishing a pneumatic cushion, constituting a yielding and constantly maintained support for the pad, whereby the latter is given a sufficient pressure, and at the same time permitted to yield to conform readily to the curvature and inequalities of the surface upon which it acts. To this end, I provide the shaft  $c$  with a longitudinal air passage  $c^2$ , which communicates with an air passage  $c^3 c^4$  formed in the supporting-frame, the part  $c^3$  of said passage being formed in an adjustable head  $f$ , which includes the bearings  $5\ 5$  of the shaft  $c$ ; while the portion  $c^4$  of said passage is formed in the main portion of the supporting-frame.  $g$  represents an air pump, which is suitably affixed to the supporting-frame, and is connected by a pipe  $g'$  with the air passage  $c^4$ . The air pump may be operated by any suitable means, the means here shown being a shaft  $i$ , journaled in bearings in the supporting-frame; a disk  $i'$ , affixed to said shaft and provided with an eccentric wrist-pin  $i''$ ; and a pitman  $i^3$ , connecting said wrist-pin with the piston rod  $i^4$  of the air pump. The shaft  $i$  is driven by a belt  $j$ , connecting it with a pulley on the main driving-shaft  $k$ . It will be seen that, while the machine is in operation, the air pump will be continuously operated, and will maintain a pressure of air within the holder  $b$ , said pressure being therefore constant regardless of any leakage of air that may take place through or around the pad. I prefer to make one or more minute holes in the pad to permit a slight leakage of air, for the purpose of blowing away the dust formed by the action of the pad upon the article being acted upon. The head  $f$ , in which the shaft  $c$  is journaled, is here shown as provided with a trunnion  $f^2$ , which is fitted to turn in a socket formed in the supporting-frame, the portion  $c^3$  of the air passage passing through said trunnion, as shown in Fig. 3. The trunnion  $f^2$  is detachably secured, by means of a set-screw  $f^4$ , so that the head  $f$  may be turned to give the shaft  $c$  and holder  $b$  any desired position, the shaft being therefore capable of being placed vertically or at any desired angle. The shaft  $c$  and holder  $b$  may be rotated by means of a belt  $k'$ , running on a pulley  $m$ , affixed to the shaft  $c$ , said belt being driven by a pulley  $o$ , affixed to the shaft  $k$ , and passing over suitable idle pulleys  $p$ .  $q$  represents an exhaust fan, mounted upon the supporting-frame, and adapted to draw the dust and particles of material, removed by the action of the pad, from the pad through a trunk or flue  $q'$ .

I do not limit myself to the use of air as a

means for yieldingly supporting the pad, although I much prefer this means.

In Figs. 5, 6 and 7, I show certain modifications in which the pad is supported by other than pneumatic means.

In Fig. 5, I show the holder  $b$  provided with a cavity or chamber of only sufficient size to permit the introduction of the nut  $c'$  that secures the holder to the shaft  $c$ , the holder therefore presenting a comparatively large area upon its under side. The pad is in this case yieldingly supported by a cushion  $u$ , which may be of felt or any other suitable yielding material.

In Fig. 6, I show the holder  $b$  as formed with a convex bottom, without a chamber or recess. In this case the pad bears directly upon the bottom surface of the holder.

In Fig. 7, I show the holder formed hollow, as in Fig. 3, but provided with a cushion or yielding filling of some granulated material, which may be cork scraps or shavings or any other suitable material. It will be seen that, in all cases, the holder  $b$  has its margin reduced to a comparatively thin edge, and is made of elastic material, so that it permits the ready application and removal of the pad.

In Fig. 8, I show the holder  $b$  provided with a permanent bottom-piece  $b^2$ , extending across the air chamber, and made of flexible material, preferably of rubber. In this case the air chamber is permanent, and is not dependent on the pad  $a$ , the latter bearing against the outer side of the bottom-piece. The holder constructed as last described may contain a liquid cushion instead of air, or it may contain any suitable filling or cushion.

In Fig. 9, I show the pad holder of rigid construction, excepting at its marginal portion, the holder comprising a rigid hub or central portion 12, and an elastic or resilient marginal portion 13, which is preferably an annular flange of yielding rubber.

It is obvious that I may force water or other fluid into the chamber of the pad holder, instead of air, a suitable pump being used adapted to the fluid used.

Having thus fully described my invention, although without specifying all the methods of carrying the same into practice, I claim:

1. A buffing pad holder having an elastic or resilient margin, in combination with a removable pad having a permanently formed in-turned flange, the interior of the pad being smaller than the normal size of the holder, substantially as set forth.

2. A buffing pad holder having an elastic or resilient margin reduced to a thin edge at its periphery and presenting a tapering or inclined outer surface, in combination with a removable pad having a permanently in-turned flange, the interior of said pad being smaller than the normal size of the holder, for the purpose set forth.

3. A disk-shaped buffing pad holder having an elastic or resilient margin, an air space or chamber inside the plane of the margin, and

a normally open air inlet communicating with said chamber, as set forth.

4. A disk-shaped buffing tool comprising a recessed or chambered holder having a normally open air inlet and a buffing pad engaged with said holder and extending across the recess or chamber thereof, as set forth.

5. In a buffing machine, the combination of a pad holder having an internal chamber, a pad at one side of said chamber, a shaft secured to the holder and having a passage communicating with the chamber, a supporting-frame having bearings for said shaft and a

passage communicating with the passage in the shaft, and a pump or forcing apparatus adapted to maintain pressure in said chamber, as set forth. 15

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 11th day of October, A. D. 1892. 20

HAROLD A. WEBSTER.

Witnesses:

HORACE BROWN,  
M. W. JACKSON.