

(No Model.)

E. F. HODGKINS.
PAD FOR BUFFING MACHINES.

No. 587,038.

Patented July 27, 1897.

Fig. 1.

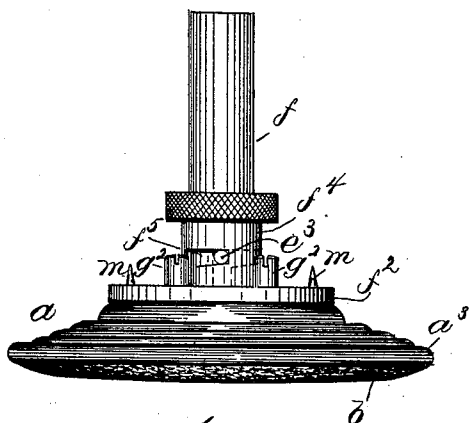


Fig. 2.

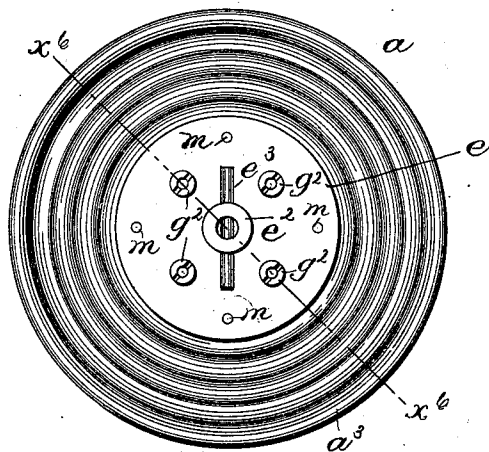


Fig. 3.

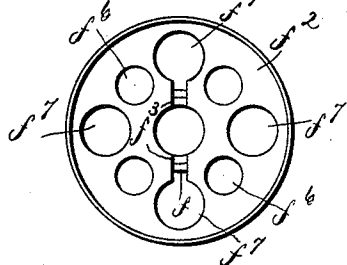


Fig. 4.

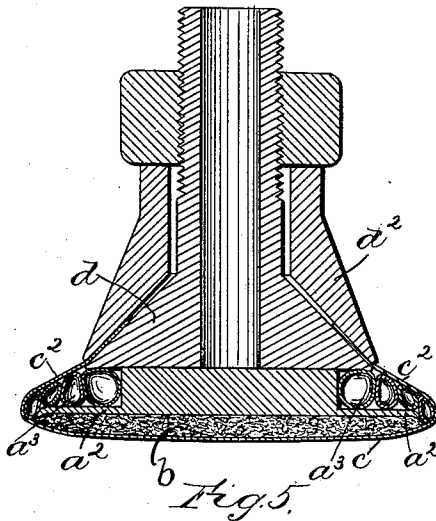


Fig. 5.

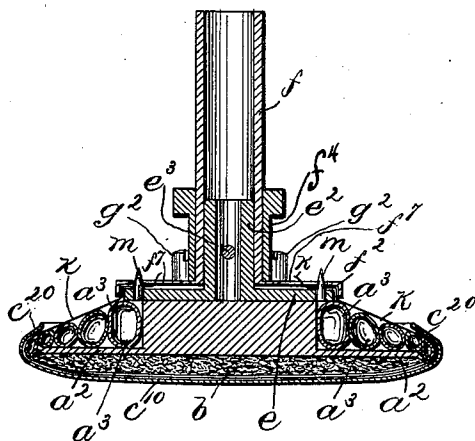
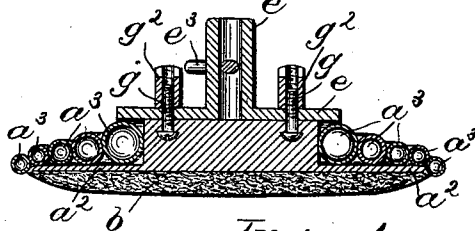


Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

EDWARD F. HODGKINS, OF BEVERLY, MASSACHUSETTS, ASSIGNOR TO
SIDNEY W. WINSLOW, TRUSTEE, OF SAME PLACE.

PAD FOR BUFFING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 587,038, dated July 27, 1897.

Application filed September 19, 1893. Serial No. 485,759. (No model.)

To all whom it may concern:

Be it known that I, EDWARD F. HODGKINS, of Beverly, county of Essex, State of Massachusetts, have invented an Improvement in Pads for Buffing-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention is embodied in a buffing-machine for buffing the soles of boots and shoes, and relates especially to the pad or foot which receives and supports the abrasive material by which the buffing is effected.

It is essential for the best operation of buffing-machines of the kind shown, for example, in Letters Patent No. 221,647, dated November 11, 1879, to F. Winslow and C. S. Fifield, that the pad-support for the abrasive material should be yielding and should have a certain amount of resilience or elasticity. Such pads have usually been composed of felt or rubber, or both felt and rubber, which possess the desired properties to a considerable degree; but the felt is likely to become hard and compact in the continuous use of the machine and has to be frequently replaced, while a pad composed of solid rubber is somewhat too unyielding and tends to develop considerable heat at the point where the abrasive action is going on.

The object of the present invention is to produce a pad having the requisite degree of stiffness and resiliency to afford the most perfect operation in abrading the shoe-sole or material operated upon and also having great durability and being adapted for use with the abrasive covers and pad-holders of the kind now in general use upon buffing-machines.

The pad forming the subject of this invention is composed mainly of rubber, preferably with a facing of felt, but the body of the rubber portion, instead of being solid, as heretofore, is of a tubular structure or composed of hollow flexible walled chambers, rendering it far more yielding than solid rubber, but also extremely resilient or capable of resuming its original form when the pressure upon it is removed or diminished. Preferably the said pad is provided with one member of a con-

necting device coöperating with a corresponding member upon the spindle of the buffing-machine, so that the pad can be readily connected with and disconnected from said spindle without reference to the construction of the abrasive cover for the pad; but the latter may, if desired, be connected with or held in place upon the spindle by means of the pad-cover itself, as is commonly done in some of the forms of buffing-machines that are now in general use.

Figure 1 is a side elevation of a pad and spindle for a buffing-machine embodying this invention; Fig. 2, a plan view of the pad detached; Fig. 3, an under side view of the spindle; Fig. 4, a modification showing in longitudinal section the pad inclosed in a cover and connected by means of said cover with a spool or holder for a buffing-machine of the kind shown in Letters Patent No. 227,839; Fig. 5, a longitudinal section of the pad and spindle shown in Fig. 1 with an abrasive cover applied thereto; and Fig. 6, a sectional view on line x^x , Fig. 2.

The pad a is composed mainly of a disk a^2 , of rubber, which is comparatively thin for a considerable distance from the periphery thereof, as best shown in Fig. 6, and preferably has connected with it a layer b , of felt, which is thinner than the layer of felt employed when the entire body of the foot or pad is made of felt. The marginal portion a^2 of the rubber disk, together with the felt b , is thus thinner and more yielding than the pads commonly used, and in order to give the same sufficient thickness and somewhat more firmness the upper surface of the disk a^2 is provided with a body portion, preferably made of concentric tubes a^3 , of soft rubber, which tubes are preferably endless or in the form of rings, so that each forms an annular chamber containing air, which tends to keep the tubes distended. By this construction the marginal portion of the pad may have about the same size or body as the pads heretofore used made of rubber or felt or both, but is lighter and more flexible and at the same time more resilient.

Such a pad may be used with any of the well-known forms of buffing-machines and

may, for example, be connected with a pad-holder such as shown in Letters Patent No. 227,839, dated May 18, 1880, as represented in Fig. 4, said pad being inclosed in an abra-
 5 sive cover c , having connected with its periphery a flange or similar top piece c^2 , which is fastened between the clamping-cones d d^2 of the spool or holder that is applied to the rotating spindle of the buffing-machine. In
 10 this case the pad itself is fastened to the spool or holder by means of the abrasive covering.

When, however, it is not desired to use the pad in connection with a spool or holder of the kind shown in Fig. 4, the pad itself is
 15 preferably provided with one member of a clamp or attaching device shown in Figs. 2, 5, and 6 as a plate e , having a short central stem e^2 to enter the hollow spindle f of the buffing-machine, which spindle is provided
 20 with a coöperating clamping or fastening member. This fastening member may be of any suitable or usual construction. As herein shown, the stem e^2 is provided with a transverse pin e^3 , and the spindle f has connected
 25 with its end a flanged plate f^2 , which embraces the plate e on the pad, as best shown in Figs. 1 and 5. The said plate f^2 and the lower end of the spindle f are slotted, as shown at f^3 , (see Fig. 3,) to permit the pin e^3 to pass up
 30 above the plate f^2 , as shown in Fig. 1, and a locking sleeve or thimble f^4 is provided upon the spindle f above the plate f^2 , said thimble having angular slots or notches f^5 , the longitudinal portions of which can be brought
 35 into coincidence with the slot f^3 when the foot is to be applied or removed, and after the foot has been applied the said thimble f^4 may be turned to the position shown in full lines, Fig. 1, so that the transverse portions
 40 of its notches lock the pin e^3 in the slot f^3 of the spindle.

The plate e , constituting the clamp member, may be connected with the pad in any suitable way—as, for example, by screws g ,
 45 (see Fig. 6,) which are introduced into the mold in which the rubber portion of the pad is formed, so that the head portions of the screws are embedded in the rubber, which is vulcanized upon them.

50 The plate e is provided with holes that register with the screws, and is fastened thereto by nuts g^2 . The plate f^2 at the end of the spindle is provided with suitable holes f^6 to accommodate the nuts g^2 when the pad is applied. A foot of this kind is well adapted for
 55 use in connection with an abrasive pad-cover provided with a permanently-inturned flange to engage the periphery of the pad, such a cover being shown at c^{10} , Fig. 5, the holding-flange c^{20} being made integral with the working face or portion c^{10} .

The abrasive pad-cover of this kind is not herein claimed, as of itself it constitutes no
 60 part of my invention.

65 With a pad of this kind the resilience of the tubular part a^3 of the pad facilitates the application of the cover thereto and also af-

fords an expansive pressure inside the cover or between the cover and the flange by which the said cover is held securely on the pad until its abrasive material is worn off so that it
 70 has to be replaced by another.

The pad is shown as having one of the annular tubes or chambers a^3 applied at its extreme periphery, so as to exert a radial out-
 75 ward pressure on the abrasive cover by which its under face is stretched flat and the tendency to wrinkle and crack is overcome.

A flanged cover of the kind shown in Fig. 5 can be applied directly to the pad shown in
 80 Figs. 1 and 2, or, if desired, it might be applied to a pad connected directly with the foot or spindle by a cover, as shown in Fig. 4, in which case the cover c c^2 of Fig. 4 would
 85 not be of abrasive material, but merely a pocket or cover used to inclose the pad and fasten the same to the holder d d^2 , after which a flanged pad, such as shown at c^{10} c^{20} , Fig. 5, can be applied to the covered pad shown in
 90 Fig. 4.

Even when the pad is provided with a fastening or clamping member, as shown in Figs. 1, 2, 5, and 6, so as to be fastened to the spindle, as shown in Figs. 1 and 5, independently
 95 of the cover, it is of advantage to apply a cover intermediate between the pad and the abrasive covering, as shown at k , Fig. 5, the said cover being preferably of cloth or material
 100 having but little tensile elasticity. The purpose of this is to resist the tendency of the portion of the pad near its periphery to draw down away from the spindle. There is such
 105 tendency when, for example, the part of the periphery at one side of the spindle is pressed up from its normal position by the shoe or material being abraded.

Such bending up of the pad at one side of the middle gives the abrasive cover a tendency to pull down the pad at the opposite side of the middle, and the cover k , Fig. 5, acts as
 110 a stay to hold up the side that thus tends to be drawn down. In order to make the cover k effective for this purpose, the clamp-plate or head-piece e of the pad is provided with spurs m , which may be caused to penetrate
 115 the cover k , so as to hold the same, as shown in Fig. 5. The foot-plate f^2 of the spindle f is provided with a number of openings f^7 corresponding to the spurs m , so as to permit
 120 the latter to act upon the cloth or cover k , and said cloth is further held with a clamping action between the flanged periphery of the plate f^2 and the periphery of the plate e , as will be readily understood from Fig. 5. This intermediate cover or stay-piece k is not
 125 essential to the operation of the foot and its abrasive cover, although in some cases it is found to be advantageous, and the invention is not limited to any specific character of the means for connecting the foot with the spin-
 130 dle or for connecting the abrasive covering with the foot, the main feature of the invention being the structure of the foot itself with hollow flexible walled chambers, constituting

a foot having on its upper surface means for exerting an expansive pressure on such abrasive cover as may be used therewith.

I claim—

- 5 1. As an improved article of manufacture a pad or foot for a buffing-machine composed of a disk having one of its faces provided with hollow flexible walled chambers, substantially as and for the purpose described.
- 10 2. In a pad for a buffing-machine the combination of the disk a^2 of soft rubber with the rubber tubing a^3 , upon the surface thereof, substantially as described.
- 15 3. A foot or pad for a buffing-machine composed of a disk a^2 of rubber, a layer b of felt, upon the under surface thereof, and a number of concentric rubber tubes upon the marginal portion of the upper surface thereof, substantially as described.
- 20 4. The combination of the foot or pad for a buffing-machine consisting of a flexible disk and an abrasive cover therefor, with a stay supporting the marginal portion of the pad, substantially as and for the purpose described.
- 25 5. The combination of the hollow rotating spindle provided at its end with a plate, with a pad having a cooperating plate provided

with a central stem, and means for fastening the said stem of the pad in the spindle with the plates of the pad and spindle in engagement, substantially as described. 30

6. The combination of an abrasive cover having a flat flexible working face and a supporting-flange at the periphery thereof with an automatically-expansible pad or foot supporting said working face and entering between the same and the supporting-flange thereof whereby the working face of the pad-cover is maintained in a state of tension, substantially as described. 35 40

7. The combination with a pad or foot composed of a flexible disk provided on one of its faces with hollow flexible walled chambers, of an abrasive cover having a working face and a supporting-flange extending from the periphery of the working face over the flexible walled chambers of the pad, substantially as described. 45

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses. 50

EDWARD F. HODGKINS.

Witnesses:

JOS. P. LIVERMORE,
M. E. HILL.