(No Model.)

S. W. WINSLOW.

BUFFING MACHINE.

No. 526,137 Patented Sept. 18, 1894.

Fig. 1.

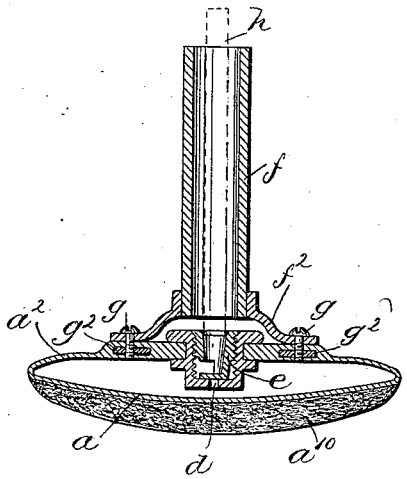


Fig. 4.

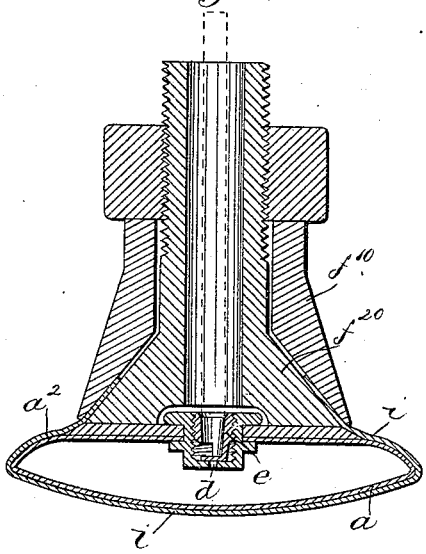


Fig. 2.

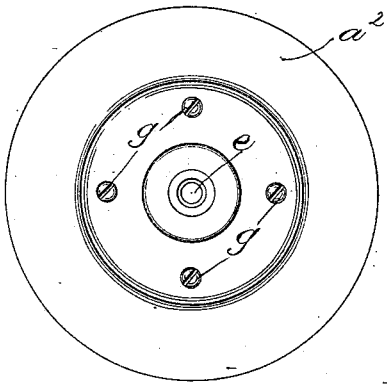


Fig. 5.

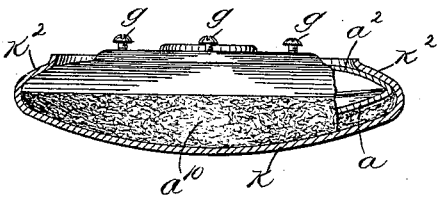
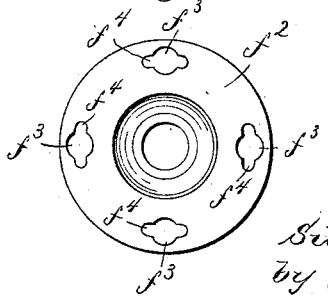


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

SIDNEY W. WINSLOW, OF BEVERLY, MASSACHUSETTS, ASSIGNOR TO SIDNEY W. WINSLOW, TRUSTEE.

BUFFING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 526,137, dated September 18, 1894.

Application filed December 26, 1893. Serial No. 494,692. (No model.)

To all whom it may concern:

Be it known that I, SIDNEY W. WINSLOW, of Beverly, county of Essex, State of Massachusetts, have invented an Improvement in 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 of the class shown in Letters Patent No. 221,647, dated November 11, 1879, to Winslow and Fifield, and relates especially to the pad or foot which receives and supports the abrasive material or cover by which the abrading action is produced. Various constructions have been adopted for the purpose of making the pad yielding so that the abrasive surface will accommodate itself to the surface being operated upon, such pads having for most part been composed of felt, or rubber, or felt and rubber combined.

The object of the present invention is to produce a pad having greater flexibility and resilience than those heretofore employed so that the abrasive material will readily accommodate itself to the surface being operated upon without producing undue pressure at any part of the said surface so as to cause heating, and the said pad also has great resilience or power of resuming its original shape and conditions when the pressure upon it has been removed, and furthermore maintains an expansive pressure on the inner surface of the abrasive cover, thereby keeping the said cover in a state of tension.

The pad forming the subject of the present invention is composed of a hollow circular chamber the upper and under walls of which are flexible, being preferably composed of soft rubber and said walls being also air tight so that the chamber can be inflated or distended by pneumatic pressure, the pad thus formed being very flexible and elastic.

The invention further consists in the combination of a pad of the kind described (that is, one having a resilient margin and being of an expansible nature) with an abrasive pad cover having a permanently inturned flange adapted to be placed on said pad and held thereon by the expansive pressure of the latter on the interior of the said flanged pad cover.

Figure 1 is a transverse section of a pad and spindle therefor embodying this invention; Fig. 2, a plan view of the pad detached; Fig. 3, an under side view of the end of the spindle; Fig. 4, a transverse vertical section showing a modified construction of the pad, and spindle or pad holder, and Fig. 5 a side elevation partly in section showing pad of the kind shown in Fig. 1 with an abrasive cover applied thereto said cover being shown in section.

The pad forming the subject of this invention is in the form of a circular hollow chamber having flexible upper and under walls a, a^2, which are united together around their peripheries, thus forming a circular flat chamber having a thin flexible edge. When an abrasive cover is applied to a pad of this kind said cover having a working force lying upon the under face of the pad, and an attaching portion or portions extending over the periphery of the pad and lying upon the upper surface thereof, expansion of the pad will maintain a strain or pressure upon the abrasive cover tending to hold its working surface in a state of tension and thus opposing the tendency of the cover to grow loose or wrinkle in the operation of the machine, and thereby rendering the cover more durable and effective than is the case when no such expansive pressure or tension is applied to it. The walls of the chamber besides being flexible are air tight being preferably composed of soft rubber alone, or soft rubber vulcanized to a suitable fabric when necessary to give it greater strength. The said chamber is provided with an air inlet passage d controlled by a stopper e shown as a hollow screw plug which when screwed down in its socket tightly closes the inlet passage d. The said pad may be connected with its actuating spindle f in any suitable or usual manner. As shown in Figs. 1, 2, and 5, the said pad is provided with fastening studs or projections g shown as short screws screwed into a metallic ring g^2 vulcanized into the upper wall a^2 of the pad. The spindle f is provided at its lower end

with a plate or fastening member f^2 having a series of openings f^3 see Fig. 3, of proper size to permit the enlarged ends of the projections g on the pad to pass through them, and said openings f^3 having lateral slots or notches f^4 which receive the necks of the projections g below the heads or enlargements thereof when the pad is turned slightly with relation to the plate f^2 after the projections g have been passed through the holes f^3, thus securely locking the pad to the spindle f, which is shown as hollow so that a tube can be passed through the same as shown in dotted lines at h Fig. 1, to engage with the screw plug e so that the pad can be inflated or deflated if desired without disconnecting it from the spindle, as would be desirable if it were permanently attached thereto.

It is not essential that the pad should be fastened to the spindle by a clamp or fastening device that connects the two directly together, but a pad of this kind may be used with a spool or pad holder of the kind shown in Fig. 4, in which case the pad is inclosed in a flexible cover i, which may be the abrasive cover or not, the said cover being clamped between the cones f^{10}, f^{20}, of the spool in the usual manner, said spool being substantially the same as shown in Letters Patent No. 221,647, before referred to.

In some cases it is desirable to provide a somewhat stiffer support for the abrasive material than that afforded by the flexible wall a of the air chamber and the internal pneumatic pressure against the same, and in such cases the pneumatic pad may have its under wall a covered with a layer of felt as shown at a^{10}, such construction affording greater resiliency than when a pad composed wholly of felt, or of felt with solid rubber is used, being also somewhat less yielding than a pad of the construction shown in Fig. 4.

The felt is a non conductor of heat and it is advantageous, and in some cases almost essential, to provide a layer of non-conducting material between the rubber wall of the pad and its abrasive cover to protect the former as well as the material operated upon from being heated or damaged in the operation of the machine. The felt furthermore is only slightly extensible and consequently with the layer of felt or equivalent non-conducting non-stretching material between the working face of the pad cover and the pad, the tendency of the latter to bulge or convex with internal pressure is diminished and the expansive action is thrown towards the margin of the upper wall of the pad where it acts upon the pad cover near the periphery thereof, thus tending to draw the working face of the pad cover tight over the supporting face of the pad and to take up any looseness of the pad cover resulting from its softening and stretching in the operation of the machine. A pad of this kind may be used with any suitable form of abrasive covering. For example, the cover i shown in Fig. 4, by which the pad is fastened to the spool or holder may if desired have its under surface of abrasive material being such a pad as shown in Patent No. 227,839, to Rogers, dated May 18, 1880, or like the one shown in patent to Andren, No. 238,201, March 1, 1881, and as before stated the said cover i may be merely employed to fasten the pad to the holder, and the abrasive cover may then be applied to and secured upon the said pad in any suitable manner.

While the invention so far as the novel features of the pad are concerned is not limited to any specific form of pad cover, an expansive or inflated pad is adapted to co-operate with a cover having a permanently inturned flange such for example as the cover shown in said Rogers Patent No. 227,839, or such for example as shown in Fig. 5 of the present application, wherein the abrasive cover k has a permanently inturned flange k^2 which engages with the upper wall of the pad which latter thus presses against the internal surface of the pad cover and its flange so as to hold the same securely thereon.

By having both the upper and under walls a, a^2, of the pad chamber flexible and yielding, the entire marginal portion of the pad is elastic or resilient and can yield with relation to the spindle or pad holder, thus affording a more perfect accommodation of the pad to the surface being operated upon, than would be the case if the entire upper wall were rigid or substantially so, and the accommodation of the pad to the surface being operated upon had to be provided wholly by the yielding of the under surface, or of the under wall, against the internal air pressure.

If found necessary the expansive pressure in the pad may be changed at any time by permitting some of the contained air to escape or by introducing more air, and it is obvious that if air escapes by leakage or otherwise it can be replaced as may be found necessary.

A pad adapted to exert an expansive or elastic outward pressure as herein described, in conjunction with an abrasive cover having attaching portions extending over the edge and lying upon the top of the pad, will operate to maintain a tensile strain upon the said pad cover as before stated, and thus to hold the said cover in a strained or tense condition as it tends to soften and grow loose in wear, thus rendering it more effective, and durable than is the case when it is permitted to become loose and wrinkled.

I claim—

1. A pneumatic pad for a buffing machine composed of a hollow flexible walled chamber provided with an air inlet opening combined with a tubular spindle and means for connecting the pad with the spindle with its inlet opening accessible through the bore of the spindle, substantially as described.

2. A pneumatic pad for a buffing machine consisting of a circular chamber having flexible circular upper and under walls connected around their peripheries and an air inlet to said chamber whereby it may be inflated and its walls distended by pneumatic pressure, substantially as described.

3. The combination of a flexible-walled inflated pad with an abrasive cover applied thereto, and a layer of non-conducting material interposed between the working face of the pad cover and the pad, substantially as described.

4. The combination of a flexible-walled pad adapted to be inflated; with an abrasive pad cover having a portion extending over the periphery of the pad; an actuating spindle; and a clamp for fastening said portion of the pad cover, said spindle being tubular whereby said pad may be inflated while the pad cover inclosing the same is held by said clamp, substantially as described.

5. The combination of the pad or foot having an elastic or resilient margin with a removable abrasive pad cover having a permanently inturned flange adapted to be placed upon the said pad and held thereon by the expansive pressure of the latter against the interior of the flanged pad cover, substantially as described.

6. The combination of a pad or foot for a buffing machine composed of a hollow, flexible-walled, circular chamber adapted to be inflated or expanded by pneumatic pressure, with a removable abrasive cover having a permanently inturned flange to engage with the marginal portion of said pad, the said cover being held upon the pad by the pressure of the latter against the interior of the flanged cover, substantially as described.

7. The combination of a pad cover having an abrasive working surface and a permanently inturned flange, with an expansive pad adapted to be inserted between the working portion and flange of the said pad cover, and to maintain a pressure in the interior surface of the latter, substantially as and for the purpose described.

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

SIDNEY W. WINSLOW.

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