

No. 643,235.

Patented Feb. 13, 1900.

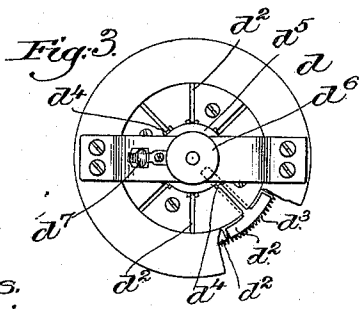
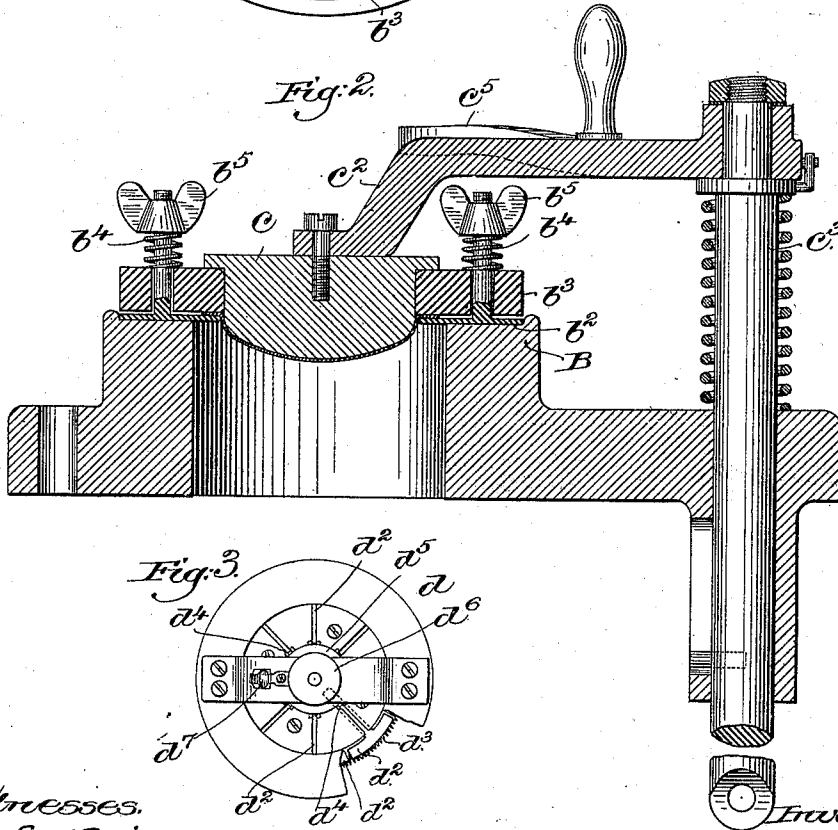
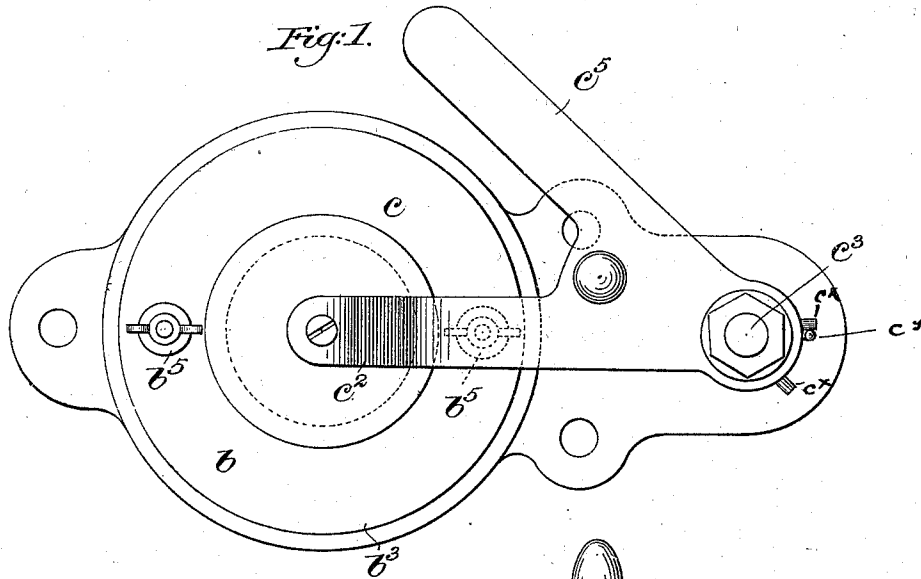
A. W. ROGERS & S. W. WINSLOW.

APPARATUS FOR MAKING ABRASIVE COVERS FOR BUFFING MACHINES.

(No Model.)

(Application filed June 14, 1897.)

2 Sheets—Sheet 1.



Witnesses.
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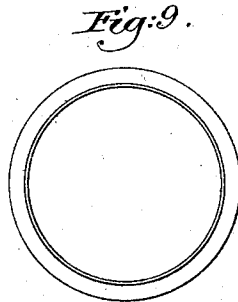
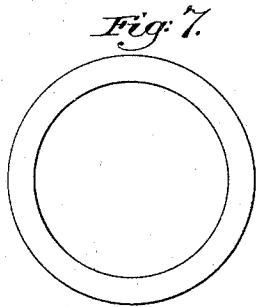
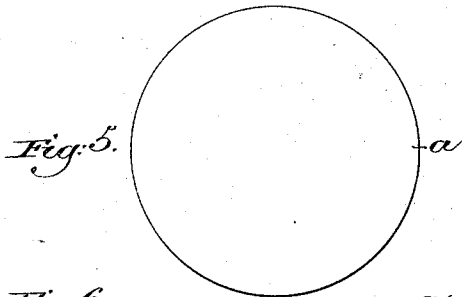
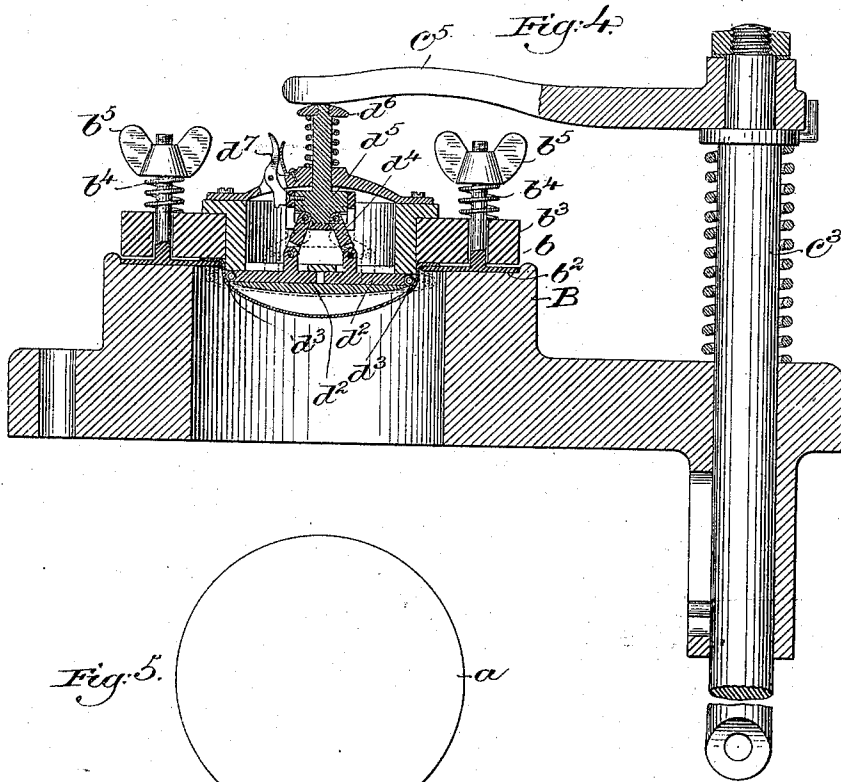
A. W. ROGERS & S. W. WINSLOW.

APPARATUS FOR MAKING ABRASIVE COVERS FOR BUFFING MACHINES.

(No Model.)

(Application filed June 14, 1897.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

ANDREW W. ROGERS AND SIDNEY W. WINSLOW, OF BEVERLY, MASSACHUSETTS, ASSIGNORS TO SIDNEY W. WINSLOW, TRUSTEE, OF SAME PLACE.

APPARATUS FOR MAKING ABRASIVE COVERS FOR BUFFING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 643,235, dated February 13, 1900.

Application filed June 14, 1897. Serial No. 640,616. (No model.)

To all whom it may concern:

Be it known that we, ANDREW W. ROGERS and SIDNEY W. WINSLOW, both of Beverly, county of Essex, and State of Massachusetts, have invented an Improvement in Apparatus for Making Abrasive Covers 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.

This invention relates to an apparatus for making abrasive covers for pads of buffing-machines, for buffing the soles of boots and shoes, of the kind shown in Letters Patent to Winslow and Fifield, No. 221,647, dated November 11, 1879.

The present invention is embodied in an apparatus for making abrasive pad-covers from flat blanks of abrasive material—such, for example, as commercial emery-cloth or sandpaper—the pad-cover having a circular working face and an inturned marginal flange adapted to overlie a portion of the pad or foot on which the abrasive cover is used in the buffing-machine, the said cover being molded so that the angle or fold between the working face and overlying portion is properly curved to correspond with the shape of the pad or foot on which it is used.

The apparatus embodying the present invention comprises a clamp or holder adapted to yieldingly hold the marginal portion of the flat blank, while leaving a circular portion at the middle of the blank encompassed by the clamped portion in condition to be operated upon by the other appliances, said middle free or unclamped portion being of approximately the size of the circular working face, but in this instance somewhat smaller.

The apparatus also comprises means for subjecting the middle unclamped portion of the blank to pressure in a direction substantially at right angles to the plane thereof, whereby the said middle portion is stretched and the marginal portion drawn inward from its holding-clamp and contracted.

The apparatus further comprises means for expanding the middle stretched portion of the blank radially outward, so that the material within the clamped periphery of the blank becomes expanded to a larger diameter

than the clamped periphery, thus bringing the cover to the desired shape.

Figure 1 is a plan view of an apparatus embodying this invention; Fig. 2, a sectional elevation thereof, showing the parts in the position occupied at the completion of the operation of stretching the central portion of the blank; Fig. 3, a plan view of the expanding former by which the blank is molded to shape; Fig. 4, a sectional elevation showing the appliances for expanding the stretched central portion of the blank in position for operation; Figs. 5 and 6, a plan view and transverse section, respectively, of the blank; Figs. 7 and 8, similar views illustrating the condition of the blank when its central portion has been stretched, and Figs. 9 and 10 similar views of the completed pad-cover.

The apparatus is intended to operate upon abrasive material—such, for example, as commercial emery-cloth or the like—which is originally in the form of flat sheets and may be cut to blanks of suitable size and shape, as shown at *a*, Figs. 5 and 6. The blank is tempered by moisture, so as to render it more tractable and capable of being stretched and molded into a different form without breaking or tearing and without wrinkling, and the apparatus forming the subject of this invention by which the molding and reshaping are effected comprises means for yieldingly holding the marginal portion of said blank, which are herein shown as a clamp *b*, comprising an annular plate *b*², forming the lower clamp member, surmounted by a ring *b*³ of corresponding size forming the upper clamp member and adapted to be yieldingly pressed toward said plate by springs *b*⁴, the force of which may be adjusted by thumb-screws *b*⁵. The marginal part of the blank may thus be held with sufficient firmness to afford considerable resistance to a force tending to pull the blank from the clamp, but insufficient to cause a rupture of the blank when acted upon by such force, which when applied will pull a portion of the blank held between the clamp members inward therefrom into the space encompassed by the annular clamp. Such pressure is applied to the middle portion of the blank by suitable means—such, for example, as the die or plunger *c*, herein shown as sup-

ported on the end of an arm c^2 , connected with a slide rod or carrier c^3 , adapted to be acted upon by a treadle (not shown) or otherwise, so as to press the die c against the middle portion of the blank a , held in the clamp b , which latter is supported in a suitable socket or support B in the frame or bed of the machine, so that the blank in said clamp may be properly operated upon by the die c and other appliances of the machine. The said die is pressed downwardly against the central portion of the blank within the opening of the annular clamp, and thus stretches the said central portion of material and at the same time draws the clamped marginal portion toward the center, and thus contracts the margin while stretching the middle portion, so that the blank is brought to the condition shown in Figs. 2, 7, and 8.

The holding force of the clamp is sufficient to prevent fulling or wrinkling of the marginal portion of the blank as it is contracted in diameter, and the movement of the die c should not be sufficient to wholly pull the marginal portion of the blank from between the clamp members.

The apparatus also comprises means for expanding the stretched central portion of the blank, herein shown as an expanding device or former d , comprising a number of radially-moving segments d^2 , capable of being moved outward or inward simultaneously. A flexible and expansible band d^3 is provided, which may be passed around the ends of the said movable segments d^2 to cover the spaces between them as they expand, or the expanding former may be given a rotary movement while expanding, so as to act upon all parts of the fold in the material being molded or formed by it. The said segments d^2 are connected by the links d^4 with a slide or follower d^5 , which when depressed acts through said links d^4 to spread all of the segments d^2 simultaneously, as shown by full and dotted lines, Fig. 4.

The arm c^2 , that carries the die or plunger c , is shown as pivotally movable on the slide c^3 and has connected with it a second arm c^5 , which acts upon the end d^6 of the slide d^5 of the expanding former to depress the same, and thus move outward the segments d^2 , which expand or stretch the fullness of the blank out beneath the clamp b , bringing the said blank to the form shown in Figs. 9 and 10. The stop projections c^x on the arms c^2 c^5 cooperate with a stop projection c^4 on the slide c^3 , as shown in Figs. 1 and 2, to limit the pivotal movement of said arms, so as to bring the plunger c into alinement with the opening in the clamp or to bring the arm c^5 into alinement with the operating-slide d^5 of the expanding device.

A latch d^7 cooperates with the slide of the expanding former to lock the same in expanded position, and after the blank has been stretched and expanded the clamp b^3 , with the expanded former and blank therein, may be

removed from the support B in the machine and preferably left connected with the blank or cover until it has set or dried, after which the expanding former may be contracted and withdrawn therefrom and the finished cover removed from the clamp. A number of clamps and formers should be supplied with each apparatus, so that fresh blanks may be operated upon while those already formed are drying.

The invention is not limited to the specific construction of the appliances shown, as it may be widely varied. It is not essential, for example, that the means for stretching the middle portion of the blank and the means for expanding the same should be independent devices, as herein shown, or that the two operations should take place consecutively, as it is obvious that the expanding former (shown in Figs. 3 and 4) might perform the stretching operation to bring the blank to the form shown in Figs. 2 and 8, as well as the expanding operation to bring the blank to the form shown in Fig. 10, and that the expanding operation might be performed simultaneously with, instead of subsequent to, the stretching operation. It is desirable, however, to employ a separate die for stretching the middle portion of the blank preparatory to expanding the same, since by these means the blank may be stretched to the form and degree best adapted for expansion to the desired final shape.

We claim—

1. The herein-described apparatus for making abrasive covers for buffing-machine pads comprising a holding device for yieldingly holding the flat blank around the marginal portion thereof, and means for stretching the middle portion of said blank and expanding the same outward beneath the marginal part while still retained in said holding device, substantially as described.

2. An apparatus for making abrasive pad-covers for buffing-machine pads, comprising a clamp for yieldingly holding the marginal portion of a flat blank, a die or plunger adapted to be pressed against the middle portion of said blank to stretch the same and contract the yieldingly-held marginal portion, and means for radially expanding the stretched portion of the blank beneath said clamp while the marginal part of the blank remains held therein, substantially as described.

3. An apparatus for making abrasive pad-covers for buffing-machine pads comprising a detachable clamp for yieldingly holding the marginal portion of a flat blank; and a detachable expanding former adapted to expand the middle portion of said blank beneath the clamp while the marginal portion of the blank is yieldingly held therein, said clamp and former with the blank formed and held thereby being removable from the apparatus, substantially as and for the purpose described.

4. In an apparatus for making abrasive

pad-covers for buffing-machine pads, an expanding former comprising a number of radially-movable segments; means for moving the same radially inward or outward simultaneously; and a latch for locking the same in outward or expanded position, substantially as and for the purpose described.

In testimony whereof we have signed our

names to this specification in the presence of two subscribing witnesses.

ANDREW W. ROGERS.
SIDNEY W. WINSLOW.

Witnesses:

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NANCY P. FORD.