

No. 626,301.

Patented June 6, 1899.

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

METHOD OF MAKING ABRASIVE PAD COVERS FOR BUFFING MACHINES.

(Application filed Mar. 7, 1894.)

(No Model.)

2 Sheets—Sheet 1.

Fig 1.

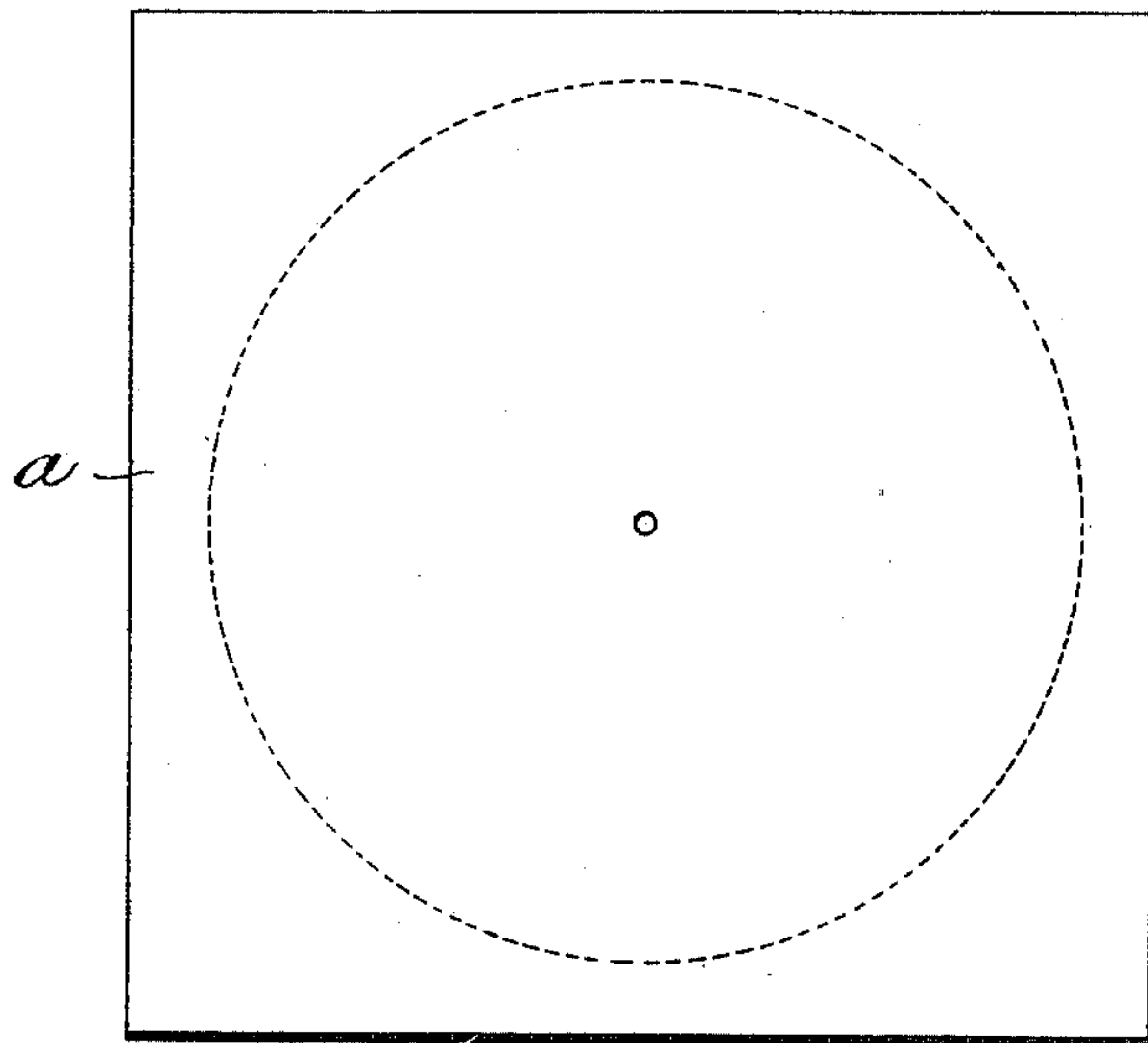


Fig 2.

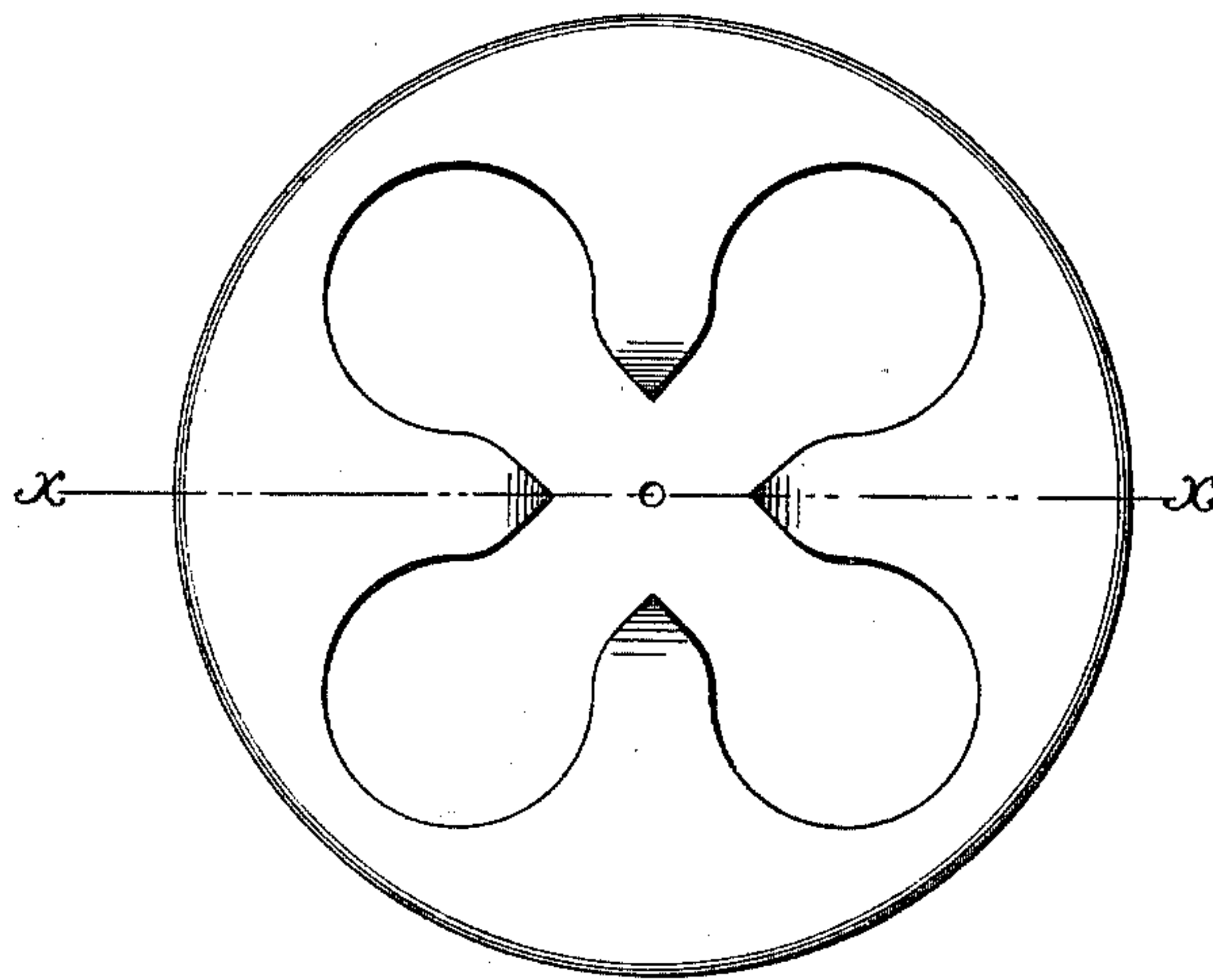


Fig 3.

Witnesses

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2 Sheets—Sheet 2.

Fig. 4.

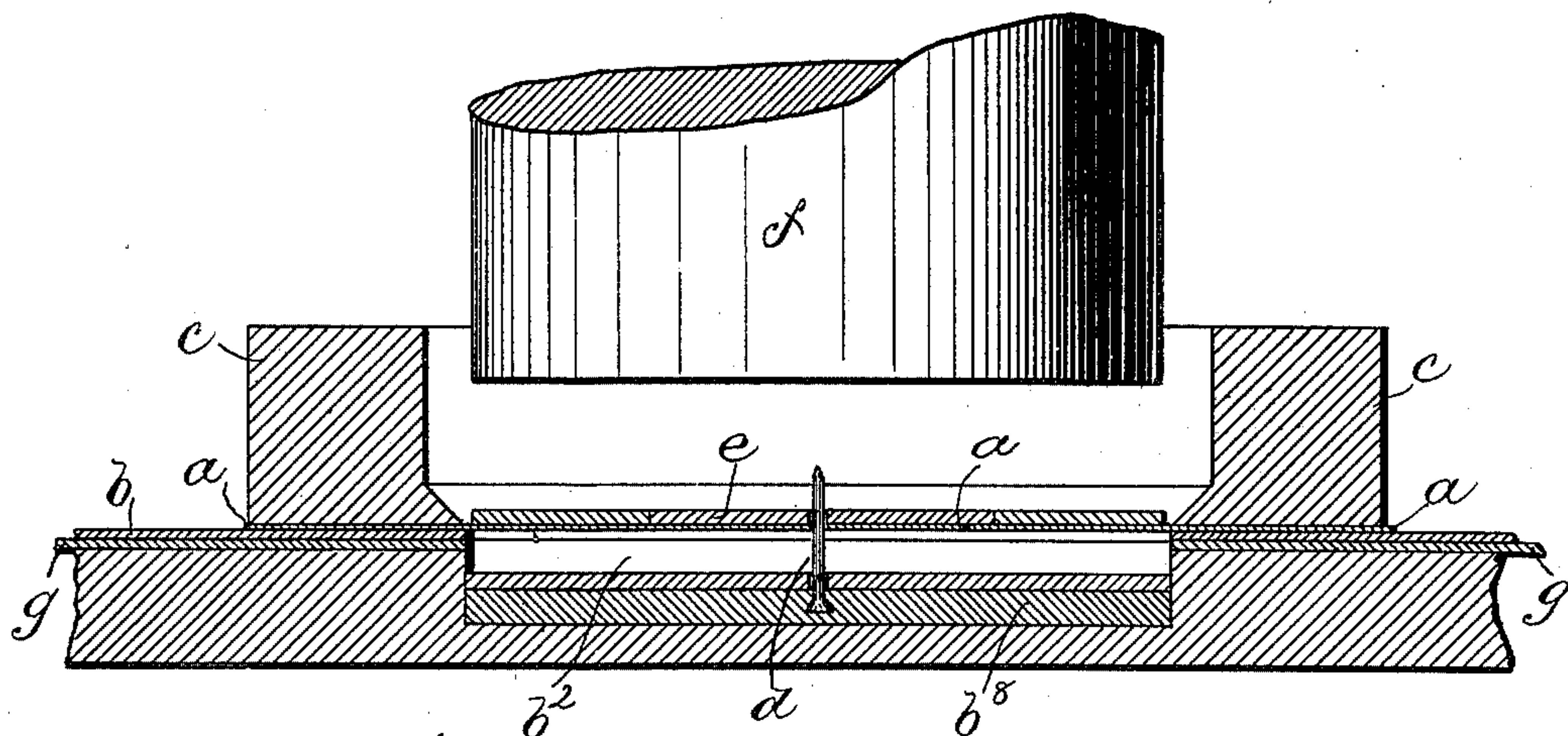


Fig. 5.

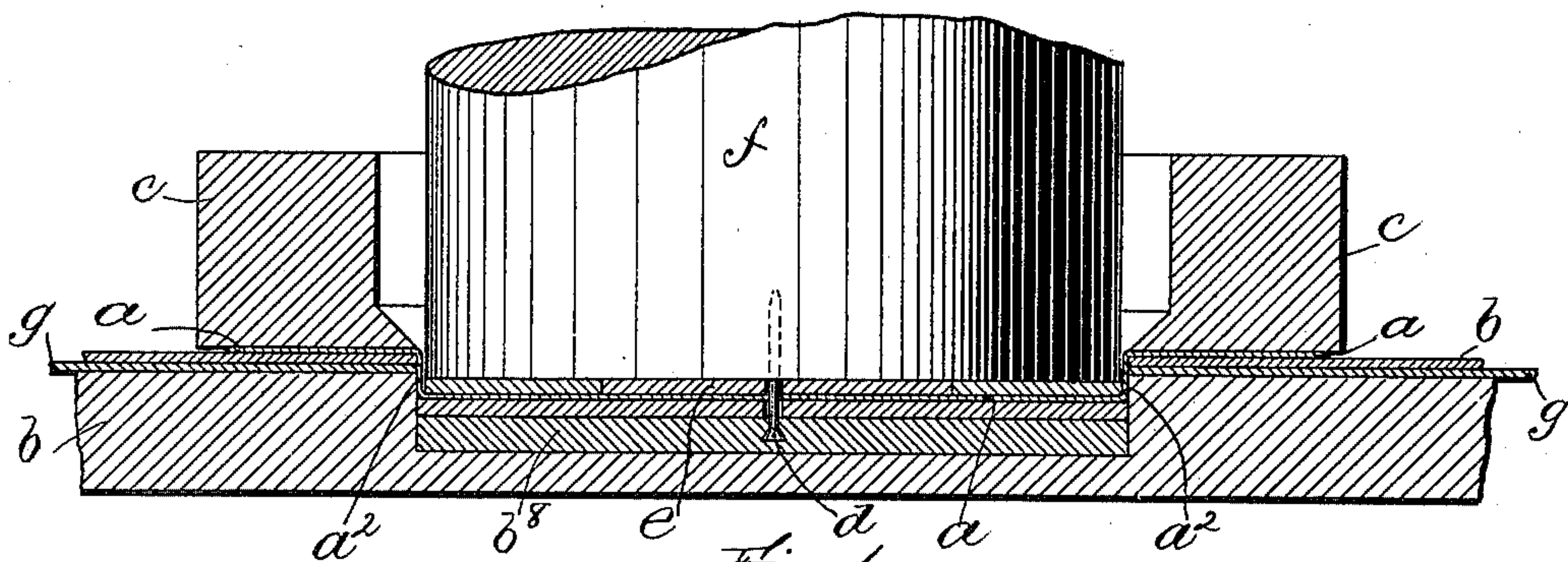
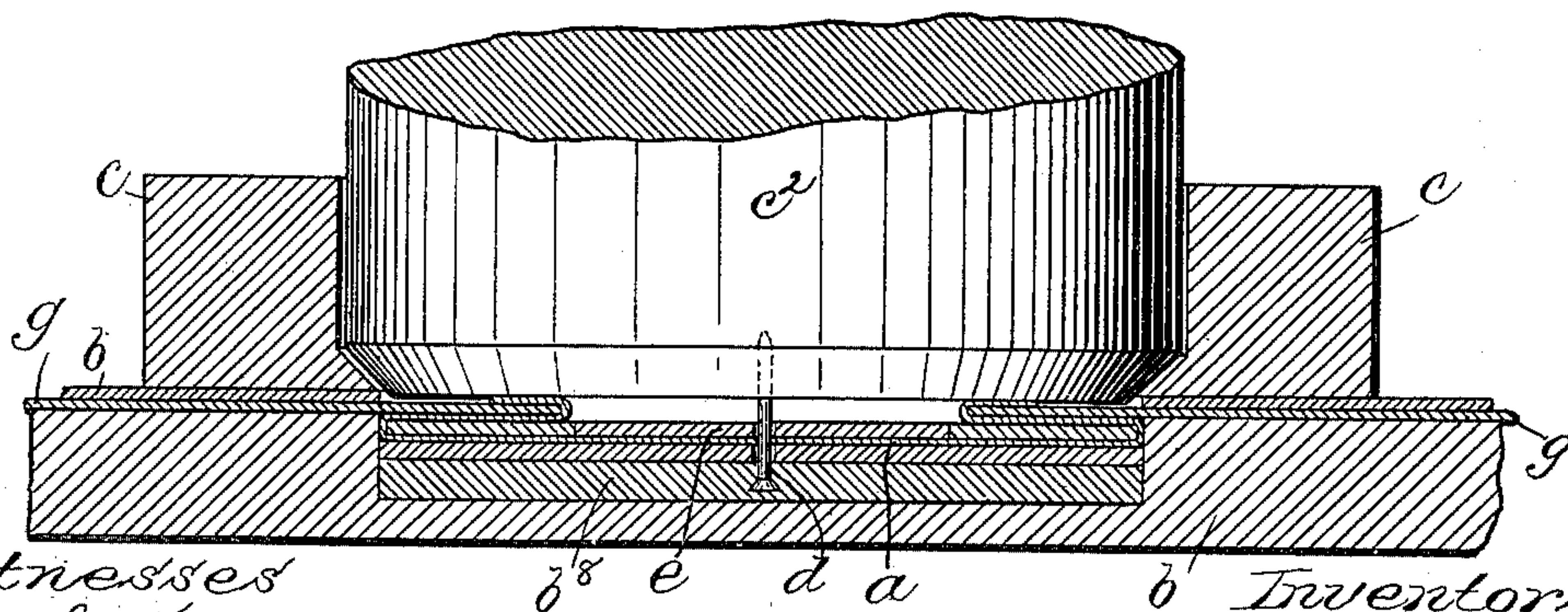


Fig. 6.



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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.

METHOD OF MAKING ABRASIVE PAD-COVERS FOR BUFFING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 626,301, dated June 6, 1899.

Application filed March 7, 1894. Serial No. 502,673. (No model.)

To all whom it may concern:

Be it known that we, ANDREW W. ROGERS and SIDNEY W. WINSLOW, of Beverly, county of Essex, State of Massachusetts, have invented an Improvement in Methods of Making Abrasive Pad - 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.

Our invention relates to a method of making abrasive covers for pads of buffing-machines for buffing the soles of boots and shoes—such, for example, as shown in Patent to Winslow and Fifield, No. 221,647, dated November 11, 1879.

The present invention consists in a method of making an abrasive cover having a circular working face and marginal attaching portion intended to overlie a portion of the pad or foot on which the abrasive cover is used in the machine, said cover being molded so that the angle or fold between the working face and the overlying portion is properly curved to correspond with the shape of the periphery of the pad or foot.

In another application, Serial No. 470,921, filed by us April 18, 1893, we have shown and described a method of producing an abrasive pad - cover of the kind just specified, consisting, essentially, in yieldingly holding a flat blank around the margin thereof and stretching and expanding the middle portion of the blank within the margin so held, by which operation the periphery of the original blank is contracted while the part within the margin is stretched and folded.

The method forming the subject of the present invention differs from that shown in the application just referred to in that the portion of the blank that is to form the working face is not materially stretched, but remains substantially in the original condition of the material of which the blank is composed, while the marginal portion is by a molding operation turned in over the working face, and its condition is so changed by stretching in some parts and contracting in others as to produce a substantially smooth inturned flange or attaching portion, while the fold at

the junction of said attaching portion with the periphery of the working face is molded to circular form to correspond with the periphery of the pad upon which the cover is to be used. This result is attained by forcing the marginal portions of the blank while in a tempered condition and while restrained or subjected to yielding resistance inward over a former applied to and corresponding in size and shape with the working face of the pad-cover, the blank thus being stretched into conformity with the periphery of the former at the fold between the working face and the inturned flange or overlying attaching portion and the said inturned portion being in part stretched and in part contracted, so as to lie substantially smooth and without plaits or folds over the working face.

Figure 1 is a plan view of a blank of the kind preferably used for producing an abrasive pad-cover by the method forming the subject of this invention; Fig. 2, a plan view of the finished pad-cover; Fig. 3, a transverse section thereof on line $x x$; Fig. 4, a sectional elevation illustrating the blank and agencies that act thereon in carrying out this process in the condition assumed at the beginning of the action on the flat blank; Fig. 5, a similar sectional view showing the agencies in the condition assumed after the operation is begun and when the blank has been prepared to have its marginal portions folded in and over the former; Fig. 6, a similar view showing the agencies in the condition assumed near the end of the folding operation.

The blank a , Fig. 1, of any suitable material, preferably commercial emery-cloth, may be of any suitable size and shape and is preferably a square in shape, slightly larger than the working face, the relative size and shape of which are indicated by the dotted circle, Fig. 1. This blank has its marginal portion outside of the dotted circle shown in Fig. 1 suitably tempered or softened by moisture, so that it is capable of stretching and contracting under the forces applied to it in carrying out the process, as will be described. The said blank a is laid upon a suitable support, (shown as a bed b ,) having a circular recess or depression b^2 of the size of the circular work-

ing face of the finished pad, as shown in Fig. 4, and the tempered marginal portion, which lies around the said opening b^2 , is yieldingly held to or clamped upon the bed b by a clamping member c , herein shown as an annular weight, which rests upon and thus holds the marginal portion of the blank between it and the bed in such manner that the marginal portion is restrained from movement, but can be drawn out from between the clamp and bed if sufficient force is applied to do so. For convenience the bed is provided with a centering-pin d , that passes through a central perforation in the blank, so as to insure holding it in the right position, and upon the central portion of the blank is laid the former e , which is a circular disk, shown as made of separate pieces to facilitate its removal from the cover after the marginal portion has been properly stretched and folded over the top of said former, so as to practically inclose said former between the working face and the said marginal portion. After the former has thus been applied upon the working face of the blank the said former, together with the central portion or working face of the blank, is depressed into the recess b^2 of the bed by any suitable means—such, for example, as the plunger f —sufficiently to bring the former slightly below the level of the top of the bed, as shown in Fig. 5. In this operation a portion of the blank a immediately adjacent to the periphery of the working face is turned up at right angles to the working face, as shown at a^2 , Fig. 5, and the angular junction with the periphery of the working face is molded to the circular periphery of the former e . This operation draws the marginal portion of the blank a inward a short distance between the bed and the clamp c , as shown in Fig. 5. A yielding cushion b^3 —such, for example, as a disk of rubber—is provided at the bottom of the recess b^2 to properly limit this first stretching or molding operation upon the marginal portion of the blank, although such cushion is not essential to the practice of the invention. The die or plunger f is then removed and a clamping device (shown as a weight c^2) is placed within the clamp c , and at this time it lies upon the upper surface of the former e . The marginal portion of the blank is now folded and laid smoothly over the upper surface of the former by any suitable means—such, for example, as the folding devices g , which are moved radially inward through suitable guideways in the bed b , just below the upper surface thereof and just above the former e . As these folders begin their movement from the position shown in Fig. 5, where their inner ends just coincide with the side walls of the recess b^2 , they first act upon the portion a^2 of the blank that stands at right angles to the periphery of the former e and carry it inward over the upper surface of the former, this movement of the marginal part of the blank being retarded by the holding pres-

sure of the clamp c , so that the material is stretched and slips or draws off over the inner ends of the folders, and is thus stretched and laid smoothly over the upper surface of the former e . As soon as the ends of the folding devices g have advanced inward a short distance they engage with the edges of the inner clamp c^2 , which edges are shown as beveled, so that as soon as the folders have advanced a short distance they lift the clamp c^2 , which now rests upon the outer or unfolded part of the margin of the blank, as shown in Fig. 6, and thus continue the retarding or restraining effect of the clamp c , so that the marginal part continues to draw off over the ends of the folders and to be stretched and smoothed thereby until they are finally carried in as far as required, this operation being illustrated in Fig. 6. At the end of the inward movement of the folders the whole or substantially the whole of the marginal portion of the blank has been laid smoothly and evenly over the top of the former e , and is held in flat smooth condition between the top of the former and the under face of the folders g , and when the operation is completed the parts may be left for a while to permit the tempered marginal portion to set or stiffen, after which the clamps c c^2 may be removed, the folders withdrawn, and the former, with the cover properly molded upon it, removed, and when the cover has thoroughly set the former may be taken out without any distortion of the cover by removing it piece at a time.

The present invention relates solely to the process or method of making the blanks and is not dependent upon or limited to any specific appliances for carrying it out, and it is obvious that the herein-described method may be carried out by other means than those herein indicated, the mechanical construction of which is not fully shown and is not herein claimed. Complete and suitable mechanism embodied in an organized machine for producing pad-covers in accordance with the method forming the subject of the present invention will form the subject of future applications for Letters Patent.

The process forming the subject of the present invention involves the same principle of operation as that shown and described in our former application and embodies the invention of that application, at least so far as one step of that process is concerned—namely, that of first molding a marginal portion at right angles to a circular part within said margin; but it differs from that process in the specific manner of performing the said step in the following particulars: In the method set forth in said former application a part of the middle of the blank of less size than the working face of the finished article was subjected to pressure by a plunger, while the marginal part was restrained, this resulting in stretching the middle part of the blank and contracting the marginal portion, and after this

stretching and contraction had taken place the stretched part was re-formed by lateral expansion so as to produce a working face and an overlying flange, the material of which
5 working face had been subjected to tension or substantial stretching action in its production.

10 In the method forming the subject of the present application the blank has a portion of a size equal to the working face subjected to pressure, which simply moves that portion out of line with the marginal part, which is restrained during this movement, thus stretching and forming the margin without producing
15 substantial change in the central part or subjecting it to tensile strain sufficient to stretch it a material amount.

20 While in the present application the central part or working face is shown as left flat, it is obvious that it might be slightly convexed by using a former having a convex under surface. Such convexing, however, would not materially stretch the material and might be effected without softening or tempering the
25 central part of the blank, which thus may retain substantially its original texture and con-

dition. This is of advantage, as the working face is more durable and efficient as an abrasive agent when in the condition of the original blank than it is after being softened or
30 tempered and subjected to stretching and molding action.

We claim—

That improvement in the art or method of making abrasive covers for buffing-machine
35 pads which consists in molding the marginal portion of a flat blank to a position at right angles to the central portion without substantially stretching said central portion, and then contracting said marginal portion to a position
40 overlying and substantially parallel with the central unstretched portion, substantially as and for the purpose described.

In testimony whereof we have signed our names to this specification in the presence of
45 two subscribing witnesses.

ANDREW W. ROGERS.
SIDNEY W. WINSLOW.

Witnesses:

JOS. P. LIVERMORE,
JAS. J. MALONEY.