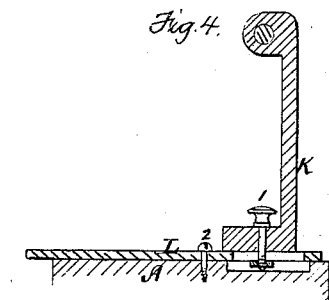
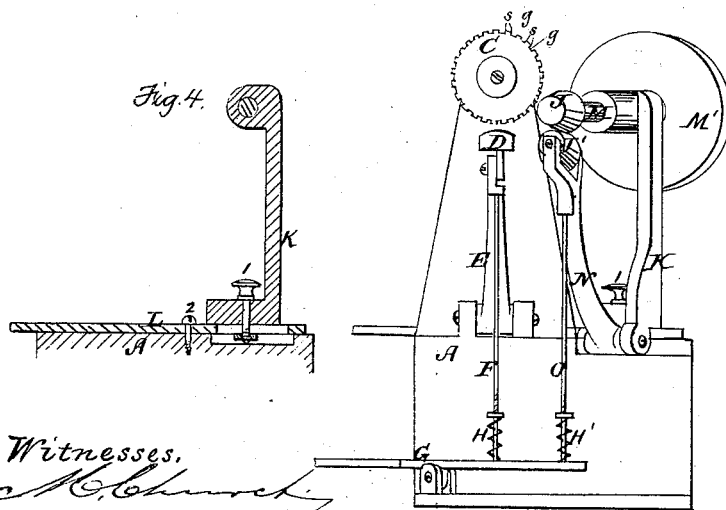
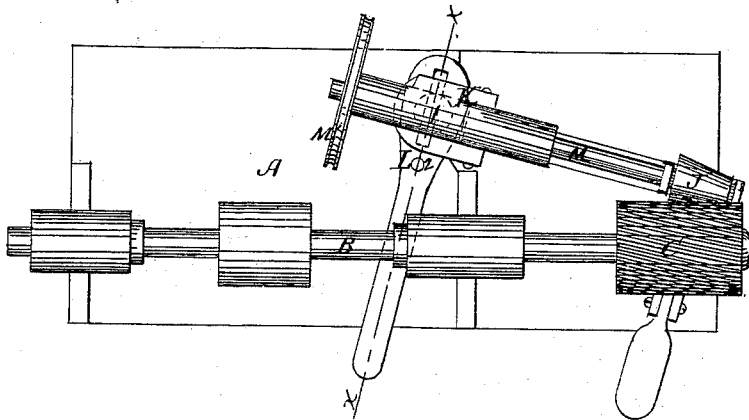
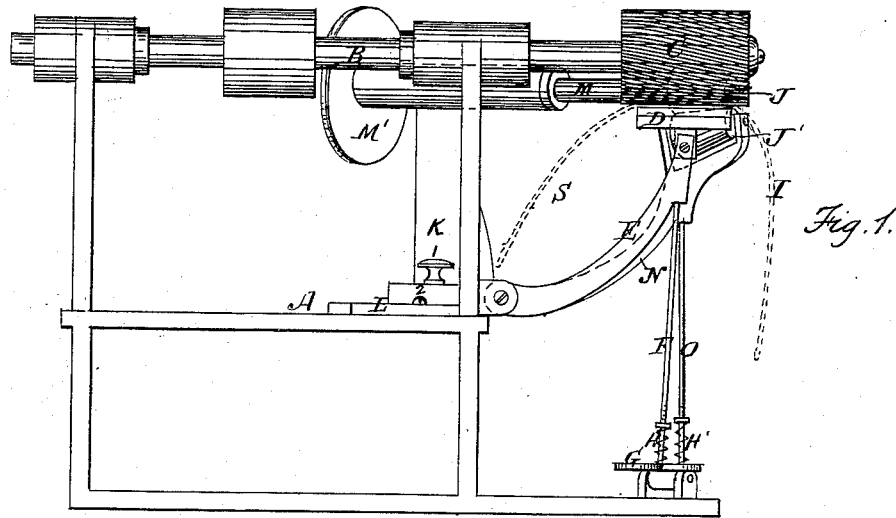


A. L. F. MITCHELL.
Hat-Pouncing Machine.

2 Sheets—Sheet 1.

No. 219,001.

Patented Aug. 26, 1879.



Witnesses.
M. Church
W. Blackstock

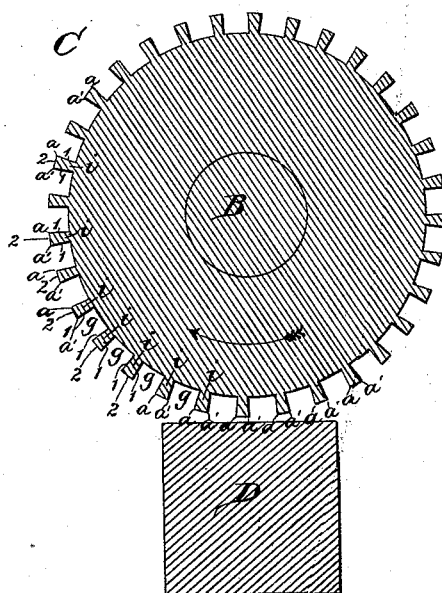
Inventor:
A. L. F. Mitchell
by *Wright Brown*
Atty.

A. L. F. MITCHELL,
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Fig. 6.



Witnesses.

Geo. W. Pierce.
E. L. Gleason.

Inventor

A. L. F. Mitchell
by Wright & Brown
Atty.

UNITED STATES PATENT OFFICE.

ALBION L. F. MITCHELL, OF METHUEN, MASS., ASSIGNOR TO HIMSELF,
JOSEPH W. FULTON, AND CALVIN J. SARGENT, OF SAME PLACE.

IMPROVEMENT IN HAT-POUNCING MACHINES.

Specification forming part of Letters Patent No. **219,001**, dated August 26, 1879; application filed
April 19, 1879.

To all whom it may concern:

Be it known that I, ALBION L. F. MITCHELL, of Methuen, in the county of Essex and State of Massachusetts, have invented certain Improvements in Hat-Pouncing Machines, of which the following is a specification:

This invention has for its chief object to provide an improved tool for shearing or finishing hat-bodies in hat pouncing, shearing, and finishing machines, and also to provide certain other improvements in the construction of such machines.

The invention consists, mainly, in a rotary hat shearing and finishing tool, formed as hereinafter described, to shear and smooth the surface of a hat, to operate equally well when rotated in either direction, and to be improved in condition when rotating in one direction for operation when its motion is reversed.

The invention consists, also, in certain details of construction and combinations of parts, whereby the operation of presenting a hat-body to a rotary finishing-tool is facilitated, all of which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a front elevation of a machine embodying my improvements. Fig. 2 represents a top view of the same. Fig. 3 represents an end view of the same. Fig. 4 represents a section on line *x x*, Fig. 2. Fig. 6 represents an enlarged transverse section of the shearing and finishing tool and the supporting bed or block.

Similar letters of reference indicate like parts in all of the figures.

In the drawings, A represents the frame of a hat-pouncing machine, having suitable standards to support a horizontal shaft, B, which is adapted to be rotated by suitable means.

C represents my improved shearing and finishing tool, which is located on the end of the shaft B and is rotated thereby. The tool C consists of a body having the form of a cylinder, in the periphery of which are cut parallel grooves *g*, extending longitudinally of the cylinder. The sides of the grooves are substantially radial with the center of the body C, and the grooves are separated by intervening segments of the periphery of the body. Said segments are therefore concentric with the

center of the body. They are marked 2 in the drawings, and they form what I term "smoothing-surfaces." By this construction ribs *i* are formed, each of which has two sides, 1 1, which are radial, or nearly so, with the center of the body, an outer surface, 2, concentric with the center of the body, and two sharp angles, *a a'*, formed by the junction of the surfaces 1 1 and 2, said angles being equal, and, preferably, somewhat acute, so that they can act as shearing-edges, as hereinafter described.

It will be seen that the angles *a a'* compose two series, only one of which is operative at a time. For instance, when the tool is rotated in the direction indicated by the arrow in Fig. 6, only the angles *a* will operate to shear a hat or other article pressed against the periphery of the tool, and when the rotation of the tool is reversed the angles *a'* operate, the angles *a* becoming inoperative.

In the operation of the machine the tool C is very rapidly rotated, and a hat-body is presented to it by suitable means, as is usual in hat pouncing and shearing machines.

If the tool be rotated in the direction indicated by the arrow in Fig. 6, the angles *a* shear the surface of the hat to the desired extent, and the smoothing-surfaces 2, following the angles *a*, rub down, smooth, and compact the surface of the hat, giving the latter a lustrous and finished appearance, said smoothing-surfaces being polished and moving with great rapidity.

The material removed by the angles is not reduced to fine dust, as it is by the sandpapered pouncing-rollers usually employed, and said material is carried away from the hat-body by the grooves *g*. Hence two objections to the use of sandpapered rolls are obviated—viz., first, the reduction of the removed material to dust, and its consequent deterioration in value as an article of commerce, and, second, the lodging of said dust in and upon the body of the hat.

When the angles *a* become dulled by use, the rotation of the tool may be reversed, thus bringing into action the angles *a'*, which, having the same form and sustaining the same relation to the grooves and smoothing-surfaces as the angles *a*, operate in the same manner.

It is obvious that the contact of the surfaces

2 with the hat-body wears said surfaces away, and thereby tends to sharpen the inoperative series of angles; hence, by frequently reversing the rotation of the tool, both series of angles may be kept in good cutting order for a long time by the inevitable wear of the tool.

When the rotation of the tool is reversed it will be necessary to reverse the position of the tool on its shaft in such manner that its ends shall be reversed, so that the movement of the tool, while actually reversed, will not be changed relatively to the feed-rollers, herein-after described; hence the tool should be detachable from its shaft, and adapted to be placed thereon either end first. All the angles may be sharpened by turning off the surfaces 2.

The ribs *i* are preferably spiral in form, and are, of course, made of metal, preferably steel.

If desired, the entire tool may be made of one piece of metal, grooved to form the grooves and ribs; or the ribs may be separate pieces, rigidly attached to a central core or body, which may be of wood, metal, or any suitable material. The diameter of the tool C is preferably about three inches, and the width of each surface 2 is preferably about one-eighth of an inch.

Any suitable means may be provided for presenting the hat-body to the tool C. I prefer to employ a block, D, which is pivoted to an arm, E, which is, in turn, pivoted to the frame A, so as to swing in a vertical plane. The arm E is supported by a rod, F, which is supported by a treadle, G. A spring, H, is interposed between the treadle and an adjustable collar on the rod F. These means enable the bed D to be raised by the pressure of the operator's foot on the treadle, and forced thereby against the under surface of the tool C. The spring H gives the bed a yielding pressure against a hat-body inserted between itself and the tool. The arm E is curved or otherwise formed to leave an unobstructed space, S, between itself and the tool C and its arbor B, as shown, said space being of sufficient depth to receive the outer portion of a hat-body when the tip or crown portion is being operated on by the tool C, as shown in dotted lines in Fig. 1, I representing the hat-body.

The space S enables the machine to pounce or shear the entire surface of a hat-body, and obviates the use of a special machine to finish the tip, as has been necessary heretofore.

J J' represent the feed-rolls, both of which are supported by a frame, K, which is pivoted at 1 to a base or support, L, which is pivoted at 2 to the frame of the machine, the frame K and base L being adapted to rotate horizontally on their respective pivots. The frame K is provided with a horizontal shaft, M, on one end of which is located the feed-roll J, and on the other end a pulley, M', whereby the shaft M and roll J are rotated. The frame

K is also provided with an arm, N, which is pivoted thereto to swing vertically, and carries in its outer end the feed-roll J'.

The arm N is supported by a rod, O, which is supported by the treadle G, and rests directly on a spring, H', which supports the roll J' as the spring H supports the bed D, the roll J' being raised and lowered simultaneously with the bed D, and held with a yielding pressure against a hat-body interposed between itself and the roll J by the spring H'.

The rolls J J' are conical, and their supporting devices, before described, enable them to be moved laterally and longitudinally with relation to the tool C, the lateral motion being effected by the rotation of the frame K, and the longitudinal by the joint rotation of frame K and base L. The feed-rolls are thus adapted to be variously adjusted with reference to the roll C, and to be swung around so as to be entirely removed therefrom.

The provision of means for raising and lowering the feed-roll J' enables the operator to stop the motion of the feed-roll J' at any time by releasing the treadle, and the connection of the feed-roll J' and the bed D to the same treadle enables the operator to stop both the feeding and the shearing operations simultaneously, and gives him complete control over the machine. The arm N of the feed-roll J' corresponds in form and arrangement with the arm E of the bed D, so that it does not obstruct the space S.

I do not limit myself to the described means for supporting and feeding a hat-body in connection with the shearing-tool, as the latter may be employed with any other suitable devices without departing from the spirit of my invention.

I am aware that a hat-pouncing-machine has been constructed in which the feed-rolls are adjusted longitudinally and laterally with reference to the pouncing-roller, and I do not therefore claim, broadly, rolls capable of being so adjusted. By the described means of adjustment, however, I obtain greater freedom and facility of movement than any with which I am familiar.

I claim as my invention—

1. A hat shearing and finishing tool consisting of a rotary roll or body having longitudinal metallic ribs *i*, separated by grooves *g*, each rib having three surfaces, 1 1 and 2, arranged as described, whereby shearing-angles *a* and *a'* and intermediate smoothing-surfaces, 2, are formed, and the tool is adapted to shear, smooth, and remove the sheared material from a hat, whether rotated in one direction or the other, and one series of shearing-angles is adapted to be sharpened while the other is in use, as set forth.

2. The improved reversible cutter or tool consisting of a rotary metallic body having longitudinal grooves in its periphery, the sides of said grooves being substantially radial, and

formingshearing-angles by their junction with the intervening portions of the periphery of the body, as set forth.

3. A shearing and finishing tool consisting of a rotary roll or body having two series of metallic shearing-angles, a and a' , a series of smoothing-surfaces, 2 , which are concentric with the center of the tool, and a series of grooves or depressions, g , all as set forth.

4. In combination with a rotary pouncing or shearing tool, the upper feed-roller, the bed or supporting-block, and the lower feed-roller, the curved supporting-arms $E N$, formed to leave a deep space, S , under the arbors of the rotary tool, and the upper feed-roller, whereby a hat-body may be inclined downwardly to allow its tip to be acted on by the rotary tool, as set forth.

5. In a hat-pouncing machine, the combination and arrangement of the pouncing-roller, the bed, the upper feed-roller, the lower feed-

roller, and means, substantially as described, whereby the lower feed-roll is raised and lowered simultaneously with the bed, and held with a yielding pressure against the upper feed-roller, as set forth.

6. In a hat-pouncing machine having a rotary pouncing-roller, and a bed supported and operated by means substantially as described, the feed-rollers $J J'$, both supported upon a frame which is pivoted to swing horizontally upon two axes, one of said feed-rollers being connected to said frame by an arm adapted to swing vertically, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 16th day of April, 1879.

ALBION L. F. MITCHELL.

Witnesses:

JOSEPH W. FULTON,
C. F. BROWN.