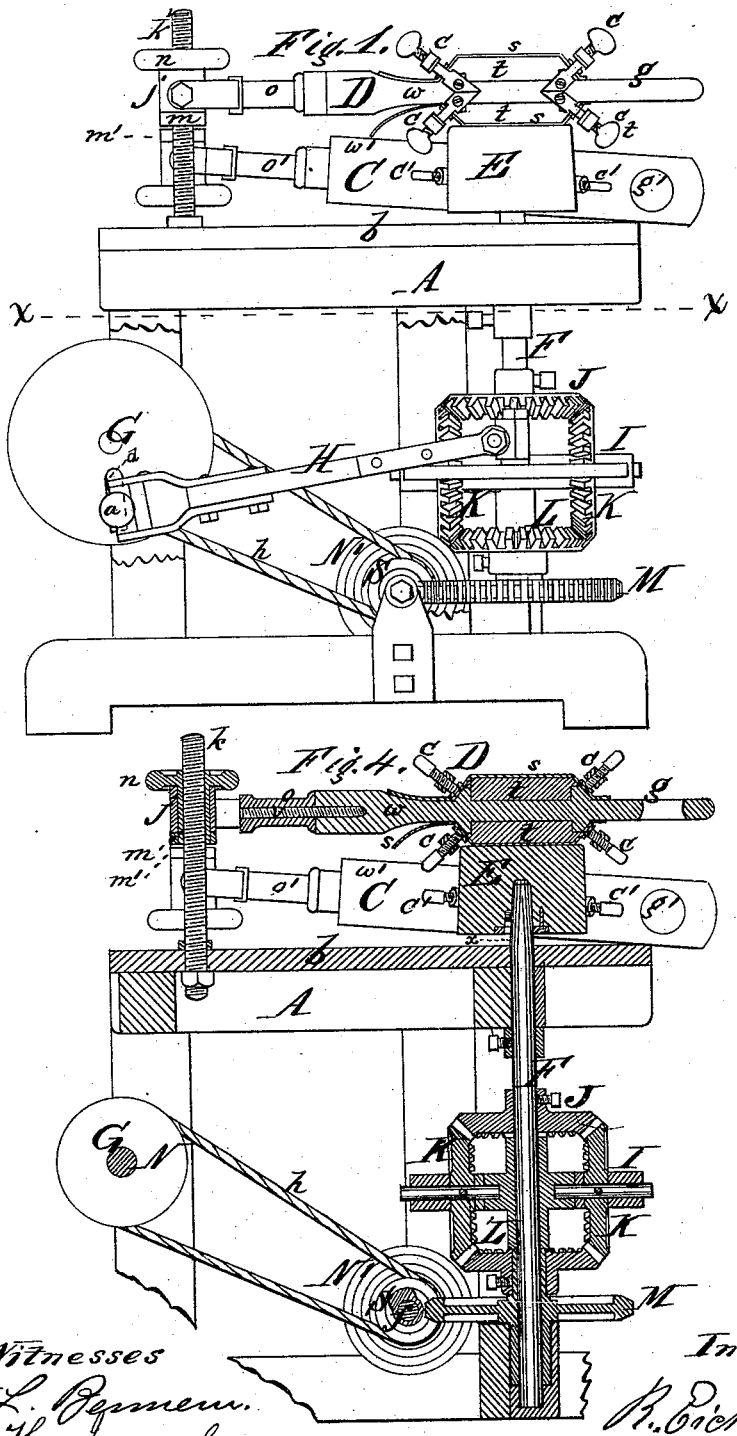
2 Sheets—Sheet 1.

R. EICKEMEYER.

HAT POUNCING MACHINE.

No. 181,829. Patented Sept. 5, 1876.



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2 Sheets—Sheet 2.

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Fig. 2.

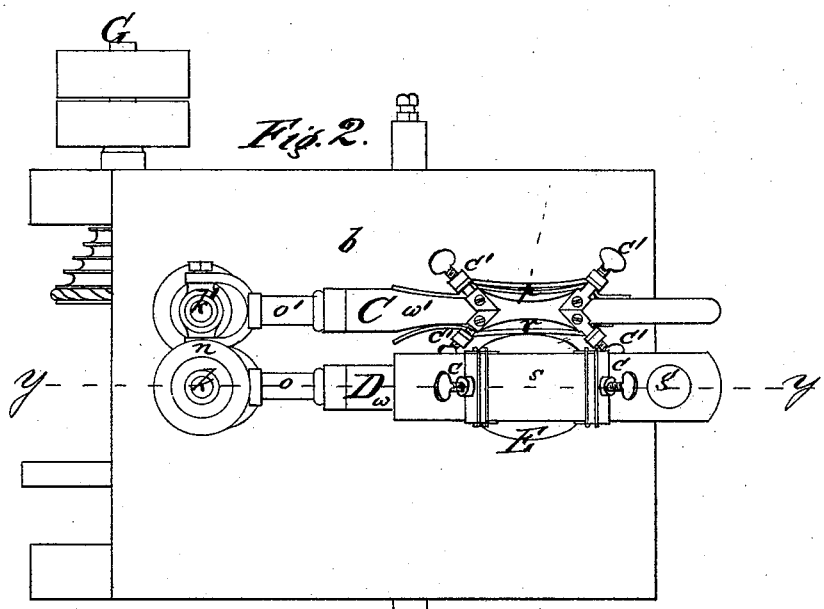
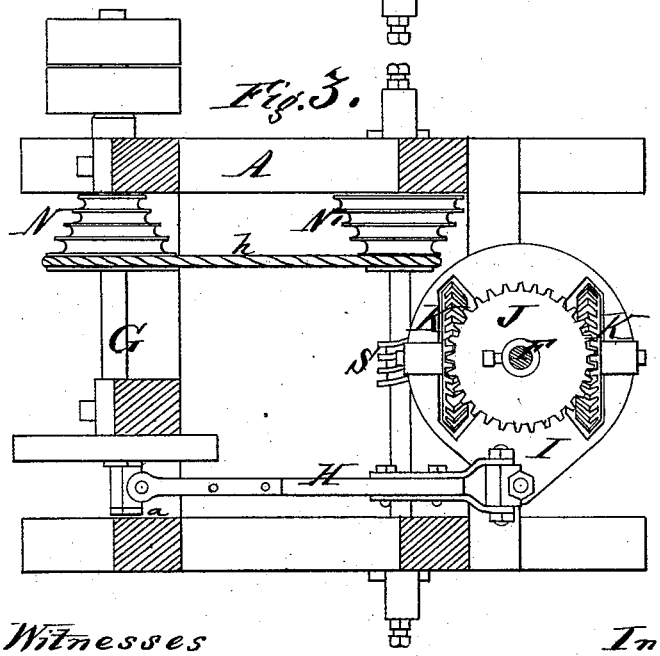


Fig. 3.



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UNITED STATES PATENT OFFICE.

RUDOLF EICKEMEYER, OF YONKERS, NEW YORK.

IMPROVEMENT IN HAT-POUNCING MACHINES.

Specification forming part of Letters Patent No. **181,829**, dated September 5, 1876; application filed August 1, 1874.

To all whom it may concern:

Be it known that I, RUDOLF EICKEMEYER, of Yonkers, in the county of Westchester and State of New York, have made an invention of new and useful Improvements in Machines for Pouncing and Lustering or Velveting Hats; and that the following is a full, clear, and exact description and specification of the same.

The object of my invention is mainly to enable a glossy or lustered velvety surface to be imparted to hats mainly by machinery, so as to obviate the necessity of doing the greater part of such work by skilled hand-labor.

To this end my invention consists of certain combinations of mechanical devices which are set forth in detail at the close of this specification. The principal members of these combinations are the following, viz: A hat-block carrier, by means of which a circular reciprocating movement may be imparted to the hat-block, upon which the hat to be operated upon is mounted; reciprocating mechanism for causing the hat-block carrier with the hat-block and hat to turn to and fro, or have a rapid circular reciprocating movement, so as to rub the hat to and fro against the rubbing material; mechanism for turning the hat-block carrier progressively during its circular reciprocating movement, so as to subject every portion of the periphery of the hat in succession to the action of the rubbing-surfaces of the machine; rubbing-stocks and their appurtenances, by means of which the rubbing materials are carried and conveniently applied to the hat; and adjusting devices, by means of which the positions of the rubbing-surfaces may be adjusted to hats of different dimensions, and the speed with which the hat is turned may be varied.

In order that the invention may be fully understood I have represented, in the accompanying drawings, and will proceed to describe, a hat-velveting machine embodying my invention in the best form which I have thus far devised.

In the said drawings, Figure 1 represents a side view of the said machine with parts of the frame removed. Fig. 2 represents a plan of the machine. Fig. 3 represents a horizontal section of the machine at the line *x x* of Fig. 1. Fig. 4 represents a vertical section of parts of the machine at the line *y y* of Fig. 2.

The said machine has a frame, A, upon which the moving parts are mounted, and whose top forms a table, *b*, upon which the rubbing-stocks C D rest when not in use. The hat-block E projects above this table, and it is mounted upon the upper end of an upright block-carrier, which is composed, in this example, of the shaft F and the head or chuck *x*, to which the hat-block is secured. A circular reciprocating movement is imparted to the block-carrier from a continuously-revolving driving-shaft, G, by means of the crank-pin *a*, the connecting-rod H having swivel-boxes at its ends, and the reciprocating frame I, which is caused to vibrate about one-sixth of a revolution in each direction when the driving-shaft G is turned.

In order that the extent of the reciprocating movement may be varied as found expedient, the crank-pin *a* is secured in a slot, *d*, (represented in dotted lines,) so that it may be set nearer to or farther from the axis of the driving-shaft G.

The rubbing-stocks C D are arranged to operate upon only a portion of the periphery of the hat at one time, and in order that every part of the periphery of the hat-block (with the hat upon it) may be presented in succession in the position for being rubbed, the reciprocating frame I is not connected directly with the carrying-shaft F, but is arranged to turn upon it, and is connected with it through the intervention of the beveled wheels J K K L. The wheel J is secured to the shaft F. The wheels K K are constructed to turn upon arbors secured to the reciprocating frame I, and the wheel L is secured to a worm-wheel, M, which is fitted to turn upon the hat-block carrier F, and is turned by means of the screw S. This screw is secured to a counter-shaft, *f*, which receives a revolving motion from the driving-shaft G by means of a belt, *h*, and belt-pulleys N N′. In order that the speed of movement of the screw may be varied, the pulleys N N′ are cone-pulleys, having grades of different diameters to which the belt may be shifted.

The rubbing materials are secured to the

rubbing-stocks C D, of which one, D, is fitted to operate upon the tip of the hat, and the other, C, to operate upon the side crown. Each rubbing-stock is combined with the hat-block carrier F, through the intervention of the frame of the machine and a species of universal joint, which, while holding one end of the rubbing-stock in place, permits the body of the stock to be readily moved, as required, to bear the rubbing material forcibly against the hat secured upon the hat-block of the hat-block carrier. Thus, the tip-rubbing stock D, which has at one end a handle, *g*, is pivoted at its other end to a sleeve, *j*, which is constructed to turn freely upon a hub, *m*, secured to a standard, *k*, so that the pivot and turning-sleeve permit the rubbing-stock to be turned up and down and also crosswise of the axis of the hat-block carrier.

In order that the tip-rubbing stock may be adjusted to suit hats of different heights, the hub *m* is formed into a nut, and the standard *k* has the form of a screw, so that the required adjustment of the tip-rubbing stock D may be effected by turning the nut-hub *m* up or down the screwed standard *k*, and, for convenience of adjustment, the nut *m* is fitted with a hand-wheel, *n*, by means of which it may be readily turned. The tip-rubbing stock is provided with two fixed cushions, *t t*, composed in this example of blocks of vulcanized india-rubber, to support the rubbing material *s*, and a clamp, *c*, is fitted at each end of each cushion to hold the rubbing material to the cushion.

The body *w* of the tip-rubbing stock is connected with its shank *o* by means of a swivel-joint screw, *i*, Fig. 4, so that the stock may be turned upside down to bring one or other of its rubbing-surfaces into operation, or that it may rock slightly to adapt itself to the surface of the hat on the hat-block.

The employment of a screw as the means of making the swivel-joint is advantageous, because, in addition to forming the joint, it enables the rubbing-stock to be adjusted longitudinally, as circumstances may render expedient.

The rubbing-stock C for the side crown is similar to the tip-rubbing stock D, and is connected with a nut, *m'*, which may be screwed up and down upon the screw-standard *k'*, for the purpose of adjustment. Its body *w'*, also, is connected with its shank *o'* by a swivel-joint screw, which permits the stock to be reversed side for side, or to rock, to adapt itself to the surface of the hat-crown. This crown-rubbing stock is fitted with clamps *c' c' c' c'*, for holding the rubbing material, and with flexible beds *r*, one at each side, for supporting those materials. Each of these beds *r* consists of a broad strap of leather, which is secured to the stock at its ends, and is permitted to sag between them, so as to adapt itself to the curvature of the crown of the hat.

When this machine is in operation the hat to be pounced or lustered is made fast to the hat-block E by means of a string tied at the band, and the driving-shaft G is caused to revolve. The revolution of this shaft imparts a circular reciprocating or vibratory movement to the reciprocating frame I, and to the cog-wheels K K. As the lower teeth of these wheels are held by the wheel L while their pivots are caused to reciprocate circularly by the reciprocating frame I, the said wheels act upon the upper wheel J as circular levers, to compel it, the block-carrying shaft F to which it is secured, the hat-block, and the hat to move to and fro, or reciprocate circularly upon the axis of the block-carrier F, the angular movement in each direction being about twice as great as that of the reciprocating frame I. As, however, the screw S turns the lower wheel L a little during each vibration, the cog-wheels K K, carried by the reciprocating frame I, are compelled to turn a little more during the vibration in one direction than during the return vibration, and consequently to move the wheel J and the block-carrier F correspondingly; and as this progressive movement of the lower wheel L is continued, the hat-block carrier and hat-block are progressively turned, and the part of the hat-block which is in contact with the rubbing-stocks C D is progressively shifted or varied. The screw S, the worm-wheel M, and cog-wheels J K K L, constitute the progressive turning mechanism by which such progressive turning and shifting are effected automatically and continuously, while the cone-pulleys N N' enable the speed of turning to be adjusted to suit the kind of work which is to be done.

The rubbing-stocks are borne, one at a time, against the hat by the hands of the operator applied to the handles *g g'*, and the combination of these stocks with the hat-block carrier greatly facilitates the work, as it dispenses with the necessity of supporting the rubbing material by the hands of the operator alone, as has heretofore been necessary with reciprocating pouncing-machines. The clamps *c c c' c'* not only secure the rubbing material to the stock, but permit it to be shifted as worn. Thus a long ribbon of sand-paper or of lustering felt may have one of its ends slipped into the clamps and fastened by them, and when the surface in use between the clamps becomes worn away the clamps may be slacked, and the ribbon may be pulled endwise through them, so as to bring a fresh surface in the proper position to operate. The pliability or flexibility of the beds *r* of the crown-rubbing stock is important, because it enables the rubbing-surface to adapt itself to variations in the curvature of the crown; consequently the machine can be used with great advantage to luster oval-crowned hats. The hat-block E may be secured to the reciprocating hat-block carrier F *x* in any suitable manner, and the mechanism of the machine may be varied in construction as circumstances render expedient, mechanical substitutes or

equivalents being substituted for the members which impart the circular reciprocating and the progressively-turning motions to the hat-block carrier. Thus, for example, belts and pulleys suitably arranged to effect the progressive turning of the hat-block carrier may be substituted in place of cog-gear; or, the progressive turning movement may be effected directly by the screw and worm wheel, while the circular reciprocating movement is effected by making the same screw with a longer barrel, and by causing it to move endwise to and fro the requisite distance. In this latter modification the worm-wheel would be fixed directly to the hat-block carrier, and would be the equivalent for the reciprocating frame of the machine, represented in the drawings, while the screw would act as a reciprocating rack to impart the reciprocating movement to the said equivalent, the screw itself being moved endwise by means of a crank and connecting-rod, or other suitable means.

One or more parts of my invention may be used without the others.

I claim as my invention—

1. The combination, substantially as before set forth, of the hat-block carrier, the reciprocating frame, the progressive turning mechanism, and the rubbing-stock for holding the rubbing material.

2. The combination, substantially as before set forth, of the hat-block carrier, the reciprocating frame, the progressive turning mechanism, and the devices for varying the relative speeds of the reciprocating and turning motions.

3. The combination, substantially as before set forth, of the progressive turning mechanism and the vibrating frame, with the shaft that imparts motion to the hat-block, whereby the said shaft is caused to both reciprocate circularly and turn progressively, and to impart this compound movement to the hat-block.

Witness my hand this 9th day of July, A. D., 1874.

RUDOLF EICKEMEYER.

Witnesses:
W. L. BENNEM,
W. H. ISAACS.