4 Sheets—Sheet 1

R. EICKEMEYER.
Hat-Pouncing Machine.

No. 202,529. Patented April 16, 1878.

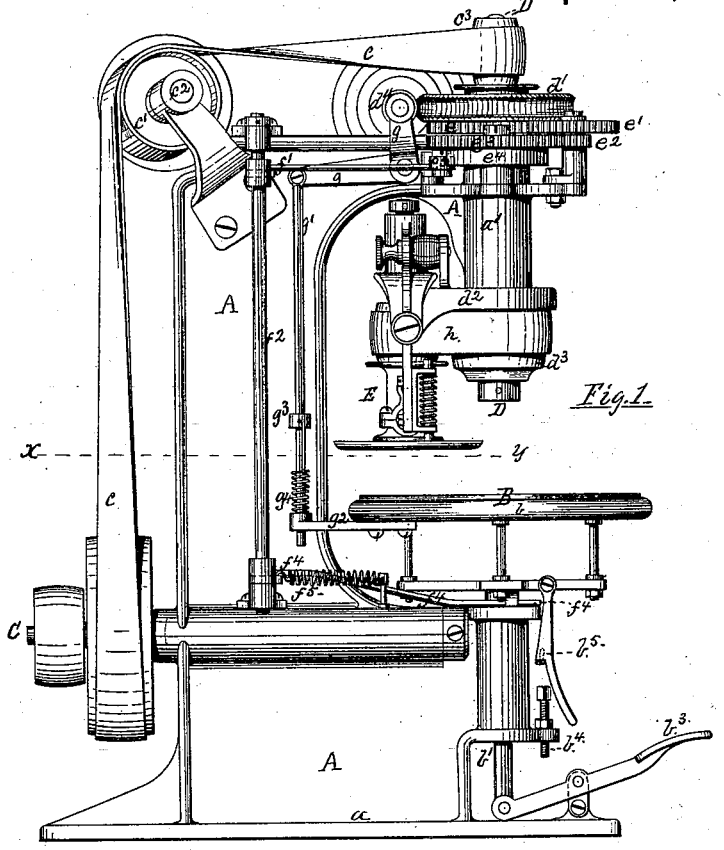

Fig. 1.

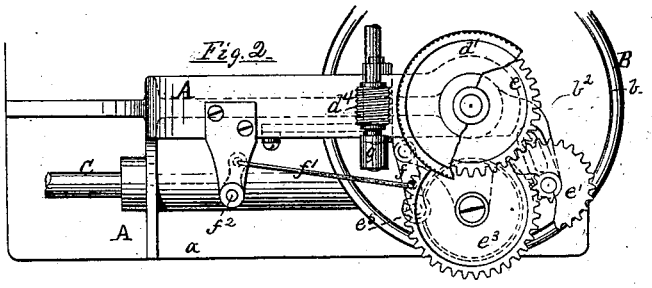

Fig. 2.

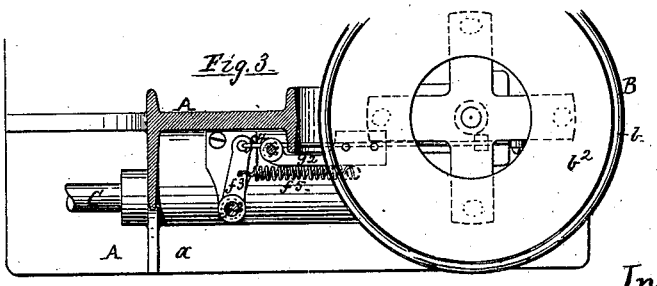

Fig. 3.

Witnesses.
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4 Sheets—Sheet 2.

R. EICKEMEYER.

Hat-Pouncing Machine.

No. 202,529. **Patented April 16, 1878.**

Fig. 4.

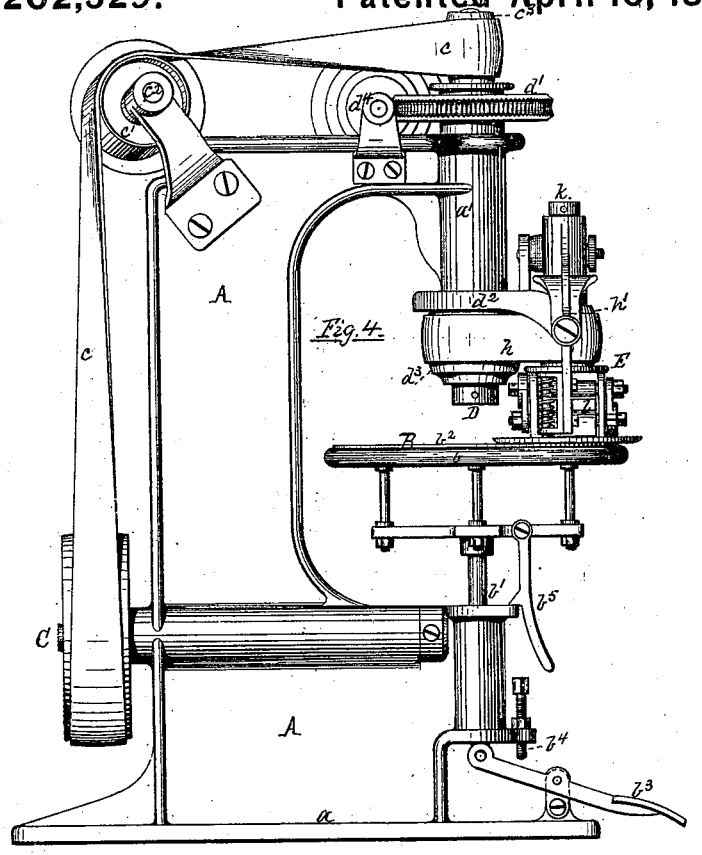
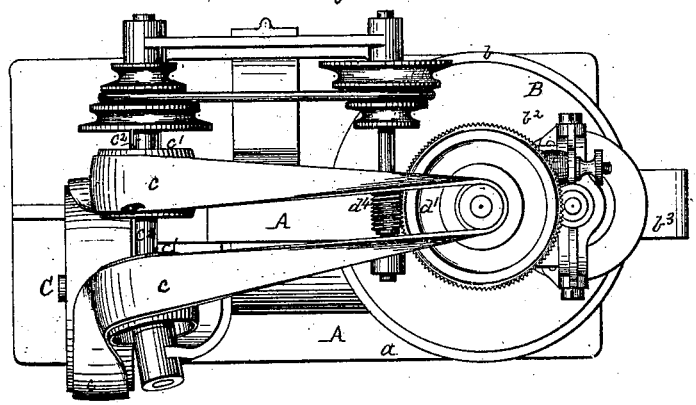


Fig. 5.



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4 Sheets—Sheet 3

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Fig. 6.

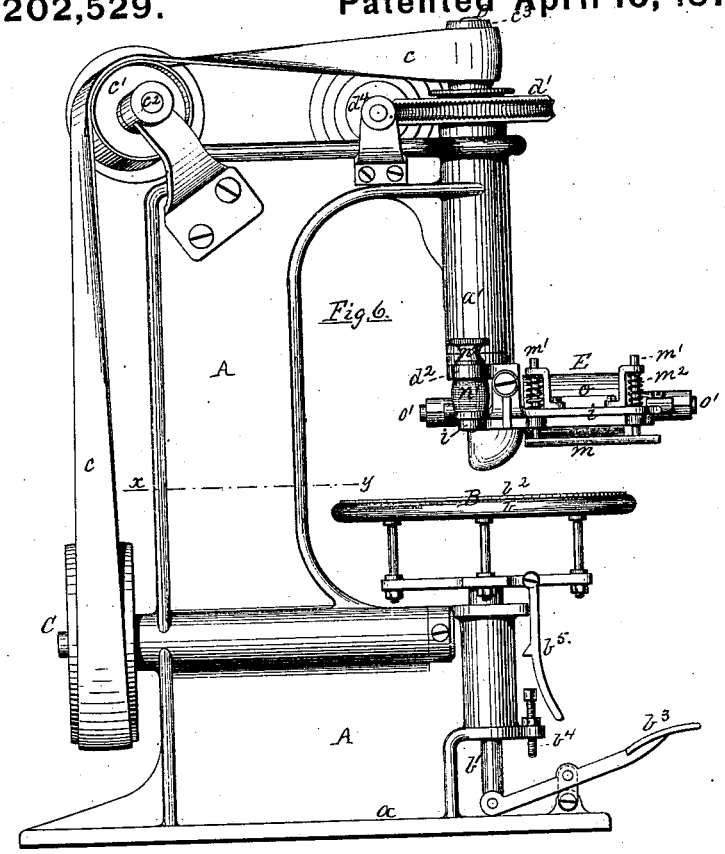
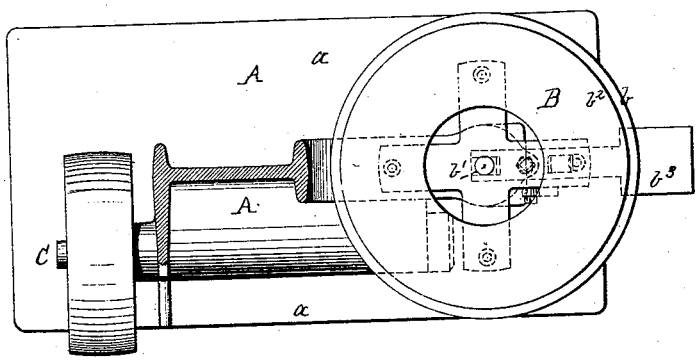


Fig. 7.



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4 Sheets—Sheet 4

R. EICKEMEYER.
Hat-Pouncing Machine.

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Fig. 8.

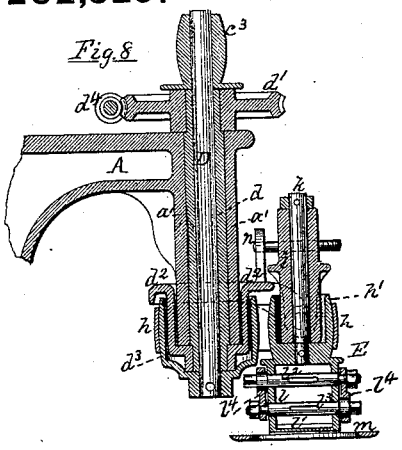


Fig. 9.

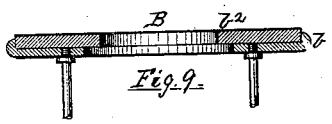


Fig. 10.

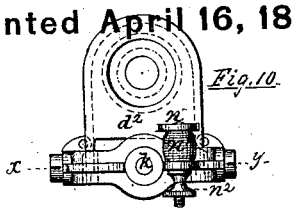


Fig. 11.

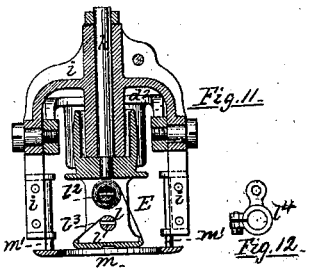


Fig. 12.

Fig. 13.

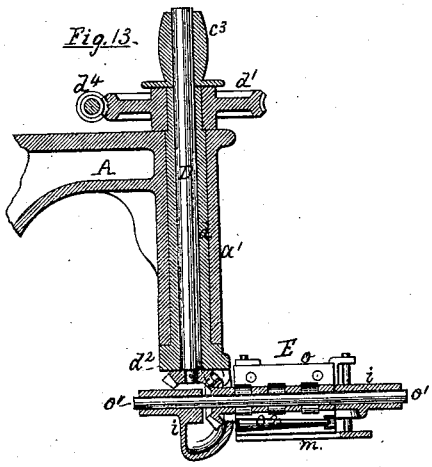


Fig. 14.

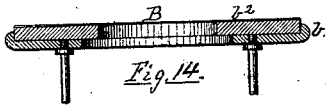


Fig. 15.

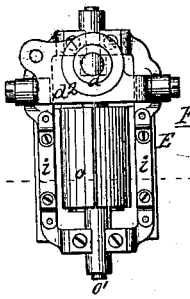
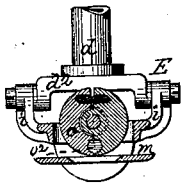


Fig. 16.



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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. **202,529**, dated April 16, 1878; application filed March 26, 1878.

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 invented certain new and useful Improvements in Hat-Pouncing Machines; and I do hereby declare that the following specification, taken in connection with the drawings forming a part thereof, is a clear, true, and complete description of my invention.

My said improvements are herein described as embodied in a machine designed for the pouncing of the brims of hats only; but portions thereof may be applied with advantage to pouncing-machines in general.

The main feature of my invention consists in the combination, with pouncing mechanism, of an annular bed, which supports a hat by its brim, and feeding mechanism, by which the pouncing mechanism is enabled to operate progressively upon the entire surface of one side of the brim. My annular bed differs from any pre-existing device in pouncing-machines known to me, by which a hat is supported during the action of the pouncing devices, it being so constructed and arranged that a hat can be bodily supported thereon with its entire brim resting on the bed, instead of being only partially supported on a bed-roller, as in some classes of machines, or suspended by its brim, as when a hollow revolving hat-block with a brim-flange is employed, with a holding plate or roll. In this latter case the hat-block is mounted on a horizontal spindle, and a hat, with its crown within the block, is also supported by its side crown. The annular bed has a central opening for receiving the crown of a hat, whether right or wrong side out, thus enabling either the upper or the under surface of the brim to be exposed to the pouncing mechanism.

I prefer that the annular bed be non-rotative, because the operator can then better observe the pouncing operation as it progresses, and I have therefore applied the feeding mechanism to the pouncing devices, so that they are not only operated as heretofore, but while thus operating they are automatically moved in a circular line over the annular bed; and my invention further consists in the combination, with the annular bed, of pouncing mechanism, which, while in operation, is also moved in a circular path around the annular bed.

For the purpose of readily putting hats on and taking them from the annular bed, it is important that the bed and pouncing mechanism be capable of being placed into co-operative positions; and this may be effected by having the bed fixed with relation to the pouncing mechanism, and having the latter mounted on a vertically-sliding spindle, controlled longitudinally by a hand or foot lever; but as this involves complication, I prefer, for convenience in operation, that the annular bed be so mounted that it can be lifted to and lowered from the pouncing devices.

In this connection my invention further consists in the combination, with an annular bed for supporting a hat by its brim, of pouncing mechanism and means for placing the bed (with a hat thereon) and the pouncing devices into co-operative relations, and so maintaining them until the pouncing is completed, and also for separating them thereafter, so that the operative may readily place a hat upon the bed, adjust the machine to perform the pouncing operation, and, when this is completed, separate the parts between which the hat is located and remove the hat from the bed.

I am aware that in previous pouncing-machines which contain pouncing-rollers, between which and bed-rolls a hat-brim is fed, the bed-rolls have been capable of separation from the pouncing-roll for the ready insertion of a hat; also, that a revolving hollow hat-block with a brim-flange has heretofore been used with a pouncing device, which, while in rapid motion, could be moved to and fro by hand, and placed in contact with the surface of the brim; but in none of these prior machines of which I have cognizance could a hat be placed in position and its brim pounced without requiring manipulation, either for maintaining the hat with relation to the pouncing and feeding rolls, or for holding the pouncing device against the hat. The specific means for controlling the bed herein shown consist of a treadle and a catch, and for limiting the vertical movement of the bed a stop-screw is employed; and these features in separate combinations constitute portions of my invention.

So far as my knowledge extends, pouncing-machines have heretofore been so constructed as to require continuously the attention of the operator, and in most cases they require continuous service at his hands; and one object of a portion of my invention is to so far render the pouncing operation automatic that a hat, when pounced to a certain predetermined extent or degree, will be no longer operated upon by the pouncing devices independently of the action of the operator; and to that end my invention further consists in the combination, with the pouncing and feeding mechanism and a hat-supporting bed, of stopping mechanism, which, when the pouncing device has operated over the exposed surface one or more times, will automatically terminate the pouncing operation.

It is obvious that such stopping mechanism may be variously applied for producing the result sought—as, for instance, it may stop the entire machine, or it may stop the rotative action of the pouncing mechanism; but as considerable speed is required in these machines, it is greatly preferable that the stop-motion be arranged to effect only a separation of the pouncing devices and the hat; and therefore, while I do not limit myself thereto, I prefer that the stopping mechanism be arranged either to lift the pouncing devices from the hat, or to lower the latter and the bed on which it rests from the pouncing devices, and this latter arrangement is the one particularly illustrated and hereinafter described; and in this connection my invention further consists in the combination, with pouncing mechanism and a hat-supporting bed, of automatic mechanism for separating the bed and pouncing devices.

Whether the annular bed be rotated or the pouncing devices while in operation be moved in a circle over and parallel with the bed by the operation of the feeding mechanism, it is desirable that the feeding mechanism be inoperative while a hat is being applied to or taken from the bed, in order that a desirable adjustment of the hat may be properly effected; and to that end my invention further consists in the combination of pouncing mechanism, feeding mechanism, and a bed for supporting a hat with mechanism for placing the bed and pouncing devices into and out of working relation, and simultaneously controlling the feeding mechanism by causing it to operate when the bed and pouncing devices occupy operative positions, and rendering the feed-motion inactive when the bed and pouncing devices are separated.

I prefer that the bed be lifted by a treadle to and capable of being dropped from the pouncing devices, and such a bed, with a catch, rods, and levers, controlled by the feeding mechanism for dropping the bed when the pouncing is completed, constitutes another portion of my invention; and in a similar connection my invention further consists of the combination, with the pouncing mechanism, of a bed which can be lifted and lowered, and feeding mechanism which is controlled by the movements of the bed, so that the feed-motion will operate only when the bed is lifted, and while the hat thereon is in contact with the pouncing devices.

As pouncing-machines are employed both on wool and on fur hats, and as hats of each class are best pounced by means of devices specially adapted therefor, it is important that a machine be so constructed as to be capable of interchangeably operating with the different kinds of pouncing devices. For wool hats a rapidly-revolving roller clad with abrasive matter is preferable, while for fur hats it is desirabe to use a sheeted fabric—emery-cloth, for instance—arranged to revolve in flat contact with the hat. The roller is revolved on an axis which is parallel with the surface of the bed; but the emery sheet must be mounted in a frame or head, and have an axis at right angles to its pouncing-surface.

Another object of my invention is to so organize and construct a brim-pouncing machine that a pouncing-sheet frame or a pouncing roller may be interchangeably employed therein for operating respectively on fur and on wool hats; and my invention further consists in the combination, with an annular bed mounted in a frame which is provided with a bearing at right angles to the surface of the bed, of a sleeve within said bearing, a spindle within said sleeve, and gearing for driving the sleeve and spindle respectively at high and low speed, whereby, when the pouncing devices are mounted upon and connected with the lower ends of such a sleeve and spindle, said sleeve will revolve slowly for causing the pouncing device to move over the surface of the annular bed and perform the feeding function, and the spindle will revolve rapidly for operating the pouncing device at effective speed. The frames containing the pouncing-roller or the pouncing-sheet may be detachably or permanently connected to the sleeve. When detachably connected the spindle and the sleeve need never be disconnected from their respective driving-gearing; but when permanently connected the spindle and sleeve are arranged to be readily connected to the driving-gear or separated therefrom, and this latter arrangement is quite as convenient as any, and is herein particularly described and shown.

For properly controlling emery cloth or paper for pouncing fur hats, I have devised a novel frame or head, in which a considerable length of emery cloth or paper of proper width may be mounted, and run off into working position from time to time, and maintained with desirable tension; and in this connection my invention further consists, in a pouncing-sheet frame or head, of the combination of a pair of rollers frictionally mounted in said frame, and a back plate so arranged that emery cloth or paper may be coiled upon one roll, and the end passed therefrom below the

back plate, and thence to the second roll and secured thereto, whereby, on turning the second roll, a fresh portion of emery-cloth may be drawn from the first roll and placed below the back plate for service from time to time, as occasion may require. The particular friction device for holding these rollers against backward rotation under the tension of the pouncing fabric consists of a clamping-collar, which embraces the roller at its outer end.

As it is equally important that the pouncing-roll used on wool hats be easily clad with emery cloth or paper, my invention further consists in a roll divided centrally and longitudinally into two parts, and hinged together axially, in combination with an expanding device located in the roll between the sections on one side of the axis, whereby, when a length of emery cloth or paper is applied to the roll, and the ends of said cloth inserted between the two sections, the expanding device will cause the cloth to be firmly clamped between the coincident edges of the sections.

It is impracticable to actually confine the hat on the bed; and in order to well and securely hold the brim adjacent to the pouncing devices, my invention further consists in the combination, with a pouncing device, of a spring presser-foot, which presses upon the hat, and firmly holds it on the bed on each side of the pouncing device when in service.

It sometimes occurs that a hat-brim is thicker or thinner at its periphery than at its inner line, and it is important that the pouncing device be so mounted that it can assume various positions or angles with relation to the surface of the brim-supporting bed, in order that it may act with uniformity on the entire surface of the brim; and to that end my invention further consists in a pouncing-frame containing a rotating pouncing device, which is pivoted and provided with a yielding abutment and adjusting-screw, which enable the pouncing-surface to be readily adjusted to the surface of the hat.

To more particularly describe my invention, I will refer to the accompanying four sheets of drawings, in which—

Figure 1, Sheet 1, represents, in side elevation, a pouncing-machine embodying the main features of my invention, arranged for operating on fur hats, but not in working position. Fig. 2, Sheet 1, represents the same in top view, with portions thereof removed and broken away to exhibit a portion of the gearing. Fig. 3, Sheet 1, represents the same in horizontal section on line *x y*, Fig. 1. Fig. 4. Sheet 2, represents, in side view, a machine similar to Fig. 1, but without the automatic stop-motion, and with its operative parts in working position. Fig. 5, Sheet 2, represents machine, Fig. 4, in top view. Fig. 6, Sheet 3, represents, in side view, a machine like Fig. 4, adapted to operate on wool hats. Fig. 7, Sheet 3, represents the same in horizontal section on line *x y*, Fig. 6. Fig. 8, Sheet 4, represents, in central section, the operative or fur-pouncing mechanism of the machine shown in Figs. 4 and 5. Figs. 9 and 14, Sheet 4, represent the annular bed in central vertical section. Fig. 10, Sheet 4, represents, in top view, the pouncing device and its frame detached from the machine, Figs. 1 and 4. Fig. 11, Sheet 4, represents the same as Fig. 10, in vertical central section on line *x y*, Fig. 10. Fig. 12 is a side view of one of the friction-clamps which secure against rotation the rolls on which the pouncing paper or cloth is mounted. Fig. 13 represents, in central vertical section, the wool-pouncing mechanism of the machine shown in Fig. 6. Fig. 15 represents, in top view, the pouncing device and its frame detached from the machine, Fig. 6. Fig. 16, Sheet 4, represents, in vertical lateral section, the pouncing-roll and its frame, shown in Fig. 15.

The same letters of reference are used in all the figures to designate corresponding parts.

The frame of the machine is shown at A. It has a broad base-plate, *a*, by which it may be secured to a proper foundation or floor. It is preferably cast in one piece, and provided with suitable strengthening-webs. At the upper end it is provided with a forwardly-projecting portion, which at its front end overhangs a lower portion, so that each of these portions may be provided with vertical bearings axially in line with each other.

B denotes an annular bed-plate, which supports a hat by its brim. A central opening affords a space for receiving the crown of a hat, while its brim rests upon the bed. So far as my knowledge extends this is the first instance of a pouncing-bed on which the hat may be truly supported by its brim. With my annular bed the hat is supported wholly by its brim, which therefore lies flat on the bed, and its proper contact therewith is secured with uniformity. This bed is composed in part of a foundation-plate, *b*, recessed on top within a peripherical flange, as shown in section, Figs. 9 and 14, and it has also a central opening larger than the crown of the largest hat made. This plate is mounted on a vertical sliding rod, b^1, housed in a vertical bearing in the lower part of the frame, and connected with said rod by means of a four-armed plate and a post at each arm, as clearly shown in Figs. 1 and 3. For pouncing hats of various sizes, bed-disks, one of which is shown at b^2, are provided, each having a central opening of proper diameter to receive a crown of a certain size, and the upper surface of said disk is usually clad with rubber or other material which will afford frictional contact for the brim. These bed-disks have a uniform exterior diameter, so as to snugly occupy the recess of the plate *b*. The recessed annular foundation-plate, in combination with the annular disk, constitutes one feature of my invention.

The annular bed is only in working relations with the pouncing devices when elevated. The vertical movement of the bed is effected by

the treadle b^3, which is pivoted to the lower end of the sliding rod b^1, and the extent of its upward movement is adjustably limited by the adjusting stop-screw b^4. For self-maintaining the bed in position when thus elevated, I provide it with a swinging catch, b^5, suspended from one of the four arms beneath the bed-plate before referred to. This catch, when it rises with the bed-plate, swings inward, so that its holding-face engages with the upper surface of the adjacent portion of the frame, and serves as a supporting-post when pressure is removed from the treadle; and in order to again lower the bed, this catch must either be moved by hand or by automatic mechanism, as hereinafter described. In order that this catch may be rendered adjustable, I sometimes provide in its face a screw, with a large flat head, so that by advancing or withdrawing the same the bed may be held at varied heights. The operation of the catch is clearly shown in Figs. 1 and 4.

Power is applied to the machine at the main shaft C, which has its journals housed in the frame, and from thence, by belt *c*, to the vertical spindle D, passing over the angle-pulleys c^1, which run loosely on a bent rod, c^2, supported in brackets projecting from the upper portion of the frame laterally and rearward.

The machine, Fig. 1, is arranged to operate on fur hats, and is provided with emery-cloth or other abrasive sheeted material, instead of with a pouncing-roll, as for wool hats. The spindle D is relied upon to impart motion to the pouncing-surface, whether it be a sheet or roll.

In Fig. 8, Sheet 4, it will be seen that the vertical tubular housing a' in the frame of the machine contains a vertical sleeve, *d*, which is provided at its upper end with a worm-wheel, d^1, resting on top of the frame, and thereby suspending the sleeve in its bearing. At the lower end of the sleeve is a bracket or hanger, d^2, of peculiar form, in this instance it being cup-shaped, and loosely surrounding the lower end of the housing a' of the frame; but at one side, at its top, it projects laterally, and has at its outer end a projection on each side, which support the pouncing devices and their frame, as at E.

The spindle D, at its upper end, has a belt-pulley, c^3, and a collar-plate, by which the spindle is suspended in its bearing within the sleeve *d*. The lower end of the spindle carries a cup-shaped belt-pulley, d^3, which extends upward, and surrounds the cylindrical portion of the bracket d^2 on sleeve *d*. The worm-wheel d^1 on sleeve *d* engages with a worm-shaft, d^4, provided with a cone-pulley, driven by a belt from a similar pulley attached to one of the angle belt-pulleys c^1 on bent rod c^2, as is clearly shown in Fig. 5.

The pouncing device, considered as a whole, is designated by the letter E, and this letter is used to indicate said device, whether it be one which is arranged to operate on fur hats or one best adapted to operate on wool hats, each of which will be hereinafter separately described in detail.

It is to be understood that the spindle D is the medium through which a desired rapid movement is imparted to the pouncing-surface, and that the sleeve *d* is the medium by which, while rapidly rotating on their special axes, the pouncing devices are also made to move slowly in a circular path above the bed; and it will be readily seen that when the machine is in operation the spindle D will rapidly revolve, and that the pouncing devices geared thereto will be also rapidly revolved on their separate axes, and that the sleeve *d* will, by the cone-pulleys, the worm-shaft, and worm-wheel, be revolved more or less slowly, according to the adjustment of the belt to the cones; and, also, that when a hat is placed on the bed and the bed elevated, as before described, the pouncing-surface will be in operative contact with the exposed surface of the hat-brim, and by the slow feeding movement due to the rotation of the sleeve the pouncing devices will be moved around and around above the bed, and thus cause the entire surface of the brim to be pounced.

For rendering the machine automatic, so that when a hat-brim has been pounced to a certain predetermined extent, the pouncing operation will cease, I have provided certain controlling mechanism, which, in this instance, operates by removing the hat from contact with the pouncing device; but I do not limit this portion of my invention thereto, because it is immaterial, so far as terminating the pouncing operation is concerned, whether the pouncing-surface be lifted or the hat and bed lowered, or whether, instead of either, the rotation of the spindle D be terminated or the entire machine stopped, although, in view of the considerable speed desired in operating the machine, it is deemed better to not check or retard the rapidly-moving mechanism.

The stopping mechanism generally preferred by me, and which is shown in the drawings, is operated from a gear, *e*, which is beneath worm-wheel d^1, and attached to it, as shown in Figs. 1 and 2. This gear meshes with a gear, e^1, mounted on a vertical stud supported by a bracket projecting from the frame of the machine. A small pinion, e^2, beneath gear e^1, and attached to it, meshes with a large gear, e^3, mounted also on a vertical stud supported by a bracket, so that this latter gear will make only one revolution to, say, three, four, or even more, revolutions of the sleeve *d*, according to the nature of the gearing, and according to the predetermined number of circuits known to be required to properly pounce any particular kind of hat. The stud on which gears e^1 and e^2 are mounted is adjustable on its bracket, so that change-gears may be employed in a manner well known. The large gear e^3 is provided on its under side with an annular flange, e^4, which, at one point in its periphery, is wholly cut away, affording a free opening toward its center. In Fig. 1 this

opening is on the left-hand side of the flange, and cannot therefore be seen in the drawing; but its location is well defined by the presence of a roller, e^5, which partially occupies the opening, and the same is also clearly shown in dotted lines in Fig. 2. The roller e^5 is loosely mounted on a vertical stud in the outer end of a lever, f, pivoted at its opposite end to the frame of the machine, as seen in Fig. 2. This lever f is connected, by a link, f^1, and an arm, to the upper end of a vertical shaft, f^2, mounted in bearings projecting from the frame, and at its lower end this shaft has another arm, f^3, to which a stop-rod, f^4, is connected. This stop-rod f^4 extends toward the front of the machine, and rests upon the top of the lower portion of the frame, with its end in line with and adjacent to the suspended catch b^5, before described. The lower arm f^3 on shaft f^2 has a retractile spring, f^5, which normally maintains the roller e^5 in close contact with the surface of the flange e^4, and it has sufficient power, when permitted, to also trip the catch.

It will be seen, when the bed is elevated and held by its catch, that when the flange e^4 is revolved and presents its opening opposite roller e^5, the latter will enter, thereby allowing the spring f^5 to force the stop-rod into contact with and release the catch, and permit the bed to drop. Simultaneously with the dropping of the bed the feeding movement is also terminated by stopping the rotation of the sleeve d.

The worm-shaft d^4 and its cone-pulleys have been before referred to; but it will now be understood that said shaft, at the end nearest its cone-pulley, is loosely mounted in its box, and that the opposite end is journaled in a box on the upper end of the vertical arm of a bell-crank lever, g, pivoted to the frame. The horizontal arm of this lever g is provided with a suspended rod, g^1, which extends downward through an opening at the end of a rigid arm, g^2, which projects from the under side of the annular bed B. The rod g^1 is provided with an adjustable collar, g^3. The normal position of the worm-shaft, due to the strain on its belt and the weight of the lever and rod, is away from the worm-gear; but when the annular bed is lifted the arm g^2 engages, by way of a spring on the rod, with the collar g^3, lifts rod g^1, and tilts the bell-crank lever, so that the worm-shaft is meshed with the worm-gear. The feed-motion is thereby operated so long as the bed remains in its elevated position; but it is terminated as soon as the bed is dropped. The expansive spring g^4, which encircles the rod g^1, rests on the rigid arm g^2, and this spring, as before stated, serves as a medium of connection between the arm and the collar g^3, thereby affording a yielding pressure, which secures easy engagement of the worm-shaft with the worm-wheel.

The mechanism for controlling the feed-motion, and also that for stopping the pouncing operation, are not contained in the machines shown in Figs. 4, 5, and 6, and they are not therefore automatic in their operation; but they require the presence of the operative for stopping the pouncing operation. The worm-gear feeding motions are continuously operated in each case. So far, however, as relates to the parts thus far separately considered, the description heretofore given will accurately apply to these figures, in which corresponding letters of reference are employed.

I have before herein employed the letter E for designating the pouncing devices and their frame, as before stated, regardless of their particular structure or the particular line of service for which they are intended.

For fur hats it is desirable to employ a flat surface, like emery cloth or paper, distended in a plane coincident and parallel with the surface of the hat-brim when on the annular bed, and such a pouncing device is shown in Figs. 1, 4, 5, 8, 10, and 11. The pouncing-surface, being flat, must, of course, be revolved in the same plane as the surface of the hat-brim, and this involves an axis which is vertical and at right angles to the pouncing-surface, or, in other words, parallel with the spindle D.

Referring now to Figs. 1 and 8, it will be seen that the spindle D is rotatively connected with the pouncing-frame axis or spindle by means of the pulley d^3, the horizontal belt h, and the pulley h' on the lower end of the pouncing-frame spindle k.

I have already referred to the peculiarly-formed bracket or hanger d^2, which is connected to the lower end of sleeve d. The outer end of this bracket supports a bow-shaped frame, i, which is pivoted thereto on each side, and is provided with a central tubular housing for the reception of the pouncing-frame spindle k. The spindle k is suspended in its bearing by a collar at its upper end, and at its lower end it is connected with a cup-shaped pulley, h', before referred to, and an emery-cloth holder, l, which has a flat back plate, l^1, at its lower end. Mounted transversely in this holder are two rolls, l^2 and l^3, each being provided with a central longitudinal slot for receiving the ends of a strip of pouncing paper or cloth, in order that it may be snugly coiled thereon.

It will be seen that the strip of pouncing material passes from one roller downward across the lower face of the flat back plate l^1, and thence to the second roller.

Each roller is squared at the end to receive a winding-key and each is provided with a friction clamping-collar, as at l^4, Fig. 12, for securing it against backward rotation under proper tension of the cloth or paper. This clamping-collar has an eye, which is occupied by the end of one roller, and a larger open eye, provided with a screw, which encircles a boss on the other roller, so that by turning on the screw the open ring will frictionally secure its respective roller against rotation.

It will be seen that the two rollers are

placed beneath and in line with the spindle *k*, which prevents undue lateral vibration during the rapid rotative movement of the frame.

To properly confine and hold the brim adjacent to the pouncing-surface, I provide a novel presser-foot or presser plate or foot, *m*. The presser-plate used with the frame described is circular in form, and has a central opening, within which the frame freely revolves, and it is suspended from frame *i* on rods m^1, encircled by expansive spiral springs m^2, as shown in several figures.

When the bed is raised with a hat thereon, the presser-plate is lifted against its springs, thereby clamping the hat firmly on all sides of the pouncing-surface. To provide for the pouncing-surface a good bearing contact with brims of hats which are thinner near the brim than near the side crown, the frame is rendered adjustable.

It will be seen that the bow-shaped frame *i* is centrally pivoted on each side to the bracket or arm d^2, and its axis is at right angles to the pouncing-spindle *k*. On the upper side of the bracket d^2 is a vertical standard, *n*, parallel with the upper inner side of the frame *i*, and between these, and in contact with both, a spring, n^1, is located on a screw-stud, which projects from the standard through the frame, and which is provided at its outer end with a thumb-nut, n^2.

With this construction it will be seen that the frame *i*, when the pouncing-surface is in forcible contact with a hat-brim, is free to be readily adjusted to various positions, because its upper end can move inward against the spring, which operates as a yielding abutment in enabling the frame to be set at any inclination by the thumb nut and screw.

A machine provided with a roller for pouncing wool hats is shown in Fig. 6, and in Figs. 13, 15, and 16 certain details of construction are illustrated. As before stated, the stopping mechanism previously described is not shown on this machine; but it is obvious that it can be readily applied thereto. The spindle D and sleeve *d* are as before described. The bracket or arm d^2 is different in form from that previously shown, but it is attached to the sleeve in a similar manner. The frame *i* is also different in form from that in Figs. 1 and 8, it being rectangular, with a central space for the reception of the roller *o*, which is mounted on and secured to a shaft, o^1, having suitable bearings at each end of the frame. The spindle D has, instead of a pulley at its lower end, a bevel-gear, which meshes with a gear on the roller-axis o^1, so that while said roller is rapidly revolving the sleeve *d* will carry the roller and its frame in a circular path above the annular bed, as before described. This roll and its frame has the same self-adjusting capacity as that previously described, it being provided in like manner with a yielding abutment in the spring n^1 and thumb-nut n^2, as seen in Fig. 6. In this instance the spring is in a vertical position; but it is interposed between the under side of the bracket or arm d^2 and the upper surface of the frame *i*, and occupies the same position with relation to the pivotal connection of the frame with the bracket or arm as previously described. The frame *i* beneath the gear on roller-axis o^1 is recessed to afford a space for the gear, and practically incloses it. This roll-frame is also provided with a presser foot or plate, *m*, mounted on rods m^1, surrounded by springs m^2, as before described, and its self-adjusting operation and effect are identical with that shown in previous figures. The roll is of novel construction, and is particularly valuable on account of the facility with which it may be clothed with emery cloth or paper in a proper manner. It is composed of two longitudinal sections, each hinged centrally to the shaft o^1. Between these sections, on one side of the axis, as shown in Fig. 16, an expansive spiral spring is employed within recesses provided therefor, which tends to separate the sections on that side, and afford a space for the reception of the two ends of a strip of pouncing cloth or paper. On the opposite side of the axis each section has a longitudinal tapered recess for the reception at one end of the roll of a round tapered plug, o^2. It will be seen that after the paper has been adjusted, as described, and snugly fitted to the roll, this plug, on being fully entered, constitutes an expanding device, which will cause the opposite edges of the sections to firmly clamp the paper, and that the slight change of position of the sections will secure a perfect tension of the cloth or paper.

It is to be distinctly understood that I do not limit my invention to the precise mechanism shown and described, as I am well aware that it can be largely varied without materially affecting the results desired or departing from the spirit of my invention; and I am also aware that certain specified portions of my invention may be profitably used in hat-pouncing machines of various kinds.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with pouncing mechanism, of an annular bed, on which a hat is supported by its brim, and feeding mechanism, by which the entire surface of one side of a hat-brim is progressively subjected to the pouncing mechanism, substantially as described.

2. The combination, in a hat-pouncing machine, of an annular brim-supporting bed and pouncing mechanism, which, while in pouncing operation, is also moved in a circular path around the annular bed, substantially as described.

3. The combination, with the annular bed, of pouncing mechanism and means, substantially as described, for placing the bed and pouncing devices, with a hat interposed between them, into co-operative relation, for maintaining them in said relation, and sepa-

rating them for the removal of the hat, as set forth.

4. The combination, with pouncing mechanism, of an annular bed for supporting a hat by its brim, of a treadle and a catch, substantially as described, whereby the bed, with a hat thereon, may be lifted to the pouncing devices for operating on the hat-brim, secured in its elevated position during the pouncing operation, and lowered for the removal of the hat, as set forth.

5. The combination, with pouncing mechanism, of an annular bed, a treadle for moving the bed toward the pouncing devices, and a stop-screw for limiting the movement of the bed, substantially as described.

6. The combination, in a hat-pouncing machine, of a supporting-bed for the hat, the pouncing mechanism, and feeding mechanism, with stopping mechanism, substantially as described, whereby, when a hat has been pounced to a certain predetermined degree, the pouncing operation will be automatically terminated, as set forth.

7. The combination, with pouncing mechanism and a hat-supporting bed, of automatic mechanism for separating the bed and pouncing devices, and thereby terminating the pouncing operation, substantially as described.

8. The combination, with pouncing mechanism, feeding mechanism, and a bed for supporting a hat, of mechanism for placing the bed, with a hat thereon, into and out of working relation with the pouncing devices, and mechanism which controls the feeding operation, substantially as described, whereby the feed-motion will operate only while the pouncing devices are at work upon a hat, as set forth.

9. The combination, with pouncing mechanism and feeding mechanism, of an annular bed, a treadle for lifting the bed, and a catch for maintaining the bed when lifted, of a series of rods and levers controlled by the feeding mechanism for tripping the catch and dropping the bed, substantially as described.

10. The combination, with the pouncing mechanism and feeding mechanism, of a vertically-moving annular bed provided with a treadle, and a series of rods and levers connecting the bed with the feeding mechanism, substantially as described, whereby the feeding mechanism will be operated or terminated as the bed is raised or lowered, as set forth.

11. The combination, in a hat-pouncing machine, of an annular hat-supporting bed, mounted in a frame provided with a bearing at right angles to the surface of the bed, a sleeve within said bearing, which supports the pouncing device, a spindle within said sleeve for driving the pouncing device, and gearing for driving said spindle and sleeve respectively at high and low speed, substantially as described.

12. A pouncing head or frame containing, in combination, a pair of rollers, frictionally mounted in said frame, and a back plate, substantially as described, whereby sheeted pouncing material may be coiled on said rollers, supported when in service by the back plate, and delivered from one roller to the other, as set forth.

13. The combination, in a pouncing-head, of a roller for receiving a coil of sheeted pouncing material, and a clamping-collar which prevents the backward rotation of the roller, substantially as described.

14. A pouncing-roller divided centrally into two longitudinal sections, hinged axially, and provided with an expanding device, located between the sections on one side of the axis, substantially as described, whereby the roller may be readily clad with sheeted pouncing material, as set forth.

15. The combination, with a pouncing device, of a yielding presser foot or plate, substantially as described.

16. The combination, with a pivoted frame containing a rotating pouncing device, of a yielding abutment and set-screws, which permit the pouncing-surface to be adjusted to the surface of hat-brims of uneven thickness, substantially as described.

17. The annular bed consisting of the recessed annular plate, in combination with the annular disk, substantially as described.

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Witnesses:

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