

R. EICKEMEYER.
Machines for Lustering Hats.

No. 141,339.

Patented July 29, 1873.

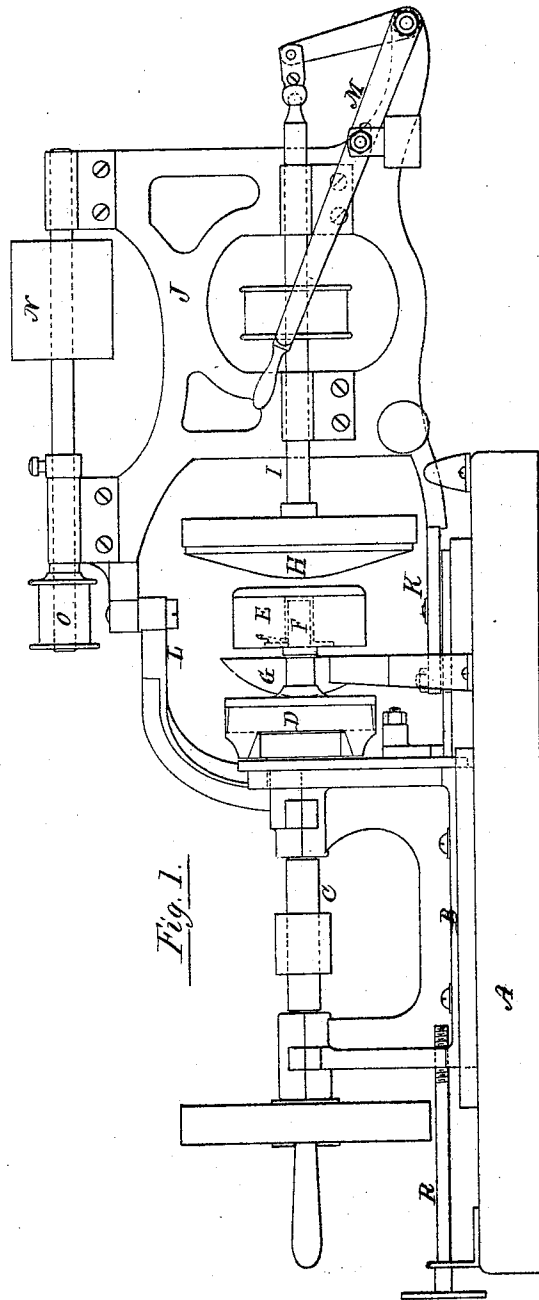


Fig. 1.

WITNESSES.

E. Eliot
Boyd Eliot

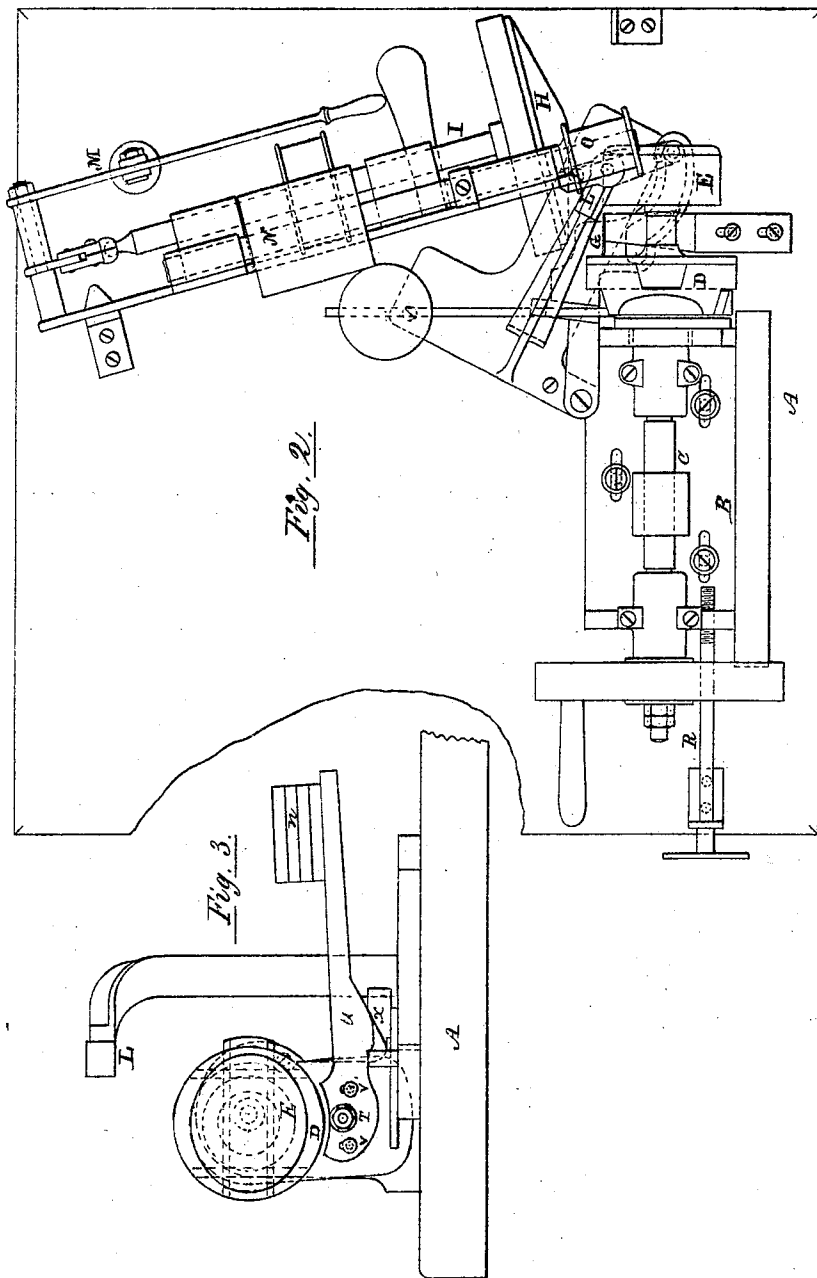
R. Eickemeyer

INVENTOR.

R. EICKEMEYER.
Machines for Lustering Hats.

No. 141,339.

Patented July 29, 1873.



WITNESSES.

E. Eliot
Boyd Eliot

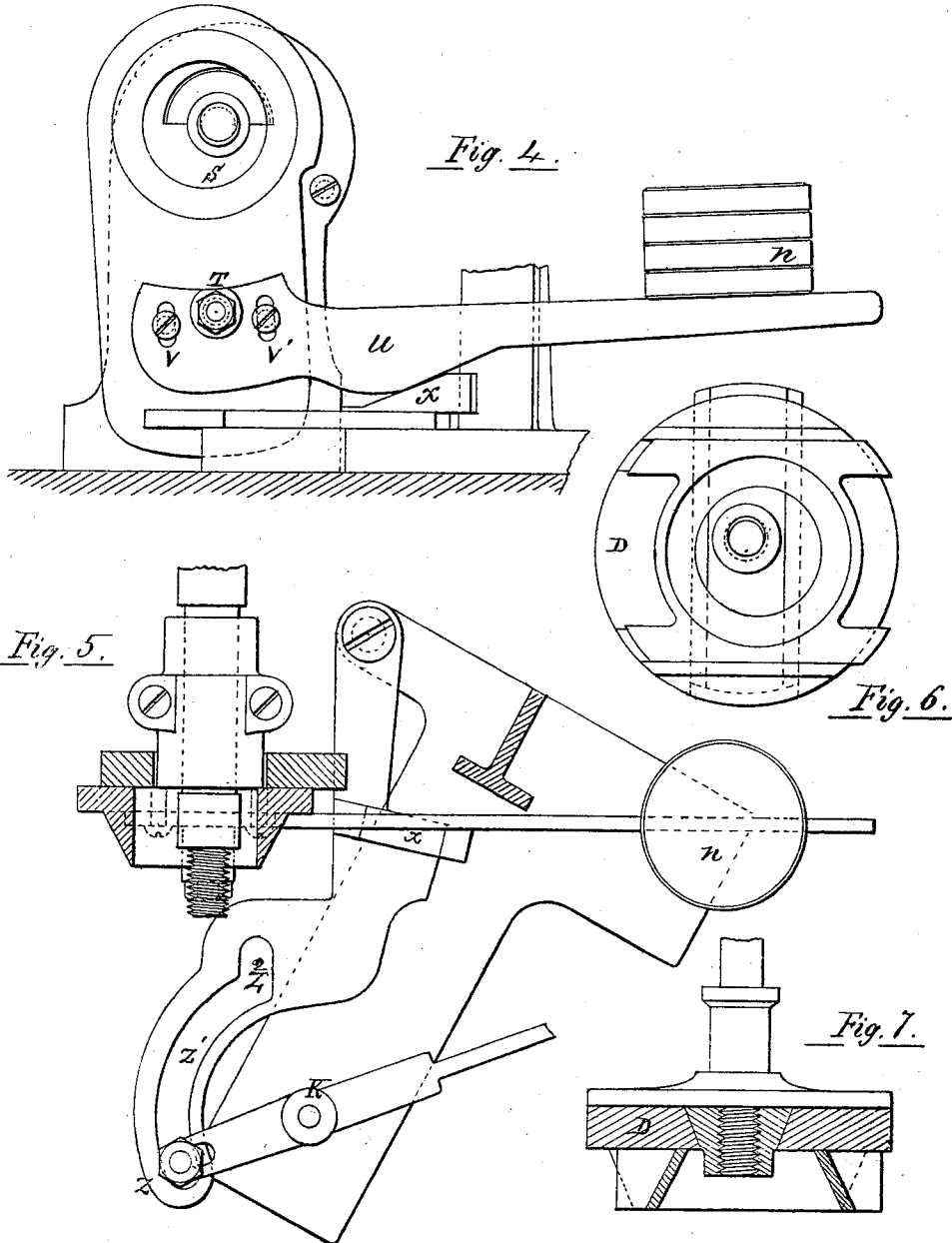
R. Eickemeyer

INVENTOR.

R. EICKEMEYER.
Machines for Lustering Hats.

No. 141,339.

Patented July 29, 1873.



WITNESSES
E. Eliot
Boyd Eliot

R. Eickemeyer
INVENTOR.

UNITED STATES PATENT OFFICE.

RUDOLF EICKEMEYER, OF YONKERS, NEW YORK.

IMPROVEMENT IN MACHINES FOR LUSTERING HATS.

Specification forming part of Letters Patent No. **141,339**, dated July 29, 1873; application filed July 25, 1872.

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 a certain new and useful Machine for Lustering Hats; and I do hereby declare that the following specification, taken in connection with two sheets of drawings furnished and forming, with the letters of reference thereon, a part of the same, is a full, clear, and accurate description of a machine embodying the several features of my invention.

After a hat-body has been subjected to the several preliminary operations, it is ready to receive the final exterior finish. Fur hats are partially dampened and subjected to the action of brushes and heated smoothing-irons, by means of which the moisture is intentionally wholly eliminated by a continued application of the brushes and hot irons, and the surface fibers are thereby laid smoothly and properly glossed or lustered. As wool is less easily worked than fur, it requires somewhat different treatment, and in the manufacture of wool hats "brushing" and "hot-ironing" to the degree required for fur hats would be practically too slow and too expensive. In finishing wool hats, if any moisture be left therein after the lustering operation, the gloss will be fugitive, as a rule, and a dead uneven finish will be the result. From the fact that moisture is so particularly objectionable in wool hats, the employment of hot irons for glossing them is practically precluded, although, in the absence of better means, they have been heretofore more or less used, with results which, viewed from the state of the art as at present attained, were far from satisfactory. The effect of hot irons, as polishing or lustering mediums, on wool hats, at their best, is the production of a gloss having a solid metallic cast, rather than the more desirable so-called "silken luster." The object of my invention is to rapidly and economically develop this desirable luster on hats, which I practically accomplish by subjecting the surface of the hat to the frictional contact of a peculiarly-clothed wheel, which is rapidly revolved, independently of the block which carries the hat. By friction my machine generates sufficient heat to practically eliminate all moisture which may be contained in the

surface wool, and also to even evaporate the modicum of oily matter contained within the cells of the fiber. A solid frictional surface, as of polished iron or steel, for instance, can only deal, so to speak, with the mass of fiber in a general way, and cannot affect the several surface fibers, separately considered. On the other hand, a brush, while dealing in a marked degree with the individual or separate fibers, will not so operate on the mass as to impact the surface and develop the luster thereon. The working-surface of the lustering-wheel must therefore be essentially clothed with a material sufficiently solid to pack and polish the mass of wool on the surface of the hat, sufficiently rough to develop the required degree of heat by friction, and sufficiently fibrous or brush-like to engage with the individual or separate surface fibers. While possessing all of these virtues, the surface of the wheel must be practically free from all positive abrading, scouring, or grinding powers, for such would be antagonistic to the attainment of the desired result. The material which I have found to be practically the best adapted to the purpose is felted wool, of a character substantially similar to that of which the hats are composed. My invention, therefore, consists, mainly, in combining, in an organized machine, a rapidly-revolving, felt-clothed lustering-wheel and a revolving hat-block, so arranged with relation to each other that the exterior surfaces of a hat on the hat-block may be subjected to the frictional action of the felt-wheel, whereby objectionable moisture will be practically eliminated from the hat, the separate fibers of the surface wool straightened out, and the surface of the hat polished or lustered in a rapid, effective, and economical manner. In clothing the lustering-wheel I prefer to cut the felt in strips, and so apply it to the wheel that the cut edges thereof will constitute its frictional or working surface. In using the frictional wheel with a round hat-block the "tip" of a hat can be evenly glossed from the center to the "square;" but when an oval block in an oval chuck is employed, owing to its eccentric movement, there will be an imperfect clouded spot at the center of the tip, which will be objectionably distinguishable from the surrounding lustrous surface. To

obviate this is the object of another feature of my present invention, which consists in combining with the oval chuck which carries the hat-block a controlling mechanism which can readily change the rotation of the hat-block from a concentric to an eccentric movement, and in connecting the same with the carriage on which the lustering-wheel is mounted in such a manner that when the axes of the wheel and chuck are truly coincident the rotation of the chuck will be truly concentric, and also so that as their respective axes are placed out of coincidence, and on lines which radiate from the point of coincidence, the rotation of the chuck and hat-block will be automatically changed from a concentric to an eccentric movement corresponding with the form of the hat-block in use. My present invention further consists in combining with the rotating hat-block and lustering-wheel a bed, whereby the brim of the hat may be finished in a manner equal to the side, crown, and tip; and, still further, in certain minor mechanical details; but more particularly to describe my invention, I will refer to the accompanying drawings, in which—

Figure 1, Sheet 1, is a side elevation of the machine, showing the position of the several parts when the disk is in proper position to begin the operation of lustering. Fig. 2, Sheet 2, is a plan, showing the relative position of the several parts at the close of the operation. Fig. 3 on same sheet shows a portion of the mechanism for changing the eccentric to a concentric lathe. Figs. 4, 5, 6, and 7 are views to illustrate, in detail, portions of the mechanism, as will be hereafter explained.

Upon any suitable bed, as at A, is mounted a stock, B, for carrying the mandrel C, on one end of which is arranged an eccentric chuck, D, similar in form and mode of operation to the ordinary lathe for turning ovals. The guide, however, that gives the eccentricity in this chuck is placed in a movable support instead of a fixed portion of the head-stock B, as usual in such lathes, so that it can be varied in its throw during the operation of lustering, as will appear hereafter. The block for supporting the hat is shown at E, and it is mounted upon a short spindle or bearing, F, that is firmly attached to the face of the eccentric chuck, and the block is held thereon by a pin or stud, as at f, which projects from the spindle F and inside of a plate or flange fastened upon the block, similar to a bayonet-fastening, and is thereby readily connected and disconnected, but firmly held thereon when in operation. At or near the base of the block E is an adjustable bed, G, for supporting the brim of the hat, and its edge acts as a guide to keep the brim smooth, while its face serves as a bed to support the brim during the action of the lustering-disk thereon. Said bed or guide is made adjustable by screws working through slots in its base, as shown at g g, to adapt it to the various sizes of blocks. The

special function of said bed is to support the brim underneath the pressure of the lustering-disk, while the block acts as a feeding agent to carry the hat-brim over said bed or between it and the lustering-disk. The lustering disk or wheel is shown at H, and is mounted upon an axis, I, working in suitable bearings upon a frame, J, which is supported by pivotal or hinged connections with the frame A, and arranged relatively to the block E in such a manner that the axis of the lustering-disk may be moved around from a line coincident with the axis of the block to a line at a right or other angle thereto, or so that the face of the disk H can traverse from the tip to the brim of the hat.

It is practically preferable that the lustering-wheel be mounted on an axis which is variable with relation to the hat-block axis; but it will be obvious that approximate results may be attained by having the hat-block axis movable and the other axis stationary, or by having both axes movable, substantially in the manner as described, in connection with that of the lustering-wheel.

One method of mounting the disk, as shown in the drawings, is to pivot an arm projecting from the inner lower corner of the frame J to the frame or bed of the machine, as at K, and to connect in a similar manner the inner upper corner to a bracket, as at L, which is firmly supported by the bed A, and is carried up and curved over to the proper point to receive a pivot in the same axial line, as at K, and this axial line of both pivots must be in such relative position to the block E that the face of the lustering-disk will not slide upon the block to any great extent while varying the angle between the axes, as already mentioned. The face of the disk is covered with the felt, and the face is raised in the center, as shown at H, to form a nicely-rounded apex for acting upon the center or the tip of the hat, as when in the position shown at Fig. 1 of the drawings.

As before stated, I have found in practice no material better adapted for clothing the lustering-wheel than wool felt, although similar results would, no doubt, be attained by the use of any sufficiently-solid fabric, of wool or other fiber, possessing the requisite characteristics of the felted fabric named. It is believed by me, however, that no other known fabric is better suited to the purpose, as it is sufficiently solid to impact the fibrous surface of the hat, sufficiently rough to generate the required degree of heat by friction, sufficiently filamentous to perform a brush-like function, and is practically free from any capabilities of injuriously abrading or grinding the surface of the hat to be finished. Any fabric or compounded substance embodying these several characteristics, and capable of performing like functions under the same circumstances, would therefore involve this, the ruling feature of my invention.

The shaft that carries the lustering-disk is

arranged to slide endwise in its bearings, and is connected by a ball and socket to a hand-lever, M, which is mounted upon the swinging frame J, and travels with it, and by which the operator of the machine can press the lustering-disk toward the hat upon the block E, or remove it from it at his pleasure. Said lever is also provided with a weight, as shown in the drawings, by which the requisite pressure for lustering may be applied independently of the operator.

Motion is given to the disk or wheel H by a belt from a counter-shaft, at N, mounted upon the swinging frame J, and to which motion may be given in any convenient manner, as by a belt to the pulley O, which, leading from a shaft above, will easily permit the swinging of the frame J through its entire range of vibration.

When the pivots K and L are fixed firmly in a machine, as shown in the drawings, then, to compensate for any change that may be desired in the relation of the block E to the said pivots, the head-stock B may be made adjustable on the bed A, as shown at P, by slotting the holes for the screw-bolts, and a regulating or adjusting screw, as at R, may be provided to move the head-stock.

To change the block from an eccentric to a concentric motion the eccentric disk in the head D, as has been already observed, works in an adjustable bearing, (best seen at Fig. 4, at S,) and it is pivoted to one end of the head-stock B, at T, so as to vibrate thereon. To it is fastened the lever U by clamping-screws in slots, as at V V', for the purpose of adjustment. The outer end of said lever is weighted, as shown at W, or pressed in any convenient manner toward the incline at X, upon or against it, and by which it is controlled. Said incline is mounted upon a vibrating arm, Y, (best seen at Fig. 5,) one end of which is pivoted to the frame or connected therewith in some convenient manner, and the other is connected with the vibrating frame J by a bolt, Z, working in a curved slot, shown at Z', said bolt being attached to a projected end of the arm that is pivoted at K, and upon which the frame J vibrates, as already explained.

It is evident now that, since the vibrating frame controls the incline X, and it controls the lever U, the eccentric, at S, will be varied according to the motion of the frame J, and the shape of the slot Z', and this is made to conform to whatever degree of eccentric or concentric motion of the block is desired. As usually only a very small amount of concentric action is required, then only a small portion of the slot in Z' is concentric with the pivot at K; but as soon as the pin or bolt Z strikes the eccentric point in the slot Z', or as at Z², the incline is moved back and the lever U is permitted to drop, and thereby draws the bearing at S over sufficiently far to neutralize the action of the eccentric chuck, and in so doing the axis that carries the block E is thrown into the same

axial line with the driving-mandrel C, and the axis of the block and the axis of the lustering-disk are concentric with each other. As the incline X is moved gradually by the swinging motion of the frame J, it is evident that the change of motion in the axis of the block will be gradual from a concentric to an eccentric motion. Therefore, if a hat is placed on the block E, and the lustering-disk is brought to bear upon the center of the tip, as in the position shown in Fig. 1, and the block be given a slow and the disk a rapid rotary motion on their axes, then will the operation begin in concentric circles on the center of the tip, and as the frame J is moved around toward the position shown at Fig. 2 of Sheet 2, the concentric action of the disk will gradually change to conform to the shape and surface of the block, and so continue on to the final completion of the operation of lustering, even to the edge of the brim, if desired, as it is caused to travel over the face of the bed G.

It will be manifest to any skillful mechanic in such matters that various methods of arranging and combining a rotating lustering-wheel with a revolving hat-block or feeding devices may be devised so as to operate practically without departing from the nature of my invention; and it is also apparent that the lustering device may be greatly varied in its form, as from a disk to a conical wheel or cylinder; and it is also evident that the operation of finishing the brim may be performed separately from the tip or crown, by feeding it between a pair of rolls independently of the block, but over a bed, as at G, and in combination with a rapidly-revolving lustering agent, as clearly hereinbefore set forth.

I am well aware that it has long been common for the craft to subject hats, while carried on a revolving block, to contact under more or less pressure with a piece of felt held in the hand of the operator, and that such operation has for its object the cleansing and smoothing of the surface, and the laying of the exterior fibers in one direction, and, also, that, as an incident thereto, more or less glossy finish is developed thereon. The practical results attained, however, by this hand process vary materially from those attained with my machine, and are inferior thereto, not only in the matter of rapidity in execution, but also in the quality of the work performed. It will be readily comprehended that the hand process develops more or less heat; but instead of heating the surface of the hat, as in my machine, it heats mainly the piece of felt without properly affecting the hat, and it is, therefore, in operation, so far as the development of heat is concerned, the reverse of the operation in my machine. That this heat should, if possible, be applied to the fibers at the time they are being straightened, and while they are held in that straightened condition, will be obvious to persons skilled in the art. It will also be seen that the operation of the felted frictional surface in my machine is close-

ly analogous to the combined action of the brushes and the heated irons, as heretofore separately applied, and that the result attained in my machine is similar to what might be reasonably expected if the brushes and the hot irons could be applied simultaneously to the same fibers.

I therefore claim as new and desire to secure by Letters Patent—

1. The independently-driven and rapidly-revolving lustering-wheel, and the revolving oval hat-block chuck mounted on separate spindles, the positions of which are variable with relation to each other in a plane common to the longitudinal axes of both, in combination with the movable guide for controlling the chuck and the mechanism for connecting the movable guide with the axis of the lustering-wheel, substantially as described, whereby the hat-block chuck will be made to rotate

in concentric or eccentric lines, respectively, in proportion as the axes of the wheel and chuck are in or out of coincidence, as and for the purposes specified.

2. The combination, substantially as described, of the oval or eccentric chuck for carrying and rotating the oval hat-block with the mechanism for controlling its eccentricity while in motion, whereby, without change in the rapidity of its rotating movement, the hat-block may be made to revolve concentrically or eccentrically, as and for the purposes specified.

3. The combination of the brim-bed G with the lustering-wheel, substantially as described, and for the purposes specified.

RUDOLF EICKEMEYER.

Witnesses:

JOSIAH F. HARVEY,
G. OSTERHELD.