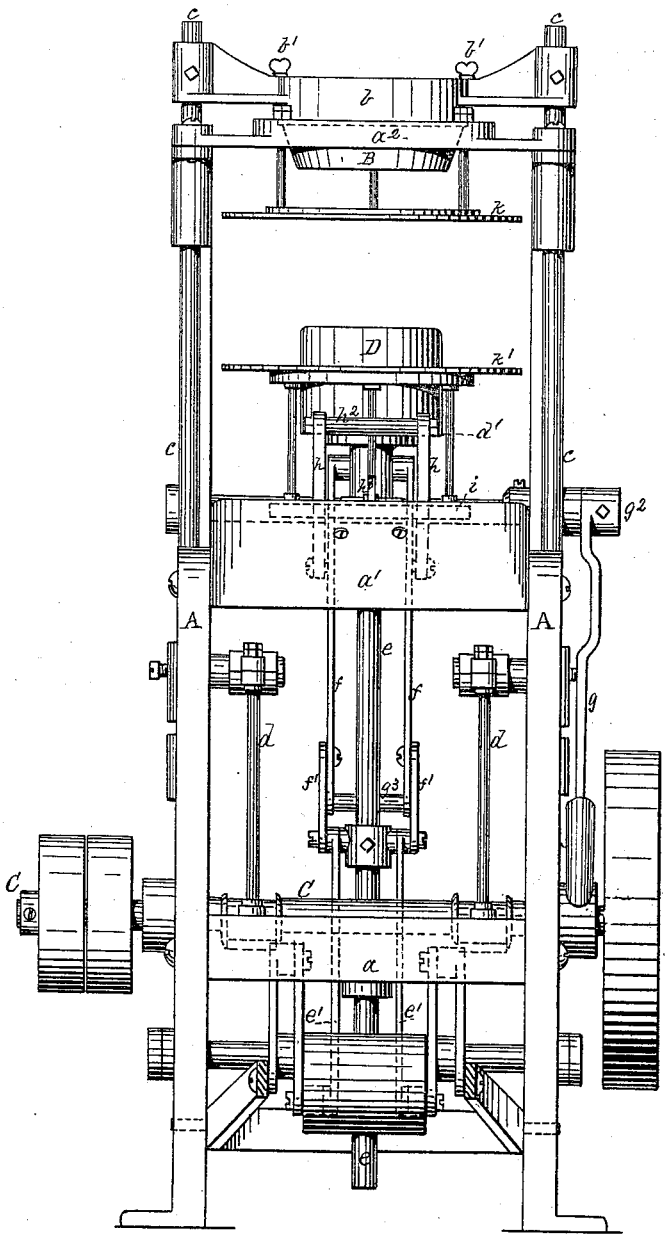
3 Sheets—Sheet 1.

R. EICKEMEYER.

Hat-Blocking and Banding Machine.

No. 200,034. **Patented Feb. 5, 1878.**

Fig. 1.



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3 Sheets—Sheet 2.

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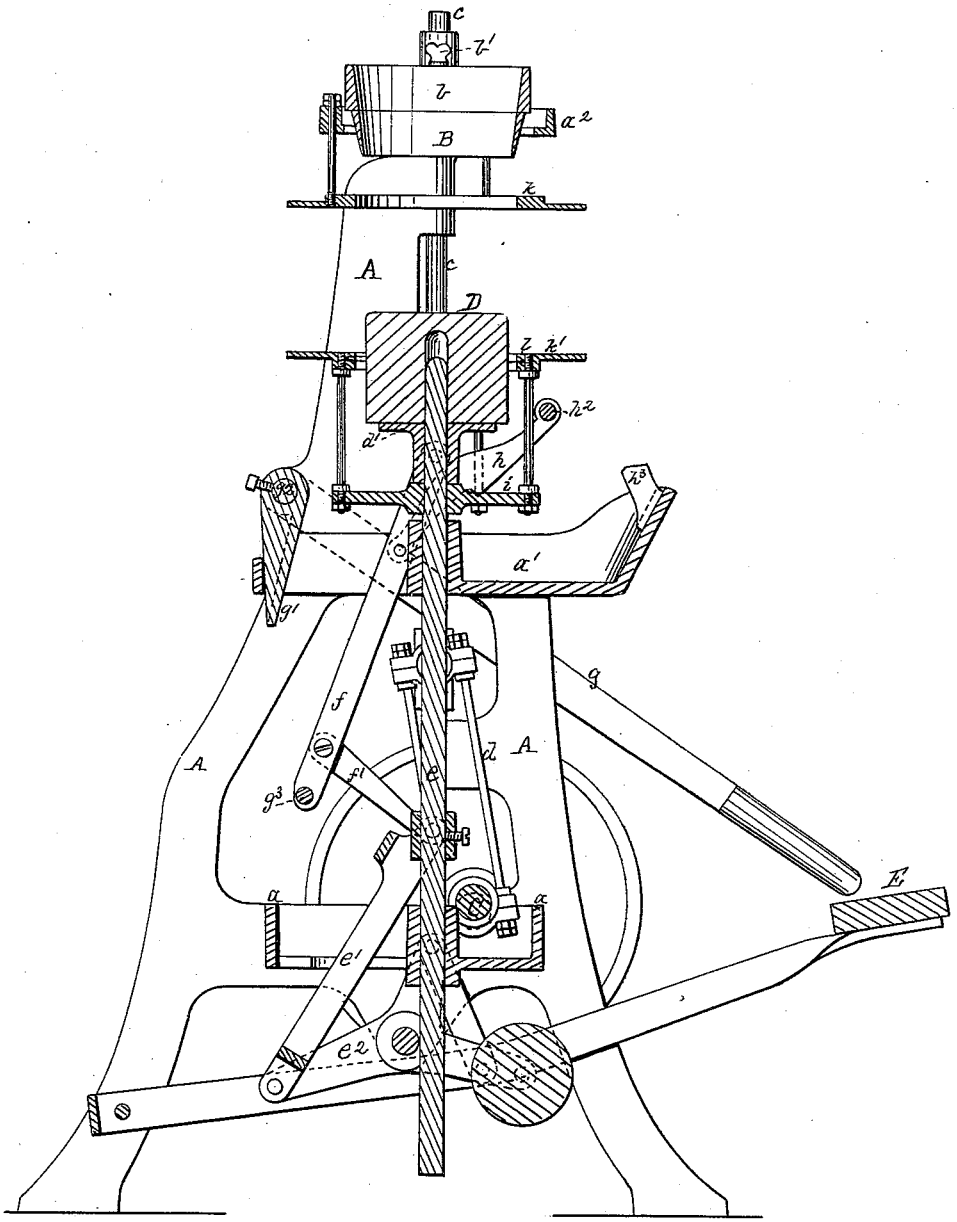
Fig. 2.



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3 Sheets—Sheet 3.

R. EICKEMEYER.

Hat-Blocking and Banding Machine.

No. 200,034. **Patented Feb. 5, 1878.**

Fig. 3.

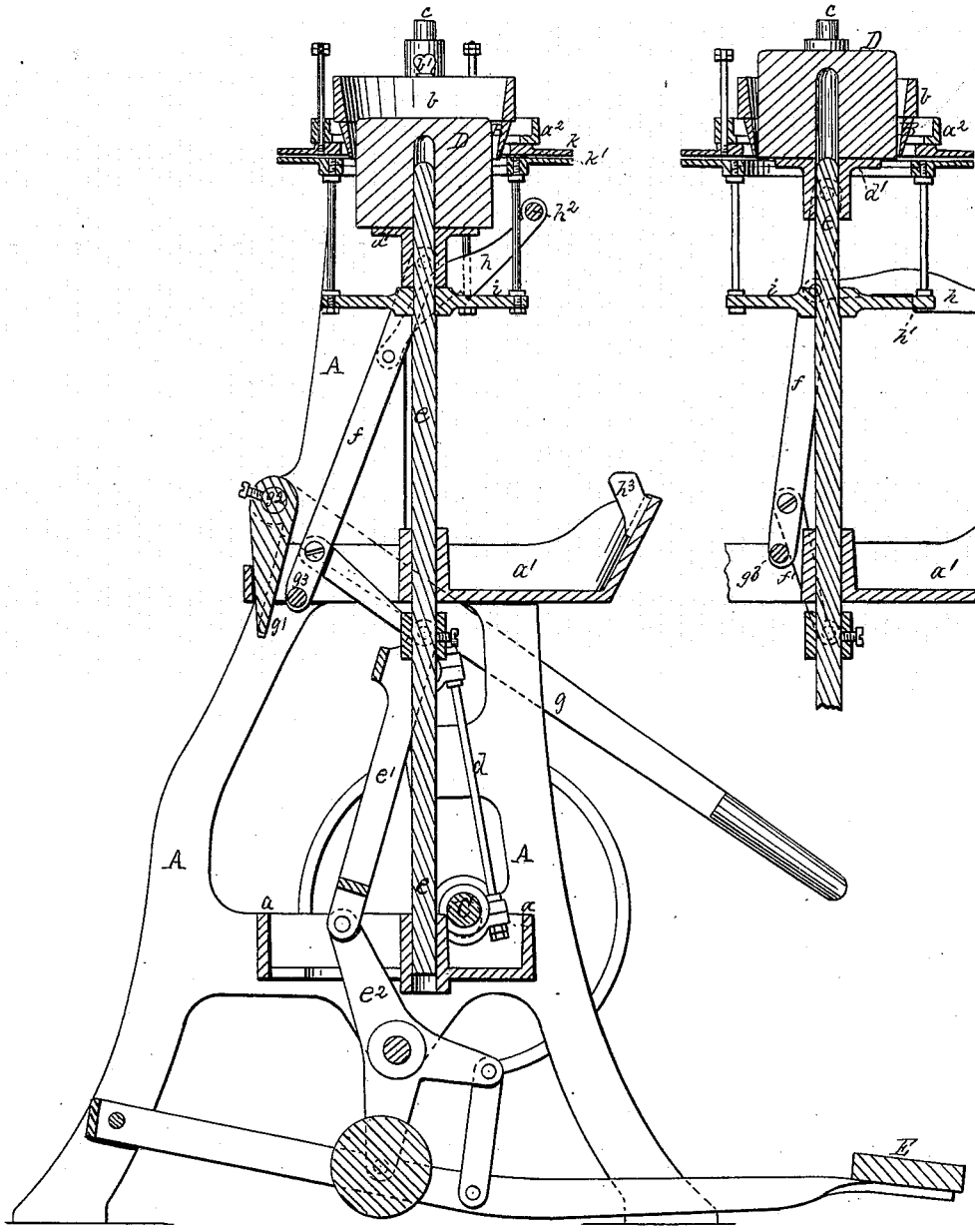

Fig. 4.

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UNITED STATES PATENT OFFICE.

RUDOLF EICKEMEYER, OF YONKERS, NEW YORK.

IMPROVEMENT IN HAT BLOCKING AND BANDING MACHINES.

Specification forming part of Letters Patent No. **200,034**, dated February 5, 1878; application filed December 29, 1877.

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 Blocking and Banding Machines; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear, true, and complete description of my invention, and of a machine embodying the several features thereof.

Machines embodying my present improvements are intended for blocking and developing the bands of wool hats, and I have therewith succeeded in attaining much greater rapidity of execution than has been possible with any prior machine known to me, and the character of the service performed by it is not only superior to any machine-work of this class, but is also better than ordinary hand-work.

As instances of prior machines of this general class to which reference can be readily had, I will refer to Letters Patent No. 53,661, April 3, 1866, granted to George Osterheld and myself, and to my own Letters Patent No. 72,726, December 31, 1867, which exhibit in combination banding-shells, clamping devices, banding-rings, and hat-blocks.

Broadly stated, my present machine differs from preceding ones in that it contains a rapidly-reciprocating banding-ring; and such a banding-ring, in combination with any suitable clamp for holding the hat by its brim, and any suitable hat-block arranged to co-operate therewith, constitutes the main feature of my present invention.

A minor feature of my invention consists in the specific combination of the rapidly-vibrating banding-ring, the clamp, and the hat-block, substantially as hereinafter described.

Another feature of my invention consists in a combination of mechanism with the hat-block, the clamp, and spindle, by which the hat is clamped and the hat-block partially elevated by a treadle, and then fully elevated by hand, for developing the band. Said combination embraces a treadle, a clamp operated by the treadle, a hat-block spindle, a hat-block supported by the spindle, but capable of independent vertical movement thereon, toggle-levers, and a band-lever. By these means the hat is clamped, and its upper side crown abruptly presented to the action of the reciprocating banding-ring, and then elevated until the banding-ring has fully developed the band of the hat.

Another feature of my invention consists in a combination, with the mechanism by which the hat-block is elevated independently of its spindle, of a device by which the block is secured in its elevated position independently of the hand-lever which lifts it, so that when the spindle is lowered the block will move downward with it; and, still further, in the combination, with the hat-block, of a releasing device, whereby, when the spindle has been nearly lowered, the hat-block may fall independently of the spindle to its normal position thereon.

Another feature of my invention is the combination of the clamp with the spindle, a treadle, and toggle-lever, by which the hat-brim is clamped and easily and securely held, at the will of the operative, without requiring full pressure on the treadle.

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

Figure 1, Sheet 1, is a front elevation of a machine embodying my invention. The treadle-lever is shown in cross-section. Fig. 2, Sheet 2, is a central vertical section of the same, showing the operative portions of the machine ready for receiving a hat. Fig. 3, Sheet 3, is a similar view, showing the clamping mechanism fully elevated and the hat-block partially elevated. Fig. 4, Sheet 3, is a sectional view of the upper portion of the machine, showing the block fully elevated.

The frame of the machine consists of two duplicate side plates, A, connected by the lower cross-bars a, the central plate a^1, and annular top plate a^2. B denotes the vertically-reciprocating banding-ring, which is detachably secured to an annular cross-head, b, by means of thumb-screws b'. This banding-ring differs in construction and operation from the non-reciprocating banding-shells shown in my former Letters Patent No. 72,726, December 31, 1867, and also from that shown in Let-

ters Patent No. 53,661, April 3, 1866, granted to George Osterheld and myself. The banding-ring here shown is similar in form to the one shown in my Letters Patent No. 167,083, August 24, 1875, which is placed in and out of working position by a hand-lever.

The banding-ring, with the annular cross-head *b*, is adjustably mounted on sliding rods *c*, fitted to guides in the side plates of the frame, and these rods are connected by pitmen *d* with cranks of about three-eighths of an inch throw on the driving-shaft C, which is provided with balance-wheel and a fast and loose pulley.

In practice the shaft is driven at about four hundred revolutions per minute, which imparts to the banding-ring a like number of vibrations toward and from the clamp and parallel with the central axis of the block.

The combination, with the banding-ring and its cross-head, of the sliding rods, pitmen, and double crank-shaft constitutes a minor portion of my invention.

The hat-block D is circular or oval, as desired, and is readily detachable, two or more of the same size being interchangeably used for securing economy in time, and it is loosely mounted upon a block-carrier or base-plate, *d'*, on a vertically-sliding spindle, *e*, which is controlled by a treadle, E, and a well-known system of levers and cross-head, clearly shown in the drawings, and substantially like those shown by me in several prior Letters Patent for lifting the "former" in hat-stretching machines, and which, in combination with clamping devices, constitute a portion of my present invention, as hereinafter described.

The vertical movement of the hat-block in this machine is not wholly derived from the treadle. The block-carrier or base-plate *d'* has a hub which slides freely on spindle *e*, and it has also laterally-projecting studs on the hub, which, with the hub, constitute a cross-head connected with the spindle cross-head below by pivoted pairs of levers *f* and *f'*, which operate as one toggle-lever when the hand-lever *g* is elevated, because the lever-arm g^1 on the rock-shaft g^2 then engages with a cross-bar, g^3, which connects the duplicate levers *f* at their lower ends, and throws the toggle-lever joint toward the spindle, thereby lifting the hat-block independently of the spindle, as clearly shown in Figs. 3 and 4. This combination of the spindle, the block, and its carrier, the toggle-levers, and hand-lever constitutes a portion of my invention.

After this additional vertical movement of the block is effected by the hand-lever *g*, the block is secured in its position with relation to the spindle by means of a pair of catch-bars, *h*, which are pivoted to the levers *f*, and extend forward on each side of the spindle above a plate, *i*, which is also attached to and moves with the spindle. The plate *i* has at its front edge two squared surfaces, (not shown, except in dotted lines in Fig. 4,) and the catch-bars *h* have each a rectangular shoulder, as shown at h^1, Fig. 4, so that when the block has been fully elevated by the hand-lever *g* the outer ends of these catch-bars fall and engage by their shoulders h^1 with the plate *i*, and thus hold the block at a point above that at which the spindle would otherwise place it; but it will be seen that when the spindle is then lowered a cross-bar, h^2, which connects the two catch-bars at their outer ends, will strike a releasing-stop, h^3, on the middle frame-plate a^1, and be thereby released, so that the block will then fall to its normal position and be supported directly by the contact of its base-plate with the plate *i* on the spindle, as before. This combination, with the spindle, block-carrier, toggle-levers, and hand-lever, of the catch-bars, and the same in connection with the releasing-stop, constitutes separate features of my invention.

The clamp by which the hat-brim is held while the crown is subjected to the action of the rapidly-reciprocating banding-ring is also controlled by the treadle. It is composed of an upper and a lower plate, and, considered broadly as a device for holding the hat during the blocking operation, it is like those shown in the Letters Patent Nos. 53,661, and 72,726, before referred to; but it differs from them in that in the former machines the mere weight of a heavy upper plate is relied upon for clamping, while in my present machine the pressure of the foot upon the treadle, through intermediate leverage, is imparted to the clamp, and constitutes the clamping force, and also in that in the former machines the clamping devices were automatically elevated and depressed, instead of by a treadle at the will of the operative. In this machine the upper clamping-plate *k* is thin and light, and is suspended from the annular top plate a^2 by means of rods which slide in holes in the top plate. The lower annular clamping-plate *k'* is mounted on posts supported by the plate *i*, which is secured to the spindle. This lower plate *k'* has its surface provided with annular scores, and is centrally rabbeted for the reception of what I will term an auxiliary "banding-ring, *l*," substantially as shown in my prior Letters Patent. This auxiliary banding-ring is readily detachable, and conforms in shape with the exterior outline of the hat-block, and should be about one-half inch greater in its inside diameter than the block.

While the auxiliary banding-ring *l* is in its form, and is mounted upon the lower plate of a clamp, as heretofore, it performs a different function in this machine than in the prior machines referred to.

In this machine the lower edge of the banding-ring B, at its lowest position, does not extend below the upper surface of the auxiliary banding-ring, and therefore this latter serves really as an accurately-adjusted support for the hat-brim closely adjacent to the block during the thrusting movement of the banding-ring.

In the former machines the upper interior

edge of the banding-ring (which corresponds in form and position with this ring *l*) is one over which the hat is turned inside out by a banding-shell. The block in these prior machines, on rising, turns the hat outside in, and forces it upward within the banding-shell, which remains stationary.

The levers and treadle which lift the spindle have been referred to as similar to those previously employed in other machines; but, in connection with the clamping device, the toggle-levers e^1, which connect with the treadle-lever e^2, enable the operative to easily maintain the clamp in its closed position while firmly holding a hat, because, when the spindle is elevated, the upper plate is forced against the top plate a^2 of the frame, the lower plate is forced against the hat-brim interposed between the two plates, and the toggle-levers e^1 are so near parallel with the spindle that but little, if any, continued pressure is required on the treadle after it has once been fully depressed, which will be fully apparent on inspection of Fig. 3. This combination of treadle, toggle-lever, spindle, and clamp constitutes a feature of my invention.

The operation of my machine is as follows:

The banding-ring and the auxiliary ring are selected with reference to the size and character of the block to be used. The machine is put in motion, and so speeded that the banding-ring will vibrate about four hundred times a minute. The block is placed on its carrier. A previously-stretched and well-heated hat is then placed over the block, with its brim resting on the lower clamping or supporting plate, the annular grooves therein serving as centering-guides. The treadle is then depressed, thereby elevating the spindle, block, and lower plate until the brim of the hat is firmly held between the clamping-plates. The hand-lever is then raised, thus elevating the hat-block to its highest position, enabling the lower edge of the banding-ring to work down to the band. The catch-bars engage with the plate *i*, securing the block in its elevated position, after which the hand-lever may be dropped. After the hat has been thus operated upon for from thirty to sixty seconds, the spindle is partially lowered, the hat and block removed; then the spindle is fully lowered, the catch-bars permitting the block-carrier to fall to its normal position ready to receive another block and hat, after which the operation is repeated.

The rapidly-reciprocating banding-ring subjects the felt to brief strains or pulls on the side crown, which result in safely and rapidly blocking the hat and perfectly developing the band; and this mode of operation in blocking-machines is wholly novel.

It is to be distinctly understood that I do not limit the broad features of my invention to the combination of the rapidly-reciprocating banding-ring with any particular form of clamp, nor to any particular mechanism for elevating and controlling the hat-block, for I am well aware that these may be largely varied and modified, and that the reciprocating banding-ring may be profitably employed in connection with a great variety of blocks, clamps, &c., many of which I have already tested.

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

1. In a hat blocking and banding machine, the combination, with a movable hat-block and a clamping device for holding a hat firmly by its brim while on the block, of a rapidly-reciprocating banding-ring, which vibrates toward and from the clamp and parallel with the central axis of the block, substantially as described, whereby the band of a hat, while held by the clamp and on the block, may be rapidly and thoroughly developed, as set forth.

2. The combination, with a rapidly-reciprocating banding-ring, of two clamping-plates, a detachable hat-block, and a hat-block spindle which is movable toward and from the banding-ring, substantially as described.

3. The combination, with the upper clamping-plate, the hat-block and its carrier-plate, the lower clamping-plate, the spindle and treadle by which the hat-block is partially elevated, and the lower plate placed in clamping relation with the upper plate, of the toggle-levers, and hand-lever for fully elevating the block, substantially as described.

4. The combination, with the hat-block and its carrier-plate, of the spindle and treadle by which the block is partially elevated, the toggle-levers and hand-lever by which the block is fully elevated, and the catch-bars by which the block is maintained in its elevated position independently of the hand-lever, substantially as described.

5. The combination, with the hat-block, spindle, treadle, toggle-lever, hand-lever, and catch-bars, of the stationary stop, which releases the catch-bars when the spindle is lowered, and permits the block to fall on the spindle to its normal position, substantially as described.

6. The combination, with the banding-ring, of the cross-head to which it is attached, the sliding rods, pitmen, and double crank-shaft, substantially as described.

7. The combination, with a clamping device operated by a spindle and a treadle, of toggle-levers which connect the treadle-lever and spindle, substantially as described, whereby the toggle-levers, when the clamp is closed, will sustain the pressure and practically relieve the foot of the operative, as set forth.

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