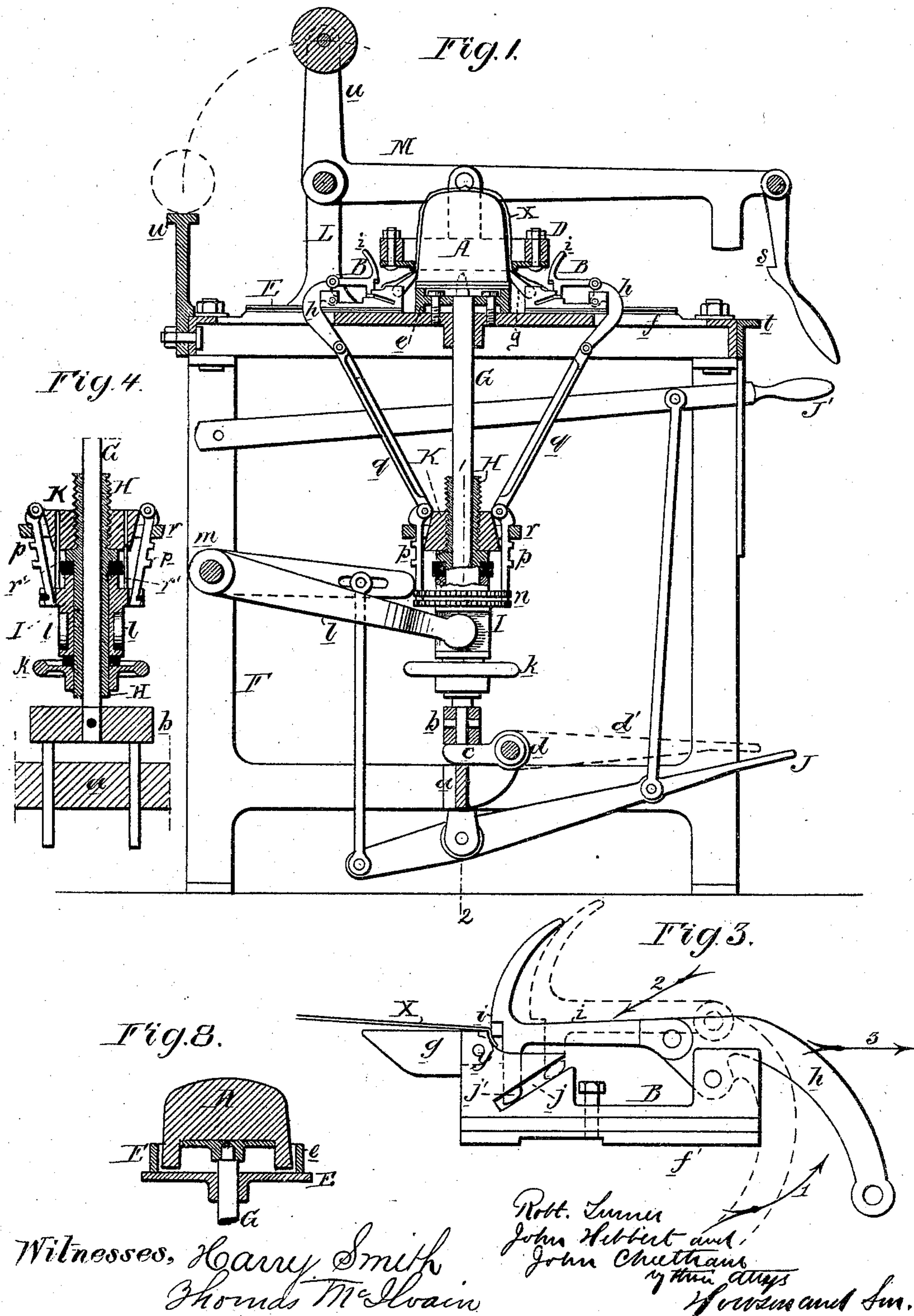


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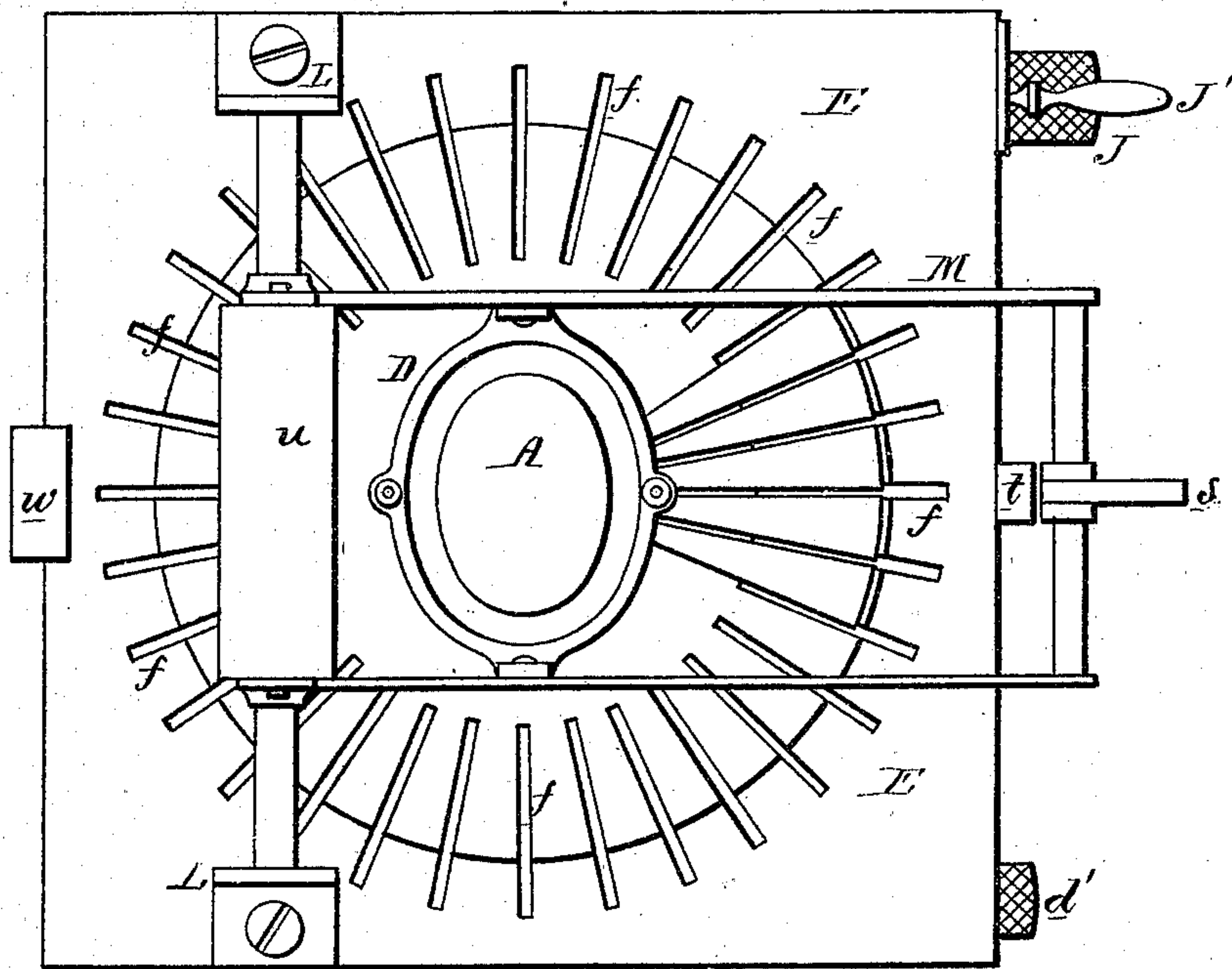
No. 149,548.

Patented April 7, 1874.

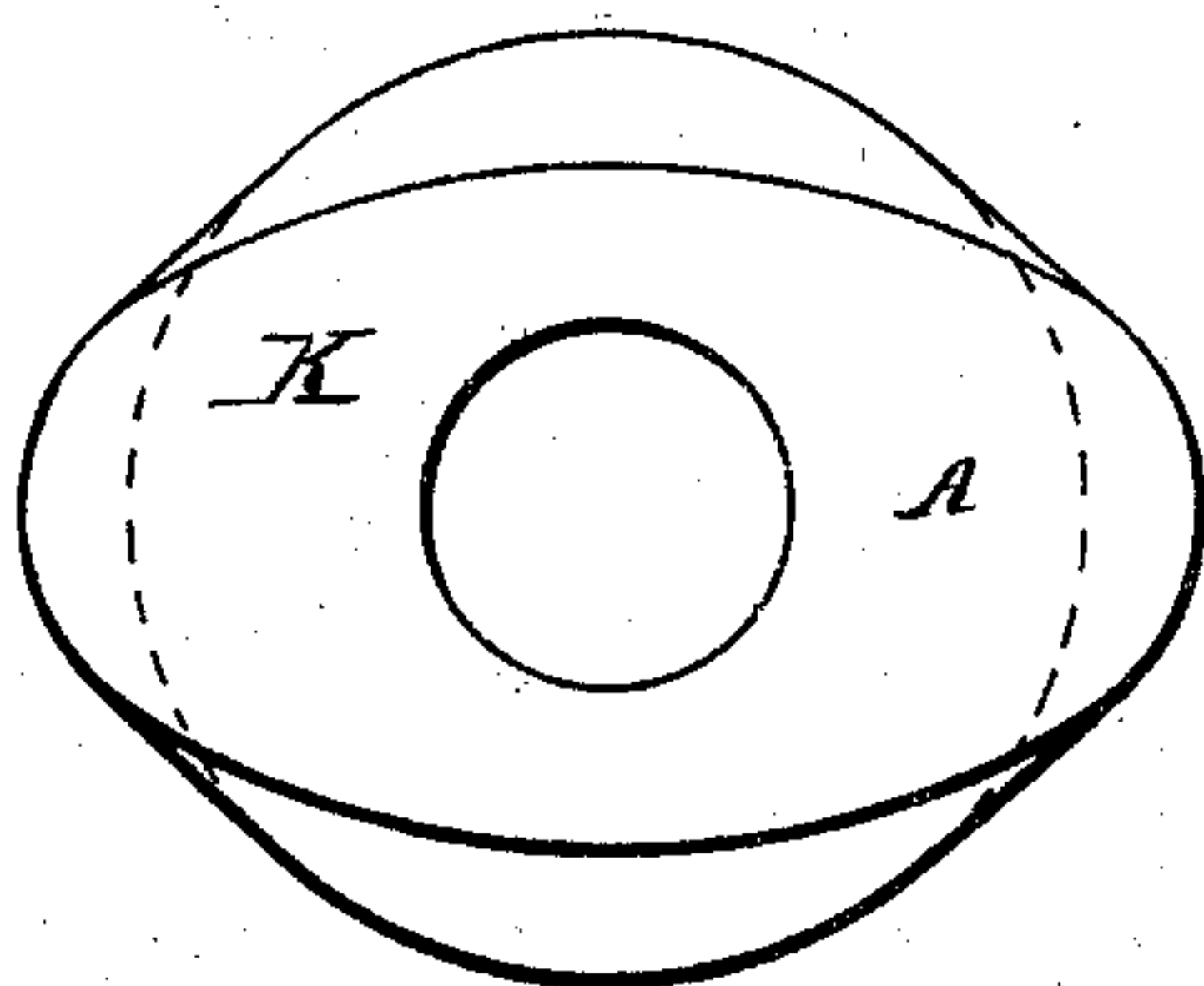


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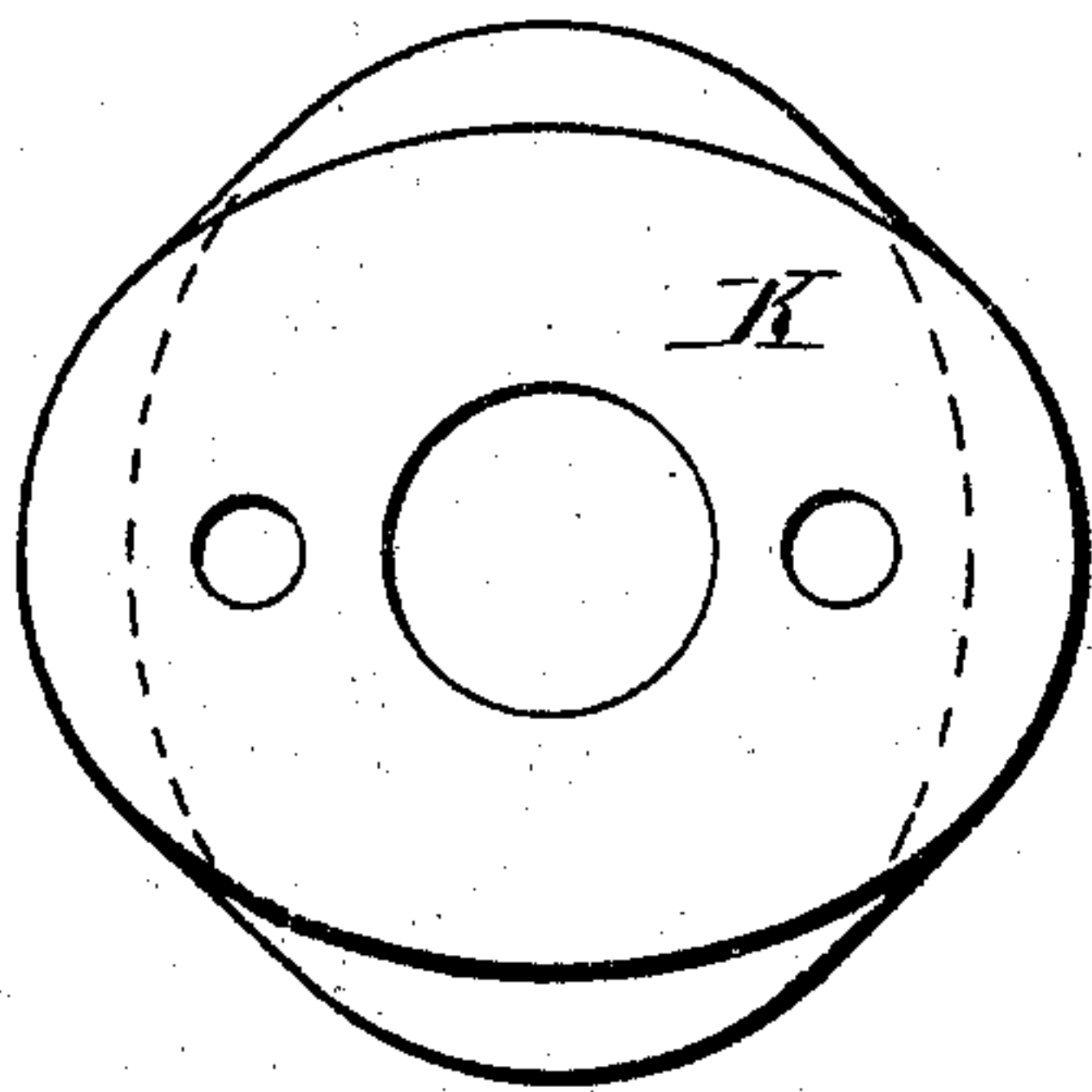
*Fig 2.*



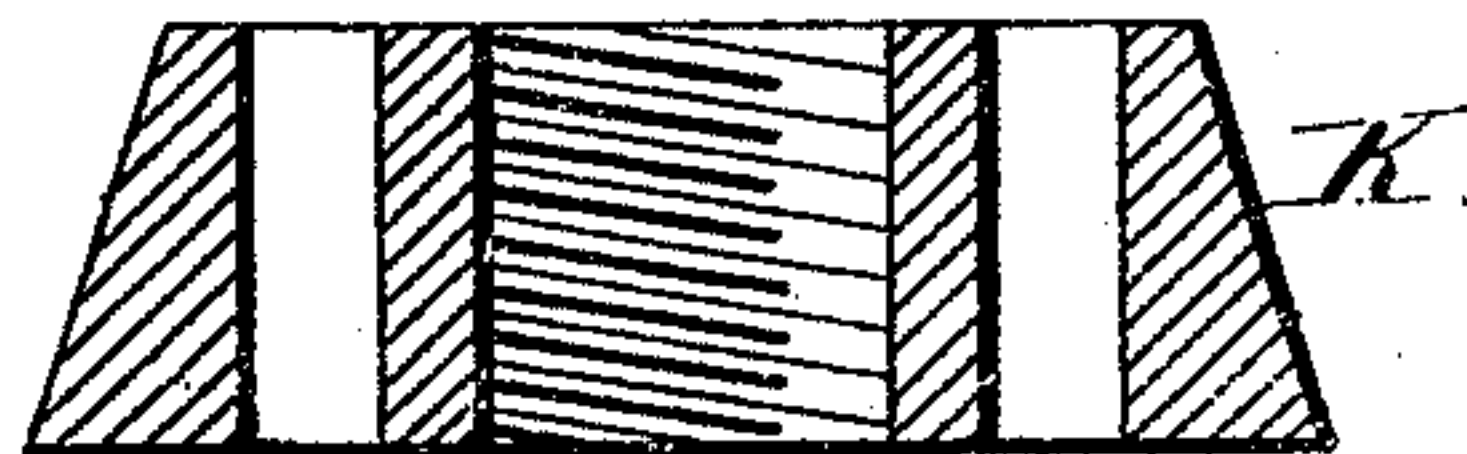
*Fig. 5.*



*Fig. 6.*



*Fig. 7.*



*Witnesses, Harry Smith  
 Thomas M. Shaw*

*Robert Turner  
 John Hibbert and  
 John Cheetham  
 by their attys  
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# UNITED STATES PATENT OFFICE.

ROBERT TURNER, JOHN HIBBERT, AND JOHN CHEETHAM, OF HYDE,  
ENGLAND.

## IMPROVEMENT IN MACHINES FOR BLOCKING AND STRETCHING HATS.

Specification forming part of Letters Patent No. 149,548, dated April 7, 1874; application filed  
January 24, 1874.

*To all whom it may concern:*

Be it known that we, ROBERT TURNER, JOHN HIBBERT, and JOHN CHEETHAM, all of Hyde, in the county of Chester, England, have invented certain Improvements in Machinery for Blocking and Stretching Hats, of which the following is a specification:

The object of our invention is to facilitate the operation of blocking and stretching hats by the combination of a block, A, a series of brim-stretching clamps, B, arranged radially around the said block, and a ring, D, adapted to the exterior of the latter, all as fully described hereafter, and as illustrated by the accompanying drawings, in which—

Figure 1, Sheet 1, is a sectional elevation of the machine; Fig. 2, Sheet 2, a plan view; Fig. 3, Sheet 1, an enlarged view of one of the stretching-clamps; Fig. 4, Sheet 1, a section on the line 1 2, Fig. 1; Figs. 5, 6, and 7, Sheet 2, detached views of a portion of the machine drawn to an enlarged scale; and Fig. 8, Sheet 1, a sectional view of a modified arrangement of hat-block.

The frame of the machine consists of a table, E, supported by opposite side frames F, connected together by cross-stays *a*. The block A, which may be made in one or several pieces, occupies the center of the table, and is secured to a vertical rod, G, passing downward through an opening in the table, and secured at its lower end to a guided cross-head, *b*, which rests upon the arm *c* of a rock-shaft, *d*, the latter being provided with a treadle, *d'*, by depressing which the rod G and block may be raised, as hereafter described. The block may be secured to its rod in any suitable manner, and may, when depressed, either rest upon an annular flange, *e*, on the table, as shown in Fig. 1, or occupy a position within the said flange, as shown in Fig. 8. In the table, surrounding the block, are a number of radial grooves, *f*, arranged at equal distances apart, and to each groove is adapted a sliding brim-clamp, B, constructed as follows: To the front portion of a slide, *f'*, adapted to the groove in the table, is pivoted a finger, *g*, which, when at rest, remains in the horizontal position shown in Fig. 3, but which, when moved toward the block A, is turned upward to an angle of about forty-five degrees

by the said block, or by the above-mentioned flange *e*, as shown in Fig. 1, and there serves to guide the brim of the hat to the clamping device described hereafter. To the rear or outer portion of each slide is hung a lever, *h*, the long arm of which projects through a slot in the table, and to the extremity of its short arm is pivoted a clamping-jaw, *i*, the peculiar movement of which, when the lever is turned upon its fulcrum, is determined by an inclined slot, *j*, in the slide, to which slot a projection, *j'*, of the said jaw is adapted. To the rod G, beneath the table, is adapted a sleeve, H, having a screw-thread cut upon its upper portion, and provided at its lower end with a hand-wheel, *k*, by which it may be turned. (See Figs. 1 and 4.) A second sleeve, I, is adapted to the exterior of the sleeve H, and both sleeves may be raised or lowered simultaneously on the rod G by the forked arm *l* of a rock-shaft, *m*, the latter being operated by a treadle, J, and hand-lever J', through the medium of the connections, too clearly shown in Fig. 1 to need explanation. To a flange, *n*, on the sleeve I are pivoted a series of arms, *p*, each of which is connected at its upper end, by a link, *q*, to one of the levers *h* of the clamps B, and the whole number of arms *p* are forced inward against and maintained in contact with the surface of a shaping-block, K, by a rubber or other equivalent spring, *r*. This block K is, in the present instance, circular beneath and oval above, as best observed in the detached view, Fig. 5. It has an internal screw-thread corresponding to the external thread on the sleeve H, and is prevented from turning by guide-rods *r'*, Fig. 4, secured to the sleeve I, so that it may be raised and lowered by turning the internal sleeve, for a purpose which will be rendered apparent hereafter. To standards L L at the top of the table is pivoted a frame, M, from which is suspended a blocking-ring, D, the latter encircling the hat-block A when the frame is lowered, as shown in Fig. 1, in which position it may be retained by a catch, *s*, adapted to a projection, *t*, at the edge of the table; and the said frame is retained in its elevated position by its weighted arm *u*, which rests upon a projection, *w*, on the table, as indicated by dotted lines.



The operation of the machine is as follows: The pivoted frame M and ring D are, in the first instance, raised out of the way, and the whole of the clamping-slides B are moved inward toward the block A, to the position shown in Fig. 1, or until the whole of the guiding-fingers *g* have been turned upward, as before described. The operator then adjusts a hat-body, X, which has been previously softened in hot water or by steam, to the block A, the brim sliding down the inclined guide-fingers *g* until it rests upon the upper surfaces of the whole number of clamping-slides B. The operator next depresses the treadle J, and thus elevates the sleeves H and I. The first effect of this movement will be to turn all of the levers *h* in the direction of the arrow 1, Fig. 3, from the position indicated by dotted lines to that shown by full lines, and to thus force each jaw *i* in the direction of the arrow 2 until the edge of the brim of the hat has been clamped between the series of jaws and the portions *y* of the slides. The continued upward movement of the sleeves will cause the whole number of clamps to be moved outward, in the direction of the arrow 3, Fig. 3, to the extent determined by the shaping-block K, against which the inner ends of the operating rods or links *q* are caused to bear, the brim of the hat, which is held at equidistant points by the said clamps, being thus expanded or stretched to the extent and shape required. The ring D is next lowered over the block A, in order to shape the hat and form the band, after which the hat is set by pouring cold water upon it, or otherwise. The swing-frame M is next thrown up, and the ring D is disengaged from the block A, and the clamping-slides B are then moved inward by elevating the hand-lever J', and thus depressing the sleeves H and I and their connections. During the first portion of this inward movement the jaws *i* of the clamps will be drawn back to the position indicated by dotted lines in Fig. 3, and the brim of the hat will consequently be released, and the parts will thus be prepared for a repetition of the above-described operations after the finished hat has been removed.

If the block A is so large in the tip that the hat-body will not easily fall over it to a sufficient extent to reach the clamps B, we prefer to arrange it as shown in Fig. 8, the block remaining in the position shown in the said fig-

ure until the swing-frame M is fastened down, after which it is raised, by means of the treadle *d'*, to the level of the hat-brim, and is thus held until the hat is set, after which the treadle is liberated, and the block falls, by its own weight, to its original position, and is ready for the next operation.

The shaping-block K is an important feature of our invention, as it determines the extent of the outward movement of the arms *p* and links *q*, and consequently of the clamping-slides, and thus regulates the shape of the brim. On raising and lowering the block by means of the threaded sleeve H, different portions of its surface may be brought opposite the arms *p* and links, the same block being thus made available for different shapes of brims. Blocks of any required shape may be used. That illustrated in Figs. 6 and 7, for instance, is oval both above and below, the major axes of the ovals being at right angles to each other.

The principal advantages resulting from the use of our improved machine are, first, that the hat may be softened for the blocking operation either by hot water or by steam; second, that the brim may be formed of any required width, and of any character of oval, with accuracy; and, third, that the whole operation of blocking tip, body, and brim is performed with once softening the hat.

We claim as our invention—

1. The combination of the block A, sliding clamp B, devices for moving the clamps radially, and the shaping-block K, by which the differential adjustment of the clamps is effected, as specified.

2. The combination of the hat-block A, ring D, and sliding clamps provided with fingers *g*, substantially as and for the purpose set forth.

3. The combination, with a slide, *f'*, of a lever, *h*, and jaw *i*, between which and a shoulder on the slide a hat-brim is clamped by the action of the bar, substantially as set forth.

4. The combination of the block A, clamps B, vertically-sliding sleeve I, and arms *p*, connecting the sleeve and clamps, as set forth.

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