

(No Model.)

3 Sheets—Sheet 1.

J. BRANDY.

MACHINE FOR MANUFACTURING FELT BOOTS, SHOES, OR STOCKINGS.

No. 277,450.

Patented May 15, 1883.

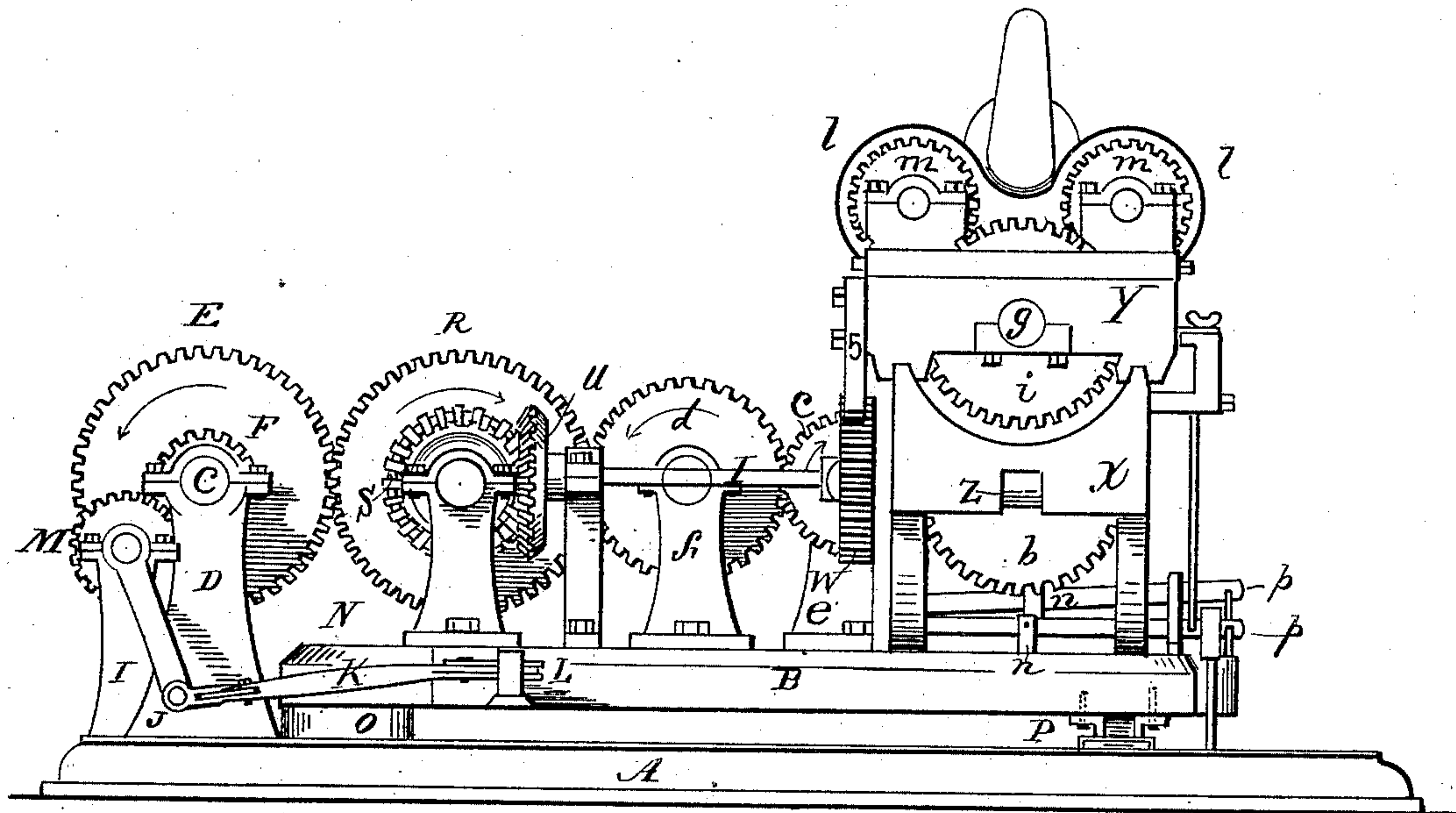


Fig. 1.

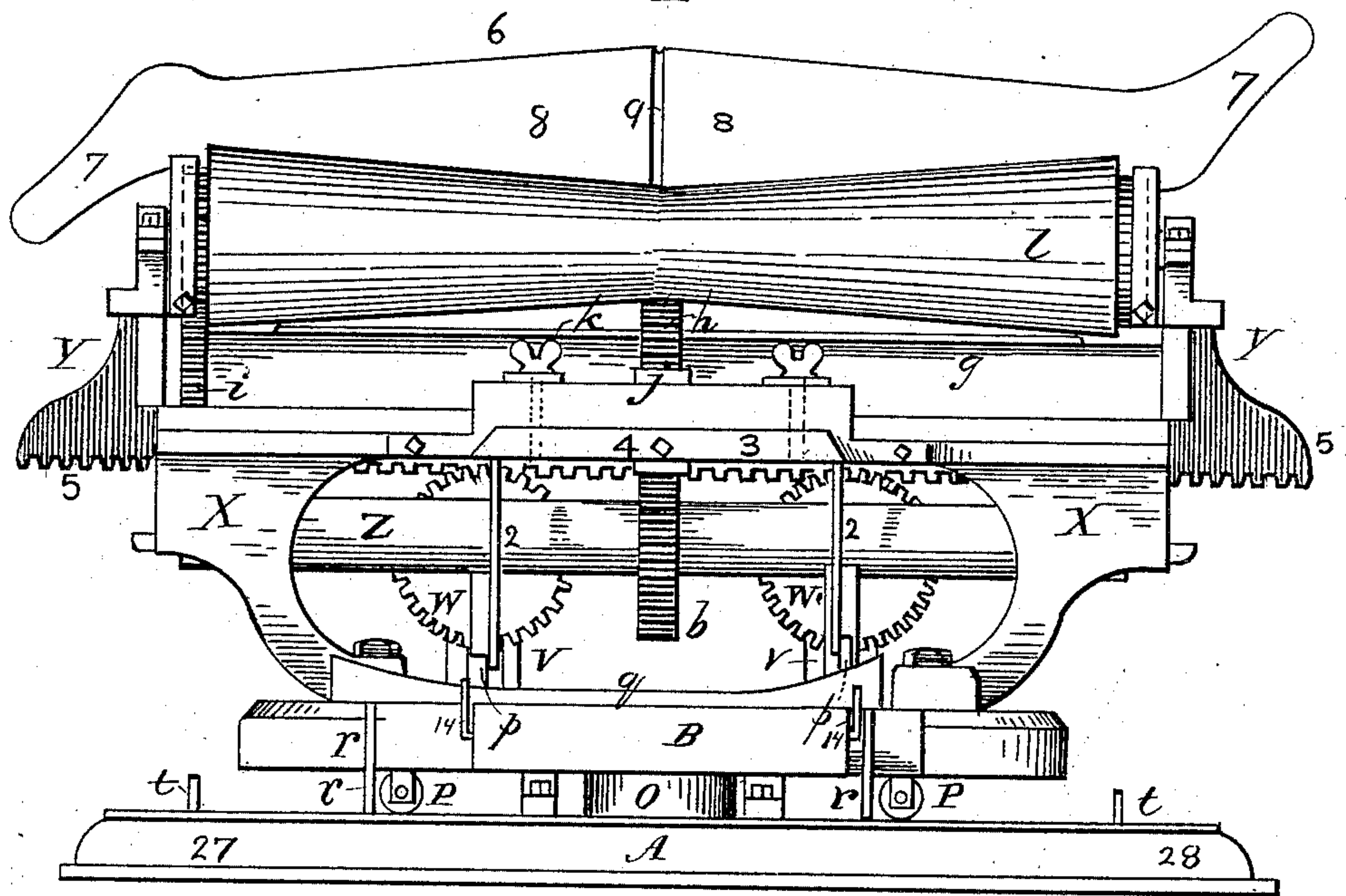


Fig. 2.

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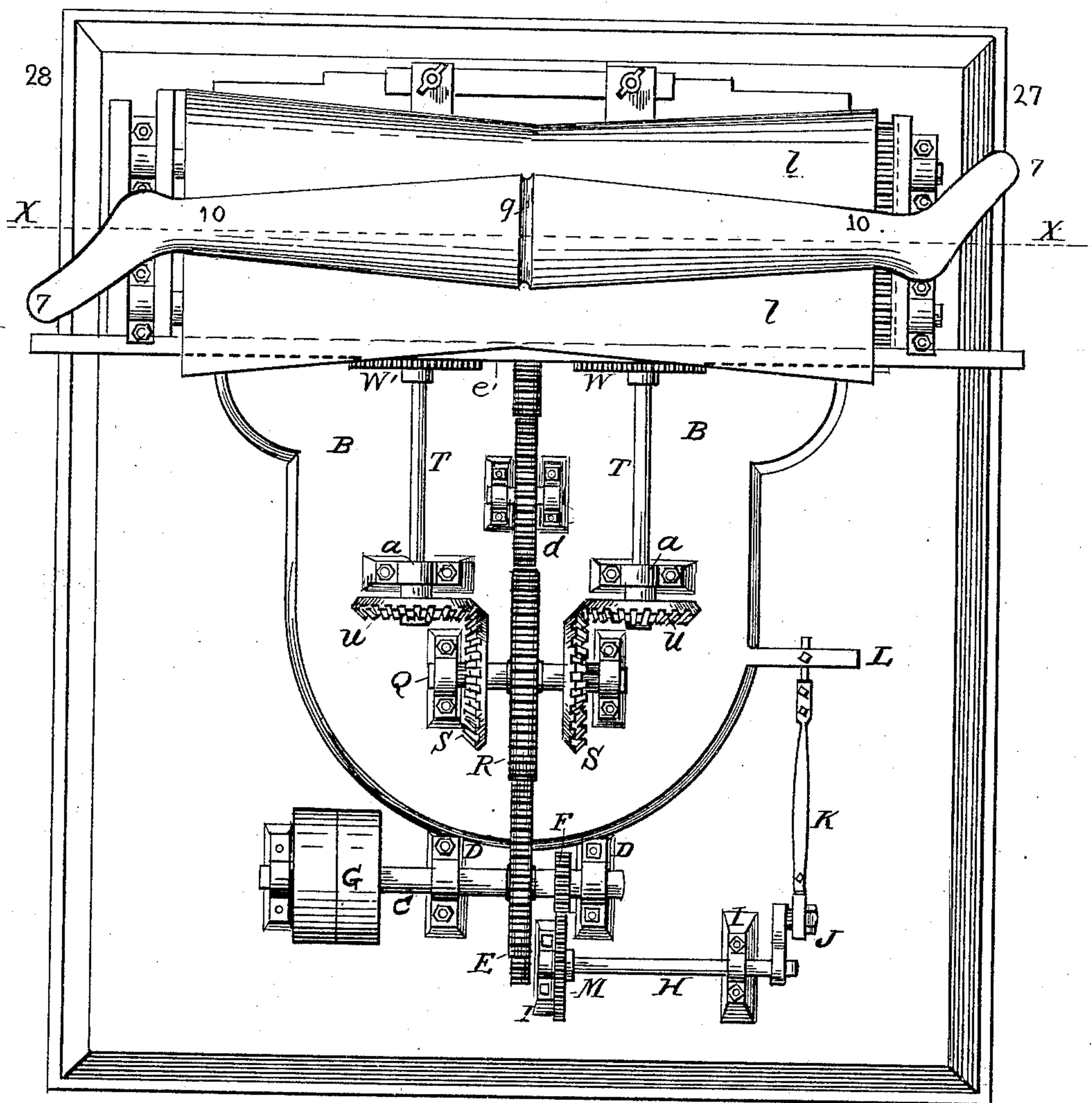


Fig. 3.

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3 Sheets—Sheet 3.

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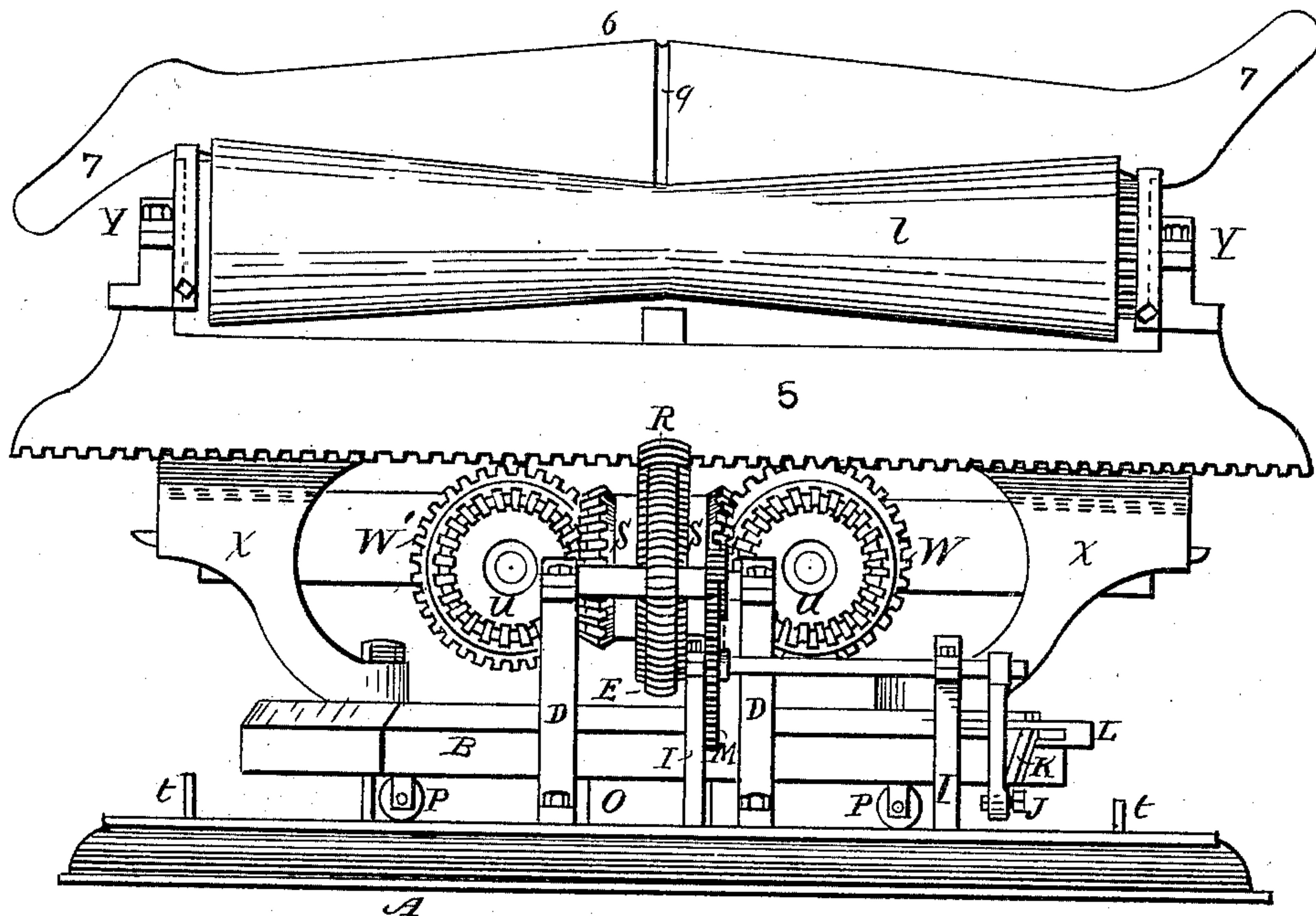


Fig. 4.

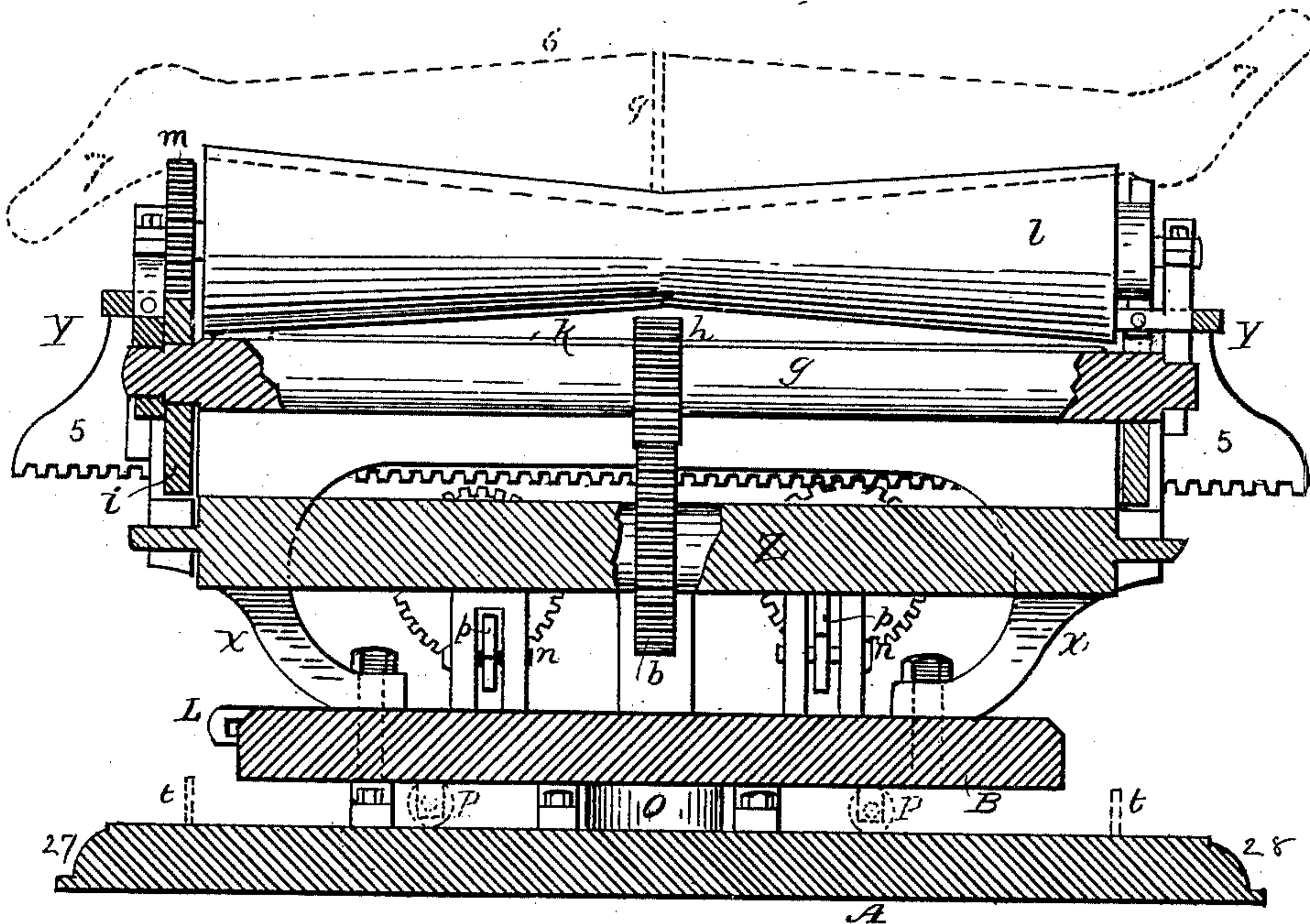


Fig. 5.

Witnesses

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# UNITED STATES PATENT OFFICE.

JAMES BRANDY, OF LAWRENCE, MASSACHUSETTS.

MACHINE FOR MANUFACTURING FELT BOOTS, SHOES, OR STOCKINGS.

SPECIFICATION forming part of Letters Patent No. 277,450, dated May 15, 1883.

Application filed February 26, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES BRANDY, of Lawrence, in the county of Essex, State of Massachusetts, have invented a certain new and useful Improvement in Machines for Manufacturing Felt Boots, Shoes, or Stockings, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation of my improved machine; Fig. 2, an end elevation; Fig. 3, a top plan view; Fig. 4, an end elevation the reverse of Fig. 2, and Fig. 5 a vertical transverse section taken on line *x* in Fig. 3.

Like letters of reference indicate corresponding parts in the different figures of the drawings.

My invention relates more especially to means for holding and manipulating the former or cone on which the "sliver" or felting material is deposited in the manufacture of felt boots, shoes, or stockings; and it consists in a novel construction and arrangement of the parts, as hereinafter more fully set forth and claimed, by which a more effective device of this character is produced than is now in ordinary use.

The nature and operation of the invention will be readily understood by all conversant with such matters from the following explanation.

In the drawings, A represents the bed or body of the machine; B, the table, and C the main driving-shaft. The shaft is journaled horizontally in the standards D, and carries the main gear E, pinion F, and driving-pulley G.

A crank-shaft, H, mounted in the standards I, has its crank J connected to the table B by the pitman K, jointed to the bracket or arm L, and carries a gear, M, which intermeshes with the pinion F on the shaft C.

The table B is pivoted at its rear end, N, to the hub O, projecting upwardly from the bed A, and is provided at its forward end with two small supporting-wheels, P, resting on the bed.

A shaft, Q, carrying the gear R and miter-gears S S, is mounted in proper bearings on

the table B near its pivoted end N, and journaled horizontally at right angles to this shaft are two shafts, T T, respectively provided at their outer ends with miter-gears U, which intermesh with the gears S on the shaft Q. The inner ends of the shafts T work in vertically-sliding boxes (not shown) in the standards V on the table B, and respectively carry gears W, the outer ends of the shafts T being so arranged in the boxes *a* as to permit the inner ends of the same to be raised and lowered, as hereinafter described.

Arranged transversely on the table B, near its outer or free end, there is a head-stock or bed, X, its upper side being in parallelism with the table B, and provided with a sliding carriage, Y.

Journaled horizontally in the head-stock beneath the carriage there is a shaft, Z, carrying the gear *b*, which is connected with the gear R by the intermediate gears, *c d*, mounted in the standards *e f* on the table B.

Disposed in the lower part of the carriage Y, and journaled therein in parallelism with the shaft Z, there is a shaft, *g*, provided at its center with the gear *h*, and at one end with the gear *i*. The gear *h* intermeshes with the gear *b*, but does not traverse with the shaft *g* and carriage Y, being kept in position by the double flange or holder *j*, projecting from the bed X, and prevented from turning on said shaft by the spline *k*.

Mounted horizontally in the upper part of the carriage Y there are two rollers, *l l*, journaled in suitable boxes, each of said rollers being provided with a gear, *m*, which intermeshes with the gear *i* on the shaft *g*. These rollers are preferably arranged on the same plane in parallelism with each other and with the shafts *g* Z, and are constructed substantially alike, being smaller at the center than at the ends, or gradually tapering from either end to the center, as shown in Figs. 3 and 4.

Pivoted to the short standards *n* on the table B there are two shipping-levers, *p p*, which project outwardly over the free end of the table, as shown in Fig. 1, and have their inner ends respectively connected to the vertically-sliding boxes in which the inner ends of the shafts T rest.



A shipping-bar, *q*, is disposed on the outer end of the table B, being fitted to slide longitudinally in proper ways, 14, and provided with a downwardly-projecting stud, *r*, at either end, 5 designed to engage the fixed stops *t* in the bed A. The bar is curved on its upper side or edge, being narrowest at the center and widest at the ends, as seen in Fig. 2, and the levers *p* project over it, and have their outer ends 10 connected by the rods 2 to a horizontal lever, 3, (shown in the end view, Fig. 2,) the lever being pivoted at 4 on the front portion of the head-stock X.

Attached to the rear lower edge of the carriage Y there is a rack, 5, with which the gears W are alternately engaged in moving the carriage back and forth on the head-stock X.

The cone or former 6, on which the sliver or felting material is deposited, is made in two 20 sections, each section being provided with a foot-piece, 7, and leg-piece 8, the leg-pieces being united on the line 9, and the feet or foot-pieces turned in opposite directions, as best seen in Figs. 2 and 4, in order to balance the 25 cone and enable it to be manipulated in a better manner. The taper of the leg-pieces of the cone is designed to correspond with the taper of the rollers *l*, but in an opposite direction, the cone being largest at the center and the 30 rollers smallest at the point, so that when the cone is placed on the rollers, as shown in Fig. 3, it will be in perfect contact therewith the entire length of the rollers, or from the ankle-pieces 10 of the cone to the center 9, the cone being longer than the rollers and its feet projecting over the same, as shown in Fig. 2.

In the use of my improvement the machine is placed in a convenient position to receive the sliver or bat of felting material from the 40 card or other source of supply, and the cone or former placed in position on the rollers, one end of the sliver of felt being wound around the cone or passed over it downwardly between it and the outer roller *l* in such a manner as 45 to be fed onto the cone properly when the machine is started up. The table B being centrally arranged on the bed A, as shown in Fig. 3, and the crank J nearly at its lowest point, power is now applied to the pulley G, causing 50 the pulley and gear E to turn from the rollers *l*, and said rollers to turn toward said gear or toward the pivoted end of the table B, as shown by the arrows, thereby giving to the cone a rotary motion opposite that of the rollers, or in a direction opposite that in which 55 the main gear E is revolving. The shaft H continuing to revolve, the crank J will pass downwardly and cross a vertical line drawn through the center of said shaft, acting on the 60 pitman K as it rises to swing the table B to the left, or toward that side of the bed marked 27 in Fig. 2. The gear W being at the same time engaged with the rack 5 and the gear W' disengaged therefrom, the carriage Y will be 65 caused to traverse or move on the head-stock X in an opposite direction from that in which

the table B moves, or will move toward the side 28 of the bed A while the table is moving toward the side 27. When the table has traversed far enough to bring one of the studs 70 *r* into contact with the stop *t* which is on the side 27 of the bed A, the shipping-bar *q* will be prevented from traversing any farther with the table in that direction, causing the shipping-lever *p* nearest the side 27 to ride upwardly 75 on the curved end of the shipping-bar, lifting the outer end of said shipping-lever and depressing its inner end, thereby disengaging the gear W from the rack 5, and at the same time causing the gear W' to become engaged 80 therewith and the motion of the carriage Y to be reversed. When the crank J arrives on a plane with the axial line of the shaft H or passes the center on its return, the movements of the table B will also be reversed, and it will 85 be caused to travel in the direction of the side 28 of the bed A until the crank passes said plane again on the opposite side of its shaft. As the table moves toward the side 28 the stud *r* in that end of the shipping-bar *q* which 90 is nearest said side will strike its stop *t*, causing the shipping-bar to act on the shipping-lever to bring the gear W into engagement with the rack 5 and disengage the gear W', thereby reversing the movements of the carriage Y in a manner which will be readily obvious without a more explicit description. 95

The shipping-levers being connected to the pivoted lever 3 by the rods 2, it will be evident that when the bar *q* acts to raise one of said 100 levers the opposite or companion lever will be correspondingly depressed, the formation of the upper side or edge of said bar permitting this, as shown in Fig. 2.

The teeth of the gears E R are rounded, as 105 best seen in Fig. 4, to permit the table to be swung alternately to the right and left, as described, the pitman K being also loosely connected to the crank-pin of the crank J for the same reason. 110

The sliver of felting as it comes from the card passes in a direct line to the cone or former mounted on the rollers *l l*, and as the cone is moved back and forth under the sliver in the arc of a circle of which the pivoted end N 115 is the center, the sliver will be crossed and re-crossed on the cone in such a manner as to greatly strengthen the fabric of the boot or article being formed on the cone. It is, however, desirable, in order to perform the work 120 in the best manner, that all portions of the cone should receive the layers of the sliver evenly or be held in the direct line of its delivery to the machine a proper time as it moves back and forth under the same, which would 125 not be accomplished if the rollers *l* were mounted directly on the head-stock X, for the reason that when the table, swinging either to the right or left, reaches the end of its traverse the crank J is just passing its center, thereby 130 causing the table to remain comparatively still for a short time, or to move very slowly, and



the sliver to be wound onto the cone unevenly. To obviate this difficulty I make use of the carriage Y, traversing with the head-stock, but having independent movements, as described, whereby the cone is kept moving under the sliver at a sufficient speed to perform good work, even when the table B is nearly motionless, it being obvious that the speed of all the gears will be uniform, whereas in converting the rotary movements of the crank into the reciprocating movements of the table the speed at which the table will move will vary in different parts of its course, as described.

It will be obvious that the carriage may be arranged to travel in the same direction with that of the table, if desired, and at any rate of speed; also, that it may be caused to traverse by other means than shown without departing entirely from the spirit of my invention.

Having thus explained my invention, what I claim is—

1. In a machine for making felt boots, shoes, or stockings, the table B, carrying the carriage Y and rollers *l l*, in combination with operative mechanism therefor, said carriage and rollers being adapted to move longitudinally at a different speed from the table, substantially as and for the purpose set forth.

2. In a machine for making felt boots, shoes, or stockings, the rollers *l l*, provided with the gears *m m*, the shaft *g*, having the spline *k*, and provided with the gears *i h*, and the carriage Y, having the rack 5, in combination with the gears *W W'*, shaft Z, gear *b*, and operative mechanism, substantially as specified.

3. In a machine for making felt boots, shoes, or stockings, the shipping-bar *q*, provided with the studs *r r*, in combination with the stops *t t*, shipping-levers *p p*, gears *W W'*, rack 5, and operative mechanism, substantially as and for the purpose set forth.

4. In a machine for making felt boots, shoes, or stockings, the following instrumentalities, to wit: a cone or former for receiving the sliver or felting material from the card, a pair of rollers adapted to receive and support the cone and give it rotary movements, a carriage in which the rollers are mounted, and a table for supporting the carriage, in combination with operative mechanism, by which the table,

carriage, and rollers are moved back and forth as the sliver is deposited on the cone, the longitudinal movements of the rollers not being in unison with the like movements of the head-stock or support on which the carriage or the rollers is supported, substantially as and for the purpose set forth.

5. In a machine for making felt boots, shoes, or stockings, a pair of rollers for supporting the cone on which the boot, shoe, or stocking is formed, said rollers being mounted in a carriage or support, and moving longitudinally in an opposite direction from that of the table on which the carriage is supported, and at a rate of speed which is not uniform with that of the table, substantially as described.

6. In a machine for making felt boots, shoes, or stockings, the shaft H, crank J, pitman K, gears M, shaft C, gears E F, shaft Q, gears S S, shafts T T, gears U U W W' *d c*, table B, and means for supporting and operating the rollers *l l*, substantially as set forth.

7. In a machine for making felt boots, shoes, or stockings, the cone 6 for receiving the sliver, said cone having the leg-pieces 8, joined at 9, and provided with the feet 7, projecting in opposite directions, in combination with the rollers *l l*, constructed, combined, and arranged to operate substantially as specified.

8. In a machine for making felt boots, shoes, or stockings, the carriage Y, provided with the rack 5, the rollers *l*, provided with the gears *m*, and the shaft *g*, provided with the gear *i*, in combination with means for giving said carriage longitudinal reciprocating movements on the head-stock X, substantially as set forth.

9. In a machine for making felt boots, shoes, or stockings, the shafts T T, each provided with a gear adapted to engage the rack 5 at regular intervals, in combination with operative mechanism, substantially as specified.

10. In a machine for making felt boots, shoes, or stockings, the table B, pivoted at N, and provided with the head-stock X, carriage Y, and rollers *l l*, in combination with operative mechanism therefor, substantially as set forth.

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Witnesses:

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