H. A. REYNOLDS.

NOTCH CHAMFERING MACHINE FOR MATRICES.

APPLICATION FILED JAN. 16, 1907.

904,995. Patented Nov. 24, 1908.

4 SHEETS—SHEET 1.

Fig. 1.

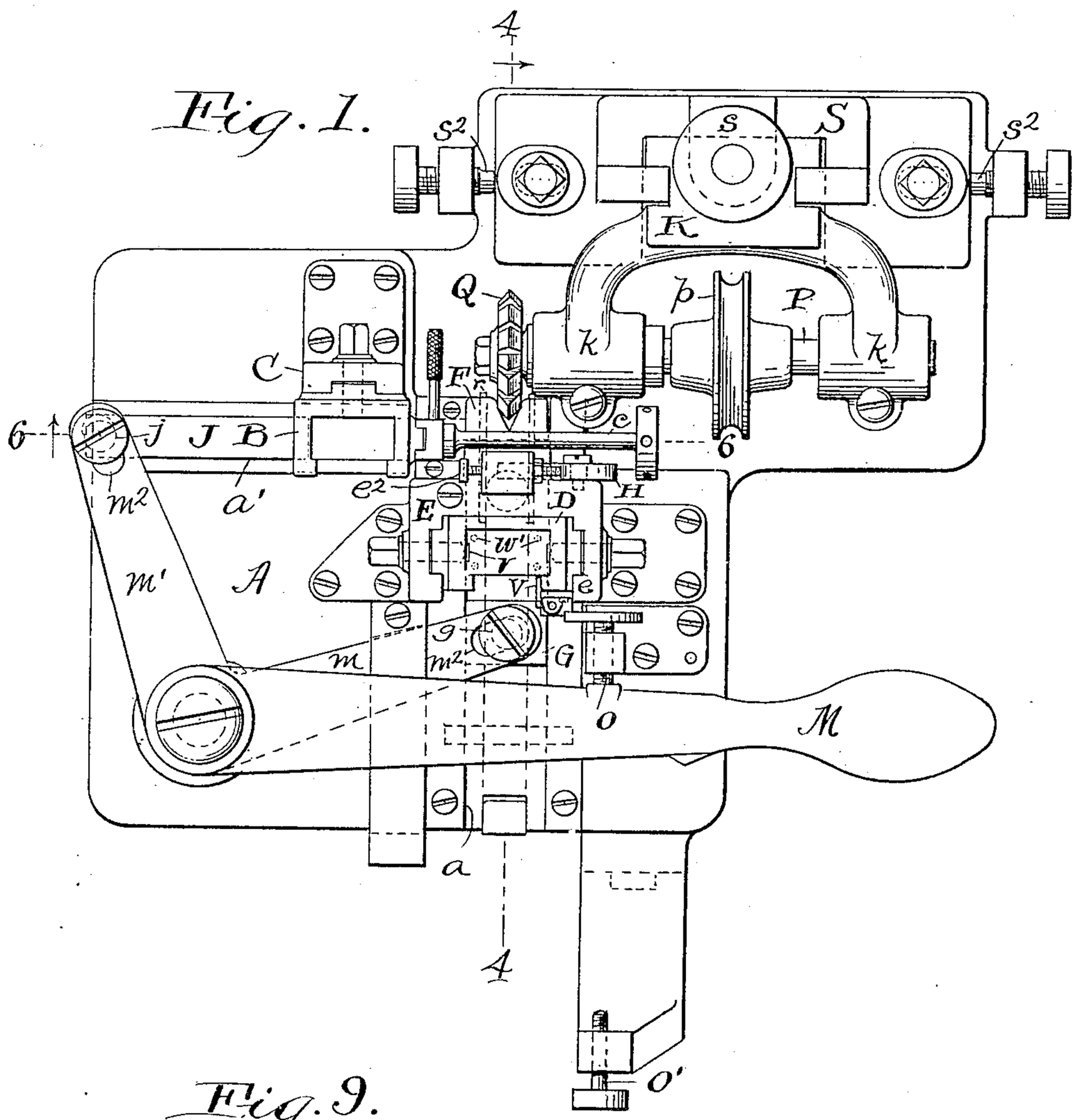


Fig. 9.

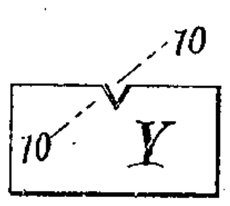
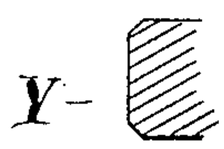


Fig. 10.



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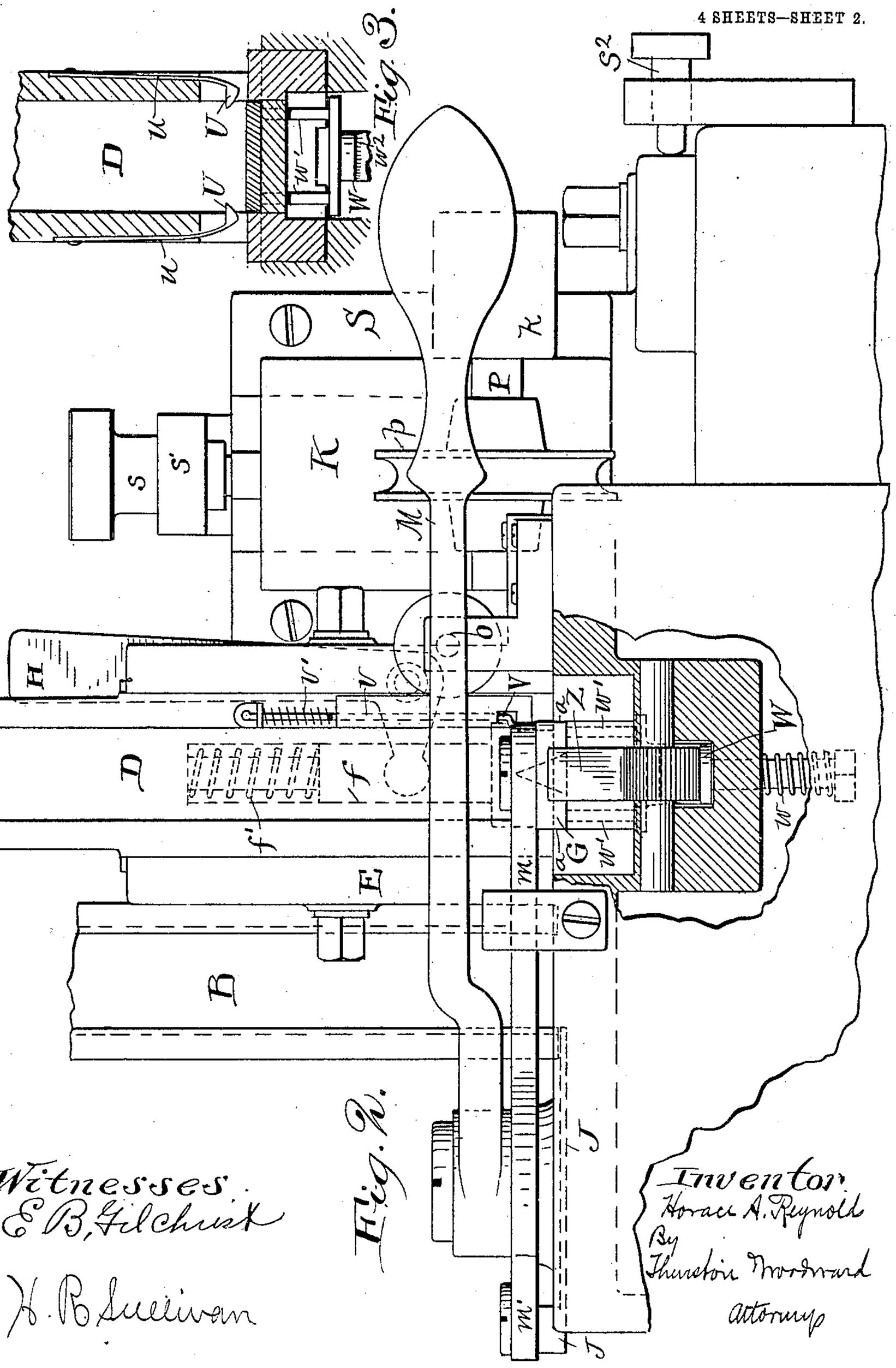

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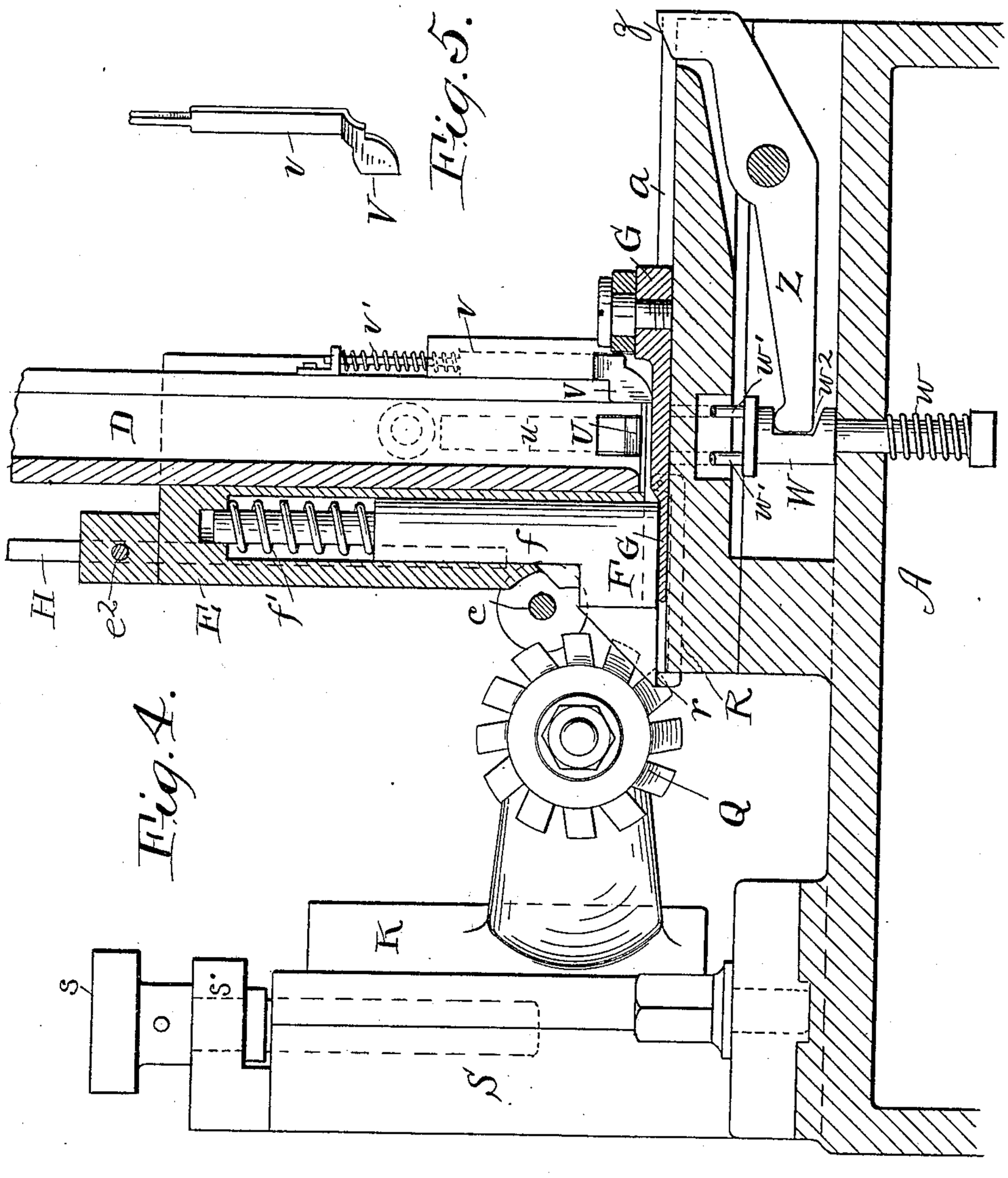

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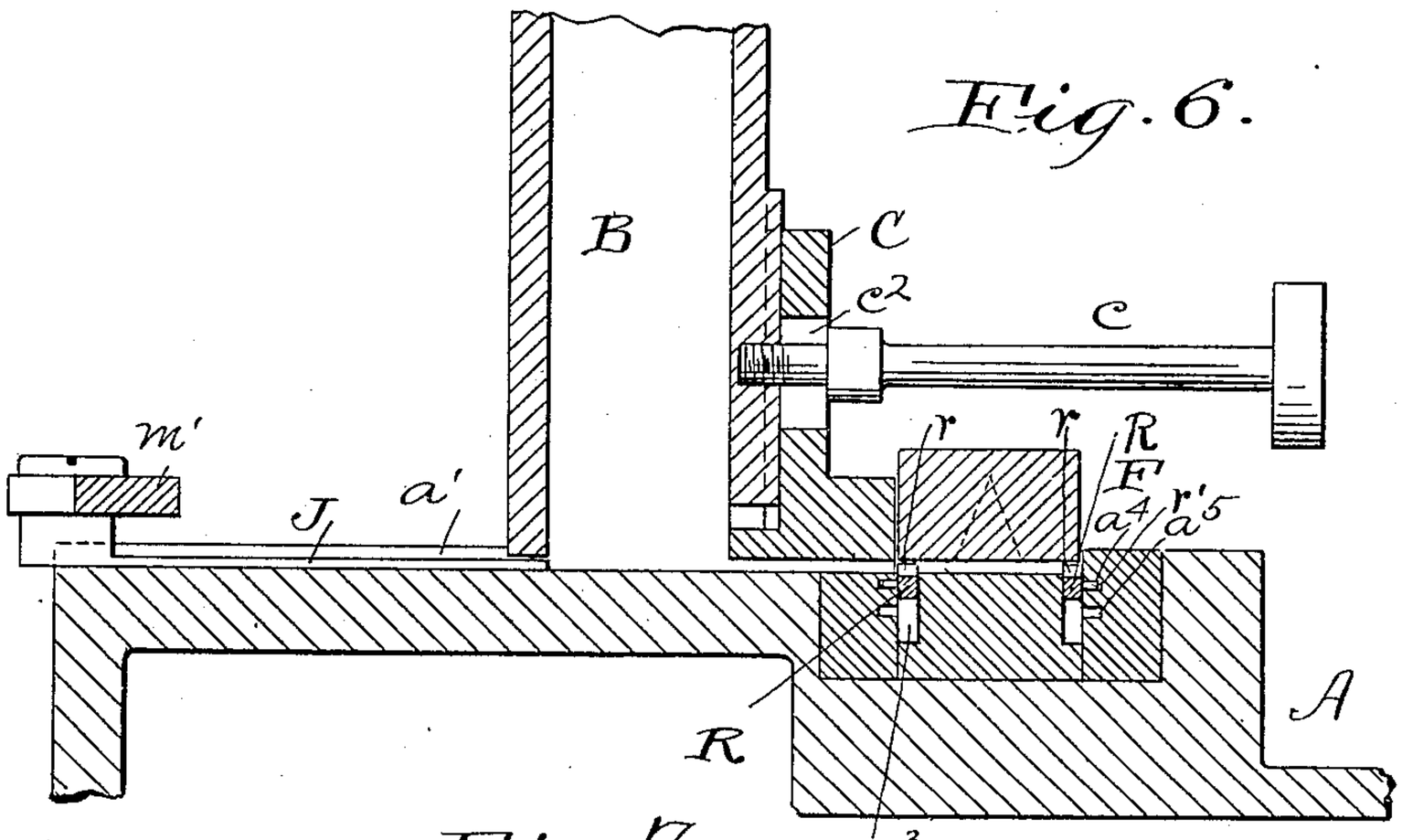

Fig. 6.

Fig. 7.

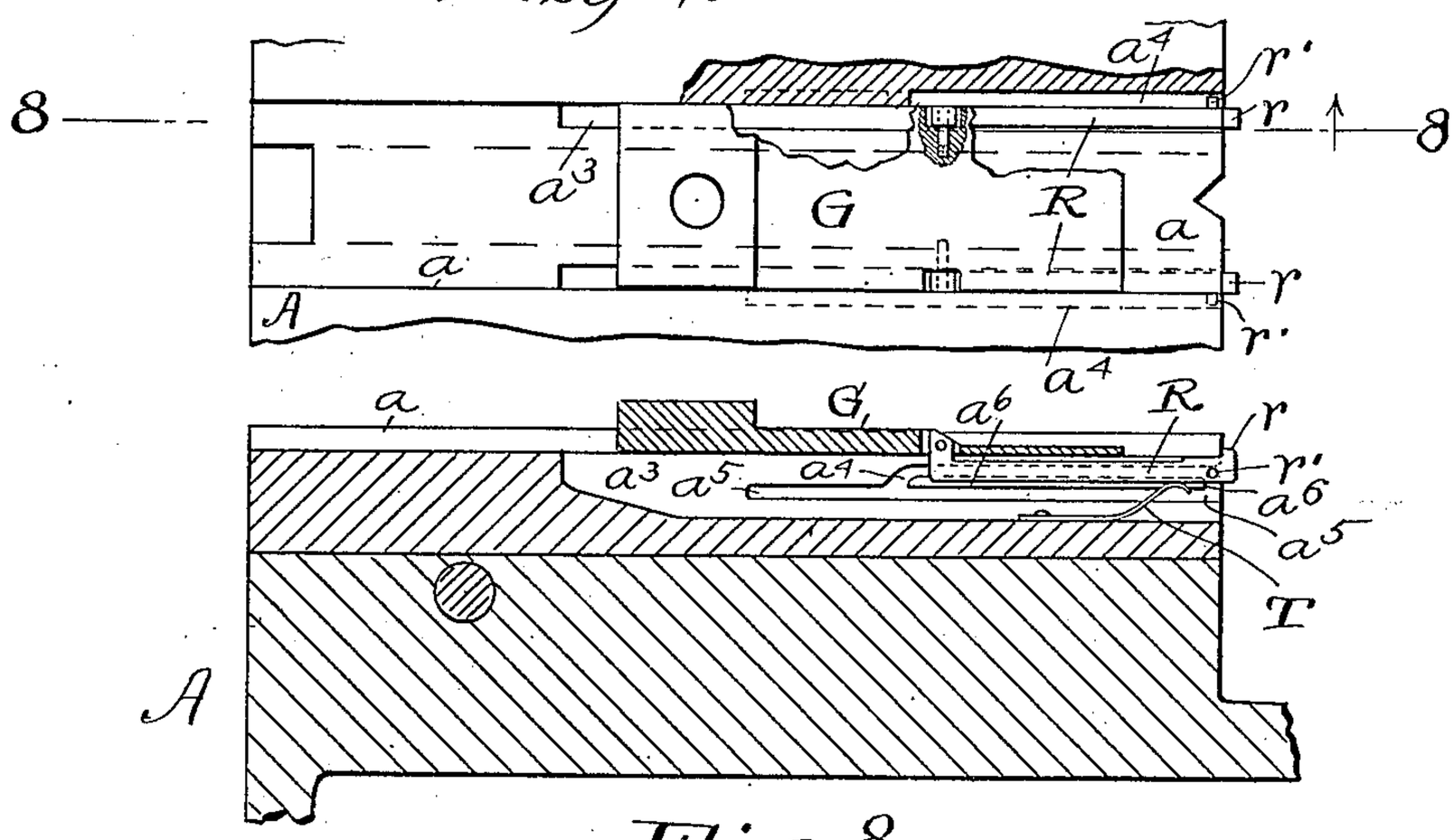

Fig. 8.

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UNITED STATES PATENT OFFICE.

HORACE A. REYNOLDS, OF WOONSOCKET, RHODE ISLAND, ASSIGNOR TO ELECTRIC COMPOSITOR COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

NOTCH-CHAMFERING MACHINE FOR MATRICES.

No. 904,995. Specification of Letters Patent. Patented Nov. 24, 1908.

Application filed January 16, 1907. Serial No. 352,622.

To all whom it may concern:

Be it known that I, HORACE A. REYNOLDS, residing at Woonsocket, in the county of Providence and State of Rhode Island, have invented a certain new and useful Improvement in Notch-Chamfering Machines for Matrices, of which the following is a full, clear, and exact description.

In certain kinds of matrices, adapted for use in linotyping machines, there is a V-shaped alinement notch in one of the vertical edges thereof. It is necessary that, after these V-shaped notches have been formed, their edges should be slightly beveled or chamfered for the purpose of eliminating sharp corners and burs, and of making said edges absolutely smooth.

The object of this invention is to provide a machine adapted for quickly and accurately beveling the edges of these V-shaped notches in matrices of various thicknesses.

In the drawing, Figure 1 is a plan view of a machine embodying my invention. Fig. 2 is a front view thereof with a portion of the bed plate broken away. Fig. 3 is a vertical sectional view through the lower part of the receiving magazine and adjacent parts. Fig. 4 is a sectional elevation in the plane of line 4—4 of Fig. 1. Fig. 5 is a perspective view of a spring actuated stop plate. Fig. 6 is a sectional elevation in the plane of line 6—6 of Fig. 1. Fig. 7 is an enlarged plan view, partly broken away, of the slide and its guide way. Fig. 8 is a sectional elevation of that part of the machine which is shown in Fig. 7,—the section being taken in the plane indicated by line 8—8 of Fig. 7. Fig. 9 is a side view of a matrix after it has been acted upon by the machine; and Fig. 10 is an enlarged sectional view in the plane of line 10—10 on Fig. 9.

A represents the bed plate of the machine in which are two channels *a a′*, which are at right angles to each other, and which are connected with one another as shown,—the bottom of these channels being in the same horizontal plane. The width of the channel *a* is substantially equal to the height of the matrix; while the width of the channel *a′* is substantially equal to the width of a matrix.

A feed magazine B is supported above the channel *a′*,—this magazine being of such size that the matrices Y, lying on their sides, fit loosely therein. A pile of these matrices to be operated upon is put into this magazine and the bottom matrix rests upon the bottom of the channel *a′*. The bottom of the magazine is elevated above the bottom of the channel a distance slightly greater than the thickness of a matrix and not as great as the thickness of two matrices, so that the bottom matrix, and that only may be pushed out of the magazine along that channel.

The receiving magazine D is secured over the channel *a* with one lower edge at such elevation that a matrix may pass under it.

A vertically movable presser foot F extends over the two channels *a*, *a′* between these two magazines. Its vertical stem *f* is mounted in the standard E; and this presser foot is subject to the influence of a spring *f′* pressing it downward. A lever H is pivoted to this standard, and has a horizontal arm, shown in dotted lines in Fig. 2, which enters a recess in the presser foot stem, wherefore by operating this lever the presser foot may be temporarily raised. There is a set screw e^2 which screws through the standard E and engages with the upper arm of the lever H, and thereby limits the downward spring-induced movement of the presser foot.

In the two channels *a* and *a′*, respectively, the slides G and J are placed. These slides are respectively connected, in a well known manner, with the arms *m*, *m′*, of a lever which is pivoted upon the bed A and is provided with an operating handle M. Slots m^2 in these levers receive pins *g*, *j*, which are fastened to said slides. It is evident, therefore, that by operating the handle, these two lever arms will be rocked and the two slides will be moved along in the channels in which they lie. Two set screws O, O′ lie in the path of the handle of the lever M, and thereby limit its movement in both directions.

A vertically movable block K has arms *k* which serve as bearings for a shaft P, which carries a driving pulley *p* and a milling cutter Q having a V-shaped cutting edge. This block K is adjustably mounted upon a standard S, and is raised and lowered, so as to bring it at the desired elevation for matrices of different thicknesses by means of a screw *s* rotatively mounted in a flange *s′* upon said standard S and screwing into the block K,—said screw being prevented from moving endwise in the standard. This standard is also adjustable sidewise upon the bed plate A, and its position accurately determined by the set screws s^2 s^2. A suitable belt (not

shown) is to drive shaft P and the cutter Q secured thereto.

In operating the machine, a pile of matrices Y, to be operated upon, are placed in the magazine B lying upon their sides. An operator swings lever M into contact with the stop screw O'. As it moves to this position, slide J is moved to the right, as shown in Fig. 1, and this pushes the lowest matrix, of the pile in magazine B, along into the channel *a'* until the end of said matrix comes into contact with the right side wall of the channel *a*. Likewise this matrix passes under the presser foot F. The lever M is now swung in the contrary direction into contact with adjustable stop O, thereby moving the slide G rearward. The rear end of this slide engages with the matrix referred to and pushes it rearward into engagement with the milling cutter. This cutter is placed in such position and is of such shape that it engages with the edge of the V-shaped slot and bevels off a very small part of the corners thereof on one side, as shown in Figs. 9 and 10. The engagement of the lever M with the stop screw O determines the exact distance which said matrix shall be moved, and therefore it determines how much of the corners shall be so beveled off.

The levers R are pivoted to the slide G near the sides thereof, and they project rearward beyond the end of said slide, and each has an up-turned finger *r*. These levers are below the slide and lie in a recess a^3 in the bed plate, especially provided for them. In the sides of this recess are two horizontal guide grooves a^4 a^5 located one above the other. Each of the grooves a^4 at its front end, is curved downward and merged into the groove a^5, while, at the rear end of these grooves, the separating partition a^6 is cut away, so that they are thereby connected. Each of these levers R has a pin *r'* which projects laterally into these grooves. When the slide G is moving rearward, pins *r'* are in the lower grooves a^5, and therefore the fingers *r* are held below the bottom of the channel *a*. When slide G is moving forward, these levers are brought into contact with the flat springs T, wherefore the levers are given an upward impulse. When the pins *r'* are carried beyond the end of the partition a^6, these levers are moved up by said spring, which brings the fingers *r* just behind the matrix which has just been operated upon. When, now, the slide G moves forward, these fingers engaging with said matrix draw it forward until it is brought beneath the receiving magazine D. When the slide G is so moving forward, the slide J is moved to the right, carrying another matrix from magazine B into position before described; and the end of this matrix passes beneath the presser foot F before the first matrix is drawn from beneath the same.

In the bed plate directly below magazine D is a plunger W provided with a spring *w*, wherewith it is drawn downward. Attached to this plunger are four pins *w'* which pass up through holes in the bed plate, and particularly through the bottom of the channel *a*. Normally these pins do not extend above the bottom of said channel. In the plunger W there is a notch w^2 which receives one end of a pivoted lever Z. The other end of this lever is provided with a beveled surface *z* which projects up into the path of the slide G. When this slide is moved forward far enough to carry a matrix beneath the magazine D it is, of course, passed over the pins *w'*. This slide then strikes the beveled surface *z*, thereby rocking lever Z. This results in lifting the plunger W, whereby the pins *w'* push the matrix upward. In so moving the ends of the matrix engage with the beveled lower surfaces of spring-actuated fingers U which project a very short distance into the magazine D from the sides thereof. These fingers are secured to the lower ends of yielding springs *u* whereby when the matrix is pressed upward these fingers are pushed outward and the matrix passes them. These fingers immediately spring inward beneath the matrix, and thereby sustain it and all of the other matrices above it.

Adjacent to the front side of the magazine D is a stop plate V which has an upwardly extended guide stem *v*. A spring *v'* presses this stem downward so as to hold the plate V down on top of slide G. When, therefore, the slide G is moved forward to carry a matrix beneath the magazine D, this plate by bearing upon the top of the slide will be in the path of the matrix and will stop it in the desired position beneath the magazine. At the same time the pins *r* will be drawn downward by the downwardly bent front end of the groove a^4, so that the fingers *r'* will be below the bottom of the matrix wherefore the matrix may remain in position in which it will be stopped by said plate V as the slide G continues its forward movement. The front edge of this plate V is beveled so that when the slide G moves rearward again the plate is lifted.

The described operations are carried on indefinitely until all of the matrices in the magazine B have been moved therefrom and subjected to the action of the cutter Q and are delivered into the magazine D.

This machine is adapted to be used with matrices of different thicknesses. It is for this reason that the block K and the parts supported thereby are made vertically adjustable.

Having described my invention, I claim:

1. The combination of a bed plate having in its top surface two channels which inter-

cept and are at right angles to each other and whose bottoms are in the same horizontal plane, a magazine supported over one of said channels, two slides movable in said channels, a bell crank lever operatively connected with said slides, mechanism for operating the bell crank lever, two levers pivoted to one of said slides and having upwardly directed fingers at their free ends, means for holding said levers in an elevated position when the slide is moving in one direction and for drawing said levers down and holding them in a depressed position when the slide is moving in the opposite direction, and a rotatable beveling cutter against which the matrices are moved by the slide which carries said levers, substantially as and for the purpose specified.

2. The combination of a bed plate containing a channel, means for moving matrices into said channel, a rotatable cutter located at the end of said channel, a slide movable in said channel for pushing the matrices toward said cutter, means limiting the movement of said slide, means carried by the slide for engaging with the matrices to move them in the contrary direction, that is to say away from said cutter, and means for automatically withdrawing the matrices from said channel, substantially as and for the purpose specified.

3. The combination of a bed plate containing a channel, means for moving matrices into said channel, a rotatable cutter located at the end of said channel, a slide movable in said channel for pushing the matrices toward said cutter, means limiting the movement of said slide, means carried by the slide for engaging with the matrices to move them in the contrary direction, that is to say away from said cutter, and means for automatically withdrawing the matrices from said channel, and a spring-actuated presser foot for pressing upon said matrices while they are in contact with said cutter, substantially as and for the purpose specified.

4. The combination of a bed plate having in its top surface two connected channels lying at right angles to each other, a feed magazine supported over one of said channels, a slide movable in said channel and adapted to push the matrices severally out of the magazine and along said channel into the other channel, a magazine supported over the other channel, a slide movable in said channel beneath said magazine and adapted to push the matrices toward the end of said channel, a rotatable cutter at the end of said channel, means carried by said slide for drawing matrices in the contrary direction to the position beneath said receiving magazine, means for forcing the matrices upward out of the channel into said magazine, means sustaining the matrices in said magazine, and means imparting simultaneous movement to said slides, substantially as and for the purpose specified.

5. The combination of a bed plate having in its top surface two connected channels lying at right angles to each other, a feed magazine supported over one of said channels, a slide movable in said channel and adapted to push the matrices severally out of the magazine and along said channel into the other channel, a magazine supported over the other channel, a slide movable in said channel beneath said magazine and adapted to push the matrices toward the end of said channel, a rotatable cutter at the end of said channel, a presser foot, means carried by said slide for drawing matrices under said receiving magazine, a vertically movable plunger below the receiving magazine, a spring moving said plunger downward, a lever for moving it upward having an up-turned beveled faced arm which lies in the path of the last mentioned slide, substantially as and for the purpose specified.

6. The combination of a bed plate containing a channel in its top surface, a presser foot over said channel, a rotary cutter located at the end of said channel, a slide movable in said channel and adapted to engage with a matrix therein to push it into operative relation with said cutter, arms pivoted to said slide having up-turned fingers adapted to engage with the other edge of said matrix, means for holding said levers down as the slide is moving toward the cutter, and means for moving and holding the levers up in operative position when the slide is moving in the contrary direction, substantially as and for the purpose specified.

7. The combination of a bed plate containing a channel in its top surface, a presser foot over said channel, a rotary cutter located at the end of said channel, a slide movable in said channel and adapted to engage with a matrix therein to push it into operative relation with said cutter, arms pivoted to said slide, a pair of parallel horizontal guide grooves associated with each of said levers, which grooves are united at their ends, a pin on each lever entering its associated guide grooves, and means for forcing said levers up when the slide is at the end of its movement toward said cutter, substantially as and for the purpose specified.

8. The combination of a bed plate containing a channel in its top surface, a presser foot over said channel, a rotatable cutter located at the end of said channel, a receiving magazine located above said channel, a slide movable in said channel and adapted to engage with the matrix therein to push it into operative relation with said cutter, arms pivoted to said slide having up-turned fingers adapted to engage with the other edge of said matrix, means for moving said levers down and holding them down as the slide is

moving toward said cutter, means for moving and holding said levers up in operative position when the slide is moving in the contrary direction, means for moving said arms down before the slide concludes the last named movement, a plunger movable up through the bottom of said channel beneath said magazine, a lever for operating said plunger, said lever having a beveled surface adapted to be engaged by said slide when the slide reaches the end of its movement away from the cutter, and spring fingers in the magazine to sustain the matrices therein,—said fingers having beveled lower surfaces, substantially as and for the purpose specified.

9. The combination of a bed plate having a channel in its top surface, a rotatable cutter located at the end of said channel, a receiving magazine located above said channel, a slide movable in said channel and adapted to engage with one edge of a matrix therein to push it into operative relation with said cutter, a presser foot located above said channel, arms pivoted to said slide and having up-turned fingers adapted to engage with the other side of said matrix, means for moving said levers down and holding them down as the slide is moving toward said cutter, means for moving and holding said levers up in operative position when the slide is moving in the contrary direction, means for moving said arms down before the slide concludes its last named movement, mechanism operated by said slide for pushing the matrix out of the channel up into said magazine, and spring fingers which project into said magazine and adapted to sustain the matrix therein, said fingers having beveled lower surfaces, substantially as and for the purpose specified.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

HORACE A. REYNOLDS.

Witnesses:
G. L. HAMMOND,
T. L. CLARK.