

(No Model.)

4 Sheets—Sheet. 1.

R. L. ELLERY & J. VEAZIE.

BUTTON MAKING MACHINE.

No. 390,118.

Patented Sept. 25, 1888.

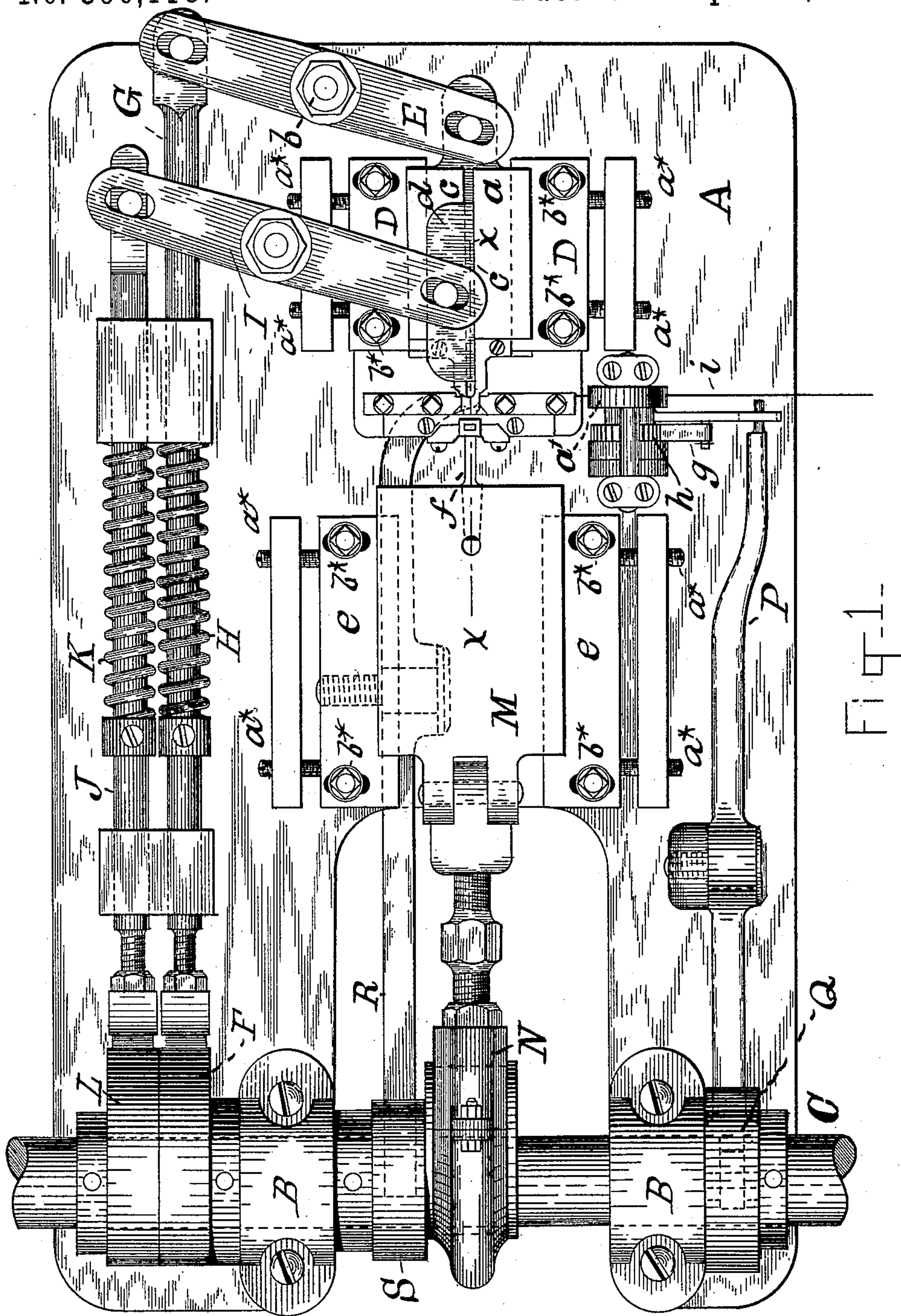


Fig. 1.

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Sherman H. Fada

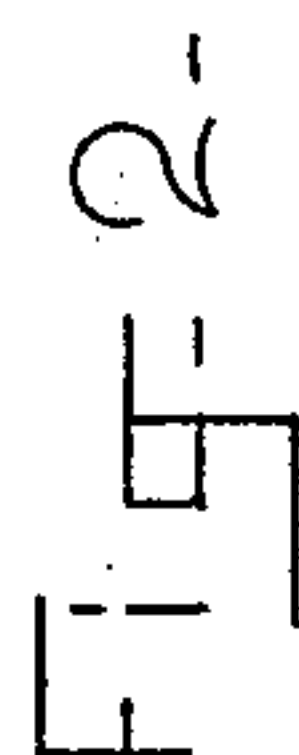
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4 Sheets—Sheet 2.

BUTTON MAKING MACHINE.

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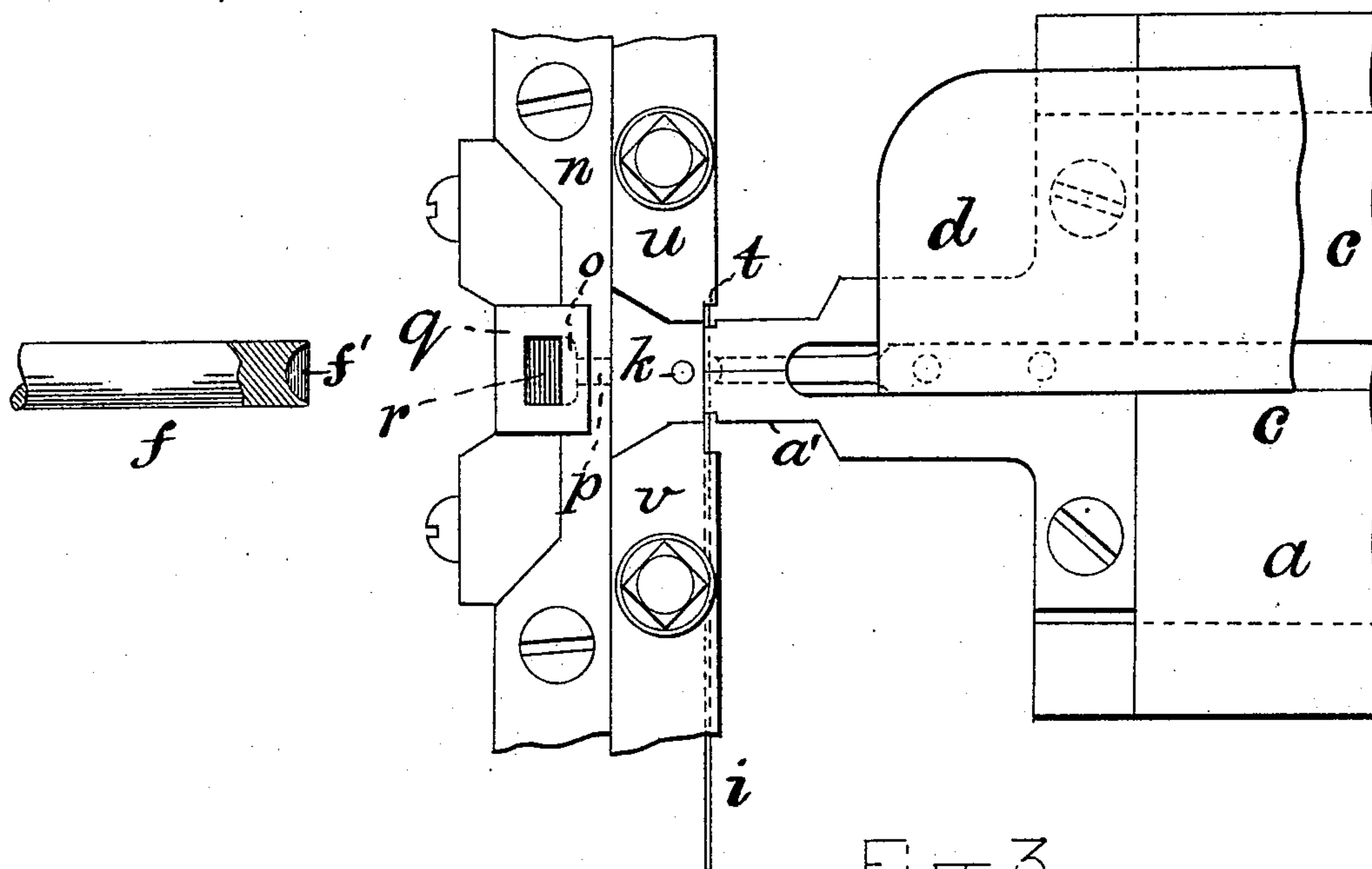


Fig. 3.

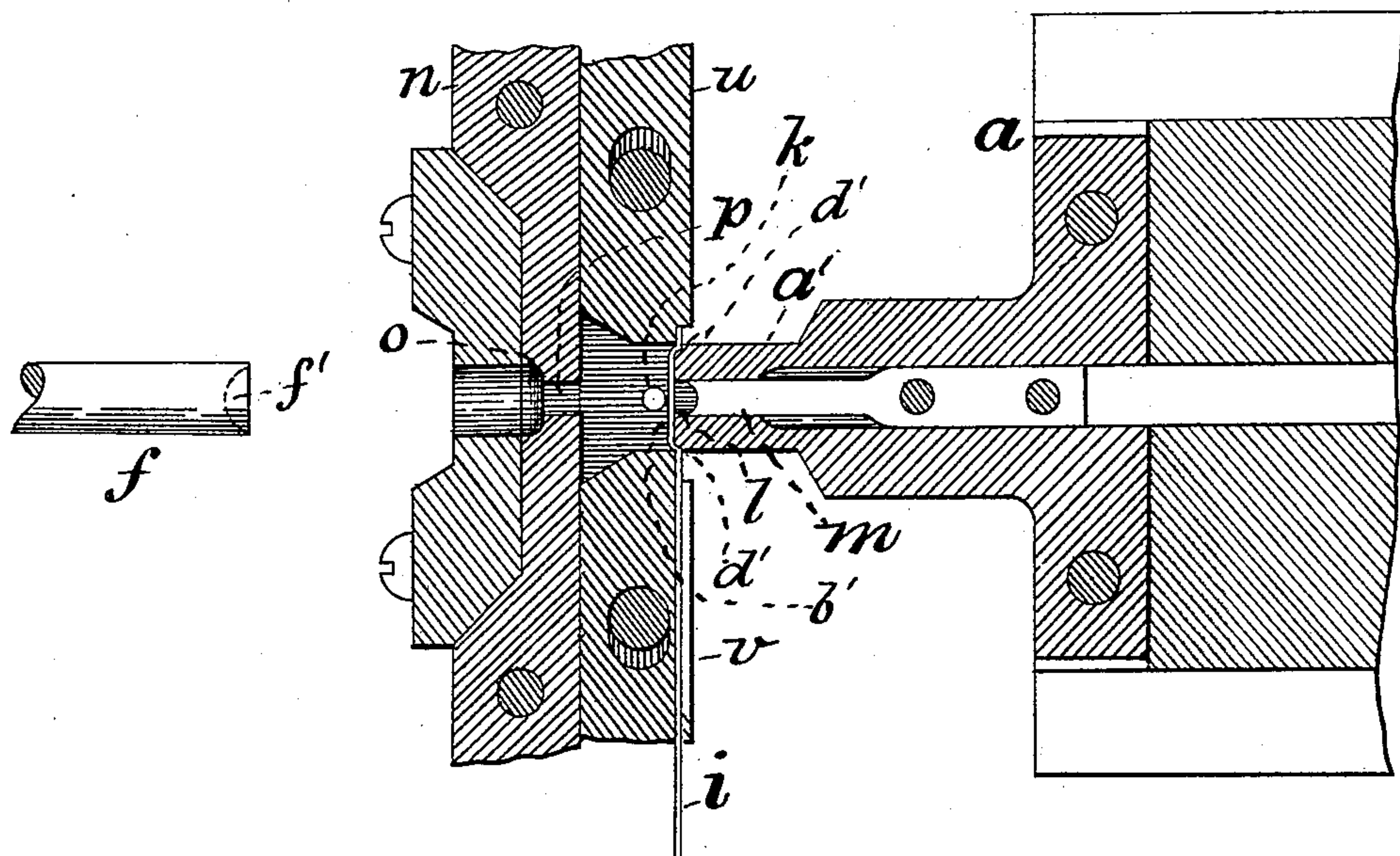


Fig. 4-

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4 Sheets—Sheet 4.

R. L. ELLERY & J. VEAZIE.
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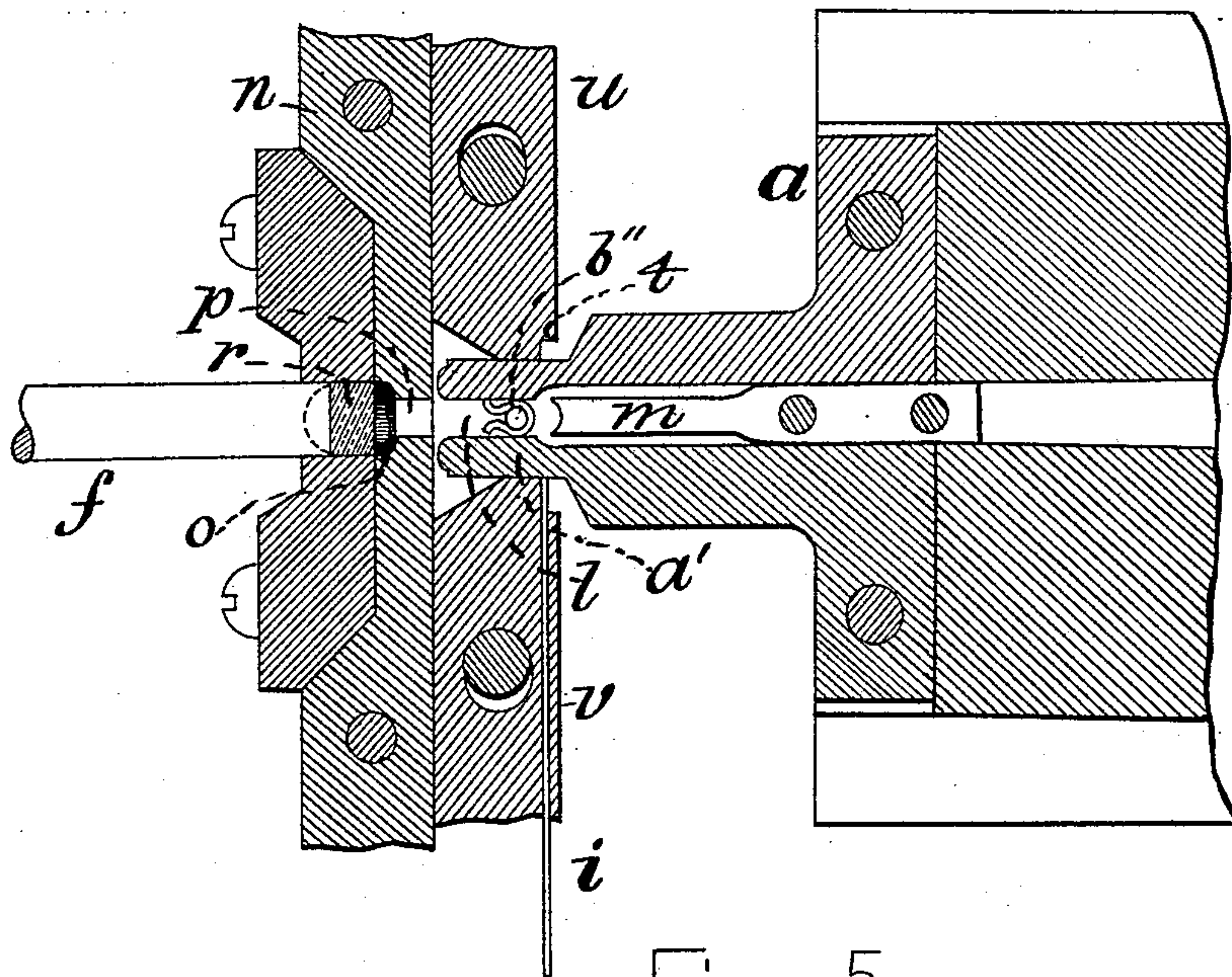


Fig. 5.

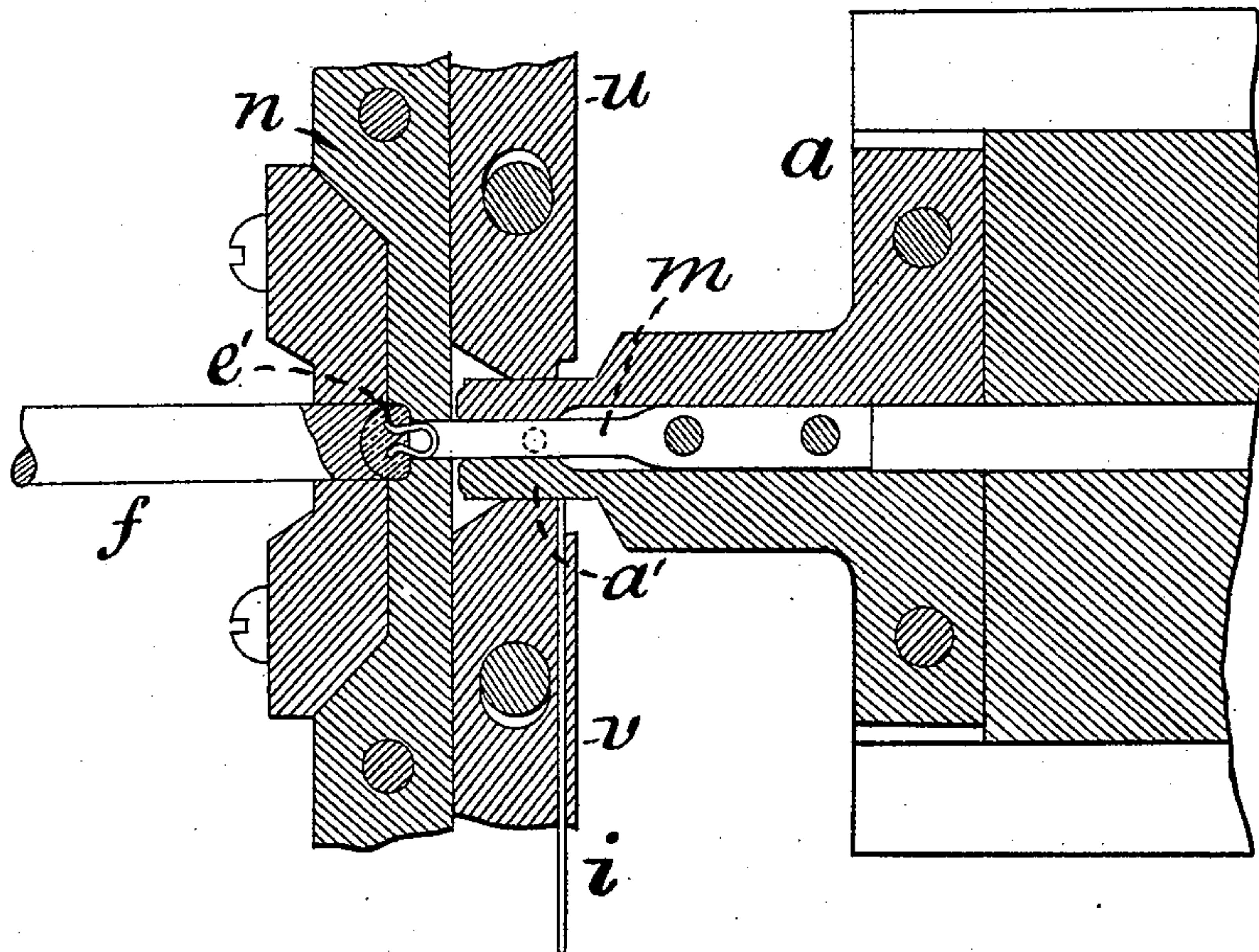


Fig. 6.

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UNITED STATES PATENT OFFICE.

ROBERT L. ELLERY AND JULIAN VEAZIE, OF TAUNTON, MASSACHUSETTS;
SAID VEAZIE ASSIGNOR TO FRANCIS E. FULLER, OF SAME PLACE.

BUTTON-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 390,118, dated September 25, 1888.

Application filed January 18, 1888. Serial No. 261,097. (No model.)

To all whom it may concern:

Be it known that we, ROBERT L. ELLERY and JULIAN VEAZIE, citizens of the United States, residing at Taunton, in the county of Bristol and State of Massachusetts, have invented a new and useful Button-Making Machine, of which the following is a specification.

The object of our invention is to produce a button-making machine more simple in construction and effective in operation than those now in use.

Our invention consists, first, in a solid die made of one piece, provided with a matrix in which the button is formed.

Our invention also embodies various improvements in details of construction and combination, as hereinafter fully set forth.

In the accompanying drawings, which form a part of this specification, Figure 1 is a plan view of our improved button-making machine, illustrating our invention. The other figures are enlarged detail views illustrating our improvements. Fig. 2 is an enlarged vertical section through line *x x*, Fig. 1. Fig. 3 is an enlarged plan view of that part of the machine shown in vertical section in Fig. 2. Figs. 4, 5, and 6 are horizontal sections of the same through line *y y*, Fig. 2. Fig. 3 shows the wire of which the eye of the button is made in position as it enters the machine. Fig. 4 shows the first operation of bending and cutting off the wire. Fig. 5 shows the eye of the button fully formed and the machine in position for the next movement, which completes the button, as illustrated in Fig. 6.

Similar letters of reference indicate corresponding parts in all the figures.

The base-plate A of the machine carries the journal-boxes B, in which revolves the shaft C, to which the power which operates the machine is applied in the usual manner.

To the base-plate A are also secured the guides D, in which travels the block *a*, operated back and forth by the lever E, pivoted at *b*. Said lever E is in turn operated by the rod G, which is alternately moved back and forth in one direction by the spring H and in the other by the cam F on the revolving shaft C. The traveling block *a* is itself provided with guides *e*, in which travels back and forth the

block *d*, operated by the lever I, which in turn is operated by the traveling rod J, which latter is moved back and forth by the spring K and cam L on the shaft C.

The specific construction, operation, and purpose of the traveling blocks *a* and *d* will be hereinafter fully described.

The bed-plate A is also provided with guides *e*, in which travels the block M, carrying the cutting and forming punch *f*. The block M is moved back and forth by the eccentric N on the revolving shaft C; but it is obvious that this to-and-fro movement might readily be accomplished by means of a cam and spring, if desired.

The lever P, operated by the cam Q on the shaft C, operates the ratchet *g*, which turns the ratchet-wheel *h* and the roller *a'*, and thus feeds the wire *i* to the machine, as hereinafter more fully described.

The lever R, operated by the cam S on the said revolving shaft C, actuates the pin *k*, around which the eye of the button is formed, as hereinafter more fully described.

The traveling block *a* has its front end provided with a forming and cutting block, *a'*, said forming-block being provided with a groove, *l*, in which travels the thin tongue *m*, which latter is secured to the traveling block *d*. The said tongue *m* has its front end concaved, as shown.

The solid die *n* has its front side provided with the round open depression or matrix *o*, in which the body of the button is formed, and back of this space said die is provided with the slot *p*, passing through said die, and just large enough to permit the eye of the button to pass through. In front of the die *n* is the receptacle or chute *q*, which is kept filled with the square paper or other fibrous blanks, *r*, when the machine is in operation.

Having thus described the parts in detail, the operation of the machine when set in motion is as follows: The lever R raises the pin *k* to the position shown in Fig. 2. At the same time the action of the ratchet-wheel *h* feeds the wire *i* into the machine until the end of said wire is stopped by the shoulder *t* of the cutting-block *u*. The forming-block *a'*, which is secured to the traveling block *a*, now advances and bends the wire into the form shown in

Fig. 4. Said forming-block *a'* now continues to advance past and close to the edges of the cutting-blocks *u* and *v*, thus cutting the bent piece of wire *b'* from the straight wire at both ends at the points *c'* *d'*. The forming-block *a'*, having cut off the piece of wire *b'*, bent at both ends, carries the same forward against the projecting pin *k*, which stops the forward progress of the wire; but said block *a'*, still advancing, bends said piece of wire *b'* around said pin *k*, completing the formation of the eye *b''*, as shown in Fig. 5, said eye finding lodgment in the groove *l* of said forming-block *a'*, which advances to the position shown in Fig. 5. The pin *k* is now withdrawn, and the traveling block *d*, provided with the tongue *m*, now advances. The said tongue *m* pushes the eye *b''* forward along the slot or groove *l* of the former *a'* and through the slot *p* of die *n* until the ends of said eye project into or a little beyond the space *o* of said die. Meantime the traveling block *M* advances in the opposite direction, carrying the punch *f* against and through the paper blank opposite the end of said punch, thus cutting out a round piece of said blank and forcing it into the recess *o* of the die *n*. Thus, it will be seen, the pressure of the tongue *m* and punch *f* from front and rear against each other forces the eye *b''* into the round piece of fibrous material cut out by the punch, thus forming the completed button *e'*, as shown in Fig. 6. The punch *f* now retires, and the tongue *m*, still advancing, pushes the completed button out of the machine and allows it to fall into any suitable receptacle—as through the orifice *T* in the bed-plate *A* of the machine. The next revolution of the shaft *O* withdraws and advances the moving parts described of the machine, and thus forms another button, the whole operation being automatic.

The end of the punch *f* is concaved, as shown at *f''*. This affords sharp cutting-edges to the outer rim of the punch, which cut a clean disk out of the paper stock against the edges of the recess *o* of the die *n*, and at the same time the pressure exerted, as already described, forces a portion of said paper disk into said concavity *f''* of the punch, whereby the upper surface of the button is made convex. Of course this surface may be made of any desired form by simply modifying the form of the recess *f''* in the end of the punch *f*:

The tendency of the pressure exerted in forming the button is to spread the ends of the eye *b''* within the button-stock and to close up the stock firmly around the eye.

The pin *k* rests upon and is pressed against

the end of the lever *R* by the spring *h'*, but is not otherwise connected to said lever. When the position of the cam *S* permits it, the spring *h'* depresses the pin *k*, carrying its upper end below the surface of the block *j*, and withdraws said pin from the eye *b''* of the button, thus permitting said eye to be pushed forward by the tongue *m* into the slot *p* of the die *n*, as described.

It will be observed that the pin *k* is withdrawn from the eye *b''* of the button before said eye and the body of the button are united—that is, before the button is completed. This we believe to be an entirely new feature of our machine, since in other machines the pin is not withdrawn until the button is completed.

*a** and *b** are respectively adjusting and set screws to bring the various working parts into proper relative alignment and to secure said parts in such position.

We claim—

1. In a button-making machine, a solid die, preferably made of a single plate of metal, said metal plate being provided on one side with a matrix or mold in which the body of the button is formed, and on the opposite side with a small slot through which the eye of said button is passed and pressed into the body of the same, substantially as described.

2. In a button-making machine, the combination of the following elements: the solid die *n*, provided with the matrix *o* and the eye-slot *p*, the punch *f*, the forming cutter *a'*, provided with the groove *l*, and the tongue *m*, inclosed and traveling within said groove *l*, the whole operating substantially as described.

3. In a button-making machine, the pin *k*, around which the eye of the button is formed, in combination with mechanism operated by the revolving shaft and adapted to withdraw said pin from said eye before the button is completed, substantially as described.

4. In combination, the traveling block *a*, provided with the cutting-block *a'* and guides *c*, the block *d*, sliding on said block *a*, between said guides *c*, and provided with the tongue *m*, the fixed cutting-blocks *u v*, adjacent to said cutting-block *a'*, the traveling block *M*, carrying the punch *f*, and situated opposite to the blocks *a* and *d*, and the solid die *n*, located between said punch *f* and said blocks *a* and *d*, substantially as described.

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