

(No Model.)

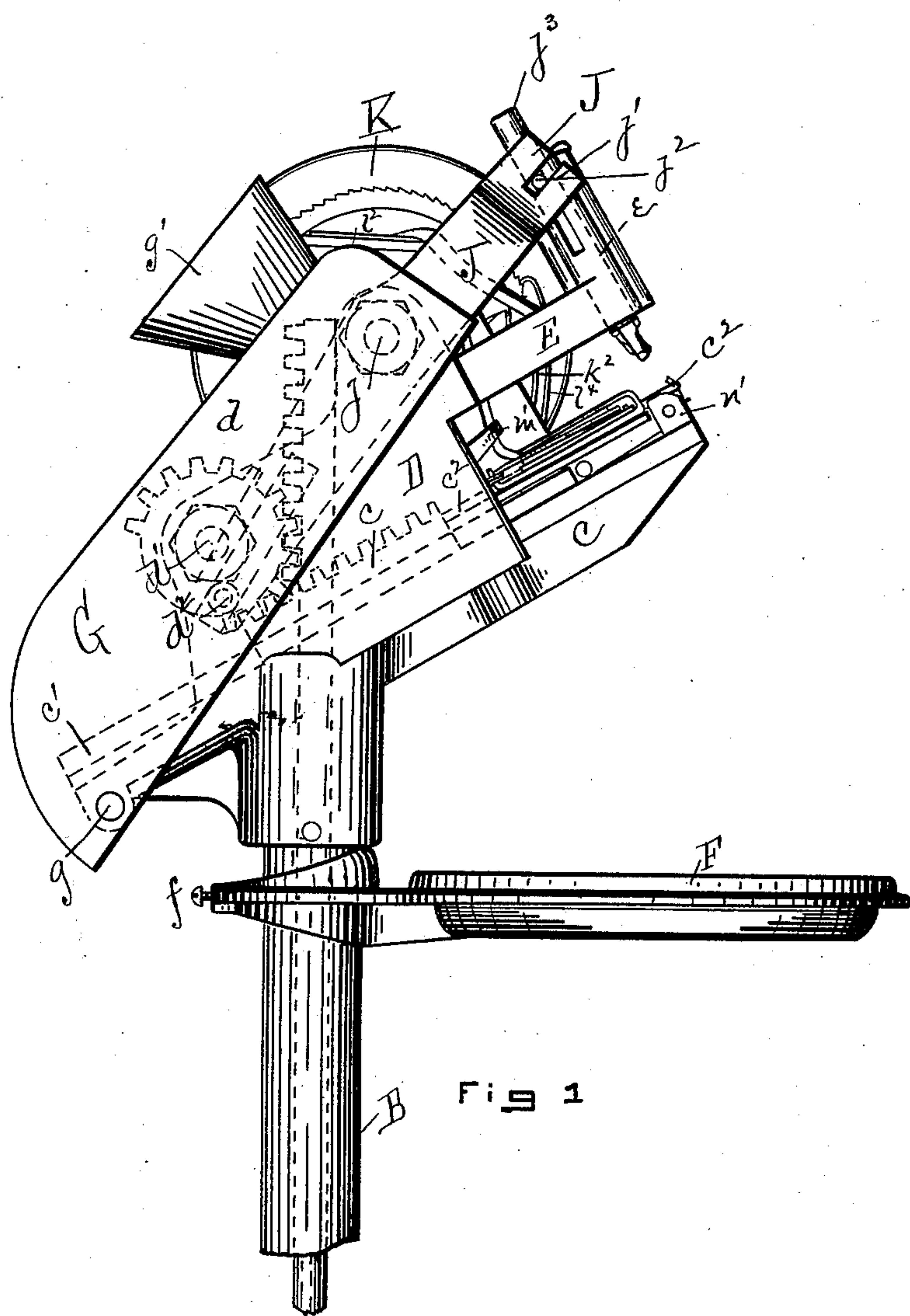
5 Sheets—Sheet 1.

A. M. ENGLISH.

MACHINE FOR ATTACHING BUTTONS.

No. 358,342.

Patented Feb. 22, 1887.



WITNESSES
Chas. Fitch
M. W. Mareton

INVENTOR
Arnold M. English
By *W. B. H. Dowsen* Attorney

(No Model.)

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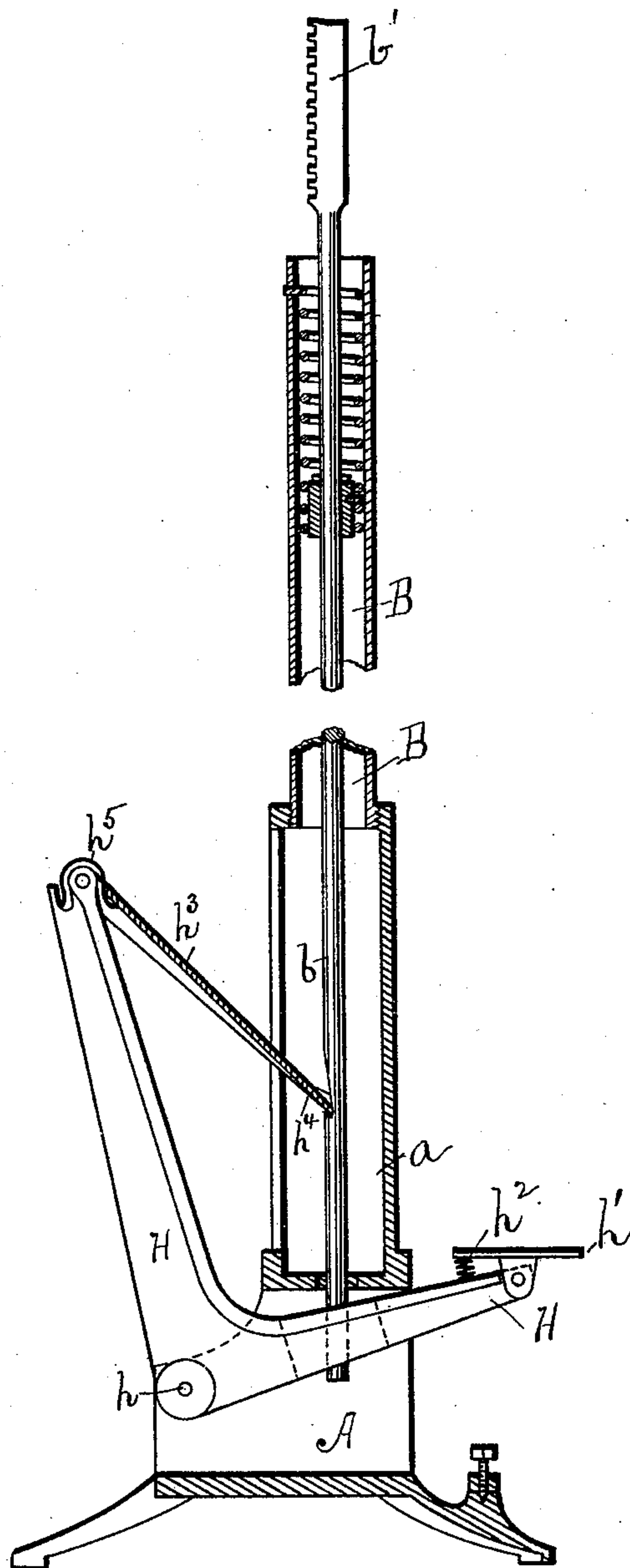


Fig 2

WITNESSES

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(No Model.)

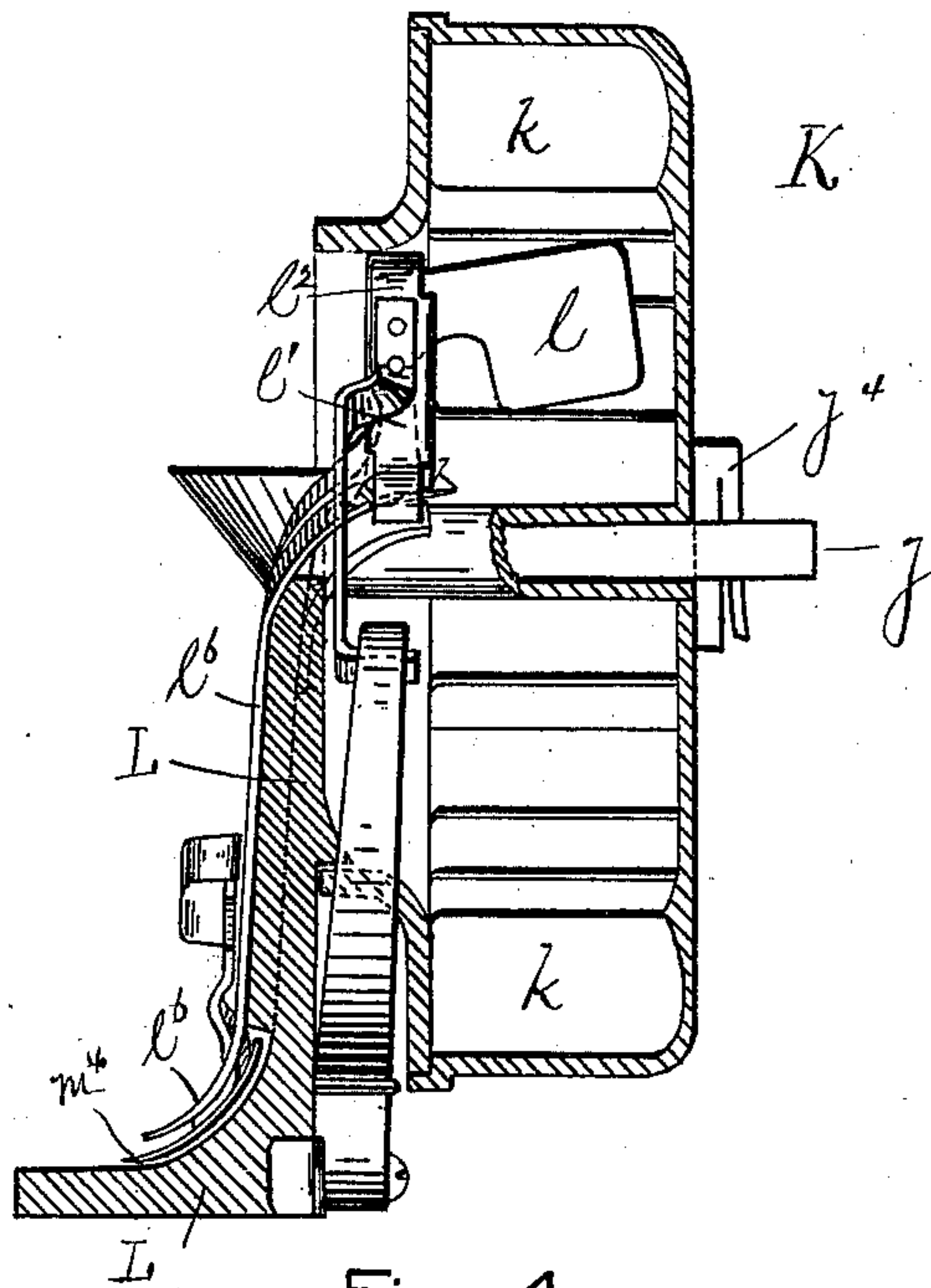
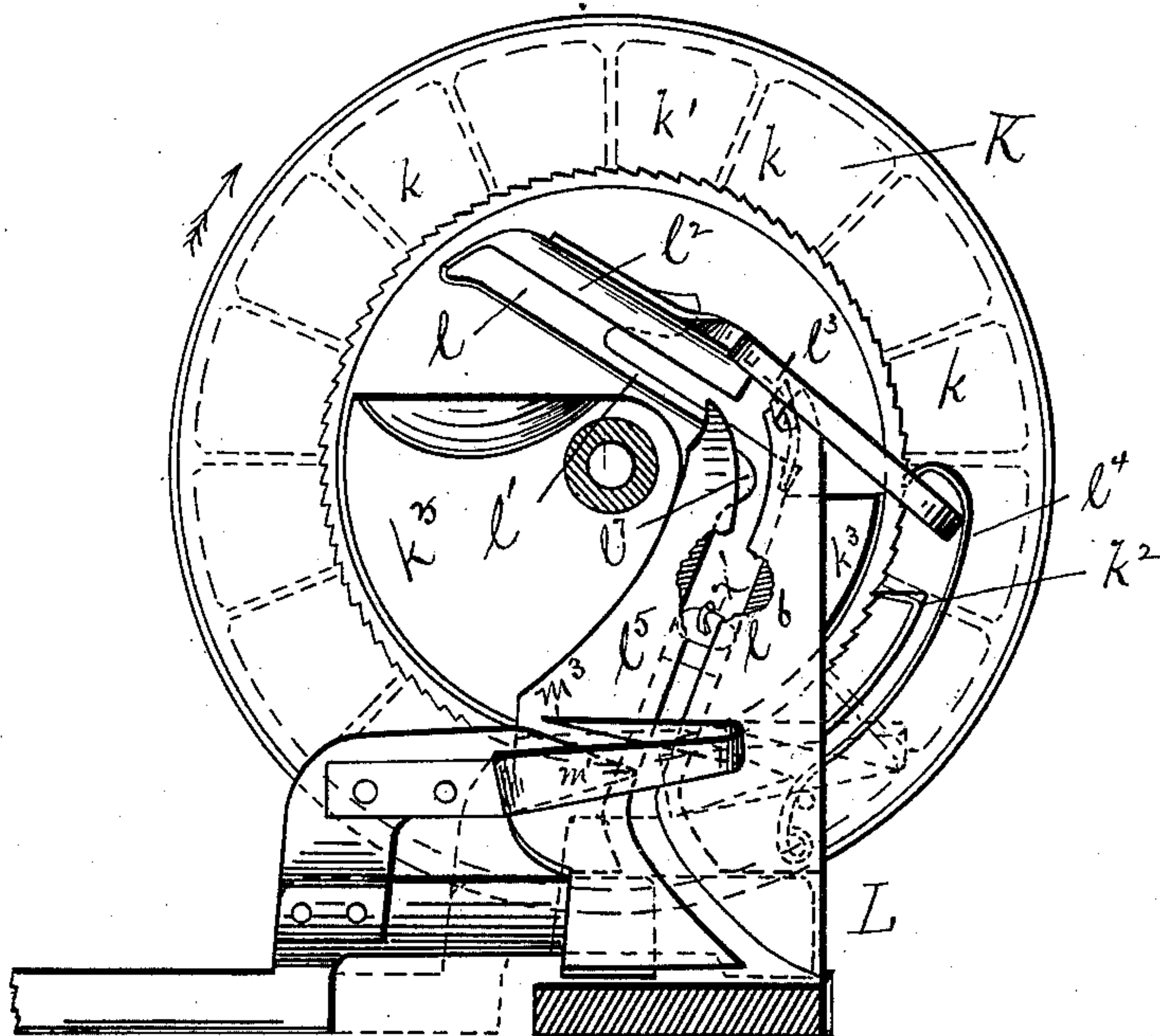
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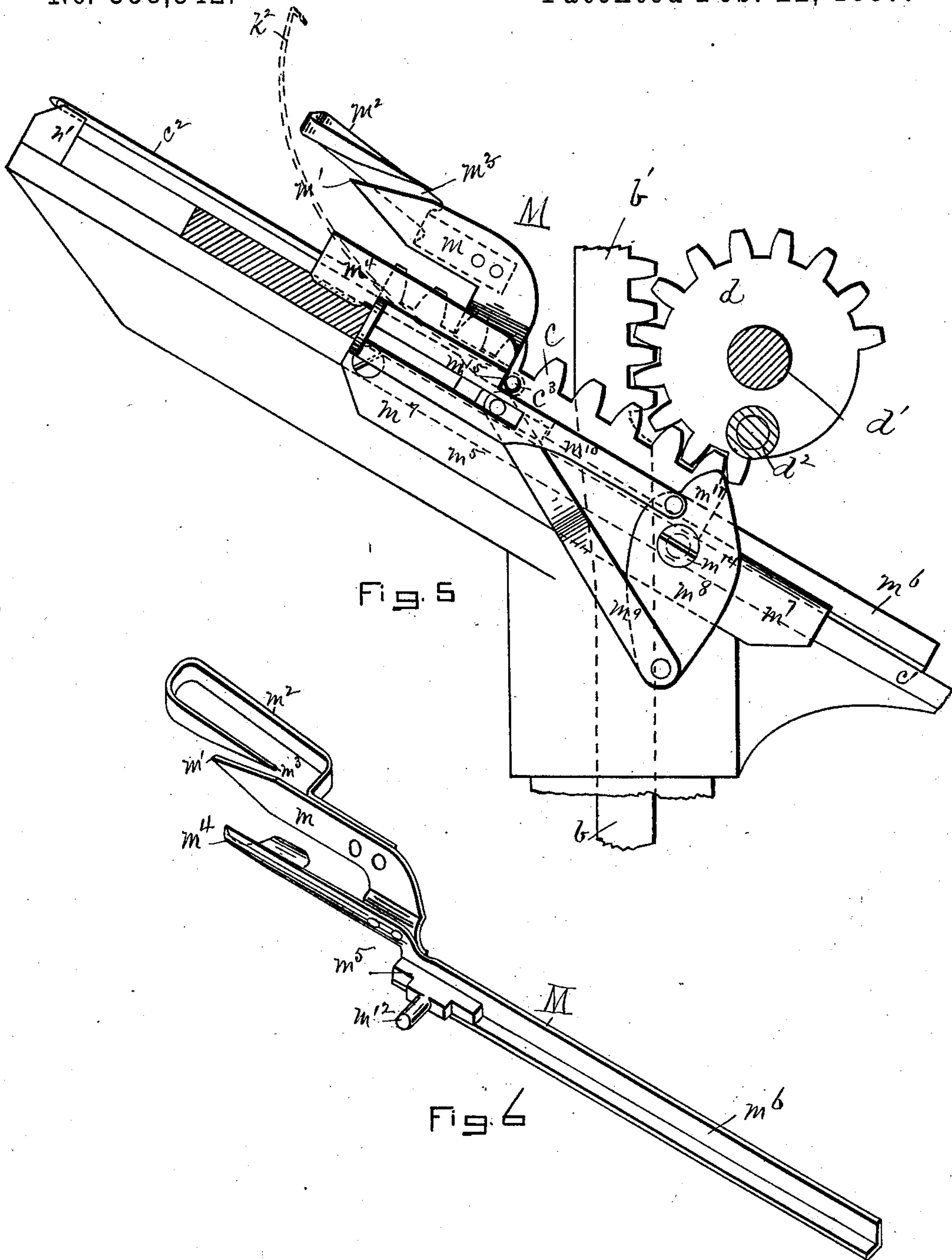
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A. M. ENGLISH.

MACHINE FOR ATTACHING BUTTONS.

No. 358,342.

Patented Feb. 22, 1887.



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(No Model.)

5 Sheets—Sheet 5.

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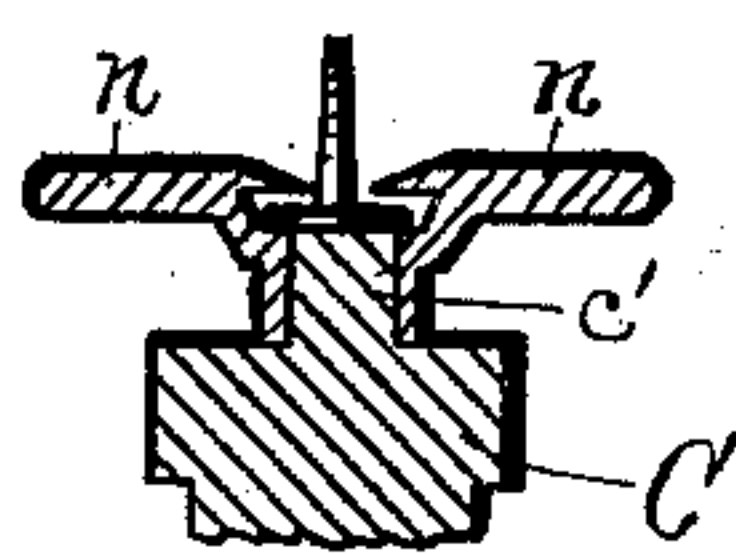
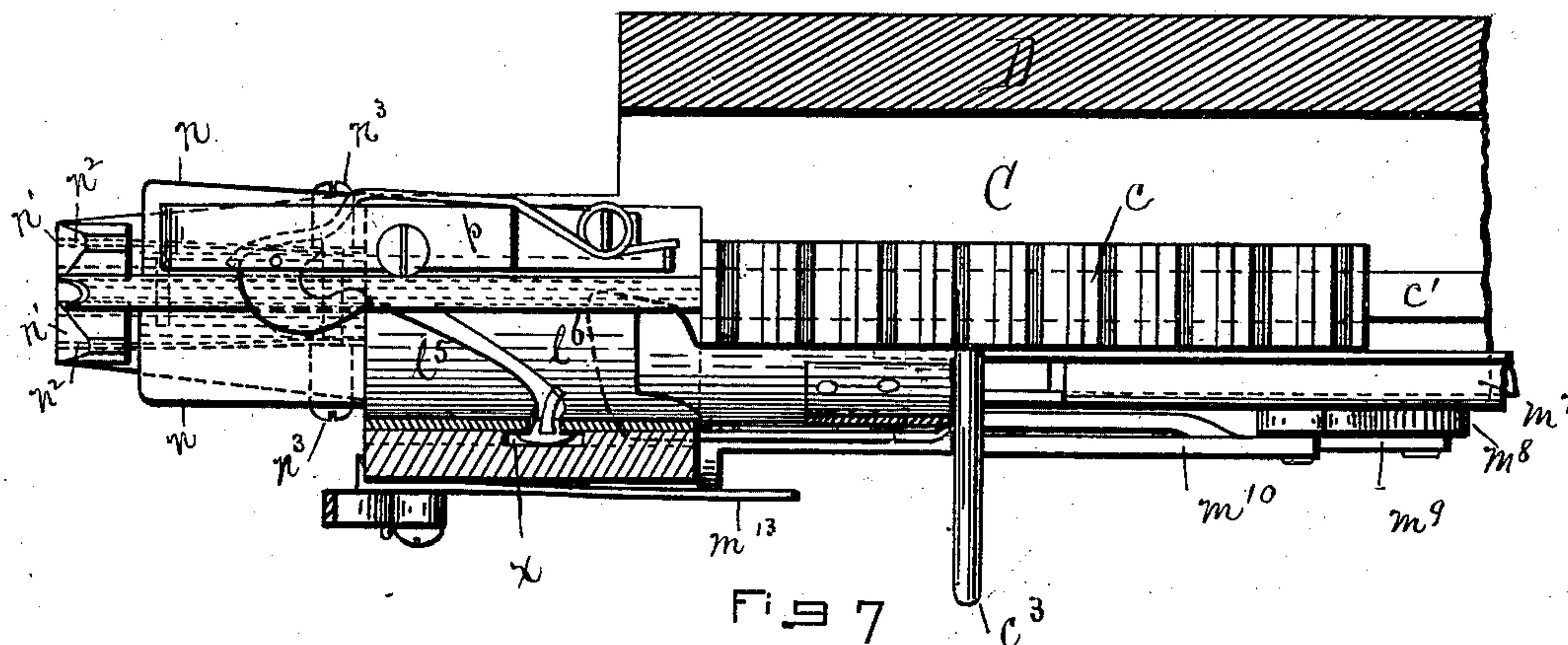


Fig 10

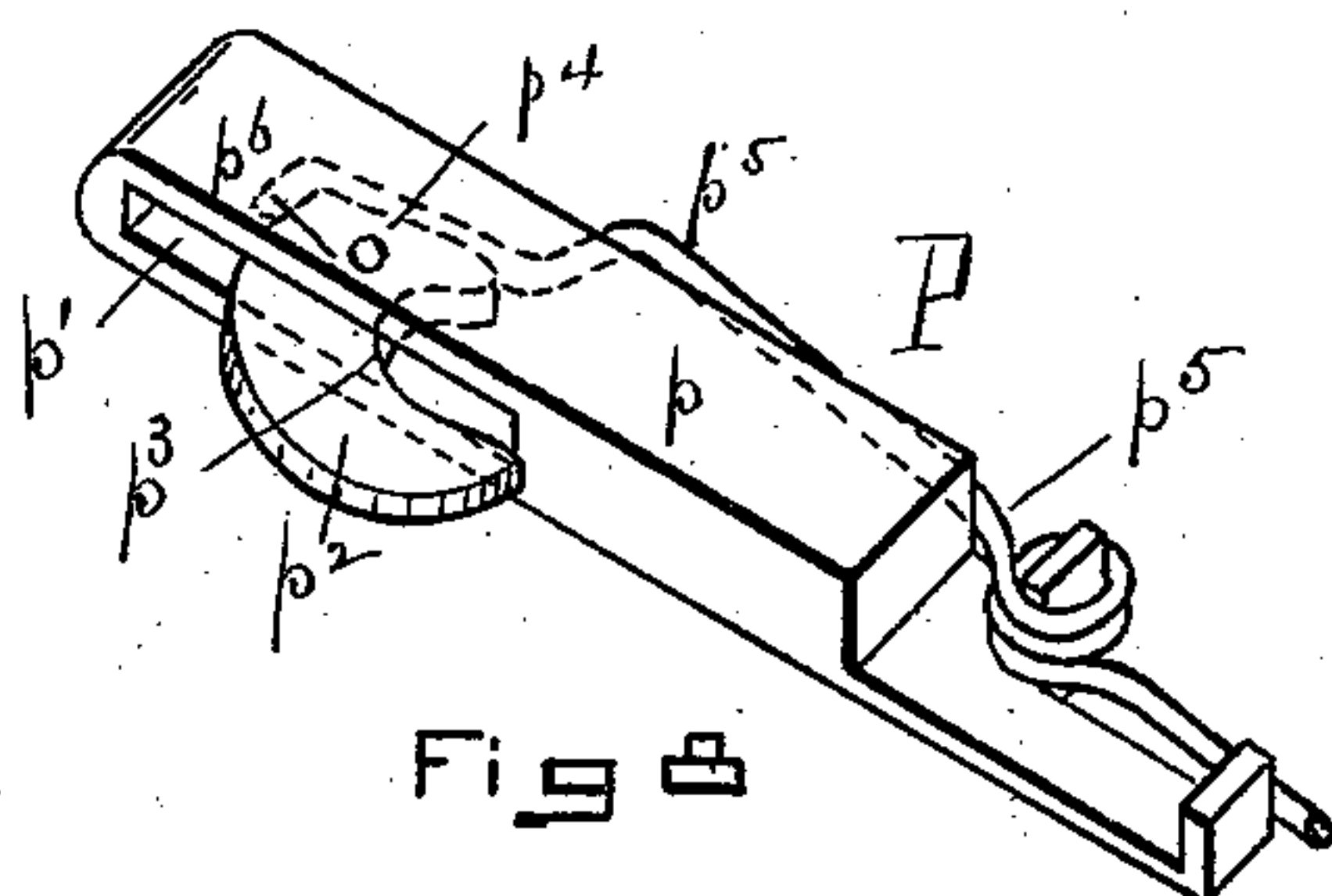


Fig 6

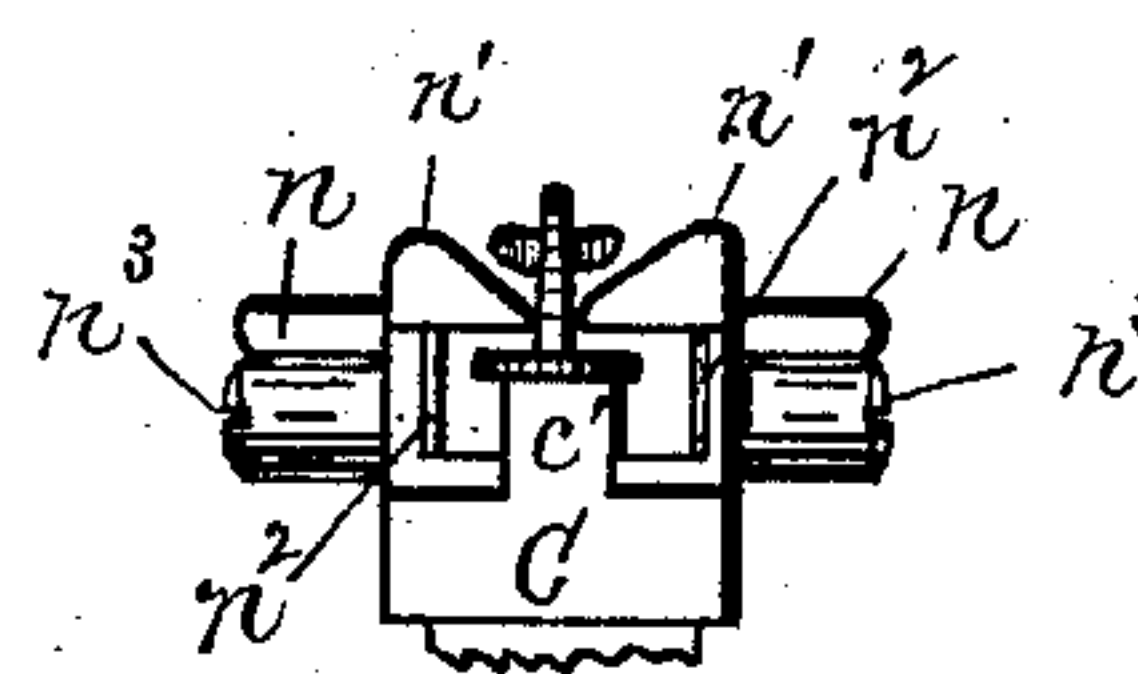


Fig 11

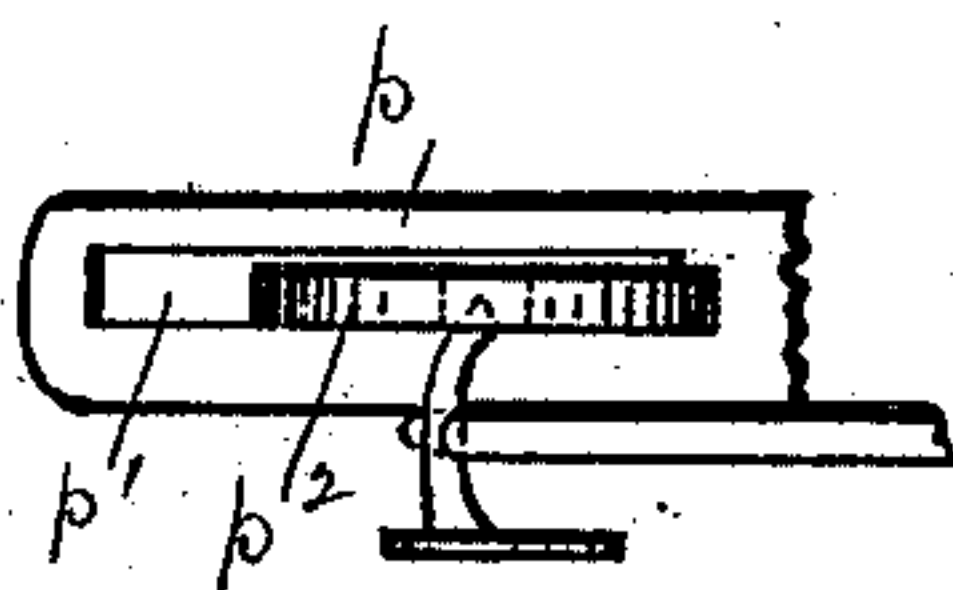
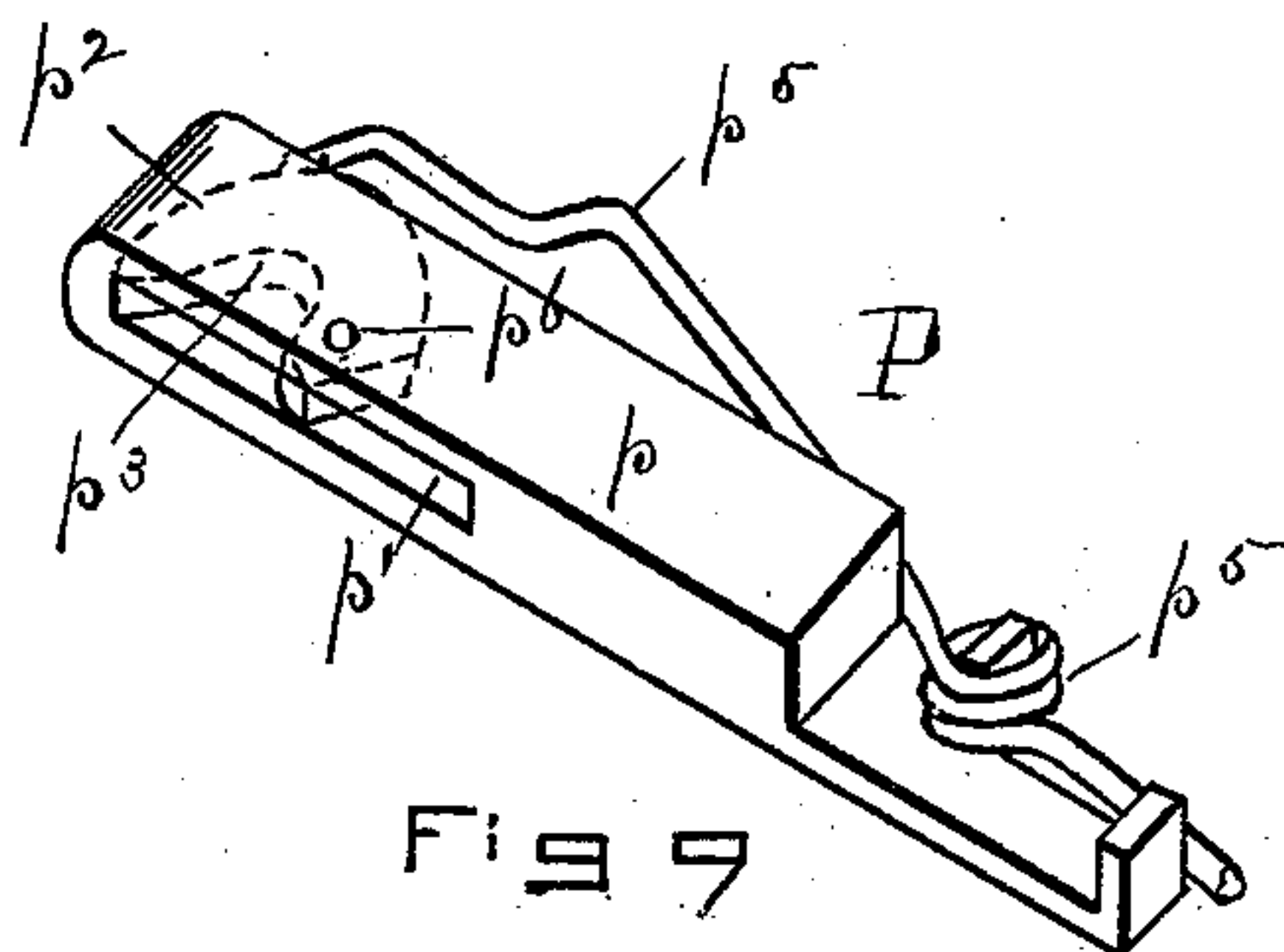


Fig 18



F: 9 7



Fig 12

WITNESSES

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UNITED STATES PATENT OFFICE.

ANALDO M. ENGLISH, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE PRATT MANUFACTURING COMPANY, OF PORTLAND, MAINE.

MACHINE FOR ATTACHING BUTTONS.

SPECIFICATION forming part of Letters Patent No. 358,342, dated February 22, 1887.

Application filed March 29, 1886. Serial No. 196,963. (No model.)

To all whom it may concern:

Be it known that I, ANALDO M. ENGLISH, a citizen of the United States, residing in the city of Boston, county of Suffolk, Commonwealth of Massachusetts, have invented a new and useful Machine for Attaching Buttons to Leather, Woolen Cloth, or other Fabrics, of which the following is a true and complete specification.

10 My invention relates to the foot-power machine hereinafter described, wherein I use one-prong metallic button fasteners, which are automatically fed to the machine as they are required, while the buttons are fed by hand.

15 In the accompanying drawings, Figure 1 is a side view of the head of the machine, showing the general arrangement of the drum, plunger, and oscillating lever, and the manner in which the power is applied. Fig. 2 is a section of the support, showing the arrangement of the foot-power and connecting-rod. Fig. 3 is a front view of the drum and its appendages, showing the arrangement of the inclined table, bridge, ways, and gate, whereby the fasteners are fed one by one to the machine. Fig. 4 is a side section of the same. Fig. 5 is a side view and partial section showing the mechanism connected with the gate and ram. Fig. 6 is a perspective view of the gate. Fig. 7 is a plan view and part section showing more clearly the arrangement of the ways and ram, also the guide-bars by which the fastener is guided to the jaws of the machine and the mechanism by which it is turned into proper position before it is carried by the ram to the jaws of the machine. Fig. 8 is a perspective view showing the device for turning the fastener into proper position in its normal position before turning the fastener. Fig. 9 is a view of the same just after turning the fastener. Fig. 10 is a front section showing more clearly the arrangement of the guide-bars. Fig. 11 is a front view of the jaws and plunger, showing the fastener in position in the jaws. Fig. 12 shows the fastener used. Fig. 13 is a side view of the device for turning the fastener.

The machine stands upon the three-legged base A, Fig. 2, the upper part of which consists of a slotted barrel, *a*, into the top of

which is screwed the tube B. (A piece of one and one-half inch gas-pipe is used, preferably; but any stout tubing will answer the purpose.)

To the top of the tube B, Fig. 1, is attached the head of the machine, consisting of the bed C, the frame D, having an arm, E, at the end of which is carried the plunger-sleeve *e*. To the upper end of the tube B is adjusted the pan F, for holding buttons, &c. This pan may be raised or lowered by loosening the screw *f*. The working parts of the machine are protected by an adjustable jacket, G, which may be rotated back, when desirable, on the pivot *g*, thus exposing the machinery for oiling, cleaning, &c. This jacket carries the hopper *g'*, by which the fasteners are introduced into the drum.

Power is communicated to the machine by the treadle H, Fig. 2, which consists of a bent lever moving on a pivot, *h*. It is provided with a foot-piece, *h'*, pivoted to its front end, which has a spring, *h''*, which serves to hold it in a horizontal position. To the other end of the bent lever H is pivoted the link *h'''*, having at its outer end, *h''''*, a chisel-edge, which engages with a corresponding notch in the connecting-rod *b*, Fig. 2. The link *h'''* is provided at its joint with the lever H with a spring, *h'''''*, which tends to elevate its end *h''''*, and so cause it to continually engage with the notch in the connecting-rod *b*. The parts thus arranged form a toggle or elbow joint, by which, power being applied to the foot-piece *h'*, great force is brought to bear to depress the connecting-rod *b*.

The upper end of the connecting-rod *b* is provided with a rack, *b'*, which engages with a pinion, *d*, revolving on a pin, *d'*, supported by the frame D. The pinion *d* is provided with an eccentric pin, *d''*, which slides in a slot in the oscillating lever J, which oscillates on a pin, *j*, supported by the frame D. The lever J is split at its other end, so as to embrace the sleeve *c*, and is provided with slots *j'*, which engage with the pin *j''*, attached to the plunger *j'''*, whereby, the lever J being oscillated around the pin *j*, the plunger *j'''* is caused to rise and fall. The plunger *j'''* is fully described in the patent of Pratt and English, No. 287,389, of October 23, 1883. The pinion

d engages with a rack, c , which slides on a guide, c' , attached to the bed C, Figs. 1 and 2. To the front end of the rack c is attached the ram c^2 , Figs. 1, 5, 7, and 11, whereby, the pinion D being rotated, the ram c^2 is caused to move forward and backward.

The drum K is supported by the pin j , upon which it is free to turn, being held in place by the retaining-pin j^4 , Fig. 4, and is provided with ribs k , Figs. 3 and 4, and a series of teeth, k' , by which it is turned a certain distance by the pawl k^2 at each stroke of the machine.

Immediately in front of the drum is placed a frame, L, which supports the inclined table l and bridge l' . Both the inclined table and bridge project into the interior of the drum, as shown in the section, Fig. 4, whereby, the drum being revolved, as indicated by the arrow, Fig. 3, the fasteners in it will be raised up by the ribs k and drop on the inclined table l . The inclined table l and bridge l' are provided with a guard, l^2 , placed at such a height above the table and bridge that a fastener standing on its head, as shown in Fig. 12, cannot fall off, while one lying in any other position may, Fig. 3. To the guard l^2 is attached an arm, l^3 , whose outer end rests against the spring l^4 , the end of which engages with the teeth k' of the drum, whereby, the drum being turned by the pawl k^2 , the spring l^4 receives a vibratory motion by the passage of the teeth k' . This is communicated to the table l by the arm l^3 and the guard l^2 , and causes the fasteners deposited on the machine-table to run down onto the bridge, and so to the machine. From the bridge the fastener runs into the ways, which conduct it to the bed of the machine.

The construction of the ways may be best seen by referring to Fig. 7, where a fastener is shown in the act of descending. It will be noticed that the casting has a slot, x , plowed into it, which receives the head of the fastener, while the shank projects between the guide-plates l^5 and l^6 . A fastener, being dropped upon the inclined table l , descends toward the bridge l' in consequence of the shaking motion already described, arriving at which point, if it is not standing on its head, as is shown in Fig. 12, it will probably fall off, as the bridge is somewhat narrower than the head of the fastener. If it is standing on its head, its shanks, projecting upward, will be caught by the guard l^2 , which will prevent its falling off, and so it will pass onto the ways. If by any chance a fastener not standing on its head should pass the bridge and arrive at the ways, it would fall through the aperture, l^7 , left for that purpose. A fastener arriving at the ways standing on its head will be guided by the upper end of the plate l^6 , and so descend in the proper position, as shown at x' , Fig. 3, where the plates have been broken away to show the construction, until stopped by the gate, which is so arranged as to let but one fastener through at each stroke of the machine.

k^3 k^3 are guards in front of the drum, which

catch all fasteners dropping from the inclined table and bridge and return them into the drum.

k^2 is provided with a lip, into which fits the neck of the hopper g' .

The gate M consists of an L-shaped bar, M^6 , which slides on the bed of the machine C'. (See Figs. 3, 4, 5, and 6.) This terminates at one end in the spoon m^4 , which occupies a recess at the bottom of the ways, and serves to shove the fastener at each stroke of the machine entirely out of the ways and in front of the ram, which in turn forces it into place in the jaws of the machine. (See Fig. 4.) To the back end of the spoon m^4 is riveted the lower arm of the gate, m , which is provided with the point m' , and to these is attached the curved upper arm, m^2 , having the point m^3 . The construction is best seen in Fig. 6. This gate is so arranged that at each stroke of the machine the points m' and m^3 play across the slot x' in the ways forward and backward.

As the fastener descends it is stopped by the point m^3 . At the next stroke of the plunger c^2 and rack c the gate moves forward by a mechanism to be hereinafter described, and one fastener drops onto the point m' , and when the gate moves back to its first position that fastener drops through, while the next one is still held back by the point m^3 , the distance between the points m^3 and m' being just sufficient to permit one fastener to pass at a time. In Fig. 3 the gate is shown by dotted lines in its forward position. The gate is held in place by the retaining-piece m^7 .

To the bed-piece c' is attached the cam m^8 , having a projection, m^{11} . To the lower part of the cam m^8 is pivoted the link m^9 , the other end of which is attached to the pin m^{12} of the gate M. To the upper end of the cam m^8 is pivoted the slide m^{10} , the other end of which is supported by the projection m^5 of the gate M and the spring m^{13} , Fig. 7.

To the rack c is attached the pin c^3 , which as the rack moves back strikes against the projection m^4 of the cam m^8 , and so revolves the cam around the pin m^{11} , thus forcing the gate M forward by means of the link m^9 , and as the rack moves forward on the return-stroke the said pin strikes against the projection m^{13} of the slide m^{10} , and so revolving the cam back brings the gate to its first position.

It will be noticed that the movement of the gate is much more rapid than that of the rack C.

After passing through the gate the fastener is struck by the spoon m^4 , and, so guided by the guide-bars l^5 and l^6 , is pushed out onto the bed of the machine, where it is held between the guide-bars n n , as shown in Fig. 10.

It is necessary that the fastener should be so placed in the jaws of the machine that its shank curves backward. To accomplish this the fastener-turning device P is introduced, Figs. 7, 8, and 9. This consists of a frame, p , having a slot, p' , in which is pivoted the cam-shaped piece p^2 , having a concaved surface, p^3 ,

and a flat surface, p^4 , against which rests a spring, p^5 . The fastener being pushed forward by the concave end of the ram, its upper end comes in contact with the concave-curved surface of the piece p^2 , which revolves around the pivot p^6 .

If the fastener is in the position shown in Fig. 13, it will stay in that position. If it is not, it will revolve until it is in that position, by a well-known principle which needs no explanation. The fastener, now being turned into the proper position, is forced by the continued stroke of the ram c^2 into its place in the jaws of the machine.

In Fig. 11, at n' , is shown the jaws which hold the fastener while it is turned over and clinched by the mechanism of the plunger. They each of them consist of a block of metal, n' , so formed that the fastener may be securely held between them. To each of them is attached one end of the flat spring n^2 , the other end of which is secured to the bed of the machine by the screw n^3 . The springs n^2 force the jaws toward each other upon the fastener held between them, and so hold the fastener firmly while it is turned over and clinched by the proper mechanism.

The fasteners are fully shown in Figs. 10, 11, 12, and 13, Figs. 10 and 11 showing a front view, and Figs. 12 and 13 showing a side view, of the fastener.

The fastener being introduced into the drum K by the hopper g' and the treadle H being successively depressed by the foot and allowed to rise, the drum revolves and a portion of the fasteners are lifted by the ribs k and fall upon the inclined table l , and travel down it on account of its vibratory motion, as described; thence they move down the bridge l' and into the ways. During the passage over the inclined table and bridge all of the fasteners which are not standing on their heads fall back into the drum, and only those descend into the ways which are in proper position, as shown at x' , Fig. 3. The fastener descends in the ways, as described, until it reaches the gate M, which allows one fastener to pass through it at each back-stroke of the machine, as described. Having passed through the gate, the fastener is struck by the spoon at the next forward stroke of the machine and forced out of the ways onto the bed of the machine, where it is held, as previously described, until the plunger forces it into place between the jaws of the machine, which hold it firmly while being clinched around the eye of the button by the plunger j^3 , as described in United States Patent to Pratt and English, No. 287,389, before mentioned.

Having now fully described my invention, what I desire to claim and secure by Letters Patent, is—

1. In a machine for attaching buttons, the combination, substantially as described, of a bent lever rocking on a pivot attached to the frame of said machine, having a foot-piece at one end and a link pivoted at the other end,

a connecting-rod having a rack at its upper end and a notch engaging with said link at its other end, a ratchet-wheel engaging with said rack and having an eccentric pin, a rocking lever having a slot at one end which engages with the said eccentric pin on said ratchet-wheel, and a plunger sliding in a sleeve and actuated by said rocking lever, whereby, said foot-piece being depressed and raised, said plunger is caused to fall and rise, substantially as shown and described.

2. In a machine for attaching buttons, the combination, substantially as described, of a bent lever rocking on a pivot attached to the frame of said machine, having at one end a foot-piece and at the other end a pivoted link, a connecting-rod having at its upper end a vertical rack and at its other end a notch engaging with said link, a ratchet-wheel engaging with said vertical rack, a nearly horizontal rack engaging with said ratchet-wheel and having at its forward end a fastener-positioning ram, whereby, said foot-piece being depressed and raised, said fastener-positioning ram is made to move backward and forward, substantially as described.

3. In a machine for attaching buttons, the combination, substantially as described, of a sliding gate, a reciprocating pin, a revolving cam pivoted to the frame of said machine and having a projection which engages with said reciprocating pin, a link one end of which is attached to the said cam below its center of revolution and whose other end is attached to said sliding gate, and a slide having a projection which engages with said reciprocating pin, one end of said slide being pivoted to said cam above its center of revolution, whereby said reciprocating pin, moving backward, strikes said projection on said cam, and so revolves said cam and causes said sliding gate to move forward, and said reciprocating pin, moving forward, strikes said projection on said slide, and so reverses said cam and causes said sliding gate to move back into its first position, substantially as described.

4. In a machine for attaching buttons, the combination, substantially as described, of a reciprocating fastener-positioning ram having a concave fastener-holding surface at its working end, a pair of fastener guide-bars, and a pair of spring fastener-holding jaws, whereby, said ram being moved forward, the said button-fastener is forced into position between said fastener-holding jaws, substantially as described.

5. In a machine for attaching buttons, the combination, substantially as described, of a reciprocating fastener-positioning ram, a pair of fastener guide-bars, and a revolving fastener-turning spring-cam having a concaved fastener-turning surface placed eccentrically to its axis, whereby the fastener, being forced forward by the said rams engaging with the middle of its shank, its upper end striking against the said concaved surface of said fastener-turning cam, causes said cam to revolve

around its axis and itself is revolved until the convexity of its tang is directly forward in position for work, substantially as described.

5 6. In a machine for attaching buttons, the combination, substantially as described, of a revolving fastener-holding drum having internal fastener-lifting ribs integral therewith, an inclined vibrating fastener-holding table projecting into the interior of said drum, hav-
10 ing a narrow bridge at its lower end and a fastener-retaining guard, and the fastener-conducting ways, whereby the fasteners are lifted from said drum and automatically fed into said machine, substantially as shown and
15 described.

7. In a machine for attaching buttons, the combination of a reciprocating gate, M, hav-
ing two fastener-retaining points, m' and m^3 , arranged as shown, which play across the slot
20 of the fastener-conducting way, and a fastener-conducting way, all arranged and operating as and for the purpose substantially as described.

8. A machine for attaching buttons, consist-
ing of a fastener-feeding device consisting of a revolving drum provided with internal fast- 25
ener-lifting ribs, an inclined vibrating table, fastener-conducting ways, and a reciprocating fastener-feeding gate, a fastener-positioning ram, a revolving-fastener-turning cam, and a button-holding fastener-clinching plunger, all 30
arranged and operating substantially as described.

9. In a machine for attaching buttons, the combination of a reciprocating gate, M, hav-
ing two fastener-retaining points, m' and m^3 , 35
and a spoon, m^4 , with a fastener-conducting way, all arranged and operating as and for the purpose substantially as described.

In witness whereof I have hereunto set my hand.

ANALDO M. ENGLISH.

Witnesses:

WM. B. H. DOWSE,

CHAS. L. FITCH.