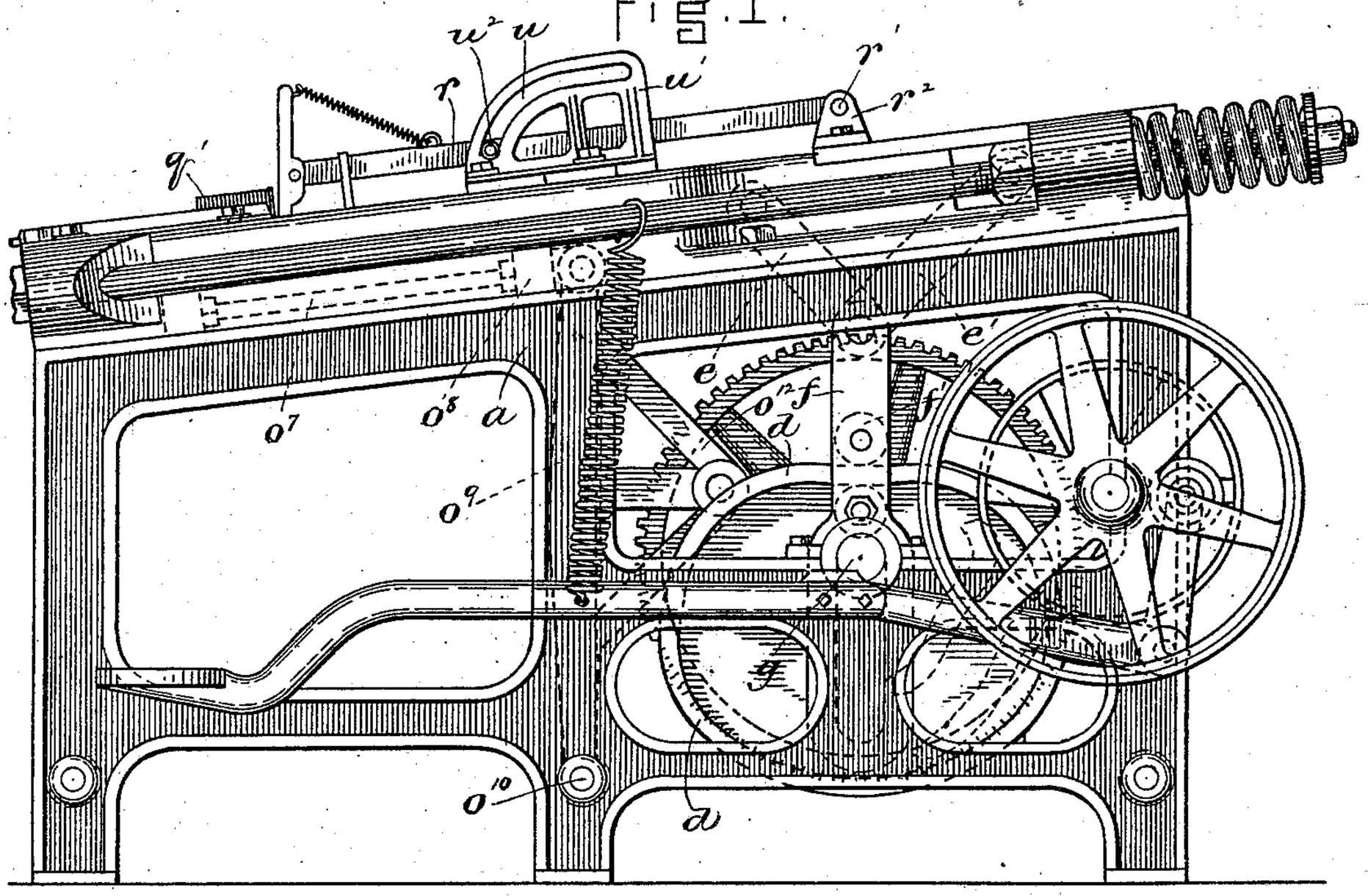
(No Model.) 3 Sheets—Sheet 1.

L. W. LITCH.

HEEL STIFFENER MACHINE.

No. 503,608. Patented Aug. 22, 1893.

Fig. 1.



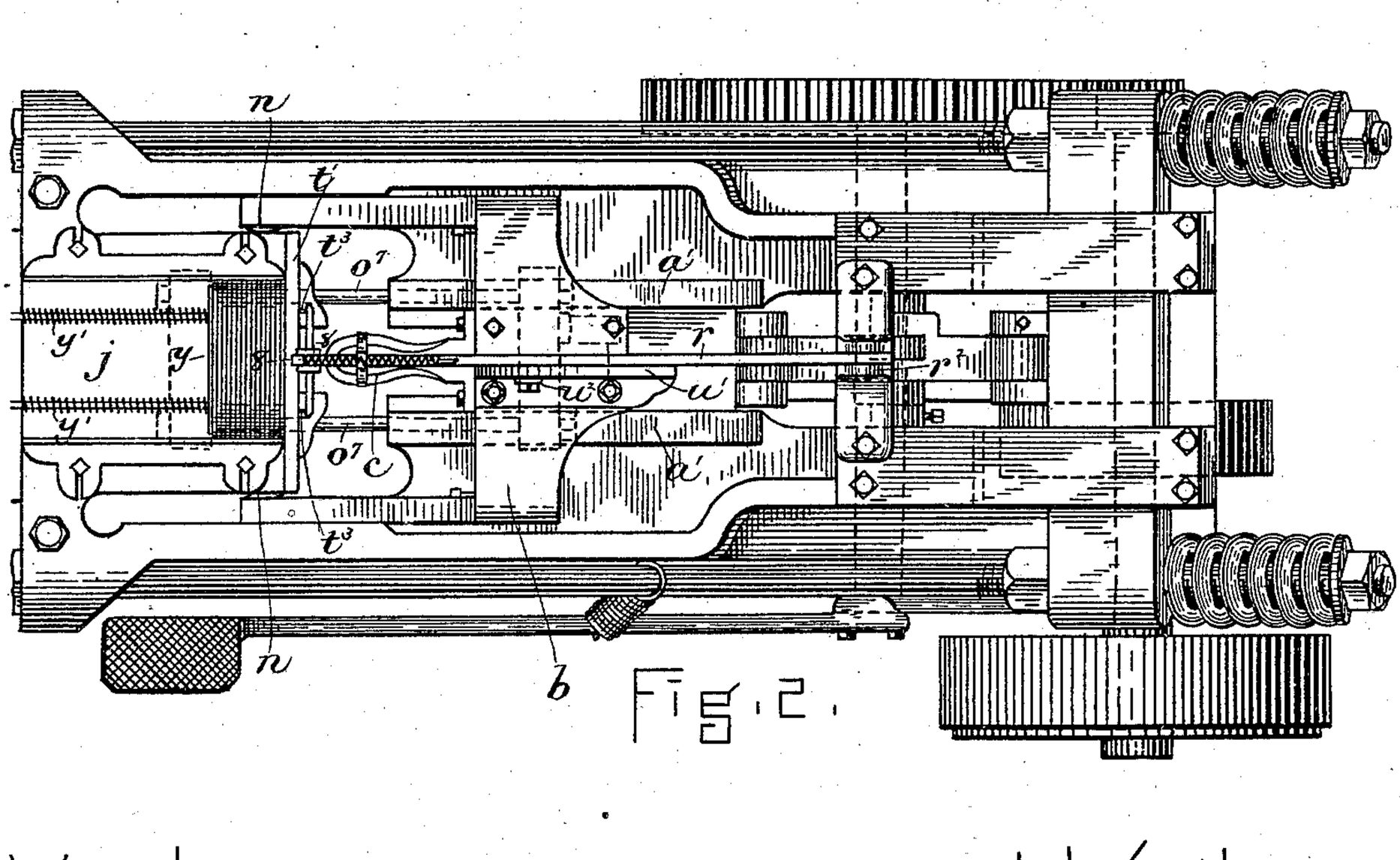


Fig. 2.

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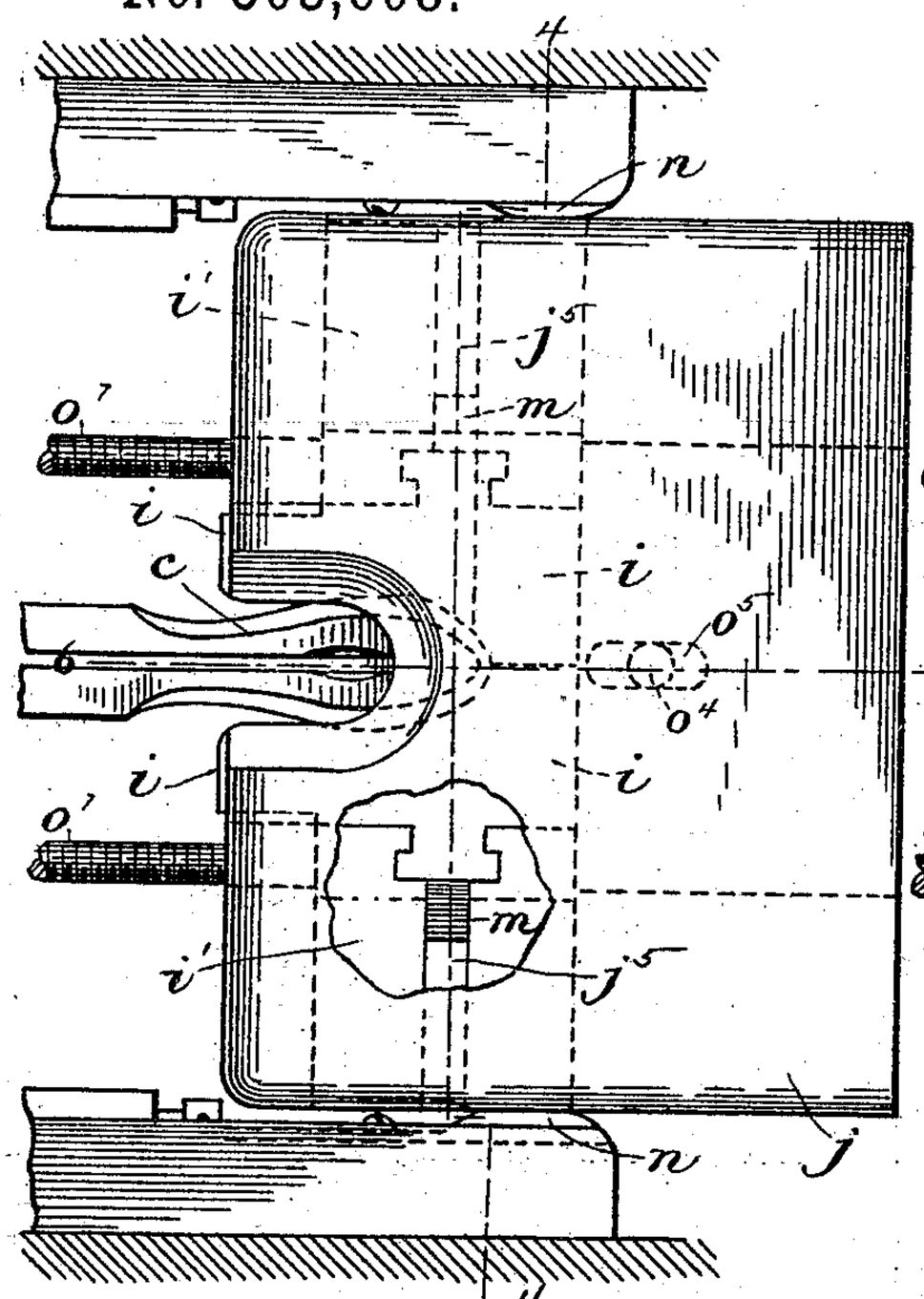

Fig. 3.

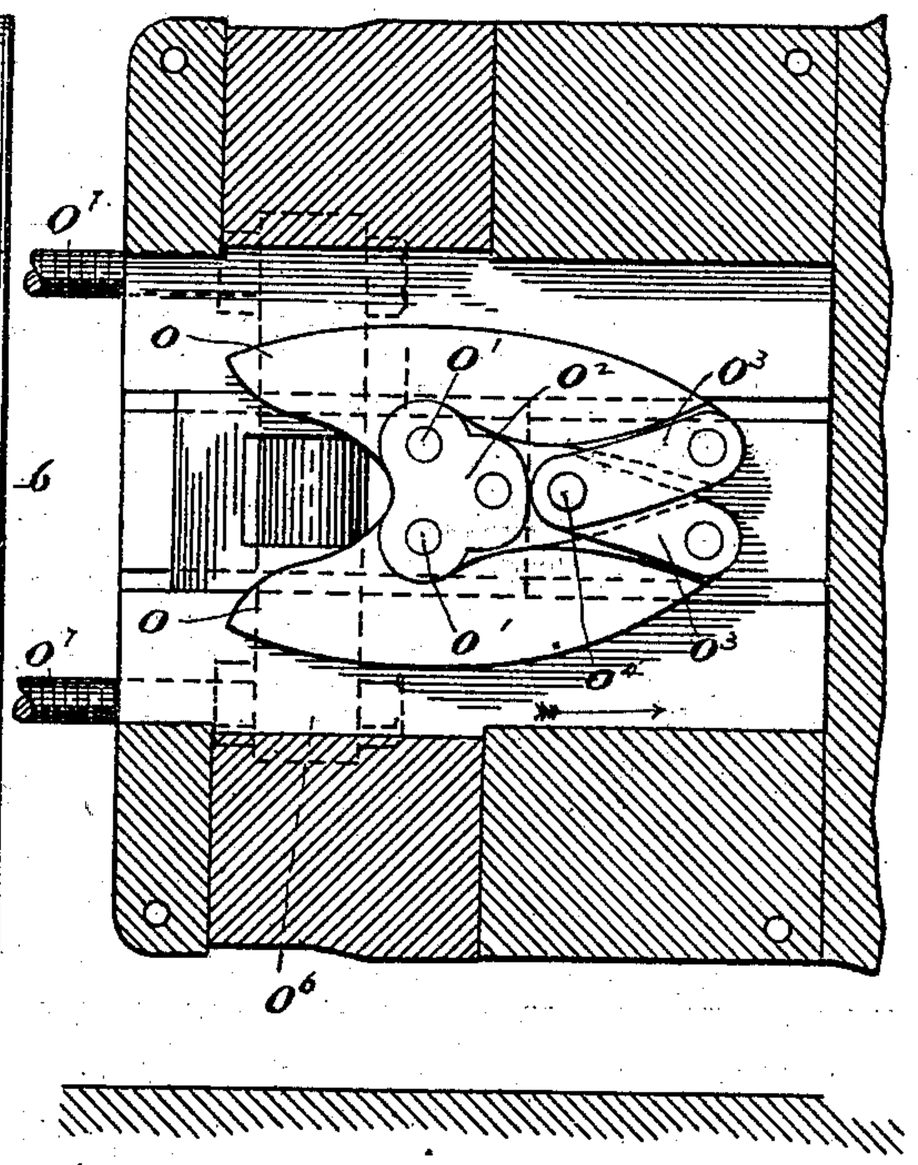

Fig. 4.

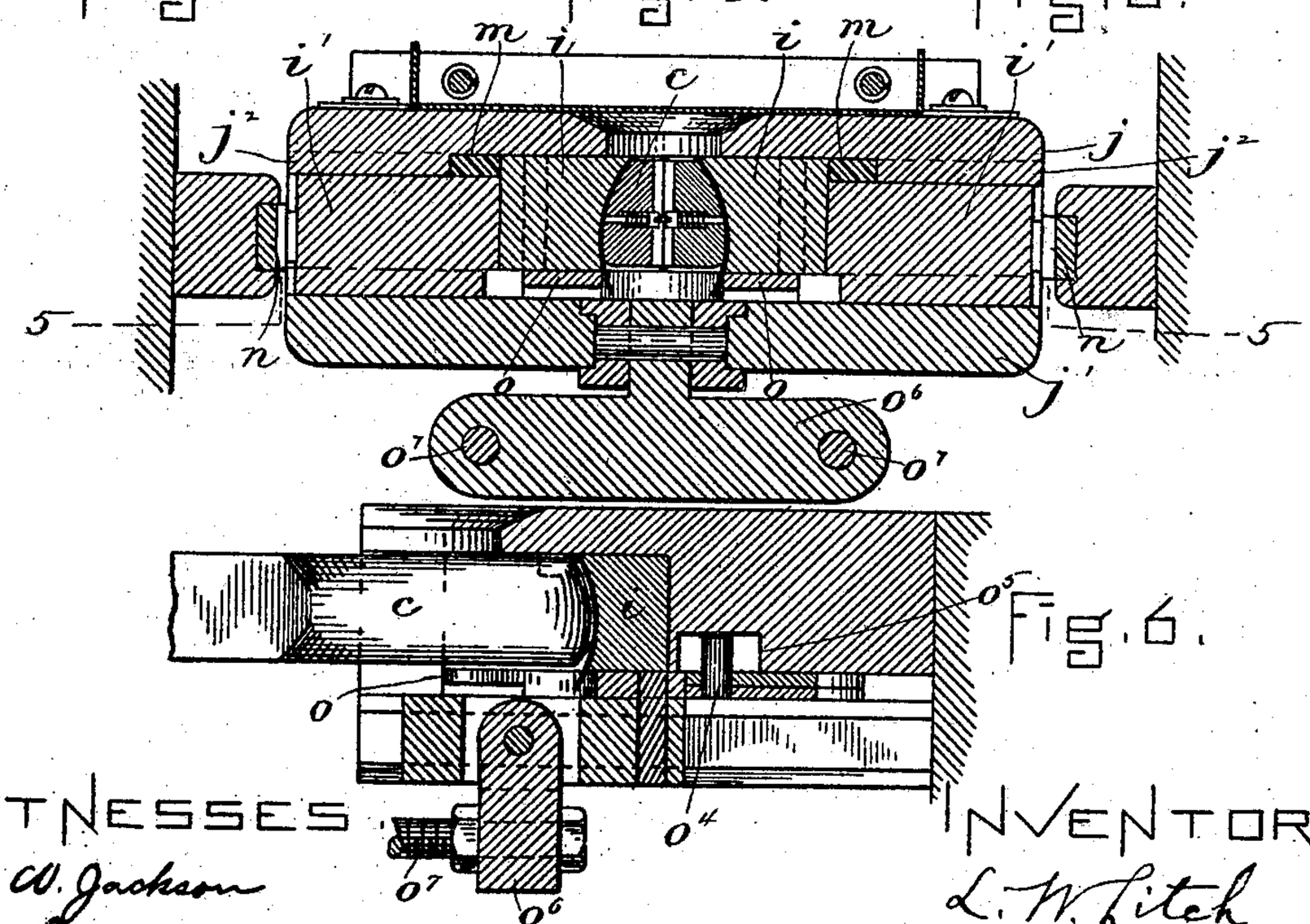

Fig. 5.

Fig. 6.

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HEEL STIFFENER MACHINE.

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Fig. 7.

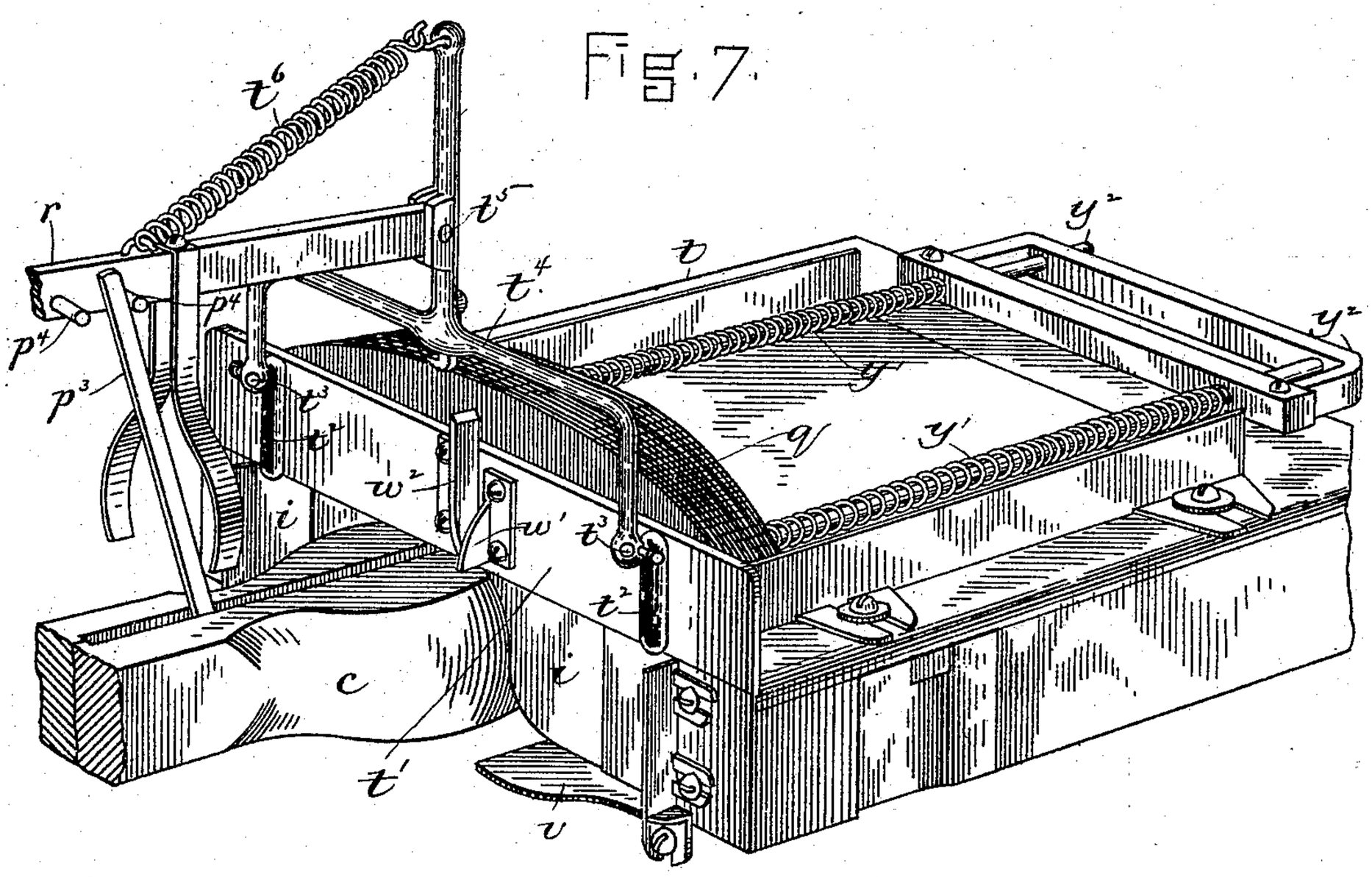


Fig. 8.

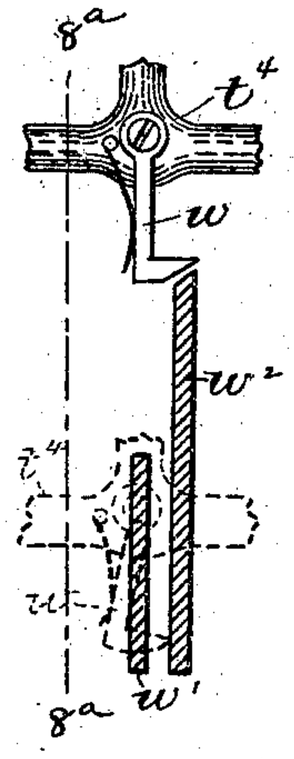


Fig. 8ª.

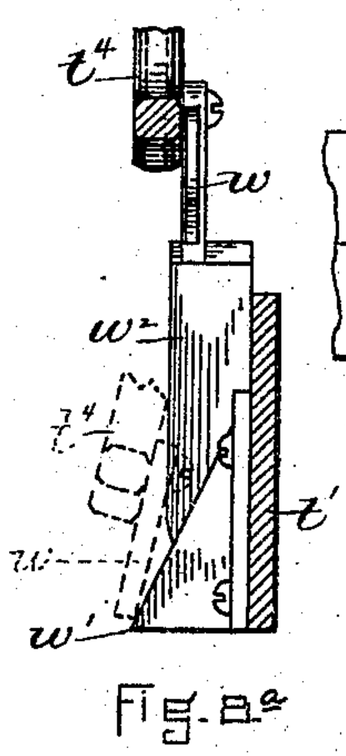


Fig. 9.

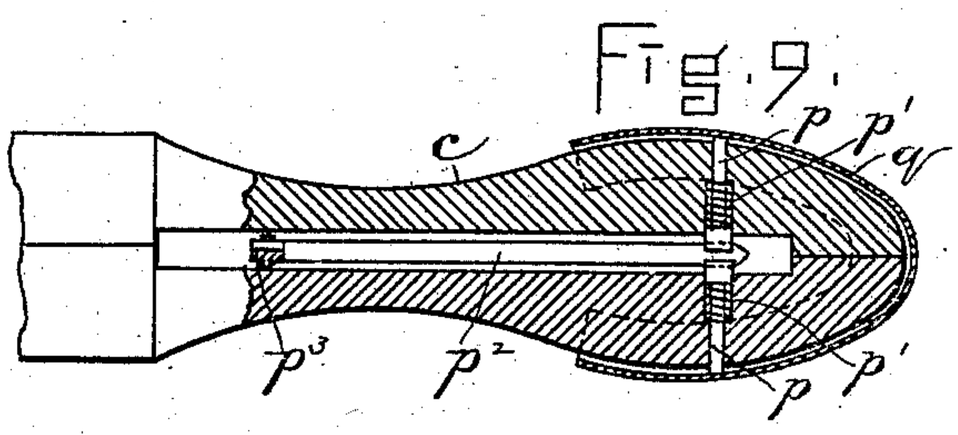
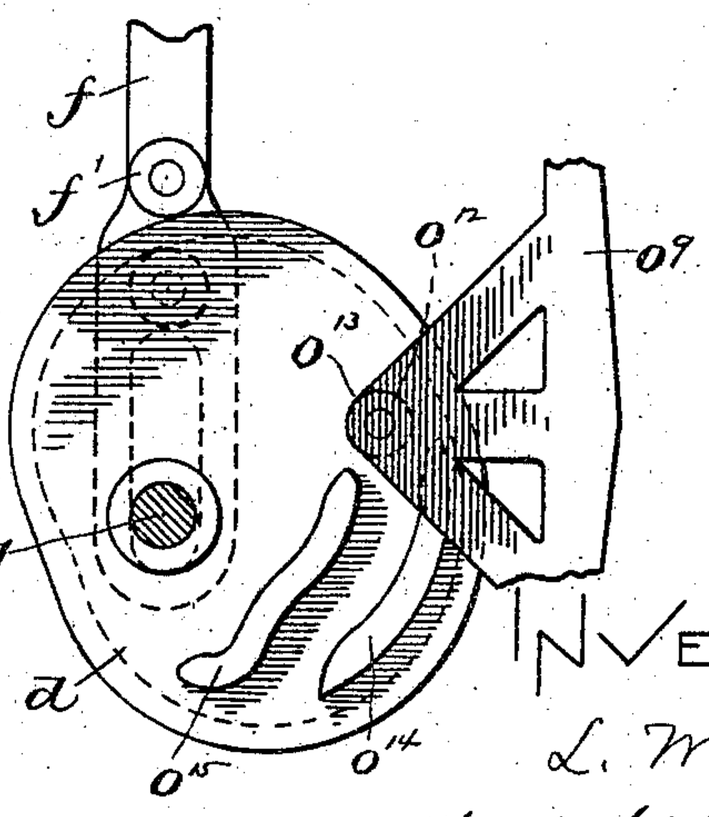


Fig. 10.



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UNITED STATES PATENT OFFICE.

LEMUEL W. LITCH, OF SWAMPSCOTT, ASSIGNOR TO THE LYNN COUNTER COMPANY, OF LYNN, MASSACHUSETTS.

HEEL-STIFFENER MACHINE.

SPECIFICATION forming part of Letters Patent No. 503,608, dated August 22, 1893.

Application filed October 24, 1892. Serial No. 449,748. (No model.)

To all whom it may concern:

Be it known that I, LEMUEL W. LITCH, of Swampscott, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Machines for Making Counters for Boots or Shoes, of which the following is a specification.

This invention relates to that class of counter-making machines in which two separable half-molds are employed, co-operating with a former which is inserted between the molds, the molds and the former acting upon a blank in such manner as to impart to it the desired shape, the flange of the former being formed by suitable flange-formers or wipers movable across the under side of the former.

The invention has for its object, first, to provide each half-mold with an independently yielding movement, so that, while the former and the counter blank are being inserted between the half-molds before the latter are pressed inwardly, either of the half-molds can yield independently, in case one end or side of the blank is thicker than the other.

The invention also has for its object to enable the former to positively withdraw the completed counter from between the half-molds.

The invention also has for its object to provide improved means for feeding the counter blanks to the point where they are grasped by the half-molds and former, thus obviating danger of injury to the operator or attendant.

To these ends, the invention consists in the several improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming part of this specification: Figure 1 represents a side elevation of my improved counter machine. Fig. 2 represents a top view of the same. Fig. 3 represents a top view of a portion of the machine, showing the former and the half-molds. Fig. 4 represents a section on line 4—4, Fig. 3. Fig. 5 represents a section on line 5—5, Fig. 4. Fig. 6 represents a section on line 6—6, Fig. 3. Fig. 7 represents a perspective view, showing the blank-feeding mechanism. Fig. 8 represents a section on the plane of line 8—8, Fig. 2. Fig. 8^a represents a section on line 8^a—8^a, Fig. 8, looking toward the right. Fig. 9 represents a partial plan view and partial longitudinal section of the former, showing the means for withdrawing the formed counter from the half-molds. Fig. 10 represents a side elevation of a part of the machine, showing the means for operating the flange-forming wipers.

The same letters of reference indicate the same parts in all the views.

In the drawings: *a* represents the supporting-frame of the machine, having guides or ways *a' a'*, on which is fitted a sliding cross-head *b*.

c represents the former, which co-operates with the half-dies hereinafter described in molding a counter, said former being affixed to the cross-head *b*. A reciprocating motion is imparted to the cross-head by suitable means, such as a cam *d;* a toggle joint, composed of links or members *e e'*, the former pivoted to the cross-head and the latter to the supporting-frame; and a rod *f*, connected with the meeting ends of said links and provided with a trundle-roll *f'* bearing upon the perimeter of the cam *d*. The cam is affixed to a shaft *g*, which is driven by power suitably applied, and rotates the cam, the rotation of the latter causing the toggle links to impart a reciprocating motion to the cross-head, thus alternately projecting and retracting the former.

i i represent the half-molds, which are formed to receive the former and co-operate therewith in molding a counter blank. Said half-molds are mounted in a suitable casing or holder supported by the frame *a*, said casing or holder being, as here shown, composed of suitably connected top and bottom plates *j j'*, between which are ways or guides in which the half-molds are adapted to slide laterally or in a direction at right angles to the direction of movement of the former. The top plate *j* of the casing is provided with guides or ribs j^2 j^2 (Fig. 4), which enter corresponding grooves j^5 j^5 (Fig. 3) in the upper surfaces of blocks *i' i'* which are affixed to the half-molds, said blocks being adapted to slide with the half-molds in the casing.

m m represent springs interposed between the inner ends of the ribs or guides j^2 j^2 and the outer sides of the half-molds *i i*. Said springs permit each half-mold to yield inde-

pendently when the former is entering the space between the half-molds, so that, in case there is any variation in thickness between the sides of the counter blank, such variation may be compensated for by the independent yielding motion of the half-molds, the half-molds being free to yield or slide outwardly when the former and blank are entering the cavity between them.

I find that a rectilinear motion of the half molds is preferable, to an arc movement for the reason that there is a uniform displacement of all parts of the inner wall of each mold, instead of a displacement gradually increasing in extent from the inner to the outer or swinging end of the half-mold.

The half-molds are pressed inwardly after the former and blank have been inserted between them, by any suitable means, such as by wedges or cheek-pieces n n (Figs. 2 and 3), affixed to the cross-head b, said wedges acting on the outer ends of the blocks i' i' and forcing the half-molds inwardly after the forward motion of the former c has ceased.

The flange of the counter is formed by wipers o o (Fig. 5), which are pivoted at o' o' to a block o^2, adapted to slide in the casing containing the half-molds, the rear ends of said wipers being pivotally connected to links o^3 o^3, the meeting ends of which are connected by a pin o^4, which enters a slot o^5 (Fig. 6) in the upper plate j of the casing or holder. The block o^2 is secured to a cross-head o^6, which is adapted to slide in the half-mold casing, and is connected by rods o^7 o^7 with a cross-head o^8, pivotally connected to the upper end of a lever o^9, the lower end of which is pivoted at o^{10} to the supporting-frame. Said lever has an off-set or arm o^{12} (Figs. 1 and 10), having a trundle-roll o^{13}, which is adapted to be engaged by cam-shaped ribs o^{14} o^{15} affixed to the cam d, the arrangement being such that, at a given point in the rotation of said cam, the said ribs will move the lever o^9 in such manner as to force the block o^2 in the direction indicated by the arrow in Fig. 5, and thus cause the wipers o o to move simultaneously inward in opposite directions and wipe or fold over the flange of the counter. This flange-forming mechanism is substantially the same as shown in Letters Patent of the United States No. 480,023, granted to me August 2, 1892, and therefore is not claimed in this application.

The former is provided with feed dogs p p, which are fitted to slide in slots formed in the sides of the former, and are adapted to be projected so that their outer ends will engage the inner surfaces of the sides of a counter q of said former, as shown in Fig. 9. The dogs p are normally retracted by springs p', and are projected to engage the counter by means of the tapering or wedge-shaped end of a rod p^2, which is movable longitudinally in an opening in the former. p^3 represents a lever, which is pivoted to the former, and has its lower end jointed to the rod p^2. The upper end of the lever p^3 projects between pins p^4 p^4, projecting from one side of an arm or bar r, which is pivoted at r' to a lug r^2 affixed to the supporting-frame, the arrangement being such that, when the former is moving forward to press the blank into the divided mold, the rod p^2 will be moved back from between the dogs; but, when the former begins its backward movement, the rod p^2 will be moved to the position shown in Fig. 9, thus forcing the dogs outwardly against the inner surface of the counter and causing them to forcibly withdraw the counter from the mold cavity.

t represents a receptacle or magazine for counter blanks q', said blanks being arranged edgewise, as indicated in Figs. 1, 2 and 7, above the holder or casing in which the half-dies are located. At one end of the magazine t is a fixed plate t', having vertical slots t^2 t^2, through which project spurs t^3 t^3 (Fig. 2), affixed to a forked lever t^4, which is pivoted at t^5 to the swinging end of the lever r. The lever t^4 is normally held by a spring t^6 in such position that the spurs t^3 press against the blank q' lying next to the plate t'. The lever r is given a vertical swinging movement by means of a cam-shaped groove u, formed in an ear u', affixed to the sliding cross-head b and receiving a trundle-roll u^2 on the lever r (Fig. 1). When the cross-head is moved forward to carry the former between the half-dies, the lever r is raised by the action of the cam groove u, thus carrying the spurs t^3 to the upper ends of the slots t^2. When the cross-head is moved in the opposite direction, the lever r is depressed and the spurs t^3, which are at this time held in engagement with the outer blank in the reservoir by the spring t^6, are caused to force said blank downwardly through a slot provided in the bottom of the magazine t, the blank being thus caused to drop upon stops or gages v (Fig. 7), which support it in position to be taken by the former c when said former again advances. At the lower portion of the downward movement of the lever t^4 and the spurs t^3, said lever is swung outwardly by the contact of a pivoted latch-piece or hook w with an inclined ear or flange w' affixed to the lower portion of the piece t', said inclined ear causing the lever t^4 to swing outwardly at its lower end, as indicated in dotted lines in Fig. 8^a, thus withdrawing the spurs t^3 from the slots t^2. During the upward movement of the lever t^4 and spurs t^3, the spurs are prevented from swinging inwardly until they reach their highest point, by means of a guard-piece w^2, affixed to the piece t', said guard-piece being arranged to bear upon the latch w during the upward movement of the lever t^4 and prevent the said lever from swinging inwardly. As the lever t^4 approaches the upper extreme of its movement, it rises above the guard-piece w^2, and is therefore permitted to swing inwardly, so that its spurs again enter the slots t^2 t^2.

The mass of counters in the magazine t is pressed forward toward the plate t', by means of a spring follower y (Fig. 2), which is actuated by springs y' y', arranged on sliding rods y^2 y^2 affixed to said follower.

I claim—

1. In a counter machine, the combination with a reciprocating former, of two independently movable half-molds provided with guide-ribs, fixed guides in which said half-molds are movable in a rectilinear path at right angles to the direction of movement of the former, said guides being provided with grooves which receive the guide-ribs of the half-molds, springs behind said half-molds and permitting them to yield independently and accommodate the thickness of the counter blank, and means for pressing the half-molds inwardly against the former.

2. In a counter machine, the combination with two independently movable half-molds, of a reciprocating former, mechanism for alternately projecting and retracting the former, counter-engaging devices or dogs in the former, and means for alternately projecting and retracting said dogs, as set forth.

3. In a counter machine, the combination with the half-molds and the reciprocating former, of the blank magazine, a vertically movable blank-feeding device carrying spurs adapted to engage a blank in said magazine, means for alternately raising and depressing said device, and means for retracting said spurs at the end of their feeding movement and projecting them at or before the beginning of said movement, as set forth.

4. In a counter machine, the combination with the half-molds and the reciprocating former, of the blank magazine having a front plate provided with slots t^2, a forked lever having spurs arranged to enter said slots, a pivoted lever r supporting said forked lever, means substantially as described for swinging the lever r vertically, a spring whereby the forked lever is pressed forward to engage its spurs with a blank during its downward movement, and devices whereby the forked lever is retarded during its upward movement, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 15th day of October, A. D. 1892.

LEMUEL W. LITCH.

Witnesses:
W. H. CHADWELL,
GEO. F. PUTNAM.