

No. 676,242.

Patented June 11, 1901.

G. M. ROGERS.
PUNCHING MACHINE.

(Application filed June 15, 1900.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1,

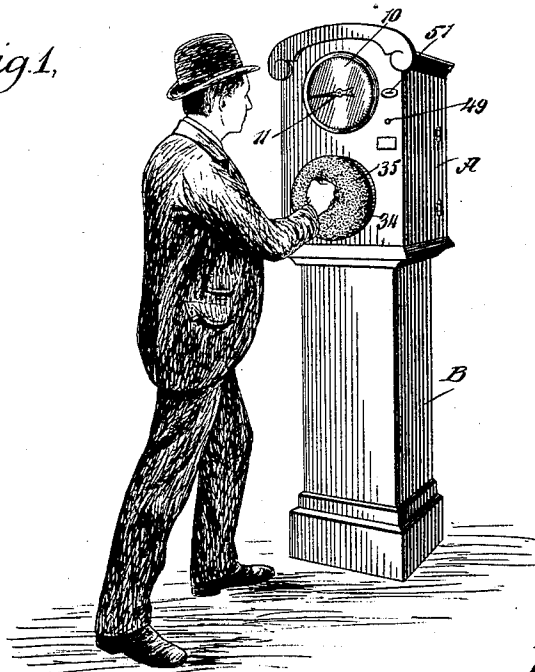
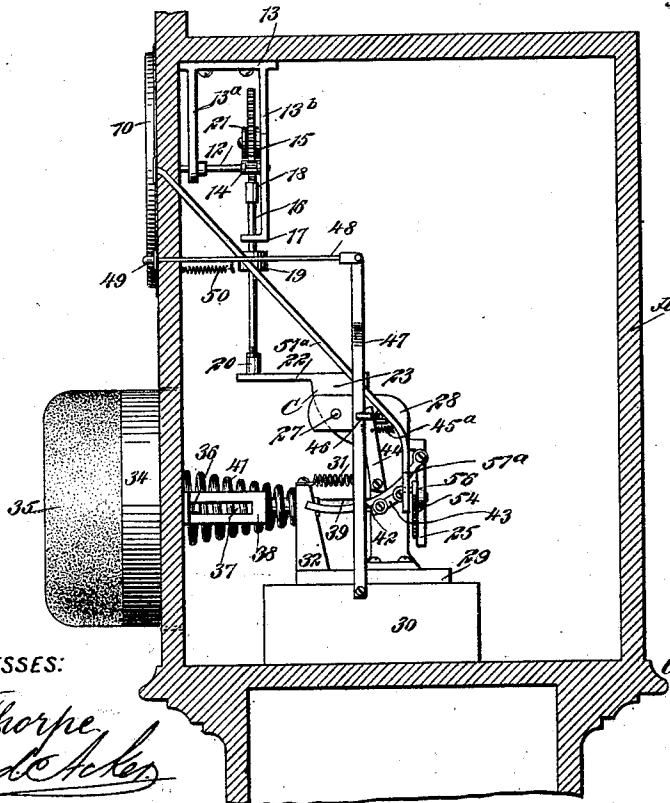


Fig. 2,



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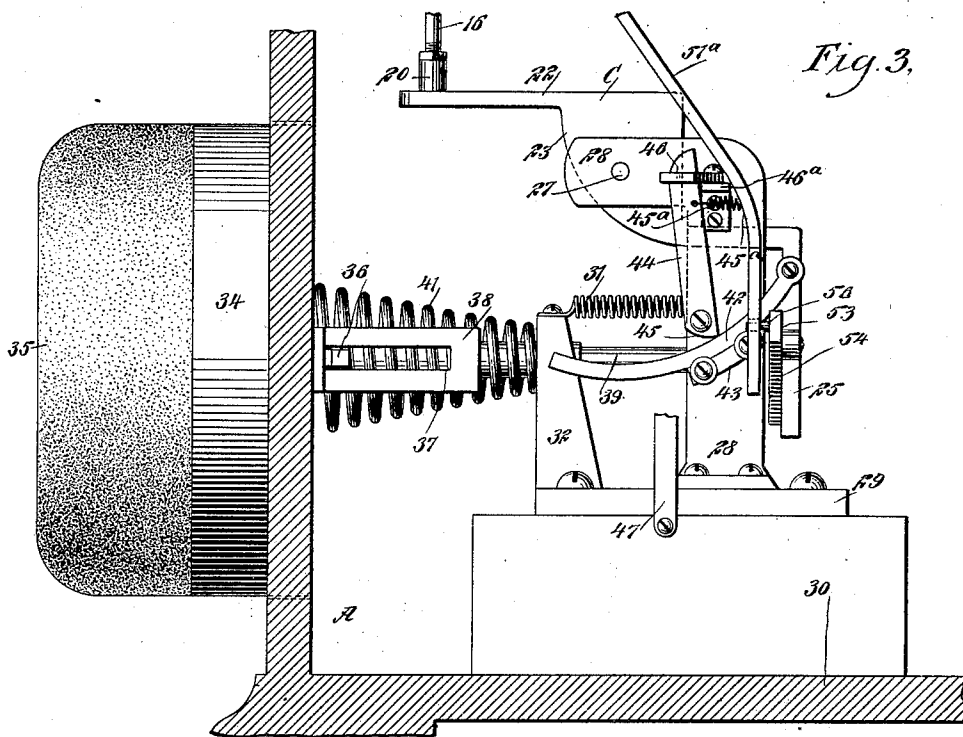


Fig. 3.

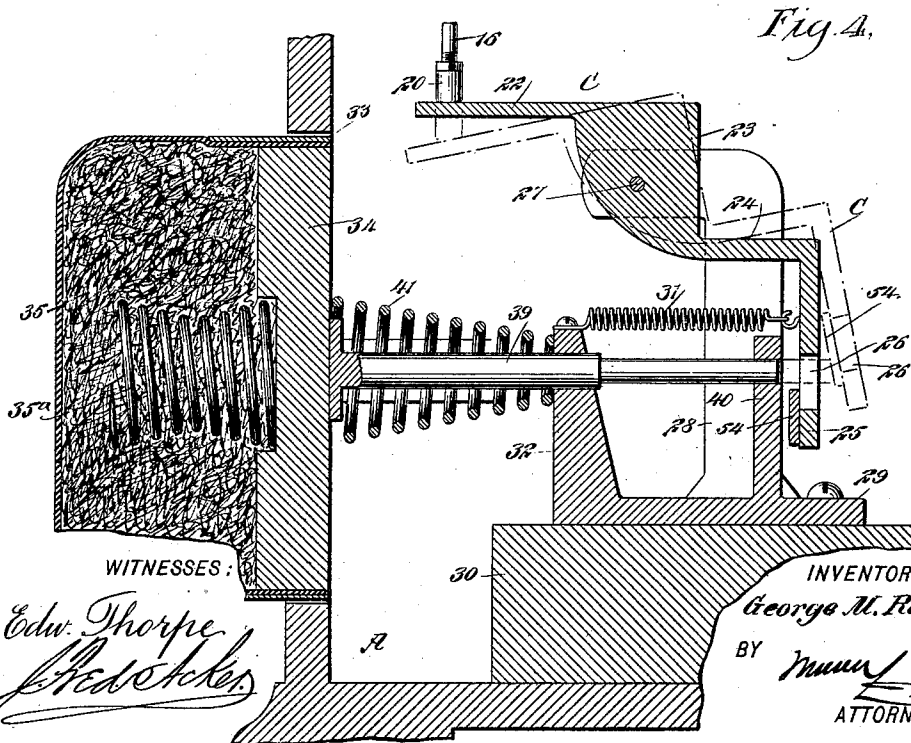


Fig. 4.

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Fig. 5,

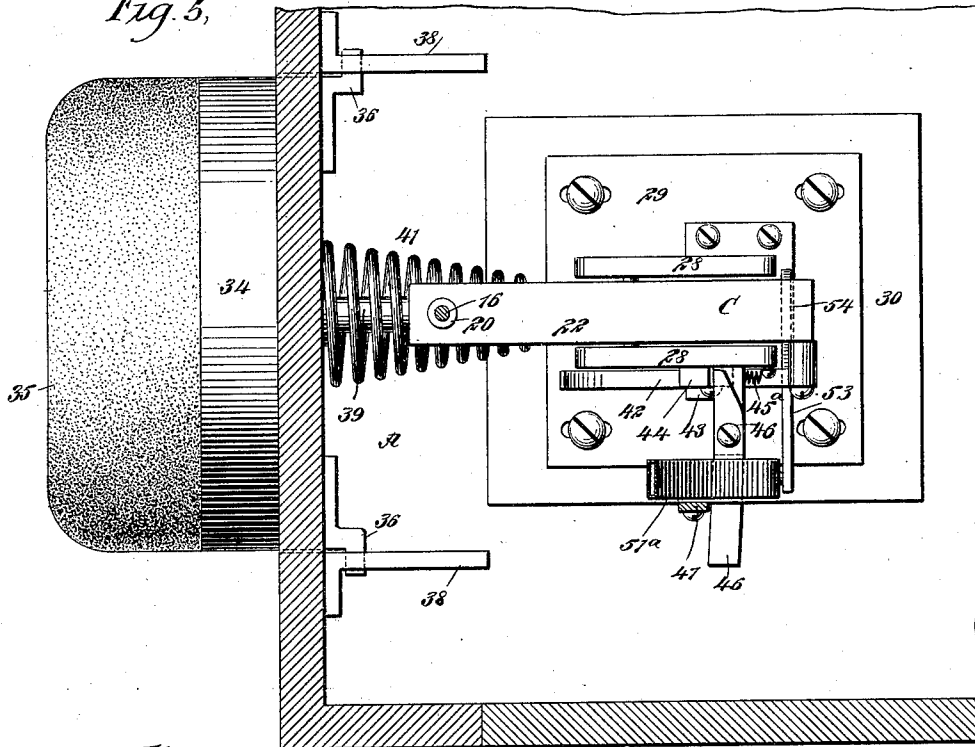
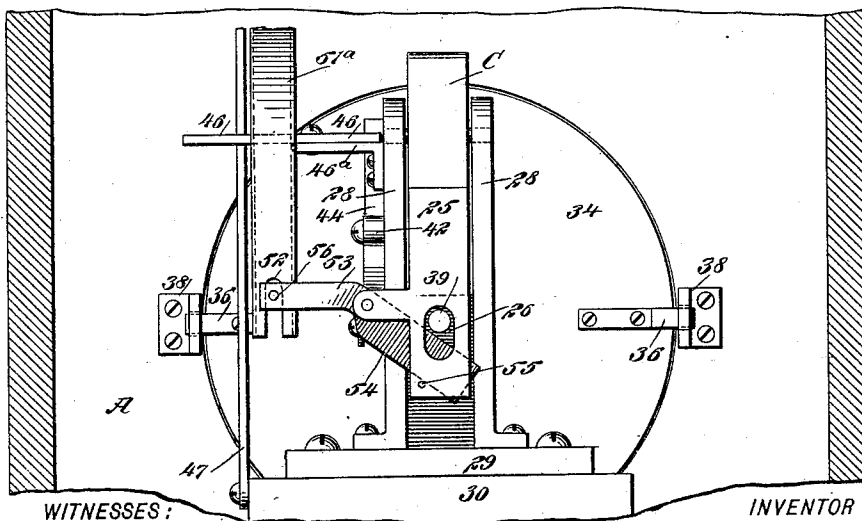


Fig. 6



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UNITED STATES PATENT OFFICE.

GEORGE M. ROGERS, OF NEW YORK, N. Y., ASSIGNOR TO THE AMERICAN AUTO-MACHINE COMPANY, OF SAME PLACE.

PUNCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 676,242, dated June 11, 1901.

Application filed June 15, 1900. Serial No. 20,424. (No model.)

To all whom it may concern:

Be it known that I, GEORGE M. ROGERS, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Punching-Machine, of which the following is a full, clear, and exact description.

The purpose of the invention is to provide a simple, novel, effective, and durable construction of punching-machines or machines adapted to indicate upon a dial or a like device the force of a blow manually delivered to a member of the machine.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of the machine. Fig. 2 is an enlarged vertical section through the main casing of the machine, illustrating in side elevation the normal position of mechanism contained in the said casing. Fig. 3 is a further enlarged view indicating a section through a portion of the main casing and a side elevation of the mechanism at the lower portion of the casing—namely, the mechanism which is directly operated upon by a blow delivered to the proper member of the machine and the coin-receiving mechanism. Fig. 4 is a vertical central section through the parts shown in Fig. 3, illustrating the indicating-lever in dotted lines and in operating position. Fig. 5 is a horizontal section through a portion of the main casing, illustrating in plan view the mechanism contained therein, the coin-receiving chute being in horizontal section; and Fig. 6 is a vertical section through a portion of the main casing, taken at the rear of the mechanism contained in the casing and showing in rear elevation the mechanism contained in the lower portion of the casing.

In the organization hereinafter described the apparatus is shown as a coin-controlled apparatus, in which the device is rendered operative by the insertion of a coin. I do not

claim such coin-controlled features in this case, nor do I limit my invention to such coin-controlled parts, as it will be obvious that the parts which are set into operative relation by a coin may be definitely adjusted to such operative relation by an extension of one of these parts to such position as to be within reach of definite adjustment by hand without the use of a coin.

A represents a main casing in which the operative parts of the machine are contained, and this casing may be placed upon a pedestal B or may be otherwise supported. A dial 10 is fixed in the front face of the main casing A and a scale in pounds and fractions of pounds is produced upon the dial. A pointer 11 is adapted to travel over the face of the dial 10, and this pointer is secured to one end of a shaft 12, which extends within the main casing A and is journaled in the downwardly-extending members 13^a and 13^b of a hanger 13, attached to the upper wall of the casing A; but the form of hanger 13 may be changed, if desired. The shaft 12 between the members of the hanger 13 is provided with a pinion 14, the teeth whereof engage with the teeth of a rack 15, formed at the upper end portion of a rod 16, which rod is passed through an aperture in a foot 17, made at the bottom of the longer member 13^b of the hanger 13, as is also shown in Fig. 2. A collar 18 on the rod 16 limits the upward movement of the said rack and rod; but this collar 18 may be simply employed to connect the rack with the rod 16 when this portion of the device is made in two parts. A weight 19 is secured upon the rod 16 below its bearing 17, and the lower end of the rod 16 terminates in a head or enlargement 20, which is adjustable upon the rod. The weight 19 renders the rod 16 operative in a downward direction by gravity; but if the lower end of the rod 16 is unsupported the rod 16 naturally drops downward until the upper portion of the rack 15 is brought in engagement with the pinion 14. A friction-roller 21 is employed as a guide for the rack 15, as shown in Fig. 2. The lower end or head 20 of the rod 16, however, is constantly supported by engagement with the horizontal table member 22 of an angle-lever C, and in the construction of this lever C a

vertical body member 23 is employed, to which the table member 22 is attached, and a lower horizontal member 24 is likewise employed, which extends rearward or in an opposite direction to the upper or table member 22, together with a vertical terminal member 25, which latter member has an opening 26 produced therein, as illustrated in Figs. 4 and 6. The various parts of the lever C may be integrally formed. The said lever at its body portion is pivoted by a pin 27 or its equivalent between the upper horizontal members of angle-standards 28, which standards are secured to a base-plate 29. The upper or horizontal members of the standards 28 extend in a forward direction; but the form of the standards may be changed, and preferably the rear lower member 25 of the lever C is at the rear of the standards 28 when the lever is in its normal position. (Shown in Fig. 4.) The base 29 may be attached directly to the bottom of the casing A; but in the drawings it is illustrated as secured to a block 30.

The lever C is held in its normal position by a spring 31, attached to the forward face of its rear vertical member 25 and to an upright 32, formed at the front portion of the base 29. This spring 31 serves also to return the lever C to its normal position after it has been given an inclined position, (shown in dotted lines in Fig. 4,) in which latter position this lever C is placed when a plunger, to be hereinafter described, is operated by a blow after a coin has been duly deposited in the machine.

At a convenient point in front of the main casing A an opening 33 is formed, which opening is preferably circular, and a socket-plate 34 is adapted to slide in the opening 33, conforming to the contour of said opening. This socket-plate receives a pad 35, which may be termed a "punching-head," since the blows of a person exercising are directed against said pad. The punching-head consists of a suitable cover or casing of flexible material attached to the socket-plate 34, the space between the socket-plate and inner surface of the cover being filled with hair or other suitable material; but in addition to such filling a coil or spiral spring 35^a is placed within the said head, preferably at its center, the spring having bearing against the socket-plate, and the outer end of the spring is preferably made to terminate short of the striking-surface of the head, as shown in Fig. 4. More than one spring may be used, if desired, and the object of introducing a spring or springs in the punching-head is to render it less liable to injure a person's hand when forcibly striking the head.

The punching-head and the socket-plate are guided and prevented from turning by attaching to the inner face of the socket-plate 34 pins or projections 36, which enter and have movement in slots 37, horizontally produced in horizontally-located guides 38, attached to the inner front wall of the main

casing A. A plunger 39 is secured to the central portion of the inner face of the socket-plate for the punching-head. This plunger has free movement in openings made in the front upright 32 on the base 29 and in a rear upright 40, located between the standards 28, and when the lever C is in its normal position the rear end of the plunger 39 will pass freely through the opening 26 in the rear lower member 25 of the lever C and the said lever will remain unaffected by the action of said plunger, so that until certain conditions are complied with the punching-head may be struck any number of times without accomplishing any results or moving the lever C. Therefore the pointer of the dial under such circumstances will remain inactive, since the pointer is brought into operation only when the lever C is acted upon by the plunger 39. A spring 41 is coiled around the plunger 39, having bearing preferably against the inner face of the socket-plate for the plunger-head and the front upright 32 of the base 29.

A curved arm 42 is secured to one longitudinal edge of the rear member of the lever C. This arm extends in direction of the front of the machine and its upper surface is concaved. The arm is guided in its movement by engaging with a segmental plate 43, secured to the outer face of one of the standards 28, as shown in Fig. 3. A brake or locking bar 44 is used in connection with the curved arm 42. This brake or locking bar is pivoted near its lower end upon the outer face of said standard 28, as is also shown in Fig. 3, and the lower end 45 of the brake or locking bar is curved. The rear lower corner of this brake or locking bar rests upon the upper surface of the curved arm 42, bearing lightly thereon when the various parts are in their normal position; but when the lever C by a blow is forced to the inclined position (shown in dotted lines in Fig. 4) the lower end of the brake or locking bar will have such positive engagement with the upper surface of the curved arm 42 that it will prevent the lever C being restored to its normal position until the said brake or locking bar is carried out of said positive engagement with the arm 42. A spring 45^a serves to hold the brake or locking bar 44 in operative position. When curved arm 42 goes back, it slides freely under the curved lower end 45 of the locking bar 44; but in any tendency of arm 42 to return, the spring 45^a causes lower end 45 of bar 44 to dig into the curved arm 42, holding it like a detent-brake. The brake is removable from the curved arm 42, and such result is obtained usually in the following manner: A shifting bar 46 is pivotally mounted upon a bracket 46^a, secured near the upper end of one of the standards 28, as shown in Fig. 3, and this shifting bar at its inner end engages with the rear upper edge of the brake or locking bar 44, and when the outer end of the shifting bar 46 is carried rearward the pointed engaging member of the brake or

locking bar 44 will be carried rearward, and the spring 31 may then act to restore the lever C to its normal position. The shifting arm or bar 46 may be operated from the exterior of the machine by pivoting a rod 47 to the block 30, for example, and causing the said rod to engage with the forward edge of the outer end portion of the shifting arm or bar and pivoting the rod 47 at its upper end to a connecting-bar 48, which extends out at the front of the machine, terminating in a knob 49, if desired. Thus after a blow has been delivered and the force of the blow has been indicated on the dial, if another blow is to be delivered, the connecting-rod 48 must first be pressed inward to permit the lever to resume its normal position and a second coin must be introduced into the machine before the force will be again indicated on the dial. The connecting-rod 48 is provided with a suitable spring 50, which serves to carry it outward after it has been pressed inward and released.

The coin when used is introduced through a suitable slot 51, which may be at the front of the machine, as illustrated, and the upper end of a chute 51^a connects with the slot 51, receiving the coin placed in such slot. The chute 51^a is provided at its bottom, which is open, with opposing longitudinal slots 52. (Shown best in Fig. 6.) A pin 56 extends into the slots 52, which pin is secured to a shank 53, and a plate 54 is attached to the shank at an angle thereto, as is likewise shown in Fig. 6. This plate serves as a gate and is used to close the opening 26 and receive the plunger 39 when a coin has been placed in the machine and the punching-head 35 is struck; but in the absence of a coin the gate uncovers the opening 26 sufficiently to permit a free passage of the plunger 39 through it. Thus the punching-head may be struck without injury to the parts of the machine at this time and no record of the blow can be obtained.

When the machine is to be organized to be operated by other means than by a coin-controlled device, it will be obvious that the plate 54 must be adjusted by hand in front of the path of the plunger by an extended handle, or there may be no slot through the lower end of the tilting elbow-lever, so that the plunger will act against it at all times.

Normally the shank 53 is in a horizontal position and the plate or gate is in a downwardly-inclined position, uncovering the opening sufficiently to permit the plunger 39 to freely pass through the opening, as has been stated. The gate and its shank are balanced in their normal position and are pivoted upon a projection from an edge of the lower member of the lever C, as is illustrated in Fig. 6, and in the same figure it will be observed that the downward throw of the gate is limited by a stop 55. When a coin has been received in the chute 51^a, it will rest upon the pin 56, and the weight of the coin will carry the gate upward, whereupon the

gate 54 will cover the opening 26 in the rear portion of the lever C, and when a blow is delivered upon the punching-head the inner end of the plunger 39 will strike the gate 54 and will force the rear member of the lever C outward or rearward, as is shown in dotted lines in Fig. 4, and at such time the rod 16, operating the pointer 11, will drop downward, following the descent of the table-section 22 of the lever C, and will cause the pointer 11 to indicate on the dial in pounds and fractions thereof the force of the blow that was delivered. The next operation is to press in the connecting-rod 48 and permit the lever C to assume its normal position. The coin will drop from the chute 51^a as soon as the blow is struck, as the gate is carried back with the lever C and the pin 56 leaves the slot 52 at that time, returning to its normal position again after the blow has been delivered.

In my invention it will be seen that the blow struck on the pad has no direct influence upon the indicator-hand, but merely adjusts an intermediate device—the lever C—to a greater or less degree of deflection, according to the force of the blow, to which position it is held by a locking device, and which lever C acts as a stop device to determine the drop of the rod which is connected to and operates the indicator-hand.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a punching or striking machine, the combination of an indicator-hand, a drop-rod for moving it from gravity, a movable stop device for limiting the range of movement of said drop-rod to any variable point in its fall, a rectilinearly-moving punching-plunger acting upon the movable stop device and directly driving it to a variable position according to the strength of the blow, said movable stop device being arranged between the plunger and drop-rod, and a locking device for holding the stop device to a variable position substantially as described.

2. In a punching or striking machine, the combination of an indicator-hand, a drop-rod connected thereto and moving said indicator by its fall, a pivoted angle-piece having a horizontal table-surface supporting said rod and acting as a variable stop for the rod at any point of its fall, a spring for holding said stop-table horizontal, and a spring-seated punching-plunger arranged to act upon the said angle-piece to drop the table-surface to a variable extent determined by the force of the blow substantially as described.

3. In a punching or striking machine, the combination of an indicator-hand, a drop-rod connected thereto and moving said indicator by its fall, a pivoted angle-piece having a horizontal table-surface supporting said rod and acting as a variable stop for its fall, a spring for holding said stop-table horizontal, and a spring-seated punching-plunger arranged to act upon the said angle-piece to

drop the table-surface to a variable extent determined by the force of the blow, and a locking device for holding said angle-piece to any position to which it may be driven substantially as described.

4. In a punching or striking machine, the combination of an indicator-hand, a drop-rod connected thereto and moving said indicator by its fall, a pivoted angle-piece having its horizontal member supporting the drop-rod and its vertical member provided with a spring for pulling it forward, a punching-plunger arranged in front of the said vertical member to operate against it, and an automatic locking device for the said angle-piece substantially as described.

5. In a punching or striking machine, the combination of an indicator-hand, a drop-rod connected thereto and moving said indicator by its fall, an angle-piece having a horizontal table-surface for sustaining the drop-rod and having also a vertical pendent member, a standard supporting the pivot of the angle-piece, a spring arranged in front of the vertical member of the angle-piece to pull the latter forward, and a spring-seated striking-plunger having its rear end guided in the supporting-standard for the angle-piece substantially as described.

6. In a punching or striking machine, the combination with the indicator-hand, drop-

rod, angle-piece for supporting the latter, and the spring-actuated plunger; of a curved bar pivoted to the angle-piece and moving over a guide, and an automatic locking detent-bar binding against the same on the backward movement of the angle-piece substantially as described.

7. In a punching or striking machine, the combination with the indicator-hand, drop-rod, angle-piece for supporting the latter, and the spring-actuated plunger; of a curved bar pivoted to the angle-piece and moving over a guide an automatic detent-locking bar binding against the same, and means for releasing the detent substantially as described.

8. In a punching or striking machine, the combination with the indicator devices and the spring-seated striking-plunger; of an inclosing case having an opening conforming to the margin of the plunger with slotted and inwardly-projecting guides at the edges of said opening, and guide-lugs attached to the plunger inside the case and moving in said guides substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE M. ROGERS.

Witnesses:

J. FRED. ACKER,
ALEX. MCINTOSH.