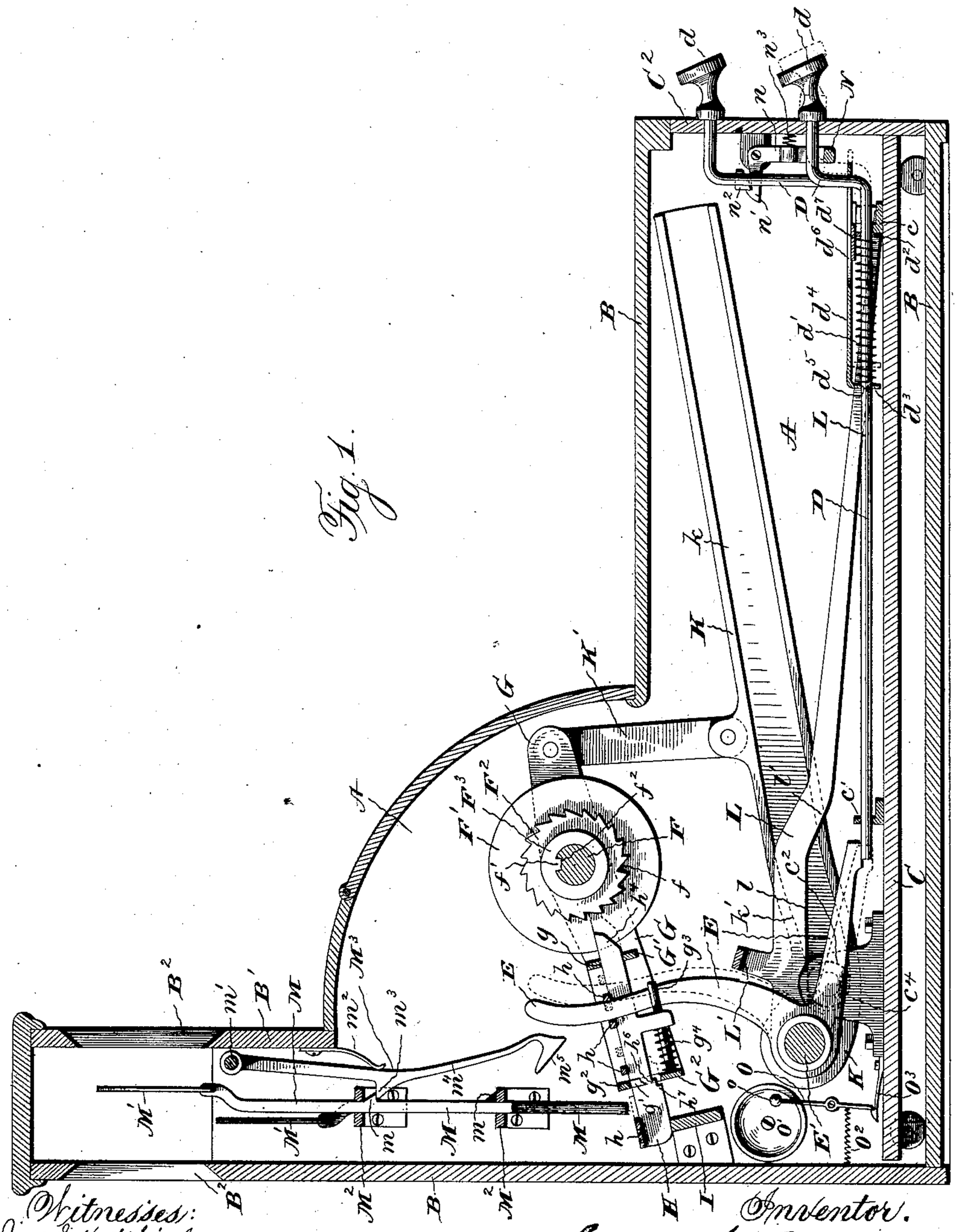
(No Model.) 7 Sheets—Sheet 1.

G. L. BARNES.

CASH REGISTER AND INDICATOR.

No. 568,081. Patented Sept. 22, 1896.

Fig. 1.



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(No Model.) 7 Sheets—Sheet 2.

G. L. BARNES.

CASH REGISTER AND INDICATOR.

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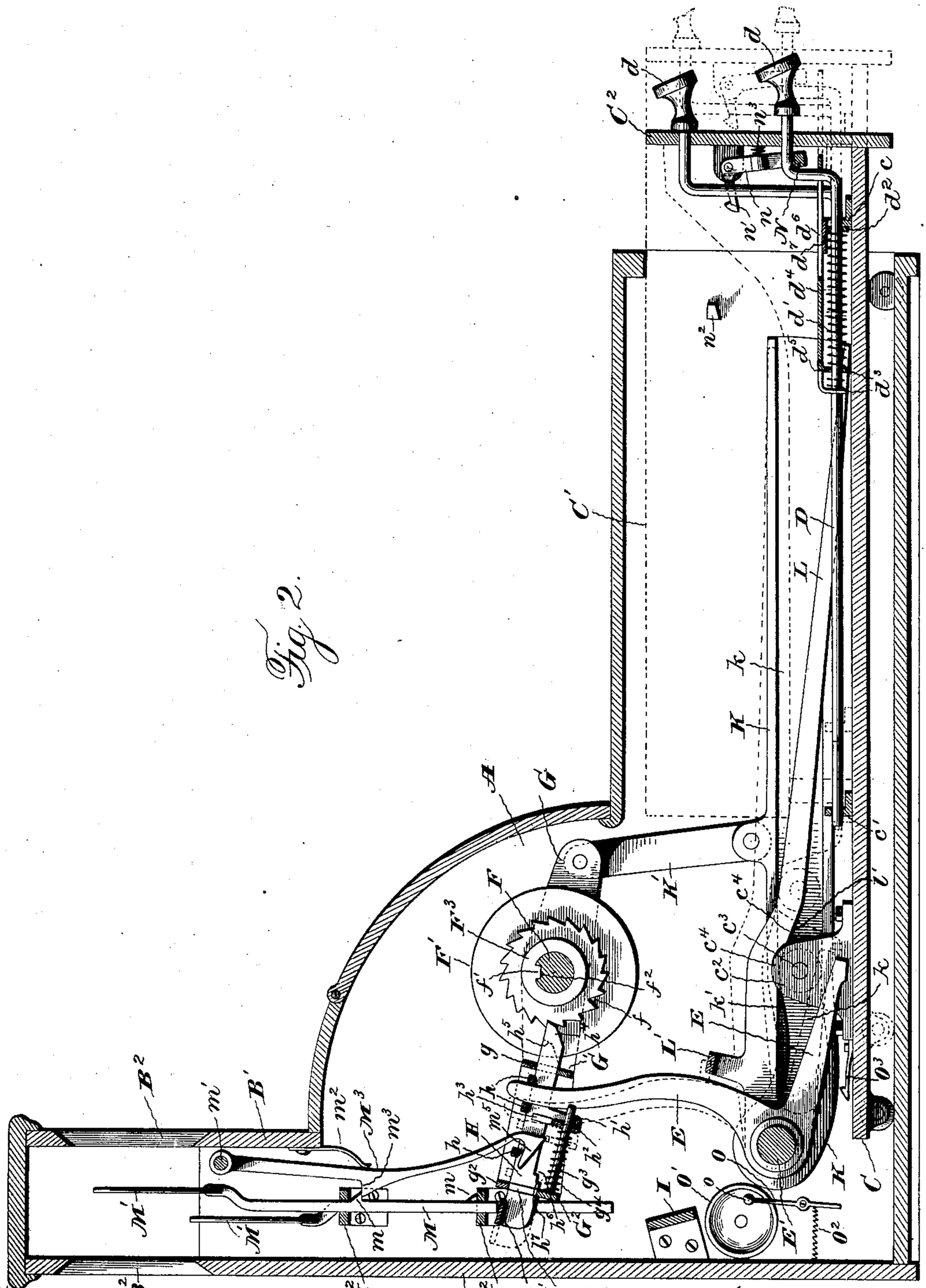
Fig. 2.



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(No Model.) 7 Sheets—Sheet 3.

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CASH REGISTER AND INDICATOR.

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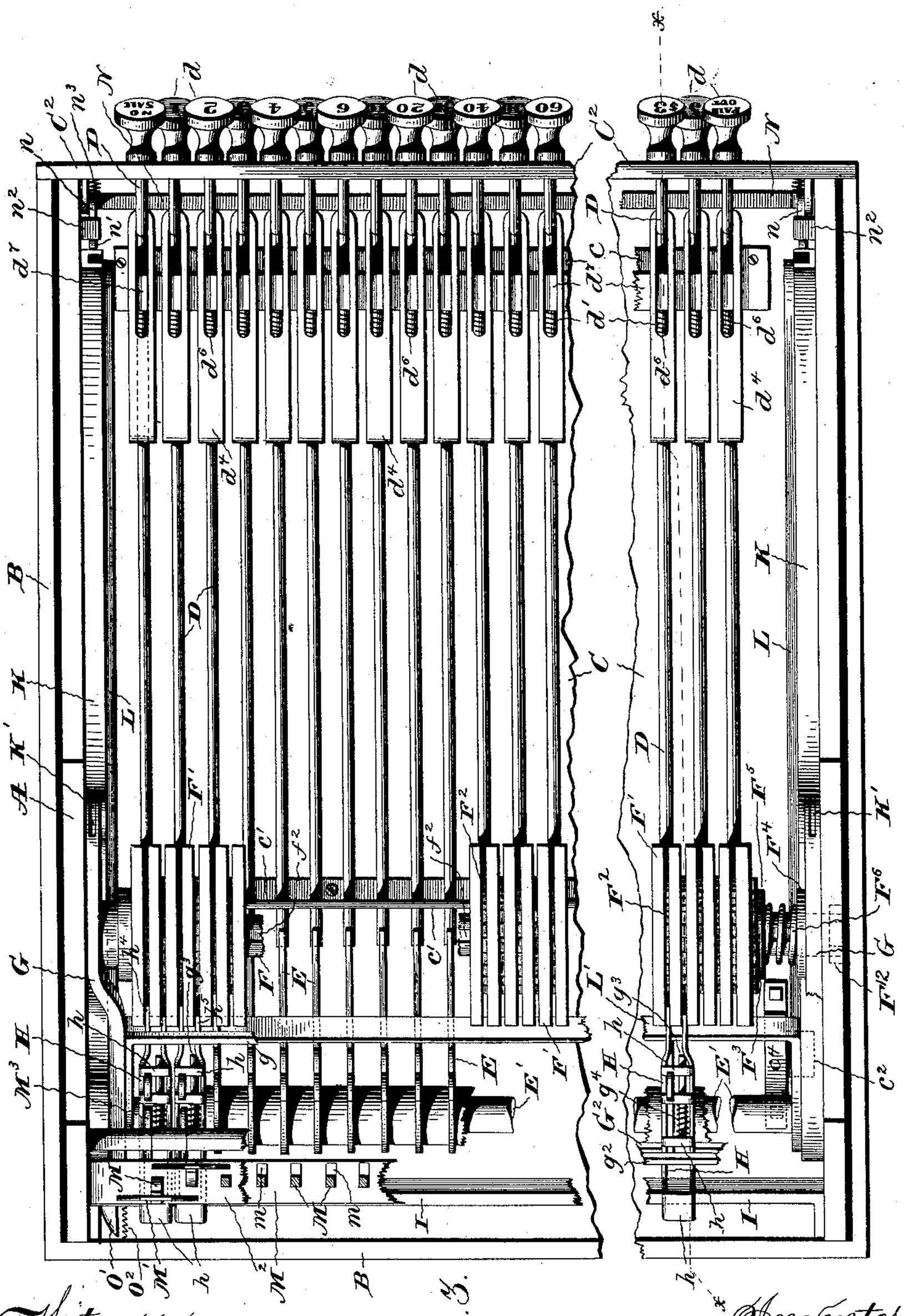

Fig. 3.

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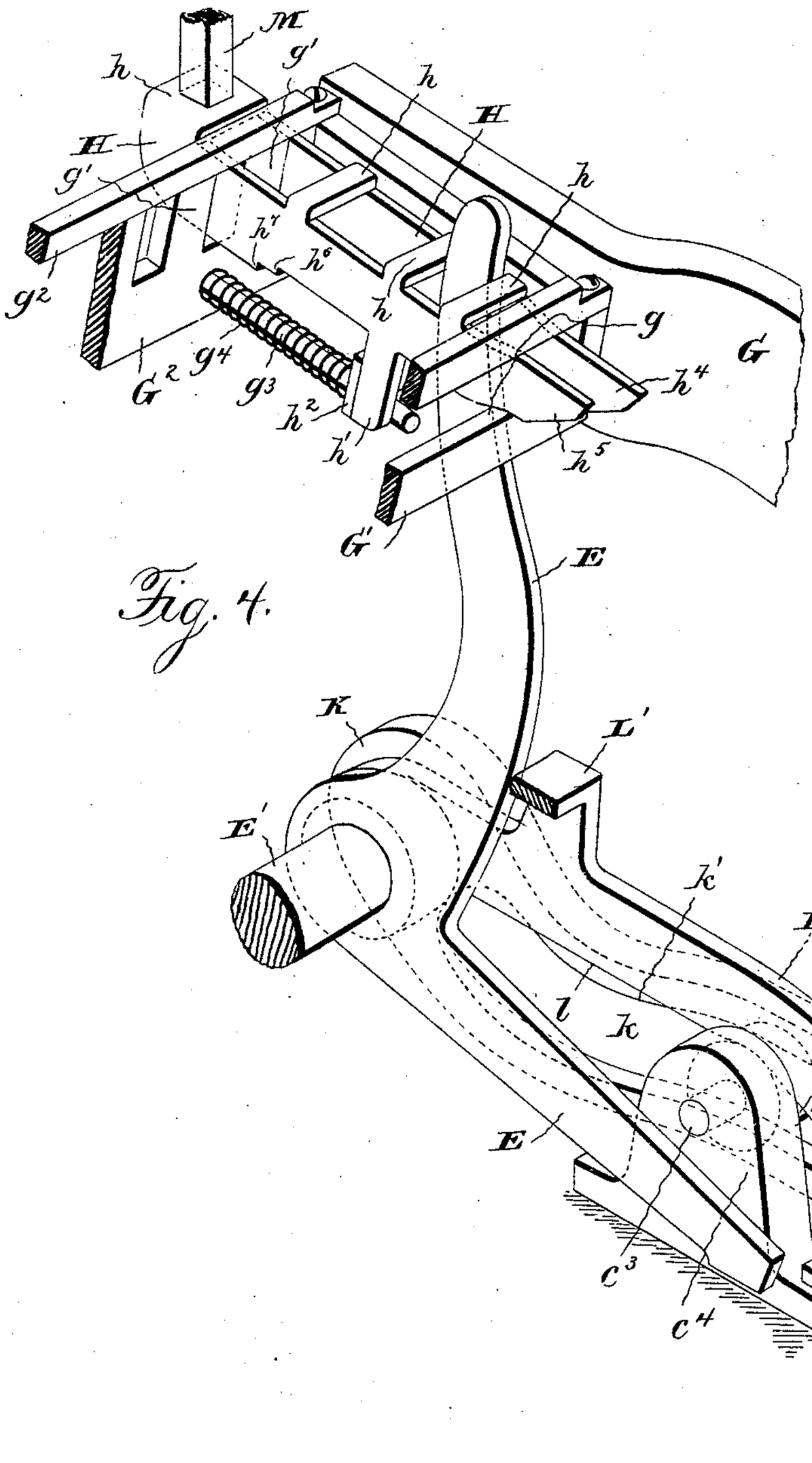

Fig. 4.

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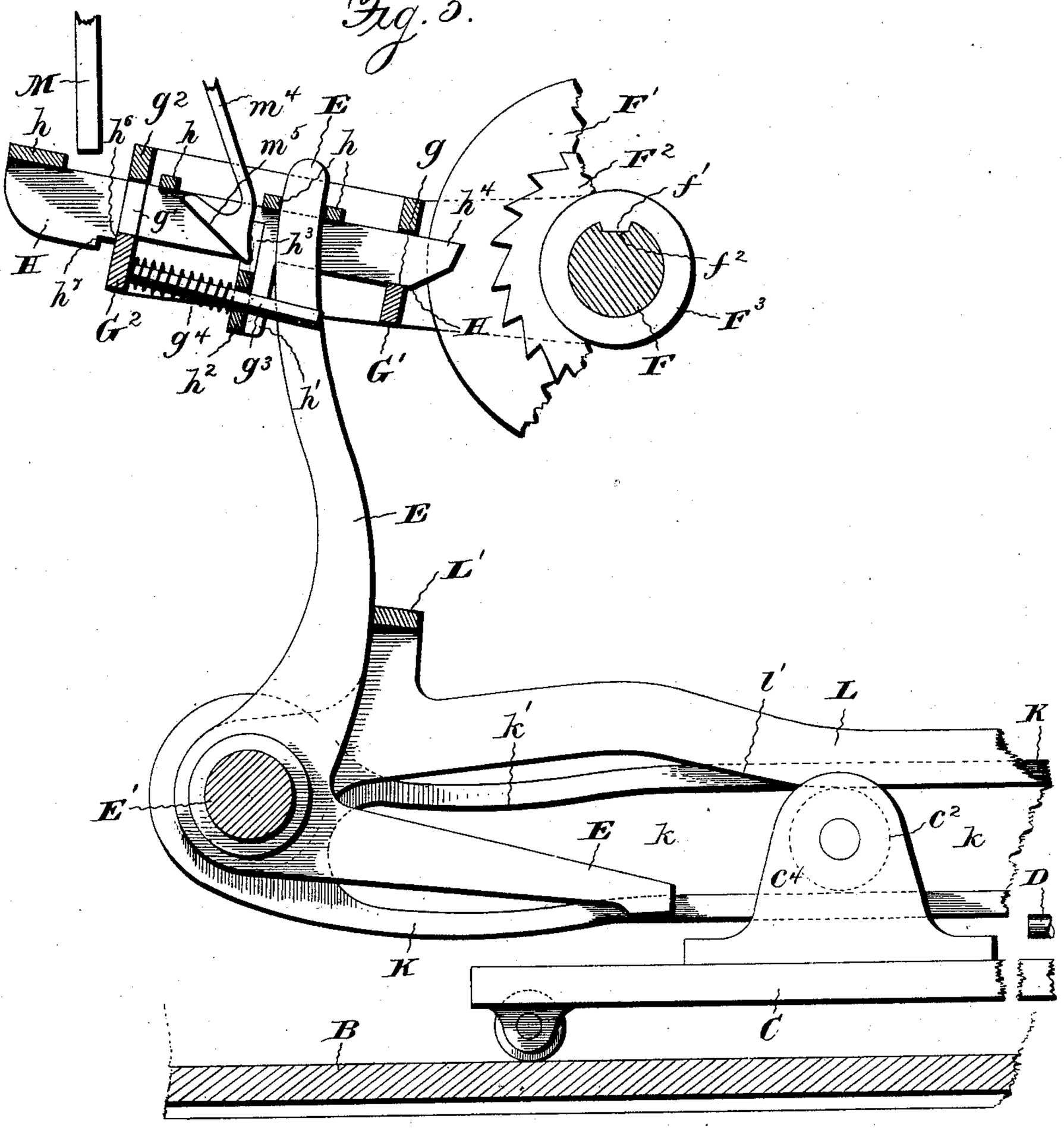
Fig. 5.



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(No Model.) 7 Sheets—Sheet 6.

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CASH REGISTER AND INDICATOR.

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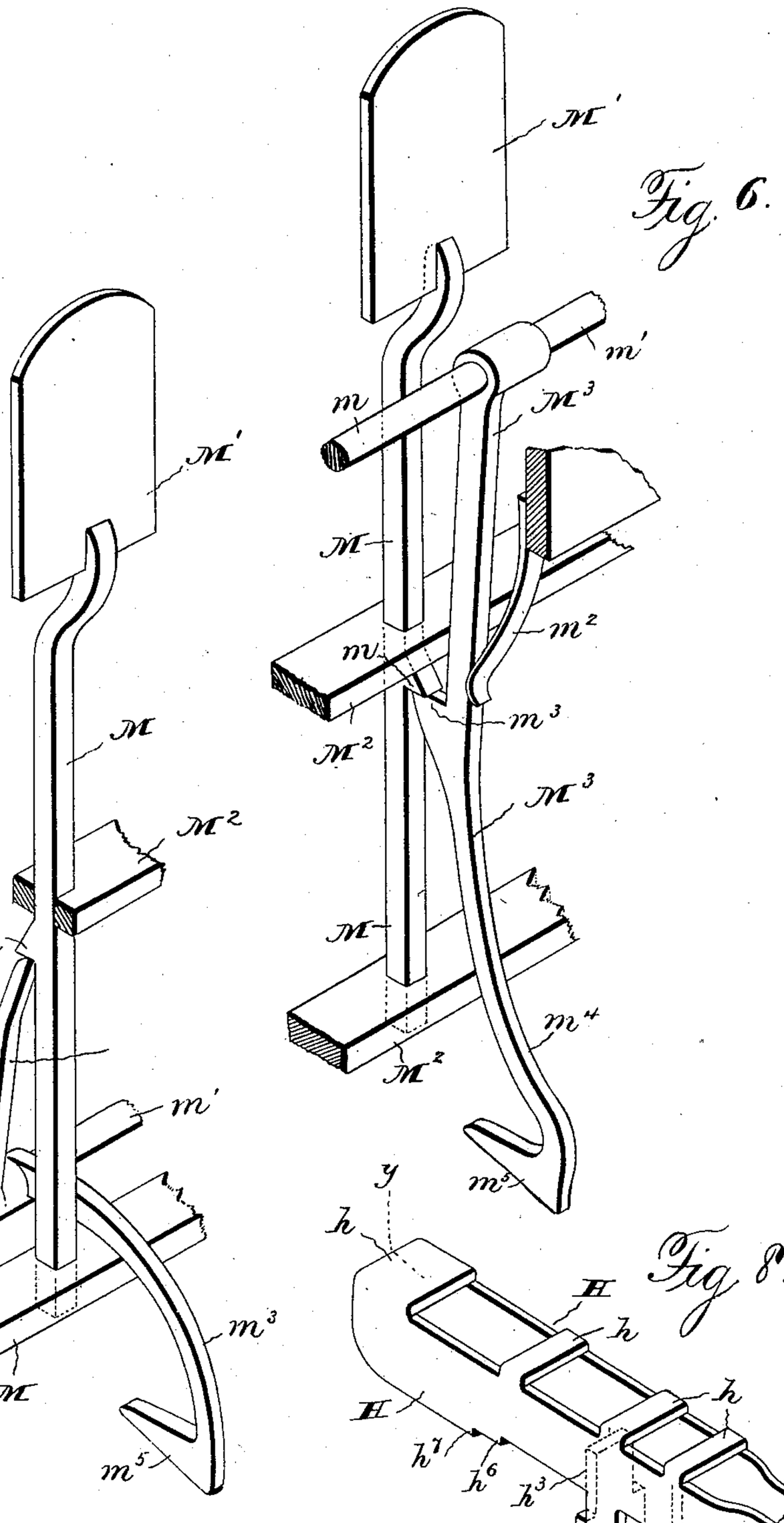

Fig. 6.

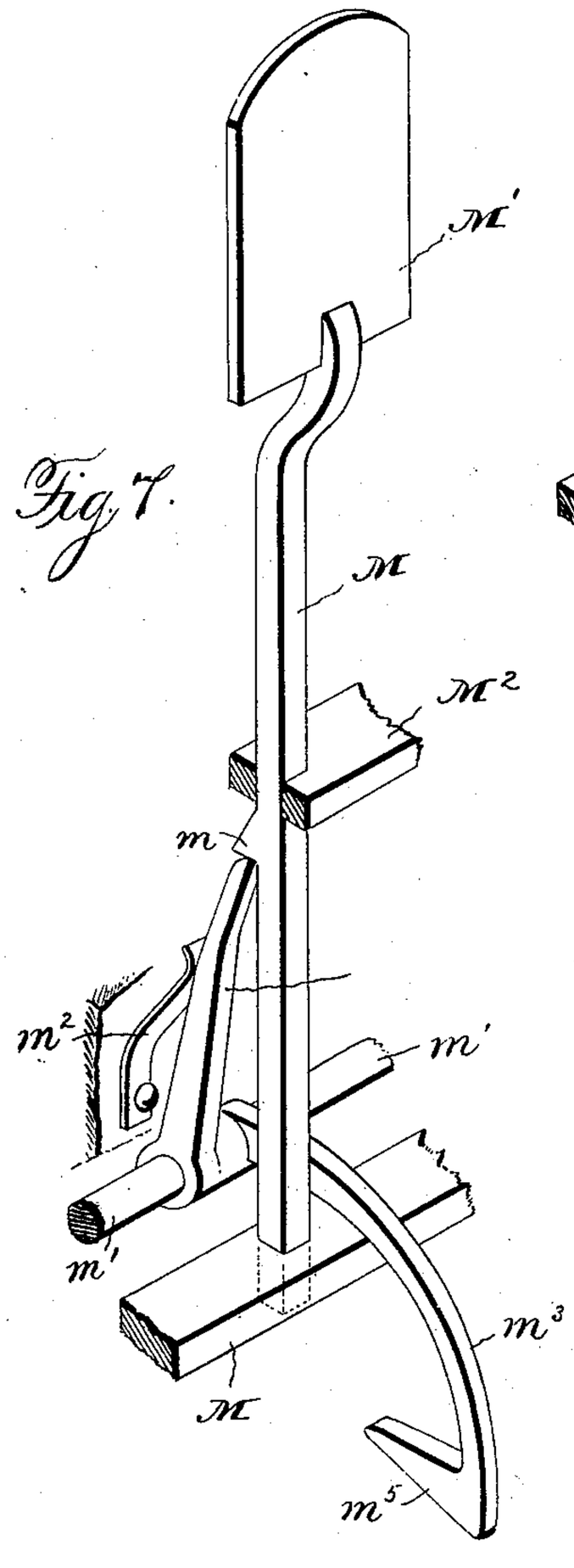

Fig. 7.

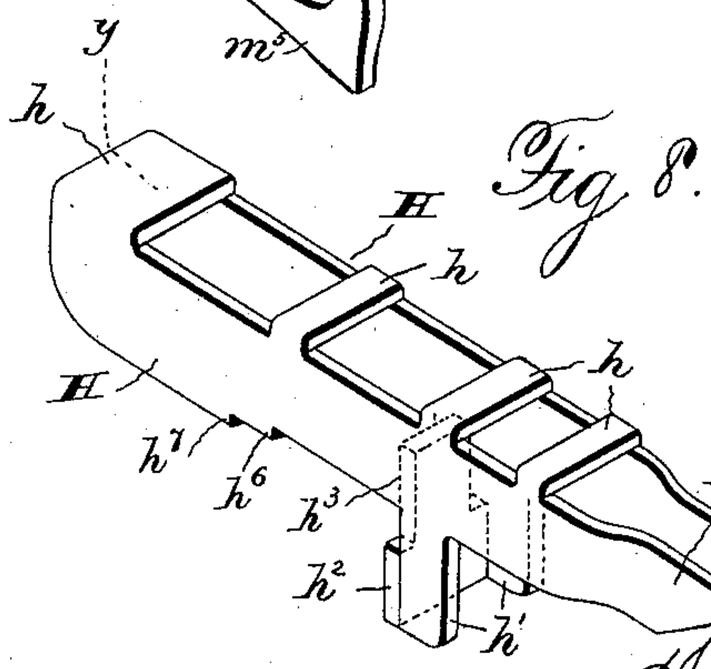

Fig. 8.

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G. L. BARNES.

CASH REGISTER AND INDICATOR.

No. 568,081. Patented Sept. 22, 1896.

Fig. 9.

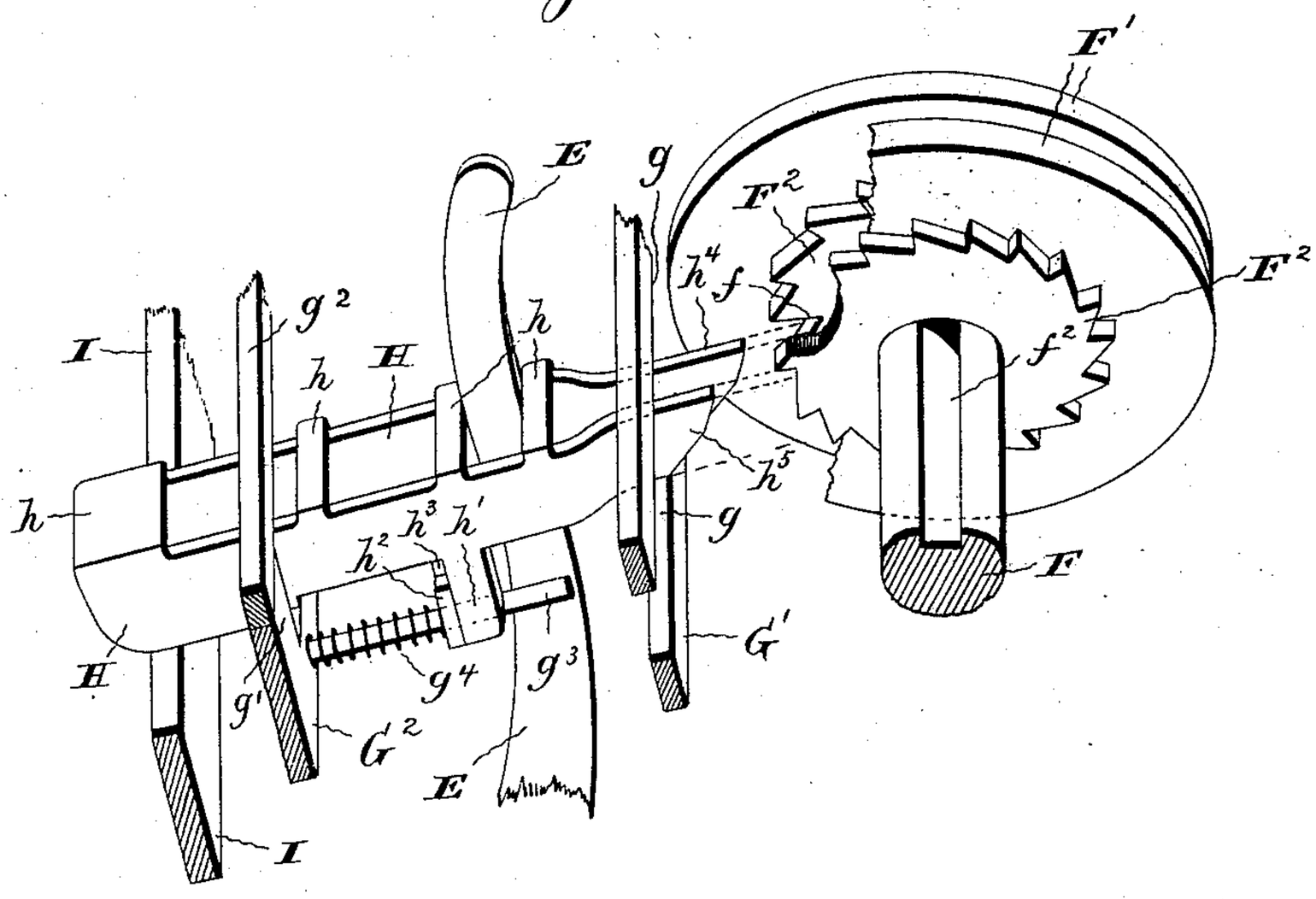
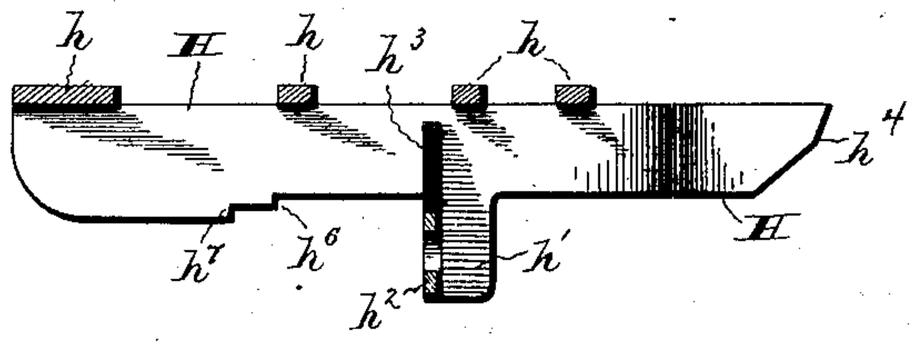


Fig. 10.



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UNITED STATES PATENT OFFICE.

GEORGE L. BARNES, OF MONTOWESE, CONNECTICUT.

CASH REGISTER AND INDICATOR.

SPECIFICATION forming part of Letters Patent No. 568,081, dated September 22, 1896.

Application filed January 7, 1896. Serial No. 574,647. (No model.)

To all whom it may concern:

Be it known that I, GEORGE L. BARNES, of Montowese, town of North Haven, in the county of New Haven, and in the State of Connecticut, have invented certain new and useful Improvements in Cash Registers and Indicators; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 shows a view of a vertical section of my machine on line *x x* of Fig. 3, the parts being shown in full lines in the positions which they occupy before the beginning of a registering and indicating operation and in dotted lines in the positions which they assume when a key has been moved to set the machine for securing a registration and indication by the opening of the drawer; Fig. 2, a similar view with the parts shown in full lines in the positions occupied by them at the completion of a registration and indication and in dotted lines in the positions to which they are moved by continued outward movement of the drawer; Fig. 3, a plan view of the machine with the drawer-tray or cash-receptacle removed and the casing partly removed and partly shown in section; Fig. 4, a detail perspective view, on an enlarged scale, showing a portion of the register-actuating and indicator-rod-lifting devices, the register-wheels being removed; Fig. 5, a detail view showing, partly in section and partly in elevation, on an enlarged scale, a portion of the register-actuating and indicator-rod-lifting devices with the parts in position as when the retractor has been moved to retract the pawl-engaging levers; Fig. 6, a detail perspective view showing, on an enlarged scale, a portion of the means for holding up and causing the release of any raised indicator-rod; Fig. 7, a view of a different form of such means; Fig. 8, a detail perspective view showing, on an enlarged scale, one of the register and indicator-rod actuating pawls; Fig. 9, a detail perspective view, on an enlarged scale, showing the operation of one of the pawls in connection with the ratchet-wheels of the respective pair of register disks or wheels; and Fig. 10, a view of a longitudinal section of one of the pawls on line *y y* of Fig. 8.

Letters of like name and kind refer to like parts in each of the figures.

The object of my invention has been to provide an improved registering and indicating machine; and to this end my invention consists in the machine and in the construction, arrangement, and combination of the parts thereof, as hereinafter specified.

My present invention relates to that class of cash registers and indicators in which the keys are used to secure the setting of the machine for obtaining any desired registration and indication, and the movement of the drawer or other movable part of the till is utilized to cause the registration and indication for which the machine has been set by movement of the proper key; but I do not intend to limit myself in my invention to cash registers and indicators or to the employment of a movable part of the till for actuating the registering and indicating devices.

My improved mechanism is applicable for use in any registering, indicating, or registering and indicating machine, and any other movable frame may be used to cause completion of the registration or indication, or both, instead of a drawer or other movable part of the till.

In the drawings, A designates the frame for supporting the operative parts of the machine, and B designates the casing, which can be of any desired form, construction, and material. As usual in the casings of cash registers and indicators it has the elevated part B′, provided in its front and rear sides with the sight-openings B^2 B^2, through which the display-tablets on the indicator-rods, to be hereinafter described, can be seen when the respective rods are raised to their indicating positions.

Sliding in guides in the lower part of frame A is the drawer, consisting of the bottom frame C, the cash-holding tray or receptacle C′, and the upright front plate C^2. Upon this drawer I mount the series of sliding keys D D, corresponding in number with the different registrations and indications to be made by the machine. The outer ends of these keys, passing out through openings in the front plate C^2 of the drawer and having

on them the operating knobs or finger-pieces *d d*, marked to correspond with the indications to be secured after the movement of the respective keys to set the machine, are preferably arranged in two series, one higher up on plate C^2 than the other. At a short distance to the rear of such plate the keys, which are in the form of rods, are bent abruptly and extend downward to a point near the upper face of the drawer-bottom frame C. At this point they are bent abruptly in the other direction, and from this second bend they extend inward over the drawer-bottom frame, passing on the way through the guide-plates *c* and *c'*. Surrounding a portion of each of these keys, to the rear of the guide-plate *c*, is a helical spring *d'*, which, at its forward or outer end, engages a washer d^2, loosely placed on the key-shank and resting against the guide-plate *c*. The inner or rear end of such spring engages the downturned end portion d^3 of plate d^4, such end portion having an opening d^5, through which the key-shank passes. The forward or outer portion of this plate is slotted to permit the passage of the upright part of the key between the two described bends in the latter, the forward end of the slot d^6 engaging the outer side of such upright part. Near their forward or outer ends all of these plates d^4 d^4 rest upon the supporting-plate d^7, attached to the part C of the drawer and extending across between the keys and the plates d^4 d^4. These plates, constructed and combined with the keys and springs, as described, serve to transmit the stress of the springs to the keys in such way that the keys will be held normally drawn inward and will be quickly returned by the power of the springs when they have been drawn outward, with reference to the drawer, and are released and left free to move inward again.

The rear or inner ends of the keys project well beyond the rear face of guide-plate *c'*, so as to extend past the forward ends of the forwardly-extending arms of levers E E when the keys are unretracted and the drawer is closed or at the limit of its inward movement within the frame A. These levers, of which there is one for each key D, have, besides the forwardly-projecting arms above referred to, upwardly-extending ones, for a purpose to be described. A fixed transverse shaft E', supported at its opposite ends in the sides of frame A, serves as a fulcrum for these levers, which are journaled upon it, so that their forwardly-extending lower arms are in the same vertical planes with the respective keys and rest upon such keys when the drawer is closed and the levers are in their normal positions, as when the machine is ready for a registering and indicating operation.

Upon a transverse shaft F, extending across in front of the upright arms of the series of levers E E and supported at its opposite ends in frame A, I journal the series of register wheels or disks F' F', of which there are two for each lever, one being a primary wheel to be given a step-by-step movement each time that the respective key has been actuated and the drawer or other movable frame used in place of the drawer is pulled out, and the other being a secondary or transfer wheel to be moved one step for each complete revolution of the primary wheel. While these wheels can be supported and journaled on the shaft in any desired way without departure from my invention, I prefer to arrange them as shown in the drawings. (See Figs. 1, 2, and 3.)

Each wheel has attached to one side a ratchet-wheel F^2, having twenty teeth to be engaged by an actuating-pawl to be described. The spaces between these teeth on the ratchet-wheel rotating with each primary register-wheel F' are not all of the same depth, one of them, *f*, being made deeper than the others, for a purpose to be set forth hereinafter.

Washers F^3, held from rotation on the shaft F by a lug *f'* on the washer engaging the groove f^2 in the shaft, are placed between the side of each register-wheel F' and the ratchet-wheel F^2 on the adjoining register wheel or disk. Such washers serve not only to keep the register wheels or disks separate, so that the actuating-pawls can pass in between them to reach the ratchet-wheels, but also, because of their being held from rotation on the shaft, to prevent the movement of one wheel from causing rotation of the next one. They are also used to bring such friction to bear upon the wheels as will surely prevent accidental movement of the wheels or over-registration during operation of the machine. For this purpose I use yielding means for forcing the series of wheels with interposed non-rotatable washers together.

The shaft F is near one end threaded to receive the screw-nut F^{12}, which engages a loose collar F^4 on the shaft. Between such collar and another one, F^5, bearing against the washer F^3, which engages the ratchet-wheel on the end one of the register-wheels F' F', is the helical spring F^6, which, being compressed by the screw in the nut F^{12}, exerts its force to crowd the wheels and washers together, so as to cause the desired friction of the washers against the register-wheels and the ratchet-wheels rotating with them.

Upon shaft F, beyond the opposite ends of the series of register-wheels and close to the sides of frame A, I journal the arms G G, forming part of a swinging frame which has, besides such arms, two parallel plates G' G^2, rigidly connected at their opposite ends with the arms. Of these plates, both of which are situated to the rear of the series of register-wheels, the forward one G' has a longitudinal slot *g* for the passage of the register-actuating pawls H H, the lower side of such slot serving as a support for the forward portions of the pawls. As shown in the drawings, (see Figs. 3, 4, 8, and 10,) each of these pawls consists of two side plates having their upper edges con-

nected by cross-pieces h, preferably formed in one piece with the side plates.

To the rear of plate G′ the pawls are supported upon the plate G^2 of the swinging frame, being guided in their forward and back sliding on such plate by portions g' g' of the latter extending up between the side plates of the pawls.

To keep the pawls from swinging upward out of engagement with the guides g' g', I fix to the upper edge of plate G^2 the bar g^2, situated far enough above the part of plate G^2, upon which the pawls normally rest, to allow some up and down swinging of the rear portions of the pawls. Each pawl has extending down from each of its side plates at a point between the plates G′ and G^2 an arm h', against which bears a plate h^2, which is loosely mounted upon a pin g^3, attached to and extending forward from the plate G^2 between and past the two arms on the pawl. A helical spring g^4 on each of these pins g^3 g^3, pressing at its rear end against plate G^2 and at its forward end engaging the respective plate h^2, forces the latter against the pawl-arms, so as to press the pawl forward toward the register ratchet-wheels.

A tongue h^3 on the plate h^2, projecting up between the side plates of the pawl, serves to keep the plate steadied in proper relation to the pawl-arms h' h'. The latter are made of such length and the point of application of the power of the spring to them is made so far below the level of the part of plate G′, upon which the forward portion of the pawl is supported, that the stress of the spring tends to swing the pawl down toward the supporting part of plate G^2, and will, when the pawl is free to swing downward, hold the rear portion thereof seated upon the latter plate.

The forward ends of the side plates of each pawl are shaped into noses h^4 and h^5 to engage the teeth of the ratchets on the primary and secondary register-wheels, respectively. The nose h^4 to engage the ratchet of the primary wheel is made longer than the other nose h^5, so that as it is in engagement with primary ratchet-wheel the nose h^5 cannot reach the secondary ratchet-wheel until the nose h^4 passes into the deep notch f in the primary wheel. Both noses will then be in engagement with their respective ratchet-wheels, and an upward swing of the frame G G G′ G^2, upon which the pawl is supported, will cause both of said wheels, with their connected register-wheels, to turn together through one of their step-by-step movements of rotation. In this manner the secondary register-wheel will be turned through one step at each full revolution of the respective primary wheel, and the registration will be carried from the primary to the secondary wheel.

Preferably each primary wheel is to have its ratchet-wheel formed with twenty teeth, the periphery of the primary wheel being provided with a series of twenty markings, which, beginning with zero, are made successively larger and larger by a difference equal to the amount or unit marked upon the head d of the respective key D. The secondary register-wheel has its markings, also twenty in number, beginning at zero and increasing successively by the amount indicated by the highest figure or marking on the primary wheel and running to twenty times such amount.

Two of the cross-pieces h h on each pawl H serve as bearings to engage the front and rear sides of the upwardly-extending arm of one of the levers E E, so that the pawl cannot move toward or from the ratchets on the register-wheels without a corresponding movement of the lever-arm.

The part of each lever-arm which is engaged by the cross-pieces h h as the swinging frame G G′ G^2 is swung about the shaft F as an axis is curved, so that when the lever-arm is swung forward and the connected pawl is in position to engage and actuate a ratchet-wheel of the registering mechanism, as hereinbefore described, the curved portion will have its front and rear edges substantially concentric with the ratchet-wheel and the curved path followed by that part of the swinging frame which supports the pawl.

Each pawl has the under sides of its side plates provided with a shoulder h^6, adapted to engage the plate G^2 and hold the pawl and the lever-arm connected therewith far enough retracted to raise the other forwardly-extending arm of the lever above the level of the rear end of the respective key D, so that as the drawer is being closed the key end will pass in under the latter lever-arm in position to receive and support it, when the pawl is tripped to disengage its shoulder h^6 from plate G^2 and is moved forward by the spring g^4.

There is a second shoulder h^7 on each pawl side plate to the rear of shoulder h^6, which, when it engages the plate G^2 on the swinging frame, will hold the pawl sufficiently retracted to keep it out of engagement with any ratchet-wheel of the registering devices.

The helical spring g^4 for each pawl, acting upon the latter in the manner hereinbefore described, not only serves to throw the pawl forward into register-actuating position when the body or rearward part of the pawl is held up to raise both of its shoulders h^6 and h^7, so that they cannot strike the plate G^2, but also when either shoulder is in engagement with the plate will tend to hold the pawl down, so as to maintain such engagement.

The two shoulders h^6 and h^7 are preferably arranged, as shown, with the latter one starting from the level of the lower end of the other, so that there is nothing to prevent the pawl, when the shoulder h^7 is in engagement with plate G^2, from being slid rearward to carry the shoulder h^6 to the rear of the plate. When the pawl is so moved, the spring g^4 at once draws it down to bring the face of the shoulder down behind the plate.

To the rear of the swinging frame G G G′ G^2 is the cross-bar I, attached at its opposite ends to frame A and having its upper edge situated so as to arrest and hold up the rear portions of the pawls H H just before the swinging frame reaches the limit of its downward movement. When such frame is down in its normal position, this bar will, as shown in Fig. 1, hold the pawls swung up with reference to plate G^2, so that even the lowest shoulder h^7 on a pawl cannot engage the plate if the key D corresponding to such pawl is pulled out to release the arm of the respective lever E and the pawl is thrown forward by the spring g^4 to carry it into register-actuating position.

As soon as the swinging frame has moved a short distance upward, and before the forwardly-projecting arms of the levers E E (the keys for which have not been moved) are left free to drop by the outward movement of the supporting-keys with the drawer-frame C, the pawls connected with such levers, being no longer supported by the trip-bar I, will be swung down by their springs g^4 g^4, to bring the shoulders h^7 h^7 into engagement with plate G^2, so that such pawls will be held positively retracted, away from their ratchet-wheel-engaging positions, as the frame G G G′ G^2 continues its upward movement to cause registration and indication corresponding to any key that has been pulled out to release its lever E before the drawer or other frame, used in place thereof, to cause operation of the machine, is moved.

The operative connections between such drawer or frame I prefer to make as shown in the drawings. They consist of two long levers K K, pivoted upon the shaft E′ beyond the opposite ends of the series of levers E E, and each having on its inner side a cam-groove *k*, engaged by a roller c^2, journaled on a stud c^3 on an arm c^4, attached to drawer-frame C. At its rear or inner end each of such grooves is arranged so that the engagement of the roller c^2 with it, while the drawer is closed, will hold the lever K swung up, as shown in Fig. 1. From the part then engaged by the roller the groove *k* is inclined upward and forward, so that as the roller is moved outward by the pulling out of frame C the lever will be cammed down to the position in which it is shown in Fig. 2. From the forward end of its short inclined part *k′* the groove *k* extends in a straight line, so that the lever will be held from further movement in either direction as the outward movement of frame C is continued and the roller c^2 passes out along the groove. Each of these levers K K is connected by a link K′ with the forward part of one of the arms G G of the swinging frame supporting the pawls H H. The inclined part *k′* of each groove *k* is made of such length that the movement of the arm K, as the roller c^2 passes over such part, will be sufficient to cause the frame G G G′ G^2 to swing far enough to cause any one of the pawls H H which may be in engagement with one of the ratchet-wheels of the register to move such wheel through the space of one tooth.

To secure the withdrawal of any pawl H which has been in engagement with any ratchet wheel or wheels during the upward swing of frame G G G′ G^2 and the retraction of all of the pawls and connected levers E E to raise the lower arms of the latter above the plane of the tops of the keys D D before the latter are brought into their normal positions by inward movement of frame C, I journal upon shaft E′, between the ends of the series of levers E E and the levers K K, the arms L L, which are connected by a cross-bar L′, extending across in front of the levers E E. These arms L L rest upon the rollers c^2 c^2 and have a straight portion at *l l*, along which the rollers can travel without raising the arms. These straight portions are of such length as to engage the rollers while the latter are passing along through the inclined parts *k′ k′* of grooves *k k* on levers K K. Just beyond such straight portions the arms L L are bent downward to form the cam-inclines *l′ l′* in the path of the rollers and so shaped that the latter will, as the movement of the drawer or frame C is continued, cam the arms L L quickly upward to bring the cross-bar L′ against any forwardly-swung lever E and force it back to retract the pawl H, connected therewith, when the frame G G G′ G^2 has been raised to complete a registration, in the manner hereinbefore indicated.

The cam-inclines *l′ l′* are of such shape and length that they will, by the engagement of the rollers c^2 c^2 with them, cause the bar L′ to be moved back far enough to retract all of the pawls to bring the forward shoulders h^6 h^6 on the latter to the rear of the plate G^2. The pawls will then tend of their own weight to drop, so as to bring such shoulders down behind the plate; but the springs g^4 make sure of such dropping. With the pawls so retracted and having their rear ends swung down to bring their shoulders h^6 h^6 below the portion of the plate G^2 upon which the pawls slide, as shown in Fig. 5, the pawl will, when the respective levers E E are subsequently released by bar L′, be held retracted against the stress of their springs by the shoulders engaging the rear side of the plate.

Beyond the inclines *l′ l′* the lower edges of the arms L L are made straight, so that they will remain without further movement while the rollers c^2 c^2 are traveling farther outward with the frame C and until such rollers reach the inclines again on their inward travel as the frame C is returned in closing the drawer. As soon as the rollers begin to pass inward along the inclines the arms L L drop and the cross-bar L′ moves forward to release the arms of levers E E and allow the pawl-shoulders h^6 h^6 to engage the plate G^2, so that the respective levers will, because of the engagement of the cross-pieces *h h* on the pawls with the forward sides of their upwardly-extend-

ing arms, be held swung back to raise the ends of their other lower arms above the planes of the tops of the keys D D, so that the latter can pass freely rearward under the respective lever-arms.

Because of the curvature of the upwardly-extending lever-arms described hereinbefore, and shown in the drawings, the levers E E will be retained in their retracted positions by the pawls H H as the frame G G G′ G² swings downward toward its normal position (shown in Fig. 1) and until the trip-bar I causes disengagement of the pawl-shoulders from plate G². Before such disengagement the keys D D will, by the inward movement of the frame C, carrying them, be brought into position with their rear or inner ends under the lower arms of the respective levers, so that as the latter are swung by the forward movement of the released pawls under stress of their springs g^4 g^4 the extent of their swinging will be limited by the keys which will be engaged by and will support the lever-arms in their normal positions ready for the operation of the machine to secure a new registration and indication.

The same pawls which are used in the manner set forth hereinbefore for actuating the registering devices serve to actuate the indicators to cause an indication corresponding to each registration made. These indicators, as shown, consist of the upright rods M M, carrying on their upper ends the targets or tablets M′ M′ to be displayed through the sight-openings B² B² when the rods are raised to indicating position. These targets or tablets are provided with markings corresponding with those on the respective keys D D. The rods are guided in suitable guide-openings in cross-plates M² M², secured to frame A. The rear cross-pieces *h h* on the pawls H H are used as tables to engage the lower ends of the rods and raise them as the frame G G G′ G² is swung upward to cause a registration to be made. These rod-engaging tables are so situated on the pawls as to stand to the rear of the indicator-rods while the pawls are retracted out of engagement with the registering devices and to be brought under the rod ends by the forward movement of the pawls, which bring the latter into engagement with their ratchet-wheels.

While the pawls are held back by the levers E E, as shown in Fig. 1, or by the engagement of either of the shoulders h^6 h^7 with plate G² the forward edges of their above-described tables stand in a vertical plane to the rear of the indicator-rods, which are situated over the space between the side plates of the respective pawls.

With the construction described above and none of the keys moved to release their respective levers E E an upward swing of the frame G G G′ G² could not cause the raising of any indicator-rod, for the forward edges of the tables on the pawls would pass up to the rear of the rods, but if any lever E be released by the pulling out of its key D its pawl H will be thrown forward by the spring g^4, so that it will be in position to actuate its registering device and its table will be brought under the rod to be raised. An upward swing of the frame G G G′ G² will then cause the pawl to actuate both the rod and register to raise the indicating-tablet on the rod up to the sight or display openings B² B², so that an indication corresponding to the key which has been moved will be made at the same time that the registration is.

To retain any indicator-rod in its raised indicating position when the frame G G G′ G² descends during the closing of the drawer and keep it so raised to indicate to the observer the nature of the last registration and indication made by the machine, I provide each indicator-rod with a ratchet-shaped lug or shoulder *m*, having its abrupt face on its under side and having a retaining-pawl M³ to engage each of such shoulders when the respective indicator-rod has been raised into indicating position. These pawls, which I prefer to have on the forward or front side of the series of indicator-rods, as shown in Figs. 1, 2, 3, and 6, are pivoted on a cross-rod *m′*, suitably supported in frame A, or from any other support within casing B, and are pressed toward the respective indicator-rods by springs m^2 m^2.

Each pawl has a ratchet-shaped lug or shoulder m^3 to engage the lug or shoulder *m* on its rod and a downwardly-projecting arm m^4, having on its lower end the toe m^5, having its under side inclined upward and rearward. On each pawl H is another cross-piece *h*, situated between the other cross-pieces which engage the arms of levers E E, as hereinbefore described, and the table for raising the indicating-rod, the position of this cross-piece being such that it will, as the pawl is raised by the upward swing of the frame G G G′ G², engage the inclined under side of the toe m^5 on the respective rod-holding pawl M³, so as to trip the latter and cause it, if it is holding up its respective rod, to release the same and let it drop. The situation of this pawl-tripping cross-piece is also such that it will pass by the extreme rear end of the pawl-toe m^5 when the pawl H, bearing the cross-piece, has been moved rearward on frame G G G′ G² far enough to bring the shoulder h^6 on the pawl to the rear of the plate G². Just above toe m^5 the arm of the rod-holding pawl is formed to allow for the swinging of the pawl, after the tripping cross-bar has passed the toe, into position to bring its lug or shoulder m^3 against the indicator-rod, or below the shoulder *m* on the rod, if the latter has been raised. As the frame G G G′ G² descends, then after a registration and indication have been made and when the drawer is being closed any raised indicator-rod can only drop far enough to bring its shoulder *m* into engagement with the shoulder or lug of its holding-pawl, which will

keep the rod from falling below its indicating position.

As all of the pawls II II are, by the hereinbefore-described action of the retracting-frame L L L′ upon levers E E, retracted so as to bring their forward shoulders h^6 h^6 into engagement with the rear side of plate G^2 before the frame G G G′ G^2 begins to descend, the cross-pieces h h for tripping the indicator-rod-holding pawls will all be in position to pass down to the rear of the pawl-toes m^5 m^5 without moving the pawls M^3 M^3 during the return of frame G G G′ G^2 to its normal depressed position.

The drawer is provided with a lock adapted to be tripped by the movement of any key beyond the amount necessary to release the respective lever E to set the machine for a registration and indication in the manner hereinbefore described. This lock consists of a swinging frame pivoted upon the drawer or a part of the frame thereof and having a transverse bar N extending across in front of the upright portions of keys D D and an arm n provided with a shoulder n' to engage a stop n^2 on the casing B. A spring n^3 serves to keep this frame swung so as to hold the arm n in position for its shoulder n' to engage the stop n^2 when the drawer is closed. The bar N then stands at a distance from the upright portions of the keys sufficient to allow any key to be pulled out to release its lever E before the lock is tripped to disengage the shoulder n' from the stop.

If desired, any suitable one of the well-known key-arresters in use in cash registers and indicators and type-writers to prevent the operation of more than one key at a time, or where the keys are divided into subseries of more than one key in any one of such series, can be employed in combination with the keys of my machine. Such an arrester could be placed in position to be engaged by and to operate upon the abruptly upward-extending portions of the keys between the two bends in the latter just to the rear of the front plate C^2 of the drawer-frame, all as indicated in my pending application, Serial No. 556,241, filed July 17, 1895.

To sound an alarm each time that the drawer is opened, I provide a swinging striker-lever O, provided with a hammer-head o to strike the bell O′. This lever is pivoted to frame A, and is actuated to strike the bell by a spring O^2. A spring-pawl O^3 on the drawer-frame swings the striker-lever back against the stress of its spring and then passes off of it to allow it to strike the bell.

Preferably the money-tray C′ is made with its forward edge some distance to the rear of plate C^2, so that the tray is not exposed or made accessible in any way until the drawer has been moved far enough to cause the alarm to be sounded in the manner described.

Instead of having the indicator-rod-supporting pawls swung in front of the series of rods, as shown in Figs. 1, 2, 3, 4, and 6, I contemplate arranging them, when desired, as indicated in Fig. 7. The pawl, as shown in such figure, is pivoted upon a fulcrum-rod m' to the rear of the respective indicator-rod and has an upwardly-extending arm to engage the rod-shoulder, which in this case is on the rear side of the rod, and another arm m^3, which, extending forward past the side of the rod, has on its forward end a toe m^5, which, being like the toe on the other form of pawl already described, is adapted to be engaged by the pawl-tripping cross-piece h on the respective pawl II. A spring m^2 serves to press the arm of the pawl which is to engage the rod-shoulder in toward the rod.

The operation of my machine, which will be understood from the foregoing description and the drawings, is briefly as follows: With the drawer closed and the parts in position, as shown in full lines in Fig. 1, the drawer-lock will be in operation to lock the drawer, the levers E E will all have their lower forwardly-extending arms resting upon and supported by the respective keys D D, so that the pawls H H will be held retracted against the stress of their springs, so that their noses cannot engage the respective ratchet-wheels and their indicator-rod-engaging tables stand to the rear of the planes of the rear sides of the rods, the rear ends of the pawls will be held swung up to hold their shoulders h^7 above the plane of the edge of plate G^2, and the indicator-rod which was raised to indicating position during the previous operation of the machine will be held up by the respective retaining-pawl M^3, engaging the rod-shoulder m. If now a key D be pulled out with reference to the drawer-frame so as to release the respective lever E, the pawl H, with which the upwardly-extending arm of such lever is connected, will, by the stress of its spring g^4, be thrown toward its respective primary and secondary ratchet-wheels, so that the longer nose h^4 will pass into a space between the teeth of the primary ratchet-wheel, so as to be in position to engage a tooth on such wheel and move it upward, to turn the wheel, when the pawl is subsequently swung up by the rising of frame G G G′ G^2. Unless the space which the nose h^4 thus enters is the deep one f the shorter nose h^5 on the set pawl will not reach the secondary ratchet-wheel to engage a tooth thereon when the pawl rises. The rising of the pawl will then cause only the primary ratchet-wheel and the register-wheel attached thereto to move. Should the deep notch or space f in the primary ratchet-wheel be in position to receive the longer pawl-nose h^4, the pawl will travel, under stress of its spring g^4, farther toward the ratchet-wheels, so that the shorter nose h^5 can engage a tooth on the secondary ratchet-wheel. When the frame G G G′ G^2 is swung up, the pawl will then cause the primary and secondary register-wheels to turn through one space to bring the next higher marking on the secondary wheel

and the "zero" on the primary wheel around to the reading point or opening. This turning of the two register-wheels together through one space each time that the primary wheel makes a complete revolution is for the purpose of carrying or transferring the registration from the primary to the secondary wheel, so that the highest registration on the primary wheel will be added up on the secondary one in the manner which will be understood by those familiar with registering mechanisms. The forward movement of any pawl H, which takes place when the lever E connected therewith is released by its key D, carries the table on the rear end of the pawl under the lower end of the respective indicator-rod M in position to engage and raise such rod to indicating position, when the pawl is elevated by the upward swing of the pawl-supporting frame G G G′ G^2.

With one of the pawls H set in the manner above described, because of the pulling out of the respective key D to release the lever E, connected with the pawl, if the key be pulled farther out to trip the drawer-lock the drawer will be left free to be drawn outward, either by continuing the pull on the key or by applying power through a handle or some part of the drawer.

If desired, where there is no key-arrester to prevent, any number of the keys may be pulled out far enough to cause setting of their respective pawls before the drawer is opened.

Where the keys are divided up into separate subseries, each having its key-arrester, single keys in the different subseries may be operated far enough to release the respective levers E E and cause setting of their pawls H H ready for causing registrations and indications when the frame G G G′ G^2 rises to carry the set pawls upward.

In the above-indicated way, by manipulation of several keys before the drawer is opened the machine may be set for making any desired combination of registrations and indications simultaneously, when the drawer is subsequently opened.

When the unlocked drawer is drawn outward, the rollers c^2, engaging the inclined parts k' k' of the grooves k k in the levers K K, cam the latter downward to cause the links K′ K′ to swing the frame G G G′ G^2 so as to raise its rearward portion, which carries the pawls H H. The first part of the upward swing of this frame leaves the rear ends of all of the pawls which have been held up by the stop-bar I free to swing down to rest upon the rear plate G^2 of the swinging frame. This will bring the rear shoulders h^7 h^7 on any unset pawls down behind the plate G^2 before the unoperated keys D D corresponding to such pawls have, by the movement of the drawer-frame C, been drawn out from under the levers E E, which are connected with the unset pawls. Such shoulders will then, by their engagement with the plate G^2, when the levers E E are released by the outward movement of the respective unoperated keys, hold the pawls retracted, so that they cannot reach the respective ratchet-wheels or engage the respective indicator-rods. As the outward movement of the drawer-frame and the consequent upward swing of the frame G G G′ G^2 are continued any set pawl will actuate the register in the manner hereinbefore described and will raise the respective indicator-rod M up toward its indicating position, where its tablet or target M′, with its markings, may be seen through display-openings B^2 B^2. As the pawl-supporting frame rises the cross-pieces h h on the pawls H H, which are to trip the indicator-rod-holding pawls M^3 M^3, engage the inclined toes m^5 m^5 on the latter pawls, so that all of the latter will be tripped to insure the release and consequent dropping of any previously-raised indicator-rod. This tripping takes place before the completion of the upward swing of the frame G G G′ G^2. As the pawl-tripping cross-pieces h h are carried above the toes m^5 m^5 the pawls M^3 M^3 are, by the stress of their springs m^2 m^2, thrown quickly toward the respective indicator-rods, so that the pawls for any rod will be sure to stand with its lug or shoulder m^3 under the shoulder m on the rod in position to receive and support such rod-shoulder when the frame G G G′ G^2 descends.

It will be understood that before the drawer has been opened far enough to allow of access of the cash-holding tray from without the bell-striking lever O, having been swung against the stress of its spring by the spring-pawl O^3 on the drawer-frame C, will be released by said pawl and will be swung by its spring O^2 to strike the bell O′.

As the rollers c^2 c^2 reach the ends of the inclined parts k' k' of grooves k k and pass to the straight parts of such grooves the movement of the levers K K and the frame G G G′ G^2 will be stopped and the latter frame will be held stationary in its raised position, while by the continued outward movement of the drawer-frame C the rollers are carried along through the straight portions of the grooves k k extending longitudinally along the levers K K.

As the upward swing of frame G G G′ G^2 is completed, so that any set-pawl H has moved its respective registering device through one space, to complete a registration, the rollers c^2 c^2, passing off of the inclined parts k' k' of grooves k k, engage the inclines on levers L L and force the latter upward to cause the bar L′ to engage and force back the upwardly-extending arms of all of the levers E E, so as to retract the connected pawls until their forward shoulders h^6 h^6 are brought to the rear of the plate G^2 in position to engage the rear side the latter. The weight of the pawls would then tend to swing them down into position to bring the shoulders h^6 h^6 behind the plate G^2 and below that part of the plate upon which the pawls rest, but the springs g^4 g^4 make most sure of this down-swinging.

The described retraction of the levers E E by the bar L′ is sufficient to raise the forwardly-extending key-engaging arms well above the plane of the tops of the keys as the latter move with the drawer-frame. The frame L L L′ is kept in its lever-retracting position during the continued outward movement of the drawer by the straight portions of arms L L resting upon the rollers c^2 c^2.

When the drawer is being closed and the rollers pass rearward under the inclined portions of the arms L L, so that the latter can drop and the bar L′ is swung forward again, the front shoulders h^6 h^6 on pawls H H, engaging the plate G^2 of frame G G G′ G^2, hold such pawls, and, consequently, the levers E E connected with the latter retracted, so that the forwardly-extending lower arms of the levers will be kept raised with their ends above the plane of the tops of the rear ends of keys D D.

Because of the curvature of the upwardly-extending arms of the levers E E the levers will be kept thus retracted by their respective pawls during most of the down-swinging of frame G G G′ G^2, which takes place as the rollers c^2 c^2 pass from the straight parts of grooves k k inward along the inclined parts k' k'.

The described retraction of the levers E E is maintained until after the inner or rear ends of the keys D D have, by the inward movement of the frame C, been caused to pass in under the raised lower arms of the levers. As the movement of the frame C to close the drawer is continued and the frame G G G′ G^2 is caused to swing lower the rear portions of the pawls H H come in contact with the stop-bar I, which, arresting them before the lowest limit of the swing of the frame is reached, causes the shouldered portions of the pawls to be so far separated from the plate G^2 that the pawls are free to be moved forward by their springs g^4 g^4, so as to swing the connected levers E E until the forwardly-extending lower arms thereof rest upon the respective keys D D. The machine is then ready for another registering and indicating operation, the parts being again in the positions as shown in Fig. 1.

The indicator rod or rods, which may have been raised during the operation of the machine just described, will remain held up by the respective pawl or pawls M^3, and the registration or registrations made can be read at the reading-point or through a suitable reading-opening which is usually provided within the casing and is accessible upon opening a door or lid in the latter.

Each pawl H, with its two ratchet-wheel-engaging noses, its cross-pieces h h and rod-engaging table, and its arms h' h', can be made in one piece of a plate of metal cut and struck up to give it the required form, which, as shown in the drawings, is of an inverted-U shape in cross-section, the parallel side plates carrying on their forward ends the ratchet-engaging noses and on their under sides the retaining-shoulders h^6 h^7, constituting the sides of the inverted U. The levers E E, as shown and described, may also be cut or stamped out of metal plates, their hubs being then secured to them in any desired way. The swinging frame G G G′ G^2 is also preferably made of plates of metal, which, having their edges turned in the direction of the greatest strain, as shown in the drawings, will be sufficiently strong, even when made quite thin and light.

My machine, constructed as shown and described, is therefore capable of being made very cheaply, and the operative parts, which are actuated by movement of the drawer-frame, can be made quite light, while being strong enough to resist all strain to which they can possibly be subjected during use of the machine.

The setting of the machine for making a registration and indication is made sure of by any movement of a key sufficient to cause the drawer to be unlocked, and the making of a full registration and indication corresponding to any actuated key, when the drawer is subsequently opened far enough to expose the till-tray to access, is made certain without any chance of failure of the register-actuating and indicator moving, holding, and tripping devices due to wear of the parts, even after long-continued use of the machine.

As indicated hereinbefore, the machine is capable of use for making, simultaneously, any combination of indications and registrations for which it may be set by a pulling out of the respective keys before the drawer is opened. Any key thus pulled out and released will be held from moving back to its normal position again by the end of the arm of the respective lever E abutting against the key end, so that the key will remain visibly retracted until the drawer is moved outward to cause the frame carrying the pawls to begin its upward swing.

Having thus described my invention, what I claim is—

1. In combination with a series of movable registering devices, a movable frame, a series of pawls for actuating the registering devices, movably mounted on the frame, means for moving the pawls into registering-device-engaging position, a series of levers connected with the pawls, and a series of keys to engage the levers, adapted to be moved to release the same, substantially as and for the purpose specified.

2. In combination with a series of movable registering devices, a movable frame, a series of pawls for actuating the registering devices, movably mounted on the frame, springs to move the pawls into registering-device-engaging position, a series of levers connected with the pawls, and a series of keys to engage the levers, adapted to be moved to release the same, substantially as and for the purpose shown.

3. In combination with a series of movable registering devices, a movable frame, a series of pawls for actuating the registering devices, movably mounted on the frame, springs to move the pawls into operative position, a series of levers connected with the pawls, a series of keys to engage the levers, adapted to be moved to release the same, a second movable frame, and connections between the two frames, whereby movement of the second frame causes the other frame to be moved, substantially as and for the purpose set forth.

4. In combination with a series of movable registering devices, a movable frame, a series of pawls for actuating the registering devices, movably mounted on the frame, yielding means tending to move the pawls into position to engage the respective registering devices, a series of levers connected with the pawls, a second movable frame, connections between the two frames, whereby movement of the second frame causes the other frame to be moved, and a series of keys to engage the levers, movably mounted on the second frame, substantially as and for the purpose described.

5. In combination with a series of movable registering devices, a movable frame, a series of pawls for actuating the registering devices, movably mounted on the frame, yielding means tending to move the pawls into position to engage the respective registering devices, a series of levers connected with the pawls, a second movable frame, connections between the two frames, whereby movement of the second frame causes the other frame to be moved, a series of keys to engage the levers, adapted to be moved to release the same, and a retractor to retract the levers with the connected pawls, substantially as and for the purpose specified.

6. In combination with a series of movable registering devices, a movable frame, a series of pawls for actuating the registering devices, movably mounted on the frame, yielding means tending to move the pawls into position to engage the respective registering devices, a series of levers connected with the pawls, a second movable frame, connections between the two frames, whereby movement of the second frame causes the other frame to be moved, a series of keys to engage the levers, adapted to be moved to release the same, a retractor to retract the levers with the connected pawls, and means carried by the second movable frame to actuate the retractor, substantially as and for the purpose shown.

7. In combination with a series of movable registering devices, a movable frame, a series of pawls for actuating the registering devices, movably mounted on the frame, yielding means tending to move the pawls into position to engage the respective registering devices, a series of levers connected with the pawls, a second movable frame, connections between the two frames, whereby the movement of the second frame causes the other frame to be moved, a series of lever-engaging keys movably mounted on the second frame, a retractor to engage and retract the levers with their connected pawls, and means moving with the second frame for actuating the retractor, substantially as and for the purpose set forth.

8. In combination with a series of movable registering devices a movable frame, a series of pawls movably mounted thereon, yielding means tending to move the pawls into position to engage the registering devices, a series of levers connected with the pawls, a second movable frame, connections between the two frames, whereby movement of the second frame causes the first frame to be moved, a series of lever-engaging keys movably mounted on the second frame, a retractor to engage and retract the levers with their connected pawls, and means moving with the second frame for actuating the retractor, substantially as and for the purpose described.

9. In combination with a series of movable registering devices, a movable frame, a series of pawls movably mounted therein, yielding means tending to move the pawls into position to engage the registering devices, a series of levers connected with the pawls, a second movable frame, connections between the two frames, whereby movement of the second frame causes the first frame to be moved, a series of lever-engaging keys movably mounted on the second frame, a retractor having a bar to engage the levers and one or more arms, and means on the second frame for engaging each arm of the retractor, to move it to retract the levers with the pawls connected therewith, substantially as and for the purpose specified.

10. In combination with a series of movable registering devices, a movable frame, a series of pawls movably mounted therein, yielding means tending to move the pawls into position to engage the registering devices, a series of levers connected with the pawls, a second movable frame, connections between the two frames, whereby movement of the second frame causes the first to be moved, a series of lever-engaging keys, movably mounted on the second frame, a retractor consisting of a swinging frame having a transverse bar extending across the series of levers, and one or more arms each provided with an inclined part, and a bearing on the movable frame to engage each of such arms, substantially as and for the purpose shown.

11. In combination with a series of movable indicators, a movable frame, a series of indicator-actuating pawls movably mounted thereon, yielding means for moving the pawls into position to engage and actuate the indicators, as the frame is moved, a series of levers connected with the movable pawls, and a series of movable keys to engage the levers to hold them in position to keep the pawls which are connected with them retracted, such

keys being adapted to be moved to release the levers, substantially as and for the purpose set forth.

12. In combination with a series of movable indicators, a movable frame, a series of indicator-actuating pawls movably mounted thereon, springs to move the pawls into position to engage and actuate the indicators when the frame is moved, a series of levers connected with the pawls, and a series of keys to engage the levers adapted to be moved to release the same, substantially as and for the purpose described.

13. In combination with a series of movable indicators, a movable frame, a series of indicator-actuating pawls movably mounted thereon, yielding means to move the pawls into position to engage and actuate the indicators, when the frame is moved, a series of levers connected with the pawls, a series of keys to engage the levers, adapted to be moved to release the same, a second movable frame, and connections between the two frames, whereby movement of the second frame causes the other frame to be moved, substantially as and for the purpose specified.

14. In combination with a series of movable indicators, a movable frame, a series of indicator-actuating pawls movably mounted thereon, yielding means tending to move the pawls into position to engage and move the indicators, when the frame is moved, a series of levers connected with the pawls, a second movable frame, connections between the two frames, whereby movement of the second frame causes the other frame to be moved, and a series of lever-engaging keys movably mounted on the second frame, substantially as and for the purpose shown.

15. In combination with a series of movable indicators, a movable frame, a series of indicator-actuating pawls movably mounted thereon, yielding means tending to move the pawls into position to engage and actuate the indicators when the frame is moved, a series of levers connected with the pawls, a second movable frame, connections between the two frames, whereby movement of the second frame causes the other frame to be moved, a series of lever-engaging keys movably mounted on the second frame, and a retractor to retract the levers with the connected pawls, substantially as and for the purpose set forth.

16. In combination with a series of movable indicators, a movable frame, a series of indicator-actuating pawls movably mounted thereon, yielding means tending to move the pawls into position to engage and actuate the indicators, when the frame is moved, a series of levers connected with the pawls, a second movable frame, connections between the two frames, whereby movement of the second frame causes the other frame to be moved, a series of lever-engaging keys adapted to be moved to release the same, a retractor to retract the levers with the connected pawls, and means carried by the second frame to actuate the retractor, substantially as and for the purpose described.

17. In combination with a series of movable indicators, a movable frame, a series of indicator-actuating pawls movably mounted thereon, yielding means tending to move the pawls into position to engage and actuate the indicators, when the frame is moved, a series of levers connected with the pawls, a second movable frame, connections between the two frames, whereby the movement of the second frame causes the other frame to be moved, a series of lever-engaging keys movably mounted on the second frame, a retractor to engage and retract the levers with their connected pawls, and means moving with the second frame for actuating the retractor, substantially as and for the purpose specified.

18. In combination with a series of movable indicators, a movable frame, series of indicator-actuating pawls movably mounted thereon, yielding means tending to move the pawls into position to engage and actuate the indicators, when the frame is moved, a series of levers connected with the pawls, a second movable frame, connections between the two frames, whereby movement of the second frame causes the other frame to be moved, a series of lever-engaging keys movably mounted on the second frame, a retractor having a bar to engage the levers, and means on the second frame to engage and actuate the retractor, substantially as and for the purpose shown.

19. In combination with a series of movable indicators, a movable frame, a series of indicator-actuating pawls movably mounted thereon, yielding means tending to move the pawls into position to engage and actuate the indicators, when the frame is moved, a series of levers connected with the pawls, a second movable frame, connections between the two frames whereby movement of the second frame causes the other frame to be moved, a series of lever-engaging keys movably mounted on the second frame, a retractor consisting of a swinging frame having a bar to engage the levers, and one or more arms, and means on the second frame for engaging each arm of the retractor, to move it to retract the levers with the pawls connected therewith, substantially as and for the purpose set forth.

20. In combination with a series of movable indicators, provided with retaining-shoulders, a series of pawls to engage such shoulders, when the indicators are moved into indicating position, a movable frame, and a series of indicator-actuating pawls movably mounted thereon, having portions to engage and trip the indicator-holding pawls, substantially as and for the purpose described.

21. In combination with a series of movable indicators, having retaining-shoulders, a series of indicator-holding pawls, to engage the shoulders, when the indicators are moved into indicating position, a movable frame, a series of pawls movably mounted thereon having

portions to engage and actuate the indicators, and other portions or bearings to trip the indicator-holding pawls, before the movement of the frame, to cause actuation of the indicators, is completed, substantially as and for the purpose specified.

22. In combination with a series of movable indicators, provided with retaining-shoulders, a series of indicator-holding pawls to engage the shoulders, when the indicators are moved into indicating position, a movable frame, a series of pawls movably mounted thereon, having portions to engage and actuate the indicators, and bearings to trip the indicator-holding pawls, and means for moving the indicator-actuating pawls into and out of position to engage and actuate the indicators, when the frame is moved, substantially as and for the purpose shown.

23. In combination with a series of movable indicators provided with retaining-shoulders, a series of pawls to engage such shoulders, when the indicators are moved into indicating position, a movable frame, a series of pawls movably mounted thereon, having tables to engage and actuate the indicators as the frame is moved, and cross-pieces to trip the indicator-holding pawls, and means for moving the indicator-actuating pawls into and out of position to actuate the indicators, as the frame is moved, substantially as and for the purpose set forth.

24. In combination with a series of movable indicators, having retaining-shoulders, a series of indicator-holding pawls adapted to engage the shoulders, when the indicators are moved into indicating position, and having toes with inclined surfaces, a movable frame, a series of pawls movably mounted thereon, each having a table to engage the respective indicator, and a piece to engage the toe on the respective indicator-holding pawl, and means for moving the indicator-actuating pawls on the movable frame, so as to bring the tables on the pawls into and out of position to engage and move the indicators, as the frame is moved, substantially as and for the purpose described.

25. In combination with a movable frame, having an abutment, a series of actuating-pawls movably mounted thereon, each having a shoulder to engage the abutment, so as to hold the pawl retracted from operative position, yielding means tending to move the pawls into such position, a series of levers connected with the pawls, a second movable frame, connections between the two frames, whereby movement of the second frame causes the first frame to be moved, a series of lever-engaging keys on the second frame, and means for holding the shouldered portions of the pawls away from the abutment on the first frame, when the latter is in its normal unmoved position, substantially as and for the purpose specified.

26. In combination with a movable frame, having an abutment, a series of actuating-pawls movably mounted thereon each having a shoulder to engage the abutment, so as to hold the pawl retracted out of operative position, springs to move the pawls into such position, a series of levers connected with the pawls, a second movable frame, connections between the two frames, whereby movement of the second causes the other frame to be moved, lever-engaging keys movably mounted upon the second frame, and means for holding the shouldered portions of the pawls out of engagement with the abutment on the first frame, when such frame is in its normal unmoved position, substantially as and for the purpose shown.

27. In combination with a movable frame, having an abutment, a series of actuating-pawls mounted thereon, each having a shoulder to engage the abutment, so as to hold the pawls retracted out of operative position, yielding means tending to move the pawls into such position, a series of levers connected with the pawls, a second movable frame, connections between the two frames, whereby movement of the second frame causes the first frame to be moved, a series of lever-engaging keys movably mounted on the second frame, and a stop-bar to hold the shouldered portions of the pawls out of engagement with the abutment on the first frame, until such frame has been moved a certain distance from its normal position, substantially as and for the purpose set forth.

28. In combination with a movable frame having an abutment, a series of actuating-pawls mounted on the frame, each having the two shoulders to engage the abutment, yielding means tending to move the pawls into operative position, a second movable frame, connections between the two frames, whereby movement of the second frame causes the other to be moved, a series of levers connected with the pawls, a series of lever-engaging keys movably mounted on the second frame, a stop-bar, to hold the shouldered portions of the pawls up out of position to engage the abutment on the first frame, and a retractor to retract the levers and pawls, when the first frame has been moved, substantially as and for the purpose described.

29. In combination with a rising-and-falling frame having an abutment, a series of pawls mounted so as to slide and be capable of being swung on the frame, each having two shoulders to engage the abutment and hold the pawls retracted out of operative position, the springs to move the pawls into such position, a second movable frame, connections between the two frames, whereby movement of the second frame causes the other frame to be moved, a series of levers connected with the pawls, a series of lever-engaging keys movably mounted on the second frame, the stop-bar to engage the pawls, a retractor to retract the levers and pawls,

and means on the second frame for actuating the retractor, substantially as and for the purpose specified.

30. In combination with a series of movable registering devices, a swinging frame having an abutment, a series of registering-device-actuating pawls, movably mounted on the frame, each having a shoulder to engage the abutment and hold the pawl retracted, yielding means tending to move the pawls toward their registering devices, a second movable frame, connections between the two frames whereby movement of the second frame causes the other frame to be moved, a series of levers connected with the pawls, a series of lever-engaging keys movably mounted on the second frame, a retractor to retract the levers and pawls, and the stop-bar in the path of the pawls, as they move down with the swinging frame, adapted to hold the shouldered portions of the pawls up out of position to engage the abutment, while the swinging frame is down in its normal position, substantially as and for the purpose shown.

31. In combination with a series of movable registering devices, a swinging frame having an abutment, a series of registering-device-actuating pawls movably mounted on the frame, each having two shoulders to engage the abutment on the frame, springs to move the pawls into engagement with the registering devices, a second movable frame, connections between the two frames whereby movement of the second frame causes the other frame to be moved, a series of levers connected with the pawls, a series of lever-engaging keys movably mounted on the second frame, the stop-bar to hold the shouldered parts of the pawls normally up away from the abutment on the swinging frame, and a retractor actuated by the second movable frame to retract the levers and the pawls connected therewith, substantially as and for the purpose set forth.

32. In combination with a series of movable indicators, a swinging frame having an abutment, a series of indicator-actuating pawls movably mounted on the frame, each having a shoulder, yielding means tending to move the pawls into position to engage and actuate the indicators, as the frame is swung, a second movable frame, connections between the two frames whereby movement of the second frame causes the other frame to be moved, a series of levers connected with the pawls, a series of lever-engaging keys movably mounted on the second frame, a stop-bar to hold the shouldered portions of the pawls up out of engagement with the abutment on the swinging frame, while the latter is in its normal position, substantially as and for the purpose described.

33. In combination with a series of movable indicators, a swinging frame having an abutment, a series of indicator-actuating pawls movably mounted on the frame, each having a shoulder, springs to move the pawls into position to engage and actuate the indicators, a second movable frame, connections between the two frames, whereby movement of the second frame causes the other frame to be moved, a series of levers connected with the pawls, a series of lever-engaging keys movably mounted on the second frame, the stop-bar to hold the shouldered parts of the pawls up away from the abutment on the swinging frame, while the latter is down in its normal position, and a retractor to retract the levers and pawls, actuated by the second frame, substantially as and for the purpose specified.

34. In combination with a series of movable indicators, a swinging frame having an abutment, a second movable frame connected with the other so as to actuate the same, a series of pawls movably mounted on the swinging frame each having two shoulders to engage the abutment on the frame, springs to move the pawls into position to engage and actuate the indicators, as the pawl-carrying frame is swung, a series of levers connected with the pawls, a series of lever-engaging keys movably mounted on the second frame, and means for causing retraction of the pawls after the swinging frame has been swung a certain distance, substantially as and for the purpose shown.

35. In combination with a series of movable registering devices, the swinging frame having an abutment, the series of sliding pawls mounted on the frame each provided with an abutment-engaging shoulder, yielding means tending to move the pawls into position to actuate the registering devices, means for holding the pawls normally retracted, a series of movable keys to engage and be disengaged from such means, and a stop-bar to hold the shouldered parts of the pawls normally out of engagement with the abutment on the frame, substantially as and for the purpose set forth.

36. In combination with a series of movable registering devices, a swinging frame having an abutment, the series of sliding pawls mounted on the frame, each having an abutment-engaging shoulder, springs to move the pawls into position to engage and actuate the registering devices, means for holding the pawls normally retracted, a series of movable keys to engage and be disengaged from such means, a stop-bar to hold the shouldered parts of the pawls up out of engagement with the abutment on the swinging frame, and means for causing retraction of any pawl which has been moved into engagement with its registering device, substantially as and for the purpose described.

37. In combination with a series of movable registering devices, a swinging frame having an abutment, the series of sliding pawls mounted on the frame, each having two abutment-engaging shoulders, springs to move the pawls into position to engage and actuate the registering devices, means for holding the pawls normally retracted, a series of

movable keys to engage and be disengaged from such means, a stop-bar to hold the shouldered parts of the pawls up out of engagement with the abutment on the swinging frame, and means for causing retraction of any pawl which has been moved into engagement with its registering device, substantially as and for the purpose specified.

38. In combination with a series of movable indicators, the swinging frame having an abutment, the series of sliding pawls mounted on the frame, each provided with an abutment-engaging shoulder, yielding means tending to move the pawls into position to actuate the indicators, means for holding the pawls normally retracted, a series of movable keys to engage and be disengaged from such means, and a stop-bar to hold the shouldered parts of the pawls normally out of engagement with the abutment on the frame, substantially as and for the purpose shown.

39. In combination with a series of movable indicators, a swinging frame having an abutment, the series of sliding pawls mounted on the frame, each having an abutment-engaging shoulder, springs to move the pawls into position to engage and actuate the indicators, means for holding the pawls normally retracted, a series of movable keys to engage and be disengaged from such means, a stop-bar to hold the shouldered parts of the pawls up out of engagement with the abutment on the swinging frame, and means for causing retraction of any pawl which has been moved into engagement with its registering device, substantially as and for the purpose set forth.

40. In combination with a series of movable indicators, a swinging frame having an abutment, the series of sliding pawls mounted on the frame, each having two abutment-engaging shoulders, springs to move the pawls into position to engage and actuate the indicators, means for holding the pawls normally retracted, a series of movable keys to engage and be disengaged from such means, a stop-bar to hold the shouldered parts of the pawls up out of engagement with the abutment on the swinging frame, and means for causing retraction of any pawl which has been moved into engagement with its indicator, substantially as and for the purpose described.

41. In combination with the swinging frame having an abutment, the series of actuating-pawls mounted on the frame so as to slide thereon, each having an abutment-engaging shoulder, springs to move the pawls on the frame, a series of levers connected with the pawls, a series of movable lever-engaging keys, a stop-bar to hold the shouldered parts of the pawls normally above the abutment before the frame is swung, and a retractor to retract the levers and pawls, substantially as and for the purpose specified.

42. In combination with the swinging frame having an abutment the series of sliding actuating-pawls mounted on the frame, each having two abutment-engaging shoulders, springs to move the pawls on the frame, a series of levers connected with the pawls, a series of movable lever-engaging keys, a stop-bar to hold the shouldered parts of the pawls above the abutment on the frame, while the latter is down in its normal position, and a retractor to retract the levers and pawls, substantially as and for the purpose shown.

43. In combination with the swinging frame having an abutment, the series of sliding pawls mounted thereon each shouldered on its under side, and provided with an arm, springs engaging the arms on the pawls, a series of levers connected with the pawls, a series of movable lever-engaging keys, a stop-bar to hold the shouldered parts of the pawls above the abutment on the frame, when the latter is down in its normal position, and a retractor to retract the levers and pawls, substantially as and for the purpose set forth.

44. In combination with the movable frame having an abutment, a sliding pawl mounted on the frame and having an abutment-engaging shoulder and an arm on its under side, a spring engaging a bearing on the arm, so as to move the pawl on the frame, and tending to hold it down in position to have its shoulder engage the frame-abutment, substantially as and for the purpose described.

45. In combination with a series of movable registering devices, a swinging frame, and a series of registering-device-actuating pawls mounted on the frame, a till having a movable part, a lever having a cam-groove, connections between the lever and the frame, and a bearing moving with the movable part of the till, engaging the cam-groove, substantially as and for the purpose shown.

46. In combination with a series of movable registering devices, a swinging frame, and a series of registering-device-actuating pawls mounted on the frame, a till with a movable part, two levers having cam-grooves, links connecting the levers with the swinging frame, and bearings moving with the movable part of the till, engaging the cam-grooves, substantially as and for the purpose specified.

47. In combination with a series of movable indicators, a swinging frame, a series of indicator-actuating pawls on the frame, a till having a movable part, a lever having a cam-groove, connections between the lever and the frame, and a bearing moving with the movable part of the till, engaging the cam-groove, substantially as and for the purpose set forth.

48. In combination with a series of movable indicators, a swinging frame, a series of indicator-actuating pawls on the frame, a till with a movable part, two levers each having a cam-groove, links connecting the levers with the frame, and means moving with the movable part of the till to engage the cam-grooves, substantially as and for the purpose described.

49. In combination with the swinging frame and the series of actuating-pawls thereon, a series of levers connected with the pawls a

second movable frame, one or more levers with cam-grooves, connections between each of such levers and the swinging frame, means carried by the second frame for engaging the cam-groove in each lever, a retractor consisting of a swinging frame having a bar to engage the levers connected with the pawls, and one or more arms with inclines, and means carried by the second movable frame to engage the retractor arm or arms, substantially as and for the purpose specified.

50. In combination with the swinging frame and the series of actuating-pawls mounted thereon, a series of levers connected with the pawls, a lever having a cam-groove, connections between such lever and the swinging frame, a retractor having a bar to engage the levers connected with the pawls and an arm with an incline, a second moving frame, and means carried thereby to engage the cam-groove and the cam-arm of the retractor, substantially as and for the purpose shown.

51. In combination with the swinging frame, and the series of actuating-pawls mounted thereon, yielding means to move the pawls on the frame, a series of levers connected with the pawls, a lever with a cam-groove, connections between such lever and the swinging frame, the retractor having a cam-arm, a second movable frame, a series of keys movably mounted thereon to engage the levers connected with the pawls, and means carried by the second frame to engage the cam-groove and the cam-arm of the retractor, substantially as and for the purpose set forth.

52. In a machine having a till with a movable part, in combination with a swinging frame and the pawls mounted thereon for actuating parts of the machine, yielding means for moving the pawls on the frame, a series of levers connected with the pawls, a lever with a cam-groove, connections between such lever and the swinging frame, the retractor having a bar to engage the levers connected with the pawls and a cam-arm, a series of keys to engage the latter levers, movably mounted on a support moving with the movable part of the till, and means for engaging the cam-groove and the cam-arm of the retractor, also moving with the movable part of the till, substantially as and for the purpose described.

53. In combination with a series of movable indicators provided with retaining-shoulders, a movable frame, a series of indicator-actuating pawls mounted on the frame, means for moving such pawls into and out of position to engage and actuate the respective indicators, and a series of pawls to engage the retaining-shoulders on the indicators, provided with means to be engaged by portions of the indicator-actuating pawls so that the indicator-shoulder-engaging pawls will be tripped as the frame is moved to move any indicator toward its indicating position, substantially as and for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand this 6th day of December, A. D. 1895.

GEORGE L. BARNES.

Witnesses:
OSWIN H. D. FOWLER,
JOHN S. FOWLER.