

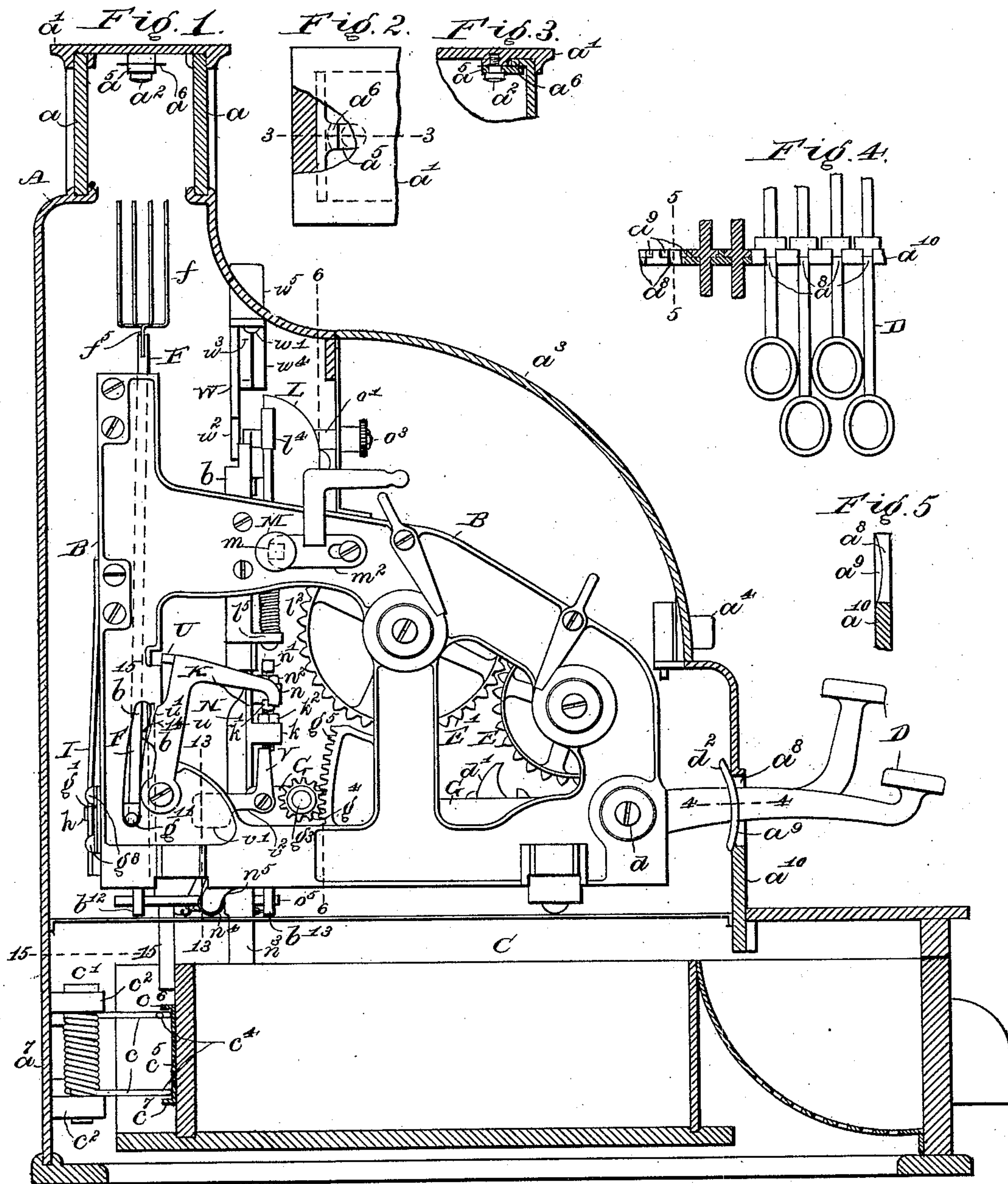
(No Model.)

5 Sheets—Sheet 1.

F. L. BAILEY.
CASH INDICATOR AND REGISTER.

No. 577,395.

Patented Feb. 16, 1897.



WITNESSES.

Kirkley Hyde.
Agnes Bailey.

INVENTOR

Fortune L. Bailey.

By Albert M. Moore,
His ATTORNEY.

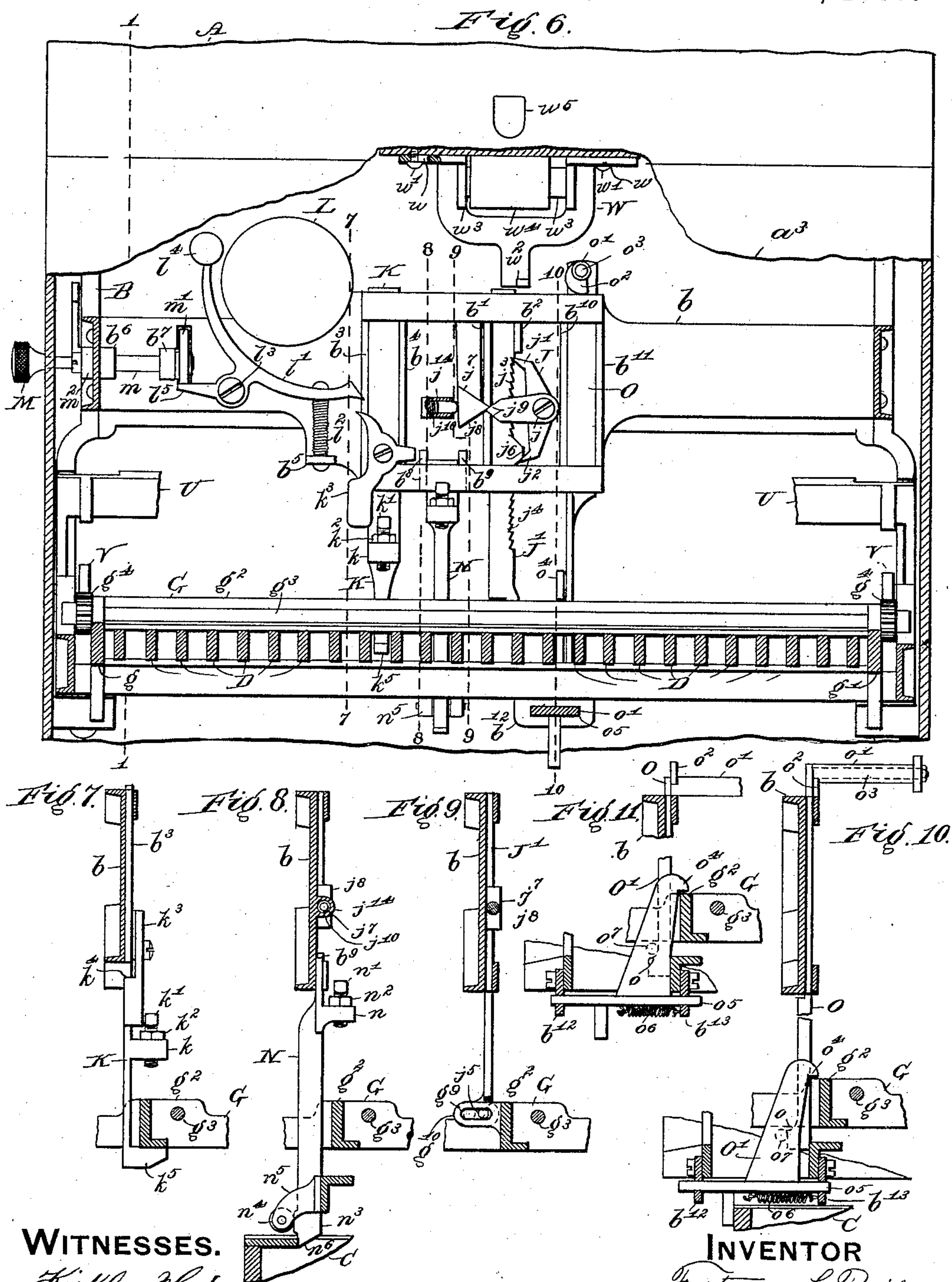
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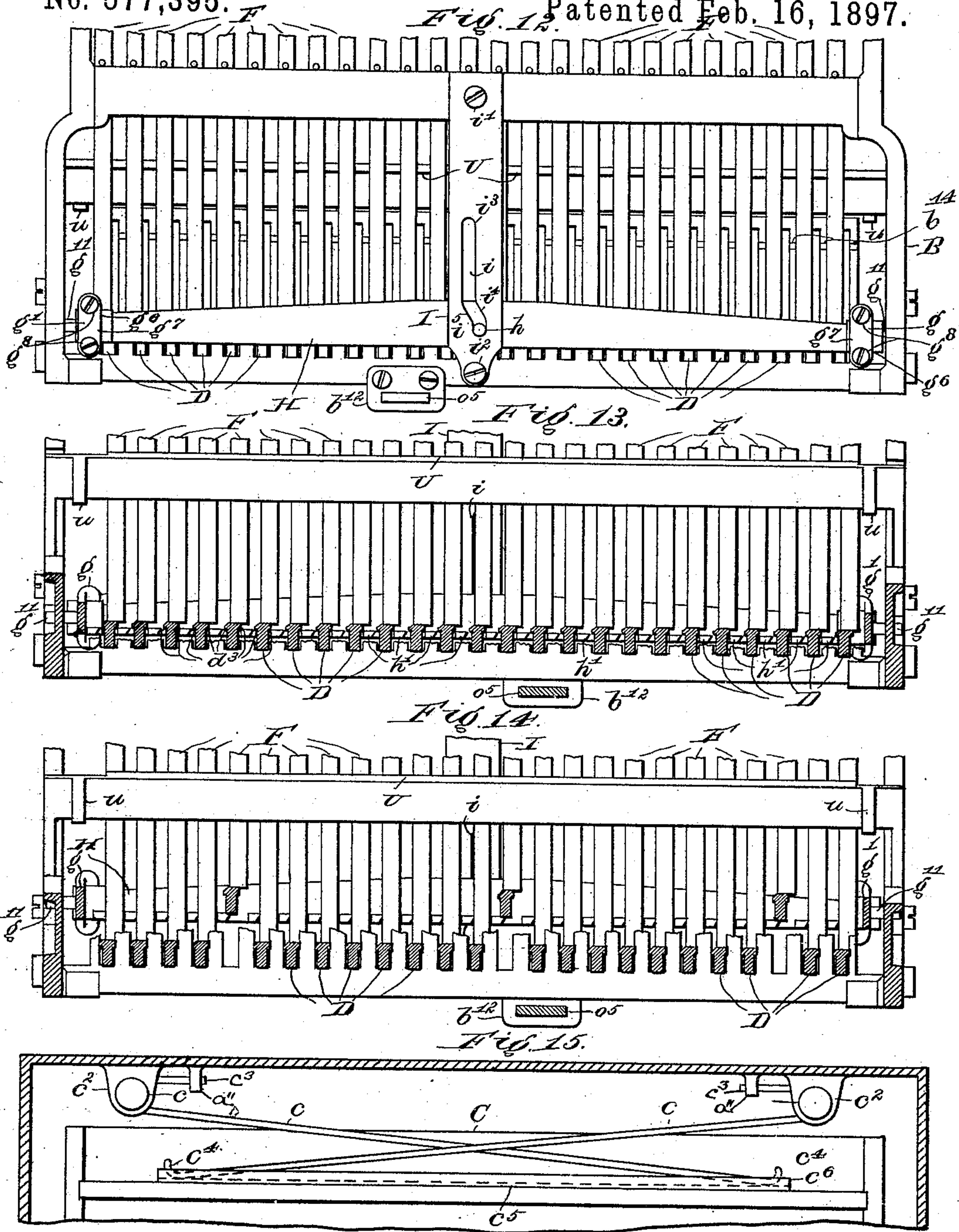
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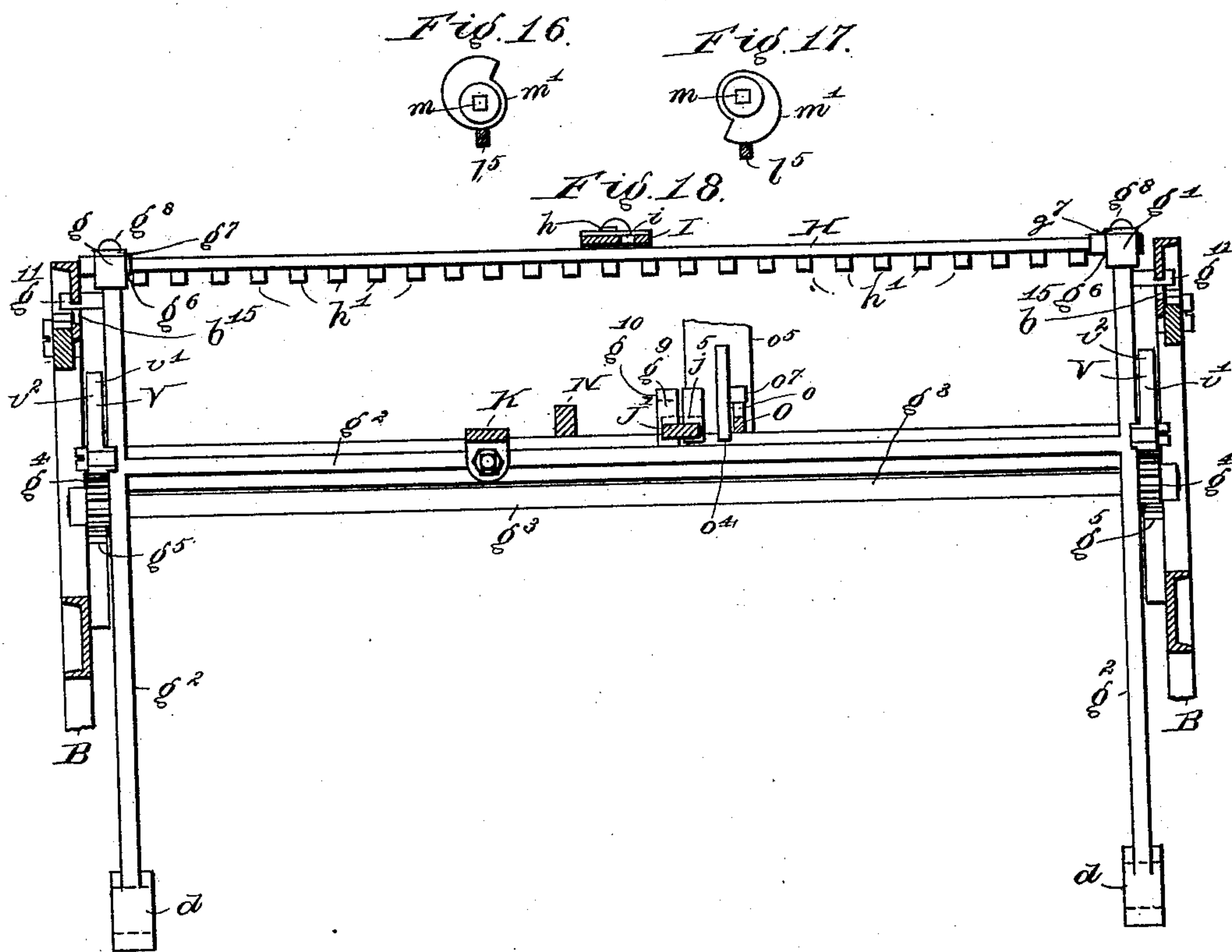
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Agnes Bailey.

INVENTOR

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his ATTORNEY.

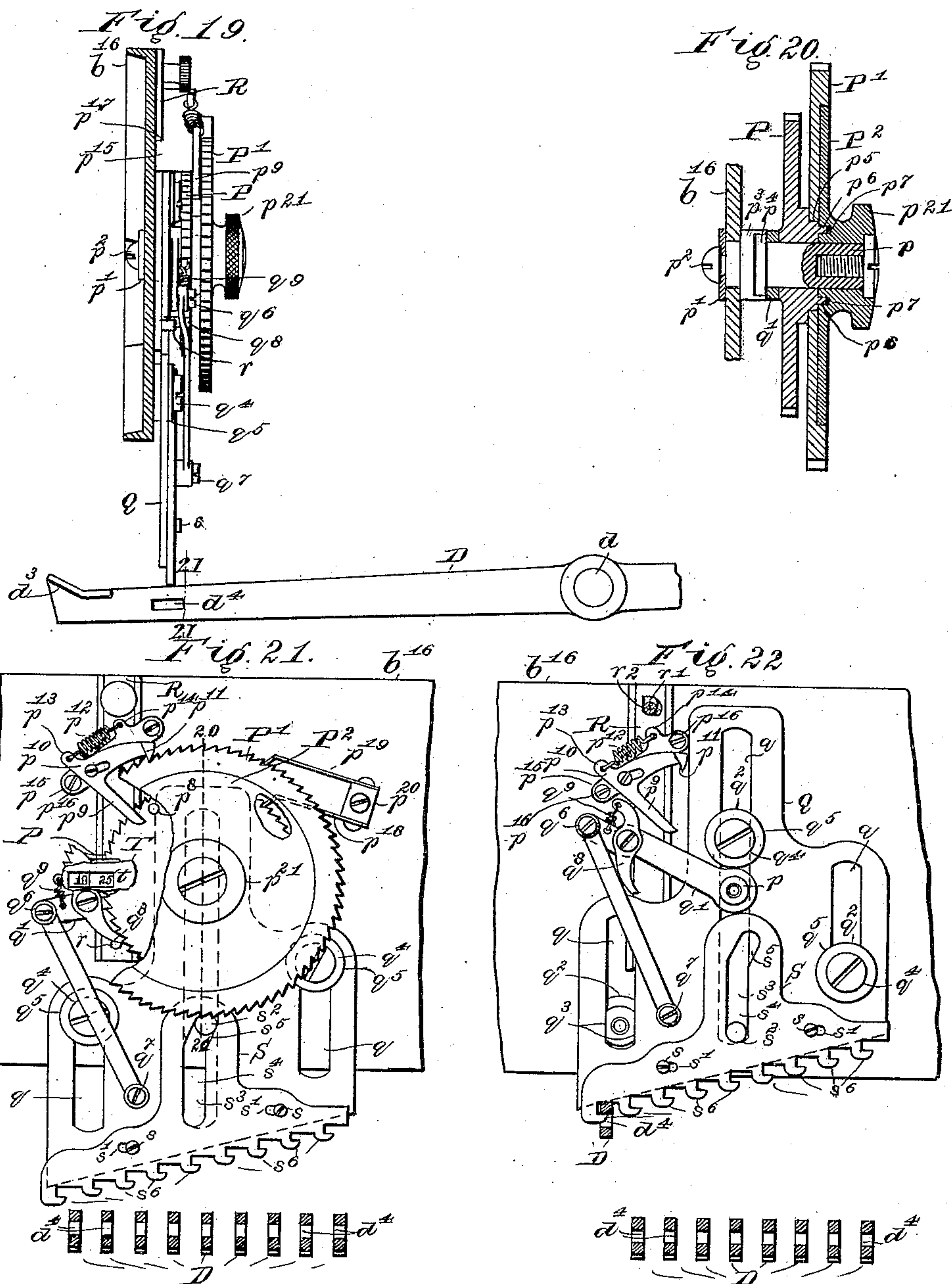
(No Model.)

5 Sheets—Sheet 5.

F. L. BAILEY.
CASH INDICATOR AND REGISTER.

No. 577,395.

Patented Feb. 16, 1897.



UNITED STATES PATENT OFFICE.

FORTUNE L. BAILEY, OF NORTHAMPTON, MASSACHUSETTS, ASSIGNOR, BY
MESNE ASSIGNMENTS, TO ROBERT F. HERRICK, TRUSTEE, OF BOSTON,
MASSACHUSETTS.

CASH INDICATOR AND REGISTER.

SPECIFICATION forming part of Letters Patent No. 577,395, dated February 16, 1897.

Application filed July 27, 1894. Serial No. 518,697. (No model.)

To all whom it may concern:

Be it known that I, FORTUNE L. BAILEY, a citizen of the United States, residing at Northampton, in the county of Hampshire and Commonwealth of Massachusetts, have
5 invented a certain new and useful Improvement in Cash Indicators and Registers, of which the following is a specification.

My invention relates to cash indicators and
10 registers; and it consists in the devices and combinations hereinafter described and claimed, and has for its object a simpler and better construction of the machine with particular reference to the connection of the keys
15 with the mechanism which drives the registering devices, to the coupling of partially-depressed keys in different banks or sections, to the muffling of the alarm-bell, to the locking up of the machine to prevent any opera-
20 tion thereof both by a key used by the cash-taker or salesman in charge when the case of the machine is closed and by means inside the case to be manipulated by the proprietor after opening the case, to securing the top
25 plate of the case to prevent the removal thereof without first opening the case, and to properly distributing the strain caused in raising the rock-plate.

In the accompanying drawings, on five
30 sheets, Figure 1 is a vertical section on the line 1 1 in Fig. 6 of the case and drawer, showing the frame and operative mechanism in left-side elevation; Fig. 2, a plan of a part of the top plate of the case and of a part of the side of case secured thereto, said top plate
35 being partly in horizontal section, also showing in plan a part of the latch which secures said top plate to said case; Fig. 3, a vertical section on the line 3 3 in Fig. 2; Fig. 4, a plan of parts of keys and a part of the slotted guard-
40 plate, two of said keys and a part of said plate being in horizontal section on the line 4 4 in Fig. 1; Fig. 5, a vertical section of the guard-plate on the line 5 5 in Fig. 4; Fig. 6, a ver-
45 tical transverse section of a part of the case, the frame, and keys on the line 6 6 in Fig. 1, showing in front elevation the bell ringing and muffling devices, the mechanism which requires the movement of a key in one direc-
50 tion to be completed before such key can be

moved in the opposite direction, the rock-plate, the drawer-unlocking devices and the devices which prevent the operation of the machine; Figs. 7, 8, 9, and 10, vertical sec-
tions on the lines 7 7, 8 8, 9 9, and 10 10, re- 55 spectively, in Fig. 6, each of said figures showing in section the rock-plate and cross-girth and one of the slides, the slide in each figure being partly in section and partly in eleva-
tion, Fig. 7 showing the bell-ringing slide; 60 Fig. 8, the drawer-unlocking slide and part of the drawer; Fig. 9, the rack-slide, and Fig. 10 the slide which unlocks the rock-plate and allows the keys to be operated whether
65 the drawer is open or closed, and in side elevation the cam which operates said slide and the lock which automatically engages said rock-plate when the drawer is opened and is
70 disengaged therefrom by the closing of the drawer; Fig. 11, a vertical section in the same plane as Fig. 10 and showing the parts shown in Fig. 10, and also a part of the drawer, the
75 cam being in its inoperative position; Fig. 12, a rear elevation of the frame, tablet-rods, rock-plate, coupling-bar, stationary coupling-
cam, the rock-plate lock, tablet-rod supports, and part of the tablet-rods; Fig. 13, a verti-
cal transverse section on the line 13 13 in Fig. 1 of the frame, keys, rock-plate, rock-plate
80 lock, parts of the tablet-rods, the coupling-cam, and the coupling-bar, the keys and said coupling-bar being in their normal position; Fig. 14, like Fig. 13, except that the coupling-
bar is raised and three keys are coupled; Fig. 15, a horizontal section on the line 15 15 85 in Fig. 1 of a part of the case and a plan of the drawer-opening springs and a part of the drawer; Figs. 16 and 17, right-side elevations of the bell-muffling cam and lever and a ver-
90 tical section of the bell-hammer, the cam being in operative position in Fig. 16 and out of operative position in Fig. 17; Fig. 18, a plan of the rock-plate and the slides shown in Figs. 7 to 11; Fig. 19, a left-side eleva-
95 tion of a key, registering-wheels, and their driving-plates; Fig. 20, a vertical section on the line 20 20 in Fig. 21 of the registering-wheels, the stud on which they turn, and the hub of the driving-pawl; Fig. 21, a vertical
100 section of the keys on the line 21 21 in Fig.

19 and a front elevation of the ratchet-wheels, retaining-pawl, driving and transferring mechanism, the driving-plate being in its lowest position; Fig. 22, like Fig. 21, except that the ratchet-wheels are omitted and the driving-plate is raised.

The case A, Figs. 1, 2, 3, 6, and 15, contains the frame B, has glazed apertures $a a$, through which the tablets may be read, and contains a sliding drawer C, all in the usual manner, except that the top plate a' is secured to the top of the case A by means of screws a^2 , which are entirely within the case and cannot be manipulated without opening the door a^3 of the case, which is provided, as usual, with a lock a^4 , only to be opened by the key of the proprietor. The screws a^2 are driven up into the top plate through a clip-plate a^5 , which extends under a ledge or flange a^6 , cast or otherwise secured to the inside of the sides of the case at the top thereof, as shown in Figs. 1, 2, and 3.

The drawer C when unlocked by the means hereinafter described or by any usual means is caused to project from the front of the case by two springs $c c$, Figs. 1 and 15, of wire coiled about vertical studs $c' c'$, supported in brackets $c^2 c^2$, cast on or otherwise secured to the inside of the rear wall a^7 of the case, near the sides of the case, one short arm $c^3 c^3$ of each spring passing through a lug a^{11} , cast on said wall a^7 , while the other or long arm c^4 of each spring presses against the back of said drawer or against a bearing-plate c^5 , secured to said back and provided at the upper and lower edges with horizontal flanges $c^6 c^7$, which prevent said springs from rising above or falling below said plate. This construction allows of the use of very long spring-arms and a greater movement of the drawer than where a leaf-spring is secured midway between its ends to the back of the case.

Within the case, above the drawer, is arranged the frame B, which supports the operating mechanism. The keys D turn upon a common fulcrum-rod d and carry pawls d' , which engage numbered ratchet-wheels E when the front or outer ends of the keys are depressed, a single depression of any key turning the corresponding ratchet-wheel E one tooth and each wheel E having a projecting pin or long tooth (not shown) which engages another ratchet-wheel E' once in every revolution of said wheel E and gives said wheel E' a partial revolution, substantially as shown and described in Patent No. 271,363 to Ritty and Birch, dated January 30, 1883.

To prevent tampering with the mechanism by a wire or pin introduced into the case through the slots a^8 , in which the keys move, each key is provided with an arc-shaped guard d^2 , the front convex surface of which is concentric with the fulcrum-rod d and fits and slides upon a corresponding concave bearing-surface a^9 in the rear face of the front wall a^{10} of the case A, as shown in Figs. 1, 4,

and 5, said surface a^9 being longer and wider than the corresponding slot a^8 .

Upon the rear end of each key D rests a vertical tablet-rod F, carrying at its upper end a tablet f , numbered to correspond with the number on the key and raised by the depression of the corresponding key into position to be seen through the apertures $a a$, and the stems f' of said tablets are offset in a forward or backward direction, as shown in Fig. 1, to prevent said tablets from interfering with each other.

Extending above but not touching the rear arms of all the keys is a skeleton rock-plate G, Figs. 1, 6, 12, 13, 14, and 18, consisting of two equal side arms $g g'$, pivoted upon the fulcrum-rod d and rigidly connected to each other by a cross-bar g^2 (the part which rests upon the keys) and by the rock-plate shaft g^3 , which turns freely in said side arms $g g'$, said cross-bar and shaft g^3 being horizontal and parallel with said fulcrum-rod. To each end of the rock-plate shaft g^3 is secured a pinion g^4 , which engages a corresponding stationary arc-shaped rack g^5 , rigidly secured to the frame B, concentrically with said fulcrum-rod d , so that whatever the position of the rock-plate the axis of said rock-plate shaft and fulcrum-rod always lie in the same plane with each other. (See Figs. 1, 6, and 18, also Figs. 7 to 11.)

The rear ends of the side arms $g g'$ are provided with transverse slots or ways g^6 , in which slides the coupler or coupling-bar H, retained in said slots by caps g^7 , secured thereto by screws g^8 . The coupling-bar H is provided with a backwardly-extending pin h , Figs. 1, 12, and 18, which enters a cam-slot i in the stationary cam I, secured by screws $i' i^2$ to the back of the frame B, the longest upper portion i^3 of said cam-slot being vertical, the shorter middle part i^4 thereof being laterally inclined, and the shortest and lowest part i^5 of said cam-groove being vertical.

From the front face of the coupling-bar H extend a series of horizontal projections h' , equal in number to the keys and normally reaching between the rear ends of the keys, which are provided with side flanges d^3 , Figs. 13, 14, and 19, so that said projections h' nearly fill the spaces between the rear ends of the keys. When the front end of any key is depressed, its rear end rises out from between the adjacent coupling projections h' , and immediately afterward the rear arm of said key in rising strikes the cross-bar g^2 of the rock-plate G and raises the coupling-bar, lifting the coupling projections out from between the keys until the pin h reaches the inclined part i^4 of the cam-slot i , which gives to said coupling-bar an endwise motion and causes said coupling projections to move laterally over the rear ends of all the keys which remain at rest and under the rear end of the partially-depressed key, so that if two or more keys are sufficiently depressed to raise their rear ends above the corresponding coupling

projections a further depression of any depressed key will cause the other partly-depressed keys to be equally depressed.

The use of the key-coupling devices above described enables a number of keys, placed too far apart to be simultaneously depressed by the direct pressure of the operator's fingers, to be partially depressed, one or more at a time, and their action to be completed by the complete depression of any of said keys and prevents the machine failing of its designed operation by reason of the fingers accidentally slipping from any of the partially-depressed keys.

A key depressed sufficiently to become engaged by the coupling projections above described can evidently only move in either direction with the rock-plate, and the rock-plate is prevented from moving in either direction until its movement in the other direction is completed by a double pawl J, the same being a lever pivoted between its ends at j on a cross-girth b of the frame B and provided at each end with a tooth or pawl j' j'' , adapted to engage a rack j^3 j^4 on the rack-slide J', Figs. 6, 9, and 18. The rack-slide J' is moved vertically in suitable ways b' b^2 on said cross-girth b by the movement of the rock-plate, a lateral projection j^5 on said rack-slide, near its lower end, entering a slot g^9 in a projection g^{10} , formed on the cross-bar g^2 . The teeth of the rack j^3 hook downward and are engaged by the pawl j' when the rock-plate and rack-slide are rising and the teeth of the rack j^4 hook backward and are engaged by the pawl j'' when said rock-plate and rack-slide are returning or descending. When the movement of the rack-slide is just being completed in either direction, a projection j^6 , arranged on said rack-slide between the racks j^3 j^4 , strikes the pawl then in engagement and turns the pawl-lever J upon its fulcrum, forcing said last-named pawl out of engagement with one rack and the other pawl to engage the other rack. The pawl-lever is held in either of its positions by a pawl-retainer j^7 , Fig. 6, consisting of a rod having a head j^8 beveled in opposite directions, as shown, and pressed against a similarly-beveled free end of a projection j^9 , cast or otherwise secured on said pawl-lever by a spring j^{10} , held in a socket j^{11} , cast or otherwise secured on said cross-girth b , and compressed between the closed end of said socket and said head j^8 . A bell-ringing slide K is guided vertically in ways b^3 b^4 , Figs. 1, 6, and 7, on said cross-girth b , said slide having a bracket or projection k , in which a vertical screw k' turns, said screw being prevented from turning when properly adjusted by a check-nut k^2 . The rock-plate in its upward movement strikes the lower end or point of said screw k' and raises said slide K. A bent trip-lever k^3 is pivoted on the slide K and its lower end is provided with a backward projection k^4 , which strikes against the side of said slide and prevents said trip-lever being turned by downward pressure on its upper

end. As the slide K is raised the upper end of the trip-lever k^3 raises the lower end l of the hammer-lever l' against the resistance of the spring l^2 , secured to said lower end l and a stud b^5 , secured on the cross-girth b , and turns said hammer-lever on its fulcrum l^3 until said trip-lever passes said end l , and the hammer-lever is suddenly restored to position by the contraction of said spring l^2 , causing the upper end or hammer l^4 of said hammer-lever to strike the bell or gong L and sound an alarm. The slide K is restored to position by the pressure of the rock-plate in its return movement upon the projecting foot k^5 of said slide.

Where the sound of the bell is unnecessary or objectionable, it may be prevented by turning the button M, secured on a rod m , which passes through the side of the case, Figs. 1 and 6, and turns in suitable bearings b^6 b^7 on the cross-girth b and has secured on its inner end a cam m' , which, when said button M is turned in one direction, depresses an arm l^5 of the hammer-lever in such a manner as to turn the lower end of said hammer-lever out of the path of the trip-lever k^3 . Such a device is commonly called a "bell-muffler." The rod m may be prevented from being turned by accident or design without the consent of the proprietor by a slotted fork m^2 , which slides on a stud on the frame B within the case A and is adapted to embrace a part of said rod, which is square in cross-section, as shown in Fig. 1. When the fork is not engaged with said rod, the ringing of the bell may be regulated by the attendant.

The drawer-unlocking slide N, Figs. 6 and 8, is guided vertically in ways b^8 b^9 on the cross-girth b just as the slide K is guided, and is provided with a projection n , screw n' , and check-nut n^2 , which correspond in form and function to the above-described projection k , screw k' , and check-nut k^2 on said slide K, the point or lower end of the screw n being raised by the rock-plate to lift the slide N at about the time when a key is fully depressed. The slide N carries the bolt n^3 , which locks the drawer into the case, and which, being raised with said slide, allows the drawer to be thrown out by the springs above described. A part of the strain and friction of the bolt n^3 is sustained by an antifriction-roll n^4 , which turns in a bracket n^5 , secured to the frame of the machine. The lower end of said bolt is beveled at n^6 to enable the back of the drawer C to slide under said bolt when the drawer is pushed back into the case. Another slide O, Figs. 1, 6, 10, and 11, is guided vertically in ways b^{10} b^{11} on the cross-girth b , and like slides J', K, and N is arranged back of the cross-bar g^2 , and is provided near its lower end with an incline o , which slopes downward and backward. Said slide O may be raised by turning a sleeve o' , which carries a cam o^2 and turns upon a horizontal stud o^3 , which projects from the front of said slide and bears upon a stationary part of the cross-girth b .

Below the cross-girth b is arranged a lock O' , consisting of a hook o^4 , secured upon a horizontal bar o^5 , which slides in brackets b^{12} b^{13} and is drawn forward by the contraction of
 5 a spring o^6 , which connects said bar and the front bracket b^{13} , and tends to draw said hook o^4 over the cross-bar g^3 of the rock-plate and prevent the operation of said rock-plate; but
 10 said cross-bar when the drawer is pushed into the case and remains out of engagement while the drawer is locked.

When the drawer is open, the hook o^4 normally engages the rock-plate and prevents
 15 the depression of any key, that is, prevents the operation of the machine, inasmuch as in a great pressure of business it is sometimes desired to use the machine without spending the time necessary to close the drawer after
 20 each sale. The hook o^4 is provided with a lateral projection or pin o^7 , which, with said hook, is crowded backward by the incline o above described, when the slide O is raised, until the hook is back of the cross-bar of the
 25 lock-plate, as shown in Fig. 10.

The registering mechanism is shown in Figs. 19 to 22 and includes two registering-ratchets P P' and their operating mechanism. One, P , of said ratchets turns on a stud p ,
 30 circular in cross-section, except as hereinafter stated, and which stud enters a hole in the cross-girth b^{16} and is held therein by a washer p^1 , arranged on the back of said girth b^{16} , and a screw p^2 , which passes through said washer
 35 into said stud and draws a fixed collar p^3 on said stud against the front face of said cross-girth. The collar p^3 has two opposite vertical faces p^4 to fit the central slot q of the driving-plate Q , the rear face of which rests against
 40 the flat surfaces on the front of the unreduced part of said collar. The lever q' turns on said stud p immediately in front of said plate Q and collar p^3 , the ratchet P being arranged in front of said lever q' , the ratchet P' turning
 45 on the hub p^5 of said ratchet P , and a disk or dial p^2 turning on said stud in front of said ratchets and being caused to rotate with the rear ratchet P by means of pins p^6 p^6 , which project from the hub of said ratchet
 50 P and enter corresponding holes p^7 p^7 in the rear face of said disk P^2 . The plate Q is guided vertically by washers q^2 , rabbeted at q^3 partly through to form slides or ways and to hold said driving-plate out of contact with
 55 the cross-girth b^{16} and pawl-stop plate R , said washers entering slots q in said driving-plate Q and being secured to said cross-girth b^{16} by cap-screws q^4 , which secure other washers q^5 in front of said driving-plate Q against said
 60 first-named washers. The lever q' is connected to the driving-plate by a link or connecting-rod pivoted at q^6 to the outer end of said lever and at q^7 to said driving-plate, and carries a pawl q^8 , pivoted on said lever and
 65 held in engagement with the ratchet P by a spring q^9 in an obvious manner.

Evidently a vertical reciprocation of the

driving-plate will rotate the ratchet P . The ratchet P is provided with a pin p^8 , which
 70 once in every revolution of said ratchet strikes and passes the downhanging arm p^9 of a pawl-slide p^{10} , having a pawl p^{11} or tooth held in engagement with the teeth of the ratchet
 75 p' by a spring p^{12} , (represented as a spiral spring stretched between an ear p^{13} on said slide and an ear p^{14} on a block p^{15} ,) which is secured to the cross-girth b by screws p^{16} and is grooved on the back at p^{17} to support and
 80 guide the pawl-stop plate R . Said pin p^8 strikes said arm p^9 and causes the slide p^{10} to move far enough to turn the ratchet p' an angular distance measured by one tooth thereof, and then passes said arm p^9 , and the spring p^{12} draws said slide over the following
 85 tooth of said ratchet p' .

The ratchets P P' are prevented from any backward movement which might otherwise be caused by the friction of their respective
 90 impelling-pawls q^8 p^{11} by spring-retaining pawls p^{18} p^{19} , secured on a block p^{20} , fastened to the cross-girth b^{16} .

To prevent over-registration by the ratchet P , a stop-pin r is so arranged that the pawl q^8 at the end of its downward or impelling stroke,
 95 being then in the bottom of an interdental space of said ratchet, is wedged between said pin r and said ratchet and absolutely prevents the further rotation of said ratchet. This pin r is supported on a vertically-sliding
 100 stop-plate R , which is raised or lowered by turning the eccentric stud r' (which is supported in the cross-girth b^{16}) in a hole r^2 in said plate, said hole being shaped, as shown in Fig. 22, so that the vertical diameter of the
 105 hole is the same as the vertical diameter of the stud, whatever the position of said stud, a quarter-revolution of the stud being sufficient to raise or lower said stop-plate, and said plate being lowered when it is desired to re-
 110 store the ratchet P to its zero position to allow the pawl to swing over the teeth of said ratchet as the ratchet is turned by turning the milled hub p^{21} of the dial P^2 .

The coupling-plate S is secured to the driving-plate Q by screws s s , which pass loosely
 115 through horizontal slots s' s' in said coupling-plate and allow said coupling-plate to have a lateral motion on said driving-plate, and such a lateral motion is given to said coupling-plate
 120 by a horizontal stud s^2 , rigidly secured in the cross-girth b^{16} and projecting through a slot s^3 , the lower longer portion s^4 of which is vertical, while the upper portion s^5 of said slot is inclined, Figs. 21 and 22, in such a manner that
 125 when the coupling-plate is pushed upward it moves laterally as well as upward during the first part of its upward movement. The lower edge of the coupling-plate is provided with
 130 hooks s^6 , arranged at the same intervals as the keys, said hooks pointing in the same direction as the lateral movement of the coupling-plate takes place when said coupling-plate is being raised, and said hooks entering horizontal slots d^4 in the keys D when the front ends

of said keys are sufficiently depressed, this engagement taking place in the beginning of the movement of the coupling-plate and driving-plate and continuing until said plates have nearly returned to their normal position, and requiring the movement of said plates to be uniform with that of the actuating-key, and preventing any rebounding of said plates from said key, such as might cause a double registration for one movement of the key.

It will be understood that the hooks s^6 are arranged at such different distances from the plane of the keys when the latter are at rest that a complete depression of any key will move the ratchet P an angular distance measured by a number of teeth corresponding to the number borne by such key.

The dial P^2 and ratchet P' are figured near their margins, Fig. 21, to indicate the number of teeth on the ratchets P P' , and these numbers are read through a peep-hole t in the face-plate T, and said ratchet P will, if used to register cents, have exactly one hundred teeth, so that the numbers shown on the dial will indicate cents and those on the ratchets dollars.

The registering mechanism last above described may be used in connection with the "detail-adder," of which the wheels E E' form a part and which registers the work of each key separately, said last-described mechanism constituting a "total-adder," which registers the amount of all the work of all the keys of the machine, or may be used as a "sectional adder" that is to register the work of all the keys of a section or bank of keys.

The tablet-rods F when raised by the depression of the keys are thrown forward upon a horizontal ledge b^{14} on the frame B; but just before the raising of such tablet-rods the tablet-rods previously raised are knocked off from said ledge by a horizontal releasing-bar U, supported by two bent levers u , one at each side of the machine and pivoted on said frame B in such a manner that said bar U may swing over the top of said ledge. The bar U is thrown forward by the upper arms v of bent levers V (there being one such lever at each side of the machine, pivoted on the rock-plate G) striking the backwardly-extending free ends of said levers u , Figs. 1 and 18. The upper arms v of the levers V rise above the levers u after striking the latter, and said levers V are turned forward, when the rock-plate returns to position, by striking against said levers u and are restored to position by weights v' at the ends of their lower horizontal arms v^2 .

In order that the bar V may not be thrown forward by rebounding or by the levers V striking the levers u during the return movement of the rock-plate G, said rock-plate is provided with lateral projections g^{11} , (one on each side,) which reach through slots b^{15} , concentric with the fulcrum-rod d , just back of said levers u , and the backs of said levers u

are provided with curved projections u' , which are struck by said pins.

A Y-shaped slide W, Figs. 1 and 6, is provided with slots w , through which screws w' are driven up into the top of the case A, enabling the stem w^2 of the slide W to be moved over the rack-slide J' by the bolt w^3 of the lock w^4 (operated by a key inserted in the cylinder w^5 of said lock w^4 in the usual manner) to prevent the rising of said slide J', and therefore the raising of the rock-plate and the depression of any key. By turning the key in the other direction the stem w^2 is moved off from the slide J'. This device enables the attendant to lock up the machine during a temporary absence.

I claim—

1. The combination of keys, a registering-ratchet, a lever, having a fulcrum concentric with said ratchet, a pawl, carried by said lever, and engaging said ratchet, a vertically-reciprocating driving-plate, a rod, connecting said plate and lever, a coupling-plate, movable with said driving-plate vertically and movable on said driving-plate laterally and having a slot, vertical nearly throughout its length but inclined at the top thereof, and an immovable horizontal stud arranged in said slot, to give said coupling-plate a lateral movement at the beginning of its vertical movement, said plate having projections adapted to engage the slots in said keys when said keys are depressed, as and for the purpose specified.

2. The combination of keys, a registering-ratchet, a lever, having a fulcrum concentric with said ratchet, a pawl, carried by said lever, and engaging said ratchet, a vertically-reciprocating driving-plate, a rod, connecting said plate and lever, a coupling-plate, movable with said driving-plate vertically and movable on said driving-plate laterally and having a slot, vertical nearly throughout its length but inclined at the top thereof, and an immovable horizontal stud arranged in said slot, to give said coupling-plate a lateral movement at the beginning of its vertical movement, said plate having projections adapted to engage the slots in said keys when said keys are depressed, said projections being arranged at proportional vertical distances from said keys to enable said pawl to move said ratchet through proportional annular distances under the operation of said keys, as and for the purpose specified.

3. The combination of keys, a rock-plate, arranged above said keys and moved by the depression of any of said keys, a coupling-bar carried by said rock-plate and movable laterally thereon and having key-engaging projections, and a cam engaging said coupling-bar, to move said projections into engagement with two or more partially-depressed keys, to cause all such partially-depressed keys to move in unison during the remainder of their movement, as and for the purpose specified.

4. The combination of keys, a rock-plate

operated by any key, a vertical slide, jointed to said rock-plate, a horizontal slide, a lock having a bolt engaging said slide to move said slide into or out of the path of said vertical
5 slide, said lock being adapted to be operated by a key passed into said case from the outside, as and for the purpose specified.

5. The combination of a case, keys, a rock-plate operated by any key, a vertical slide
10 having an incline, a sliding hook, a spring, normally causing said hook to engage said rock-plate, a drawer, sliding in said case and when closed holding said hook out of engagement with said rock-plate, said hook being
15 adapted to be engaged by said incline and to be forced out of engagement with said rock-plate when said drawer is open, and a cam within said case turning on a stud with which

said slide is provided, to raise said incline into engagement with said hook, as and for the
20 purpose specified.

6. The combination of the rock-plate, a shaft, pivoted therein parallel with the fulcrum of said plate, pinions, rigidly secured on said shaft at opposite sides of said plate,
25 and stationary arc-shaped racks, concentric with said fulcrum, engaged by said pinions, as and for the purpose specified.

In witness whereof I have signed this specification, in the presence of two attesting witnesses, this 6th day of July, A. D. 1894.
30

FORTUNE L. BAILEY.

Witnesses:

ALBERT M. MOORE,
AGNES BAILEY.