

(No Model.)

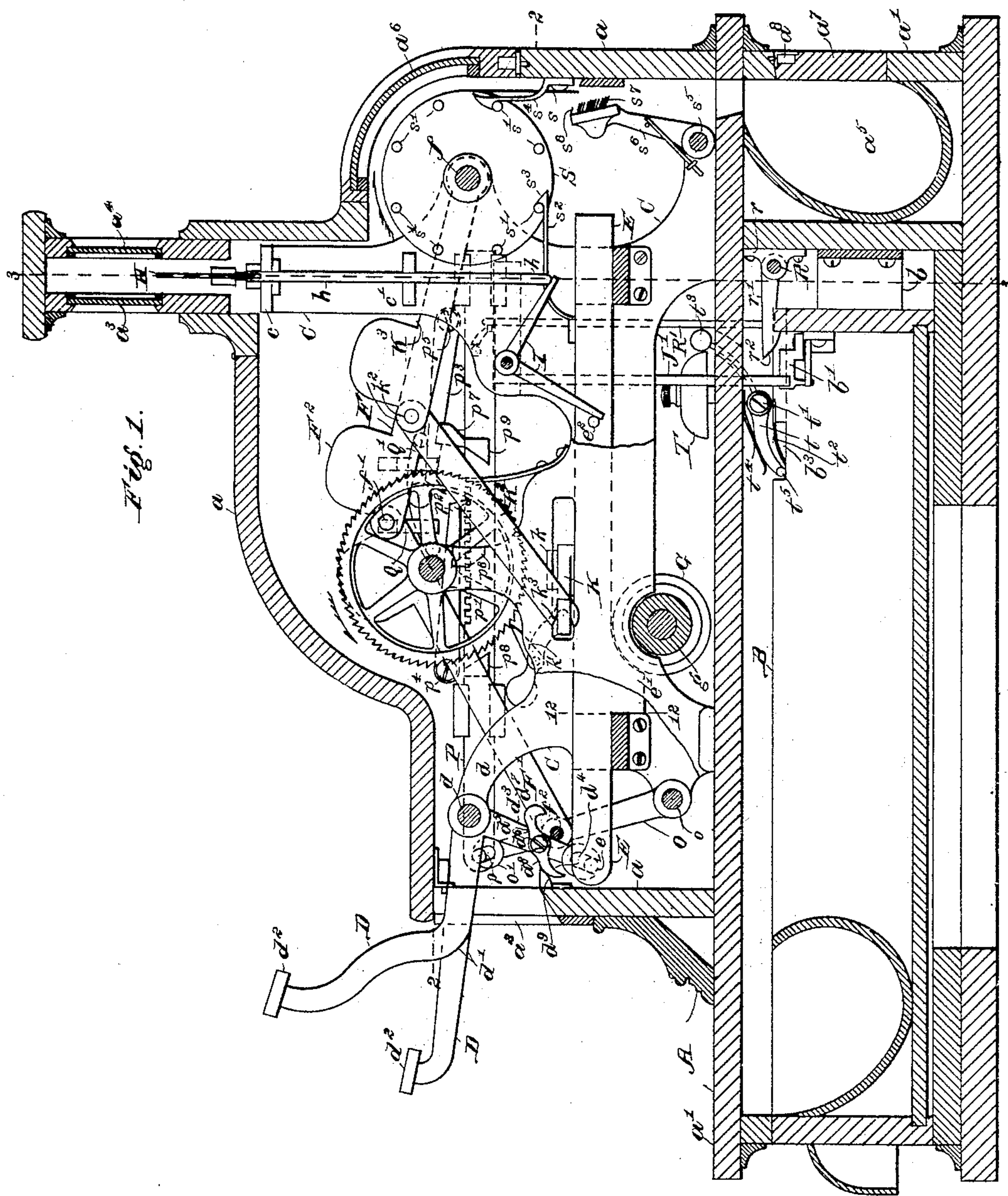
5 Sheets—Sheet 1.

J. JACQUES.

CASH INDICATOR, REGISTER, AND CHECK PRINTER.

No. 480,698.

Patented Aug. 9, 1892.



Witnesses.

Kirkley 1842.
Myrtic L. Beale.

Inventor_

James Jacques,
By Albert M. Moore,
His Attorney.

(No Model.)

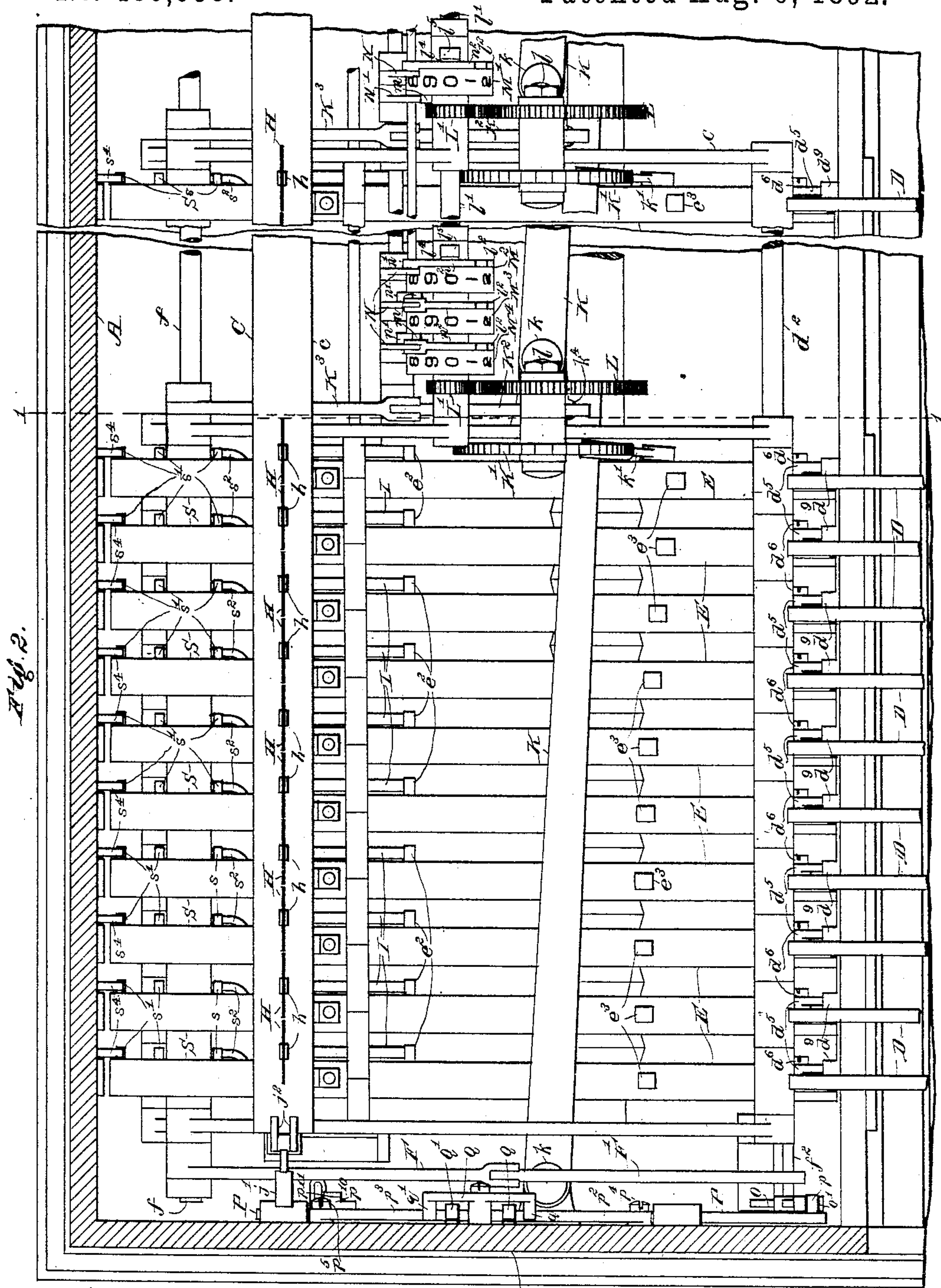
5 Sheets—Sheet 2.

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Myrtle E. Beale.

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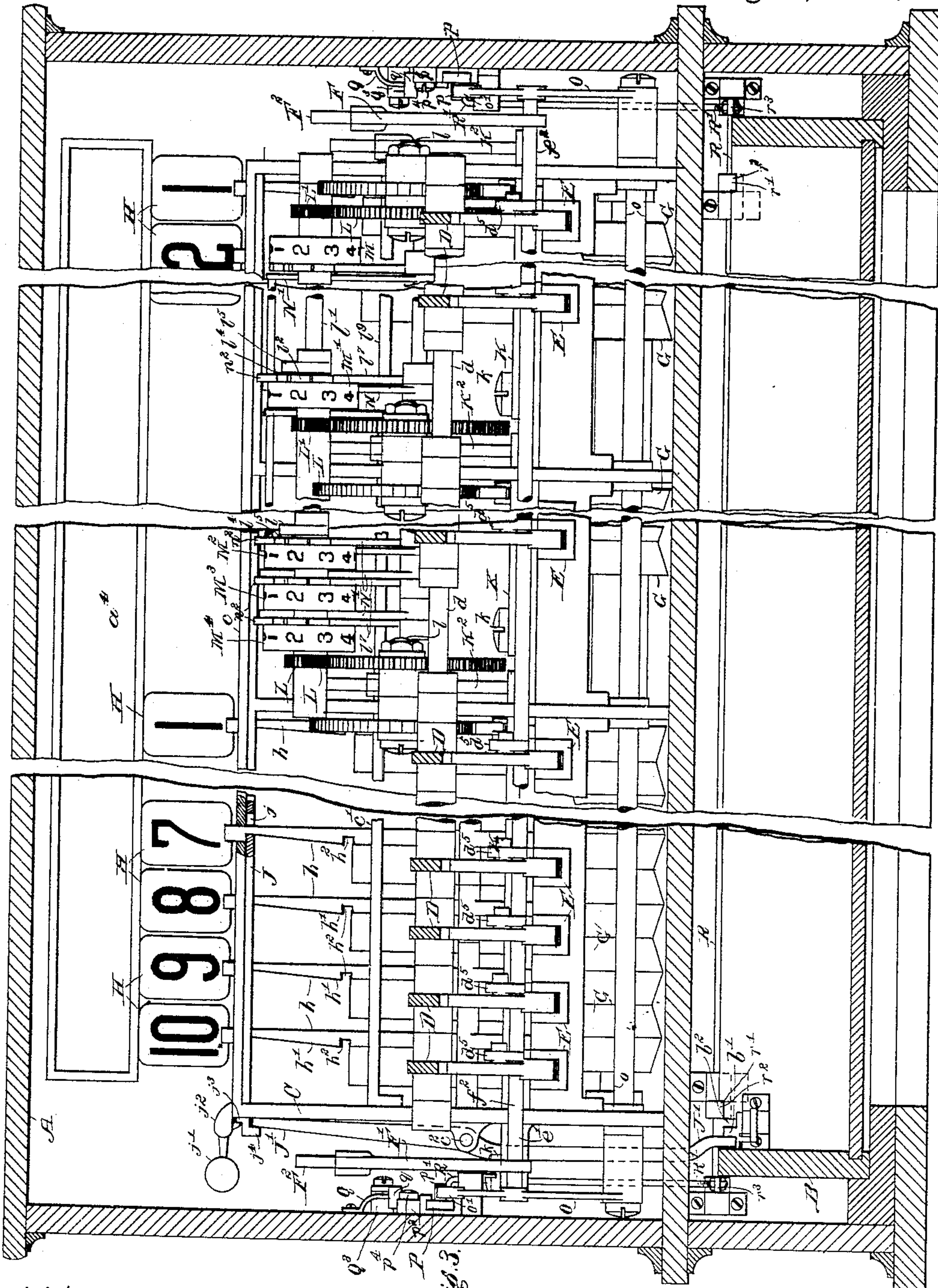
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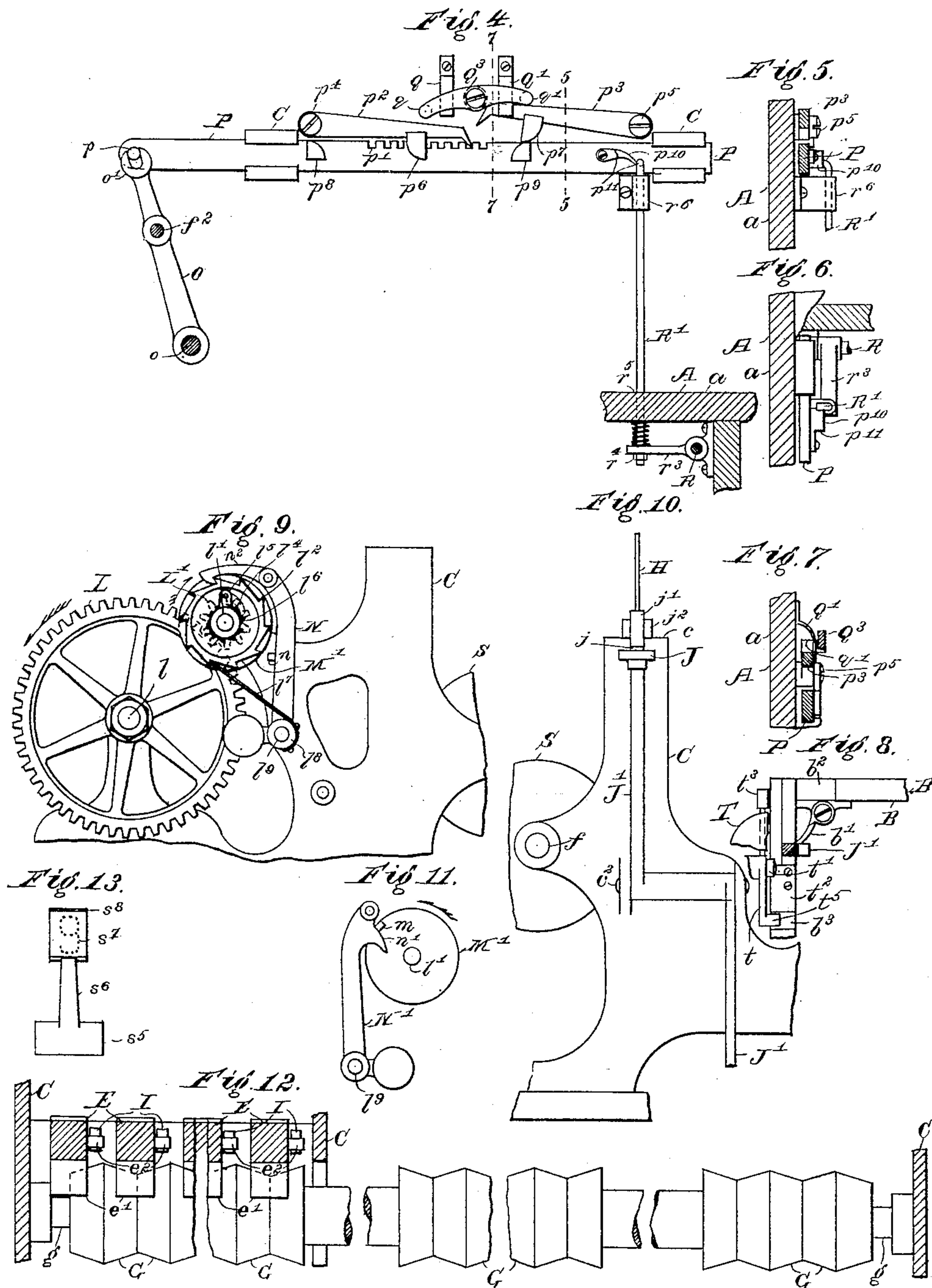
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Witnesses—

Henry J. Hyde.
Myrtie A. Brals.

INVENTOR—

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His Attorney.

(No Model.)

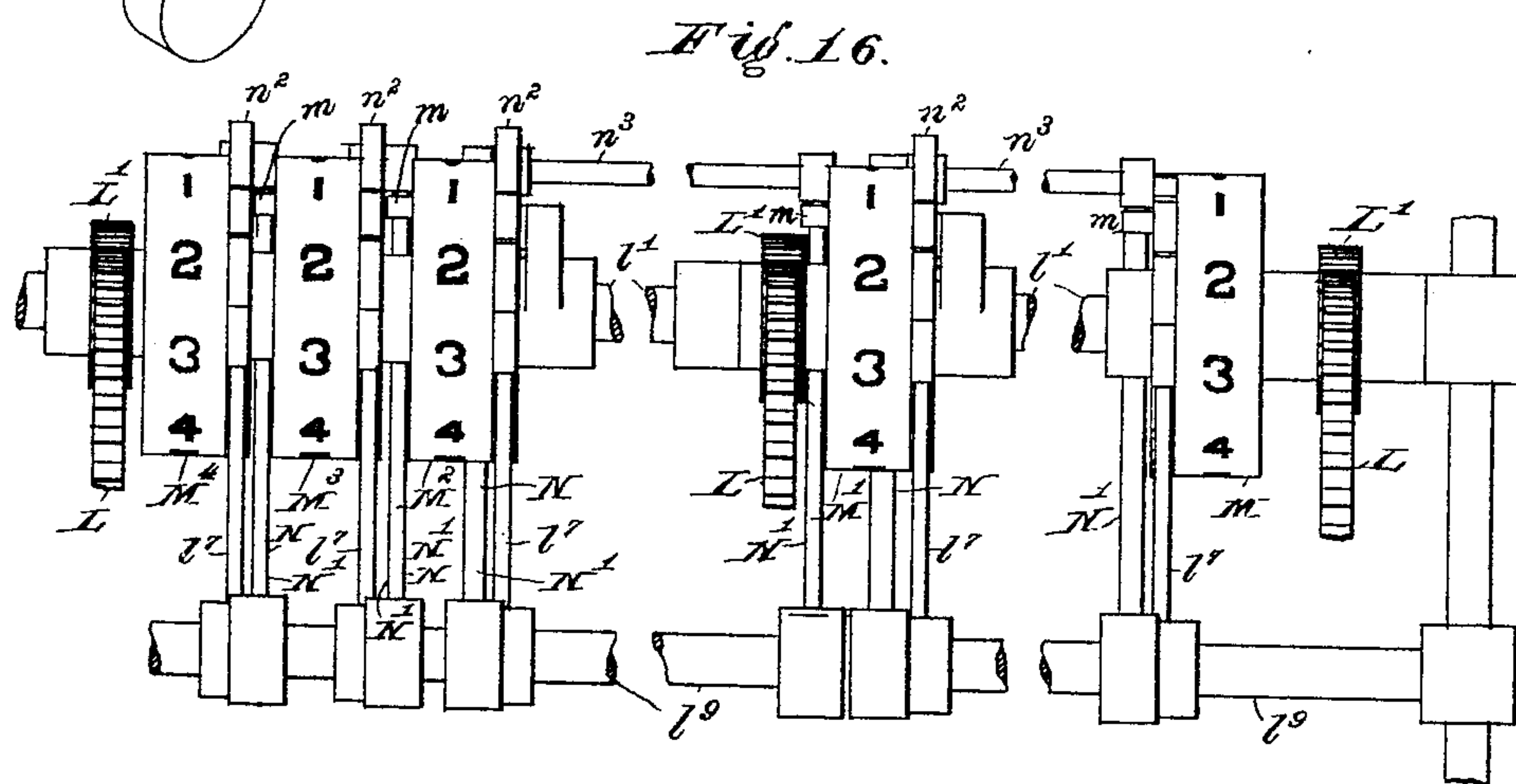
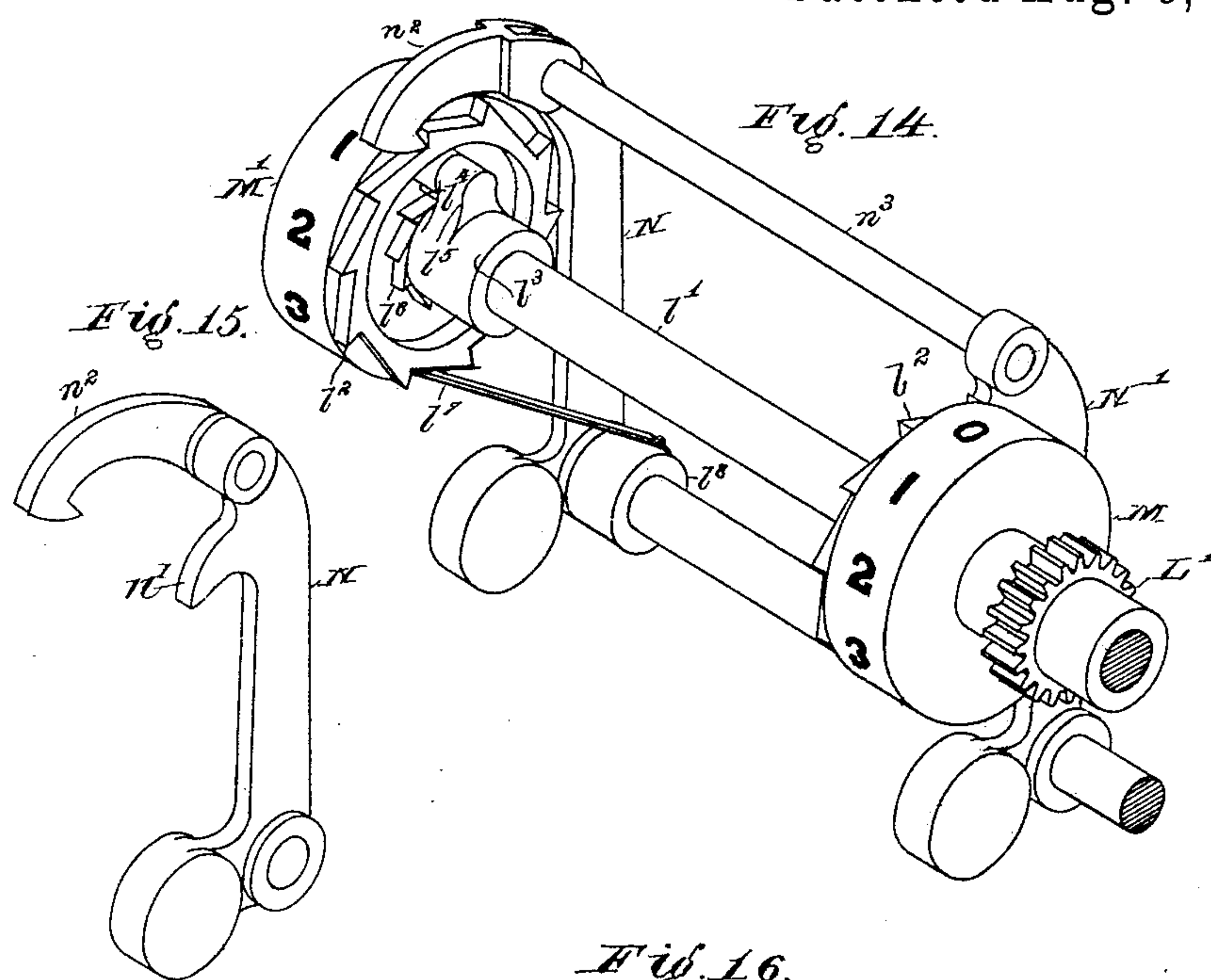
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Myrtie C. Beals.

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UNITED STATES PATENT OFFICE.

JAMES JACQUES, OF CHELMSFORD, MASSACHUSETTS.

CASH INDICATOR, REGISTER, AND CHECK-PRINTER.

SPECIFICATION forming part of Letters Patent No. 480,698, dated August 9, 1892.

Application filed January 9, 1891. Serial No. 377,244. (No model.)

To all whom it may concern:

Be it known that I, JAMES JACQUES, a subject of Victoria, Queen of the United Kingdom of Great Britain and Ireland, residing at Chelmsford, in the county of Middlesex and Commonwealth of Massachusetts, have invented a certain new and useful Improvement in Cash Registers and Indicators, of which the following is a specification.

My invention relates to cash registers and indicators; and it consists in the devices and combinations hereinafter described and claimed, the same comprising devices for preventing the simultaneous depression of two or more keys; devices for printing tickets to indicate the amount of purchases and for severing such tickets from a roll of paper; alarm, indicating, registering, and signaling devices; devices which require the movement of any key to be completed in one direction before such key can be moved in the other direction, and drawer locking and unlocking mechanism.

In the accompanying drawings, on four sheets, Figure 1 is a vertical section from front to back of the machine on the line 1 1 in Fig. 2; Fig. 2, a horizontal section of part of the machine on the line 2 2 in Fig. 1, parts of the case in front and at the right of the machine being broken away; Fig. 3, a vertical transverse section on the line 3 3 in Fig. 1, parts of the case, drawer, and mechanism being broken out to save space; Fig. 4, a right side elevation of one of the rack-rods, its locking and releasing mechanism, and a part of the drawer-unlocking mechanism and a vertical section of a part of the drawer; Fig. 5, a vertical section on the line 5 5 in Fig. 4, of a part of the case and of a rack-rod and its locking mechanism and a front elevation of the unlatching-rod and its operating-finger; Fig. 6, a horizontal section of a part of the case and a plan of a rack-rod, the unlatching-rod, its operating-finger, and a part of the rock-shaft and the arm of said rock-shaft to which said unlatching-rod is connected; Fig. 7, a section on the line 7 7, in Fig. 4, of a part of the case, a rack-rod, one of the pawls which engages the same, and the lever which throws one of said pawls into such engagement when the other of said pawls is thrown out of such engagement; Fig. 8, a plan of the rear left

corner of the drawer, a part of the signal-unlocking lever and its operating-incline, and a part of the alarm devices; Fig. 9, a right side elevation of a part of the frame, the registering-wheels, the registering-pawl, and transferring-pawl, the weighted transferring-lever, and a part of the paper-reel; Fig. 10, a left side elevation of a part of the frame, the signal-unlocking lever pivoted thereon, and an end elevation of the locking-rod, a signal, part of its rod, and a part of the paper-reel; Fig. 11, a left side elevation of a transferring-lever and registering-wheel; Fig. 12, a section of stop-rods and part of the case on the line 12 12 in Fig. 1, and a front elevation of some stops and their supporting-rod; Fig. 13, a rear elevation of a type-lever; Fig. 14, an isometric perspective view of the units and tens registering-wheels and their operating mechanism; Fig. 15, an isometric perspective view of the transferring pawl-lever and its pawl; Fig. 16, a front elevation of the registering-wheels and their operating mechanism, the large gears which drive the loose pinions being partly broken away.

The case A, the upper portion *a*, containing registering, indicating, signaling, and printing mechanism, and the drawer B, sliding in the lower portion *a'* of said case and forced outward by a leaf-spring *b*, secured to the inside of the case behind the drawer, are of the usual construction and operation.

The frame C is arranged within the portion *a* of the case A and supports the different mechanisms. The keys D are bent levers which turn loosely upon a common fulcrum-rod *d*, supported in said frame, the front arms *d'* of said keys extending through slots *a*² in the case and terminating in numbered buttons *d*² in the usual manner. The rear lower arm *d*³ of each key is forked, as shown at *d*¹, to engage a laterally-projecting stud *e* on a horizontally-sliding stop-rod E, there being a separate stop-rod for each key, so that a depression of any key pushes the corresponding stop-rod longitudinally backward.

At each side of the machine is arranged a weighted lever F, pivoted upon a rod *f*, supported at its ends in the frame of the machine. The front ends of the weighted levers F are pivoted at *f'* to the rear ends of other levers F', the front ends of said last-named levers

being connected to each other by a rod f^2 , which extends over all the stop-rods G of all the keys just in front of the lower ends of the keys, as shown in Fig. 1, so that when a key is depressed it raises the weights F^2 of the toggle-levers $F F'$, and when said key is released the falling of said weights tends to straighten out said levers or cause them to approach the same straight line, throwing the rod f^2 forward and restoring the key and stop-rod to their normal position. Each stop-rod E is provided with a downward projection e' , which when the corresponding key is depressed is pushed backward between two adjacent stops G, each of said stops consisting of a disk shaped like two frustums of cones arranged concentrically base to base. The stops G are centrally perforated and hung upon a rod g , which extends under all the stop-rods and is supported in the frame, as shown in Fig. 12, said stops being adapted to slide on said rod laterally in such a manner that there is space enough for a single projection e' between two adjacent stops when said stops are as far apart as possible, and all the stops on each side of said projection are in contact with each other.

The stops G are arranged immediately behind the projections e' and in close proximity thereto, so that when any stop-rod has moved far enough to carry its projection e' between two adjacent stops no other stop-rod can be moved backward, so that no two stop-rods can be simultaneously moved, and therefore no two keys can be simultaneously depressed.

The signals H each consist of a tablet of thin material, as sheet-metal, bearing the same number as the key which operates it and secured to the upper end of the vertical signal-rod h , which slides in horizontal guides $c c'$, which extend from side to side of the frame in the usual manner. Each stop-rod is provided with a laterally-projecting pin e^2 , which presses against the lower arm of a bell-crank lever I in such a manner that the other arm of said bell-crank lever, which extends under the lower end of the corresponding signal-rod h , is raised and raises said signal-rod and the signal carried thereby at every depression of the corresponding key, so that the number of said signal is displayed at windows $a^3 a^4$, with which the case is provided in the usual manner. Each signal-rod is provided with an incline h' and passes through a hole in a locking-rod J, which is supported horizontally in the frame of the machine below the upper guide c , and is provided with slots j , (see Fig. 3,) of greater width than the signal-rods, through which slots said signal-rods pass. A weighted lever j' is pivoted on a bracket j^2 , supported on the frame C in such a manner that an end of said lever bears against a shoulder j^3 on said locking-rod and forces a side or end of the slot j into contact with the incline h' of each signal-rod h , so that when any signal-rod is raised its incline forces said locking-rod endwise against the

resistance of said weighted lever j' until a notch h^2 , formed in each signal-rod at the lower end of its incline, is raised sufficiently to allow said locking-rod to be forced by the pressure of said lever j' into said notch and to retain said signal-rod in its elevated position with its corresponding signal displayed at the windows $a^3 a^4$, above mentioned.

When the signal is once displayed at the windows, it remains in an elevated position until the drawer B is opened. A lever J' is pivoted to the frame C at c^2 , the upper end of said lever engaging a downhanging projection j^4 and the lower end of said lever being pushed aside by a cam or incline b' , secured to the inside of the side of the drawer near the back thereof when the drawer is opened, the back of the drawer being cut away at b^2 to allow said back to move forward without striking the lower end of said lever J' . When the drawer is drawn forward, the lower end of said lever J' is swung toward the middle of the drawer and the upper end of said lever moves the locking-rod J against the resistance of the weighted lever j' and disengages said locking-rod from the signal-rod of a raised signal, allowing the same to fall.

A registering-lever K turns on the vertical pivot k and extends over all the keys of a bank or series, as shown in Figs. 1, 2, and 3, and each stop-rod is provided with an upward projection e^3 , arranged in front of said registering-lever and adapted to strike said lever and swing the same backward whenever a key is depressed, said lever carrying a pawl k' , pivoted thereon and engaging a registering-ratchet K' , said pawl being weighted to keep it in engagement with said ratchet. The projections e^3 , which strike and move the registering-lever K, are so arranged as to operate said registering-lever to rotate said registering-ratchet an angular distance measured by the number of teeth indicated by the number on the corresponding key, the depression of the key marked "1" rotating said ratchet an angular distance measured by one tooth of said ratchet, and the key marked "9," when completely depressed, causing said ratchet to rotate nine times as far. Secured to the same shaft l , with the registering-ratchet K' , is a gear L, having the same number of teeth as said ratchet, each having ten teeth or a multiple of ten teeth, preferably the latter.

The gear L engages a pinion L' , having ten teeth or a multiple of ten teeth and turning loosely on the shaft l' , (which also supports all the numbered registering-wheels $M M' M^2 M^3 M^4$;) and causes said pinion L' to make a complete revolution at every partial rotation of the registering-ratchet K' an angular distance measured by ten teeth of said registering-ratchet. (See Figs. 9, 14, and 16.) A ten-toothed ratchet l^2 is (except as hereinafter stated) loose on the hub l^3 of the pinion L' , concentrically therewith, but is caused to rotate therewith in the direction shown by the

adjacent arrow in Fig. 9 by a pawl l^4 , pivoted on an arm l^5 , projecting from said hub l^3 and engaging a small ten-toothed ratchet l^6 , secured to said ratchet l^2 . To the ratchet l^2 concentrically therewith is secured a registering wheel or drum, as M, carrying ten figures on its periphery, from "0" to "9," inclusive.

It will be understood that there are at least as many registering wheels or drums as there are banks of keys, five such registering-wheels M M' M² M³ M⁴ being represented in Fig. 3, the wheel M at the extreme right registering cents, the next M' registering dimes, the wheel M² registering dollars, the wheel M³ tens of dollars, and the wheel M⁴ registering hundreds of dollars. To each such registering-wheel a ratchet l^2 is secured. Each ratchet l^2 is prevented from a return movement by a spring-pawl l^7 , secured to a collar l^8 , fast on the horizontal rod l^9 . There are as many pawl-levers N pivoted on the rod l^9 as there are registering-wheels less one, and the ratchet l^2 of each registering-wheel (except the registering-wheel M at the extreme right) is engaged by a pawl n^2 , carried by such a pawl-lever. Each pawl-lever has a weighted arm, which tends to throw the upper pawl-carrying arm of said lever forward against a stop n . (See Fig. 9.) Each registering-wheel (except the one at the extreme left of the machine) is provided with a laterally-extending finger m , which once in every revolution of said registering-wheel strikes an incline n' on the pawl-lever N next to the left of said registering-wheel and crowds said pawl-lever backward far enough to turn the corresponding ratchet l^2 an angular distance measured by one tooth of said ratchet; but in case said registering-wheel is at some distance from the registering-wheel next to the left thereof a separate lever N', just like a pawl-lever N, but not carrying a pawl, is (see Figs. 11 and 14) pivoted on said rod and is connected rigidly by a rod n^3 to the pawl-lever next to the left, these two in effect forming a broad pawl-lever. Each registering-wheel (the cents-wheel M, the dimes-wheel M', the dollar-wheel M², and wheels M³ M⁴ to the left of the dollar-wheel) is so numbered with reference to the position of the finger m that in turning from "9" to "0" the next wheel to the left is rotated one-tenth of its circumference by the hooked pawl n^2 being drawn backward by the above-described action of the finger m on the incline of the pawl-lever. Thus when the registering-wheel in the lowest or in the intermediate section stands at "9" and it is rotated one-tenth by the depression of the key marked "1" in the case of the lowest section or "10" in the case of the intermediate section, the wheel so rotated immediately displays a "0" and causes the registering-wheel next to the left to display a figure one greater than the one previously displayed by it. The finger m , when its wheel makes a tenth of a revolution after bringing said finger m in

contact with said incline, passes by said incline and allows the lever carrying said incline to return to position.

The units or cents registering wheel M, or registering-wheel at the extreme right, may of course be rigidly secured to its pinion L' and ratchet l^2 , the parts always moving together, inasmuch as said registering-wheel M is never actuated by a registering-wheel of another denomination, said ratchet l^2 serving, with the corresponding pawl l^7 , merely to prevent a backward movement of said wheel M, and the finger m may be secured to said ratchet l^2 , as shown in Fig. 16.

At each side of the machine is pivoted, at o , a lever O on the frame C, Figs. 1 and 4, said levers O being held parallel with each other by their pivots o , and by the said rod f^2 , which connects said levers rigidly to each other, so that the depression of any key throws the forked upper ends o' of said levers O backward. On each key D is pivoted, at d^6 , a hook d^5 , the rear end d^7 of which drops by its own weight over the rod f^2 upon a depression of such key too slight to cause any movement of the registering-lever, said hook being disengaged from said rod f^2 when the key has nearly returned to position, by the front end d^8 of said hook running under an incline d^9 , secured to the inside of the front of the case, (see Fig. 1,) so that a depressed key can return to position only with said rod f^2 and levers O. At each side of the machine is arranged a horizontal sliding rod P, provided with a laterally-extending stud p near its front end, which enters the fork o' of a lever O, causing said rod P to move with the upper end of said lever O, the forward movement of such rod P and lever O being caused by the return of the weighted toggle-levers F F', above described, to their normal position. Each rod P is provided with a rack p' on its upper surface adapted to be engaged by pawls p^2 p^3 , pivoted at p^4 p^5 on the case A. The pawls which engage the same rack-rod P are arranged with their free ends toward each other, and above each pawl is placed a leaf-spring Q Q', the shape of which is fully shown in Figs. 1, 4, and 7, secured to the case A in such a manner that either of said pawls may be raised and held by the pressure of the corresponding spring out of engagement with the rack-bar P. A lever Q³ is pivoted to the case A at each end of the machine and is provided with laterally-projecting arms q q' , which extend over the pawls p^2 p^3 in such a manner that when either pawl is thrown upward into engagement with its spring the other pawl is thrown downward out of engagement with its spring. When the rack-rod P is pushed backward, the pawl p^2 engages said rack p' and prevents the return of said rack-rod until the key to which the motion of the rack-rod is due is fully depressed. When any key is fully depressed and the rack-rod has completed its backward movement, the pawl p^2 is raised out of engagement with the

rack p' by an incline p^6 , secured to said pawl, riding up over another incline p^8 , secured to said rack-rod. The pawl p^2 is thus raised sufficiently to rock the lever Q^3 and to become
 5 engaged by the spring Q , which holds said pawl p^2 until the return of said rack-rod to its normal position. The rocking of the lever Q^3 by the raising of the pawl-rod p^2 throws the pawl p^3 down into engagement with the rack p'
 10 and prevents any backward movement of said rack-rod until the forward movement of said rack-rod is completed. Just at the completion of the forward movement of the rack-rod P an incline p^7 , with which the pawl p^3 is
 15 provided, is raised by an incline p^9 , secured to the rack-rod, lifting the pawl p^3 high enough to be engaged by its spring Q' , rocking the lever Q^3 , and throwing the pawl p^2 again into engagement with the rack-bar. By
 20 the means above described the depression of any partially-depressed key must be completed before such key can be restored to its normal position, and its return movement must be completed before any second depression of said key is possible. (See Figs. 1 to 7.)

A rock-shaft R is journaled in brackets r , secured to the inside of the case A back of the drawer B , and is provided near each end with a hooked arm or latch r' , which engages
 30 the back of the drawer and prevents the opening of the same, the free end of said latch r' being beveled at r^2 in such a manner that the drawer may be shoved back under said latch, raising the same and rocking the rod
 35 R in an obvious manner. The rock-shaft R is provided near its ends with arms r^3 , through which pass the lower ends of the vertical unlatching-rods R' , nuts r^4 being turned on said rods R' below said arms r^3 and said unlatching-rods being guided in holes r^5 in the part
 40 of the case on which the frame C rests and in guides r^6 , secured to said case. The upper end of each unlatching-rod R' is bent laterally in such a manner as to be struck and
 45 raised by a pivoted finger p^{10} on the rack-rod P , said finger running under the bent upper end of said unlatching-rod and lifting the same when the rack-rod is pushed backward, and said finger being offset at p^{11} in such a
 50 manner that when said rack-rod is pushed back to its greatest extent said offset passes said unlatching-rod and allows said unlatching-rod to fall in front of said offset. When the rack-rod P returns to position, said offset
 55 p^{11} rides over the top of the unlatching-rod and drops in front of said rod in position to raise said rod upon the subsequent depression of any key. (See Figs. 1 to 6.)

Each registering-lever K is restored to position after the depression of the key by weighted toggle-levers $K^2 K^3$, similar to the levers $F F'$, the rear end of the weighted levers K^3 being pivoted on the same rod f on which the rear ends of the weighted levers F are pivoted,
 60 said levers $K^2 K^3$ being pivoted to each other at their adjacent ends, at k^2 , and the front end of the lever K^2 being notched at k^3 (see Fig.

1) to receive said registering-lever near the front end of said registering-lever, which is also notched at k^4 (see Fig. 2) to receive the
 70 front end of said lever K^2 and to prevent a lateral movement of the same on said registering-lever.

On the rod f are supported as many paper-reels S as there are keys, each reel carrying
 75 a strip of paper s , (see Fig. 1,) and being provided with a ratchet the teeth of which are represented as laterally-projecting pins s' , arranged at equal intervals from each other and at equal distances from said rod f , and
 80 therefore at equal distances from the center of said reel, adapted to be engaged by a spring-pawl s^2 , such a pawl being secured on each stop-rod E and having a beveled free end s^3 adapted to slide under and past one
 85 of said pins s' when said stop-bar is pushed backward and to engage one of said pins and to rotate said paper-reel when said stop-bar returns to its normal position. Each paper-reel is prevented from a backward movement
 90 by a spring-pawl s^4 , secured to the back of the case and engaging said pins s' .

In the rear of each stop-rod E is pivoted on the rod s^5 a type-lever s^6 , provided with a type formed by a number of pins arranged in
 95 the outline of a figure, as shown at s^7 in Fig. 13, said type-levers being so arranged as to be struck by the backward movement of the stop-rods E , and the figure on each type-lever agreeing with the figure on the key which
 100 actuates it, so that when any key is depressed the type-lever is thrown back against the paper s , which hangs from the corresponding paper-reel S and prints upon said paper a figure corresponding with the figure on the depressed
 105 key. The type-lever also carries at its upper edge a knife s , which cuts off a piece from the lower end of the strip of paper so marked or printed and allows the printed ticket thus made to fall into a pocket a^5 , arranged in the lower
 110 part a' of the case A in the rear of the drawer B , and closed by a door a^7 , provided with a lock a^8 , of which only the proprietor or cashier or other trusted person has the key. A window a^6 at the back of the case A allows the
 115 reels S to be inspected and the amount of paper on each to be approximately known in order that said reels may be at all times properly supplied with paper.

The alarm devices (see Figs. 1 and 8) consist of a bell or gong T , suitably supported
 120 on the inside of the case A , a bell-lever t , pivoted at t' on said case and having a slightly elastic upper arm, and a hammer t^3 , secured to its upper end and forced by a spring t^4 ,
 125 which presses upon the lower arm of said bell-lever, into close proximity with said gong, the lower end of said bell-lever having a lateral projection t^5 , as shown in Fig. 8, which extends over the drawer B , said drawer being
 130 cut away at b^3 at the side of the drawer to admit said projection and another spring t^2 being secured to the top of said drawer and extending over the cut b^3 in such a manner that

when the drawer is pushed into the case said lateral projection on said bell-lever runs under said last-named spring, lifting the same, and passing by the free front end thereof, so that when the drawer is again opened said spring t^2 runs under said lateral projection, turning said bell-lever upon its fulcrum and carrying the hammer away from the gong until said spring t^2 passes the projection t^3 and allows the bell-lever to be restored to position by the action of the spring t^4 , the momentum of the bell-hammer carrying it against the gong T.

I claim as my invention—

1. The combination of a series of keys, an equal series of sliding horizontal stop-rods, each moved backward by the depression of one of said keys and each provided with a downward projection, a series of movable stops arranged below said stop-rods and adapted to be pushed aside by said projections when said rods are pushed backward, fixed stops arranged one at each end of said series of movable stops, the distance between said fixed stops being greater than the length of said series of movable stops by the width of one of said projections, to prevent the simultaneous backward movement of two or more stop-rods and thereby to prevent the simultaneous depression of two or more keys, as and for the purpose specified.

2. The combination of a series of keys, an equal series of sliding horizontal rods, each operated by one of said keys, an equal series of bell-crank levers, each operated by one of said rods, and an equal series of signals, each mounted upon a vertically-sliding signal-rod and each raised by one of said levers, as and for the purpose specified.

3. The combination of a series of numbered keys, an equal series of sliding horizontal rods, each operated by the depression of one of said keys, and an equal series of type-levers, each arranged to be moved by the movement of one of said rods and each provided with a type corresponding to the number on the key by which such type-bar is actuated, as and for the purpose specified.

4. The combination of a series of numbered keys, an equal series of sliding horizontal rods, each operated by the depression of one of said keys, an equal series of type-levers, each arranged to be moved by the movement of one of said rods and each provided with a type corresponding to the number on the key by which such type-lever is operated to print a number corresponding to the number of the key depressed upon a strip of paper, and a knife secured to said type-lever to cut a ticket so printed from said strip, as and for the purpose specified.

5. The combination of a series of numbered keys, an equal series of sliding horizontal rods, each operated by the depression of one of said keys, an equal series of type-levers, each arranged to be moved by the movement

of one of said rods and each provided with a type corresponding to the number on the key by which such type-lever is actuated, and an equal series of paper-reels, each adapted to be partially rotated at each return movement of one of said rods, to unwind a strip of paper carried on such reel and to bring the end portion of such strip into a position to be printed by the type of the corresponding type-lever, as and for the purpose specified.

6. The combination of a series of numbered keys, an equal series of sliding horizontal rods, each operated by the depression of one of said keys, an equal series of type-levers, each arranged to be moved by the movement of one of said rods and each provided with a type corresponding to the number on the key by which said type-lever is actuated, an equal series of paper-reels, each provided with a ratchet concentric therewith, an equal series of pawls, each secured to one of said rods and adapted to engage one of said ratchets and to give a partial rotation to the corresponding reel at each return movement of the rod to which such pawl is secured, to unwind a strip of paper carried by such reel and to bring the end portion of such strip into a position to be printed by the type of the corresponding type-lever, as and for the purpose specified.

7. The combination of a series of numbered keys, an equal series of sliding horizontal rods, each operated by the depression of one of said keys, an equal series of type-levers, each arranged to be moved by the movement of one of said rods and each provided with a type corresponding to the number on the key by which such type-lever is actuated, an equal series of paper-reels, each provided with a ratchet concentric therewith, an equal series of pawls, each secured to one of said rods and adapted to engage one of said ratchets and to give a partial rotation to the corresponding reel at each return movement of the rod to which such pawl is secured, to unwind a strip of paper carried by such reel and to bring the end portion of such strip into a position to be printed by the type of the corresponding type-lever, and retaining-pawls adapted to engage said ratchets and to prevent a reverse movement of said paper-reels, as and for the purpose specified.

8. The combination of a series of numbered keys, an equal series of sliding horizontal rods, each operated by the depression of one of said keys, an equal series of type-levers, each arranged to be moved by the movement of one of said rods and each provided with a type corresponding to the number on the key by which such type-lever is actuated, an equal series of paper-reels, each adapted to be partially rotated at each return movement of one of said rods, to unwind a strip of paper carried on such reel and to bring the end portion of such strip into a position to be printed by the type of the corresponding type-lever, and

a knife secured to said type-lever to cut a ticket so printed from said strip, as and for the purpose specified.

9. The combination of a case, a drawer sliding therein, a series of keys, an equal series of signals and signal-rods, each carrying one of said signals and adapted to be raised by the depression of a corresponding key, a locking-piece adapted to hold up any raised signal-rod, and a lever operating said locking-piece and actuated by the opening of said drawer to release a raised signal-rod and to allow said signal-rod and its signal to fall, as and for the purpose specified.

10. The combination of a case, a drawer sliding therein, a series of keys, an equal series of signals and signal-rods, each carrying one of said signals, a locking-piece adapted to engage and hold up any raised signal-rod, a lever, one end of which engages said locking-piece, and an incline or cam secured on said drawer and adapted to strike and turn said lever when said drawer is opened and to disengage said locking-piece from such raised signal-rod and to allow said rod to fall, as and for the purpose specified.

11. The combination of a key, a horizontal rod having a rack and adapted to be moved longitudinally in one direction by the depression of said key and in the other direction by the return of said key to its normal position, two pawls each adapted to engage said rack-rod and to prevent, each in the opposite direction from the other, the longitudinal movement of said rack-rod, said rack-rod having two projections, each adapted to strike one of said pawls and to throw the same out of engagement with said rack-rod at the completion of the movement of said rack-rod in one direction, and a lever arranged to be struck by either of said pawls when said pawl is thrown out of such engagement and simultaneously to strike the other of said pawls and to throw said last-named pawl into such engagement, as and for the purpose specified.

12. The combination of a key, a horizontal rod having a rack and adapted to be moved longitudinally in one direction by the depression of said key and in the other direction by the return of said key to its normal position, two pawls, each adapted to engage said rack-rod and to prevent each in the opposite direction from the other, the longitudinal movement of said rack-rod, said rack-rod having two projections, each adapted to strike one of said pawls and to throw the same out of engagement with said rack-rod at the completion of the movement of said rack-rod in one direction, a lever arranged to be struck by either of said pawls when said pawl is thrown out of such engagement and simultaneously to strike the other of said pawls and to throw said last-named pawl into such engagement, and spring-pressers, each adapted to hold one of said pawls out of engagement with said rack-rod, as and for the purpose specified.

13. The combination of a series of keys, an equal series of hooks, each pivoted on one of said keys, a lever, a horizontal bar rigidly secured to said lever and adapted to be moved in one direction by the depression of any key and to be engaged by any hook upon the depression of the corresponding key and to prevent a return movement of said key until the return movement of said bar and lever, a rack-rod connected to said lever and moved thereby, two pawls, each adapted to prevent, each in the opposite direction from the other, the longitudinal movement of said rack-rod, said rack-rod having two projections, each adapted to strike one of said pawls and to throw the same out of engagement with said rack-rod at the completion of the movement of said rack-rod in one direction, and a lever arranged to be struck by either of said pawls when said pawl is thrown out of engagement and simultaneously to strike the other of said pawls and to throw said last-named pawl into such engagement, as and for the purpose specified.

14. The combination of a series of keys, an equal series of hooks, each pivoted to one of said keys, a lever, a horizontal bar rigidly secured to said lever and adapted to be moved in one direction by the depression of any key and to be engaged by any hook upon the depression of the corresponding key and to prevent a return movement of said key until the return movement of said bar and lever, a rack-rod connected to said lever and moved thereby, two pawls, each adapted to prevent, each in the opposite direction from the other, the longitudinal movement of said rack-rod, said rack-rod having two projections each adapted to strike one of said pawls and to throw the same out of engagement with said rack-rod at the completion of the movement of said rack-rod in one direction, a lever arranged to be struck by either of said pawls when said pawl is thrown out of engagement and simultaneously to strike the other of said pawls and to throw said last-named pawl into such engagement, and an incline adapted to be struck upon the return to position of any depressed key by a forwardly-extending arm with which each hook is provided to disengage the hook on such key from said horizontal bar and to allow each key to be operated independently of the others, as and for the purpose specified.

15. The combination of a key and weighted toggle-levers adapted to be bent by the depression of said key and by their extension to restore said key to its normal position, as and for the purpose specified.

16. The combination of a series of keys and weighted toggle-levers adapted to be bent by the depression of any of said keys and by their extension to restore any depressed key to position, as and for the purpose specified.

17. The combination of a series of keys, a registering-lever actuated by any of said keys,

registering devices actuated by the movement of said registering-lever, and toggle-levers adapted to be bent by the movement of said registering-lever upon the depression of any key and by their extension to restore said registering-lever to position when such key is released, as and for the purpose specified.

18. The combination of the case, a drawer sliding therein, a series of keys, a sliding rod having a backward longitudinal movement upon the depression of any of said keys, a finger supported upon said rod, an unlatching-rod adapted to be raised by said finger upon the backward movement of the same, and a latch to engage said drawer and retain the same in said case and adapted to be disengaged from said drawer by the raising of said unlatching-rod, as and for the purpose specified.

19. The combination of the case, a drawer sliding therein, a series of keys, a sliding rod having a backward longitudinal movement upon the depression of any of said keys, a finger supported upon said rod, an unlatching-rod adapted to be raised by said finger upon the backward movement of the same, and a latch-shaft having a latch to engage said drawer and retain the same in said case and adapted to be rocked by the raising of said unlatching-rod to release said drawer, as and for the purpose specified.

20. The combination of the case, a drawer sliding therein, a series of keys, a sliding rod

having a backward longitudinal movement upon the depression of any of said keys, a finger pivoted upon said rod and having an offset, an unlatching-rod bent laterally at its upper end and adapted to be raised by said finger running under said bent upper end and to fall when said offset passes said bent upper end, and a latch-shaft having a latch to engage said drawer and retain the same in said case and adapted to be rocked by the raising of said unlatching-rod to release said drawer, as and for the purpose specified.

21. The combination of the case, the drawer sliding therein, a bell supported on said case, and a pivoted bell-lever having at its lower end a lateral projection, a spring secured to said drawer and arranged to pass over said projection when said drawer is being closed and to run under said lateral projection when said drawer is opened to turn said bell-lever away from said bell, and another spring arranged to throw said bell-lever toward said bell when said first-named spring passes said projection and releases said bell-lever, as and for the purpose specified.

In witness whereof I have signed this specification, in the presence of two attesting witnesses, this 18th day of November, A. D. 1891.

JAMES JACQUES.

Witnesses:

ALBERT M. MOORE,
SUSIE H. KENT.