

(No Model.)

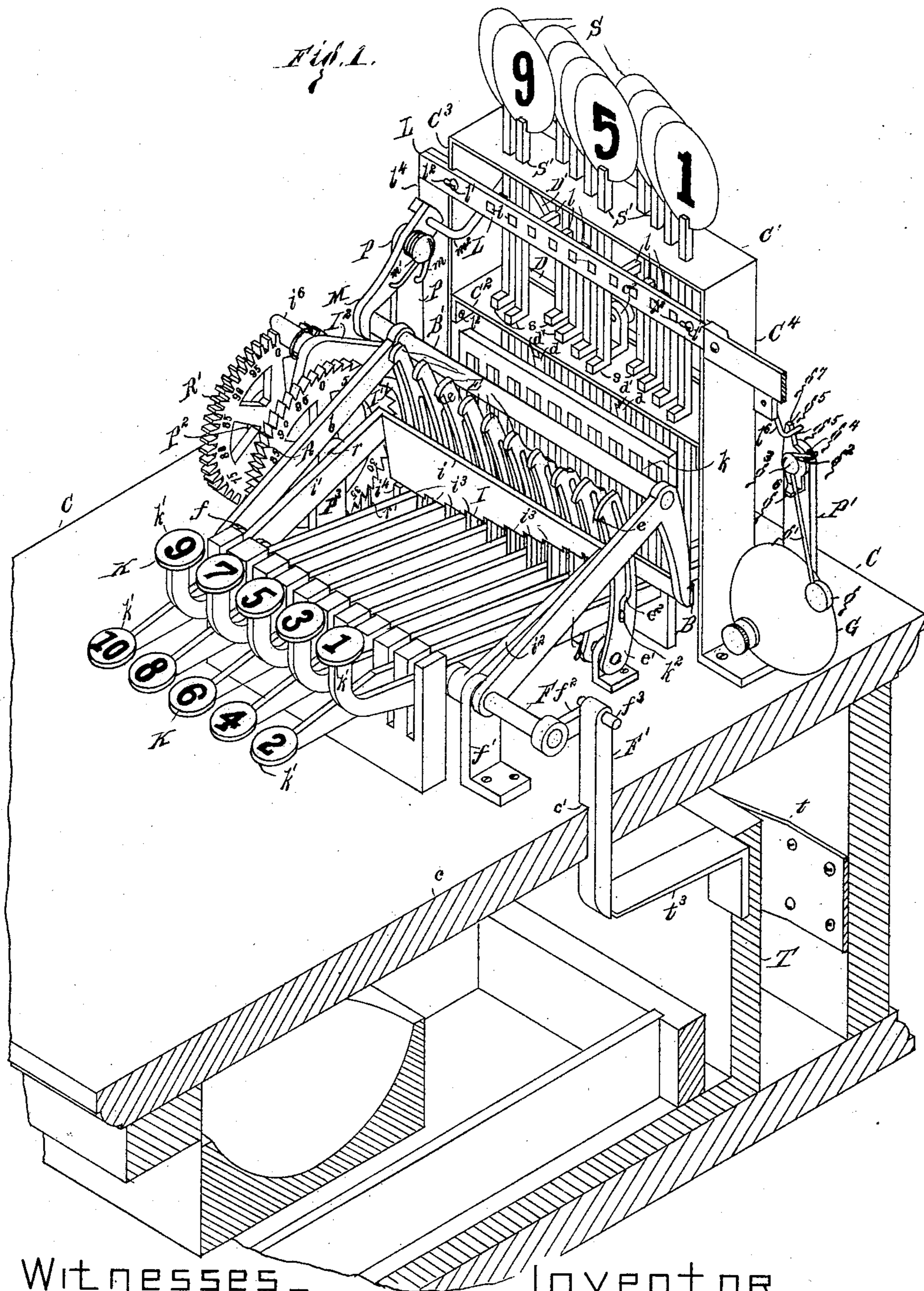
3 Sheets—Sheet 1.

J. J. WEBSTER.

CASH REGISTER AND INDICATOR.

No. 377,342.

Patented Jan. 31, 1888.



Witnesses.

Kirkpatrick

Lucius M. Day

Inventor_

Jerome J. Webster,
By Albert M. Moore,
His Attorney.

(No Model.)

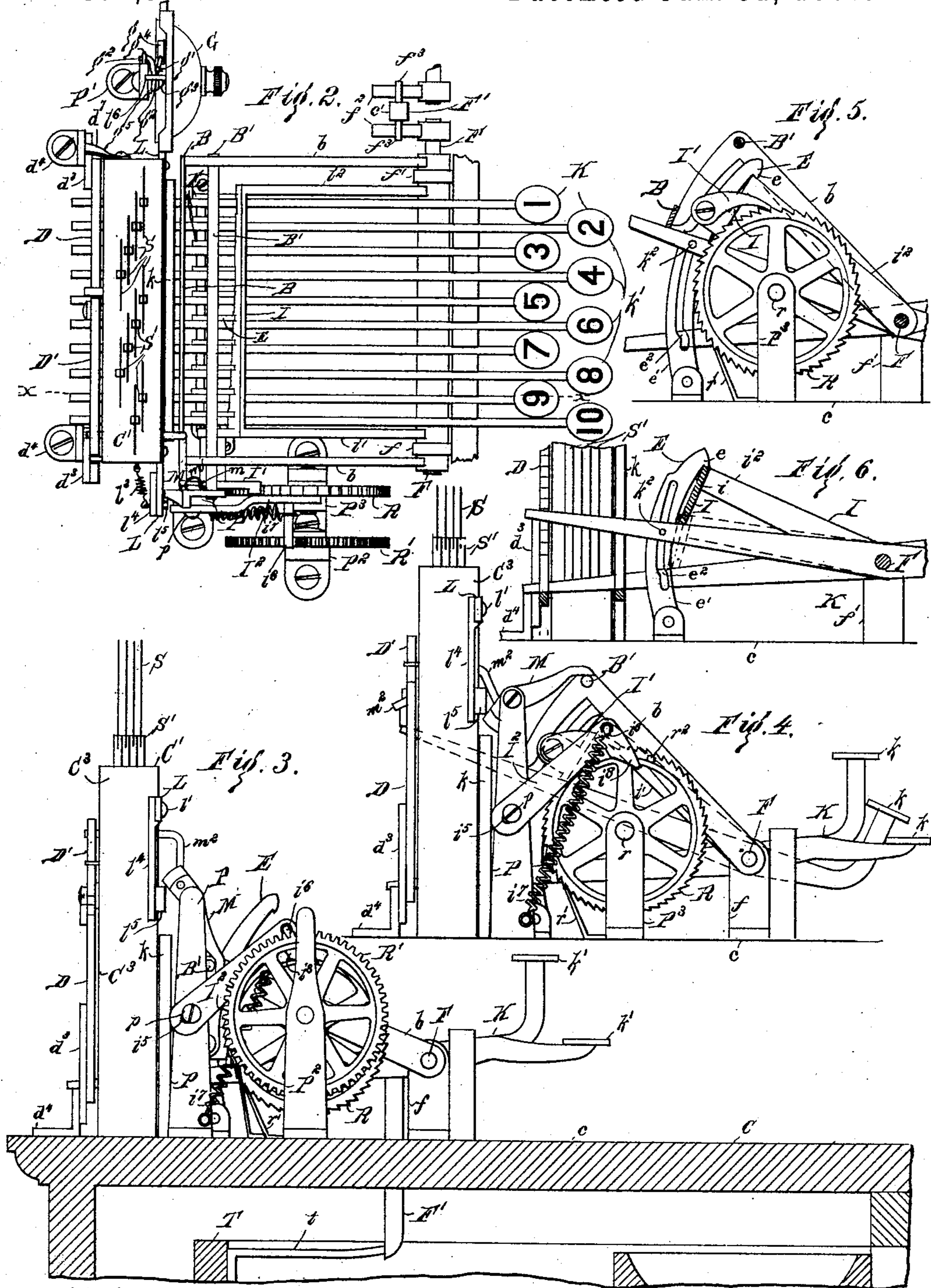
3 Sheets—Sheet 2.

J. J. WEBSTER.

CASH REGISTER AND INDICATOR.

No. 377,342.

Patented Jan. 31, 1888.



Witnesses—

Wirkley Gole
Lutwade M. Day.

Inventor—

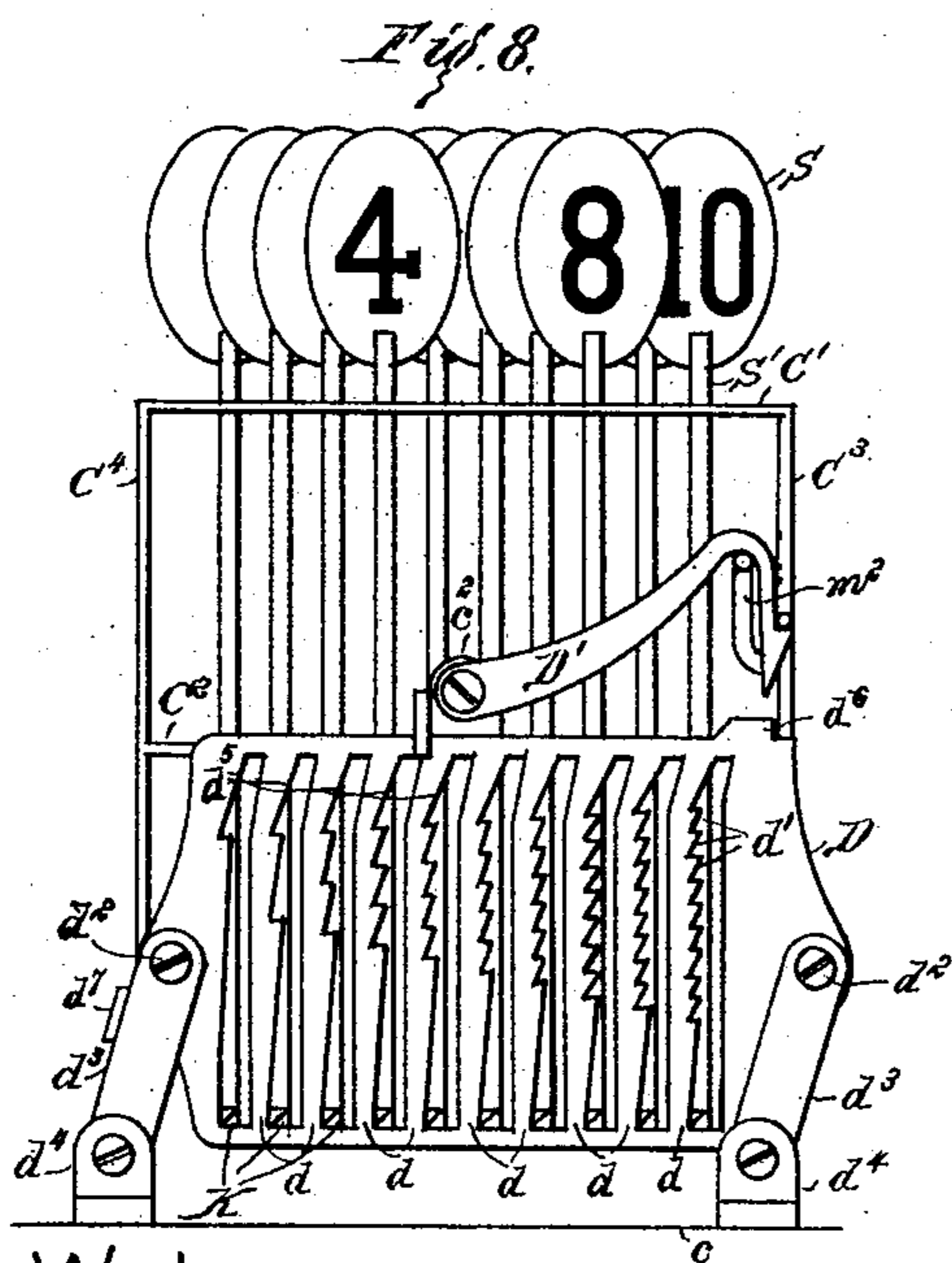
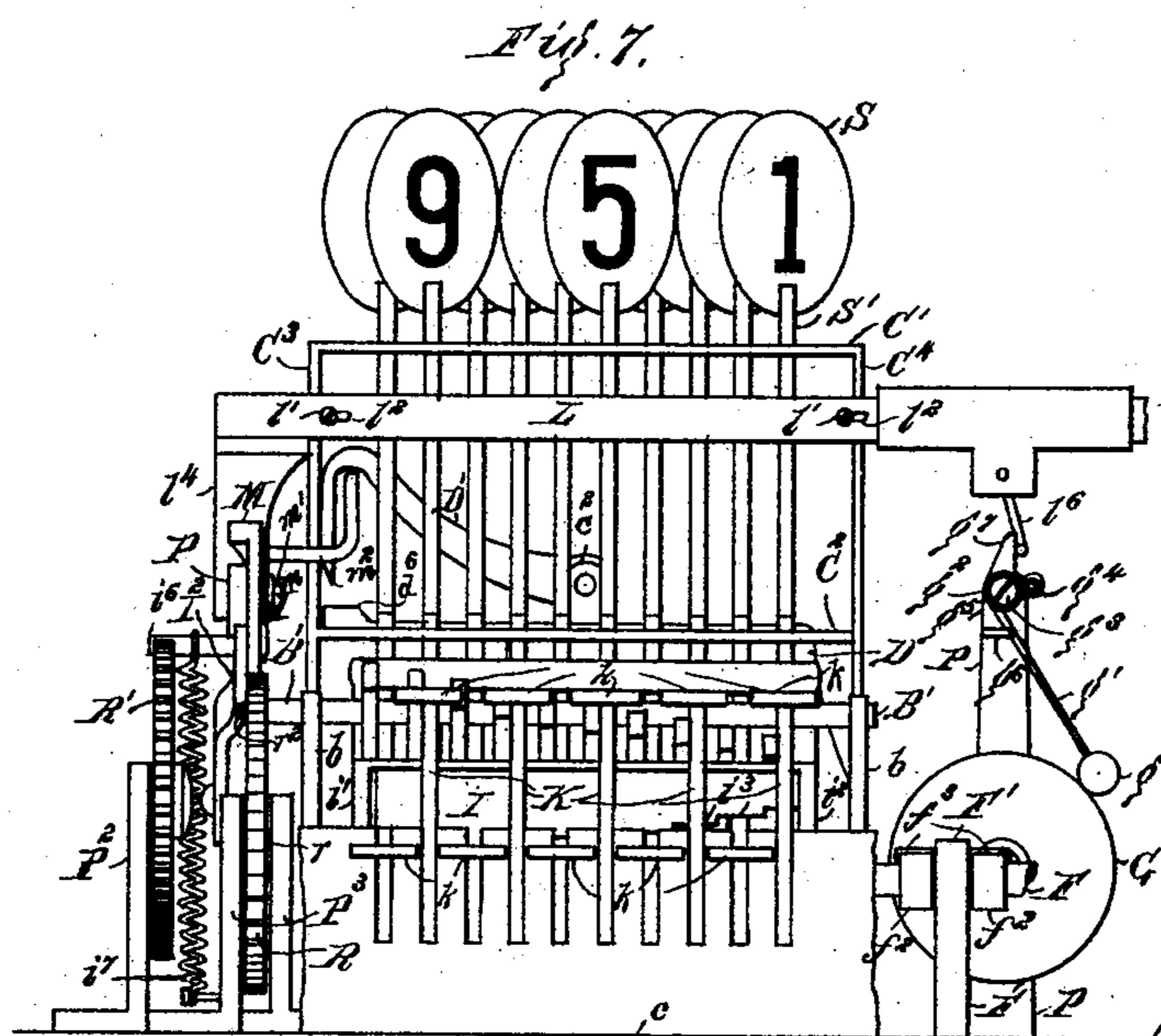
Jerome J. Webster,
By Albert M. Moore,
His Attorney.

3 Sheets—Sheet 3.

CASH REGISTER AND INDICATOR.

No. 377,342.

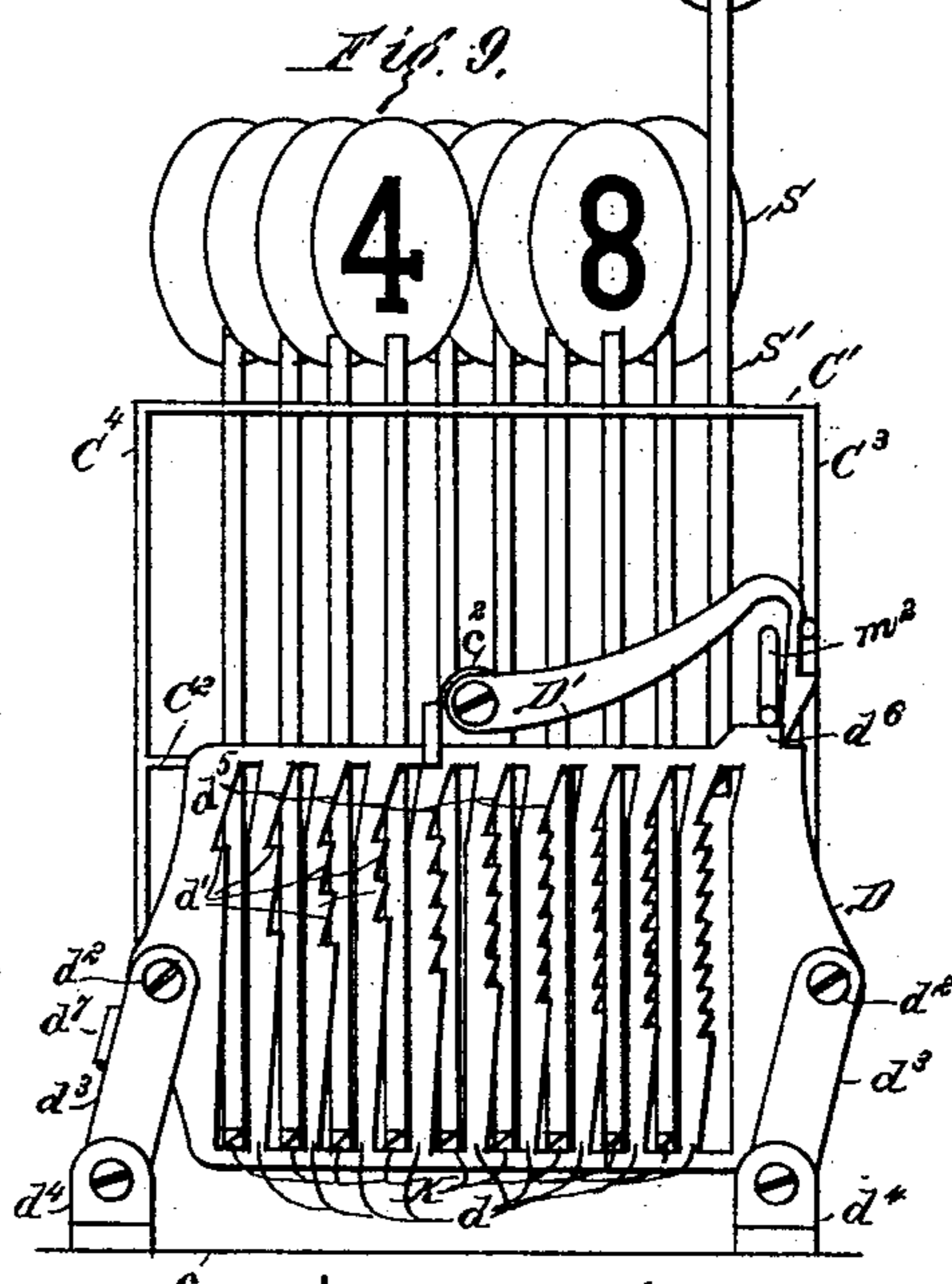
Patented Jan. 31, 1888.



Witnesses.

Kirkley 1890.

Gertrude M. Day.



Inventor_

Jerome J. Webster,
By Albert M. Moore,
His Attorney.

UNITED STATES PATENT OFFICE.

JEROME J. WEBSTER, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR TO THE
BOSTON CASH INDICATOR AND RECORDER COMPANY.

CASH REGISTER AND INDICATOR.

SPECIFICATION forming part of Letters Patent No. 377,342, dated January 31, 1888.

Application filed February 3, 1887. Serial No. 226,411. (No model.)

To all whom it may concern:

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

10 My invention relates to cash indicators and registers; and it consists in the devices and combinations hereinafter described and claimed.

In the accompanying drawings on three
15 sheets, Figure 1 is an isometric view of a portion of the case and till (in vertical section) and of a money-tray (also in vertical section) placed in said till and of the registering, indicating, alarm, and till-locking devices; Fig.
20 2, a plan of the parts shown in Fig. 1, omitting the case and till; Fig. 3, a left-side elevation of the parts shown in Fig. 2, mounted upon the case, which, with the till and money-tray contained therein, is shown in vertical section;
25 Fig. 4, like Fig. 3, omitting the registering-gear, except that in Fig. 4 one of the keys is depressed and the unlocking-lever is raised out of its normal position shown in Fig. 3; Fig. 5, a left-side elevation of the registering-
30 ratchet, a key, (depressed,) the graduated lever, the pawl carried on said lever, and the bar which operates the lever which unlocks the signal-locking devices; Fig. 6, a vertical section from front to back on the line $x x$ in
35 Fig. 2, the upper part of the frame which supports the guides, the signals, and signal-rods being broken away; Fig. 7, a front elevation of the parts shown in Fig. 2 in their normal position; Figs. 8 and 9, rear elevations of the
40 frame, the signals and signal-rods, the grids, and the hooks which lock the grids to hold up the rear ends of the keys until they have been raised to their highest position and let go, the grids being unlocked in Fig. 8 and
45 locked in Fig. 9.

The case C is of the usual construction, and serves to support the indicating, registering, alarm, and till-locking devices, and contains
50 a till, T, which, when free to move, is thrown outward by a spring, t , secured to the case on the inside thereof behind the till and pressing

against the till in the usual manner. In practice an upper part of the case (not shown) conceals the registering and alarm devices and also the signals, except when raised, the signals being then visible through glass windows
55 in the usual manner. Upon the top or table e of the case are secured fulcrum-rod brackets $f f'$, in which turns the horizontal fulcrum-rod F. 60

Upon the fulcrum-rod F the key-levers or keys K turn (all having an equal range of motion with each other) freely, being guided by vertical guides k , in the usual manner. Above
65 the rear ends of the keys are arranged vertical signal-rods S' , carrying at their upper ends signals S, marked with numbers corresponding to numbers upon the buttons or flat front ends, k' of the keys K, also in the usual manner. The signal-rods are guided vertically by
70 passing through holes in two parallel horizontal bars, $C' C^2$, being lifted by the rear ends of the keys when the front ends of the keys are depressed. The signal-rods are arranged in
75 oblique ranks, as shown in Figs. 1 and 2, to save space, and are each provided with forwardly-projecting pins s , which, when the signals are not raised, rest upon the lower guide-bar, C^2 , and when raised are held up by backwardly-projecting pins l on the locking-rod L. 80
The locking-rod L is secured to vertical standards $C^3 C^4$, which support the signal-rod guides $C' C^2$ by means of studs or screws l' , which pass through longitudinal slots l'' in said locking-rod and allow the same to have a longitudinal
85 motion. Said locking-rod is normally pushed to the right by a spring, l^3 , connected to said locking-rod and to one of the standards which support the same, in such a manner as to bring each of the pins l directly above or be- 90
low (above when the signals are not raised) one of the pins s . When any one of the keys K is depressed and the corresponding signal is thereby raised, the locking-rod is at the
95 same time moved to the left, by means hereinafter described, to allow the pin on the signal-rod of said signal to pass above the corresponding pin on the locking-bar, whereupon the locking-bar, being released, springs to the
100 right, carrying one of its pins under the pin on said signal-rod to support said signal in a raised position until, another key being de-

pressed, the locking-rod is again moved to the left, allowing the signal or signals previously raised to drop.

The locking-rod L is provided with a down-hanging arm, l^4 , as shown in Figs. 2 to 4, which is provided with a forwardly-projecting stud, l^5 , the parallel sides of which are inclined downward from left to right.

Above the keys, and normally in contact therewith, back of the fulcrum-rod, is a horizontal bar, B, rigidly connected by arms b to said fulcrum-rod, so that the depression of any key raises said bar. Parallel with said bar B, and above the same, is another bar, B', connected by the same arms, b , to the fulcrum-rod, said arms being bent to support both of said bars B B', as shown in Fig. 5.

To a post, P, back of the bar B is pivoted the unlocking-lever M, the lower end of which reaches in front of said bar B', so that depressing any key swings said lower end forward and causes the upper arm of said unlocking-lever to be depressed. The parallel sides of the upper end of said unlocking-lever are inclined downward from left to right, said upper end being normally placed above the inclined projection l^5 of the locking-rod, so that when any key is depressed and the unlocking-lever is rocked, as above described, said upper end, being drawn down past the projection l^5 , moves the locking-rod to the left, allowing the signals, then in a raised position, to drop, and then letting go of the locking-rod and allowing it to move to the right to hold up the signal raised by the key last depressed after said key is released. To a post, P', is secured a small gong, G, and to the same post is pivoted the spring striking-wire g' of the hammer g of said gong, being forced by a spring, g^2 , into or nearly into contact with said gong, the spring g^2 and the striking-wire being shown in Fig. 1 as both of one piece, the striking-wire being wound around the pivot g^3 , and then bent through an eye, g^4 , secured to said post P'. A hammer-lever, g^5 , consisting of a lower arm, g^6 , which rests against the left side of the striking-wire, and an upper arm, g^7 , turns on said pivot g^3 . A downward projection, l^6 , from the locking-rod L presses against the upper arm, g^6 , and when the locking-rod is moved to the left draws the hammer away from said gong, and, suddenly releasing said hammer-lever when said locking-rod springs to the right, allows said hammer to strike the gong to call the attention of customers. The fulcrum-rod is provided with a backwardly-extending arm, f^2 , (see Fig. 1,) and a bolt, F', provided with a backwardly and downwardly beveled lower end, is passed through a hole, c' , in the table c , the upper end of said bolt being provided with one or more lateral ears, f^3 , which rest upon said arm f^2 . The bolt F' is long enough to reach down in front of the back side of the till or in front of a bracket, t^3 , secured to said back of said till, so that when the till is pushed in under the beveled lower end of the bolt the bolt is raised up and then

drops of its own weight down in front of said bracket t^3 and prevents the till from being drawn out until one of the keys is depressed and the fulcrum-rod is rocked.

The graduated registering-lever I consists of a bar, i , parallel to the fulcrum-rod F in the rear of the same and above the keys K, and connected to said fulcrum-rod by arms i^1 i^2 , which turn loosely on said rod, the under side of said bar i being provided with steps i^3 or graduations, so that when none of the keys are depressed the lowest surface of said bar i is out of contact with the key (marked l^0) immediately below said lowest surface at the extreme left, said lowest surface of said bar then resting upon a stop, i^4 , and the vertical distance between said bar and the successive keys increasing from left to right from key to key. The registering-ratchet R turns upon a horizontal shaft, r , supported upon posts P', and is engaged and actuated by a pawl, I', pivoted on the registering-lever in the rear of said ratchet, the teeth of said ratchet being of uniform size and the steps of said registering-lever being so graduated that the depression of any key and the raising of the graduated bar and the pawl I' will move the ratchet through an angular distance represented by a number of the teeth corresponding to the number borne by said key.

The registering-ratchet R has preferably one hundred teeth, so that when used for registering cents a complete revolution of the same will indicate the receipt of one dollar. A retaining-pawl, r' , is used to prevent the ratchet from being turned backward by the friction of the actuating-pawl I'. A registering-gear, R', is pivoted on the post P', preferably a little higher than the ratchet, in order that the ratchet may not interfere with the reading of the figures upon the gear, the ratchet and gear serving as dials and having their teeth numbered, as shown in Fig. 1.

Upon the post P is pivoted the pawl I² by the pivot p , which passes through a longitudinal slot, i^5 , in said pawl I², said pawl having a tooth, i^6 , which engages with the teeth of said gear, and having also a downward projection, i^8 , which is beveled off on its under surface, as shown in Fig. 4, so that a projection, r^2 , on the ratchet R will strike said beveled surface and lift the tooth i^6 of said last-named pawl out of engagement with said gear and carry it into the next space between teeth, and upon the further rotation of said ratchet will be moved clear of said pawl, allowing it to drop into engagement with said gear, whereupon said last-named pawl will be caused by a spring, i^7 , connecting the upper end of said pawl and the post P, to move longitudinally downward and backward, turning said gear through an angular distance represented by one tooth of said gear, so that a complete revolution of said gear will register one hundred times as much as a complete revolution of said ratchet if the gear has the same number of teeth as said ratchet and each has one hundred teeth.

It is necessary that a partial registration of the amount taken by the person operating the indicator should not be made with dishonest intention or by carelessness. Accordingly, I provide the means described below for holding any key depressed unless said key is depressed to its fullest extent. The grid D consists of a frame of vertical and substantially-parallel rack-bars d , equal in number to the keys, the notches d' of said bars d being so arranged that the keys can be depressed—that is, that their rear ends can be raised by sliding over the teeth or notches and pushing the grids to one side, (to the right as one faces the machine and to the left in Figs. 8 and 9,) the grid being pivoted at d^2 to the upper ends of parallel inclined arms d^3 , said arms being pivoted at their lower ends to brackets d^4 , secured to the table, so that the weight of the rack-bars keeps their notched sides normally pressed against the keys, so that depressing any key causes its rear end to engage with the notches d' of its rack-bar and holds up said rear end, or, in other words, keeps the key depressed. The upper side, d^5 , of each of the upper notches d' , is a longer incline than the upper side of any of the notches below it, and overhangs such lower notches, so that when a key is engaged with the upper notch of its rack-bar a still further depression of said key causes the rear end of said key to push the grid still farther (to the left in Figs. 8 and 9) until none of the teeth of said rack-bar are vertically below said key, the grid being held in this position by a hook, D' , pivoted on a bracket, e^2 , supported on the lower signal-rod guide, C^2 , which hook drops over a projection, d^6 , on the top of the grid and allows the key to resume its normal position. The falling of the rear end of the key allows the bar B' to fall and the unlocking-lever to be restored to its normal position by the wire spring m , Fig. 1, the ends of which are secured to said lever and to the post P , respectively, said spring being wound around the pivot m' of said lever, the inclined upper end of said lever allowing it to slide up over the projection l^5 , above described. The unlocking-lever has a third arm, m^2 , which reaches under said hook D' and lifts the same when said lever returns to its normal position, releasing the grid, which then returns to its normal position. The notches in the several rack-bars vary in number, as shown in Figs. 8 and 9, it being necessary only that the keys should be prevented from returning to their normal positions after the registration is begun and before it is completed. Hence the rack-bar for any key has a number of notches equal to the number of ratchet-teeth which represent the angular distance said ratchet is capable of being revolved by a complete depression of that key. Thus the rack-bar of the key marked "1" has one notch, the rack-bar of the key marked "5" five notches, the notches being of such a length and so arranged as to engage a key just when the key turns the ratchet the distance represented by a tooth

of said ratchet, so that a depression of the key marked "1" does not affect the registration until just at the time when the notch of the rack-bar engages said lever, and if said key be released before engaging with said notch the key will return to its normal position, and the ratchet, if turned a part only of the distance represented by a tooth, will be turned back again that amount by the pressure of the retaining-pawl on the face of a tooth of said ratchet.

The above-described construction prevents a partial registration. The pressure of the rack-bars against their keys may be increased and the return movement of the grid be made quicker and more certain by a spring, d^7 , secured to the standard C^4 and pressing against the end of said grid.

To insure perfect accuracy, and in justice to the operator, it is also necessary to prevent the possibility of over-registration or registering a greater amount than is received or is intended to be registered. To this end there is a series of hooks, E , (see Figs. 1 and 6,) pivoted below the keys back of the fulcrum-rod, and having the upper ends or hooks proper, e , bent forward, as shown, there being as many hooks E as keys. The shank e' of each hook E has an inclined slot, e^2 , the upper end of which is nearer than the lower to the fulcrum-rod to receive a pin, k^2 , one such pin projecting from each key and entering one of said slots e^2 , said slots being so shaped and arranged as to allow the pins k^2 to move freely in them as the keys are depressed. The depression of any key causes the corresponding hook E to swing about its pivot, throwing the upper end, e , of said hook forward above the registering-lever and limiting the upward motion of said lever, to prevent said registering-lever and its pawl (by their momentum) from turning the ratchet too far. As the depression of the different keys is intended to register different amounts by raising the registering-lever through arcs of different lengths, the hooks are of different lengths, and the upper ends of said hooks are bent farther forward the higher the amounts intended to be registered by their respective keys, to allow the graduated bar of the registering-lever to move forward as it rises above its fulcrum. The distance between any key and its hook when the former is raised should be just the vertical depth of said graduated bar when raised at the point where the key and hook strike it. In order that the sudden depression of a key may not cause the graduated bar to rebound from the key before the hook reaches over it, the lower part of the slot e^2 is adapted to move the hook immediately upon beginning to depress said key, and said slot is thence continued upward in a curve which is concentric with the axis of the fulcrum F when the hook E is sufficiently over said graduated bar, the upper part of said slot e^2 allowing a loss of motion.

I claim as my invention—

1. The combination of a series of keys and

a grid composed of rack-bars adapted to be pressed automatically against said keys and provided with notches adapted to engage said keys, said grid being adapted to be moved laterally when said keys are depressed to allow said keys to pass said notches, each of said rack-bars being provided with an incline above said notches and overhanging said notches, whereby the raising of the rear ends of said keys to the tops of said inclines will move all of said notches out from under said keys and allow the same to return to their normal position, as and for the purpose specified.

2. The combination of a series of keys and a grid composed of rack-bars adapted to be pressed against said keys by their own gravity and provided with notches adapted to engage said keys, said grid being adapted to be moved laterally when any of said keys are depressed to allow said keys to pass said notches, each of said rack-bars being provided with an incline above said notches and overhanging said notches, whereby the raising of the rear ends of said keys to the tops of said inclines will move all of said notches out from under said keys and allow the same to return to their normal position, as and for the purpose specified.

3. The combination of a series of keys, a grid composed of rack-bars adapted to be automatically pressed against said keys and provided with notches adapted to engage said keys, said grid being adapted to be moved laterally when any of said keys are depressed to allow the rear ends of said keys to pass said notches, each of said rack-bars being provided with an incline above its notches, whereby the raising of the rear ends of said keys to the tops of said inclines will move all of said notches out from under said keys and allow said keys to return to their normal position, said grid being provided with a projection, and a hook adapted to swing over said projection and to prevent said notches from engaging with said keys, as and for the purpose specified.

4. The combination of a series of keys, a grid composed of rack-bars provided with notches and adapted to be automatically pressed against said keys and to engage said keys, each of said bars being provided above its notches with an incline, the upper end of which overhangs said notches, whereby raising the rear end of any of said keys to the top of an incline will move said grid to one side of said keys, said grid being provided with a projection, and a hook turning on a stationary pivot and adapted to engage with said projection to prevent said grid from returning to its normal position, a bar arranged above said keys and adapted to be raised by raising the rear ends of any of said keys, a lever provided with an arm which reaches under said hook, said lever being adapted to be operated to depress said arm to allow said hook to engage said projection when said bar is raised, and a spring to rock said lever upon its fulcrum when

said keys are restored to their normal position and to raise said hook out of engagement with said projection to allow said grid to return to its normal position, as and for the purpose specified.

5. The combination of a series of keys having a uniform range of motion and a graduated lever arranged to be struck and to be moved by any of said keys when the same are depressed, the under side of said lever being provided with as many steps or graduations as there are keys, whereby the distance through which said lever is moved is determined by the key which is struck or depressed, a registering-ratchet, and a pawl pivoted on said graduated lever, as and for the purpose specified.

6. The combination of a series of keys having a uniform range of motion, a registering-lever arranged to be struck and moved by any of said keys when the latter are depressed, said registering-lever being provided on its under surface above said keys with steps or graduations, a registering-ratchet, and a pawl pivoted to said registering-lever and engaging said ratchet, said keys being differently numbered and the number on each key representing the number of teeth by which said ratchet is rotated by a single depression of said key, as and for the purpose specified.

7. The combination of the registering-ratchet, the registering-gear, a pawl having a slot and being pivoted through said slot to allow said pawl a longitudinal motion, said pawl having a tooth which engages with the teeth of said registering-gear, and having also a downward projection beveled off on its under surface, said ratchet being provided with a projection arranged to strike the beveled surface of said pawl and to raise the tooth of said pawl out of engagement with said gear and to allow it to drop into the next space between teeth of said gear, and a spring arranged to draw the upper end of said pawl downward into engagement with said gear and, by restoring said pawl to position, to rotate said gear one tooth during every complete revolution of said ratchet, as and for the purpose specified.

8. The combination of a series of keys, a pin projecting from each of said keys, a series of hooks pivoted below said keys, the registering-lever arranged above said keys and provided with steps or graduations equal in number to said keys, the shanks of said hooks having each an inclined slot which receives the pins upon said keys, and said hooks being of different lengths and adapted to be thrown into engagement with said registering-lever to prevent said lever from being carried beyond its proper limit by its own momentum when raised by any of said keys, as and for the purpose specified.

9. The combination of a series of keys, a pin projecting from each of said keys, a registering-lever arranged above said keys and provided with steps or graduations equal in number to said keys, a series of hooks equal

in number to said keys, pivoted below said keys, and each having an inclined slot to receive the pin upon one of said keys, said hooks being adapted to be moved by the depression of said keys and the movement of said pins in said slots to engage with said graduated registering-lever, and each of said hooks being of a suitable length to prevent said registering-lever from being carried by its own momentum higher than the key appropriated to said hook should raise said lever, and a registering-ratchet, and a pawl pivoted on said registering-lever and engaging said ratchet, as and for the purpose specified.

10. The combination of the frame, the locking-rod provided with a projection and adapted to slide in said frame, a spring adapted to draw said locking-rod endwise in one direction, an unlocking-lever adapted, when turned upon its fulcrum, to press against said projection and to move said locking-rod against the resistance of said spring and to pass by said projection and to release said locking-rod, said locking-rod being provided with a series of pins, and a series of rods guided vertically in said frame and each provided with a pin adapted, when raised above a pin on said locking-rod, to be supported thereby, as and for the purpose specified.

11. The combination of the frame, the locking-rod provided with an incline and adapted to slide endwise on said frame, a spring adapted to draw said locking-rod in one direction, an unlocking-lever adapted, when turned upon its fulcrum, to press against said incline and to move said locking-rod against the resistance of said spring and to pass by said incline to release said locking-rod, signals provided with stems or signal-rods guided vertically in said frame and having projections, said locking-rod being provided with projections equal in number to the number of said signal-rods, a series of keys equal in number to said signal-rods, one of said signal-rods normally resting on each of said keys, and a bar resting upon said keys and adapted to engage and to turn said unlocking lever when any of said keys is depressed, as and for the purpose specified.

In witness whereof I have hereunto set my hand, in the presence of two subscribing witnesses, the 19th day of January, A. D. 1887.

JEROME J. WEBSTER.

Witnesses:

ALBERT M. MOORE,
GERTRUDE M. DAY.