

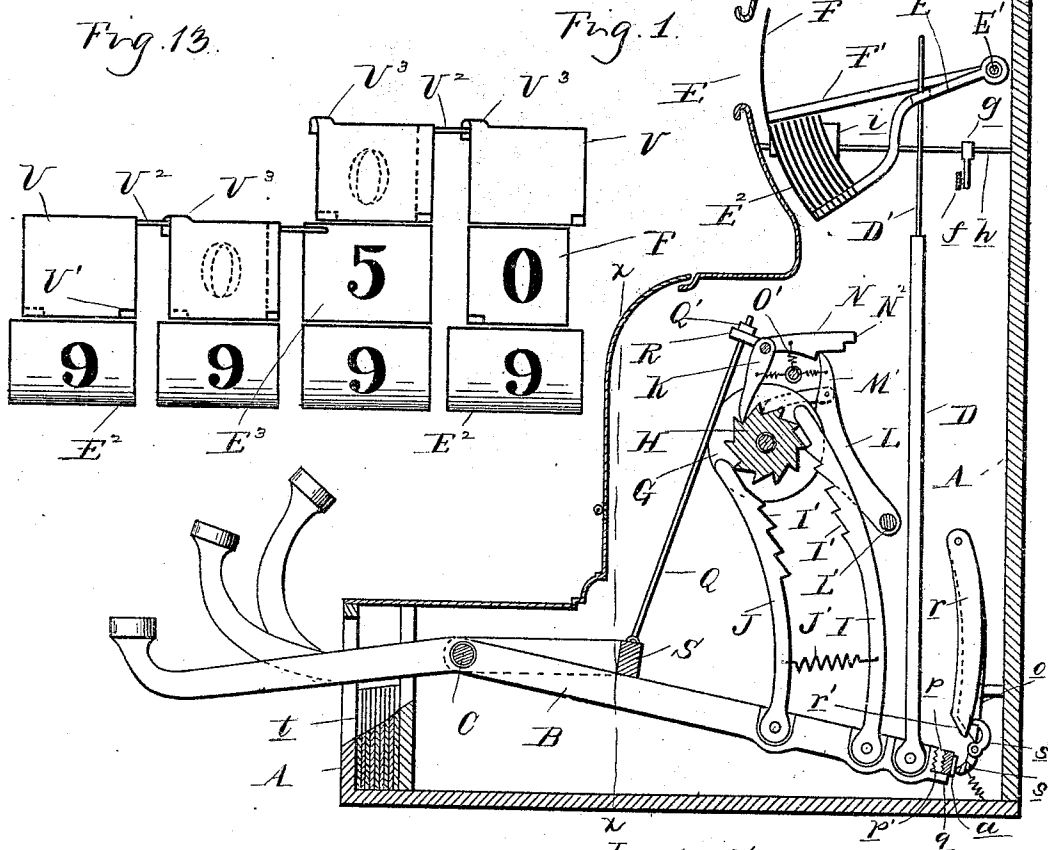
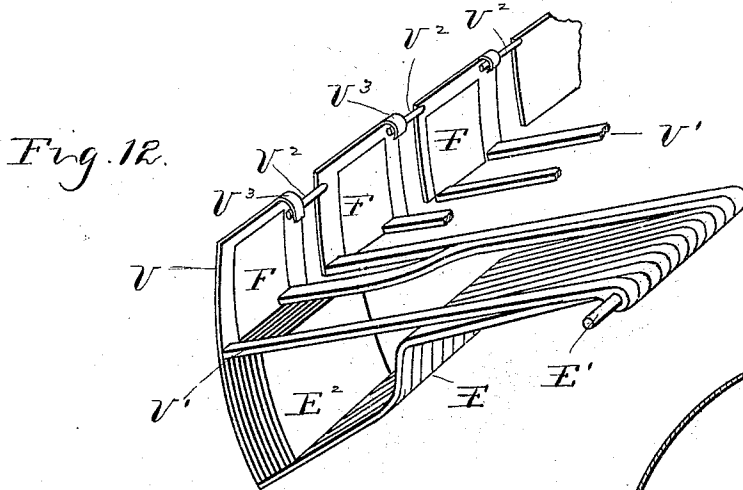
(No Model.)

5 Sheets—Sheet 1.

J. A. TREAT.
CASH REGISTER AND INDICATOR.

No. 510,211.

Patented Dec. 5, 1893.



Witnesses
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P. M. Hallbert

Inventor
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(No Model.)

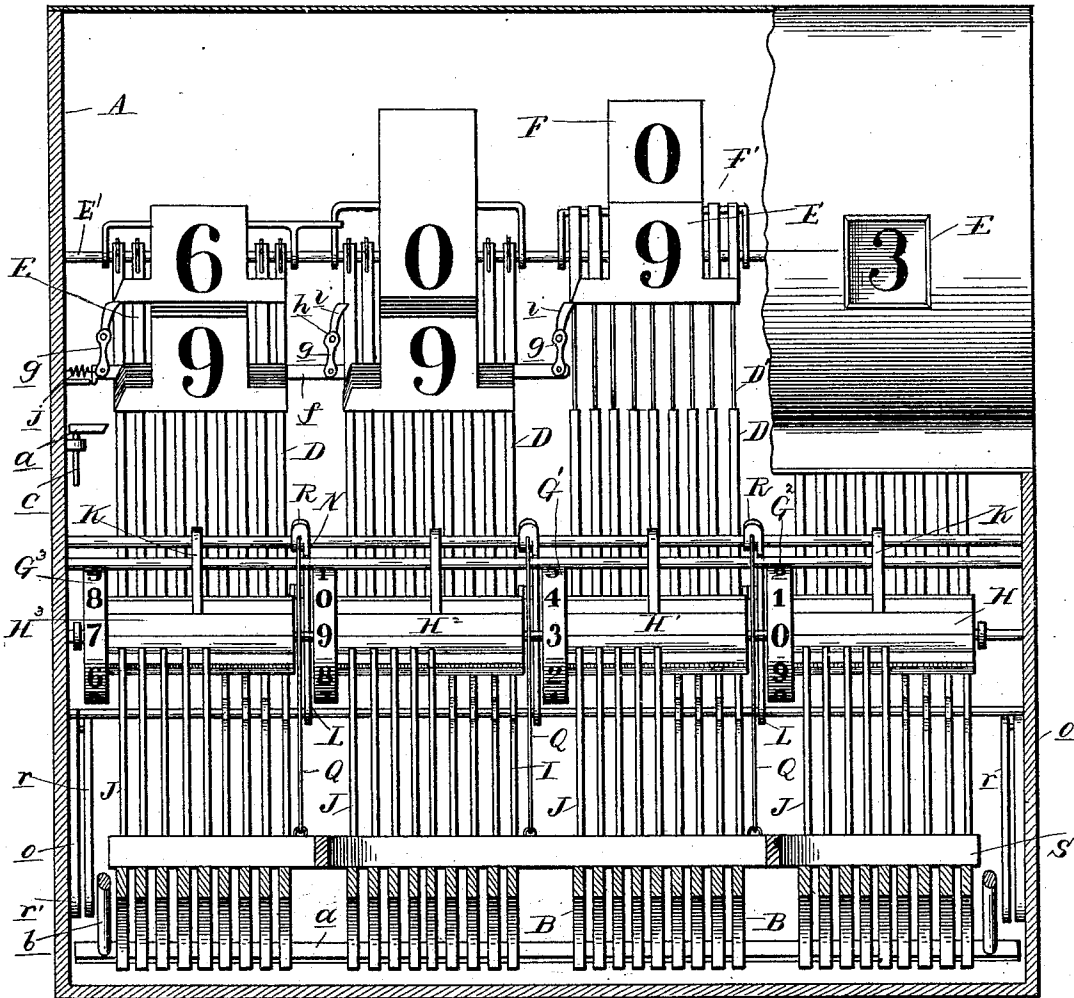
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Fig. 2



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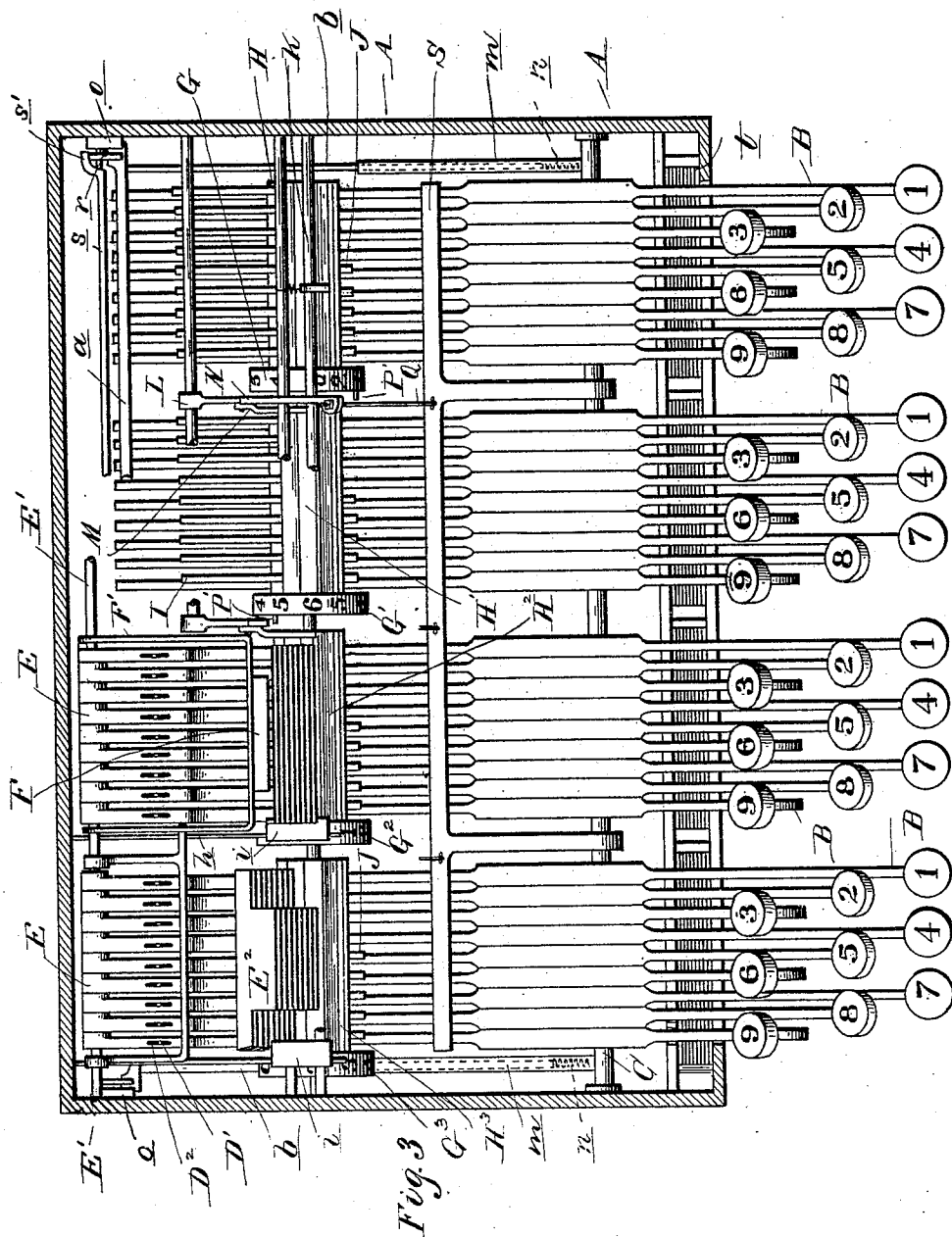
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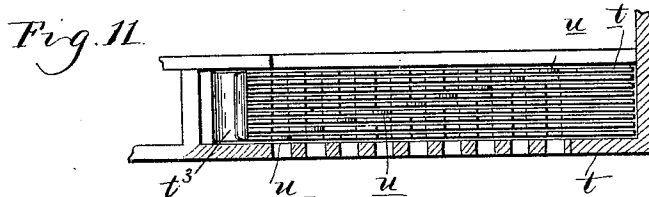
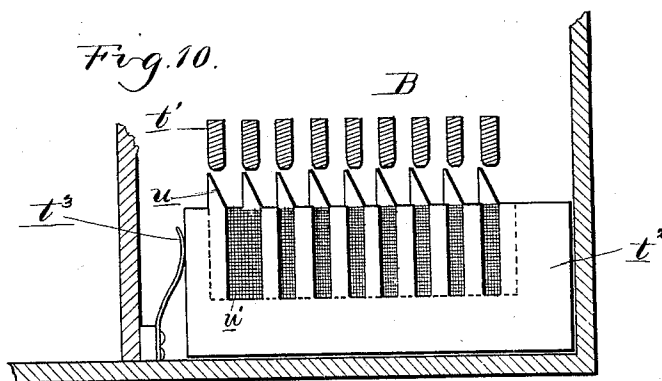
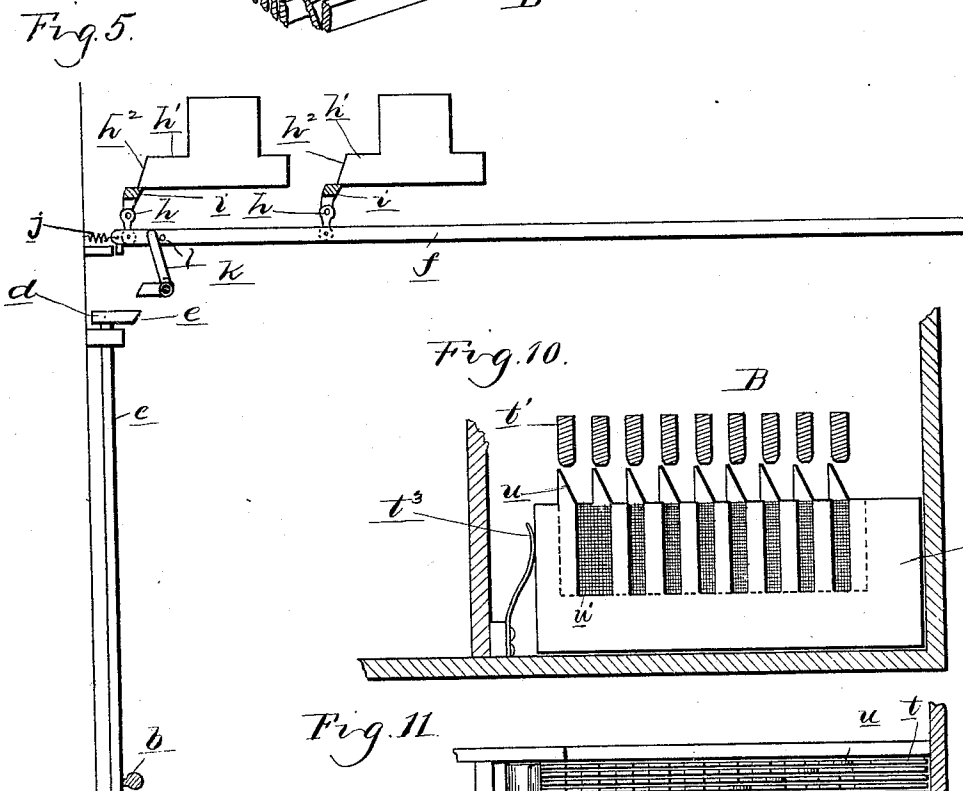
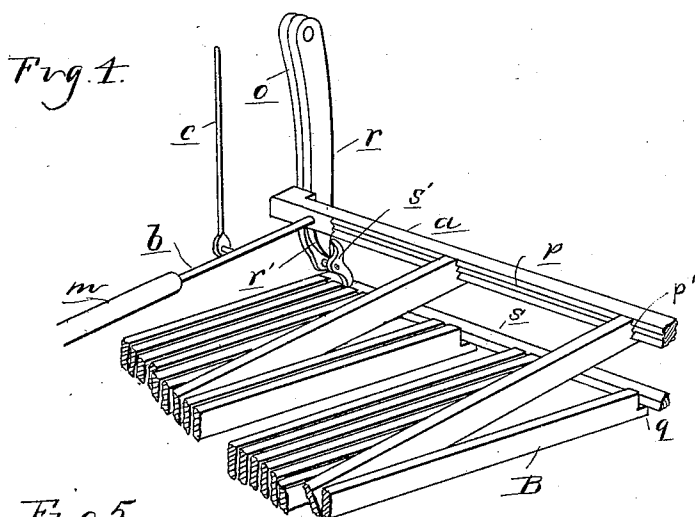
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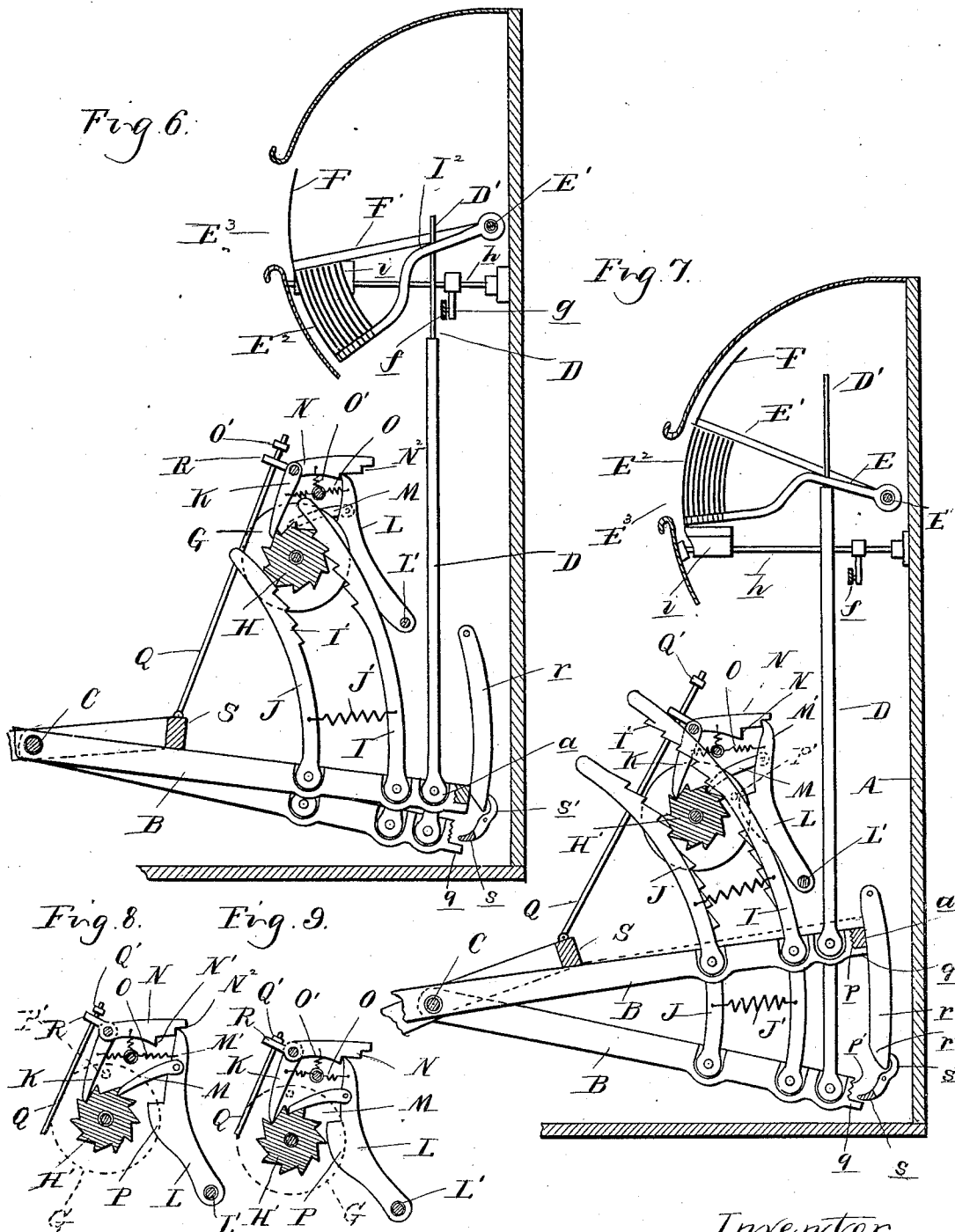
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UNITED STATES PATENT OFFICE.

JOSEPH A. TREAT, OF STUART, IOWA.

CASH REGISTER AND INDICATOR.

SPECIFICATION forming part of Letters Patent No. 510,211, dated December 5, 1893.

Application filed October 30, 1891. Serial No. 410,394. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH A. TREAT, a citizen of the United States, residing at Stuart, in the county of Guthrie and State of Iowa, have invented certain new and useful Improvements in Cash Registers and Indicators, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to new and useful improvements in cash registers and indicators, and the invention consists in the peculiar construction of the registering mechanism and means for carrying upon the registering wheels; further in the peculiar construction of the indicating mechanism; further in a device for coupling operated keys and in the device for preventing the simultaneous operation of two or more keys, all as more fully hereinafter described.

In the drawings, Figure 1 is a vertical section through a cash register embodying my invention. Fig. 2 is a cross section on line $x x$ with the casing removed and looking to the right in Fig. 1. Fig. 3 is a top plan view with the casing removed. Fig. 4 is a detached perspective view of a portion of the rear ends of the keys and showing the key coupling locked. Fig. 5 is an elevation of the holding up and throwing down mechanism for the tablets. Fig. 6 is a section similar to Fig. 1, showing the registering mechanism partly operated. Fig. 7 is a similar section showing the position of the registering wheels at the end of the upward stroke of the key. Fig. 8 is an elevation of one of the registering wheels showing the carrying mechanism, set to carry one. Fig. 9 is a similar section showing the registering wheels and carrying mechanism returned to their normal position. Fig. 10 is a cross section through the keys, showing the device for preventing the simultaneous operation of two keys in elevation. Fig. 11 is a plan view of that device. Fig. 12 is a detached perspective view of a modified construction of indicating tablets. Fig. 13 is an elevation of the same.

A is the casing, in which the operating parts are assembled, and this casing may be of any suitable material, shape and design.

B is a series of keys preferably arranged in groups of nine keys in a group and numbered respectively from 1 to 9.

In the drawings I have shown four groups (Fig. 3), each group representing a monetary denomination. These keys are all journaled upon the transverse shaft C, which is secured at its ends in the casing. At the rear end each key has pivoted to it a vertical rod D which is an indicating actuating rod. Each of these rods is provided at its upper end with a spindle or pin D', which passes through a suitable aperture or slot D² in an indicator supporting arm E. The arms E are pivoted upon a common shaft E', extending transversely across the rear of the machine, and at their forward ends each carries a tablet E² bearing upon its face a figure corresponding with that upon the finger piece of the key lever, and adapted to be exposed through an aperture E³ in the front of the casing, one aperture being arranged opposite each group of keys. These arms E are of different length, the first one extending only to the rear tablet, the second one passing under the rear tablet to the second tablet, and so on, the last one passing beneath all, being secured to the front tablet. Thus, if the front tablet is desired to be exposed, supposing it to be a 9 tablet, the operator depressing the key will lift all the tablets together, but the 9 tablet being in front will be exposed.

F is a cipher tablet secured upon the arm F', which is pivoted to the shaft E' and extending across the top of all the tablets, as plainly shown in Fig. 1, in such position that it is normally exposed to view, but upon the operation of any key, the corresponding tablet operated by that key will lift the cipher and carry it away from the aperture E³ to expose the operated tablet.

Instead of using the construction shown in Figs. 1 and 2, I may use a construction for the tablets such as shown in Figs. 12 and 13, the change in construction relating to the cipher sign in indicating any number of low value, such for instance as 50. With the device as previously described, the indication will read 0.50. I desire to use a shield in connection with the cipher signs which will obscure all

cipher signs in the unoperated higher denomination in indicating such numbers as that above mentioned .50.

To this end I employ a shield *U* secured upon an arm *U'* which is pivoted upon the shaft *E'* and extends across the aperture *E³* in front of the cipher sign *F*, one shield for each denomination. Each shield is provided upon the edge nearest the higher denomination with a hook or finger *U²*, with which an arm *U³* upon the shield of higher denomination is adapted to engage, as plainly shown in Fig. 12, all so arranged that if, for instance, a figure is desired to be indicated in the units column alone, the lifting of the tablet in that group will carry with it the cipher sign and the shield, allowing the shields in all the other groups to remain unoperated.

If a figure is to be indicated in the tens group alone, such as ninety cents, the arm *U³* on the tens shield will engage with the hook *U²* on the unit shield, and raise the unit shield with it so that the cipher sign will be exposed to view.

The mechanism for holding up and throwing down the tablets for each indication consists of a universal bar *a*, which is actuated by any key of any group. This bar in the drawings I have shown as a coupler bar for coupling together the operated keys of each group. Any other universal bar will accomplish the same result and I do not desire to confine myself to such a bar as I have shown. To this bar or to the arm *b* thereof is secured a vertically extending rod *c* guided in suitable bearings to near the top of the machine, where it is provided with a head *d* having an inclined face *e* at its outer end.

f is a latch bar suspended on hangers *g* in rear of the tablets. These hangers are secured to shafts *h* journaled in stationary bearings in the frame, one for each group of keys and extending beside the tablet rods, as plainly shown in Fig. 7, provided at their outer ends with a latch *i* of suitable width to engage beneath the lower edge of any one of the tablets in a group. Each tablet is provided with a shoulder *h'*, having an inclined face *h²*, as shown in Fig. 5.

Upon the operation of a key its tablet is raised; the inclined face *h²* striking on the under side of the latch *i* will move it to one side to allow the tablet to be elevated, and as soon as the head has passed, a spring *j* will move the latch bar *f*, rock the shafts *h* and cause the latch *i* to engage beneath the edge of the elevated tablet and hold it in position opposite the slot *E³*. The operation of a succeeding key will throw down the previously operated tablets by means of the head *e* striking the arm upon the bell crank lever *k* and causing that lever to shift the latch bar *f*, rocking the shaft *h* in such a manner as to carry the latches *i* from beneath the tablets to allow such tablets to resume their normal position. As soon as the head *e* has passed the arm of the bell-crank-lever *k*, the latch *i*

is carried by the spring *j* into its operative position to hold up the tablet-rod carried by the operated key. The downward movement of the head *e* will rock the bell crank lever in the opposite direction so that it will not strike the bearing *l* on the bar *f* and thus will have no effect upon the latch bar or latches, but will assume a position ready to throw down all the elevated tablets upon the succeeding operation of a key.

The bar *a* is supported upon the ends of the bars *b* which slide in the tube *m*, hinged at the front of the machine. The end of the rod *b* bears against a spring *n* in the rear end of the tube *m*. This spring acts with its tension to keep the bar *a* constantly in contact with the cam *o* secured at the sides of the machine in rear of the keys, as plainly shown in Fig. 4. The bar *a* is provided on its front face with grooves *p* adapted to be engaged by means of the cam *o* with the notched bearing *p'* upon the end of the key, so that upon the operation of two or more keys the bar *a* will couple them together, being lifted during the first part of its motion by the finger *q* on the keys, and moved into a coupling position by bearing against the cam *o* as soon as the keys have been slightly elevated.

r is a swinging lever having a cam *r'* at its lower end adapted to be struck by the universal bar *a* in its upward movement to swing the universal bar *s* carried by one end of a locking lever *s'* over the fingers *q* of the unoperated keys, as shown in Fig. 7. As soon as the keys are coupled together, the operator can release his hold upon all but one of them, and by continuing the depression upon one, can indicate and register the value of all the keys together, and by means of the universal bar *s* and finger *q*, all of the unoperated keys are locked against operation, as soon as the operated keys are coupled, or as soon as a single key is engaged with the coupling bar, the cam *r'* on the lever *r* being coincident with the cam *o* which actuates the coupling bar.

To prevent the simultaneous operation of two keys in the same bank, I use the following mechanism: Beneath each group of key levers is a series of slotted plates *t*. In this construction which embodies nine keys for each group, each plate has eight slots in line with eight keys, and one slot slightly out of line with the ninth key. Thus, for the key *t'* in Fig. 10, the plate *t²* is shown as having slots in line with eight keys, but a slot out of line with the key *t'*, and provided with an inclined bearing or cam *u* directly beneath the key *t'*. Now upon the operation of the key *t'* it will strike the inclined bearing *u* moving the plate *t²* laterally until its slot *u'* registers with the slots in the other eight plates and passes down into all the slots, locking any of the plates from end movement, and at the same time moving the plate *t²* so that the slots previously beneath the other keys are moved to one side thereof. As each one of

the plates has a slot out of alignment with a key, and a lug for actuating that plate upon the depression of its key, it is evident that when one key has entered the nine slots as described, no other key can be operated because all the plates are locked against end movement, and each of the eight remaining unoperated plates with an inclined bearing *u* thereon, forms a lock or stop for the remaining keys. Thus, I have a device which comprises a series of plates, each of the plates forming a locking plate for one key, and so constructed that upon the operation of one key all of those plates are locked against movement except that one beneath the operated key. A spring *t*³ bearing against the ends of all the plates returns any one of them which may be moved laterally to its normal position as soon as the key is returned.

My registering mechanism is designed to give a totalization of all the sums which have been added in all the banks of keys, and by a mechanism which is simple and efficient, comprising but one registering wheel for each monetary denomination or group of keys.

G, G', G² and G³ are four registering indicating wheels having upon their peripheries suitable numbers from 1 to 9, with a cipher, each wheel representing a single monetary denomination, that is, representing respectively cents, dimes and dollars, and tens of dollars, if used for registering the currency of the United States. To each one of these wheels is secured a registering actuating wheel H, H', H² and H³ respectively.

A description of the keys in the units and tens bank will suffice for a description of all, and I will therefore confine myself to such a description. The registering actuating wheel H is of sufficient length to extend over all of the keys of the units group, and each key is provided with an actuating arm I having a ratchet bar I' adapted to engage with said wheel and turn it proportionate to the value of that key. For the keys of higher value such as 6, 7, 8, and 9, I preferably use two actuating bars, one similar to I and another J pivoted upon the key in front of the bar I and having corresponding teeth I' adapted to actuate the register wheel upon the return movement of the key, while the teeth upon the bar I are adapted to register during the forward movement thereof. In such case I couple the two bars together, by means of a spring J', which allows the teeth on that bar which is not operating the registering wheel to slide over the teeth upon the wheel acting as a guide to hold the operating bar tightly in contact with the teeth.

K is a spring pawl acting to hold the register wheel in its adjusted position and prevent its reverse movement.

L is a carrying arm pivoted upon the bar L' and arranged in proximity to the face of the register wheel G. It carries a pawl M engaging with the register actuating wheel H' of the tens group. This arm is provided

with an upwardly extending finger M' adapted to engage with a spring catch N, which is provided with a shoulder N', forming a stop to hold the arm L in its normal position, and a shoulder N² adapted to hold the arm L in its operative position, a spring O being provided to actuate the arm L and a spring O' to hold the catch N in engagement with the finger M' of the arm L.

P is a cam shaped face upon the arm L, arranged in line with a pin P' upon the inner face of the register wheel of the units group. The parts being in the position shown in Fig. 9, as the units key completes its revolution the pin P' will strike the cam shaped face P upon the arm L and carry that arm backward until the finger M' engages with the shoulder N² upon the catch N, just as the pin P' passes out of engagement with the cam shaped face P. This will move the parts into the position shown in Fig. 8 carrying the pawl M back one notch upon the register actuating wheel of the tens group. The parts will remain in this position until all the keys have returned to their initial position, and as they approach this initial position, the latch N is released from the finger M' by means of a connecting bar Q, having a lug Q' adapted to strike a finger R upon the opposite end of the latch N, this connecting bar being secured to a universal bar S. As soon as this latch is released, the spring O will draw the finger M' forward until it strikes the shoulder N', which will carry the tens wheel one notch, causing it to carry one. Thus, I obtain my carrying after the keys have completed their actuation, and the register wheels are at rest, preventing any necessity of complicated mechanism, and insuring a perfect registration of all amounts. At night, the operator has simply to read the total from the register indicator wheels, as shown in Fig. 2, which gives the sum as \$79.30.

It is evident that various modifications of this carrying and registering mechanism may be employed, and I do not desire to limit myself to the precise mechanism shown, but

What I claim as my invention is—

1. In a registering machine, the combination with a ratcheted registering wheel, and a series of keys for actuating the same, of two actuating arms having reverse ratcheted bars thereon pivoted independently to said keys extending up on opposite sides of the register, substantially as described.

2. In a registering machine, the combination with a ratcheted registering wheel, and a series of keys for actuating the same, of two coupled actuating arms independently pivoted to said keys, extending up on opposite sides of the register wheel, and having reverse ratchet bars thereon, substantially as described.

3. In a registering machine, the combination with a ratcheted registering wheel and a series of keys for actuating the same, of two actuating arms pivoted to each of said keys

extending up on opposite sides thereof, of reverse ratchet bars thereon, and a spring coupling said arms together, substantially as described.

4. In a registering machine, the combination with a series of keys, a series of register actuating arms on said keys, a ratchet bar thereon, a ratcheted register wheel adapted to be differently moved by each key, and a second arm independently pivoted on the key forming a guide to hold the register actuating arm in operated contact with the register wheel, substantially as described.

5. In a registering mechanism the combination with a series of keys, of registering wheels actuated by the keys, an independent carrying motor for the register, means carried by the wheels for setting the motor and a releasing means for the motor actuated by a subsequent movement of the keys, substantially as described.

6. In a cash register, the combination with the register wheels, and the keys adapted to actuate the wheels proportionate to their value, of a carrying motor normally inoperative set by the register wheels, a latch for holding it in its operative position during the forward movement of the wheel, and a connection from the keys to said latch to release the same upon the return of the key to its initial position, substantially as described.

7. In a cash register, the combination with the register wheels, the keys adapted to actuate the wheels proportioned to their value, a carrying device set by the wheel of lower denomination to actuate the wheel of next higher denomination and consisting of the arm L, pawl M, latch N, spring O and means for tripping said latch, substantially as described.

8. In a cash register, the combination with the register wheels, the keys adapted to actuate wheels proportioned to their value, a carrying device set by the wheel of lower denomination to actuate the wheel of next higher denomination and consisting of the arm L, the cam shaped face P, the pin P', the pawl M, finger M', latch N, spring O and a tripping mechanism actuated from a universal bar above the keys, substantially as described.

9. In a cash register, the combination with a series of keys and a series of tablets actuated thereby arranged one in front of the other, of a movable cipher sign above the tablets and an arm on the cipher extending above all the tablets, substantially as described.

10. In a cash indicator, the combination with a series of independent movable tablets and means for actuating the same of a cipher

sign having an extension arranged in the path of the tablets and actuated by the movements of the tablets, substantially as described.

11. In a cash register, the combination of a series of keys, of the bar *a* carried by the keys, having a notched face, corresponding notches in the ends of the keys, the finger *q* and cam *o*, substantially as described.

12. In a cash register, the combination of the bar *a*, the lever *s'* having a bar extending across all the keys, the cam *r'*, the parts combined and operating substantially as and for the purpose described.

13. In a cash register, the combination with a series of groups of tablets, and a series of keys for actuating the same, of a latch for each group of tablets, a connecting bar for said latches and mechanism connected with the keys for tripping said latches upon the operation of any key, substantially as described.

14. In a cash register, the combination with a series of tablets and a series of keys for operating the same, arranged in groups, a shoulder on said tablets, latches for engaging with said shoulders, and mechanism connected with the keys for tripping said latches, substantially as described.

15. In a cash register, the combination with a series of keys, of a device for preventing the simultaneous operation of two keys, comprising a series of plates, one forming a lock for each key, and means for locking all the plates of the unoperated keys upon the operation of a key, substantially as described.

16. In a cash register, the combination with a series of keys, of a device for preventing the simultaneous operation of two keys comprising a series of plates, each plate having slots in line with all the keys but one, an inclined bearing beneath such key, a slot at the base of said bearing all so constructed that the movement of one key will lock all the plates, substantially as described.

17. In a cash register, the combination with a series of keys, of a device for preventing the simultaneous operation of two keys comprising a series of plates, one forming a lock for each key, means for locking all the plates of the unoperated keys upon the operation of a single key, and a spring to return said plates to their normal position, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH A. TREAT.

Witnesses:

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ADA STOKES.