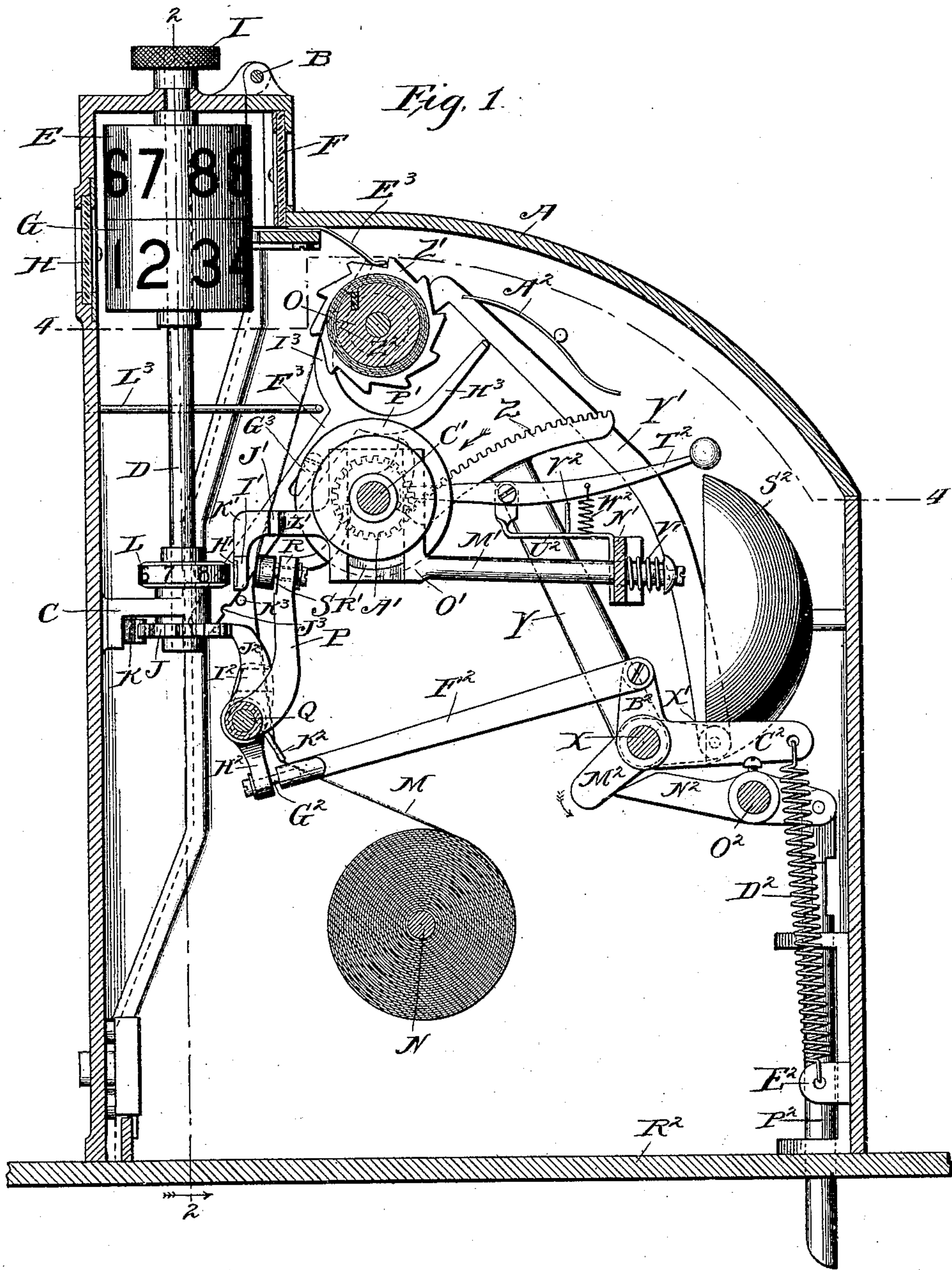


T. CARNEY.
CASH INDICATOR AND RECORDER.

No. 488,063.

Patented Dec. 13, 1892.



Witnesses
Martin H. Olsen.
John L. Emerson.

Inventor.
Thomas Carney
by Edward Rector
his atty

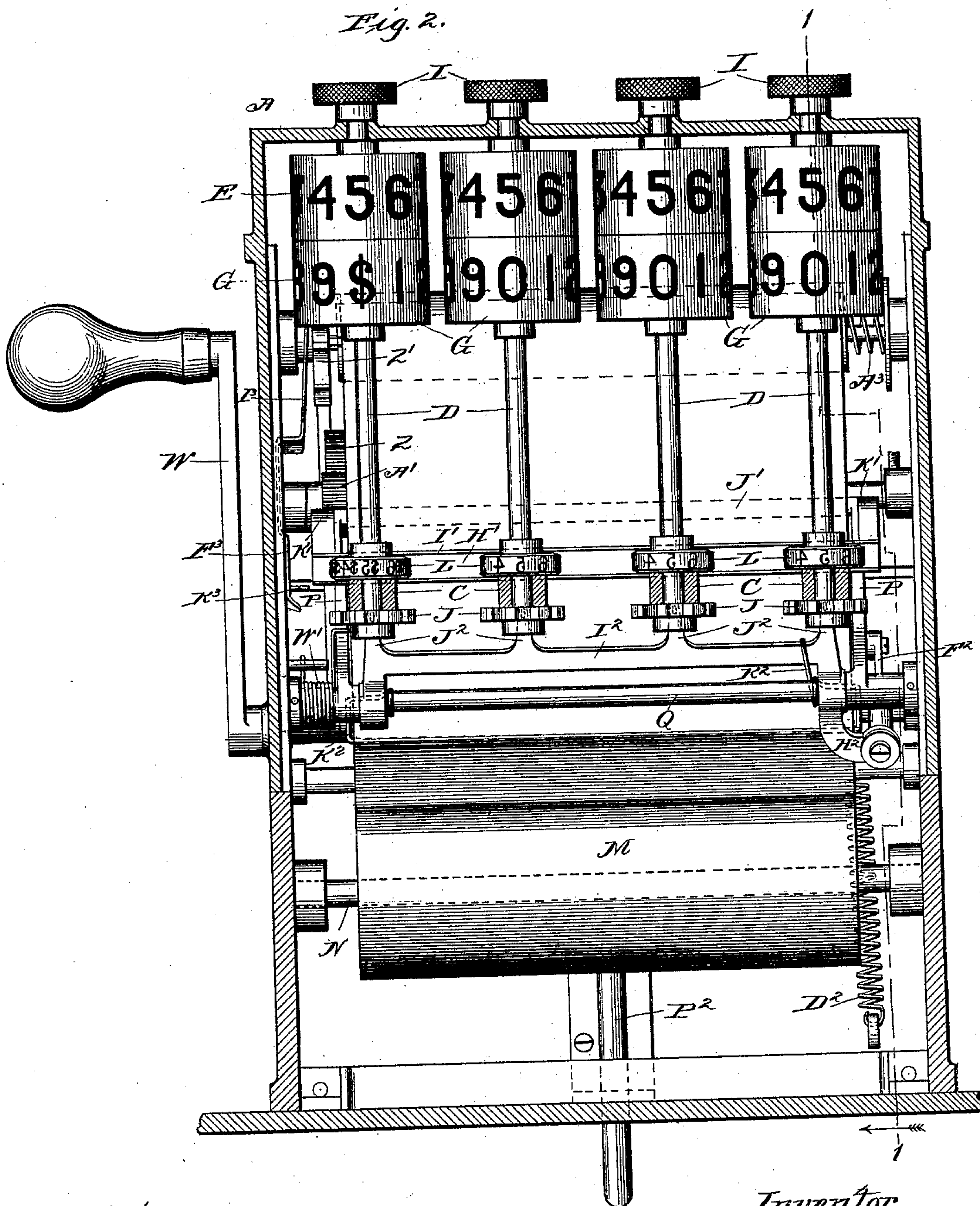
(No Model.)

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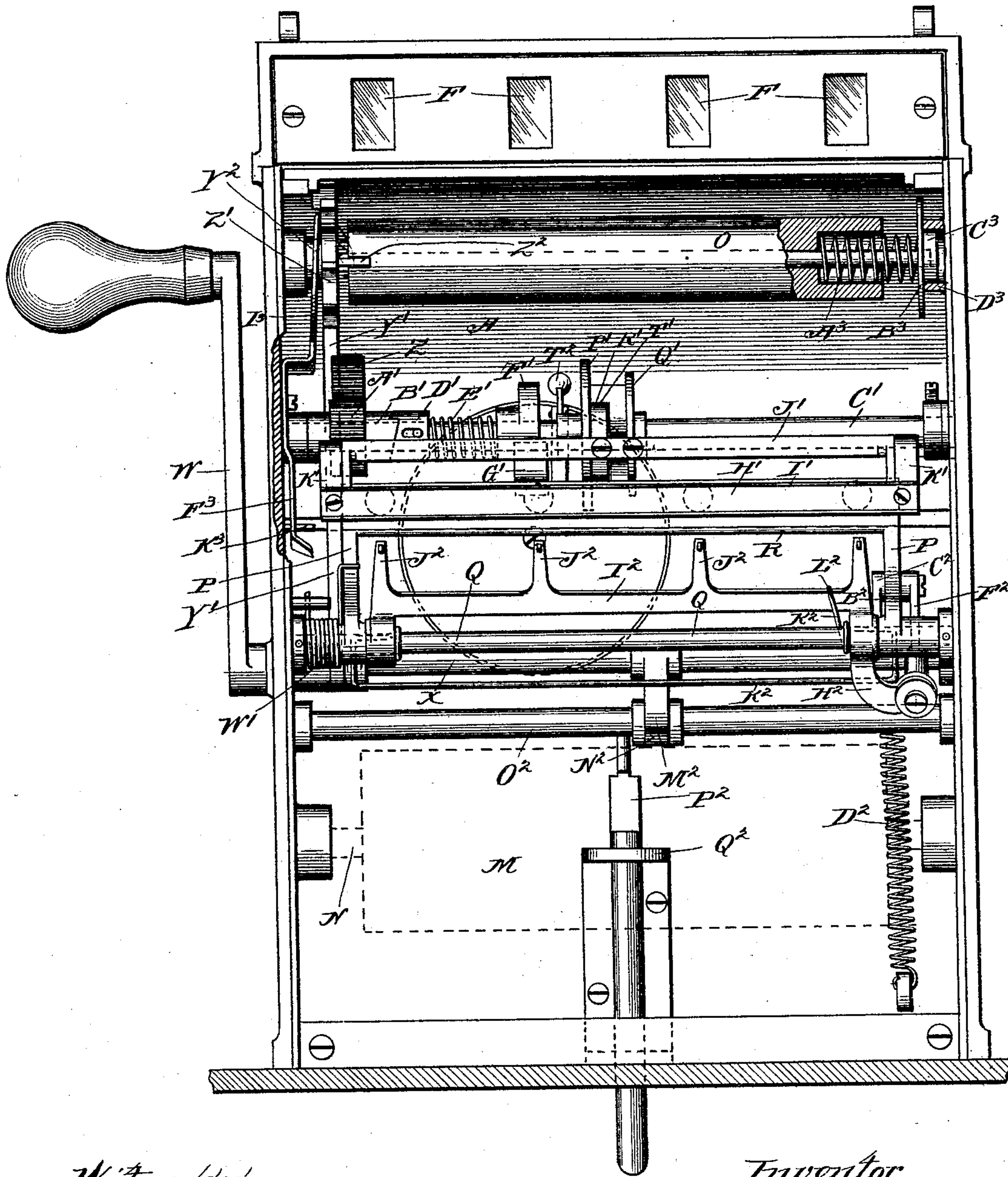
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Fig. 3



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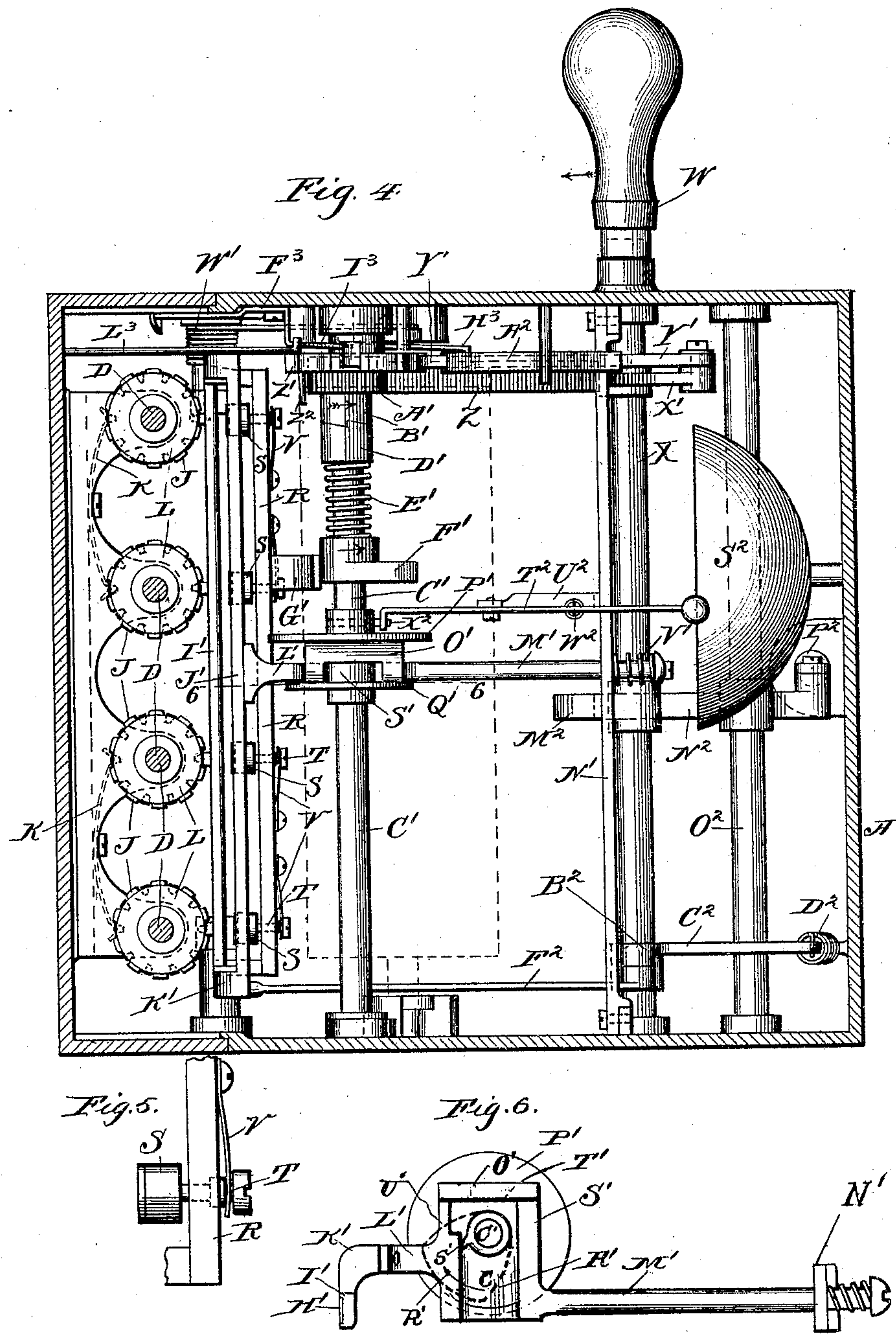
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UNITED STATES PATENT OFFICE.

THOMAS CARNEY, OF DAYTON, OHIO, ASSIGNOR TO THE NATIONAL CASH REGISTER COMPANY, OF SAME PLACE.

CASH INDICATOR AND RECORDER.

SPECIFICATION forming part of Letters Patent No. 488,063, dated December 13, 1892.

Application filed July 12, 1892. Serial No. 439,809. (No model.)

To all whom it may concern:

Be it known that I, THOMAS CARNEY, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Cash Indicators and Recorders, of which the following is a description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to that class of machines in which the various amounts to be recorded are exposed to view upon indicators whose movement into indicating position sets the type wheels or carriers, by which the numbers indicated are printed upon the recording-strip.

It has for its object the increased simplicity and improved construction of this class of machines; and its novelty consists in the new combinations and arrangements of parts, which will be hereinafter set forth, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical section of the machine approximately on the line 1 1 of Fig. 2; Fig. 2, a vertical section of the machine approximately on the line 2 2 of Fig. 1; Fig. 3, a rear elevation of the machine with the hinged rear side of the casing and the indicators and type-wheels and other parts carried thereby removed; Fig. 4, a sectional plan of the machine approximately on the line 4 4 of Fig. 1; Fig. 5, an enlarged detail of part of the impression-frame and one of the platens and springs carried thereby; and Fig. 6, a sectional detail through the rotating shaft on the line 6 6 of Fig. 4, showing the cams for operating the inking-pad frame.

The same letters of reference are used to indicate identical parts in all the figures.

The rear side of the casing A of the machine is hinged to the main portion thereof at B, Fig. 1, so that it may be swung upward to permit access to the interior of the machine. Journaled in this rear portion of the casing, at their upper ends in the top of the casing itself and at their lower ends in forwardly-extending brackets C upon the inner face of the rear wall of the casing, are a se-

ries of vertical rods or spindles D, in this instance four in number, as seen in Fig. 2. Secured upon each of these spindles near its upper end and within the casing is a cylinder E, bearing a series of indicating-numbers from "1" to "9," inclusive, adapted to be exposed singly through a window F in the casing immediately in front of the indicating-cylinders. Secured upon the spindles D immediately below the cylinders E is a second set of indicating-cylinders G, corresponding to the cylinders E, but secured upon the spindles in such position relatively to the cylinders E that when any given number upon a cylinder E is exposed to view through the window F the same number upon its corresponding cylinder G will be exposed to view through a window H in the rear side of the casing. In addition to the nine digits, each of the indicating-cylinders, excepting the two left-hand ones in Fig. 2, is provided with a zero in the space between the "1" and "9," the two left-hand indicators each having a dollar-mark in such space. The upper ends of the spindles D, outside the casing, are provided with thumb-pieces I, by which the spindles may be turned to bring the different numbers upon the indicators into view at their respective windows or reading-openings. The lower ends of the spindles have fast upon them toothed wheels J, with which co-operate springs K, Fig. 4, which yieldingly hold the spindles in the different positions to which they may be moved. Secured upon the spindles D immediately above their supporting brackets C are a series of type-wheels L, bearing upon their peripheries type-numbers corresponding to the numbers upon the indicating-cylinders. The positions of the type-numbers upon the wheels L correspond to the numbers upon the upper set of indicators E and are in reverse position to the numbers upon the lower set of indicators G, so that when any given numbers upon the latter set of indicators are exposed to view through the windows H in the rear side of the casing the same numbers upon their respective type-wheels will stand at the printing-point hereinafter described, at the opposite forward sides of the type-wheels. Thus in the position

of the indicators G, (shown in Fig. 2,) with the three zeros and the dollar-mark exposed to view, three zeros and the dollar-mark upon the type-wheels L will stand at the printing-point, and if any indicator be turned until another one of its numbers is brought into position to be exposed through its window H the same number upon its type-wheel L will be brought to the printing-point.

10 The record-strip M is carried in a roll upon a spindle N and led thence upward past the printing-point and wound upon a storage-reel O. This record-strip is forced against the respective type-wheels to effect the printing by means of an impression-frame composed of side arms P, loosely mounted upon a shaft Q, and a cross-bar R connecting their upper ends. This cross-bar carries four impression blocks or platens S, one opposite each type-wheel L. These blocks are secured upon pins T, passed through and loosely fitting in the cross-bar R. These pins have enlarged ends at the forward side of the bar R, between which enlarged ends and shoulders 20 U upon the pins, Fig. 5, fit the forked ends of springs V, secured to the forward side of the bar R. These springs yieldingly hold the pins T and platens S in the position shown in the drawings and permit the platens to yield slightly when they are forced against the type-wheels by the rearward movement of the impression-frame in the manner hereinafter described.

The operating handle or lever W of the machine is secured upon a rock-shaft X. This rock-shaft has fast upon its right-hand end within the casing an arm Y, Fig. 1, which carries a segmental rack Z, which meshes with a pinion A', fast upon a clutch-sleeve 40 B', loosely mounted upon a rotary shaft C'. At each forward and backward stroke of the handle the sleeve B' is oscillated forward and backward through a complete revolution. This sleeve B' co-operates with a second 45 clutch member D', mounted upon and having a slot-and-pin connection with the rotary shaft C', and pressed into engagement with the sleeve B' by a coiled spring E', confined between the sleeve B' and the hub of a cam F', fast upon the shaft C'. During the first stroke of the handle W in the direction of the arrow in Fig. 4 the sleeve B' will be turned a complete revolution in the direction of the arrow on it in said figure, carrying the clutch member D' and shaft C' with it, and during the stroke of the handle W in the opposite direction the sleeve B' will be turned backward a complete revolution to normal position and re-engage the clutch member D'. In this manner at each forward and backward stroke of the operating-handle the shaft C' will be turned a complete revolution and always in the same direction. The cam F', fast upon the shaft C', before referred to, co-operates with a wiper-block G' upon the forward side of the cross-bar R of the impression-frame, and at each revolution of the

shaft C' forces the impression-frame rearward. The record-strip M, as it is led from the supply-roll N to the storage-reel O, passes 70 over and rests upon the platens S of the impression-frame, and whenever said frame is forced rearward in the manner described said platens press the paper against the type-wheels and print thereon the numbers at 75 which said wheels have been set.

An inking-ribbon might be passed transversely across the machine between the type-wheels and the platens to effect the printing; but in the construction illustrated in the 80 drawings the types are inked by an inking-pad H', carried by a bar I', extending across all of the type-wheels immediately in rear of the platens S and standing between the latter and the type-wheels when the machine is at rest, as seen in Fig. 1. This cross-bar I' forms part of a frame composed of itself and a second parallel cross-bar J', united at their ends by side arms K'. This frame is secured to and supported by the rear end of an arm 85 L', which arm is rigidly connected with a rod M', passed at its forward end through a hole in a cross-piece N' of the framework. Interposed between the rod L' and rod M', and in this instance formed integral with them, is a 90 sort of frame O'. (Shown in dotted lines in Fig. 6.) This frame fits loosely between two disks P' and Q', fast upon the rotary shaft C', before described. This shaft is provided with two cams R' and S', and the frame O' is 95 so constructed as to have two bearing-surfaces T' and U', the former co-operating with the cam R' and the latter with the cam S'.

When the machine is at rest, the parts are in such position, Fig. 6, that at the first forward movement of the shaft C' the cam S' 105 will force the frame O' slightly rearward, a spring V' coiled around the front end of the rod M' and confined between the cross-piece N', and a nut or head upon the end of the rod M' permitting rearward movement of the rod M' and frame O' and operating to restore them to normal position when the shaft C' has been turned far enough for the cam S' to clear its bearing-surfaces U' on the frame O'. 110 This rearward movement given the frame O' by the cam S' at the first forward movement of the operating-handle and shaft C' carries the inking-pad H' on the bar I' against the types upon the wheels L and inks them. Immediately after the cam S' has forced the frame O' rearward for this purpose the cam R' engages the bearing-surface T' on the frame O' and lifts said frame and carries the inking-pad frame above the horizontal plane of 115 the impression-frame and maintains it in such elevated position until after the cam F' on the shaft C' has forced said impression-frame rearward to effect the printing in the manner heretofore described. After the cam F' has cleared the wiper-block G' upon the impression-frame and the latter has been thrown forward to normal position again by a spring W', coiled around the left-hand end 120 125 130

of the shaft Q and secured at one end to a fixed point and bearing at its other against one of the supporting side arms P of the impression-frame, as seen in Fig. 3, the cam R' clears its bearing-surface on the frame O', and the latter and the inking-pad frame carried by it are lowered to the normal position shown in the drawings. Thus, referring to Fig. 1, at each operation of the machine the inking-pad frame is first thrown rearward and the pad H' pressed against the types to ink them. Then said frame is lifted above the impression-frame and the latter is thrown rearward and its platens S force the paper strip against the types and effect the printing. Then the printing-frame is released and thrown forward to normal position by its spring, and then the inking-pad frame is again lowered to position between the platens S and the type-wheels, as shown.

Fast upon the rock-shaft X, near its right-hand end, Fig. 4, and dotted lines in Fig. 1, is a forwardly-projecting arm X', having connected to it the lower end of a pawl-arm Y', whose hooked upper end co-operates with a ratchet Z', fastened to the end of the storage-reel O, a spring A² holding the pawl in engagement with the ratchet. At each forward or positive stroke of the operating-handle the pawl-arm Y' will be lifted and catch over a new tooth upon the ratchet Z', and when the parts are reset the pawl will turn the ratchet the space of one tooth and wind up the record-strip upon the storage-reel; also, fast upon the rock-shaft X, near its left-hand end, are two arms B² and C², the former projecting upwardly and the latter forwardly from the shaft. To the forward end of the latter is connected a coiled spring D², whose lower end is secured to a lug E² upon the casing, this spring operating to reset the operating-handle and parts carried by the rock-shaft X at the end of each operation of the machine. The arm B² has pivoted to it the front end of a link F², whose rear end carries a pin G², passed through an eye in an arm H², Figs. 1 and 2, depending from a locking-frame I², loosely mounted upon the shaft Q. A screw-head and washer upon the rear end of the pin G² prevent its withdrawal from the eye in the arm H² and permit limited play of the pin backward and forward without moving the arm H² and locking-frame. The frame I² is provided with four upwardly-projecting arms J², one immediately in front of each of the ratchets J upon the lower ends of the spindles D, and each of these arms J² is provided with or has its upper end shaped to form a locking-tooth, Fig. 3, to co-operate with the notches in the ratchet.

When the machine is at rest and the parts in the normal positions shown in the drawings, the locking-frame will be held in engagement with the ratchets and prevent turning of the spindles D and the indicators and type-wheels carried by them. When the operating-handle is given its first stroke, how-

ever, the link F² will be thrown to the left in Fig. 1, and toward the end of its movement will oscillate the locking-frame I² and throw its upper end forward and disengage the locking-teeth from the ratchets. The lost motion between the rear end of the link F² and forward side of the arm H² of the locking-frame will permit the link F² to complete part of its rearward movement before it begins to move the locking-frame, so that the latter will not be moved far enough to release the spindles until the operating-handle has nearly completed its positive stroke. The spindles D are then free to be turned to make the new indication and set the type-wheels to print the new numbers. When the operating-handle is given its return stroke, the link F² will be turned to the right again and the locking-arms J² engaged with the ratchets to lock the spindles in the positions to which they have been turned. At the next forward stroke of the operating-handle the inking-pad frame will be moved rearward and the pad pressed against the types and then lifted above them and the impression-frame thrown rearward to effect the printing, after which, during the latter part of this stroke of the handle, the link F² will oscillate the locking-frame and unlock the spindles. The handle is held at the end of its first stroke until the indicators and type-wheels have been adjusted to indicate and print the amount of the new sale, and upon returning it to normal position or releasing it and allowing the spring D² to so return it the locking-frame again locks the spindles and holds them in their new positions until the operating-handle is given its forward stroke at the next operation of the machine. It will thus be seen that at each forward stroke of the operating-handle the amount of the last preceding sale is printed upon the paper strip, that the indicators and type-wheels are then set to indicate and print the new sale, and that upon the release and return of the handle they become locked in position to indicate and print such sale, and are not released until the amount of such sale has been printed by the next succeeding stroke of the operating-handle.

In its passage from the supply-reel N to the printing-point and storage-reel the paper strip M is led over a guide-wire K², Figs. 1 and 3. The upturned ends of this guide-wire are coiled loosely around the shaft Q, and one of them is attached to the locking-frame I², as at L² in Fig. 3. When the locking-frame is oscillated to the right in Fig. 1 during the first stroke of the operating-handle, the wire K² will be thrown to the left, carrying with it the paper strip and withdrawing a small length thereof from the supply-reel. Upon the return stroke of the operating-handle and the return of the wire K² to normal position slack will be left in the paper strip, which will be taken up by the turning of the storage-reel by the pawl Y'. In this manner the paper strip is relieved of the strain to which

it would be subjected were it drawn directly by the storage-reel from the supply-reel over the impression-platens.

Fast upon the rock-shaft X, heretofore described, near its middle, is an arm M^2 , which co-operates with the rear end of a lever N^2 , fast upon a second rock-shaft O^2 and having hung to its forward end a bolt P^2 , guided vertically in plates Q^2 and extended through the base R^2 of the machine into the usual drawer-compartment beneath the same into position to co-operate with a catch upon a sliding money-drawer (not shown) in the usual well-known manner. At each forward stroke of the operating-handle the rear end of the lever N^2 is depressed by the arm M^2 , and the rock-shaft X and the bolt P^2 lifted and the drawer unlocked.

A gong S^2 , mounted upon a stud upon the front wall of the casing, Figs. 1 and 4, is arranged to be sounded at each operation of the machine by a striker T^2 , pivoted to a bracket U^2 , carried by the cross-piece N' of the framework and yieldingly held against a stud V^2 thereon by a spring W^2 . The rear end of the striker T^2 lies in the path of a pin X^2 , projecting from the rotary shaft C' . At each operation of the machine and revolution of said shaft the pin X^2 depresses the rear end of the striker T^2 and lifts its front end against the tension of the spring W^2 , and when the pin clears the rear end of the striker the spring throws its front end against the gong and sounds the latter.

The left-hand end of the spindle of the feed-roller O, Fig. 3, is journaled in a fixed bearing Y^2 upon the side wall of the casing. The ratchet Z' is loosely mounted upon the bearing Y^2 , and is detachably connected with the feed-roller by a lug Z^2 , projecting from the side of the ratchet and fitting in a notch in the periphery of the roller. The opposite end of the roller is recessed to receive a coiled spring A^3 , which surrounds the spindle of the roller and has secured to its outer end a disk B^3 , loosely fitting upon the spindle and having upon its right-hand side a collar C^3 , which fits within an annular bearing D^3 upon the side wall of the casing. By pressing the disk B^3 to the left against the resistance of the spring A^3 until the collar C^3 is disengaged from the bearing D^3 the roller may be readily removed from the machine and the paper strip containing the record removed from it. If desired, the record-strip wound upon the storage-reel may be withdrawn therefrom without removing the roller from the machine. In such case it is necessary to disengage the pawl Y' from the ratchet Z' and also to disengage from the ratchet the spring-holding pawl E^3 , which is employed to prevent backward movement of the ratchet. For the purpose of lifting these pawls away from the ratchet I provide a forked plate F^3 , mounted by a slot and screw upon the side of the casing at G^3 . One arm H^3 of this plate engages the pawl Y' and the other arm Y^3 engages the pawl E^3 . The plate

F^3 is provided with a notch J^3 upon its under side near its lower end, which notch co-operates with a pin K^3 upon the casing. The lower end of the plate is bent at an angle from the body of the plate, as seen in Fig. 3, to permit it to be readily grasped. By lifting this plate until the notch J^3 catches over the pin K^3 the pawls E^3 and Y' will be disengaged from the ratchet Z' and maintained out of engagement therewith until the notch J^3 is disengaged from the pin K^3 again. During such time the storage-reel is free to turn in either direction and the paper strip may be readily withdrawn from it. For the purpose of insuring the re-engagement of the pawls with the ratchet after the record-strip has been taken from the storage-reel and the end of the paper strip secured to the reel again preparatory to further operations of the machine, there is provided a rod L^3 , secured upon the inner face of the rear hinged wall of the casing and extending forward into position for its front end, preferably bent at right angles to the rest of the rod to engage the upper end of the plate F^3 . The rear hinged wall of the casing is unlocked and swung upward to permit access to the interior of the machine when the record is to be taken from the storage-reel, and if the notch J^3 in the plate F^3 is allowed to remain in engagement with the pin K^3 when the hinged wall of the casing is lowered to position to be locked the front end of the rod L^3 will strike the upper end of the plate F^3 and disengage the notch in its lower end from the pin K^3 , whereupon the spring A^2 will throw the pawl Y' into engagement with the ratchet, the spring-pawl E^3 also reengaging it and resetting the plate F^3 to the position shown in the drawings.

Having thus fully described my invention, I claim—

1. In a cash-recorder, the combination of a casing provided with a sight-opening or window, a vertical spindle journaled in said casing and provided with a thumb-piece outside the casing, an indicating-cylinder fast upon said spindle within the casing and bearing numbers arranged to be exposed singly at the sight-opening, a type-wheel also fast upon said spindle and bearing type-numbers corresponding to the numbers upon the indicating-cylinder, an impression-platen co-operating with the type-wheel, the rock-shaft X, having the operating-handle W affixed to it, the rotary shaft C' , carrying the cam F' , co-operating with the platen to effect the printing, and mechanism intermediate the rock-shaft X and rotary shaft C' for converting the oscillatory movements of the former into rotary movement in the latter, substantially as described.

2. In a cash-recorder, the combination of a casing provided with two sight-openings on opposite sides of the indicating-chamber, a vertical spindle journaled in said casing and provided with a thumb-piece outside the casing, two indicating-cylinders fast upon said spindle and provided with corresponding indicating-numbers arranged in reverse posi-

tion, whereby when any number upon one cylinder is exposed to view at one of the sight-openings the same number upon the other cylinder will be exposed to view at the opposite opening, a type-wheel also fast upon said spindle and bearing type-numbers corresponding to those on the indicating-cylinders, an impression-platen co-operating with the type-wheel, the rock-shaft X, having the operating-handle W affixed to it, the rotary shaft C', carrying the cam F', co-operating with the platen to effect the printing, and mechanism intermediate the rock-shaft X and rotary shaft C' for converting the oscillatory movements of the former into rotary movement in the latter, substantially as described.

3. In a cash-recorder, the combination of a casing provided with a sight-opening, a vertical spindle journaled therein and provided with a thumb-piece outside the casing, an indicating-cylinder fast upon said spindle and provided with numbers arranged to be exposed singly through said sight-opening, a type-wheel also fast upon said spindle and bearing type-numbers corresponding to the numbers upon the indicating-cylinder, an impression-platen co-operating with the type-wheel, a ratchet also fast upon said spindle, a locking arm or frame co-operating with the ratchet to lock the spindle in different positions, the rock-shaft X, having the operating-handle W affixed to it, the rotary shaft C', carrying the cam F', co-operating with the platen, and mechanism intermediate the rock-shaft and rotary shaft for converting the oscillatory movements of the former into rotary movement in the latter, and means intermediate the rock-shaft and locking-arm for actuating the latter, substantially as described.

4. In a cash-recorder, the combination of the casing A, having the hinged wall, the vertical spindles D, carried by said wall and provided with the thumb-pieces I for turning them, the indicating-cylinders G, fast upon said spindles and provided with numbers arranged to be exposed through the sight-openings H, the type-wheels L, also fast upon the spindles D, the supply-reel N for the record-strip mounted in the main portion of the casing, the storage-reel O for the record-strip, also journaled in the main portion of the casing, the impression-frame R, provided with the platens S for forcing the record-strip against the type-wheels, the rock-shaft X, having the operating-handle W affixed to it, the rotary shaft C', carrying the shaft F', co-operating with the platen, and means intermediate the rock-shaft and rotary shaft for converting the oscillatory movements of the former into rotary movement in the latter, substantially as described.

5. In a cash-recorder, the combination of the vertical spindles D, journaled in the casing and provided with thumb-pieces I for turning them, the indicating-cylinders fast on said spindles and arranged to expose their numbers at sight-openings in the casing, the type-

wheels L, also fast upon said spindles, the impression-frame R, co-operating with the type-wheels, the rock-shaft X, the handle W, fast thereon, the arm Y, also fast thereon and carrying the segmental rack Z, the rotary shaft C', the clutch-sleeve B', loose thereon and carrying the pinion A', meshing with the rack Z, the clutch-sleeve D', mounted to slide upon and turn with the shaft C', the spring E', bearing against the sleeve D', and the cam F', fast upon the shaft C' and co-operating with the wiper-block or bearing-surface G' upon the impression-frame, substantially as described.

6. In a cash-recorder, the combination of the type-wheels L, the impression-frame R, co-operating therewith, the inking-pad frame normally resting between the impression-frame and type-wheels, the rock-shaft X, having the operating-handle W affixed to it, the rotary shaft C', mechanism intermediate the shafts for converting the oscillatory movements of the one into rotary movement in the other, and the cams upon the shaft C', co-operating with the inking-pad frame and with the impression-frame to press the inking-pad against the type-wheels and lift its frame out of the path of the impression-frame and then force the latter against the type-wheels, substantially as described.

7. In a cash-recorder, the combination of the type-wheels L, the impression-frame R, the platens S, carried by pins T, loosely mounted in the frame R, the springs V, co-operating with the pins T, and means for actuating said frame, substantially as described.

8. In a cash-recorder, the combination of the vertical spindles D, the indicators and type-wheels carried thereby, the ratchets J, fast upon said spindles, the locking-frame I², provided with arms J², co-operating with the ratchets, the rock-shaft X, the operating-handle W, fast thereon, the arm B², also fast thereon, the arm H² of the locking-frame, and the link F² and pin G², connecting the arms H² and B², substantially as described.

9. In a cash-recorder, the combination of the type-wheels L, the inking-pad frame co-operating therewith, the frame O' and rod M', rigid with the inking-pad frame, the rod M' being passed through the cross-piece N' of the framework, the spring V', confined between said cross-piece and the front end of the rod, the rotary shaft C', and the cams R' and S', co-operating with the frame O' to force the inking-pad against the type-wheels and then lift it above them, substantially as described.

10. In a cash-recorder, the combination of the storage-reel O, provided with the ratchet Z', the actuating-pawl Y', and holding-pawl E³, co-operating with said ratchet, and the forked shifter-plate F³, co-operating with said pawls and provided with the notch J³, co-operating with the pin K, substantially as described.

11. In a cash-recorder, the combination of the storage-reel O, provided with the ratchet

Z', the actuating-pawl Y', and holding-pawl E³, engaging the ratchet, the forked plate F³, co-operating with the pawls and provided with the notch J³, co-operating with the pin K³, and the hinged wall of the casing, provided with the rod L³, co-operating with the plate F³, substantially as described.

12. In a cash-recorder, the combination of the storage-reel O, provided with the ratchet Z', the rock-shaft X, the operating-handle W, fast thereon, the arm X', also fast thereon, and the pawl-arm Y', connected to the arm X' and co-operating with the ratchet Z', substantially as described.

13. In a cash-recorder, the combination of the storage-reel O, having its spindle journaled at one end in a fixed bearing Y², the ratchet Z', mounted upon said bearing and provided with a lug Z², engaging a notch in the roller, the spring A³, fitting within a re-

cess in the opposite end of the roller, the disk B³ and collar C³, fastened to the end of said spring and fitting loosely over the roller-spindle, and the annular bearing D³ for the collar C³, substantially as described.

14. In a cash-recorder, the combination of the supply-spindle N for the record-strip, the storage-reel O therefor provided with the ratchet Z', the rock-shaft X and operating-handle W, and the arms X' B², fast on said shaft, the pawl-arm Y', connected to the arm X' and engaging the ratchet Z', the vibrating guide-wire K², over which the record-strip is passed, and a connection between the arm B² and said guide-wire for vibrating the latter, substantially as described.

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Witnesses:

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