No. 700,525. Patented May 20, 1902.

A. W. MARR.

CASH REGISTER.

(Application filed Jan. 20, 1898.)

(No Model.) 4 Sheets—Sheet I.

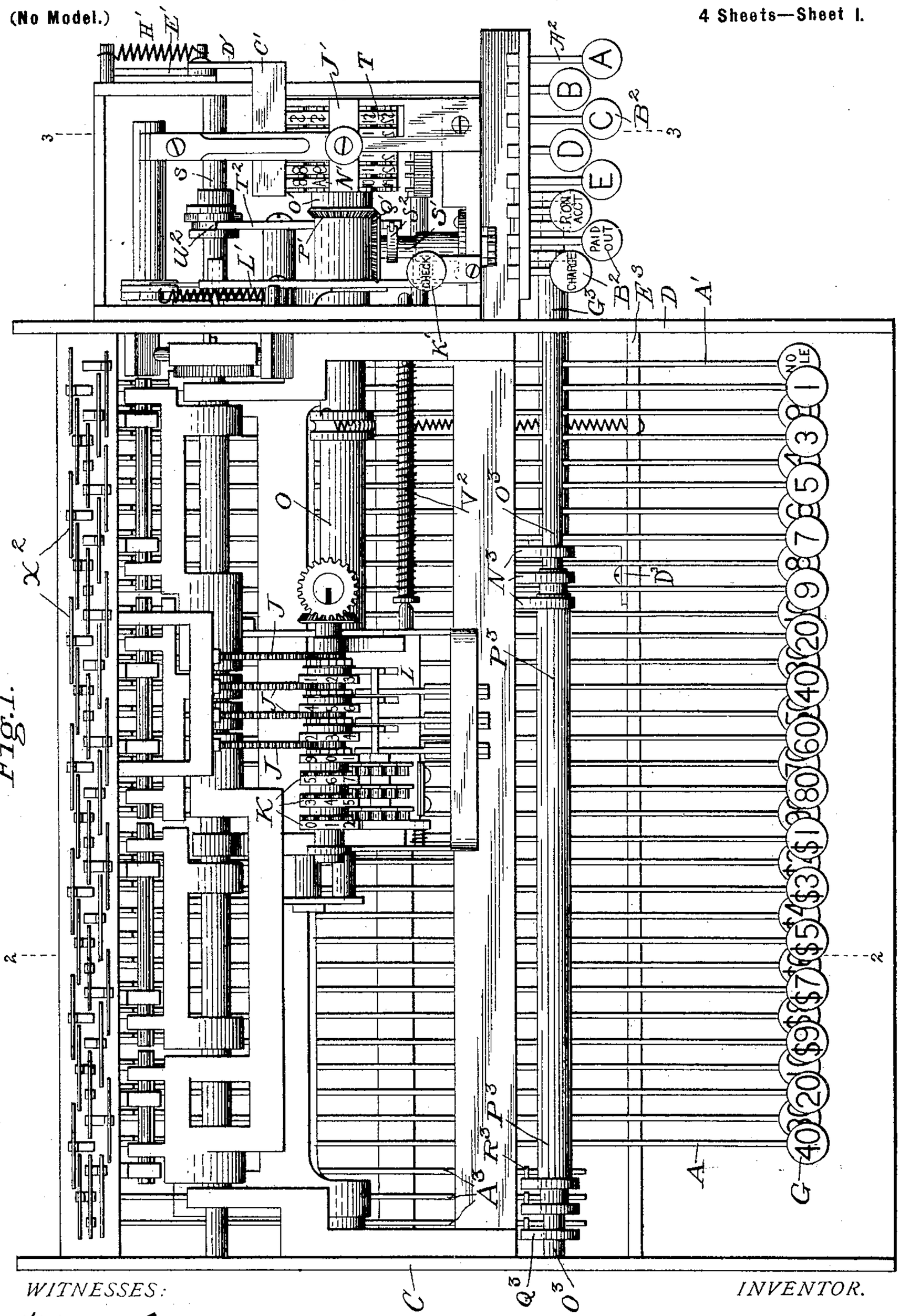

Fig. 1.

WITNESSES:

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Laura Minnaman.

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No. 700,525. Patented May 20, 1902.

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CASH REGISTER.

(Application filed Jan. 20, 1898.)

(No Model.) 4 Sheets—Sheet 2.

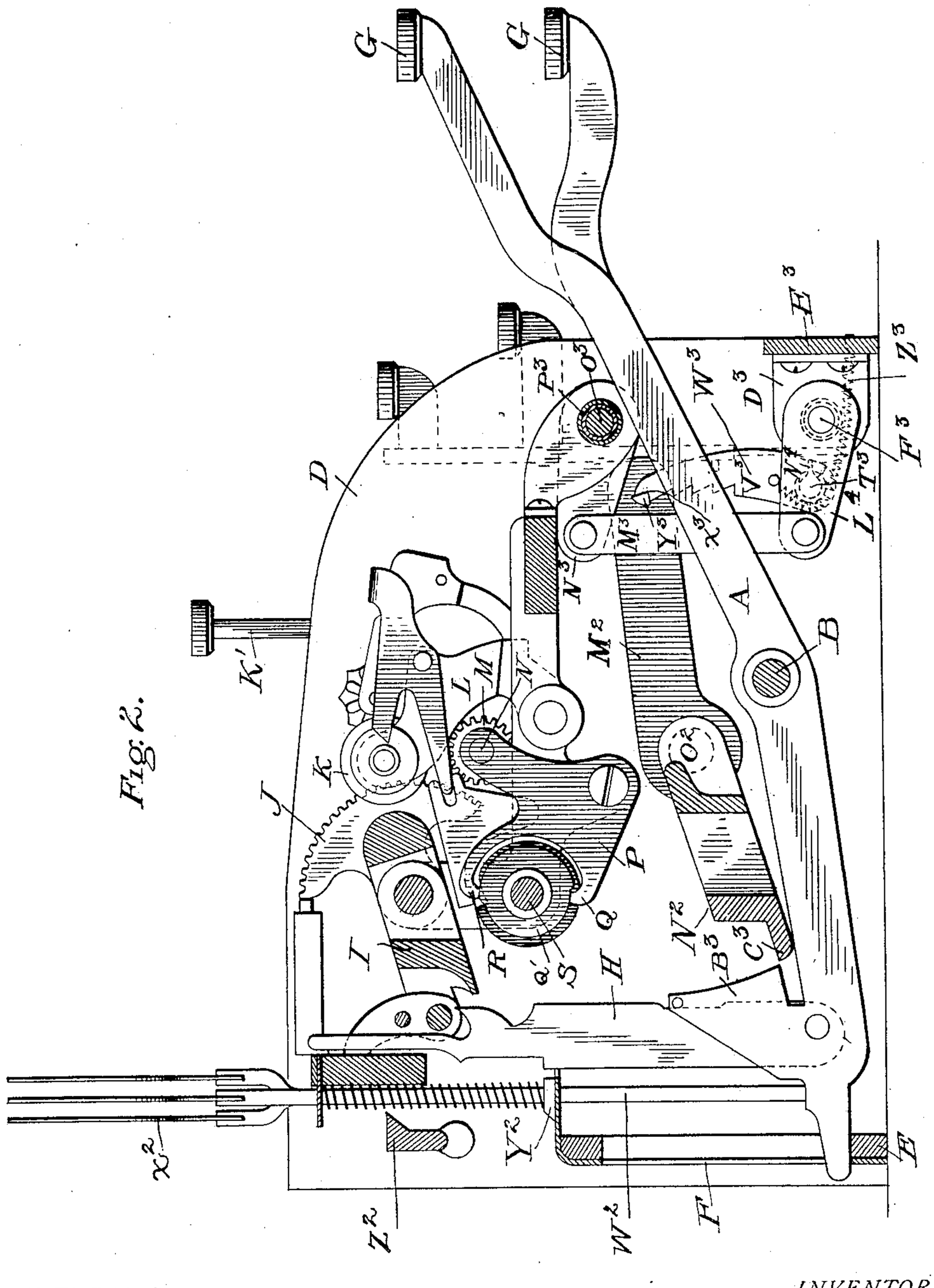

Fig. 2.

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CASH REGISTER.

(Application filed Jan. 20, 1898.)

(No Model.) 4 Sheets—Sheet 3.

Fig. 3.

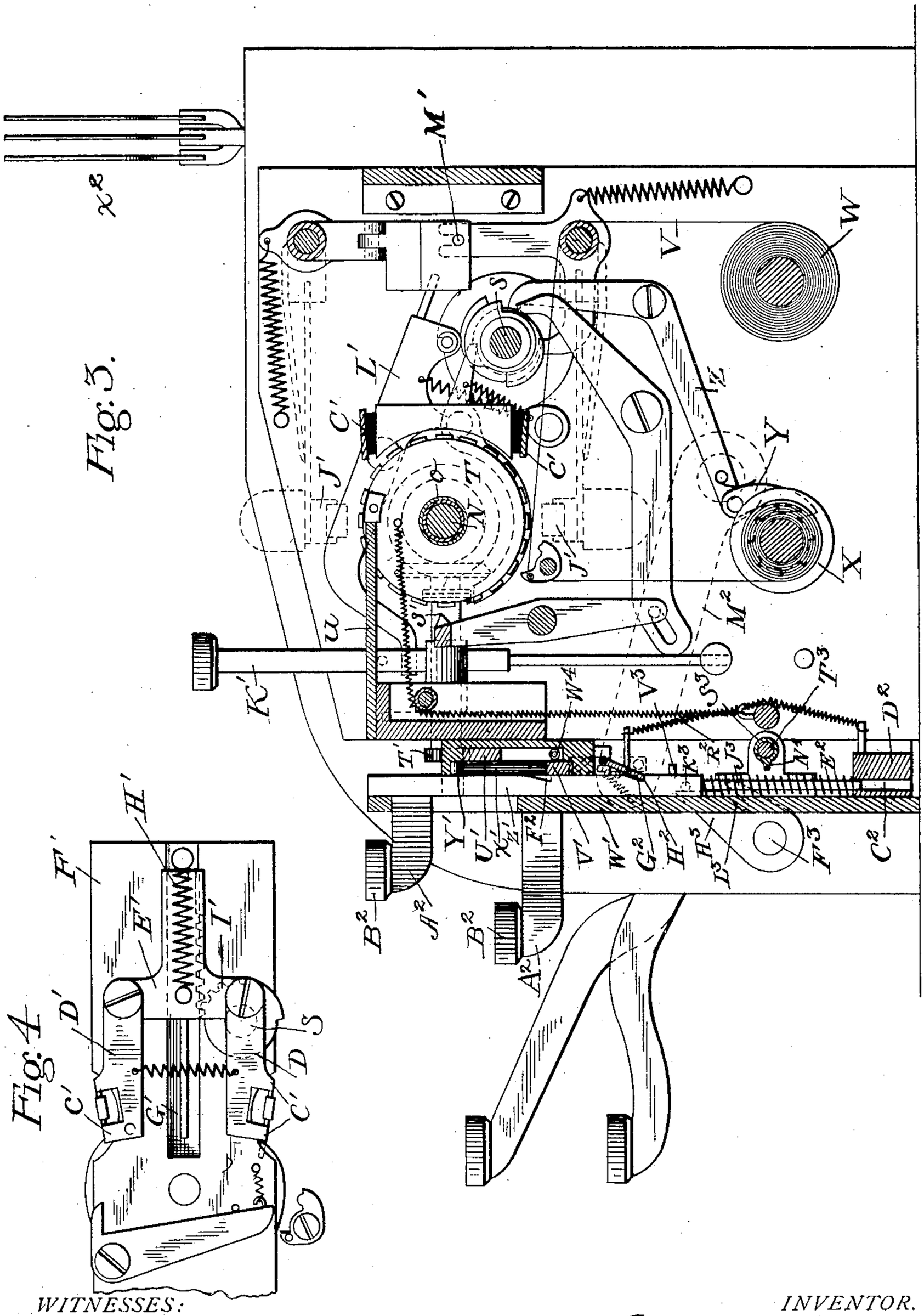

Fig. 4.

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No. 700,525. Patented May 20, 1902.

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CASH REGISTER.

(Application filed Jan. 20, 1898.)

(No Model.) 4 Sheets—Sheet 4.

Fig. 5.

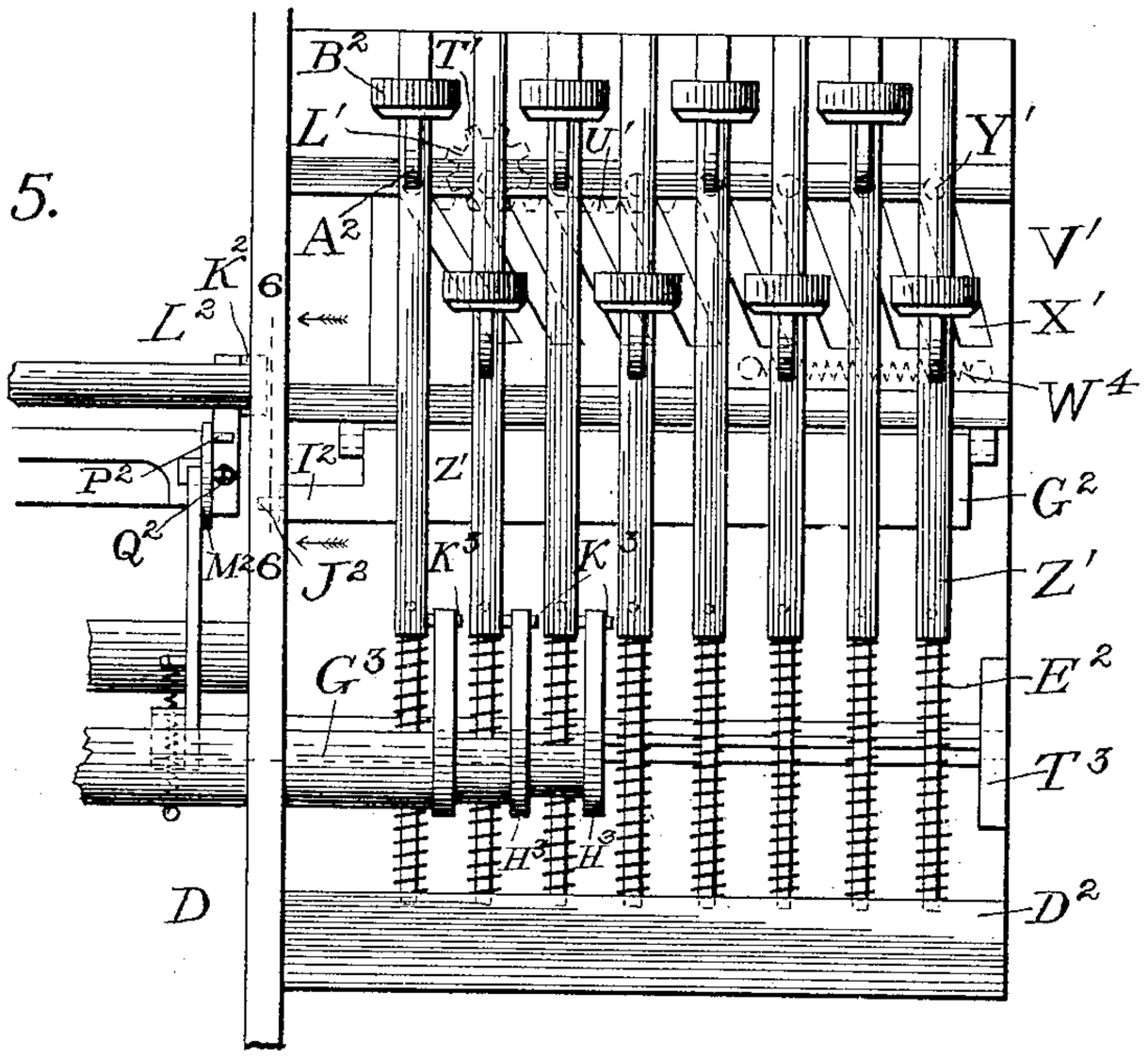


Fig. 6.

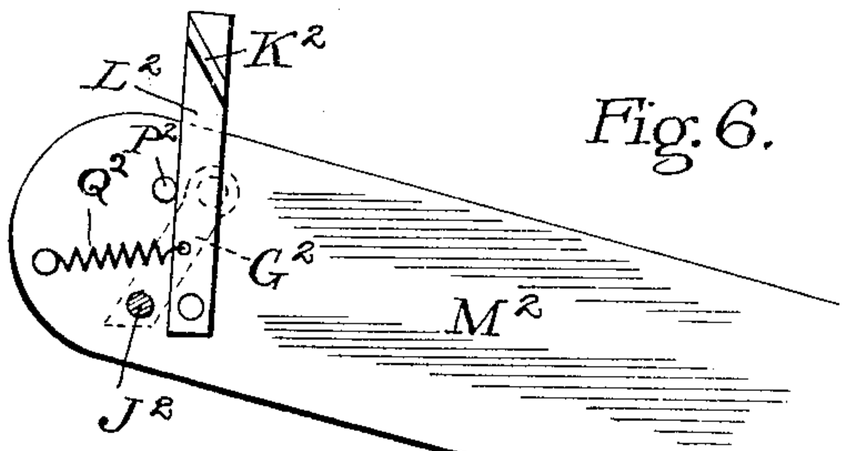
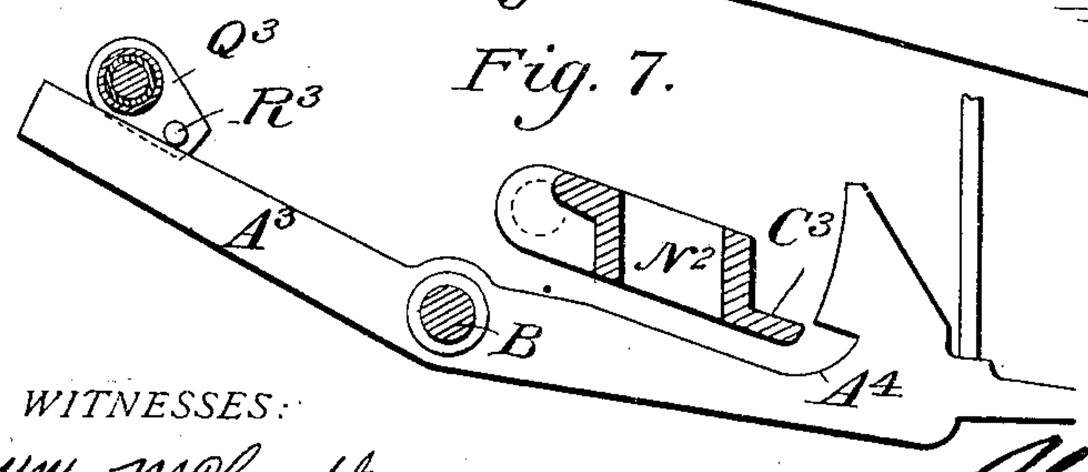


Fig. 7.



WITNESSES:

Wm. McCarthy

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UNITED STATES PATENT OFFICE.

ALEXANDER W. MARR, OF DAYTON, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE NATIONAL CASH REGISTER COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 700,525, dated May 20, 1902.

Application filed January 20, 1898. Serial No. 667,196. (No model.)

To all whom it may concern:

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

My invention has been designed more particularly as an improvement upon the machine patented to Thomas Carney by Letters Patent of the United States numbered 588,127, of August 17, 1897, but is applicable to other machines, as will be understood from the description of it hereinafter given.

In the accompanying drawings, Figure 1 is a top plan view of the complete machine removed from its casing; Fig. 2, a vertical section of the machine approximately on the line 2 2 of Fig. 1; Fig. 3, a vertical section through the printing attachment at the right-hand end of the machine approximately on the line 3 3 of Fig. 1; Fig. 4, a detail of the inking devices for the type-wheels; Fig. 5, a front elevation of the parts immediately behind the front plate of the printing attachment and some of the associated parts at the left thereof; Fig. 6, a detail view approximately on the line 6 6 of Fig. 5, and Fig. 7 represents a detail side elevation of one of the special indicator-operating levers and the key-coupler with which it coöperates.

The same letters of reference are used to indicate corresponding parts in all the views.

Referring to Figs. 1 and 2, the main operating-keys of the machine consist of levers A, fulcrumed upon a transverse rod B, located in the lower middle part of the machine and supported at its opposite ends in the side plates C D of the framework. The extreme rear ends of the levers A rest upon a crosspiece of the framework and play up and down in vertical slots in a guide-plate F, secured to the rear side of the framework, as usual. At their front ends the levers A carry the usual numbered finger-buttons G, representing the values of the respective keys. In the present instance there are thirty-one operating key-levers A, divided into four groups, which, beginning at the right, represent, respectively, units of cents, tens of cents, units of dollars, and tens of dollars, there being nine keys in each group, excepting the last-mentioned one. At the extreme right of the key-levers A is located a similar lever A′, Fig. 1, carrying at its front end a finger-button marked "No sale." This special key is employed for special purposes common in machines of this character and does not coöperate with the registering and recording devices. It need not be further referred to.

As fully described in the patent heretofore mentioned, each group of key-levers A coöperates through the medium of a series of graduated lifters H, Fig. 2, with a rocking frame I, which carries a sector-shaped rack J, there being in the present instance four of these frames I and racks J, one for each of the four groups of keys, as shown in Fig. 1. When the front end of any key-lever A is depressed to its limit of movement, the corresponding rack J will be swung forward and downward a distance proportionate to the value of such key, the differential movements of such racks proportionate to the values of the different keys being effected through the medium of the graduated lifters H, heretofore mentioned. The racks J coöperate with the pinions of the four primary wheels of a train of registering-wheels K, Fig. 1, mounted in a rocking frame L, Figs. 1 and 2, adapted to be swung backward and forward to carry the pinions of the registering-wheels into and out of mesh with the racks J, for the purpose of causing the racks to turn the pinions and registering-wheels as the racks move in one direction, but not in the other, as fully described in the patent before mentioned. The racks J also coöperate in a somewhat similar manner with pinions M, fast, respectively, upon the left-hand end of a shaft N, Fig. 2, and the left-hand ends of a series of sleeves O, loosely mounted upon said shaft, Figs. 1 and 3. At its left-hand end, Fig. 2, the shaft N is mounted in the upper forward end of a rocking plate or frame P, provided with two rearwardly-projecting arms Q R, coöperating with a cam Q′, fast upon a rotary shaft S, mounted in fixed bearings in the framework of the machine and given a com-

plete revolution at each complete operation of any one of the key-levers A in the manner and by the means described in the patent heretofore mentioned and unnecessary to set forth here. The right-hand ends of the shaft N and sleeves O thereon extend through and a slight distance beyond the right-hand side plate D of the framework, and upon their extreme right-hand ends are secured type-wheels T, Figs. 1 and 3, there being four of such type-wheels T, one corresponding to each rack J and group of operating-keys A. When the front end of any key-lever A is depressed, the rocking frame P at the beginning of the downward movement of the lever will be thrown rearward by the action of the cam Q′ and the pinions M upon the type-wheel shaft and sleeves be thrown into mesh with the racks J, with the result that the rack corresponding to the group containing the operated key-lever A will turn the corresponding pinion M and type-wheel a distance proportionate to the value of such lever and bring the corresponding number upon the type-wheel to the printing-line. At the end of the downward movement of the front end of the key-lever or at the very beginning of its return upward movement the rocking frame P will be thrown forward to normal position again by the action of the cam Q′, and the pinions M being thereby disengaged from the racks J the latter may return to their normal position independently of the pinions. The type-wheel and pinion which have been turned from normal position, as above described, will be held in the position to which they have been turned by means described in the aforesaid patent, No. 588,127, until the printing of the value of the operated key-lever has been effected, after which they will be released and restored to normal position by a suitable spring, all as fully set forth and described in said patent.

Each of the four type-wheels T bears upon its periphery two diametrically opposite series of type-numbers, each series on three of the type-wheels representing the nine digits and a cipher, while each series on the fourth or right-hand type-wheel represents the first four digits. The fourth type-wheel is also provided with "$" types, as shown in Fig. 1. The types are thus arranged to print at two lines on vertically opposite sides of the axis of the wheels, the printing at the upper line being effected on loose checks of tickets placed upon the horizontal top plate U of the printing attachment, Fig. 3, and slid thence rearward across the printing-line, and the printing at the lower line being effected upon a paper record-strip V, carried in a supply-roll W, and led thence around suitable guides, across the lower printing-line, and downward around a storage reel or spool X, which is actuated to wind up a portion of the strip at each operation of the machine by a pawl Y, carried by a lever Z, coöperating with a cam upon the rotary shaft S, heretofore referred to, the pawl Y engaging a ratchet upon the hub of the spool X. The types are inked by means of inking-pads carried by metal strips C′, Figs. 3 and 4, which strips are secured at their outer ends to arms D′, pivotally supported at their rear ends upon a backwardly and forwardly sliding plate E′, mounted upon the side plate F′ of the printing attachment, Fig. 4, and moving in a horizontal guideway G′, formed in said plate F′. The plate E′ is normally pulled rearward by a spring H′ and is advanced at each operation of the machine by the engagement of a gear-toothed sector I′, fast upon the rotary shaft S, with a rack formed upon the plate E′, as shown by the dotted line in Fig. 4. At each revolution of the shaft S the plate E′ will be advanced to move the inking-strips to the printing-lines, and after the types have been inked by the strips the plate E′ will be released by the disengagement of the teeth of the sector I′ from the rack on the plate, and the spring H′ will thereupon restore it to normal position. The inking-strips when brought to the printing-line in this manner are forced against the types to ink them by the spring-pressed platens J′, which are twice retracted and released and twice thrown against the type-wheels by their actuating-springs at each operation of the machine, the first movement of the platens serving to force the inking-strips against the type-wheels to ink them and the second occurring after the inking-strips have been withdrawn and serving to force the paper check and the record-strip against the types to effect the printing, all by the means and in the manner fully described in the patent above mentioned. A special key K′ coöperates with a lever L′, which controls a connection at M′ between the upper and lower platens in the manner described in the aforesaid patent. The cams by which the platens are actuated act directly upon the supporting arm or lever of the lower platen, and through the connection of that arm or lever with the supporting arm or lever of the upper platen they actuate the latter. The two platens are normally disconnected at M′, so that the upper platen will remain at rest during the operation of the machine; but whenever it is desired to print a check or ticket in addition to printing the amount of the sale upon the record-strip the special key K′ will be depressed, which will serve to connect the two platens at M′ and cause both platens to be actuated at the subsequent operation of the machine, as fully explained in the aforesaid patent.

In addition to the four numbered type-wheels T there is at the left-hand side of said wheels a special type-wheel N′, Fig. 1, which is fast upon the extreme right-hand end of a short sleeve O′, loosely fitting around and mounted upon the sleeves O, which carry the numbered type-wheels. The sleeve O′ has fast upon its left-hand end a beveled gear P′, which meshes with a second beveled gear Q′,

fast upon the rear end of a shaft S′, Figs. 1 and 3, which shaft S′ has fast upon its front end a pinion T′, Figs. 1, 3, and 5, which pinion T′ meshes with a rack formed upon the upper edge of a horizontal plate U′, secured upon the rear side of a transversely-sliding plate V′, mounted in suitable guides in rear of the front plate W′ of the printing attachment, Fig. 3, and pulled to the right by a spring W^4. As shown in Fig. 5, the transversely-sliding plate V′ is provided with a series of inclined slots X′, in which fit studs or pins Y′, projecting from the rear side of vertically-sliding bars Z′, mounted to reciprocate vertically upon the rear side of the front plate W′ of the printing attachment. Each of these bars has secured to its forward side and projecting forwardly through a vertical slot in the front plate W′ a finger-piece A^2, carrying a finger-button B^2, while the reduced lower end of the bar fits in a vertical guideway C^2, formed in the horizontal cross-bar D^2 of the framework. Surrounding this reduced lower end of each of the vertically-sliding bars Z′ and confined between the shoulder formed on the bar at the upper end of its reduced portion and the upper side of the cross-bar D^2 is a coiled spring E^2, which serves to press the bar upwardly and return it to and yieldingly hold it in normal position. As will be apparent from the above-described construction, when any one of the bars Z′ is depressed to its limit of movement its pin Y′, traveling downward in the corresponding inclined slot X′ in the transversely-sliding plate V′, Fig. 5, will force said plate to the left, and the rack U′, carried by said plate and meshing with the pinion T′ upon the shaft S′, will turn said shaft S′ to the right, and thereby through the medium of the gears Q′ P′ turn the special type-wheel N′ forward. The type-wheel N′ bears upon its periphery two diametrically opposite series of type characters, each representing the first five letters of the alphabet, and also the words "Received on account," "Paid out," and "Charge," and the buttons B^2 of the finger-pieces A^2 are provided with similar characters and words, as shown in Fig. 1. The slots X′ in the transversely-sliding plate V′ have different inclinations, so arranged that whenever any one of the finger-buttons B^2 is depressed to the limit of movement of the bar T′, which carries it, the type-wheel N′ will be turned until the character corresponding to such depressed key is brought to the printing-line. The bars Z′ are provided upon their rear faces with notches F^2, Fig. 3, adapted to coöperate with a pivoted detent plate or wing G^2, which is spring-pressed against the rear sides of the bars Z′. The bars are also provided with a second set of notches at H^2, in which the lower forward edge of the plate G^2 normally rests. When any one of the bars Z′ is depressed in the manner above described, its upper notch F′ will be engaged by the plate G^2 when it comes opposite the latter and the bar be thereby held in depressed position against the stress of its resetting-spring E^2 when pressure upon the finger-button of the bar is removed and the type-wheel N′ accordingly be held in position to print the character corresponding to such depressed bar. At its extreme left-hand end the detent plate or wing G^2 is provided with a laterally-projecting rod or extension I^2, Fig. 5, whose extremity is provided with a pin J^2, which coöperates with a cam K^2 upon the right-hand side of a plate L^2, Fig. 6, pivoted to the right side of the forward end of an arm M^2, Fig. 2, which is secured to or formed integral with the right-hand side arm of the universal bar or frame N^2, which is pivotally supported upon the side frames at O^2 and overlies all of the key-levers in the machine and is lifted at its rear edge by the operation of any one of them representing amounts. When the front end of any key-lever is depressed and the rear edge of the universal bar N^2 thereby lifted, the forward end of the arm M^2 will be thrown downward. The plate L^2, carried by the arm M^2, Fig. 6, is yieldingly held in normal position against a stop-pin P^2 upon said arm by a spring Q^2 and is free to yield against the resistance of such spring. As the forward end of the arm M^2 is thrown downward at the depression of any amount key-lever the forward side of the cam K^2 upon the plate L^2 will engage the rear side of the pin J^2 on the extension I^2 of the wing G^2, Fig. 5, and as the lower edge of the wing G^2 is in contact with the rear sides of the vertical key-bars Z′ and cannot yield the plate L^2 yields and swings slightly rearward as the cam K^2 rides over the pin J^2. When the operated key-lever is released, however, and the front end of the arm M^2 rises, the rear side of the cam K^2 will engage the forward side of the pin J^2, and as the wing G^2 is free to be swung rearward (against the stress of the spring R^2, which yieldingly holds it in normal position, Fig. 3) and the plate L^2 is not free to yield in a forward direction the cam K^2 as it rides upward over the forward side of the pin J^2 will swing the lower edge of the wing G^2 rearward, and thereby disengage it from the notch F^2 of the particular key-bar Z′ which has been depressed, releasing such bar and permitting it to be moved upward to normal position by its spring E^2. In this manner and by these means the depressed key-bar Z′ is released and restored to normal position at the end of each operation of the machine.

In the machine of the Carney patent, No. 588,127, heretofore referred to, the special type-wheel corresponding to the type-wheel N′ in the present case was set by means of a shaft geared to it and corresponding to the shaft S′ in the present instance; but such shaft was turned directly by hand, having secured upon its front end an index-disk or finger-piece bearing a series of characters corresponding to those upon the type-wheel and by means of which the shaft could be turned

to set the type-wheel to position to print any desired character. In the present instance the setting-shaft S′ for the special type-wheel coöperates with the series of special keys in the manner and by the means which have been described, so that in order to set such type-wheel it is only necessary to depress any one of such special keys to its limit of movement.

The shaft S′ carries devices at S^2, Fig. 1, which coöperate with a lever T^2, whose rear end coöperates with a shouldered locking-disk U^2, fast upon the rotary shaft S, in the manner fully shown and described in the aforesaid patent for the purpose of normally locking the shaft S, and consequently the entire machine, and preventing operation of it until some one of the special keys is depressed. The shaft S′ is also provided with devices (not shown) which coöperate with a spring-pressed sliding rod V^2, Fig. 1, for the purpose of maintaining the registering-wheels out of coöperation with the racks J when any one of the three keys marked "Charge," "Paid out," or "Received on account" is depressed, all in the manner and by the means shown and described in the aforesaid patent and unnecessary to be illustrated and described in detail here. It is desirable that whenever a transaction represented by any one of these three special keys last mentioned is made an indicator shall be exposed to view to indicate the character of the transaction, and I have provided a novel combination of indicators with these special keys for such purpose. As shown particularly in Fig. 2, each key-lever has resting upon the upper side of its rear end the usual indicator-rod W^2, carrying at its upper end the indicator X^2, and provided with a beveled collar or projection Y^2, coöperating with the usual supporting-wing Z^2. The indicators corresponding to the several cash key-levers A bear numbers indicating the respective values of such keys, while the indicator corresponding to the special key-lever A′ at the extreme right-hand side of the machine bears the words "No sale," as does the finger-button on the front end of said lever. In addition to the key-levers A and A′ there are provided at the left-hand side of the machine three additional levers A^3, corresponding in all respects to the levers A, excepting that their front ends are cut off about midway of the distance between the fulcrum-rod B and the front ends of the levers A and they are formed with notches A^4, as shown in Fig. 7. The indicator-rods resting upon the rear ends of these three levers A^3 carry indicators bearing the words "Charge," "Paid out," and "Received on account," respectively, thus corresponding to the words upon the finger-buttons of the three special keys B^2, above referred to. Now, in the manner and by the means to be described, whenever any one of said three special keys B^2 is depressed the front end of the corresponding lever A^3 will be slightly depressed, thereby slightly lifting its rear end. Each of the levers A, A′, and A^3 is provided upon the upper side of its rear end with the usual hook B^3, Fig. 2, coöperating in the well-known manner with the flange C^3, formed upon the lower rear edge of the universal bar N^2. When the front end of any one of the levers A^3 is depressed in the manner above described, the hook B^3 upon its rear end will be lifted into the path of or caused to engage the flange C^3 on the universal bar without moving said bar, because of the notch A^4, and when said bar is thereafter lifted by the depression of some one or more of the regular key-levers A to indicate and record the amount of the transaction the rear end of such special lever A^3 will be carried upward by the universal bar and its indicator lifted into view to indicate the character of the transaction, as will be readily understood.

It will now be in order to describe the particular means by which the depression of any one of the three special keys B^2 serves to slightly depress the front end of the corresponding lever A^3.

Journaled at its left-hand end in a bracket-plate D^3, secured to the rear side of the lower front cross-bar E^3 of the framework, Figs. 1 and 2, is a shaft F^3, which extends to the right through the right-hand side frame D, in which it has its right-hand bearing and support, and projects to the right beyond said side frame, as shown in Figs. 1 and 5. Surrounding this shaft are two sleeves, (indicated in dotted lines in Fig. 2,) and the outer one G^3 of which is shown in Figs. 1 and 5. Fast upon the right-hand ends of the shaft F^3 and the two sleeves, respectively, are three upwardly and rearwardly projecting plates H^3, Fig. 5, each of which is provided with a downwardly and forwardly inclined slot opening at its upper rear end through the rear edge of the plate, as shown by the dotted lines at L^3 in Fig. 3. The rear edge of the plate below such slot projects rearward beyond the rear edge of the portion of the plate above the slot, thereby forming a hook or shoulder, as indicated by the dotted lines at J^3 in Fig. 3. As shown in Fig. 5, the three plates H^3 are located immediately adjacent the right-hand sides of the key-bars Z′ of the three special keys now under discussion, and each of such keys has projecting from its right-hand side a pin K^3. The hooks or shoulders J^3 upon the arms or plates H^3 stand in the paths of these pins K^3 upon the bars Z′, so that whenever any one of said bars is depressed its pin K^3 will contact with the shoulder J^3 on the corresponding plate and enter the slot L^3 in said plate, Fig. 3, and swing the upper rear end of said plate rearward and downward, and thereby correspondingly rock the shaft or sleeve carrying such plate H^3. Inasmuch as the bars Z′ will be engaged by the wing G^2 at their limit of downward movement and held in depressed position until released in the manner heretofore described it follows that the shaft or sleeve in question

will be likewise held in rocked position during such time. Now the shaft F^3 and the sleeves upon it have secured upon their extreme left-hand ends, Fig. 2, rearwardly-projecting arms L^4, which are connected by links M^3 with the rear ends of corresponding arms N^3, secured to and projecting rearwardly from a shaft O^3 and two sleeves P^3, mounted upon it, respectively, as shown in Fig. 1. The shaft O^3 extends entirely across the machine and is mounted at its opposite ends in the side frames C D, while the sleeves P^3 extend to the left to a point above the front ends of the three levers A^3. At that point the shaft O^3 and the two sleeves have respectively secured upon them three rearwardly-projecting arms Q^3, provided with laterally-projecting pins R^3, overlying the respective levers A^3, as clearly shown in Fig. 1. It results from the foregoing construction and arrangement of parts that whenever any one of the three special keys in question is depressed the rear end of the corresponding arm Q^3 will be drawn downward, and the pin R^3, carried by said arm, will contact with and sufficiently depress the front end of the corresponding lever A^3 to move the hook B^3 upon its rear end into the path of the flange C^3 of the universal bar, and inasmuch as the special key depressed is held in depressed position until released during the subsequent operation of the machine it follows that the position of the lever A^3 in relation to the universal bar will be maintained until such bar is lifted by said subsequent operation of the machine, whereupon the bar will carry the rear end of the lever A^3 upward with it and expose to view the corresponding indicator representing the particular character of the transaction.

In addition to the locking means coöperating with the setting-shaft S′ of the special type-wheel N′ for preventing operation of the machine without first depressing some one of the special keys, which has been heretofore referred to, I have provided in the present instance additional novel locking means cooperating with the special keys for the same purpose. As shown in Fig. 3, there is mounted at its opposite ends in brackets S^3, secured to the rear side of the front plate W′ of the printing attachment, a rock-shaft T^3, having fast upon it a sleeve provided with a forwardly-projecting rib or flange N^4, which stands in the path of pins V^3, projecting from the rear sides of all of the key-bars Z′ near their lower ends, the result of which is that whenever any one of the eight special keys is depressed to its limit of movement the shaft T^3 will be rocked. As shown in Fig. 2, the rock-shaft T^3 has secured upon its extreme left-hand end an upwardly-extending arm W^3, which is provided at its extreme upper end with a shoulder at X^3, which normally stands in the path of a lug Y^3, projecting from the side of the arm M^2 of the universal bar, heretofore described, with the result that so long as the arm W^3 remains in normal position the arm M^2 will be locked from downward movement and operation of the machine consequently prevented. When any one of the special keys is depressed to its limit of movement, however, the shaft T^3 will be rocked in the manner described and the upper end of the arm W^3 swung forward and its shoulder X^3 carried out of the path of the lug Y^3 on the arm M^2. The arm W^3 will be maintained in this forward position so long as the special key is held in its depressed position, and when the latter is released the arm will be swung rearward again by a resetting-spring Z^3, which is connected to it. When so swung rearward, its rear edge will contact with the lug Y^3 upon the bar M^2 as the front end of the latter rises to normal position, and the rear edge of the arm W^3 is in this instance provided with a series of notches forming upwardly-presented shoulders, whose engagement with the lug Y^3 would serve to prevent any downward movement of the arm M^2, and consequently any retrograde movement of the parts, should any be attempted before they have been returned to normal position.

Having thus fully described my invention, I claim—

1. In a cash-register, the combination with a registering mechanism, of a key-coupler, a special key-lever having a rigid projection arranged to be moved into the path of the coupler without engaging it, and a series of amount-keys adapted to operate said coupler.

2. In a machine of the character described the combination with a series of cash or numbered keys and a registering mechanism, of a series of special keys, indicators coöperating respectively therewith and arranged to be set for movement to indicating position by the operation of said special keys, means controlled by the cash-keys for registering and indicating the amount of the transaction and exposing the indicator previously set by the operation of the special keys, and locking means controlled by the special keys to prevent the operation of the cash or numbered keys until a special key has been operated.

3. In a cash-register, the combination with a registering mechanism, of a pivoted key-coupler, a special key-lever pivoted eccentrically to the coupler and formed with a rigid projection that may be moved into the path of the same without engaging it, a key for setting said lever and a series of amount-keys for operating said coupler.

4. In a cash-register, the combination with a registering mechanism, of a pivoted key-coupler, a special key-lever pivoted eccentrically to the coupler and so formed that it may be moved into the path of the same without engaging it, a special key for operating said lever, a special indicator coöperating with said lever and a series of amount-keys arranged to operate said coupler.

5. In a cash-register, the combination with

a registering mechanism, of a key-coupler, a special key-lever having a hook and a notched portion whereby it may be moved into coöperative relation with the coupler without engaging it, a series of amount-keys for operating said coupler, and a special key for setting the special key-lever.

6. In a cash-register, the combination with a registering mechanism, of a series of amount-keys, a member common to all of said keys and arranged to be moved by the same, special key-levers arranged to be coupled to said member, special keys for setting said levers, and a lock for said common member arranged to be operated by the special keys.

7. The combination with the type-carrier, of a sliding plate having inclined slots, means connecting said type-carrier and plate, vertically-sliding bars Z′ having finger-pieces for depressing them and pins which project into the inclined slots, and a detent plate or wing G^2 coöperating with notches F^2 formed in the bars Z′.

8. The combination with a type-carrier, of a sliding plate having inclined slots, means connecting said type-carrier and plate, a series of special keys having projections which enter the slots of said plate, a detent plate or wing coöperating with said keys, a series of cash-keys and means operated by the cash-keys for disengaging the detent-plate from the special keys.

9. The combination with a type-carrier of a series of special keys for operating the same, a series of cash-keys, a movable member common to said cash-keys and provided with a locking projection, a pivoted locking-lever arranged to engage said projection, a rock-shaft carrying said lever, and projections mounted on the special keys and adapted to rock said shaft.

10. The combination with a type-carrier, of a series of special keys for operating the same, a series of cash-keys, a movable member common to said cash-keys, and provided with a locking projection, a locking-lever arranged to engage said projection, a rock-shaft carrying said lever and provided with an operating-rib and pins mounted on the special keys so as to engage said rib and rock the shaft.

11. The combination with a type-carrier of a series of special keys for operating the same, a latching-plate for holding said keys in their depressed positions, a series of cash-keys, a movable member common to all of the cash-keys, and a cam mounted on the same, and arranged to engage and operate the latching-plate.

12. The combination with a series of cash-keys, of a series of special keys, means for preventing the operation of a cash-key until a special key is operated, devices for locking the special keys in their depressed positions, a movable member common to all of the cash-keys, and a cam mounted on said member and adapted to operate the locking devices.

13. The combination with a series of cash-keys, of a series of special keys, the detent-plate G^2 coöperating with the special keys, the universal bar N^2 operated by the cash-keys and provided with an extension-arm, the plate L^2 pivoted on the arm and formed with the cam K^2 coöperating with the detent G^2.

14. The combination with a series of cash-keys, of a series of special keys, the special key-levers A^3, the universal bar N^2, a series of nested sleeves extending across the machine, means connecting said sleeves to the special keys at one end and devices mounted on said sleeves at their opposite ends for operating the keys A^3.

15. The combination of the special type-wheel N′, the shaft S′ geared thereto and provided with the pinion T′, the sliding plate V′ provided with the inclined slots X′ and having the rack U′ meshing with the pinion T′, the vertically-sliding bars Z′ provided with finger-pieces for depressing them against the resistance of their resetting-springs E^2 and having the pins Y′ coöperating with the slots X′ in the plate V′, and the detent plate or wing G^2 coöperating with notches F^2 in the bars Z′.

16. The combination of the special type-wheel N′, the shaft S′ geared thereto and provided with the pinion T′, the sliding plate V′ provided with the inclined slots X′ and having the rack U′ meshing with the pinion T′, the vertically-sliding key-bars Z′ provided with finger-pieces for depressing them against the resistance of their resetting-springs E^2 and having the pins Y′ coöperating with the slots X′ in the plate V′, the detent-plate G^2 coöperating with the notches F^2 in the key-bar Z′, and means actuated by the cash-keys of the machine to disengage the detent-plate from the notches in the key-bars.

17. The combination of the special type-wheel N′, the shaft S′ geared thereto and provided with the pinion T′, the sliding plate V′ provided with the inclined slots X′ and having the rack U′ meshing with the pinion T′, the vertically-sliding key-bars Z′ provided with finger-pieces for depressing them against the resistance of their resetting-springs E^2 and having the pins Y′ coöperating with the slots X′ in the plate V′, the detent-plate G^2 coöperating with the notches F^2 in the key-bars Z′, the universal bar N^2 of the machine operated by the cash-keys A thereof and provided with the forwardly-extending arm M^2, and the plate L^2 pivoted upon the arm M^2 and provided with the cam K^2 coöperating with the pin J^2 upon the detent-plate G^2 for the purpose described.

18. The combination, with the cash-keys and the universal bar N^2 operated thereby and provided with the forwardly-extending arm M^2, of the vertically-sliding key-bars Z′ of the special keys, the rock-shaft T^3 adapted to be rocked by the depression of any one of

said bars, and the arm W^3 carried by said rock-shaft and coöperating with a projection M^3 on the arm M^2.

19. The combination, with the cash-key levers A, and the universal bar N^2 coöperating therewith, of the special key-levers A^3 provided with the hooks B^3 adapted to coöperate with the flange C^3 of the universal bar N^2, the indicator-rods and indicators coöperating with said levers A^3, the special keys, and the rock-shaft and sleeves provided at one end with arms or projections coöperating with the special keys and at their opposite ends with arms or projections coöperating with the key-levers A^3 for the purpose described.

20. The combination, with the cash-key levers A and the universal bar N^2 coöperating therewith, of the special key-levers A^3 also coöperating with the bar N^2, the indicator-rods and indicators coöperating with the levers A^3, the vertically-sliding key-bars Z′ having the finger-buttons B^2 corresponding to the indicators coöperating with the levers A^3, the rock-shaft F^3 and the sleeves thereon, the plates H^3 carried by said shaft and sleeves and coöperating with the pins K^3 upon the key-bars Z′, the shaft O^3 and sleeves thereon, connected respectively to the shaft F^3 and its sleeves, and the arms Q^3 fast upon the shaft O^3 and its sleeves and coöperating with the levers A^3, for the purpose described.

ALEXANDER W. MARR.

Witnesses:
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