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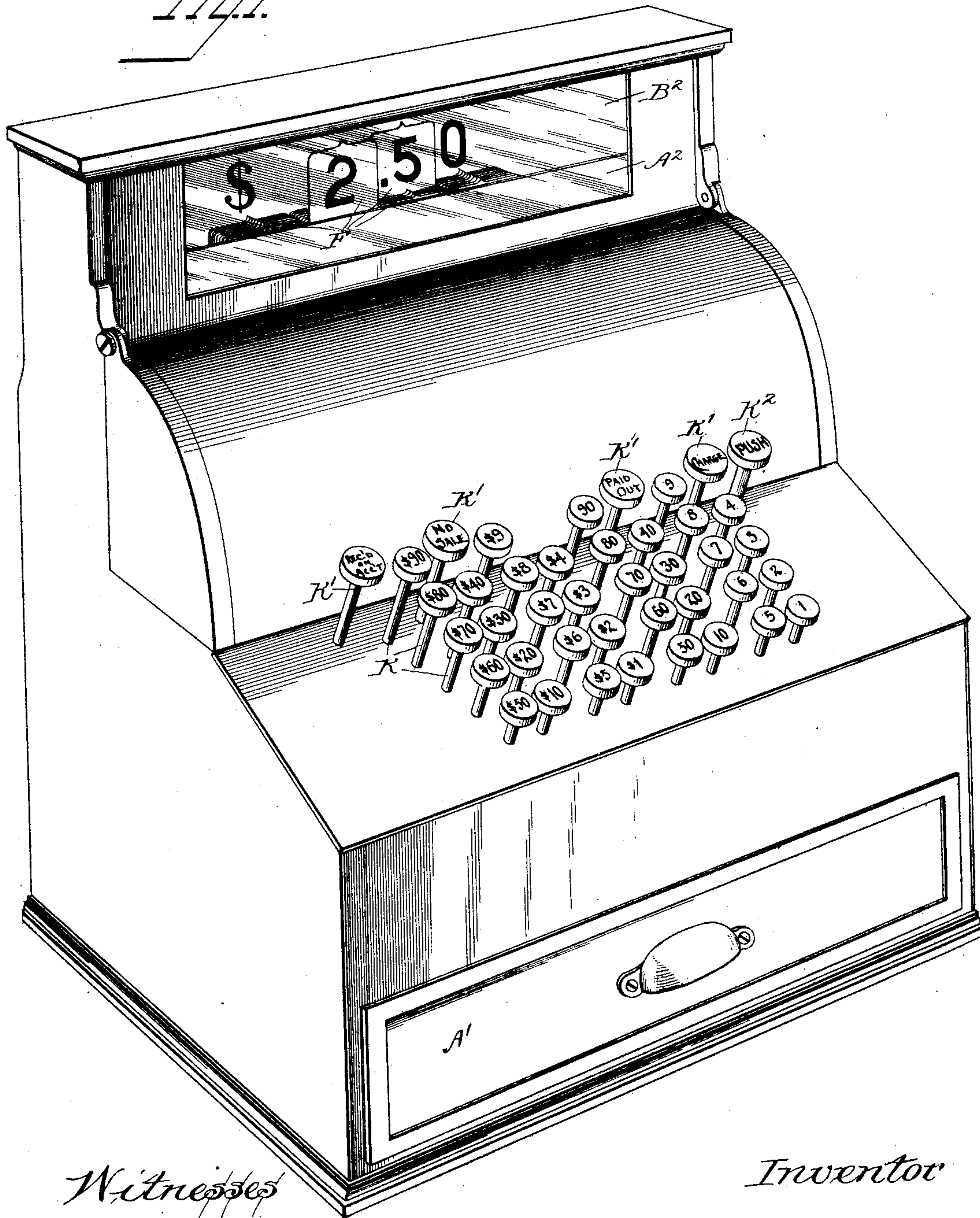
5 Sheets—Sheet 1.

T. CARNEY.  
CASH REGISTER.

No. 589,245.

Patented Aug. 31, 1897.

*Fig. 1.*



*Witnesses*  
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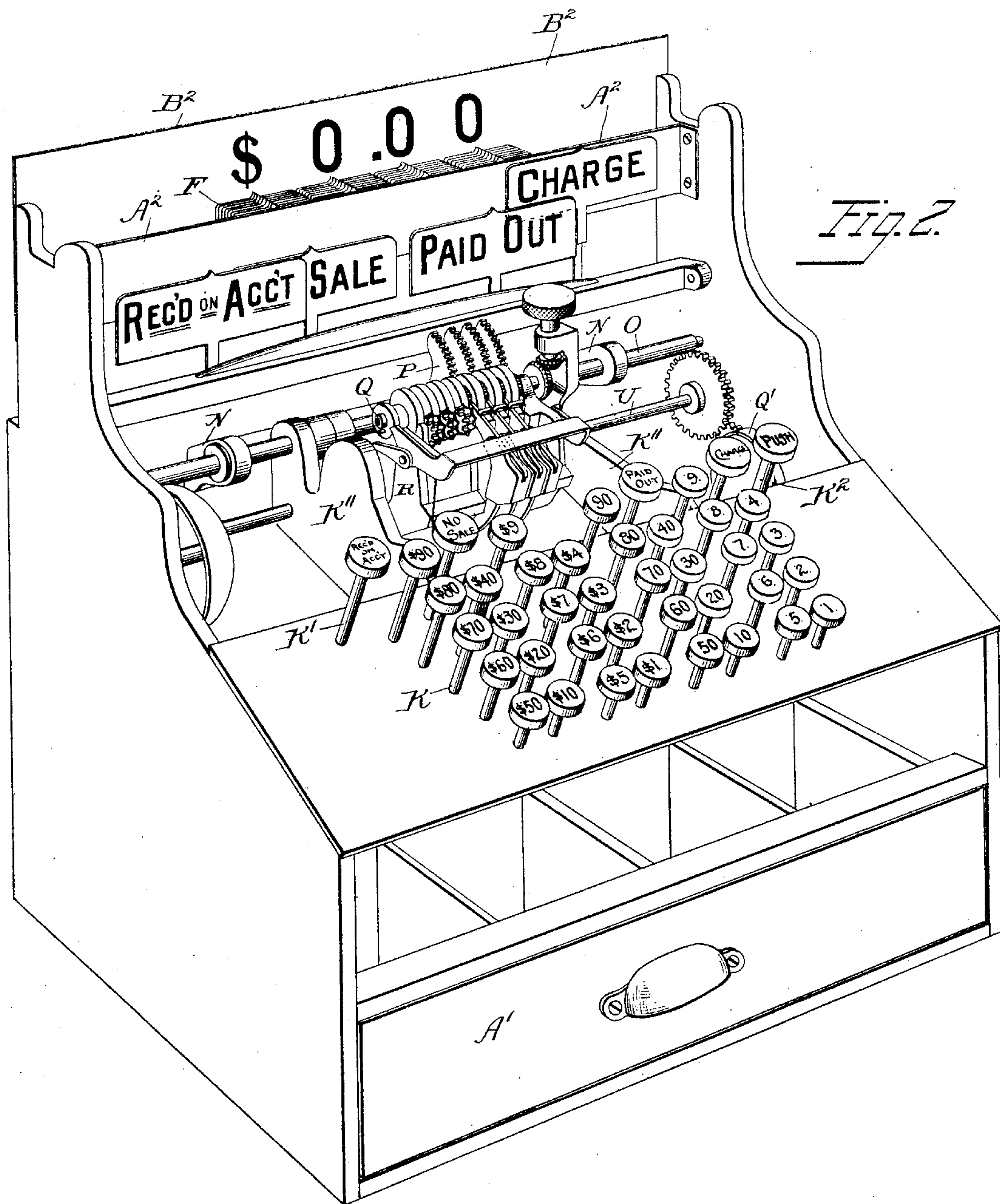
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T. CARNEY.  
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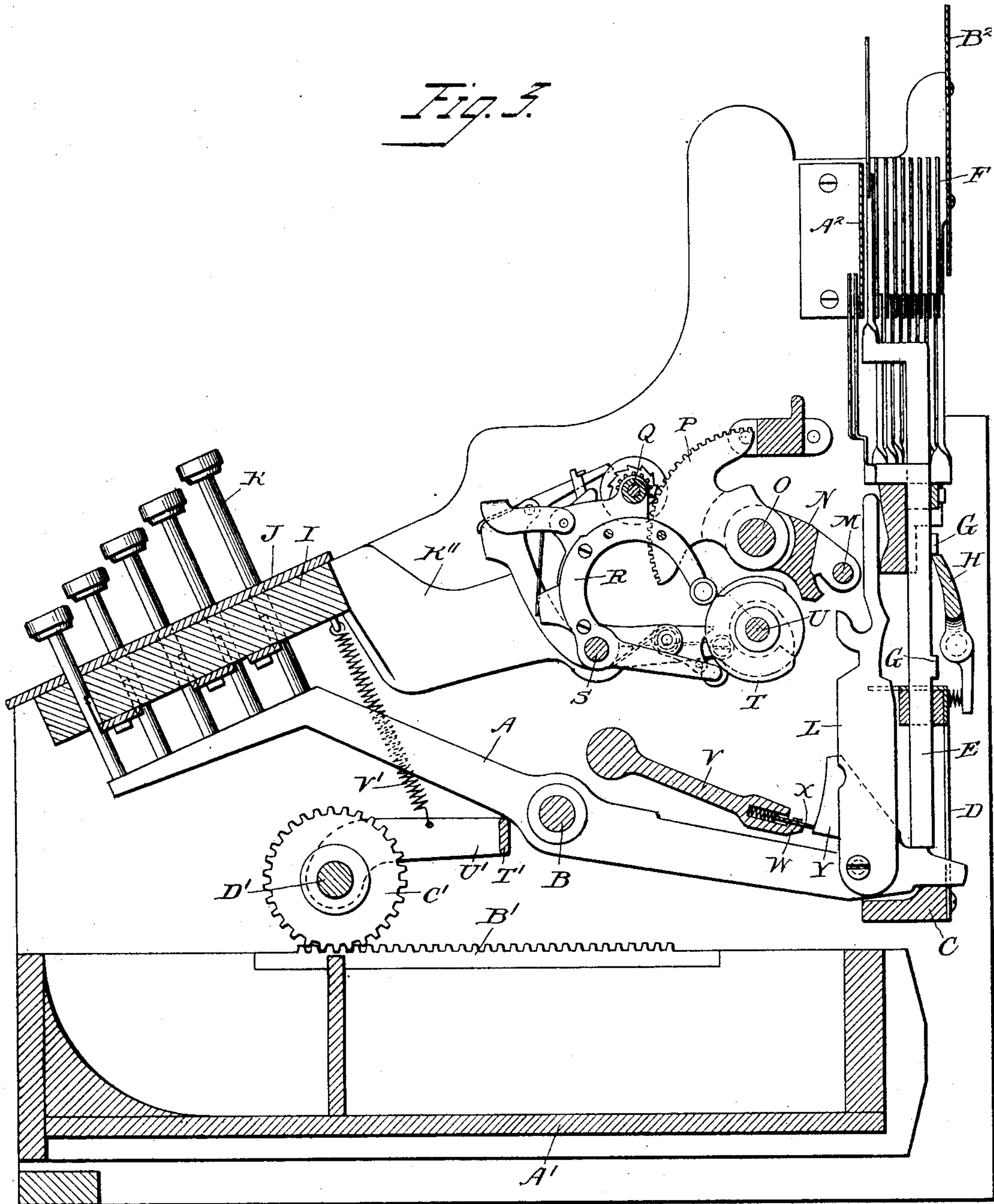
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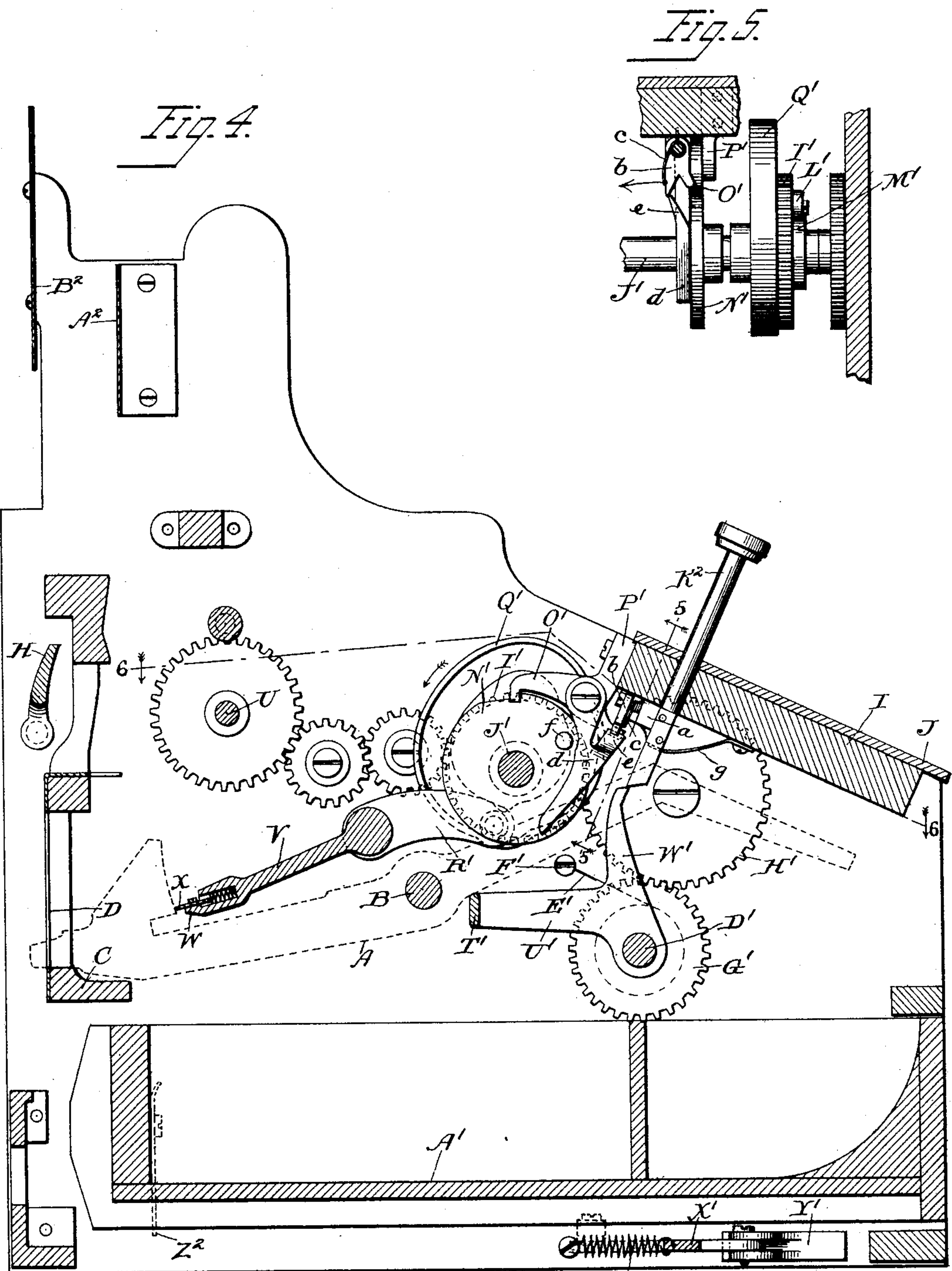
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T. CARNEY.  
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No. 589,245.

Patented Aug. 31, 1897.



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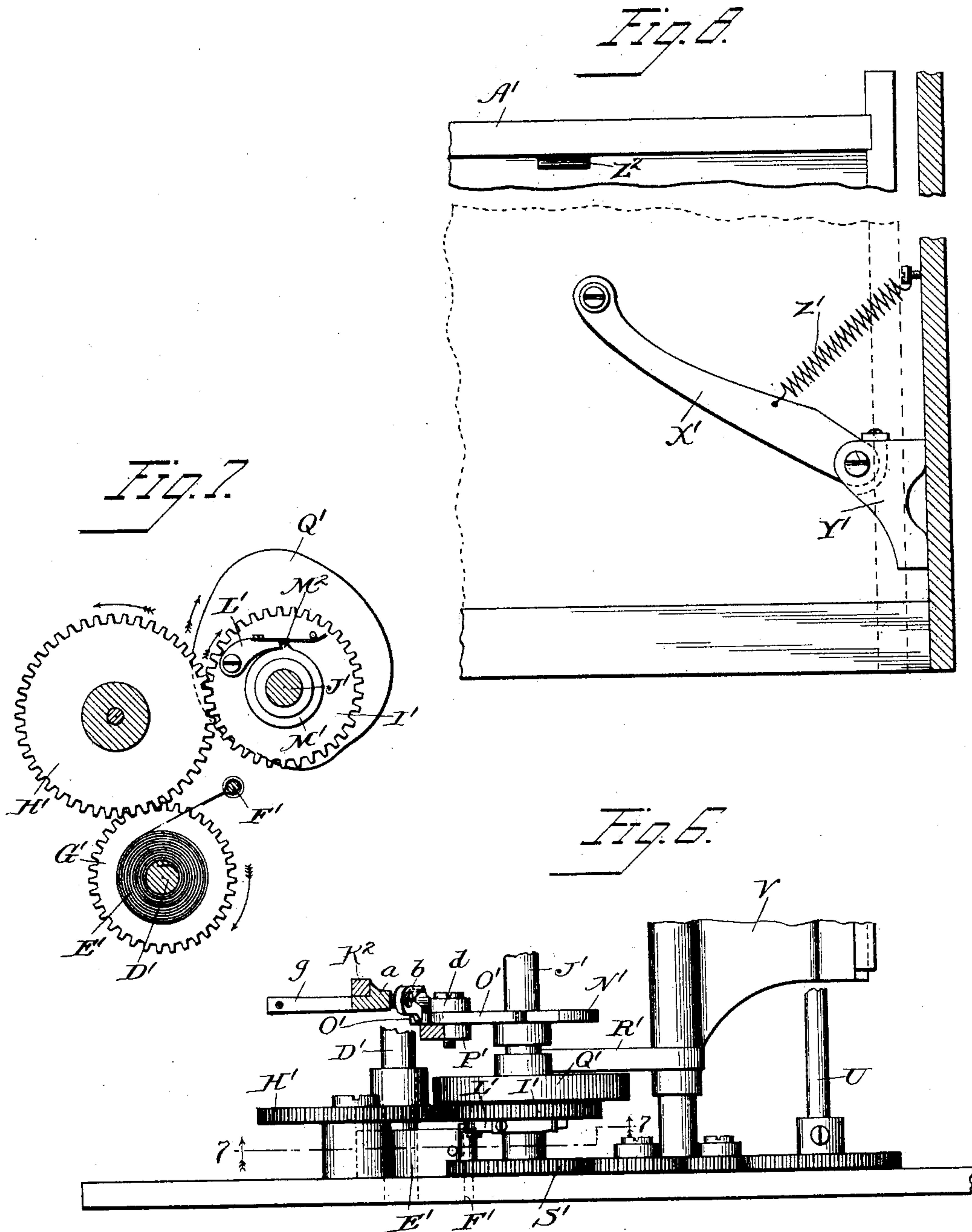
(No Model.)

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T. CARNEY.  
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No. 589,245.

Patented Aug. 31, 1897.



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# UNITED STATES PATENT OFFICE.

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

## CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 589,245, dated August 31, 1897.

Application filed November 11, 1895. Renewed July 1, 1897. Serial No. 643,140. (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 a certain new and useful Improvement in Cash-Registers or Analogous Machines, of which the following is a description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates more particularly to machines such as that shown and described in my prior patent, No. 497,800, of May 23, 1893, but is applicable to other machines, as will be apparent from the explanation of it hereinafter given. In my aforesaid prior machines there are employed a series of sets of keys with coöperating, indicating, and registering mechanisms by which the values of the operated keys are indicated and registered. Extending transversely across the entire lot of keys in rear of their fulcrum is a movable member consisting of a bar or frame common to all of the keys, to which the keys become attached when slightly started or displaced from normal position. By means of this movable member and such coöperation of it with the keys it is possible to start a key in one of the several sets and then remove the hand from it and start a key in another set, and, if desired, remove the hand from the second key and start a key in the third set, and then complete the operation of all of the keys by fully depressing any one of the keys started. This enables the operator to indicate and register with one hand amounts requiring the operation of two or more keys. Where, however, three keys are operated in this manner the load upon the key by which the operation is finally carried out is considerable, requiring a heavy pressure upon the front end of the key, while in machines containing more than three sets of keys the operation of more than three keys in this manner is proportionately difficult or burdensome.

It is the purpose of my present invention to convert such prior machine into what may be termed a "motor" machine—that is to say, into a machine in which all the work, excepting the setting or starting of the keys, is

accomplished by a motor and the operator thereby relieved of the labor above mentioned. I effect this result by combining a suitable motor with the movable member common to the keys and to which the latter become attached when displaced from normal position, as before explained. This motor is held in check while the proper keys are being set or started and is then released and permitted to act upon said member, giving it a definite movement and causing it to impart to the keys attached to it the proper movement to effect the indication and registration of their values.

Any suitable motor for the purpose may be employed, and any suitable means may be used for storing up power in the motor either between successive operations of the machine or at longer intervals. I prefer, however, as the most suitable and convenient means, to employ for this purpose the spring which is used for throwing open the money-drawer. Money-drawers normally locked with springs to automatically throw them open when unlocked are employed in nearly all machines of this class, and inasmuch as the closing of the drawer serves to wind up or put under tension the spring by which it has been opened, and thereby store up power for the next operation, it follows that such spring furnishes a ready and convenient motor for actuating the movable member common to the keys.

I am aware that it is not new to actuate the indicating and registering mechanisms of machines of this class by spring-motors, nor to employ as such motors the spring by which the money-drawer of the machine is opened, but heretofore, in the instances with which I am familiar, the keys in such machines have not performed the functions of the keys in my machine nor coöperated in a similar manner with the motor or driving mechanism. In such prior machines the keys have acted as stops or trips or controlling devices of various kinds for the motor or driving mechanism to determine the movements imparted by it to the indicating and registering mechanisms. In my present machine, however, the motor actuates the indicating and registering mechanisms by means of and through the keys, giving the latter the same movement which would



be given them by hand in the absence of the motor. The keys themselves, therefore, serve as the means for transmitting the power of the motor to the indicating and registering mechanisms. The starting or setting of a key serves to connect it to the driving mechanism or motor, and when the latter is permitted to act the key transmits its movement to the indicating and registering mechanisms. So far as I am aware I am the first in the art to produce a machine in which a spring-motor actuates the indicating and registering mechanisms, or either of them, by means of and through the keys. Such being the case my invention is not restricted in its broader scope to the particular machine shown and described nor to the particular means and method of combining the motor with the keys, as will be apparent from the terms of my respective claims setting forth the invention.

Besides the principal feature of my invention above mentioned, it embodies various other features applicable both to machines embodying said principal feature and to others, as will be hereinafter explained.

In the accompanying drawings, Figure 1 is a perspective view of the machine within its casing; Fig. 2, a similar view with the upper forward part of the casing removed; Fig. 3, a vertical section near the right-hand side of the machine, looking toward the left; Fig. 4, a corresponding view looking toward the right; Fig. 5, a sectional detail approximately on the line 5 5 of Fig. 4; Fig. 6, a detail top plan view of the parts at the right side of the machine shown in Fig. 4; Fig. 7, a sectional detail on the line 7 7 of Fig. 6, and Fig. 8 a detail plan view showing the spring-buffer for the money-drawer.

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

As shown and described in my prior patent, the keys of the machine consist of the levers A, fulcrumed upon a transverse shaft B, located in the lower forward part of the machine and resting at their rear ends upon a cross-bar C of the framework in the lower ends of slots in a vertical guide-plate D. Arranged in guides above the rear ends of the key-levers are the vertical indicator-rods E, carrying at their upper ends the indicators F. These rods are provided with projections G on their rear sides, which cooperate with the usual supporting-bar H, by means of which when any indicator-rod and indicator are lifted to indicating position they are supported there by the bar until the latter is moved to release them and permit them to drop back to non-indicating position. The means for actuating the bar H for this purpose may be such as is commonly employed in these machines, and need not be here shown or described.

The key-levers in the present instance are separated into four groups or sets, and their front ends, instead of projecting outside the casing and bearing numbered buttons, as in my prior machine, are cut off within the cas-

ing and suitably bent or shaped to underlie the inclined front plate I of the framework, to whose upper side is secured the thin plate J. Suitably confined and guided in holes in the plates I J are the operating or setting keys K, consisting of straight stems bearing numbered finger-buttons on their upper ends. There are nine of the levers A in each group, and there are nine of the setting-keys K for each of such groups, and the front end of each lever A immediately underlies the lower end of one of the keys K. The numbered finger-buttons upon the upper ends of the keys represent the amounts which will be indicated and registered by the operation of their respective cooperating levers A. Besides the nine levers A and keys K in each group there are in the present instance four special levers and four special keys K' for operating or setting them. The buttons upon said keys represent, respectively, "Received on account," "No sale," "Paid out," and "Charge." The purpose of these special keys is familiar to those acquainted with this art. The special key marked "Paid out" and its cooperating lever A serve to separate the first and second groups of cash-keys on the right while the special key marked "No sale" and its lever A separate the two groups of cash-keys on the left, the other two special keys being arranged at the opposite sides of the sets of cash-keys. In addition to all of these keys there is still another key K<sup>2</sup> at the extreme right, the purpose of which will be hereinafter explained.

Pivoted at their lower ends to the sides of the levers A near their rear ends are the lifting arms or plates L, described in my prior patent and here shown in Fig. 3. These lifters cooperate with the transverse rods M of the rocking registering-frames N, mounted upon the shaft O. There are four of these registering-frames, one for each group of keys, and each actuates one of the segments P, as described in my prior patent. The lifting-fingers of the lifters L are arranged in graduated order relatively to the rods M of the registering-frames, so that the uniform vertical movements of the nine different lifters in each group will serve to impart nine different degrees of movement to their rocking registering-frame, proportionate to the respective values they are to register.

The registering-wheels are mounted upon a shaft Q in a rocking frame R, pivoted upon a shaft S, and the pinions upon the sides of the registering-wheels are adapted to be thrown into and out of gear with the respective segments P, so that the latter will transmit their movements in one direction to the respective wheels, but move in the opposite direction independently thereof. The rocking frame R is actuated to effect this engagement and disengagement of the pinions and segments by means of suitable cams T, fastened upon a rotary shaft U and acting upon the frame R by means of suitably-interposed



arms or levers, all as fully described in my aforesaid prior patent, and whereby the full upward movement of the rear end of any lever A will cause its assigned value to be added upon the register.

Overlying the entire lot of keys in the machine is the movable member V, heretofore referred to, consisting in this instance of a bar or frame pivoted at its opposite forward corners to the side frames of the machine, and free to rise and fall at its rear edge. Its rear edge is formed with a rearwardly-projecting flange W, upon which rest and are confined a series of thin plates X, one overlying each group of keys, the rear edges of which plates project slightly rearward over the rear edges of the flange W upon which they rest. The plates are yieldingly held in this rearward position by springs confined in bores or slots in the rear edge of the bar V and pressing against their front edges, but are capable of being pressed forward or inward against the stress of such springs, all as described in my prior patent. The levers A are provided immediately in rear of the flange W and plates X with the usual hooks or slotted lugs Y. When the parts are in their normal position of rest, the bar V is held slightly above the keys, and the rear edges of the plates X project into the path of the points of the hooks Y, as in Fig. 3, with the result that when the front end of any lever A is slightly depressed the point of its hook will ride upward over the rear edge of the plate X and press the latter slightly forward as it passes, and when it clears the plate the latter will spring rearward and catch under it, and the lever A thereby become attached to the bar or frame V, so that if said bar or frame be then lifted, either by fully depressing the front end of another lever, as in my prior patent, or by other means, the attached lever will be carried upward with the bar to its limit of movement, and the lifter L, pivoted to such lever, be caused to actuate the registering mechanism in the manner heretofore described. At its return downward movement the bar V is lowered beyond its normal position, (shown in Fig. 3,) so that the lever or levers A which have been attached to it become disengaged from it and remain at rest when the bar is lifted slightly to its normal position just at the end of the operation.

Instead of the above-described means for attaching the keys to the movable bar V any other known or suitable devices for the purpose may be employed—such, for instance, as those shown and described in Patent No. 496,169 to Pritchard or No. 499,294 to Juengst.

By applying the motor-spring to the movable member V, therefore, in such manner that when permitted to do so it will raise the rear edge of the latter to its full limit of movement and then depress it to its full limit of movement and return it to normal position the machine may be operated by

starting or setting the desired keys and then releasing the motor and permitting it to actuate said bar, as will now be described.

The money-drawer A', which is mounted to slide in and out in the lower part of the framework, has secured to the upper edge of one of its backwardly and forwardly extending partition-walls, in this instance the middle wall, a rack B', Fig. 3, which meshes with a gear C', fast upon a shaft D', journaled at its opposite ends in the side frames. Coiled around the extreme right-hand end of the shaft D', Figs. 4, 6, and 7, is a spring E', one end of which is fast to the shaft and the other of which is fastened to a stud F' upon the adjacent side frame of the machine. The result of this arrangement is that when the drawer is pushed in to closed position the rack B' will turn the gear C', and consequently the shaft D', and thereby wind up the spring E' and put it under tension, so that when the drawer is released the spring will turn the shaft in the reverse direction and force the drawer outward again. The shaft D' has fast upon it, near its right-hand end next to the spring E', a second gear G', which meshes with the gear H', mounted upon a stud projecting from the side frame of the machine. The gear H' meshes with a gear I' loose upon a short shaft J', journaled at one end in the side frame of the machine and at its opposite end in the right-hand one of two rearwardly-extending plates K'' of the framework, Figs. 2 and 3, formed integral with the front cross-plate I, heretofore described. The gear I' has pivoted to its side a pawl L', which is spring-pressed against a disk M', which is fast upon the shaft J' beside the gear, and has on its periphery a single tooth M<sup>2</sup>. When the drawer is closed, the position of the parts is such that the pawl L' engages the abrupt forward face of the tooth M<sup>2</sup>, Fig. 7, so that the force of the spring tending to turn the gears in the direction of the arrows also tends to turn the shaft J' in the same direction. The shaft is held from turning by the engagement of a locking dog or detent with a notch in the periphery of a disk N', fast upon the shaft J', Figs. 4 and 6. This locking-dog is in the form of a lever O', pivoted to a bracket P', secured to the rear edge of the plate I. The rear end or nose of the dog bears against the periphery of the disk N', and is suitably shaped to fit in the notch therein, while its front end projects forwardly of its pivot toward the lower end of the key K<sup>2</sup>, heretofore referred to. When the drawer is in closed position, the dog is in engagement with the notch in the disk, and thereby locks the parts from turning, and consequently locks the drawer from opening under the stress of the spring. When, however, the key K<sup>2</sup> is pushed in, the dog will be rocked out of engagement with the notch in the disk, and the spring be permitted to turn the parts in the direction of the arrows and open the drawer. When the shaft J' and disk N' have made one complete revolution, the



dog will reengage the notch in the disk and arrest the parts, the periphery of the disk at the rear side of the notch being cut away so as to form a projecting shoulder at the opposite side of the notch, and thereby insure such reengagement of the dog with the notch and consequent arrest of the shaft J' and parts turning with it. When the drawer is pushed inward to closed position and the gears thereby turned backward in reverse direction from that indicated by the arrows, the pawl L' carried by the gear I' will ride backward over the periphery of the disk M', slipping over the inclined rear side of the tooth M<sup>2</sup> and coming to rest immediately in front of its abrupt forward side, Fig. 7, thereby reconnecting the spring and the gears turned by it with the shaft J', and as the shaft is now held in fixed position by the engagement of the dog O' with the disk N' the drawer becomes relocked in closed position.

At the next opening of the drawer the shaft J' will be given another complete revolution in the same direction, so that said shaft and the parts moving with it are always turned in one direction and are given a complete revolution at each operation of the machine. Fast upon said shaft, immediately at the left of the gear I', is a disk Q', having a cam-groove formed in its left-hand side, Fig. 4, in which groove fits a stud projecting laterally from the front end of an arm R', rigidly secured to or formed integral with the movable bar or frame V, heretofore described. At each revolution of the shaft J' and disk Q' the front end of the arm R' will be depressed to its limit of movement and then raised to its limit of movement and then slightly depressed to normal position, and the rear edge of the bar V be correspondingly moved in the opposite directions. The shape of the cam-groove in the disk Q' and adjustment of the parts are such that at each revolution of said disk the rear edge of the bar V will be moved the exact distance necessary to give the proper indicating and registering movements to any key or keys which are connected to said bar, and thereby cause their values to be indicated and registered in the manner heretofore described.

From the foregoing description it will be understood that the regular and ordinary operation of the machine consists in first slightly depressing or setting the proper cash-keys K to represent the amount to be indicated and registered, and thereby connecting their respective levers A with the bar V, and then pushing in the releasing-key K<sup>2</sup> to disengage the detent O' from the notch in the disk N', whereupon the spring will force the drawer open and give the shaft J' and parts turning with it a complete revolution and cause the bar V to carry the rear ends of the operated levers A upward and then downward with it and effect the indication and registration of their values.

In the foregoing description it has been as-

sumed that the lower end of the releasing-key K<sup>2</sup> or some rigid part projecting from it directly engaged the front end of the detent-lever O' to depress the same and disengage its rear end from the notch in the disk N'. This arrangement might be employed, but would be open to the objection that if the releasing-key were held depressed too long the detent O' might fail to reengage the notch in the disk N' as the latter completed its revolution and came to normal position again, and the spring and the momentum of the parts be thereby permitted to carry them on beyond normal position and disarrange the mechanism. For the purpose of preventing any such mishap, due to too long continued depression of the key K<sup>2</sup>, I provide the following devices: The key K<sup>2</sup> has secured to and projecting rearwardly from it immediately beneath the frame-plate I a block or bracket a, Figs. 4 and 6, to the rear side of which block is loosely pivoted a depending plate b, having a forked rear end, Fig. 5, the right-hand end of the two forks overlying the front end of the detent-lever O'. A spring c, coiled around the pivot of the plate b and bearing against the plate, yieldingly presses it toward the right and tends to hold said fork over the end of the lever O', so that when the key K<sup>2</sup> is depressed the front end of said detent-lever will be depressed and its rear end disengaged from the notch in the disk N'. Loosely pivoted to the bracket-plate P' beside the detent-lever O' is a depending arm d. Upon its forward side this arm d is provided with a projection e, inclined upwardly and to the left into position to cooperate with the left-hand fork of the plate b. The disk N' has projecting from its left side a stud f, Fig. 4, slightly in rear of the rear edge of the arm d. Now when the key K<sup>2</sup> is depressed the right-hand fork of the plate b will contact with the front end of the detent-lever O' and depress the same to release the disk N', the arm d yielding and swinging slightly rearward upon its pivot as the left-hand fork of the plate b contacts with the projection e. As the disk N' approaches the end of its revolution its stud f will contact with the lower end of the arm d, and riding upward against the rear edge of said arm will swing the latter forward and upward, causing the projection e of the arm to travel upward against the inclined right side of the left one of the two forks of the plate b and thereby force said plate to the left, carrying its right-hand fork out of engagement with the front end of the lever O' and permitting the spring applied to the latter to throw it backward toward normal position with its rear end bearing against the periphery of the disk N' ready to engage the notch in the latter when it reaches normal position. In the present instance such spring is coiled around the pivot-pin of the lever, within a recess in the latter, and therefore is not shown in the views given in the drawings. The resetting-key K<sup>2</sup> is yieldingly held



in and returned to its normal position by a spring *g*, Fig. 4.

From the foregoing description it will be understood that it is wholly immaterial whether the releasing-key  $K^2$  be quickly depressed and instantly released or be held in its depressed position, since in either event the disk  $N'$  will be released and allowed to make a complete revolution and be then re-engaged by the detent.

The shaft  $J'$  has fast upon its extreme right-hand end a gear  $S'$ , Fig. 6, forming the forward end of a train of gears by which said shaft is geared to the rotary shaft  $U$ , heretofore described, and by means of which said shaft  $U$  is given a complete revolution at each operation of the machine.

It will be understood that where the machine is to be operated otherwise than for the registration of a cash sale some one of the four special keys appropriate to the transaction will be depressed or set and its lever  $A$  thereby attached to the bar  $V$  and the key  $K^2$  be then operated to disengage the dog  $O'$  from the disk  $N'$  and permit the spring to act, whereupon the indicator corresponding to such special key will be lifted into view to indicate the character of the transaction.

For the purpose of preventing operation of the releasing-key  $K^2$  and consequent opening of the money-drawer without first setting one of the cash or special keys so that some amount will be either indicated and registered or one of the special indicators be exposed to view the following locking device is employed. Extending transversely beneath all of the key-levers  $A$ , immediately in front of their fulcrum-shaft  $B$ , is a bar  $T'$ , Figs. 3 and 4, having secured to or formed integral with its opposite ends forwardly-extending arms  $U'$ , by which it is loosely hung upon the shaft  $D'$ , before described. This bar is yieldingly held in its upper normal position by a coiled spring  $V'$ , connected to one of its side arms  $U'$ , Fig. 3, and tending to pull it upward. The right-hand side arm  $U'$ , Fig. 4, is provided with a vertically-extending arm  $W'$ , whose upper end in the normal position of the parts stands immediately beneath the lower end of the releasing-key  $K^2$  and locks the same from downward movement, with the result that until it is moved from beneath the key the latter cannot be operated nor the money-drawer opened.

Whenever any one of the keys  $K$  or  $K'$  is pushed in or set, the consequent depression of the front end of its cooperating lever  $A$  slightly depresses the bar  $T'$  underlying all of said levers, and such depression of the bar  $T'$  throws the upper end of the arm  $W'$  rearward from under the key  $K^2$ , thereby leaving the latter free to be pushed downward to release the parts in the manner heretofore described. It will therefore be seen that the parts described constitute a locking device for the releasing-key controlled by the cash and special keys in such manner that the

machine cannot be operated and the money-drawer opened without first setting some one of such keys.

For the purpose of forming a buffer to receive the money-drawer at the end of its forward movement under the influence of the spring  $E'$  and to yieldingly arrest the same and prevent it being thrown too far out of the machine or producing shock or jar by contact with a fixed stop  $I$  provide an arm  $X'$ , Fig. 8, pivoted at its right-hand end in a bracket  $Y'$  on the side frame of the machine and extending therefrom to the left beneath the drawer. A coiled spring  $Z'$ , connected to said arm at one end and at its other to the side frame of the machine, yieldingly holds the arm in the position shown against a suitable stop on the bracket  $Y'$ , adjacent the pivotal support of the arm. At its extreme left-hand end the arm is provided with a vertical stud surrounded by an antifriction-roller, which stud stands in the path of the lower end of a plate  $Z^2$ , mounted upon the rear wall of the drawer, Fig. 4, and projecting downward through an opening in the bottom thereof. When the drawer is forced outward by the spring  $E'$ , the lower end of this plate will contact with the end of the arm  $X'$  or the stud thereof at the proper limit of outward movement of the drawer and the latter be thereby yieldingly arrested. So, too, if the drawer be pulled still farther outward by hand the spring  $Z'$ , connected to the arm  $X'$ , will be put under tension and serve to start the drawer inward when it is released. The plate  $Z^2$  is in this instance loosely mounted upon the rear wall of the drawer, in order that it may be slid up and down, so that when it is desired to remove the drawer entirely from the machine the plate may be slid upward and its lower end carried above the plane of the stud upon the end of the arm  $X'$  to permit it to clear the same as the drawer is removed.

The remaining feature of my invention relates to the indicating devices. As seen in Figs. 1 and 2, the indicators corresponding to the cash-keys and those corresponding to the special keys are located in different horizontal planes, the latter being in front of and below the former. The two sets of indicators are separated by transverse plate  $A^2$ , by which the cash-indicators are hidden when in their lowermost position. This plate forms a background for displaying the special indicators when they are lifted into indicating position. In rear of and above the cash-keys is a second transverse plate  $B^2$ , which forms a background for the display of the cash-indicators. This plate preferably bears a dollar-mark and a series of ciphers to cooperate with the cash-indicators. The nine cash-indicators for each set or group of keys are arranged immediately behind one another, being brought to such position by suitably shaping or bending the vertical rods which support them, and one of the ciphers upon the plate  $B^2$  is located be-



hind one each of the three right-hand sets of indicators, while the dollar-mark is located behind the fourth one.

The arrangement of the cash and special indicators in the manner described and their separation by the plate A<sup>2</sup> permits a cash-indicator and a special indicator to be simultaneously displayed, if desired, as is sometimes the case, more particularly in machines provided with separate registering devices for registering different classes of sales, in which case the amount of the sale is displayed by the cash indicator or indicators and the class of the sale by the special indicators. The arrangement I have provided permits such simultaneous indications without one obstructing the other or creating confusion. The dollar-mark and ciphers upon the plate B<sup>2</sup> cooperate with the cash-indicators in the well-known manner to exhibit the dollar-mark at the left of any indicator displayed and at the right the cipher or ciphers, which, with the number upon the indicator, fully represent the amount to be indicated, Fig. 1.

While under the foregoing description of my machine the driving mechanism is actuated by the motor-spring, which is put under tension by the closing of the money-drawer and which serves to throw the drawer open when the latter is released, it is evident that some of the features of my invention are not dependent upon the actuation of the driving mechanism by such motor-spring and that so far as such features are concerned the drawer might be pulled open by hand as well as closed by hand. This distinction will be found set forth in my claims, some of which will be found not to include the motor as an element of the machine. I also wish it understood that the use of the word "cash-register" in my various claims is not intended to restrict said claims to machines employing registering devices, the word referred to being employed in a broader sense and intended to include all analogous machines in which the invention set forth by the claims may be usefully employed.

Having thus described my invention, I claim—

1. In a cash-register, the combination of a series of keys, an operating or driving mechanism therefor to which a plurality of keys may be successively connected at will, and a motor for actuating said mechanism normally held in check or restrained from action but adapted to be released or permitted to act by means of a releasing device independent of the keys, whereby upon connecting the keys with the operating or driving mechanism and releasing the motor or permitting it to act it will impart a definite movement to the connected keys and cause them to properly operate the respective mechanisms of the machine, substantially as described.

2. In a cash-register, the combination of a series of keys, a movable member common

thereto and to which the keys may be successively connected at will, and a motor normally held in check but operating when released or permitted to act to give said movable member a definite movement, whereby upon connecting the keys to said member and releasing the motor the latter will impart a definite movement to the connected keys, for the purpose described.

3. In a cash-register, the combination of a series of keys, a movable member common thereto and to which the keys may be successively connected by starting or slightly moving them from normal position, and a motor normally held in check but operating when released or permitted to act to give said movable member a definite movement and thereby impart a corresponding movement to the connected keys, for the purpose described.

4. In a cash-register, the combination of a series of key-levers, a movable member common thereto and overlying their rear ends and to which the rear ends of the levers may be connected at will by slightly depressing their front ends so as to cause said member to carry the connected levers with it, and a motor normally held in check but operating when released or permitted to act to impart a definite movement to the movable member and thereby to operate the connected levers, substantially as described.

5. In a cash-register, the combination of a series of key-levers, a movable member common thereto and overlying their rear ends and to which the rear ends of the levers may be connected at will by slightly depressing their front ends so as to cause said member to carry the connected levers with it, a series of setting-keys adjacent the front ends of the levers but disconnected therefrom, by which the front ends of said levers may be slightly depressed to connect their rear ends with the movable member, and a motor operating when released or permitted to act to give said member a definite movement and thereby operate the connected levers, substantially as described.

6. In a cash-register, the combination of a series of keys, an operating or driving mechanism therefor, to which the keys may be connected at will, a motor consisting of a spring, for actuating said mechanism, means for putting said spring under tension and thereby storing power in the motor, and means for holding it in check and for releasing it at will independently of the operation of the keys, whereby upon connecting the keys to the operating or driving mechanism and then releasing the motor the latter will impart a definite movement to the connected keys and cause them to properly actuate the respective mechanisms of the machine, substantially as described.

7. In a cash-register, the combination of a series of keys, a movable member common thereto and to which the keys may be connected at will, a motor, consisting of a spring,



for giving said member a definite movement at each operation of the machine, means for putting the spring under tension and thereby storing power in the motor, and means for holding it in check and for releasing it at will independently of the operation of the keys, for the purpose described.

8. In a cash-register, the combination of a series of key-levers, a movable member common thereto and overlying their rear ends and to which the rear ends of the levers may be connected at will by slightly depressing their front ends so as to cause said member to carry the connected levers with it, a motor, consisting of a spring, for imparting a definite movement to said member at each operation of the machine, means for putting the spring under tension and thereby storing power in the motor, and means for holding it in check and for releasing it at will, for the purpose described.

9. In a cash-register, the combination of a series of keys, a movable member common thereto and to which the keys may be connected at will, a motor consisting of a coiled spring, means for winding up said spring and thereby storing power in the motor, a rotary member actuated by the motor and coöperating with the aforesaid movable member to impart a definite reciprocating movement to the latter back and forth at each operation of the machine, and means for holding the motor in check and for releasing it at will, for the purpose described.

10. In a cash-register, the combination of a series of key-levers, a movable member common thereto and overlying their rear ends and to which the rear ends of the levers may be connected at will by slightly depressing their front ends, a motor consisting of a coiled spring, means for winding up the spring and thereby storing power in the motor, a rotary cam actuated by the motor and coöperating with the movable member to impart a definite reciprocating movement to the latter at each operation of the machine, and means for holding the motor in check and for releasing it at will, for the purpose described.

11. In a cash-register, the combination of a series of keys, a movable member common thereto and to which the keys may be connected at will, a motor consisting of a coiled spring, means for winding up said spring, a rotary member turned in one direction at the winding up of the spring and in the opposite direction at the unwinding of the spring, a second rotary member, a connection between said members by which the first member turns the second member with it in one direction but not in the other, so that said second member turns always in one direction, a connection between said second rotary member and the first-mentioned movable member common to the keys, by which said latter member is given a definite movement at each operation of the machine, and means for holding the

motor in check and for releasing it at will, for the purpose described.

12. In a cash-register, the combination of a series of key-levers, a movable member common thereto and overlying their rear ends and to which the rear ends of the levers may be connected at will by slightly depressing their front ends, a motor consisting of a coiled spring, means for winding up said spring, a rotary member turned in one direction at the winding up of said spring and in the opposite direction at the unwinding thereof, a rotary cam-disk and a connection between the same and said rotary member by which the latter is caused to turn the cam-disk with it in one direction but not in the other, means intermediate the cam-disk and movable member common to the keys for imparting a definite reciprocating movement to said movable member at each operation of the machine, and means for holding the motor in check and for releasing it at will, for the purpose described.

13. In a cash-register, the combination of a series of keys, an operating or driving mechanism therefor to which the keys may be connected at will, a motor consisting of a spring, for actuating said mechanism, a money-drawer coöperating with said spring to put it under tension when moved in one direction and to be moved in the opposite direction by the spring, and means for holding the motor in check, with the drawer in one position, and for releasing the motor at will independently of the operation of the keys and permitting it to actuate the driving mechanism and move the drawer to its opposite position, for the purpose described.

14. In a cash-register, the combination of a series of keys, an operating or driving mechanism therefor to which the keys may be connected at will, a motor, consisting of a spring, for actuating said mechanism, a money-drawer coöperating with the spring to put the same under tension when the drawer is closed and to be moved to open position by the spring when the latter is permitted to act, and means for holding the spring under tension, with the drawer closed, and for releasing it at will independently of the operation of the keys and permitting it to actuate the driving mechanism and open the drawer, for the purpose described.

15. In a cash-register, the combination of a series of keys, an operating or driving mechanism therefor to which the keys may be connected at will, a motor, consisting of a coiled spring, for actuating said mechanism, a rotary member to which one end of said spring is connected, a money-drawer geared to said rotary member to cause the drawer to wind up the spring when moved in one direction and to cause the unwinding of the spring to move the drawer in the opposite direction, and means for holding the spring under tension, with the drawer in one position, and for re-



leasing it at will independently of the operation of the keys to permit it to actuate the driving mechanism and move the drawer to its opposite position, for the purpose described.

5 16. In a cash-register, the combination of a series of keys, an operating or driving mechanism therefor to which the keys may be connected at will, a motor, consisting of a coiled spring, for actuating said mechanism, a rotary member to which one end of said spring is  
10 connected, a money-drawer geared to said rotary member to cause the drawer to wind up the spring when the drawer is moved to closed position and to cause the drawer to be moved  
15 to open position when the latter unwinds, and means for holding the spring under tension, with the drawer closed, and for releasing it at will independently of the operation of the keys and permitting it to actuate the driving  
20 mechanism and open the drawer, for the purpose described.

17. In a cash-register, the combination of a series of keys, a movable member common thereto and to which the keys may be connected at will, a motor, consisting of a coiled spring, operating to impart a definite reciprocating movement to said member in both directions at each operation of the machine, a rotary member to which one end of the coiled  
30 spring is secured, a money-drawer geared to said rotary member to cause the drawer to wind up the spring when moved in one direction, means intermediate said rotary member and the movable member common to the  
35 keys, for causing said rotary member to actuate the other member and impart a definite movement to it at each operation, and means for holding the spring under tension and for releasing it at will, for the purpose described.

40 18. In a cash-register, the combination of a series of key-levers, a movable member common thereto and overlying their rear ends and to which the rear ends of the levers may be connected at will by slightly depressing their  
45 front ends, a motor, consisting of a coiled spring, for imparting a definite movement to said movable member at each operation of the machine, a rotary member to which one end of the coiled spring is secured, a money-drawer  
50 geared to said rotary member to cause the latter to wind up the spring when the drawer is moved in one direction, a second rotary member with means intermediate the same and the first rotary member for causing the latter to  
55 actuate the former and turn it always in the same direction, and means intermediate the second rotary member and the movable member overlying the rear ends of the key-levers for causing said rotary member to impart a  
60 definite reciprocating movement to said movable member at each operation of the machine, and means for holding the spring under tension and for releasing it at will, for the purpose described.

65 19. In a cash-register, having a money-drawer, the combination of a series of keys, a movable member common thereto and in-

dependent of the money-drawer, to which movable member the keys may be successively connected at will, and means intermediate the drawer and said member for causing the movement of the drawer to actuate said member and the connected keys, for the purpose described.

20. In a cash-register having a money-drawer, the combination of a series of keys, a movable member common thereto and to which the keys may be connected at will, and a rotary member actuated by the movement of the drawer and cooperating with said movable member to impart a definite reciprocating movement to said member and the connected keys in both directions at each operation of the machine, for the purpose described.

21. In a cash-register, having a money-drawer, the combination of a series of keys, a movable member common thereto and to which the keys may be connected at will, and a rotary member turned by the drawer as the latter is moved in one direction but remaining stationary while the drawer is moved in the opposite direction, and cooperating with the aforesaid movable member to impart a definite movement to it and the connected  
95 keys at each operation of the machine, for the purpose described.

22. In a cash-register having a money-drawer, the combination of a series of keys, a movable member common thereto and to which the keys may be connected at will, a rotary member geared to the money-drawer, to be turned in opposite directions at the outward and inward movements of said drawer, and a second rotary member with means intermediate the same and the first rotary member for causing the first member to turn the second in one direction only, said second member cooperating with the aforesaid movable member to impart a definite reciprocating  
110 movement to said member and the connected keys at each operation of the machine, for the purpose described.

23. In a cash-register, the combination of a series of keys, an operating or driving mechanism therefor to which the keys may be connected at will, a motor for actuating said mechanism, means for holding the motor in check and for releasing it independently of the operation of the keys, and means controlled by the keys for locking said releasing means to prevent the release of the motor without first operating some one of said keys.

24. In a cash-register, the combination of a series of keys, an operating or driving mechanism therefor to which the keys may be connected at will, a motor for actuating said mechanism, means for holding the motor in check, a releasing-key cooperating with said holding means to release the motor, and locking means controlled by the first-mentioned keys and cooperating with the releasing-key or means to prevent release of the motor without operating some one of said keys.



25. In a cash-register, the combination of a series of keys, an operating or driving mechanism therefor to which the keys may be connected at will, a motor for actuating said mechanism, a detent for holding the motor in check, a special key cooperating with the detent for releasing the motor, and a movable bar common to the first-mentioned keys and moved by the operation of any one of them, and cooperating with the special key to normally lock the same and prevent its operation until said bar has been moved by the operation of some one of the other keys.

26. In a cash-register, the combination of a series of keys, an operating or driving mechanism therefor to which the keys may be connected at will, a motor for actuating said mechanism, a detent for holding the motor in check, a special key cooperating with the detent for releasing the motor, and a movable bar common to the first-mentioned keys and moved by the operation of any one of them and having a portion normally projecting into the path of the special key, to lock the same except when the bar has been moved by the operation of some one of the other keys.

27. In a cash-register, the combination of a series of key-levers, a movable member common thereto and overlying their rear ends and to which the rear ends of the levers may be connected at will by slightly depressing their front ends, a motor cooperating with said movable member to impart a definite movement to the same at each operation, a detent for holding the motor in check, a releasing-key operating with the detent, and a movable bar common to the key-levers and moved by the operation of any one of them and having a portion normally projecting into the path of the releasing-key, for the purpose described.

28. In a cash-register, the combination of a driving mechanism for actuating the several mechanisms of the machine, a series of keys cooperating therewith to determine the movements imparted to said mechanisms, a money-drawer and means intermediate the same and the driving mechanism by which the movement of the drawer actuates such mechanism, means for normally locking or holding the drawer in closed position, means independent of the keys for releasing it and permitting it to open or be opened, and means controlled by the keys and cooperating with said releasing means to prevent the releasing and opening of the drawer without first operating some one of said keys.

29. In a cash-register, the combination of a series of keys, a movable member common thereto and to which the keys may be connected at will, a money-drawer and means intermediate the same and said movable member for actuating the latter by the movements of the drawer, means for normally locking or holding the drawer in closed position and means independent of the keys for releasing it, and means controlled by the keys and co-

operating with said releasing means to prevent release of the drawer without first operating some one of said keys.

30. In a cash-register, the combination of a series of keys, a movable member common thereto and to which the keys may be connected at will, a money-drawer and means intermediate the same and said movable member for actuating the latter by the movements of the drawer, means for normally locking or holding the drawer in closed position, a special releasing-key cooperating with such holding means, and a movable bar common to the first-mentioned keys and moved by the operation of any one of them, and having a portion normally projecting into the path of the special releasing-key, for the purpose described.

31. In a cash-register, the combination of a series of keys representing different values, a registering mechanism operated thereby to register their respective values, an operating or driving mechanism for said keys to which the keys may be connected at will, a motor for actuating said mechanism, and means for normally holding the motor in check and for releasing it independently of the operation of the keys and permitting it to act, for the purpose described.

32. In a cash-register, the combination of a series of keys representing different values, a registering mechanism operated thereby to register their respective values, a movable member common to the keys to which they may be successively connected at will, and a motor normally held in check but operating when released or permitted to act to give said movable member a definite movement, for the purpose described.

33. In a cash-indicator, the combination of a series of keys representing different values, an indicating mechanism operated thereby to indicate their respective values, a movable member common to the keys to which they may be successively connected at will, and a motor normally held in check but operating when released or permitted to act to give said movable member a definite movement, for the purpose described.

34. In a cash-register having a money-drawer, the combination of a series of key-levers, a registering mechanism operated thereby to register their respective values, a vertically-movable member located at the rear ends of said key-levers, to which movable member the key-levers may be successively connected at will by depressing their front ends, and means intermediate the money-drawer and said movable member for causing said member to be raised at the movement of the drawer in one direction, to actuate the connected keys.

35. In a cash-register having a money-drawer, the combination of a series of key-levers, a series of vertically-movable indicator-rods located over the rear ends of the re-



spective levers and carrying indicators representing the values thereof, a vertically-movable member located at the rear ends of the key-levers, to which the latter may be successively connected at will by depressing their front ends, and means intermediate the money-drawer and said member for raising the latter at the movement of the drawer in one direction, to expose the indicators of the connected keys.

36. In a cash-register having a money-drawer, the combination of a series of key-levers, registering devices actuated thereby and a series of vertically-movable indicator-rods located over the rear ends of the levers and carrying indicators representing the values thereof, a vertically-movable member located at the rear ends of the key-levers to which the latter may be connected at will by depressing their front ends, and means intermediate the money-drawer and said member for raising the latter at the movement of the drawer in one direction, to lift the rear ends of the connected key-levers and expose their indicators and register their values.

37. In a cash-register having a money-drawer, the combination of a series of key-levers, a vertically-movable member located at the rear ends of said levers and to which the levers may be successively connected at will by depressing their front ends, a spring for moving said member vertically, and means intermediate said spring and the money-drawer for causing the latter to put the spring under tension when moved in one direction.

38. In a cash-register having a money-drawer, the combination of a series of key-levers, registering and indicating devices actuated thereby, a movable member located at the rear ends of said levers and to which the latter may be successively connected by depressing their front ends, a spring for moving said member vertically to actuate the indicating and registering devices, and means intermediate said spring and the money-drawer whereby the spring is put under tension by movement of the drawer.

39. In a cash-register having a money-drawer, the combination of a series of key-levers, a series of vertically-movable indicator-rods located over the rear ends of said levers and carrying indicators representing their respective values, a vertically-movable member located at the rear ends of the key-levers and to which the latter may be connected at will by depressing their front ends, a motor-spring for lifting the movable member, to expose the indicators of the connected keys, and means intermediate the money-drawer and said spring for causing the latter to be put under tension by the movement of the drawer.

40. In a cash-register having a money-drawer, the combination of a series of key-levers, registering devices actuated thereby,

a series of vertically-movable indicator-rods located over the rear ends of the key-levers and carrying indicators representing their respective values, a vertically-movable member located at the rear ends of said key-levers and to which the latter may be connected at will by depressing their front ends, a motor-spring for lifting said member to expose the indicators of the connected keys and actuate the registering devices, means intermediate the money-drawer and said spring for putting the latter under tension by movement of the drawer in one direction, and a detent or locking device for holding the drawer in position to maintain the spring under tension, whereby upon depressing the front end of one of the key-levers its rear end will become connected to the movable member, and whereby upon then releasing the money-drawer the spring will move said drawer and also lift the movable member to expose the indicator and register the value of the operated key.

41. In a cash-register having a money-drawer, the combination of a series of key-levers, registering devices actuated thereby, a series of vertically-movable indicator-rods located over the rear ends of the levers and carrying indicators representing their respective values, a vertically-movable member located at the rear end of said levers and to which a plurality of said levers may be successively connected at will by depressing their front ends, a motor-spring for lifting said member to expose the indicators of the connected keys and to actuate the registering devices, means intermediate the money-drawer and said spring whereby the spring serves to propel the drawer in one direction and is put under tension by the movement of the drawer in the opposite direction, and means for holding the drawer in position after it has been moved to place the spring under tension, for the purpose described.

42. The combination, with the money-drawer A', means for holding it closed and a spring for throwing it open, of the spring-pressed buffer-arm X' cooperating with the drawer at the end of its outward movement to arrest it when thrown open by its spring, for the purpose described.

43. The combination, with the money-drawer A' having the adjustable plate Z<sup>2</sup>, and means for holding the drawer closed and a spring for throwing it open, of the spring-pressed buffer-arm X' standing in the path of the plate Z<sup>2</sup> and adapted to cooperate therewith, in the manner and for the purpose described.

44. The combination of the disk N', the detent O' cooperating therewith, the releasing-key K<sup>2</sup>, and means intermediate said key and the detent O' for causing the depression of the key to disengage the detent from the disk N' but permit reengagement of it with the



disk without returning the key  $K^2$  to normal position, for the purpose described.

45. The combination of the disk  $N'$ , detent  $O'$  cooperating therewith, the releasing-key  $K^2$ , the plate  $b$  carried thereby and cooperating with the detent, and the pendent arm  $d$  cooperating with the projection  $f$  on the

disk  $N'$  and having the portion  $e$  cooperating with the plate  $b$ , substantially as and for the purpose described.

THOMAS CARNEY.

Witnesses:

ALVAN MACAULEY,  
PEARL N. SIGLER.