

(No Model.)

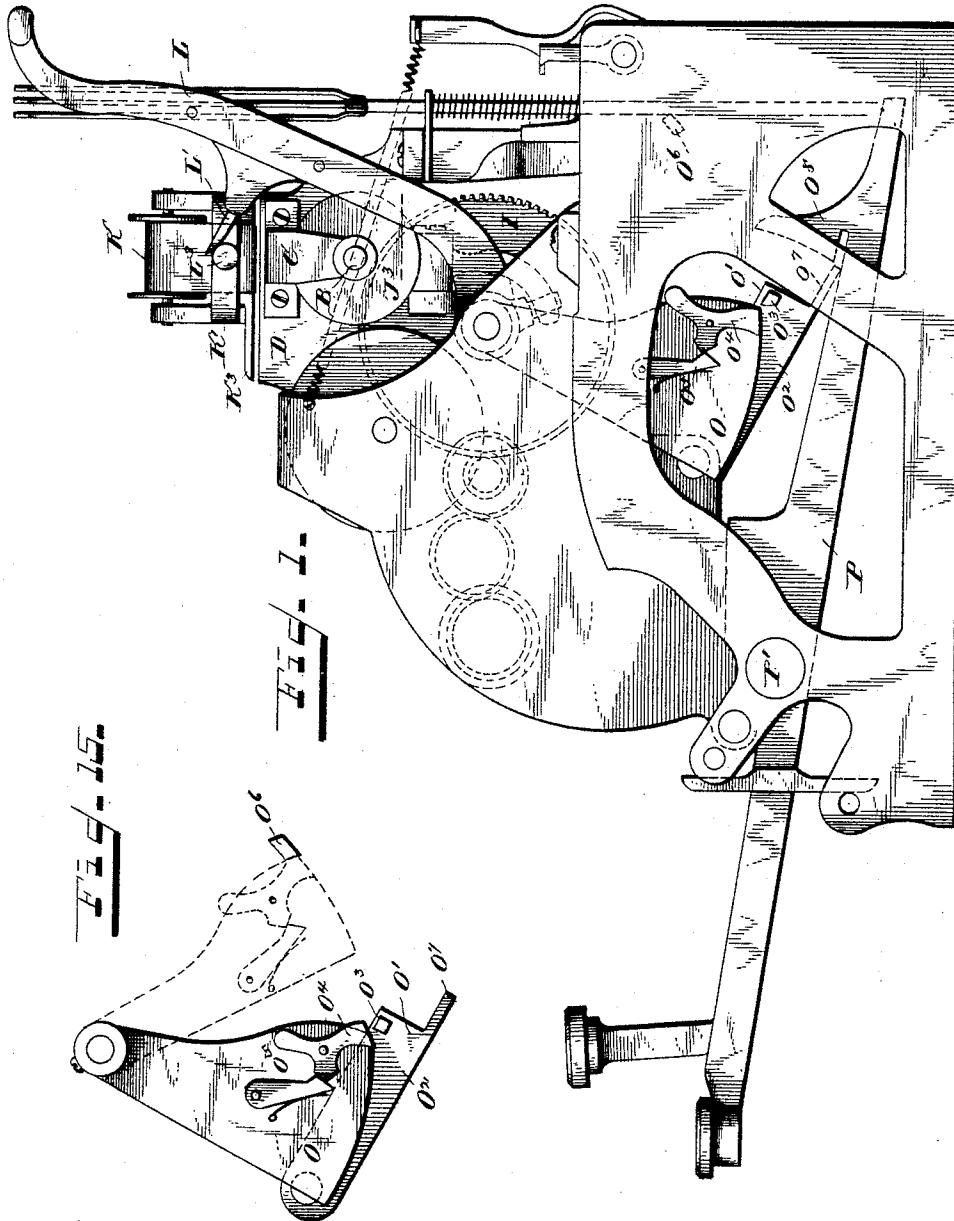
6 Sheets—Sheet 1.

H. COOK.

CASH REGISTER, RECORDER, AND INDICATOR.

No. 449,311.

Patented Mar. 31, 1891.



Witnesses
Thomson Cross
Charles Dillon

Inventor:
Hugo Cook
per Beck & Rector
Attorneys.

(No Model.)

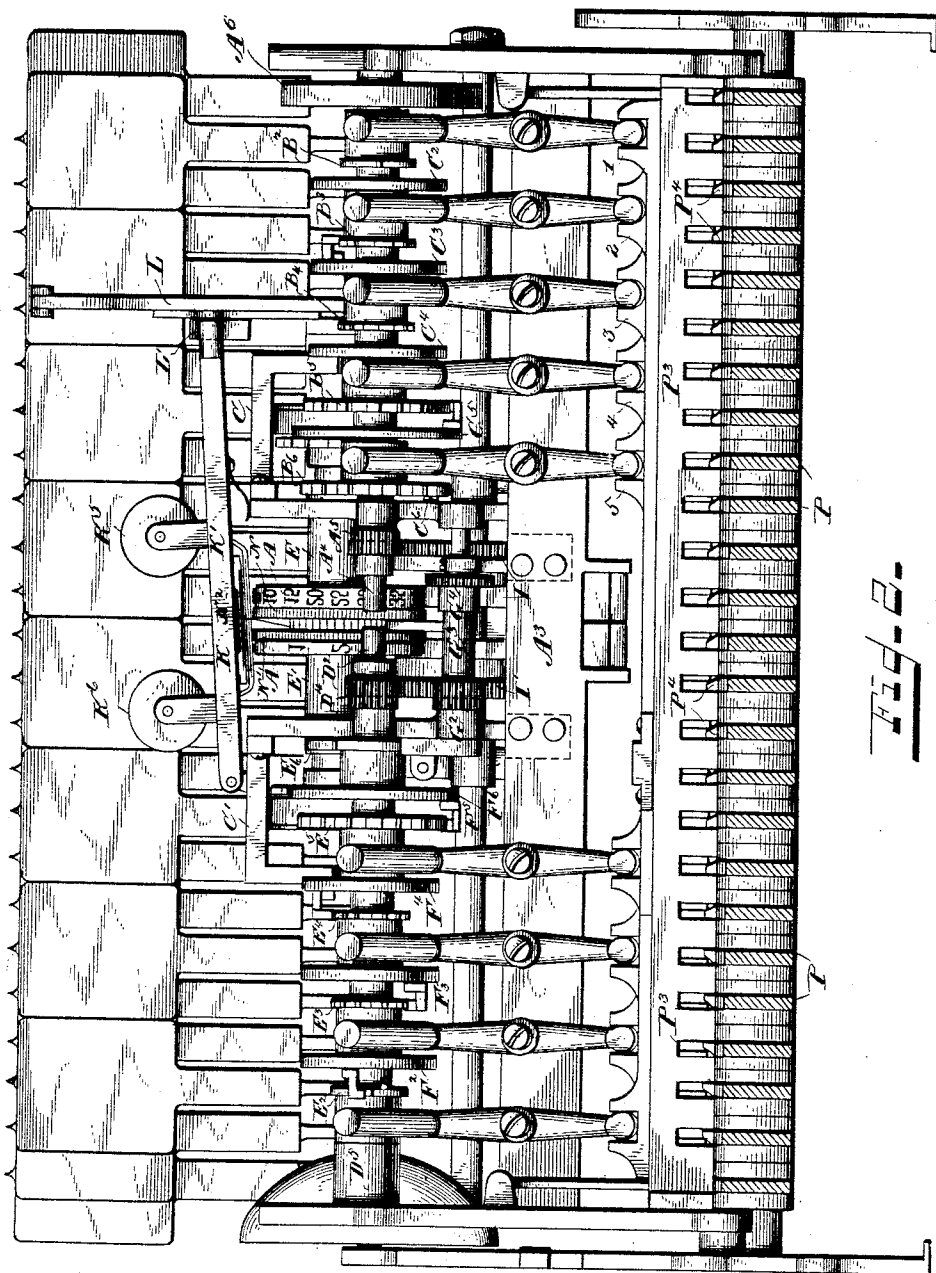
6 Sheets—Sheet 2.

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Attorney's.

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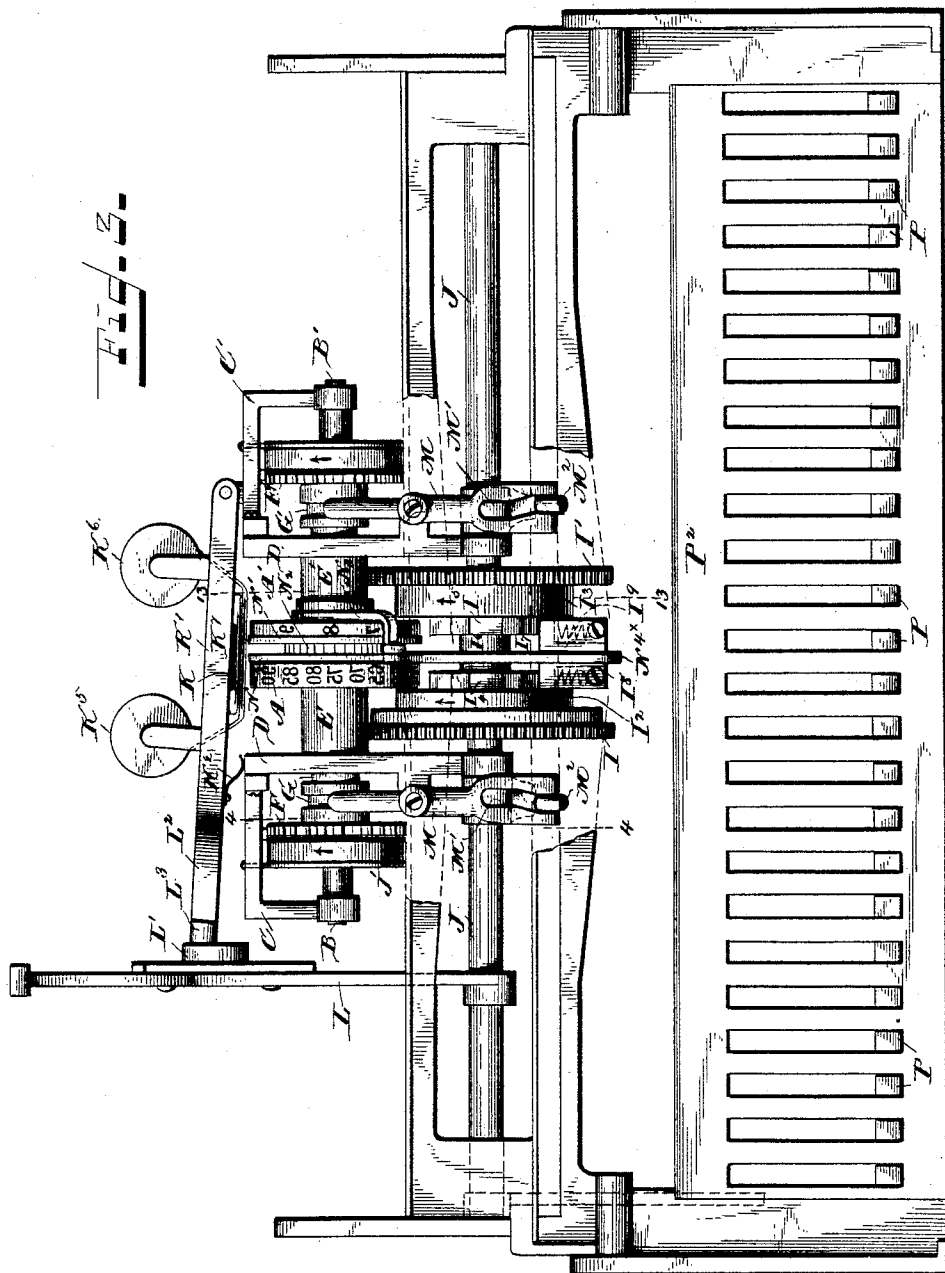
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Charles Billon

Inventor:
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per *Pick & Reuter*
Attorneys.

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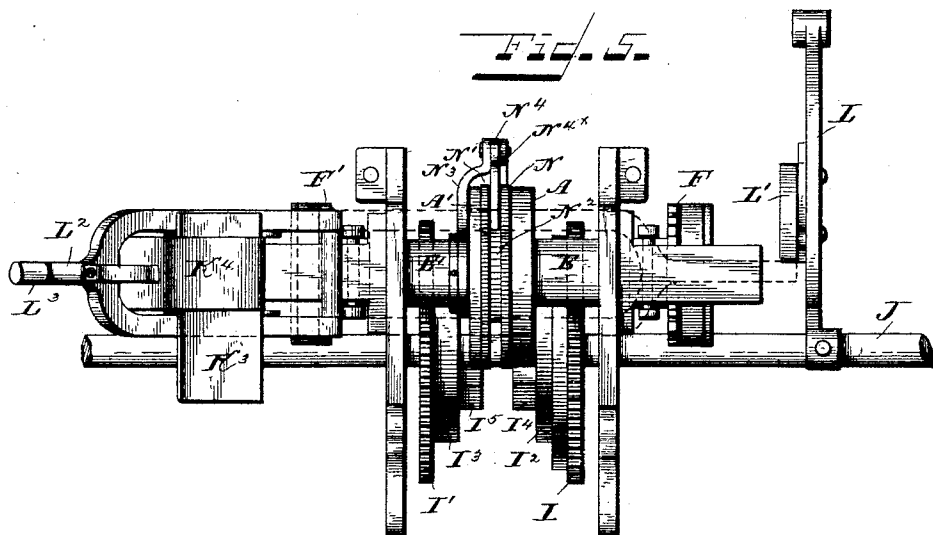
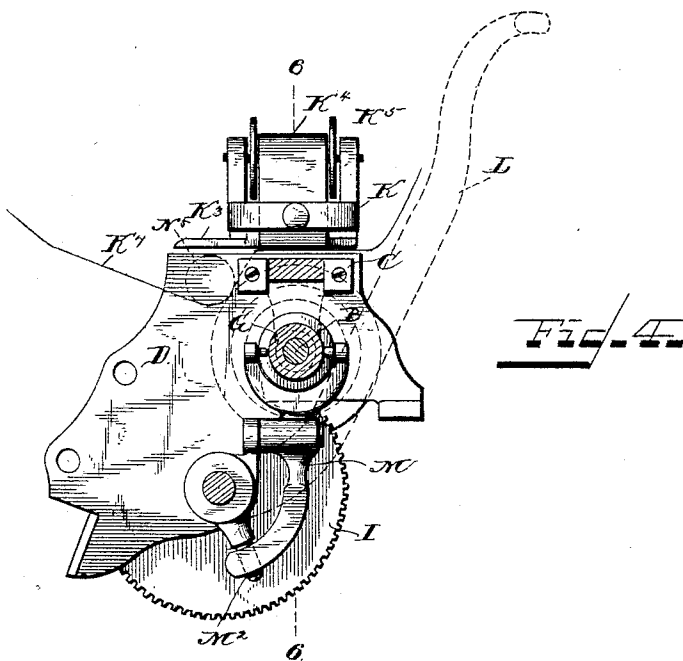
6 Sheets—Sheet 4.

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Inventor.

Hugo Cook
per Peck & Rector
Attorneys.

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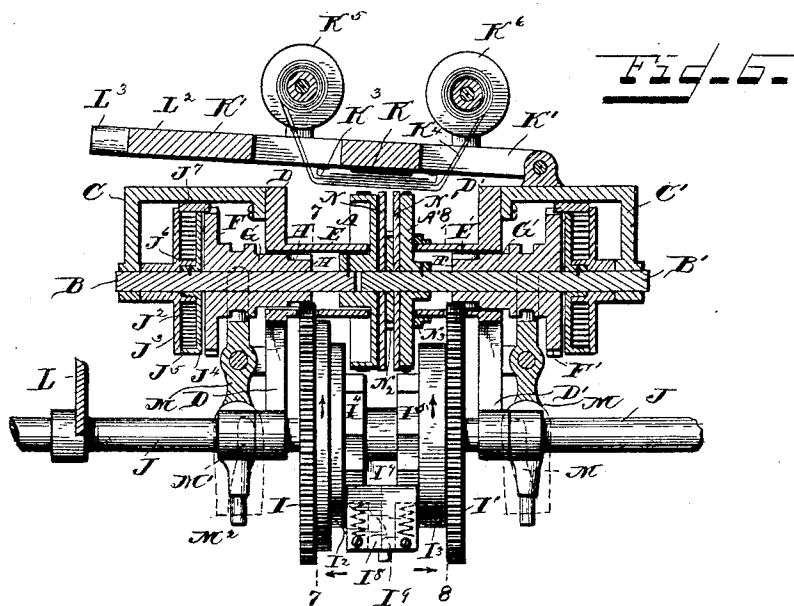


Fig. 7.

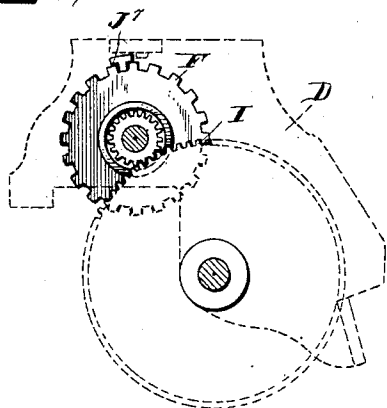


Fig. 8.

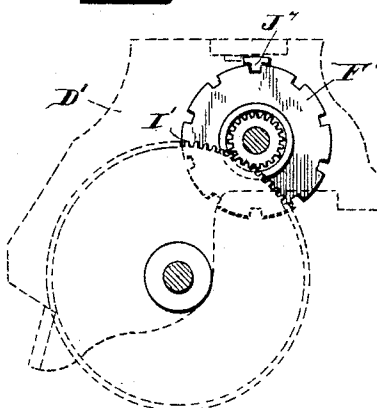


Fig. 9.

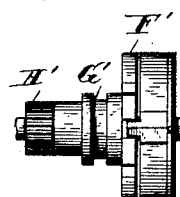
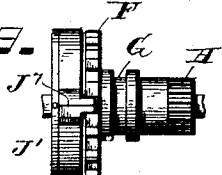


Fig. 10.

Witnesses.

Thomson Co. &
Charles Dillon.

Inventor.

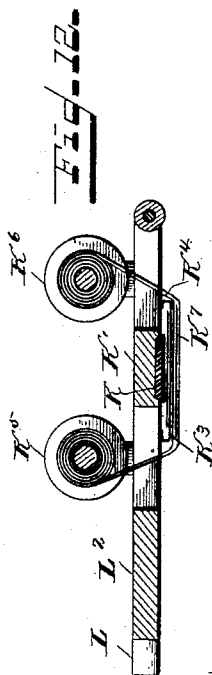
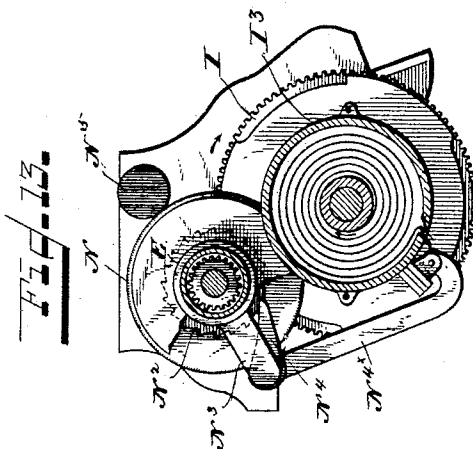
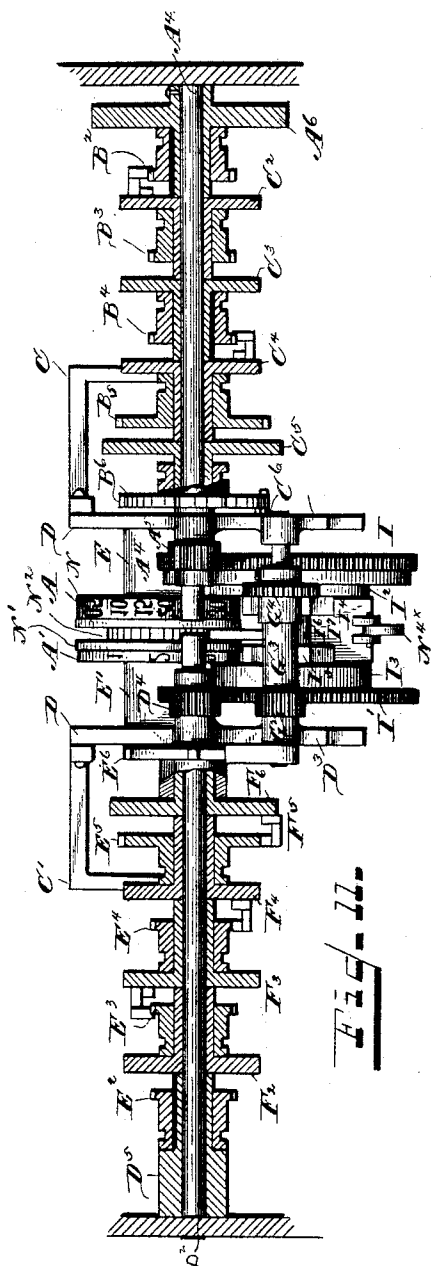
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per

Peck & Rector
Attorneys.

UNITED STATES PATENT OFFICE.

HUGO COOK, OF DAYTON, OHIO.

CASH REGISTER, RECORDER, AND INDICATOR.

SPECIFICATION forming part of Letters Patent No. 449,311, dated March 31, 1891.

Application filed November 3, 1890. Serial No. 370,100. (No model.)

To all whom it may concern:

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

My present invention relates more particularly to what may be termed a "check-printing attachment" for such machines and the combination of such an attachment with the other elements of the machine. Where machines of this class are employed in connection with a cashier, it is desirable that they be provided with a device by which the clerk, when he operates the machine to indicate and register the amount of a sale, may at the same time print or stamp such amount upon a check or ticket and give the latter to the customer, to be by him turned over to the cashier with the money he is to pay. It is for this purpose that my invention is chiefly designed, though its use is not so limited, for when the printing of separate checks is not desired, or in addition thereto, the amounts of the sales may be printed in consecutive order upon a continuous paper ribbon fed through the printing attachment, and thus form an independent and permanent registry of all sales made. A registry of this character is very desirable in a machine where the regular register is one that adds into a common total all sales made, for it preserves a permanent record of each separate sale. The proprietor can look over this printed registry at the end of each day's business or at such other time as he takes the total registry from the machine and ascertain just how his sales are running. It increases the value of the machine as a check against a dishonest attendant, for, if the proprietor knows that a sale of some certain amount has been made during the day and he does not find such sale recorded on the paper strip, it is proof that the machine has not been properly operated by the attendant.

My present machine embodies a series of keys of different values, a series of indicators representing corresponding values, a total adding registry operated by the keys to add into a common total the values of all of them

that are operated, and a type-wheel common to all the keys of the series, bearing a series of numbers corresponding to the values of the different keys and automatically set at the number corresponding to the value of any operated key at the same time and by the same movement of the key that indicates and registers its value. When the type-wheel is set at the proper number, the printing or stamping of the number upon the paper check or ribbon is effected by a suitably-operated printer.

The operating-keys, the registering mechanism, and the indicators illustrated in this application are covered by other patents and pending applications of my own, (as by Patent No. 445,671, of February 3, 1891, and application Serial No. 369,063, filed October 23, 1890,) and neither their particular construction nor the method combining them together forms an essential part of my present invention. They have been used merely to illustrate a machine to which my invention is easily applicable and by which it may be readily explained; but my invention is in no way restricted to such machine. It contemplates, broadly, the combinations and sub-combinations of parts, which will be specifically set forth without regard to their form or arrangement nor the construction of the intermediate devices by which they are operatively connected. Among such combinations included within the scope of my invention may be mentioned the combination of an operating-key of given value, a type-wheel which is set by the operation of the key at a number representing the value of the key, a printer co-operating with the type-wheel to print or stamp its number on the paper passed over it, and a lock which, upon the operation of the key, automatically locks it from further movement until the printer is actuated to print its value on the paper check or strip; the combination of a series of operating-keys of different values, a type-wheel common to all of said keys bearing numbers representing their different values and automatically set, upon the operation of any one of them, at a number representing the value of such key, a printer for printing such number upon the paper check or ribbon, and a lock which automatically locks the keys from operation until the printer

has been actuated to print the value of the key last operated; the combination of a series of keys of different values, a type-wheel common to all of said keys and bearing a series of numbers representing their different values, said type-wheel normally resting at zero and yieldingly held there by the tension of a spring, but automatically set, upon the operation of any key of the series, at the number corresponding to the value of such operated key, and a printer which automatically releases said type-wheel after its number has been printed and permits its spring to return it to zero; also, the combination of a type-wheel and a register with a series of keys, the operation of two of which will set the type-wheel at a number corresponding to the sum of their values and register such amount.

Aside from the above combinations, my invention includes numerous sub-combinations and novel features of construction in the mechanism associated with the type-wheels and printing devices, all of which will be hereinafter described, and specifically set forth in the claims.

In the accompanying drawings, Figure 1 is a side elevation of the machine; Fig. 2, a front elevation with the ends of the operating-keys cut off; Fig. 3, a rear elevation of the printing attachment in position on the machine. Fig. 4 is a vertical section through the printing attachment on the line 4 4 of Fig. 3, looking toward the right in Fig. 3; Fig. 5, a top plan view of the printing attachment with the impression-frame swung over to one side to expose the type-wheels. Fig. 6 is a vertical section through a portion of the printing attachment on the line 6 6 of Fig. 4, looking toward the front of the machine. Fig. 7 is a detail side elevation of the escapement-wheel co-operating with the cent type-wheel. Fig. 8 is a similar view of the escapement-wheel co-operating with the dollar type-wheel. Fig. 9 is a top plan view of said cent escapement-wheel and the casing inclosing its spring-motor. Fig. 10 is a similar view of the dollar escapement-wheel and its spring-motor casing. Fig. 11 is a front view, partly in section, of the two trains of escapement-wheels and the motor and type wheels. Fig. 12 is a sectional detail of the impression or printing frame. Fig. 13 is a vertical section through the printing attachment on the line 13 13 of Fig. 3, looking toward the left in Fig. 3. Fig. 14 is a perspective view of one of the escapement-wheels and its co-operating detent. Fig. 15, Sheet 1, represents a side elevation of the locking-plate and vibrating frame or key-board shown in Fig. 1.

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

I will first describe the printing attachment and its connections in detail, and afterward so much of the remainder of the machine as may be necessary to a full explanation of my invention.

The type-wheels A A' are mounted rigidly upon the inner ends of revoluble shafts B B'. These shafts are journaled at their outer ends in the pendent arms of brackets C C', supported by the frame-work of the printing attachment, said frame-work consisting, chiefly, of two parallel side plates D D', mounted on the main frame-work of the machine. At their inner ends the shafts B B' are supported by the hubs of the wheels A A', which fit within hollow cylindrical bearings or sleeves E E', integral with or rigidly secured to the inner sides of the plates D D', as shown in the drawings. The inner end of the shaft B' extends through the hub of the wheel A' and across into the bore of the hub of the wheel A, where it abuts against the inner end of the shaft B, though this arrangement of it is not essential. Loosely mounted upon the shafts B B' are two toothed escapement-wheels F F', the inner ends of whose hubs G G' fit within the sleeves E E'. Secured to or integral with the inner ends of these hubs are pinions H H', Figs. 6, 9, and 10, and meshing with these pinions are the main motor-wheels I I' of the machine. These motor-wheels are loosely mounted on a shaft J and are revolved in the direction of the arrows on them by coiled springs hereinafter described, which springs constantly tend to turn them in that direction. The motor-wheels are held in check by mechanism under the control of the operating-keys of the machine, and when a key is operated one of them is released and permitted to revolve a given distance, according to the value of such operated key.

I will now, for the sake of clearness, describe the connections between the motor-wheel I and the type-wheel A, which belong to the cent side of the machine, and will afterward refer to the connection of the motor-wheel I' with the type-wheel A', which belong to the dollar side of the machine.

Immediately on the left of the escapement-wheel F, Figs. 3, 6, and 9, is a casing J', inclosing a coiled spring J². The left side of this casing, Fig. 6, is formed of a stationary plate or disk J³, through the hub of which the shaft B passes. The opposite side J⁴ of the casing and the integral central rim J⁵ are secured to and revolve with the shaft B. The stationary disk J³ has an inner hub J⁶ fitting over the hub of the disk J⁴, and to this hub J⁶ is secured the inner end of the coiled spring J², while its outer end is secured to the inner side of the rim J⁵. The spring is wound in such direction that its tension tends to turn the disk J⁴ and rim J⁵ in the direction of the arrow in Fig. 3. Upon the upper side of the revoluble portion of the spring-casing is secured a laterally-projecting detent or lug J⁷, normally engaging the escapement-wheel F between two of its teeth, as seen in Figs. 6, 7, and 9. A lug on the under side of the bracket C, dotted lines, Fig. 7, normally engages this detent and prevents the casing turning farther forward under the tension of the spring. It will thus be seen

that inasmuch as the lug J^7 is secured to the revoluble spring-casing, which is fast upon the shaft B, which carries the type-wheel A, the engagement of said lug with the escapement-wheel F, whose hub carries the pinion H, meshing with the motor-wheel I, will connect the motor-wheel I with the type-wheel A, so that when the motor is allowed to turn forward under the impulse of its spring the pinion H, wheel F, lug J^7 , spring-casing J^7 , shaft B, and type-wheel A will be turned in the opposite direction. As has been before stated, the movements of the motor I are under the control of the operating-keys, and upon the operation of any one of them it is released and allowed to turn a given distance proportionate to the value of the operated key. The adjustment of the parts is such that the movement of the motor-wheel upon the operation of any key will turn the type-wheel A just far enough to bring its number corresponding to the value of the operated key to a point immediately beneath the impression-plate hereinafter described. Thus the type-wheel A bears upon its periphery a series of equidistant type-numbers in multiples of five from 0 to 95 and co-operates with a series of nineteen keys representing multiples of five from 5 to 95. When the five-cent key is operated, the number "5" on the type-wheel is brought beneath the impression-plate. When the twenty-five cent key is operated, the number "25" is brought to that point, and so on throughout the series.

There is a spring-casing provided with a detent and a coiled spring for it co-operating with the escapement-wheel F' on the dollar side of the machine, and their engagement and disengagement connect the type-wheel A' with the motor-wheel I' and disconnect it therefrom in the same manner as the corresponding mechanism on the cent side of the machine. The type-wheel A' bears on its periphery a series of type-numbers in multiples of one from 0 to 9. The dollar-keys represent multiples of one from 1 to 5, and upon operating any one of them the type-wheel is set at a number corresponding to its value, while upon operating any two of them simultaneously the type-wheel A' is set at a number representing the sum of their values. The impression-plate K is in this instance carried by a frame K', hinged at one end to a support on the upper side of the bracket C' and extending across the two type-wheels and normally held above and out of contact with them by a spring K^2 , interposed between the frame and the top of the side plate D or bracket C. The impression-plate K, made of rubber or other suitable material, is secured to the under side of the frame K' immediately over the type-wheels A and A'. Secured by its opposite upturned edges to the under side of the frame K' immediately beneath the plate K is a sheet-metal ticket guide and holder K^3 . It is provided with two holes coincident with the numbers on the type-wheels when the latter

are set for printing, and there is sufficient space between its upper side and the lower side of the impression-plate K to permit the insertion of a ticket or the passage of a paper ribbon upon which the numbers are to be printed. Two inking-ribbons K^4 are carried on spools K^5 K^6 , supported on the frame K', and pass under the plate K^5 immediately beneath the openings in the latter. Between these two ribbons passes the paper strip or recording-ribbon K^7 , Figs. 4 and 12, upon which the permanent record of each separate sale is made. The paper ribbon K^7 is carried upon any suitable supply and feed rolls, (not shown,) and is fed through the machine by being passed between suitably-operated feed wheels or rolls, as hereinafter described. Upon depressing the left-hand end of the frame K', Figs. 3 and 6, until the impression-plate bears firmly against the uppermost number on the type-wheel said number will be printed not only upon the ticket or paper strip inserted between said plate and the guide-plate K^3 , but also upon the paper ribbon K^7 .

The means I have shown for depressing the frame K' to do the printing consist of a lever L, rigidly secured at its lower end to the rock-shaft J, upon which the motor-wheels II' are mounted, and provided with a cam plate or arm L', Fig. 1, secured to its side next the frame K'. The latter has an arm L^2 projecting from its left side, Figs. 3 and 6, into the path of travel of the cam-plate on the lever L and provided with a friction-roller L^3 . The position of the cam-plate L^2 on the lever L is such that when the lever is pulled forward said plate will ride over the friction-roller on the end of the arm L^2 and depress the frame K' until the impression-plate has been firmly pressed against the type-wheel to print a number on the interposed ticket and ribbon, and will then clear the end of the arm and release the frame and permit the spring K^2 to lift it again. In order that the type-wheel may be returned to zero ready for the operation of the succeeding key, it is necessary that it should be disconnected from the motor-wheel I. This disconnection is effected by the disengagement of the lug J^7 from the escapement-wheel F, which permits the spring-casing J^7 to be turned back by its spring J^2 until the lug J^7 strikes the bracket C or the lug on the under side thereof. This brings the type-wheel back to zero.

I have provided means for automatically disengaging the escapement-wheel from the lug on the spring-casing by the continued movement of the lever L after its cam L' has depressed the frame K and released it. Pivoted to a lug on the outside of the plate D, Figs. 3, 4, and 6, is a lever M, having a forked upper end provided with pins engaging a circumferential groove in the hub of the escapement-wheel F. The lower end of the lever M is provided with a cam-slot M' , in which works a pin M^2 , projecting rearwardly from a sleeve

rigidly secured to the shaft J. The shape of the cam-slot is such that when the pin M² moves upward in it upon throwing forward the lever L the lower end of the lever M will be thrown to the left and its upper end to the right, thereby shifting the escapement-wheel F to the right and disengaging it from the detent J⁷ on the spring-casing, whereupon the spring J² returns the type-wheel to zero, as before explained. When the lever L is moved backward to normal position again, the pin M² throws the upper end of the lever M to the left again, and it becomes re-engaged with the lug J⁷, and thereby with the shaft B and type-wheel A, ready for a fresh operation. It will thus be seen that upon the operation of any key the motor I, which is geared to the hub of the wheel F, turns said wheel, and with it the spring-casing J⁷, shaft B, and type-wheel A, until the type-number on the latter corresponding to the value of the operated key is brought beneath the impression-plate; that upon then pulling forward the lever L the cam-plate L' engages the friction-roller on the end of the arm L² and depresses the frame K' and impression-plate K to do the printing, and that upon pulling the lever L farther forward the frame K' is released and lifted by its spring, and the motor-wheel is disconnected from the type-wheel, and the latter is restored to zero ready for the operation of the succeeding key.

It is important that means be provided for compelling the operator to depress the impression-plate and print the proper number after each operation of a key, both for the purpose of printing a check and for the purpose of making the permanent record of each individual sale upon the paper ribbon. The result to be accomplished, the end desired, is to insure the operation of the printer after the operation of each key and the setting of the type-wheel and before any other key is operated to indicate and register a different value and set the type-wheel at a different number. The device which I have produced and employ for accomplishing this result is an automatic lock so combined with the operating-keys and the printing attachment that when any key has been operated and the type-wheel set at a number representing the value of such key the whole series of keys become locked from movement and are held so locked until the printing device or printer, of whatever form it may be, is operated to print the value of the operated key.

In the printing attachment which I have shown and described the impression-plate is depressed to do the printing by the lever L, which may be called the "printing-lever," and I therefore find it convenient to combine my automatic lock with this lever and the operating-keys; but this is merely a convenient application of it in the machine by which I have illustrated my invention, and it may be combined with other parts of the machine for the same purpose. For instance, it might

be combined directly with the impression-plate or the frame carrying said plate in such manner that after the type-wheel has been set by the operation of a key and the machine automatically locked it will be unlocked directly by the depression of such plate or frame, no matter what means may be used to depress them. This feature of my invention therefore contemplates, broadly, the combination of an operating handle or key, a type-wheel set thereby, a printing device of any suitable character co-operating with the type-wheel, and a lock which automatically locks the machine upon the operation of the key and the setting of the type-wheel and holds it locked until the printing device is operated to print the number at which the type-wheel has been set.

Where a device such as the lever L is employed for depressing the impression-plate—a device which has to be reset after it has been moved to depress the plate in order to bring it into position for its next operation—it is desirable that the machine shall be locked not only until such device is operated to do the printing, but until it has been reset to position for another operation. I have therefore combined with the lever not only a lock which automatically locks the keys and holds them locked until said lever is moved to do the printing, but have also combined with it a lock which holds them locked until the lever has been reset to normal position. Furthermore, I have combined with the printing device—the lever—a lock which automatically locks it during the operation of any key, so that said printing device cannot be operated until a key has been fully operated and the type-wheel set at the proper number, thus always insuring the printing of the correct number whenever the printing device is operated. This feature of my invention therefore contemplates, broadly, the combination of the type-wheel and the printing device with a lock which, upon the operation of any key, automatically locks said printing device and holds it from operation until the type-wheel has been set at the proper number. I will now proceed to describe these several features of my invention in the form in which they have been illustrated in the drawings.

Rigidly secured to the rock-shaft J, which carries the lever L, is a pendent plate O, Fig. 1, having a wide lower end whose edge is preferably curved to conform to the arc of the circle in which it moves. The plate O is secured to the rock-shaft J near its right-hand end just within the near side of the frame-work in Fig. 1, so that it is some distance from the lever L on said shaft; but as they are both rigidly secured to the shaft and the latter may be freely rocked in its bearings the lever L and plate O practically constitute one lever with the shaft J as its fulcrum. When the upper end of the lever L is pulled forward, the lower end of the plate O is thrown rearward, and vice versa. Extend-

ing across the entire series of operating-keys and resting upon their upper sides near their rear ends is the usual vibrating bar or keyboard O', hung by side arms O² upon pivotal supports on the frame-work. When the front end of any key is depressed and its rear end lifted, this bar is lifted by it. None of the keys can therefore be operated without lifting this bar. When it is held down, they are all locked. Upon the right end of this bar, near its upper rear corner, Fig. 1, is a projecting lug O³. When the upper end of the lever L is pulled forward and the lower end of the plate O swung rearward, the lower edge of the latter moves over the lug O³ and locks the bar O' down, so that none of the keys can be operated until the lever L is thrown rearward again and the plate O moved from over the lug O³. Pivoted to the side of the plate O is a three-armed plate or locking-dog O⁴. A spring-pressed latch O⁵, also pivoted to the plate O, bears against the pointed end of the middle forwardly-projecting arm of the dog O⁴, so that when the lower arm of said dog is thrown forward until the pointed end of its middle arm passes above the pointed nose of the latch O⁵ the latter holds its lower arm forward and its upper arm rearward. When the upper arm is thrown forward until the pointed end of the middle arm passes below the nose of the latch, said upper arm is held forward and the lower arm rearward.

The rear edge of the lower portion of the plate O is curved to conform substantially to the arc of the circle traversed by the lug O³, when the vibrating bar O' is lifted by the operation of a key, as before described. The forward side of the lug travels up the rear side of the plate O at a short and uniform distance from it.

When the parts are in the position shown in Fig. 1, it will be seen that the upper arm of the locking-dog O⁴ is thrown rearward and held so by the latch O⁵, and its upper end projects into the path of travel of the lug O³. The bar O' is free to rise, and the keys therefore free to be operated. When the front end of any one of them is depressed and the bar O' is lifted thereby, the lug O³ as the bar rises strikes the end of the upper arm of the dog O⁴ and throws it forward far enough for the pointed end of the middle arm to pass below the nose of the latch O⁵, and the latter thereupon holds the dog in the new position with its lower arm thrown rearward, as seen in Fig. 15. The upper arm of the dog O⁴ is thus moved and held out of the path of the lug O³, so that the bar O' is free to descend. The lower arm of the dog, however, is now in the path of the lug; but the adjustment of the parts is such that when the lug strikes it as the bar O' descends it will not throw it forward far enough to move the pointed end of the middle arm above the nose of the latch O⁵, so that when the lug presses the arm forward and passes below it the spring action of the latch will immediately throw the arm rear-

ward again. This brings the lower arm of the dog and the lug into the relative positions shown by the solid lines in Fig. 15, where it will be seen that the arm is immediately above the lug. The bar O' therefore cannot be moved upward, and all the keys are locked. The operation of the key just described has set the type-wheel at the number representing its value, and the next thing to do is to operate the printing device to print such number on the paper ribbon or check, or both of them if the two be employed. As the operating-keys are all locked in the manner described above, this is therefore the only thing that can be done. When the lever L is pulled forward to depress the impression-plate and do the printing, the plate O is swung rearward and the lower arm of the dog O moved from over the lug O³; but the lower edge of the plate O itself is moved over the lug and remains over it during the further movement of the lever L, so that the lock remains unbroken. Just as the lever L reaches the limit of its forward stroke and the printing has been done the lower arm of the dog O³ in the rearward movement of the plate O strikes a lug O⁶ on the frame-work of the machine and is thrown forward far enough to move the pointed end of the middle arm above the nose of the latch O⁵, as shown in dotted lines in Fig. 15, and the dog is thereby restored to and held in the position shown in Fig. 1. The bar O' remains locked down by the lower edge of the plate O until the lever L is moved entirely back to its normal position, whereupon the bar is released and the keys are free for another operation. Any suitable stop engaging the rear edge of the plate O just at the limit of its rearward stroke may be provided on the frame-work.

As seen in Fig. 1, the bar O' has on its rear side a flange O⁷, adapted to enter slots in lugs O⁸ on the upper sides of the keys when the rear ends of the latter are lifted and to thereby attach the operated key to the bar, so that it must move with the bar during its further operation. The forward faces of the lugs O⁸ are curved to conform to the arc of the circle traversed by the rear edge of the flange O⁷, so that when any key is operated the flange moves up immediately in front of the forward faces of all the unoperated keys and holds them from operation until the operated key and bar O' are reset to normal position in the well-known manner. This as effectually locks the machine during the operation of any key as do the devices above described after the operation of a key and before the printing is done.

Having now described the construction and mode of operation of the printing devices, I will proceed to describe the means interposed between the type-wheels and the operating-keys for setting each of said wheels upon the operation of any key of its series at the number which represents the value of such operated key. These means, as I have before

stated, are described and claimed in other applications filed by me. Their particular construction, therefore, is not material to my present invention, and any other known or suitable means may be interposed between the operating-keys and type-wheels for the same purpose without departing from my invention.

The means employed for the purpose in the machine in connection with which I have illustrated my invention consist, essentially, of an escapement mechanism under the control of the operating-keys and connected with the spring-impelled motor-wheel which operates the type-wheel in the manner heretofore described. There is one of these escapement mechanisms interposed between each series of keys and its corresponding type-wheel, and the operation of each mechanism is such that it normally holds the motor-wheel stationary against the tension of its propelling-spring, but upon the operations of different keys of the series releases it and permits it to revolve different distances, according to the values of the keys. Upon the inner sides of the motor-wheels I I' are secured circular casings I² I³, Figs. 3, 5, and 6, which contain the coiled propelling-springs for the motor, one of which springs is shown in Fig. 13. The outer end of each coiled spring is secured to the inside of the rim of its casing and its inner end to a sleeve loose on the shaft L, Fig. 13. These sleeves are the hubs of ratchets I⁴ I⁵, Fig. 3, mounted loosely on the shaft L, one beside each casing, with its hub projecting into the casing and having the inner end of the spring secured to it, as above stated. When these ratchets are turned forward, their hubs wind up the coiled springs and put them under tension, and they tend to revolve the motor-wheels I I' in the direction of the arrows, as will be apparent from Fig. 13. Tight on the shaft L between the two ratchets is a sleeve I⁶, having an integral rearwardly-extending plate I⁷, upon whose rear upper side in a housing formed by a recessed plate I⁸, secured thereon, are carried two sliding pawls I⁹, (shown in dotted lines in Figs. 3 and 6,) pressed by the coiled springs behind them into engagement with the ratchets I⁴ I⁵. When the lever L is pulled forward to depress the frame-work, the shaft J is rocked, and the sleeve I⁶ and plate I⁷ are lifted by it, and the pawls I⁹ wind up the coiled springs within the motor-casings I² I³, as will be readily understood.

It has not been thought necessary to illustrate in detail the devices just described, since all of them, excepting the lever L, have been illustrated and described in full in application Serial No. 369,063, before referred to, and do not constitute part of my present invention.

In connection with the winding-pawls for the motor-springs I will here describe the feed-wheels which feed the paper ribbon be-

tween the type-wheels and impression-plate and the means for operating them. They are shown in Figs. 2, 3, 5, 6, 11, and 13. Mounted loosely upon the shaft B', Fig. 6, between the type-wheels A and A' are two rigidly-connected disks or wheels N N', preferably having milled or roughened edges. Interposed between the wheels N N' and rigidly secured to them is a ratchet N². Hung loosely by a sleeve upon the bearing E' just to the right of the type-wheel A', Figs. 3, 5, and 13, is an arm N³, carrying at its lower rear end a pawl N⁴, spring-pressed into engagement with the ratchet N², Fig. 13. A link N^{4x}, connected at its upper end with the rear end of the arm N³ and pawl N⁴, has its lower curved end pivoted between lugs on the under side of the plate I⁷, which carries the pawl I⁹. When the printing-lever L is pulled forward to effect the printing and the shaft J is rocked and the plate I⁷, rigid therewith, is lifted, as before explained, the rear end of the arm N³ is lifted and the pawl N⁴ rides idly up over the teeth of the ratchet N². Upon the resetting of the lever L and the downward movement of the plate I⁷ and arm N³ the pawl N⁴ turns the ratchet N² and wheels N N'. Journaled between the side plates D D' in front of the type-wheels is a pressure-roller N⁵, of rubber or other suitable material, bearing against the edges of the wheels N N'. The paper ribbon K⁷ is passed between the wheels N N' and roller N⁵, Fig. 4, so that whenever the wheels are turned by the pawl N⁴ in the manner described the paper ribbon is fed along over the type-wheels. It will thus be seen that during the printing-stroke of the lever L the paper ribbon K⁷ remains stationary, and that upon the resetting of the lever it is fed along preparatory to having another number printed on it.

The means I have shown and described for moving the paper ribbon are suitable and operative; but any other convenient or desirable ones may be employed in their place.

I will now describe the mechanism interposed between the cent series of keys on the right side of the machine and the type-wheel A, by which the latter is set at the proper number upon the operation of any key and by which the values of the operated keys are added on the registering mechanism. This part of the machine is shown most clearly in Figs. 2, 11, and 14. Journaled at its right end in one of the side plates of the frame-work and at its left end in the front portion of the plate D, which rests upon a cross-piece A³ of the frame-work, is a revoluble shaft A⁴. Tight upon this shaft near its left end is a pinion A⁵, constantly meshing with the motor-wheel I. Tight upon the opposite end of the shaft A⁴ is a cent-registering wheel A⁶, bearing on its periphery a series of numbers in multiples of five from 0 to 95. Interposed between this wheel and a stationary detent C⁶, secured to the side of the plate D, is a train of escapement-wheels B², B³, B⁴, B⁵, and B⁶ and a co-operating

series of detent supports or wheels C^2 , C^3 , C^4 , and C^5 , the stationary detent C^6 co-operating with the last escapement-wheel B^6 . The first escapement-wheel B^2 and its hub are mounted 5 and feathered upon the laterally-extending hub or fixed sleeve of the registering-wheel A^6 , Fig. 11, so as to revolve with it, but be free to slide laterally. The teeth of the wheel B^2 co-operate with the detent on the 10 disk C^2 , which disk is loosely mounted directly on the shaft A^4 , while feathered upon its laterally-extending hub is the next succeeding escapement-wheel B^3 , and so on through the series, each escapement-wheel 15 being feathered upon the hub of the preceding detent-wheel and co-operating with the detent on the succeeding wheel. The power of the motor exerted through the pinion A^5 , shaft A^4 , and registering-wheel A^6 tends to revolve the escapement-wheel B^2 in the direc- 20 tion of the arrow. This holds one of its teeth pressed constantly against the face of the detent on the disk C^2 and tends to revolve that disk in the same direction. As each escapement-wheel is feathered on the hub of its pre- 25 ceding detent-wheel, so as to turn with and be turned by it, and as one of its teeth is in engagement with the detent on the succeeding detent-wheel, it follows that the power of the motor is exerted through the entire train 30 of wheels and tends to revolve all of them in the direction of the arrows. They are held in check by the stationary detent C^6 , which engages the teeth of the last escapement-wheel B^6 . When the engaged tooth of any 35 escapement-wheel is disengaged from its co-operating detent, the power of the motor-wheel exerted through the shaft A^4 , wheel A^6 , and all the wheels between the wheel A^6 and the disengaged escapement-wheel will turn 40 the latter, and consequently all the wheels preceding it, including the registering-wheel A^6 , until the said disengaged escapement-wheel is arrested by one of its succeeding teeth engaging the detent from which its pre- 45 ceding tooth had been freed.

The detents on the wheels C^2 , C^3 , &c., and the stationary detent C^6 are each of the shape shown in Fig. 14, where the escapement-wheel 50 co-operating with the detent is shown in dotted lines. It will be seen that the detent has two contact faces, an outer one a and an inner one a' , with a passage or slot a^2 between them, and that the escapement-wheel, under 55 the influence of the spring-motor, is pressed with one of its teeth against the outer face a of the detent. When the escapement-wheel is slid to the left toward the disk, its engaged tooth is moved out of the plane of the outer 60 face a of the detent and into the plane of the inner face a' , and the wheel, under the influence of the motor, at once turns on in the direction of the arrow until said tooth strikes the inner face of the detent. The whole train 65 of wheels preceding this escapement-wheel, including the wheel A^6 , moves with it, since the power to move the disengaged escapement-

wheel is transmitted through them from the shaft A^4 , geared to the motor-wheel. When the escapement-wheel is moved back to the right 70 again, its engaged tooth is moved out of the plane of the inner face of the detent and back into the plane of the outer face, but behind the latter, so that it is now entirely freed from the detent, and the wheel turns on until its 75 next succeeding tooth engages the outer face of the detent. It will thus be seen that the result of this left-and-right movement of an escapement wheel is to free one of its teeth from and permit it to pass by its co-operating 80 detent and cause the wheel to be turned the distance between the centers of two of its teeth. Inasmuch as the registering-wheel A^6 is each time turned just the same distance as the escapement-wheel, it follows that by pro- 85 viding the different escapement-wheels with different numbers of teeth at different distances apart the registering-wheel will be turned different distances by the before-described movements of different escapement- 90 wheels. Thus the escapement-wheel B^6 is provided with twenty equidistant teeth, so that when one of them is disengaged from and passes by the detent C^6 and the next succeeding tooth engages said detent the wheel is 95 turned one-twentieth of a revolution. The wheel A^6 is simultaneously turned the same part of a revolution, and five cents is added to the amount registered upon it; so the wheel B^5 has ten equidistant teeth, and every 100 time it is moved to the left and back to the right again and one of its teeth permitted to pass the detent on the disk C^5 the wheel turns one-tenth of a revolution, and the wheel A^6 , turning with it, adds ten cents to its registry. 105 The wheels B^4 and B^3 each have five teeth, and each of their described movements permits the wheel A^6 to turn one-fifth of a revolution and add twenty cents to its registry. 110 The wheel B^2 has only two teeth, and at each operation turns a half-revolution and adds fifty cents on the registering-wheel.

By simultaneously disengaging two or more escapement-wheels from their co-operating 115 detents and permitting each of them to turn the distance between two of its teeth the wheel A^6 and shaft A^4 will be permitted to turn a distance equal to the sum of the dis- 120 tances turned by the operated escapement-wheels. Thus, if the wheels B^2 and B^3 be simultaneously moved to the left to disengage their engaged teeth from the outer faces of the detents C^2 and C^3 the wheel B^3 , being 125 feathered upon the hub of the wheel A^6 , which is constantly pressed in the direction of the arrow by the power of the motor, will be turned in that direction until its said tooth strikes the inner face of the detent C^2 ; but it will not stop there, as it would had it been the only wheel 130 operated, for the wheel B^2 , which is feathered on the hub of the detent-wheel C^2 , has been disengaged from the detent C^2 , and as that was all that held it in check it is turned on by the pressure of the wheel B^2 on the detent

C^2 until its disengaged tooth strikes the inner face of the detent C^3 . Upon sliding the wheels B^2 and B^3 to the right again the engaged teeth of each are freed from the inner faces of their respective detents. The wheel B^2 turns on until its next succeeding tooth strikes the outer face of the detent on the wheel C^2 , whereupon it picks up said wheel and carries it on with it until the next succeeding tooth of the wheel B^3 , which is feathered on the hub of the detent-wheel C^2 , strikes the outer face of the detent on the wheel C^3 . It will thus be seen that the result of the simultaneous operation of the wheels B^2 and B^3 is to permit the motor to turn the shaft A^4 and registering-wheel A^6 both a half and a fifth of a revolution, and to thereby register seventy cents on said registering-wheel; so the result of the simultaneous operation of wheels B^2 , B^3 , and B^4 would be to permit the motor to turn the shaft A^4 and registering-wheel A^6 a half and a fifth and a twentieth of a revolution and register seventy-five cents, and so on, the simultaneous operation of any number of the escapement-wheels permitting the motor to turn the registering-wheel a distance equal to the sum of all the distances turned by the several operated escapement-wheels.

It will be understood that the registering-wheel A^6 does not form an essential part of the train of escapement and detent wheels, but serves merely as a means of connecting one end of said train to the shaft A^4 . A simple sleeve or hub fast on the shaft would serve the same purpose. It is only necessary that the registering-wheel should be geared to the motor-wheel and revolved by it different distances, according to the movements allowed to the motor-wheel by the operation of different escapement-wheels. The location of it on the shaft A^4 is a convenient one; but it might be mounted upon a separate shaft or support and be geared directly or indirectly to the motor.

The operating-keys of the machine consist of levers P , Fig. 1, fulcrumed on a horizontal shaft P' , extending from side to side of the lower forward part of the machine. Their front ends are provided with numbered finger-buttons and their rear ends play up and down in slots in a guide-plate P^2 , Fig. 3. Those of the cent series are nineteen in number, representing multiples of five from 5 to 95, as before stated, and they are connected with the escapement-wheels upon the shaft A^4 by a series of shifting-slides and pivoted levers in such manner that when any one of them is operated it shifts to the left and back to the right again just such escapement-wheels as are necessary to permit the motor-wheel to move the shaft A^4 and registering-wheel A^6 far enough to register the value of such key.

The shifting-slides and the levers connecting them with the escapement-wheels are illustrated and described in detail in my other pending applications and form part of the in-

ventions covered thereby, and as they are illustrated here merely for the purpose of showing an operative machine they may be briefly described. There is one slide for each escapement-wheel, and they are confined in a longitudinal slide-box P^3 , extending from side to side of the machine. The tops of them are shown at 1, 2, 3, 4, and 5, Fig. 2, it being understood that the slides are arranged side by side, so as to be free to slide independently of each other. Each slide is connected to one of the escapement-wheels by a centrally-pivoted lever, which is flexibly joined to the slide at its lower end, and at its upper end is forked and provided with pins engaging circumferential grooves in the hubs of the escapement-wheels, Figs. 2 and 11. The lower side of the slide-box P^3 is provided with a series of vertical slots, one immediately above each key. Upon each key just in rear of its fulcrum and beneath one of the slots in the box is a wedge P^4 , whose bevel is chiefly on its right side, Fig. 2. When the front ends of the keys are depressed, these wedges enter the slots in the box. Each of the slides 1, 2, 3, 4, and 5 has portions of its under side cut away to form pendent lugs, there being one lug for each key with which the slide co-operates. The lugs on the slides project from the right into the slots immediately above the keys with which they co-operate, as shown in Fig. 2. It results from this that when the wedge on any key is lifted into its slot in the box it will push to the right such slide or slides as may project into its slot, but will not move any of the others. When any slide is shifted to the right, it throws the upper end of its centrally-pivoted lever to the left and shifts the connected escapement-wheel to the left and disengages one of its teeth from the outer face of its co-operating detent. When the slide is returned to the left again, its lever shifts the escapement-wheel to the right again, and one tooth of the wheel is permitted to pass the detent, and the motor-wheel is permitted to turn the shaft A^4 and registering-wheel A^6 , as well as the escapement-wheel, the distance between two of the teeth of the latter.

Any suitable means may be employed for returning the slides to the left after being pushed to the right by the wedges on the keys. A flat spring bearing against the outer ends of the slides will serve the purpose. The arrangement of the lugs on the slides is such that the wedge of any key will shift just such slides as are necessary to operate the proper escapement-wheels to permit the motor-wheel to turn the registering-wheel far enough to register the value of such key. Thus the five-cent key will shift only the slide 5 and escapement-wheel B^5 , the ten-cent key the slide 4 and escapement-wheel B^4 , the twenty-cent key either the slide 3 or the slide 2 and the escapement-wheel B^3 , and the fifty-cent key the slide 1 and wheel B^2 . Each of the other keys will shift two or more slides and two or more escapement-wheels. Thus the fifteen-cent key will

shift slides 4 and 5 and wheels B⁵ and B⁶, the forty-cent key the slides 2 and 3 and wheels B³ and B⁴, the seventy-five-cent key the slides 1, 2, and 5 and wheels B², B³, and B⁶, and so on, each key shifting the proper slides and wheels to cause its value to be registered on the wheel A⁶.

Inasmuch as the pinion H on the inner end of the hub G of the escapement-wheel F, which drives the type-wheel A, meshes with the motor-wheel I, Figs. 6, 7, and 9, and is substantially the same in size and provided with the same number of teeth as the pinion A⁵ on the shaft A⁴, by which the registering-wheel A⁶ is driven, Fig. 2, it follows that upon the operation of any key the type-wheel A will be turned by the motor-wheel the same portion of a revolution as is the shaft A⁴ and registering-wheel A⁶. Thus when the five-cent key is operated the motor-wheel is permitted to move far enough under the impulse of its spring to turn the shaft A⁴ and wheel A⁶ one-twentieth of a revolution. Inasmuch as the type-wheel normally rests with its zero under the impression-plate, the twentieth of a revolution will bring its type-figure "5" beneath the plate. The operation of the fifty-cent key will permit the motor to turn the shaft A⁴, registering-wheel A⁶, and type-wheel A one-half a revolution, and the number "50" on the type-wheel will be brought beneath the impression-plate, and so on, the type-wheel being released and returned to zero after the operation of each key, in the manner before explained, and turned by the operation of the succeeding key that part of a revolution necessary to set it at the number representing the value of such key.

On the dollar side of the machine there is a revoluble shaft D², journaled at its left end in the side plate of the frame-work and at its right end in the plate D', supported on the cross-piece A³. Tight upon the right end of this shaft is a pinion D⁴, meshing with the motor-wheel I'. Tight upon the opposite end of the shaft is a hub or sleeve D⁵, upon which is feathered the first of the dollar train of escapement-wheels E². This wheel co-operates with the detent on the first of the detent supports or wheels F², mounted loosely on the shaft. The second escapement-wheel E³ is feathered upon the hub of the first detent-wheel F² and co-operates with the second detent-wheel F³. The third escapement-wheel E⁴ is feathered on the hub of the second detent-wheel F³ and co-operates with the third detent-wheel F⁴. The last escapement-wheel E⁵ is feathered on the hub of the third detent-wheel F⁴ and co-operates with a relatively-fixed detent F⁵ on a stationary disk F⁶. This disk is loose on the shaft D²; but it is rigid with an escapement-wheel E⁶, which forms part of the transfer mechanism by which the dollars registered by the complete revolution of the cent-registering wheel are transferred to the dollar-registering wheels. It forms no part of the train of escapement and detent wheels on

the shaft D², and is stationary relatively thereto, and will not be further described, since the transfer mechanism has nothing to do with my present invention. So far as the train of escapement and detent wheels on the shaft D² are concerned the detent F⁵ on the disk F⁶ is an absolutely stationary detent and holds them, and through them the shaft D² and motor-wheel I', in check, just as the stationary detent C⁶ holds in check the train of wheels on the cent side of the machine, and through them the shaft A⁴ and motor-wheel I.

The escapement-wheels on the dollar side of the machine are shifted upon the operations of the dollar-keys, through the medium of a series of slides and centrally-pivoted levers, just as on the cent side of the machine.

In the present instance there are only five dollar-keys, representing multiples of one from 1 to 5, the key on the extreme left being simply a blank key having no wedge and no connection with the registering mechanism and employed for the purpose of opening an automatic cash-drawer without making a registry, sounding the alarm at such times, and for other purposes. The escapement-wheel E⁵ has ten teeth and permits the motor to turn it and the shaft D² one-tenth of a revolution each time it is shifted to the right and back to the left again. The wheels E⁴ and E³ each have five teeth, and at each operation of either of them the motor turns the shaft D² one-fifth of a revolution. The wheel E² has only two teeth, and at each operation of it the motor turns the shaft D² one-half of a revolution. The five-dollar key moves only the slide which shifts the wheel E², so that upon simultaneously operating that key and any one of the keys of lower value the motor will be turned far enough to register the value of both keys.

The motor-wheel I, in addition to its engagement with the pinion D⁴, meshes, also, with a pinion G², of the same size as the pinion D⁴ and secured upon a revoluble sleeve G³, mounted on a shaft carried by the plates D D', Fig. 2, upon the opposite end of which sleeve is a pinion G⁴, meshing with the primary wheel of a train of dollar-registering wheels. It has not been deemed necessary to illustrate this train of wheels further than they are shown in side elevation by the dotted lines in Fig. 1. It is sufficient to say that each of them bears on its periphery a series of numbers in multiples of one from 0 to 9, and that they add one onto the other through suitable transfer devices, so that the total amount registered upon them may be read off at a glance. The primary wheel of the set is geared to the pinion G⁴ on the sleeve G³, carrying the pinion G², meshing with the motor-wheel I', as before stated, so that the revolutions of said primary wheel are coincident with the revolutions of the pinions G² and D⁴ and shaft D². Hence when a key is operated which permits the motor-wheel to turn the shaft D² one-tenth of a revolution, in the manner before described, the primary wheel of the registry will likewise be

turned one tenth of a revolution, and one dollar will be registered. If a key be operated which permits the motor-wheel to turn the shaft D² half a revolution, the primary registering-wheel will be turned half a revolution and register five dollars. So if two keys, such as the five-dollar key and the four-dollar key, be operated the motor-wheel will be permitted to turn the shaft D² nine-tenths of a revolution, and likewise the primary registering-wheel the same portion of a revolution, and nine dollars will be registered. This train of dollar-registering wheels has been illustrated and described in detail in my other pending applications; but the particular construction and arrangement of them has nothing to do with my present invention. It is sufficient if any suitable registering-wheel is geared to the motor-wheel I' in such manner as to accurately register the values of the operated keys.

While I prefer to employ inking-ribbons and to print the type-numbers on the paper strip or check, or both, yet the inking-ribbons might be dispensed with and the types be so formed as to indent their numbers into the paper. By the terms "print" and "printing," therefore, I intend to include any suitable method of forming the type-numbers upon the paper strip or check, either with or without the employment of inking-ribbons; also, while I have shown the type-supports as wheels it is evident that the wheels are merely supports for the types, and that segmental supports, for instance, might be employed in their stead.

Having thus fully described my invention, I claim—

1. In a registering-machine, the combination of a type-wheel, an operating handle or key, a printer co-operating with the type-wheel, and a lock which, after the key has been operated to set the type-wheel, locks said key until the printer is operated to effect the printing and is released by the operation of the printer, substantially as and for the purpose described.

2. In a registering-machine, the combination of a type-wheel, an operating handle or key, a register, a printer co-operating with the type-wheel, and a lock which locks said key after it has been operated to set the type-wheel and prevents another operation of it until the printer is operated to effect the printing and is released by the operation of the printer, substantially as described.

3. In a registering-machine, the combination of a type-wheel, an operating handle or key, a register, an indicator, a printer co-operating with the type-wheel, and a lock which, after the key has been operated to set the type-wheel, locks said key until the printer is operated to effect the printing and is released by the operation of the printer, substantially as described.

4. In a registering-machine, the combination of a type-wheel, an operating handle or

key, a printer co-operating with the type-wheel, and a lock which holds the printer from movement during the operation of the key to set the type-wheel, substantially as described.

5. In a registering-machine, the combination of a type-wheel, an operating handle or key, a register, a printer co-operating with the type-wheel, and a lock which holds the printer from movement during the operation of the key to set the type-wheel and register its value, substantially as described.

6. In a registering-machine, the combination of a type-wheel, an operating handle or key, a printer co-operating with the type-wheel, a lock which holds the printer from movement during the operation of the key to set the type-wheel, and a lock which locks the key after it has set the type wheel and prevents a second operation of it until the printer is operated to do the printing, substantially as described.

7. In a registering-machine, the combination of a type-wheel, a register, an operating handle or key, a printer co-operating with the type-wheel, a lock which holds the printer from movement during the operation of the key to set the type-wheel and register its value, and a lock which locks the key after it has set the type-wheel and prevents a second operation of it until the printer is operated to do the printing, substantially as described.

8. In a registering-machine, the combination of a type-wheel, a series of operating keys of different values common to said wheel, the operation of any one of which sets said type-wheel at a number representing the value of such key, a printer co-operating with the type-wheel, and a lock which, after the operation of any key to set the type-wheel, locks all of the keys until the printer is operated to print the value of the operated key, substantially as and for the purpose described.

9. In a registering-machine, the combination of a type-wheel, a register, a series of operating-keys of different values common to said wheel, the operation of any one of which sets the type-wheel at a number corresponding to the value of such key and registers such value, a printer co-operating with the type-wheel, and a lock which, after the operation of any key to set the type-wheel and register its value, locks all of the keys until the printer is operated to print the value of the operated key, substantially as described.

10. In a registering-machine, the combination of a type-wheel, a series of operating-keys of different values common to said wheel, the operation of any one of which sets said type-wheel at a number corresponding to the value of such key, a printer co-operating with the type-wheel, and a lock which holds the printer from movement during the operation of the key to set the type-wheel, substantially as described.

11. In a registering-machine, the combination of a type-wheel, a register, a series of op-

erating-keys of different values common to said wheel, the operation of any one of which sets said wheel at a number representing the value of such key, a printer co-operating with the type-wheel, and a lock which holds the printer from movement during the operation of the key to set the type-wheel and register its value, substantially as described.

12. In a registering-machine, the combination of a type-wheel, a series of operating-keys of different values common to said wheel, the operation of any one of which sets said type-wheel at a number representing the value of such key, a printer co-operating with the type-wheel, a lock which holds the printer from movement during the operation of the key to set the type-wheel, and a lock which locks all the keys after the type-wheel has been set and prevents the operation of any of them until the printer is operated to do the printing, substantially as described.

13. In a registering-machine, the combination of a type-wheel, a register, a series of operating-keys of different values common to the type-wheel, the operation of any one of which sets said wheel at a number representing the value of such key and adds its value on the register; a printer co-operating with the type-wheel, a lock which holds the printer from movement during the operation of the key to set the type-wheel and register its value, and a lock which locks all the keys after the type-wheel has been set and prevents the operation of any of them until the printer is operated to do the printing, substantially as described.

14. In a registering-machine, the combination of a type-wheel, a printer co-operating therewith, and a series of keys of different values common thereto, the simultaneous operation of two of which keys sets said type-wheel at a number representing the sum of their values, substantially as described.

15. In a registering-machine, the combination of a type-wheel, a register, and a series of keys of different values common thereto, the simultaneous operation of two of which keys sets the type-wheel at a number representing the sum of their values and effects the registry thereof, substantially as described.

16. In a registering-machine, the combination of a type-wheel, a register, an operating handle or key whose operation in setting the type-wheel also effects the registry of the number at which the type-wheel is set, a resetting-spring for the type-wheel, and a printer which releases the type-wheel when its number has been printed and permits its spring to restore it to normal position, substantially as described.

17. In a registering-machine, the combination of a type-wheel, a series of keys of different values common to said wheel, the operation of any one of which sets the wheel at a number representing its value, a resetting-spring for the type-wheel, and a printer which releases the type-wheel when its number has

been printed and permits its spring to restore it to normal position, substantially as described.

18. In a registering-machine, a spring-impelled motor under the control of the operating-keys, in combination with a type-wheel capable of being connected with and disconnected from said motor, substantially as and for the purpose described.

19. In a registering-machine, a motor, a series of operating-keys, and an escapement mechanism interposed between said keys and motor and regulating the movements of the latter under the operations of the keys, in combination with a type-wheel capable of being connected with and disconnected from the motor, substantially as and for the purpose described.

20. In a registering-machine, the combination of a motor, a series of operating-keys, an escapement mechanism interposed between said keys and motor and regulating the movements of the latter under the operations of the keys, a type-wheel capable of being connected with and disconnected from the motor, and a resetting-spring, against the tension of which the type-wheel is moved by the motor, and which restores said wheel to normal position when it is disconnected from the motor, substantially as described.

21. In a registering-machine, the combination of a motor, a series of operating-keys, an escapement mechanism interposed between said keys and motor and regulating the movements of the latter under the operations of the keys, a type-wheel capable of being connected with and disconnected from the motor, a resetting-spring for the type-wheel, and a printer whose operation disconnects the type-wheel from the motor after the printing is effected and permits the spring to restore it to normal position, substantially as described.

22. In a registering-machine, the combination of a motor-wheel, as I, a toothed wheel, as F, driven thereby, a type-wheel, as A, a detent, as J¹, moving with the type-wheel and co-operating with the toothed wheel, and a resetting-spring for the detent and type-wheel, substantially as and for the purpose described.

23. In a registering-machine, the combination of a motor-wheel, as I, a laterally-movable toothed wheel, as F, geared thereto, a type-wheel, as A, a suitably-supported detent, as J¹, moving with the type-wheel and co-operating with the toothed wheel, a coiled resetting-spring, as J², for the detent and type-wheel, and means for moving the toothed wheel laterally to disengage it from the detent, substantially as and for the purpose described.

24. In a registering-machine, the combination of the motor-wheel I, the laterally-movable toothed wheel F, geared thereto, the shaft B, the type-wheel A, and the detent J¹, tight upon said shaft, said detent co-operating with the wheel F, the coiled spring J², the lever M for shifting the wheel F, the impression-frame

co-operating with the type-wheel, and the printing-lever L, operating the impression-frame and the shifting-lever M, substantially as and for the purpose described.

5 25. In a registering-machine, the combination of the impression-frame, its operating-lever L, the operating-keys P, the vibrating bar O', overlying them, and the locking-plate O, moving with the lever L, substantially as
10 and for the purpose described.

26. In a registering-machine, the combination of the operating-keys P and vibrating bar O' with the lever L, locking-plate O, and locking-dog O', substantially as and for the
15 purpose described.

27. In a registering-machine, the combination of a type-wheel and an impression-plate, two inking-ribbons passed between them, and a recording-strip passed between the inking-ribbons, the impression-plate and adjacent
20 ribbon being arranged to receive between them a check or ticket, whereby by a single impression the type-numbers may be printed both upon the recording-strip and upon the check or ticket, substantially as described.

HUGO COOK.

Witnesses:

THOMAS CORWIN,
HENRY THEOBALD.