

(No Model.)

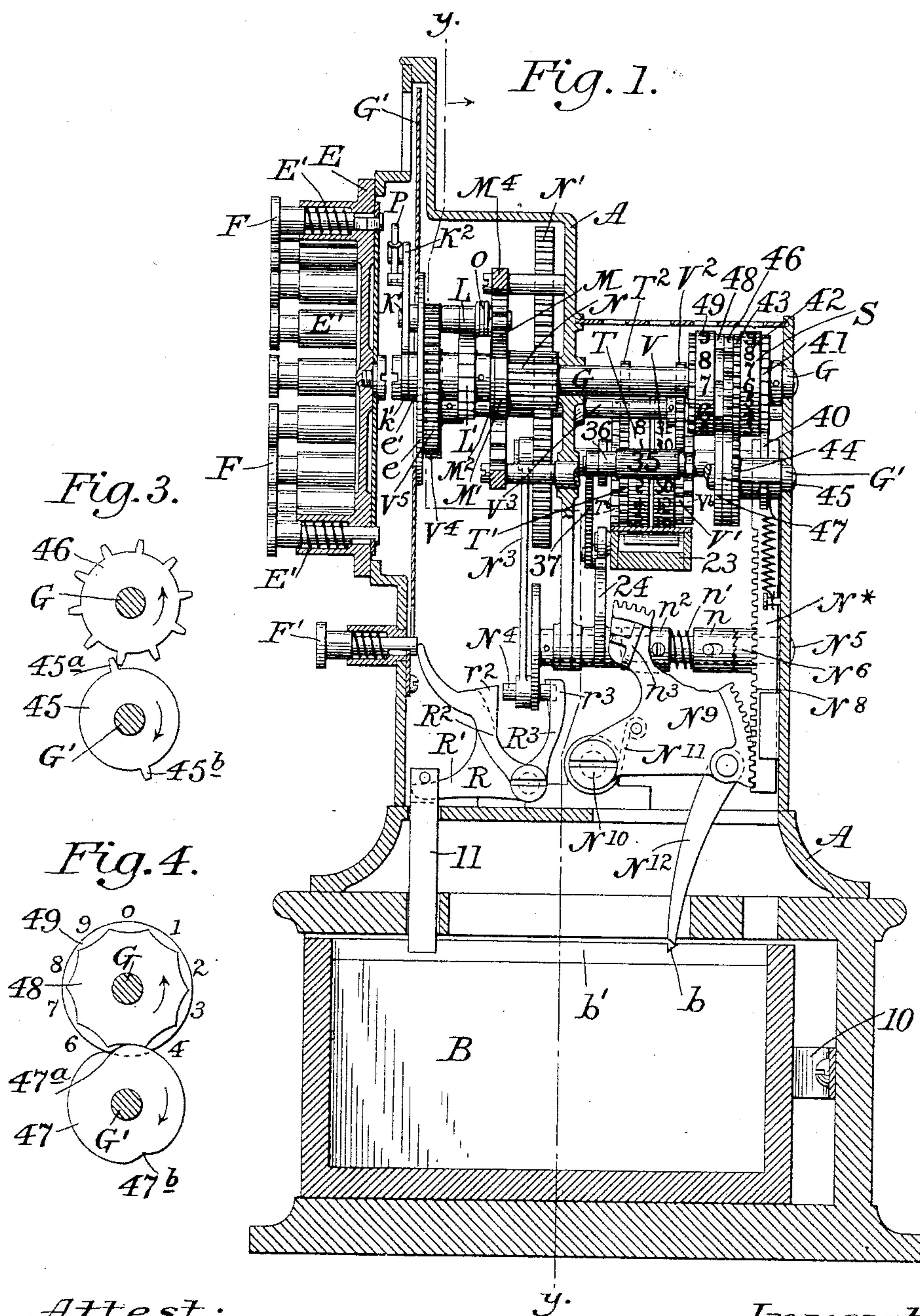
2 Sheets—Sheet 1.

C. W. WEISS.

CASH REGISTER, INDICATOR, AND RECORDER.

No. 512,639.

Patented Jan. 9, 1894.



Attest:  
A. N. Jesbera.  
A. K. Haddad.

Inventor:  
Carl W. Weiss  
by William B. Greeley  
Atty.



(No Model.)

2 Sheets—Sheet 2.

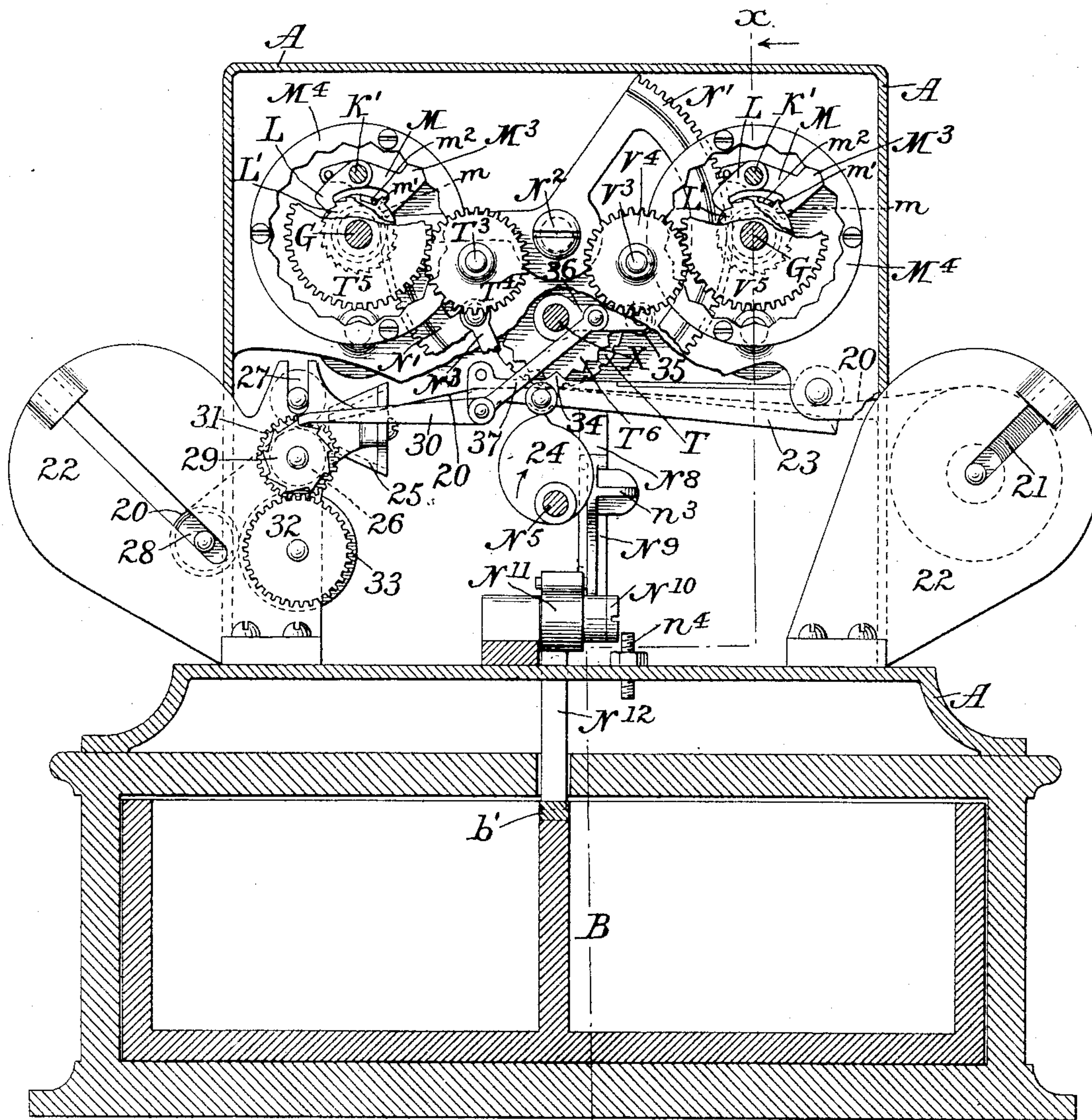
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Fig. 2.



Attest:

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Inventor:

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# UNITED STATES PATENT OFFICE.

CARL W. WEISS, OF BROOKLYN, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE NATIONAL CASH REGISTER COMPANY, OF OHIO.

## CASH REGISTER, INDICATOR, AND RECORDER.

SPECIFICATION forming part of Letters Patent No. 512,639, dated January 9, 1894.

Application filed November 10, 1891. Serial No. 411,450. (No model.)

*To all whom it may concern:*

Be it known that I, CARL W. WEISS, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Cash Registers and Recorders; and I do hereby declare that the following is a full, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

My present invention relates to cash registers of the type shown in Letters Patent of the United States No. 443,024, granted to me December 16, 1890, and consists particularly in the improvements thereon hereinafter described and claimed, and I have herein shown my present improvements as applied to a machine of the particular form shown and described in my application for Letters Patent, serially numbered 400,575.

My objects are to improve the means for guarding effectually against any improper movement of the devices which actuate the adding mechanism, to provide means whereby the amount of each sale may be printed separately upon a recording tape, to enable the usual adding mechanism which adds by tens to be operated correctly by an indicating mechanism which shows twice ten units, and variously to improve the construction and operation of the register.

In the drawings I have shown so much of the mechanism which is shown and described in said patent and pending application as may be necessary to enable the operation of the register to be understood and as far as possible I have identified like parts by the same letters and numerals of reference.

In said drawings, Figure 1 is a vertical section of the complete register on the planes indicated by the line  $x-x$  of Fig. 2. Fig. 2 is a vertical section on the planes indicated by the line  $y-y$  of Fig. 1, with parts broken out to show other parts more clearly, and Figs. 3 and 4 are details of the adding mechanism.

In the lower portion of the casing A is fitted a drawer B to slide in and out, and upon its upper front portion are secured plates E, one for each of the two separate indicating mechanisms shown in Fig. 2. The plates are

severally provided with a series of bosses E', E', within which slide the spring-pressed stops or keys F, which are notched to co-operate with the locking disk I, the latter being notched and spring-actuated, all as in my said patent.

In line with the center of each plate E is mounted in suitable bearings a shaft G, upon the end of each of which, near the front plate, is fitted to rotate freely a dial-plate G', preferably carried by a central plate  $e$  having a hub  $e'$ . The said plate may also provide a bearing in its outer end for the rotary pin K' parallel with the shaft G. Fast upon the outer end of the pin K' is an arm K<sup>2</sup>, which at its inner end, as at  $k'$ , embraces the end of the shaft G to permit of slight lost motion, and at its outer end bears a spring-actuated trip-latch P, which is made to register with the inner ends of the keys F, F, and in such proximity thereto that when a key is pushed inward it will stand in the path of movement of the outer end of the latch. In the forward movement of the arm K<sup>2</sup>, from its initial position, the latch will trip and yield so as to pass by any key which may have been pushed in, but on the return movement the latch will not yield when it strikes a key but will operate to stop the arm and dial and prevent their further movement.

Upon the pin K' and near its rear end is pivoted a pawl L adapted to engage a ratchet-wheel L' which is fixed to the shaft G and has teeth corresponding in number with the keys F, F, said teeth being so inclined as that the pawl will engage the wheel as the dial-plate G' and arm K are moving forward only. The pawl is pressed toward the teeth by a spring  $o$ .

Fast to the rear end of the pin K' is a detent M adapted to engage a single notch  $m$  in the periphery of the disk M' mounted to turn loosely on the shaft G, the engagement of the detent M with the notch being enforced by the spring  $o$ . The detent M has a rearwardly projecting beak which carries a pin overlying the pawl L to force the pawl against its ratchet-wheel L' and lock the latter against accidental movement when the detent is not in engagement with the disk.

The disk M' is fast to a pinion N, also loose



upon the shaft which meshes with an oscillating gear segment  $N'$ , journaled on a stud  $N^2$ . Said segment is oscillated by means hereinafter described, and the amplitude of its oscillation is such that the pinion  $N$  and disk  $M'$  receive a complete rotation first in one direction and then in the other, the disk, or the disk and pinion together, constituting what may be termed the driving member of the combination which includes the indicating dial, the devices for intermittently connecting it with the disk or driving member, and the keys co-operating with such devices to determine the points of connection and disconnection and the consequent degree of movement imparted by the driving member.

In the initial position of the disk  $M'$  the notch  $m$  stands directly under the tooth of the detent  $M$ , and the detent would therefore engage the notch and make a complete rotation with the disk, carrying the dial-plate  $G'$  and pawl  $L$  with it, if means were not employed to prevent the engagement at such time. To this end, as fully described in my said application, a second disk  $M^2$ , formed with a notch somewhat wider than the notch  $m$ , and with a tooth  $m'$  projecting from its periphery, is mounted loosely upon the shaft  $G$ , close to the disk  $M'$ . A pin in disk  $M'$  enters the notch  $m$  and compels the two disks to move together with some lost motion. In the initial position the parts are in the position with the notch  $m$  closed by the disk  $M^2$ .

The first movement of the pinion  $N$  moves the first disk  $M'$  through a complete rotation into position with the notch  $m$  under the detent  $M$ . The second disk  $M^2$  moves with the first until the tooth  $m'$  strikes the detent, when the second disk will be stopped and the notch will be opened allowing the detent to enter said notch. On the second or backward rotation of the disk the detent  $M$  will be carried with it until it is thrown out by the partial rotation of the pin  $K'$  due to the contact of the trip-latch  $P$  with a depressed key. The detent will then cease to move while the disk  $M'$  will continue to move until it returns to its initial position. Just before it reaches such position the tooth  $m'$  on the second disk  $M^2$  will strike the detent  $M$ , this time on the other side, causing the second disk  $M^2$  to close the notch  $m$  and restoring the disks to their initial position. The dial-plate, detent and pawl will be left in the position where they stopped until they are returned to their initial position, as follows: On the next forward movement of the pinion  $N$  and disk  $M'$  and  $M^2$ , the tooth  $m'$  of the second disk, when it reaches the point where the detent stopped, will contact with the detent, opening the notch  $m$  and allowing the detent to enter the same, when the detent will be moved to its initial position, carrying with it the dial-plate  $G'$  and the pawl  $L$ , the latter during this movement passing idly over the teeth of the ratchet  $L'$ . During these movements the shaft  $G$  will be rotated only while

the detent  $M$  is in engagement with the disk  $M'$ . Consequently the shaft is rotated only in the proper direction and to the proper extent to cause the adding mechanism  $S$  to increase the value shown at the sight opening by the value of the key depressed.

The means for oscillating the segmental rack  $N'$  may consist of a pitman  $N^3$  pivoted to the segment and to a crank-pin  $N^4$  carried by a shaft  $N^5$ , the relations of the several parts being such that a complete rotation of the shaft in one direction causes the rack to oscillate to and fro and to return to its initial position. The shaft has a slipping clutch connection with a pinion  $N^6$  in mesh with a rack upon a rack-bar  $N^*$  which reciprocates longitudinally in ways secured to the casing. The pinion is loose upon the shaft and during the upward movement of the rack-bar the teeth of the pinion will slip idly over the teeth of the sleeve without rotating the shaft. The rack-bar  $N^*$  bears a second rack  $N^8$  which meshes with a segmental rack or gear  $N^9$  pivoted at  $N^{10}$  and impelled downward by gravity or by a strong spring  $N^{11}$ . An arm  $N^{12}$  carried by the segmental rack  $N^9$  engages a notch  $b$  in a bar  $b'$  carried by the drawer  $B$ . The drawer is held as usual by a bolt 11, and when the bolt is withdrawn the drawer will be started out by the usual spring 10. The spring  $N^{11}$  will then act through the rack  $N^9$  both to throw the drawer further out, through the arm  $N^{12}$ , and to move the rack  $N^*$  downward, rotating the shaft  $N^5$  and causing the oscillation of the segmental rack  $N'$  through the described mechanism.

The devices for releasing the drawer  $B$  and for locking the actuating mechanism against improper movement are all operated by the pushing in of a single key  $F'$ , which is adapted to move an escapement frame  $R$ . Pressure upon the key  $F'$  raises the bolt 11 and moves the stop out of the path of the crank-pin, allowing the mechanism to move under the impulse of the spring  $N^{11}$ .

The devices thus far referred to are the same as in my said application and have been described only to make the construction and operation of the remaining devices more readily understood. In my said pending application I have shown devices connected with the segment  $N$  for preventing, under certain circumstances, an improper movement of the detent  $M$  and pawl  $L$  about the shaft  $G$ . It is undesirable that said pawl and detent should move except when the tooth of the latter is in the notch of the disk  $M'$ . To the end, therefore, that such movement may be prevented effectually whenever the detent tooth is out of said notch and in whatever position the detent and pawl may be, I have formed the rear of the detent with a tooth  $M^3$  and have fixed in the plane of movement of the detent, an interiorly notched ring  $M^4$  of such interior diameter as that the tooth  $M^3$  shall enter one of the notches of said ring as soon as the detent is raised from the notch of



the disk M', thereby locking the detent, and with it the pawl L and the adding mechanism S, until the detent again falls into the open notch of said disk.

5 As an additional feature of the present machine I have provided a mechanism for printing upon a web or tape of paper the amount of each sale in succession. Two printing-wheels T and V the one for dollars and the  
10 other for half-dimes, are supported side by side upon a shaft X. Each printing-wheel is provided with a gear T' and V' respectively. Each gear meshes with a corresponding gear T<sup>2</sup> or V<sup>2</sup> upon a shaft T<sup>3</sup> or V<sup>3</sup> which carries  
15 a gear T<sup>4</sup> or V<sup>4</sup> in mesh with a gear T<sup>5</sup> or V<sup>5</sup> mounted upon the respective shaft G to move with its respective dial-plate G'. The gears are so proportioned that each printing-wheel rotates in unison with its respective shaft G,  
20 and the consequence is that when the shaft G is brought to rest the printing-wheels will be stopped with the proper character at the line of print. Each printing-wheel is also provided with a star-toothed wheel T<sup>6</sup> or V<sup>6</sup>  
25 for a purpose to be referred to.

The paper in the form of a tape 20 is supported in a roll 21, by a suitable casing 22, and is fed forward to and through a trough or carrier 23 which is pivoted at a suitable  
30 point and is raised to bring the paper in contact with the printing-wheels by means of a cam 24 upon the shaft N<sup>5</sup>, the cam acting preferably upon an anti-friction roller carried by the trough. From the carrier 23,  
35 the paper passes, through a guide 25, and between an actuating-roll 26 and a weight-roll 27 to the winding-roll 28. The roll 26 carries a ratchet-wheel 29 which is engaged and driven by a pawl 30 pivoted to  
40 the paper carrier. Said roll has a gear 31 in mesh with a gear 32 on the shaft of a second roll 33 for driving the winding-roll 28. The gears and rolls bear such a relation to each other that the winding-roll 28 normally  
45 rotates with a somewhat greater speed than the roll 26 and consequently takes up any slack produced by the roll 26, while the paper is fed forward the proper distance for printing a new impression, every time the paper carrier is raised to bring the paper into  
50 contact with the printing-wheels, by the pawl 30 which is actuated by the carrier 23. For the purpose of bringing the characters on the printing-wheels exactly into the line of  
55 print, the paper-carrier 23 is provided on each side with a tooth 34 which is adapted to enter the notches of the star-wheels T<sup>6</sup> or V<sup>6</sup> and so bring the respective printing-wheel into true position should it have been left by  
60 the actuating mechanism a little to one side or the other.

Since the printing-wheels, at each operation of the register, may move through any number of spaces, from one to nineteen, or  
65 whatever the maximum may be, it is necessary that provision should be made for inking the printing-wheels at the line of print,

at each operation. To this end a suitable inking-roller 35, extending across the face of the wheels, is carried by an arm 36 pivoted upon  
70 the shaft X. A connecting rod 37 is pivoted to one of said arms and to the paper-carrier 23 so that at each downward movement of the latter the inking-roller is caused to pass over the characters in the line of print and  
75 is then moved back out of the way during the upward movement of the paper-carrier to make an impression.

In the operation of the register the action of the indicating and adding mechanisms is  
80 produced in the manner fully explained in my said application. By the connection of the gears T<sup>5</sup> and V<sup>5</sup> with the dial-plate G' they are made to partake of the movement of the latter, that is, with each operation of the reg-  
85 ister they are first moved backward to the initial position or 0-point and are then moved a distance corresponding to the amount to be registered. The gearing between the wheels T<sup>5</sup> V<sup>5</sup> and their respective printing-wheels T  
90 and V is so arranged that the latter rotate in unison with the former and that when the dials G' are in their initial position the printing-wheels stand with 0 at the printing-point. As will be understood, the shaft N<sup>5</sup>, makes,  
95 during each operation of the register, a single rotation and as the effective portion of the cam 24 reaches its operative position just before the rotation of the shaft is completed, the printing-wheels will have come to rest  
100 before the paper is brought into contact therewith at the line of print, and the movement of the paper by the roll 26, the ratchet-wheel 29 and pawl 30 will have ceased by reason of the fact that the pawl and the paper-  
105 carrier 23 form a substantially straight line before the paper reached the wheels. The inking-roller will also have completed its function and be moved out of the way of the paper-carrier.  
110

In certain classes of trade it is of great advantage to have a register which will indicate a sale amounting to more than ten dollars and I have accordingly sought in the present in-  
115 stance to combine such an indicating mechanism with the usual adding mechanism which adds by tens. In my said application I have shown both an indicating mechanism for dol-  
lars from one to twenty, and an indicating mechanism for cents, by fives, and have shown  
120 the latter alone as having an adding mechanism connected therewith. In the present case the dollar indicating mechanism has connected therewith an adding mechanism which is identical with that for the cent indicating  
125 mechanism except as modified as hereinafter described. Fast upon the shaft G of the dollar indicating mechanism are fixed the usual ratchet-wheel 41, with which co-operates the  
130 pawl 40 to prevent reverse movement, an adding-wheel 42, showing dollars from 0 to 9 on each half of its periphery, and a gear 43 which meshes with a gear 44 mounted loosely on the shaft G'. Fixed to the gear 44, to rotate



therewith, is a gear 45, having, instead of a single tooth, two diametrically opposite teeth 45<sup>a</sup>, 45<sup>b</sup>, each of which in turn, as the gear 45 makes a revolution, actuates a gear 46 loose on the shaft G and having ten teeth. Scal-  
 5 loped stop-gears 47 and 48, the gear 48 hav-  
 ing two notches 47<sup>a</sup> and 47<sup>b</sup> and the gear 48  
 having two scallops, are employed to prevent  
 10 movement of the gear 46 except when actu-  
 ated by the teeth of the gear 45. The adding  
 wheel 49, showing successive tens of dollars  
 from 1 to 10, is secured to the gears 48 and  
 46 to operate therewith. Assuming that the  
 15 adding-wheels are both at 0, a movement of  
 the indicating mechanism to any number less  
 than ten would carry the unit adding-wheel  
 with it to expose the same number, on the  
 the first half of the wheel, at the sight open-  
 ing, while a movement of the indicating mech-  
 20 anism to a number between ten and twenty  
 would carry the unit-wheel with it to expose  
 the last figure of that number, on the second  
 half of the wheel, at the sight-opening and  
 would cause, by the tooth 45<sup>a</sup>, a movement of  
 25 the tens-wheel to bring the number "1" to  
 view at the sight opening. On the addition  
 of ten or less, sufficient to make the total more  
 than twenty, the unit-wheel would be moved  
 as before to bring the last figure of the total  
 30 to view and the tooth 45<sup>b</sup> would operate to  
 bring the next figure on the tens-wheel into  
 view. The addition of any number between  
 ten and twenty sufficient to increase the num-  
 ber of tens by two, would bring to view as be-  
 35 fore, the proper unit figure, and would bring  
 both teeth 45<sup>a</sup> and 45<sup>b</sup> into play to produce a  
 double movement of the tens-wheel.

I am aware that the combination of a series  
 of operating keys, an indicator actuated or  
 40 controlled in its movements thereby, a type-  
 wheel or carrier moving in unison with the  
 indicator, and a platen co-operating with the  
 type-carrier, is not broadly new; I am also  
 aware that the combination of a driving mem-  
 45 ber having a defined movement, an indicator,  
 means for intermittently connecting them, and  
 a series of keys co-operating with such means  
 to determine the extent of movement to be  
 imparted by the driving member to the indi-  
 50 cator, is old; but, so far as I am aware, I am  
 the first in the art to combine in a machine  
 of this character a driving member having a  
 defined movement at each operation of the  
 machine, an indicator, a type-carrier moving  
 55 in unison therewith, means for intermittently  
 connecting the indicator with the driving  
 member to cause the latter to impart differ-  
 ent portions of its movement to the indicator,  
 and a platen co-operating with the type-car-  
 60 rier to print at each operation of the machine  
 the number exhibited by the indicator, and I  
 desire to broadly secure the same, and the  
 other combinations set forth in my claims,  
 without regard to the particular character  
 65 of the driving member, the indicator, or  
 the intermediate devices, except as may be

indicated by the terms of my respective  
 claims.

I claim as my invention—

1. The combination in a cash-register, of a 70  
 rotating-disk, a detent adapted to engage said  
 disk and supported to rotate about the axis  
 of said disk, an indicating device supported  
 to move with said detent means to disengage  
 said detent from said disk, a tooth formed 75  
 upon said detent, and a fixed toothed ring to  
 engage said tooth when the detent is disen-  
 gaged from the disk, substantially as shown  
 and described.

2. The combination, in a cash-register, of a 80  
 rotating disk, a detent adapted to engage said  
 disk and to rotate therewith, an indicating de-  
 vice connected to move with said detent, means  
 to disengage said detent from said disk, a gear  
 supported and connected to rotate with said 85  
 detent and indicating device, and a printing-  
 wheel driven by said gear, substantially as  
 shown and described.

3. The combination in a cash register, of in-  
 dependent indicators, independent printing- 90  
 wheels connected severally to move with their  
 respective indicators, a star-wheel connected  
 to each of said printing-wheels, a pivoted pa-  
 per-carrier having a tooth to engage each of  
 said star-wheels, and a cam to move said pa- 95  
 per-carrier against the printing-wheel, sub-  
 stantially as shown and described.

4. The combination of a driving member  
 having a defined movement at each operation  
 of the machine, an indicator, a type-carrier 100  
 moving in unison therewith, a latch or coup-  
 ling device for connecting the indicator and  
 driving member and means co-operating there-  
 with to disconnect them to cause the driving  
 member to impart different portions of its 105  
 movement to the indicator and type wheel,  
 and a platen actuated by the motor or driv-  
 ing mechanism of the machine and cooper-  
 ating with the type-carrier to automatically  
 print at each operation of the machine the 110  
 number exhibited by the indicator, substan-  
 tially as described.

5. The combination of a driving member  
 having a defined movement at each operation  
 of the machine, an indicator, a type-carrier 115  
 moving in unison therewith, means interme-  
 diate the indicator and driving member for  
 connecting and disconnecting the two, a se-  
 ries of keys cooperating with such means to  
 determine the extent of movement to be im- 120  
 parted by the driving member to the indi-  
 cator and type-carrier, and a platen actuated  
 by the motor or driving mechanism and co-  
 operating with the type-carrier, whereby upon  
 setting a key and operating the machine the 125  
 indicator will be set to indicate and the type-  
 carrier and platen will automatically print  
 the value of such key, substantially as de-  
 scribed.

6. The combination of a driving member 130  
 having a defined movement at each operation  
 of the machine, an indicator, a type-carrier



moving in unison therewith, means intermediate the indicator and driving member for connecting and disconnecting the two, a series of keys cooperating with such means to  
5 disconnect the driving member and indicator at different points determined by the position of the key, and a platen actuated by the motor or driving mechanism and cooperating with the type-carrier, whereby upon setting  
10 a key and operating the machine the indicator will be set to indicate and the type-carrier and platen will automatically print the value of such key, substantially as described.

7. The combination of an oscillatory driving member having a defined movement at  
15 each operation of the machine, an indicator, means for intermittently connecting the driving member and indicator to cause the former to impart different portions of its movement to the latter, a series of keys cooperating with such means to determine the extent  
20 of movement imparted to the indicator, a type-carrier moving in unison with the indicator, and a platen actuated by the motor or driving mechanism and cooperating with said  
25 carrier, whereby upon setting a key and operating the machine the indicator will be set

to indicate and the type-carrier and platen will automatically print the value of such key, substantially as described. 30

8. The combination of an oscillatory driving disk making substantially a complete revolution in each direction at each operation of the machine, an oscillatory indicator-dial mounted upon the same axis, a latch for  
35 connecting the disk and dial, a series of keys cooperating with the latch to disconnect the disk and dial at different points determined by the position of the operated key, a type-carrier moving with the indicator-dial, and a  
40 platen actuated by the motor or driving mechanism and cooperating with said carrier, whereby upon setting a key and operating the machine the indicator will be set to indicate and the type-carrier and platen will  
45 automatically print the value of such key, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CARL W. WEISS.

Witnesses:

A. N. JESBERA,  
W. B. GREELEY.