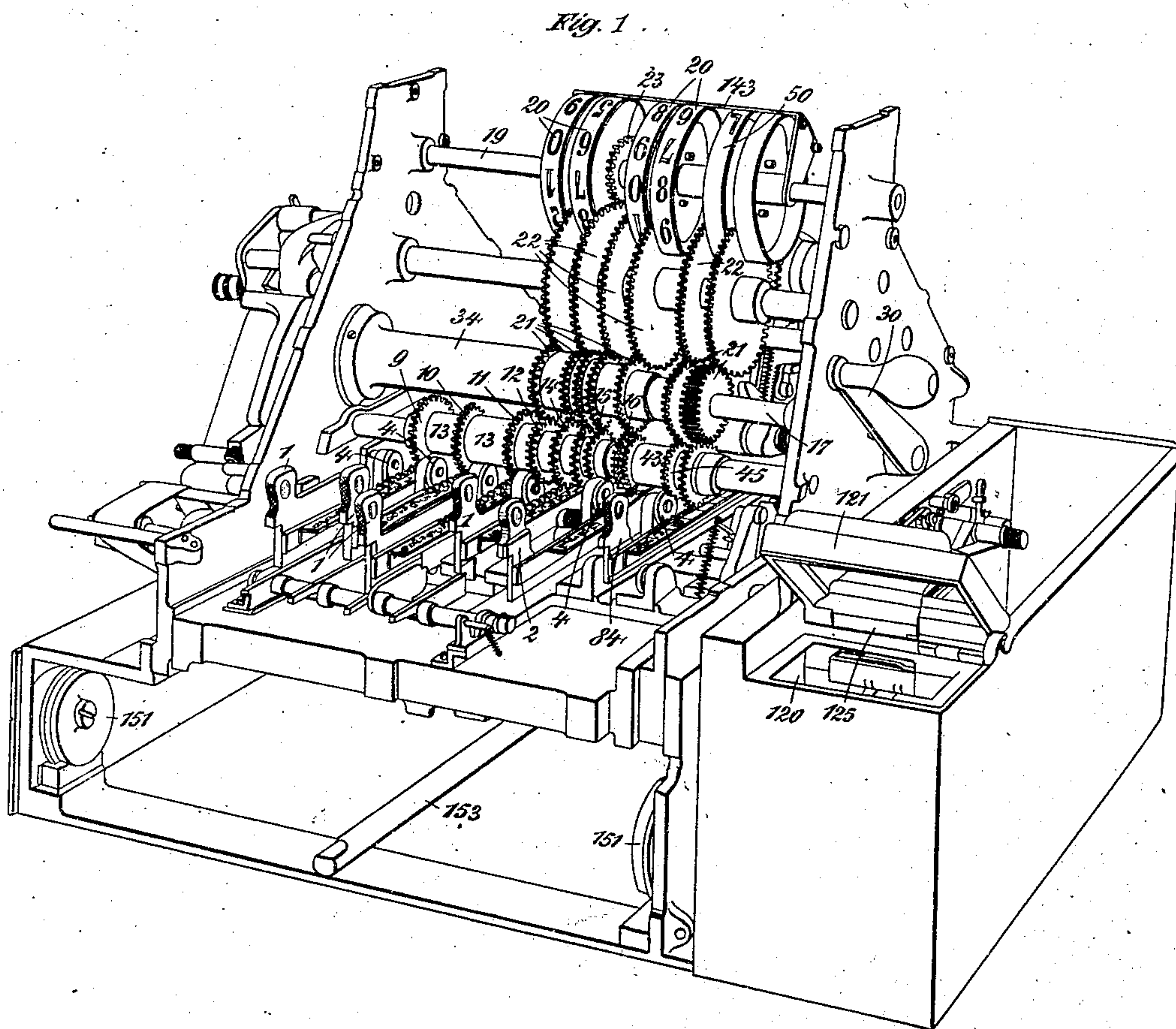


907,414.

E. SEIPEL.
CASH REGISTER.
APPLICATION FILED DEC. 9, 1901.

Patented Dec. 22, 1908.

4 SHEETS—SHEET 1.



Witnesses
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H. J. Sand

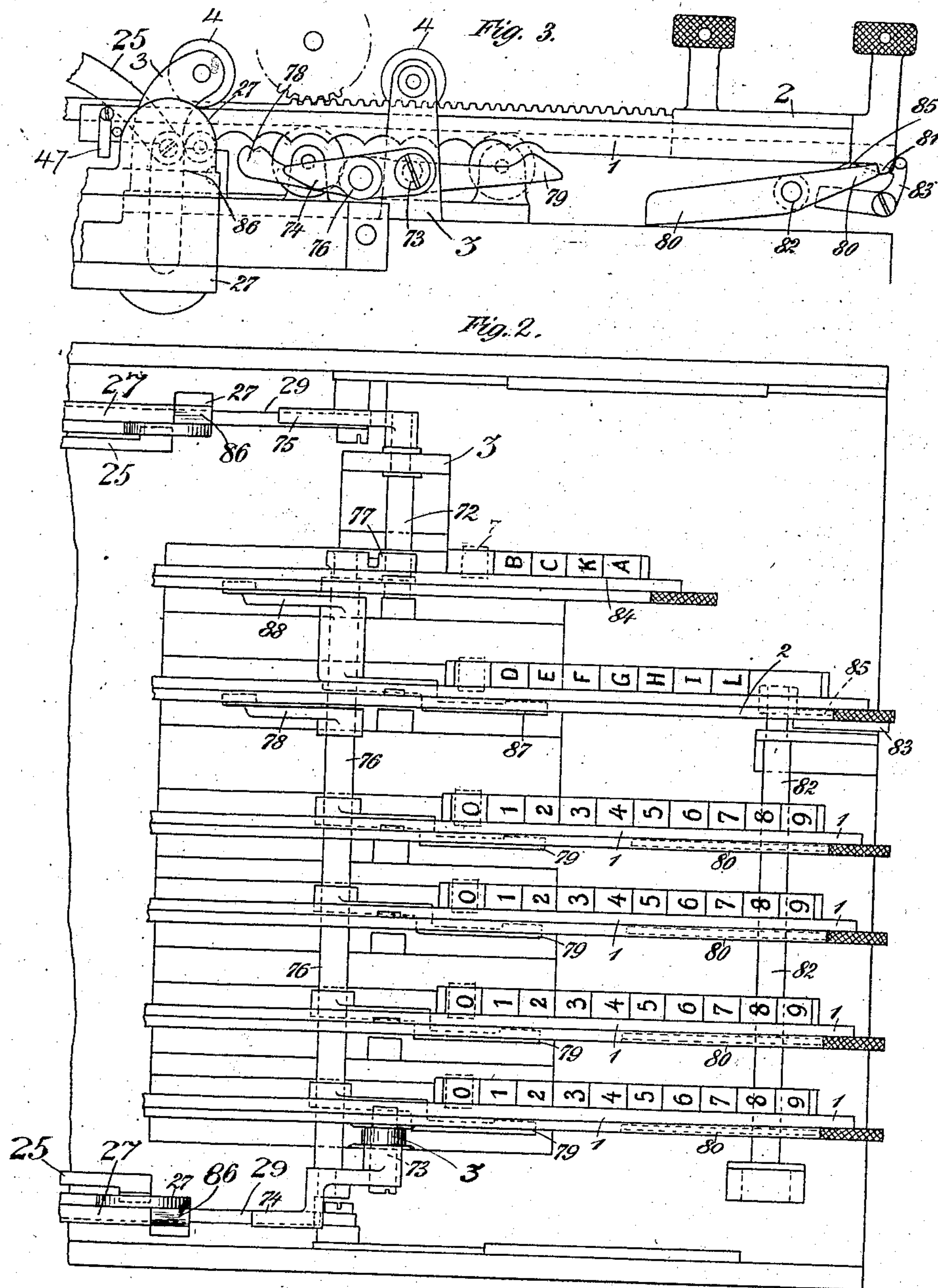
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4 SHEETS—SHEET 2.



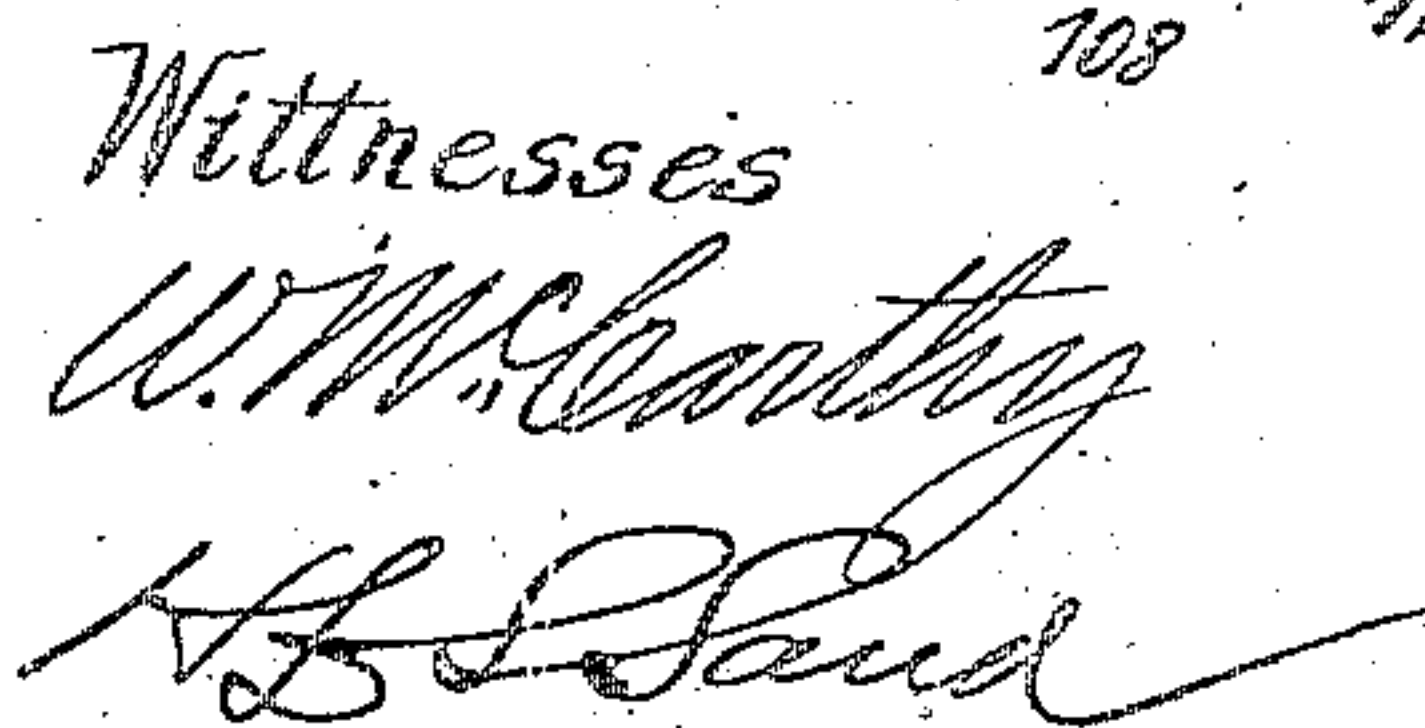
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4 SHEETS—SHEET 3.

Fig. 4.

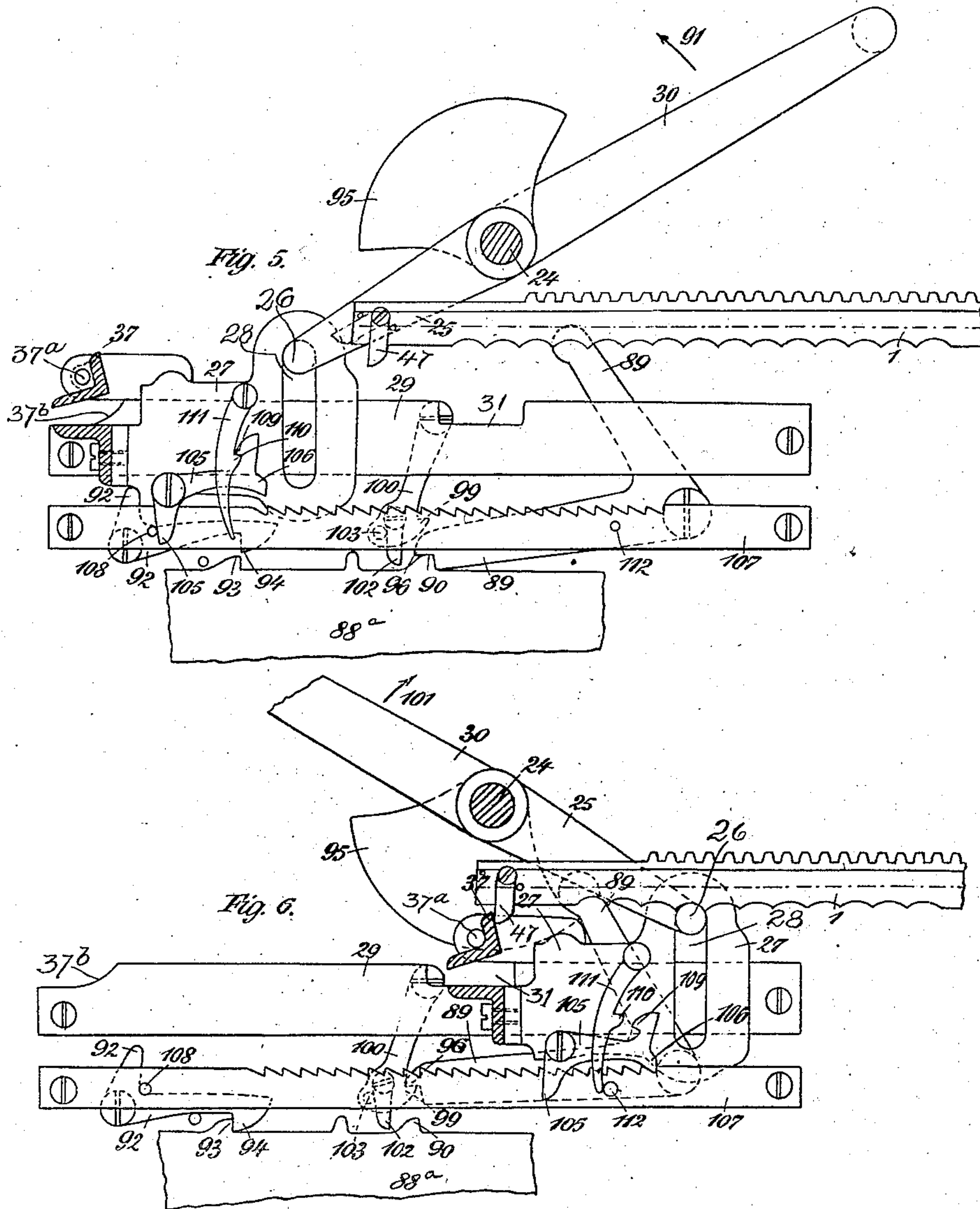


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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

ERNST SEIPEL, OF BERLIN, GERMANY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE
NATIONAL CASH REGISTER COMPANY, OF DAYTON, OHIO, A CORPORATION OF OHIO,
INCORPORATED IN 1906.

CASH-REGISTER.

No. 907,414.

Specification of Letters Patent.

Patented Dec. 22, 1908.

Application filed December 9, 1901. Serial No. 85,213.

To all whom it may concern:

Be it known that I, ERNST SEIPEL, a subject of the King of Prussia, German Emperor, and a resident of Berlin, in the Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in Cash-Registers, of which the following is a full, clear, and exact description.

My invention relates more particularly to that class of registers in which a series of denominational slides are moved to various adjusted positions, and the completion of the operation of the machine is effected by means of a suitable operating mechanism such as a crank handle; among the objects of my improvements being to provide certain interlocking mechanisms between these denominational slides, and automatically to return said slides to zero position, and also to provide a novel drawer locking mechanism.

With these and incidental objects in view, the invention consists in certain novel features of construction and combinations of parts, the essential elements of which are set forth in appended claims and a preferred form of embodiment of which is hereinafter specifically described with reference to the drawings which accompany and form part of this specification.

Of said drawings: Figure 1 represents a perspective view of a machine containing my invention, the cabinet being removed. Fig. 2 represents a top plan view of the slides and the interlocking mechanism. Fig. 3 represents a side elevation of said slides and interlocking mechanism. Fig. 4 represents a vertical cross section through the setting slides and their connecting gears, the special transaction slide being omitted, however. Figs. 5 and 6 represent detail side elevations of the locking mechanism for the cash drawer and also one of the full-stroke devices. Fig. 7 represents a detail side elevation of one of the guide rollers and support for the slides. Fig. 8 represents an enlarged detail view of a portion of the locking mechanism for the slides. Fig. 9 represents a detail side elevation of the other full-stroke device; and Fig. 10 represents a top plan view of the same.

The adjustable slides comprise four amount slides 1 (see Fig. 2), a clerk slide 2 and a special transaction slide 84, the

amount slides being provided with numerals from zero to nine inclusive and the clerk slide being provided with various letters to designate the different clerks and the special transaction slide being provided with any other suitable designations such as shown in Fig. 2 which may arbitrarily be determined upon to represent the various special transactions such as "No sale", "Received-on-account", "Paid Out" and "Charge".

When the slides are all at normal position the zeros upon the amount slides, and the blank spaces upon the other two slides are visible through suitable openings 7 in the cabinet (see dotted lines Fig. 2), so that the amount of movement of said slides may be viewed through said openings and the slide may be set to any desired position. The slides are guided in their reciprocatory movements by means of rollers 4 (see Figs. 3 and 7) mounted upon stationary parts 3 of the main frame. The setting movement of the various slides is transmitted to corresponding indicators 20 (Figs. 1 and 4) by the following means. The movement of each figure slide 1 is imparted to one of the gear wheels 9, 10, 11 and 12 which are in engagement with the teeth formed on the upper side of said slides as shown in Fig. 3, so that the reciprocatory movement of said slide is imparted to said gear wheels; and said wheels 9, 10, and 11 are mounted on the ends of concentric loosely revoluble sleeves 13 placed one inside the other and each of which carries at its opposite end a cog wheel 14, 15 or 16. The cog wheel 12 is simply loosely revolubly mounted on the outermost sleeve 13 and directly transmits the movement of its figure slide. Each of the other four cog wheels 12, 14, 15 and 16 gears respectively with a series of cog wheels 21, 22 and 23 which transmit the movement of the slides to the rotary indicators 20 mounted upon a spindle 19. It will thus be seen that when the amount slides are arranged in order to represent dollars and cents from left to right, the indicators 20 will by this nested sleeve arrangement, also indicate at the back of the machine in the proper order from left to right.

Any suitable type wheels may be connected with the cog wheels 21 and the movement of the wheels 22 may be imparted to suitable registering wheels but these

type wheels and registering wheels are not shown herein since they constitute no part of my present invention.

The clerk slide 2 transmits its movement 5 by means of a double cog wheel 43 45, Figs. 1 and 4, and a series of gears 21, 22 and 23 to a further indicator 50; and by similar connections the special transaction slide may be geared to its corresponding indicator, no 10 further detail descriptions of these indicators and the connecting mechanism being necessary since they constitute no part of my present invention.

After the various slides have been set to 15 the desired positions the operation of the machine is completed by means of an operating handle 30 (see Figs. 5 and 6) which operating handle is fast upon a transverse shaft 24. Extending downward from said 20 shaft on each side of the machine are two arms 25 each of which arms carries a pin 26 which engage with slots 28 formed in a slide piece or carriage 27, the purpose of these connections being to oscillate said slide pieces 25 back and forth with the oscillation of the 25 crank handle 30, said slide pieces 27 being guided upon guide bars 29 attached to the main frame of the machine. The aforesaid slide pieces 27, one of them being situated on 30 each side of the machine, are joined together at their rearward ends by a horizontal returning bar 37, which returning bar is pivoted to oscillate upon pivotal points 37^a. When the operating handle 30 is in its nor- 35 mal position as shown in Fig. 5, the returning bar 37 rests at the extremity of its rearward stroke over recesses 37^b formed in each of the guide pieces 29; and when the operating han- 40 dle is thrown rearward in the direction of the arrow shown in Fig. 5, the slide pieces 27 are drawn forward by the arms 25 thereby carrying the returning bar 37 forward and the 45 underside of said bar then slides along the upper surface of the guide piece 29 thereby locking said bar from oscillatory movement, and if any of the slides have been pushed forward into operative position upon the pre- 50 vious registration as shown in Fig. 5, the said returning bar 37 will contact with the pawl 47 fastened upon the end of each of said bars and will thus positively return all of the operated slides to normal position as shown in Fig. 6. When the handle has reached its half stroke as shown in Fig. 6, the returning 55 bar 37 then stands over recesses 31 formed in the guide pieces 29 so that said bar 37 is then free to oscillate and is not held in locking position; and in such position of the handle, any one of the slides may be pushed forward to registering position, when operated 60 in a certain order as hereinafter explained; and when so operated the pawl 47 on the end of the slide will pass over the bar 37, the bar 37 of course tilting to allow the pawl to pass. 65 Upon the return stroke of the handle after

the handle has been set for registration, the slide pieces 27 are of course returned toward the rear of the machine and the rearward end of the returning bar 37 strikes the raised slide-way of the guide-piece 29 and causes 70 said bar to be tilted with its angular portion upwards until the bar has been drawn rearward as far as the recess portion 37^b, in which normal position the bar again rocks backward freely to the position shown in Fig. 5; 75 and in this rearward excursion of course the bar 37 has no effect upon the registering slides since as shown in dotted lines in Fig. 5, the pawl 47 may simply move rearward and allow the bar 37 to pass freely in under it. 80 It will thus be seen that in the normal operation of the machine the lever 30 stands in the position shown in Fig. 5, and in order to operate the machine the operator first throws the handle into the position shown in Fig. 6, 85 upon which operation the slides are all automatically returned to zero; and then after the slides have been set for a new registration the operating handle is oscillated back to normal position, in which operation the 90 returning bar 37 is carried back to normal position at the rear of the machine without having any effect upon the setting levers.

I will now describe the interlocking mechanism between the various slides, by which 95 when the clerk slide is operated the special transaction slide is locked from further movement and the amount slides are unlocked, and whereby as soon as any one of the amount slides has been operated the clerk 100 slide will be locked, so that if a mistake has been made in setting the special transaction slide, all of the amount slides and the clerk slide will have to be returned to normal position, and if a mistake has been made in set- 105 ting the clerk slide, all of the amount slides must be returned to zero before the correction of the adjustment can be made. Extending below the entire set of slides is a rock shaft 76 (see Figs. 2 and 3), the ends of 110 which shaft are pivotally mounted in levers 74 and 77, each of which is mounted on a short spindle 72 73. The lever 74 is also prolonged rearward, while a separate lever 75 corresponding to the prolonged lever 74 115 is mounted on the lever 72. On the shaft 76 are rigidly mounted four levers 79 which extend forward. The outer ends of these four levers are engaged in the under teeth of the four amount slides 1, and a lever 78 which 120 is also fast to the shaft 76, extends rearward in under the teeth of the clerk slide 2. When the four levers 79 are rocked downward, the lever 78 will be rocked upward and vice versa. Mounted loosely upon the shaft 76 125 is a two-arm lever 87 88, the forward arm 87 extending under and engaging the teeth of the clerk slide 2 and the rearwardly extending arm 88 engaging with the teeth on the under side of the special transaction lever 84. 130

Extending under the forward ends of the four amount levers and the clerk slide is a shaft 82, to which are made fast four pawls 80 which rest under the four amount levers and because of their weighted rearward ends cause the forward ends to engage projections 81 upon the underside of the amount slides thereby normally locking the amount slides in zero position. Also fast to the shaft 82 is a lever 85 (see Fig. 8) which rests with its forward free end in the path of a projection formed on the under side of the clerk slide 2. Thus when the clerk slide 2 is operated said projection strikes said lever 85 and rocks it downward thereby rocking the shaft 82 and also rocking the locking levers 80 so as to withdraw their forward ends from the path of the lugs 81 and thus unlock all of the amount levers by this initial movement of the clerk slide 2. And upon such initial movement of the clerk slide 2 a catch pawl 83 (see Fig. 8) drops over the forward end of the lever 85 as shown in dotted lines in said Fig. 8, and thus latches the lever 85 downward and consequently holds the locking levers out of locking position so long as the clerk slide 2 is displaced from normal position; and of course upon the return of the clerk slide 2 to normal position the end of said slide strikes the catch pawl 83 and frees the same from contact with the lever 85 and thereby allows said lever to rise and permit the re-locking of the amount levers by the second rocking of the shaft 82. Upon the half-stroke of the handle in the manner already explained, when the slide pieces 27 and returning bar 37 are drawn forward so as to return all of the levers to normal position, the upper surfaces 86 of the slide pieces 27 (see Fig. 3) strike the levers 74 and 75 thereby rocking said levers about their pivotal points 72 and 73 respectively and thus carrying the rock shaft 76 slightly upward into operative position.

When the amount slides 1 are in normal position as shown in Fig. 3 the forward ends of the levers 79 stand directly in under the forward indentation on the under side of the slides 1 and as soon as the clerk slide 2 is moved, the teeth on its under side ride over the lever 78 and thereby rock the shaft 76 and also oscillate the levers 79 up and down into engagement with the aforesaid forward indentations; then as soon as one of the amount slides is moved, which have been unlocked by the movement of the clerk slide, the solid under portion of said slide now abuts against the lever 79 forcing the same downward and thereby rocking the lever 78 upward to lock against the teeth of the clerk slide 2. Thus it will be seen that as soon as any amount slide is moved after the clerk slide has been moved, the clerk slide will then be positively locked from further movement until all of the amount slides are returned to zero position. The arrangement of the levers

87 and 88 which are arranged respectively under the clerk slide and the special transaction slide is similar to this arrangement of the levers 78 and 79 just described; that is, the forward end of the lever 87 stands under the forward indentation on the under side of the clerk slide when said clerk slide is in normal position so that the movement of the special transaction slide will produce no locking effect upon the clerk slide; but as soon as the clerk slide has been moved its solid portion on the under side thereof will ride over the upper side of the lever 87 and force said lever downward thereby forcing upward the lever 88 into engagement with the indentations on the under side of the special transaction lever and thereby lock the latter lever from movement until the clerk slide has been returned to normal position. Thus it will be seen that after the special transaction lever has been moved and the clerk slide has then been moved and this has been followed by the movement of the amount levers to proper setting positions, both the clerk slide and the special transaction slide will be locked from further movement and the clerk slide cannot be moved until the amount levers have been returned to zero and the special transaction slide cannot be moved until the clerk slide has been returned to zero. Of course all this locking operation takes place when the operating handle 30 is oscillated to its half-stroke position as shown in Fig. 6 at which time the slide pieces 27 force the rock shaft 76 upward so as to permit of this interlocking between the keys, and as soon as the handle has been returned to normal position the rock shaft 76 is again dropped to normal position so as to disable this locking mechanism; and if it is desired to lock the various slides after the handle has returned to normal position any one of the various suitable locking means well known in the art may be employed, I not having shown any such means since it is not an essential part of my present invention.

In order to provide for the release of the cash drawer by means of the operation of the aforesaid operating handle I provide the following mechanism, shown in Figs. 5 and 6. In the initial position of the lever 30, shown in Fig. 5, in which the registering slides 1 are adjusted to a certain amount, the cash drawer 88^a is held locked by one arm of an elbow lever 89 which lies in front of a projection 90 on the cash drawer. When the lever 30 is moved in the direction of the arrow 91, Fig. 5, the following device comes into operation. One arm of a second elbow lever 92 is adapted to engage with a projection 93 on the cash drawer, and the shorter arm of this elbow lever 92 normally bears against the carriage 27 whereby the longer arm of the said lever is held out of engagement with the projection 93, but when the carriage 27 is moved forward by means of the

lever, the shorter arm of the elbow lever 92 loses its support, so that its longer heavier arm descends, and its projection 94 engages the projection 93 on the cash drawer, whereby the latter is locked in its second position. In the further forward movement of the cash lever 30 in the direction of the arrow 91, Fig. 5, the first lock or elbow lever 89 is operated by a segment 95 or the like fixed on the shaft of the cash lever 30 encountering the upper arm of the elbow lever 89 and turning the latter so far that its other arm comes out of engagement with the projection 90 on the cash drawer. On the further turning of the lever 30 the segment 95 turns the elbow lever 89 still further, until a projection 96 on said elbow lever is engaged and caught by the projection 99 of a suspended pawl 100 as shown in Fig. 6. The forward movement of the lever 30 is now ended, so that the registering slides 1 may be adjusted while the addition proceeds in the adding mechanism (not being shown in the drawings). At the end of the return movement of the handle 30, the carriage 27 encounters the shorter arm of the elbow lever 92, and brings the latter out of engagement with the projection 93 of the cash drawer. Both elbow levers 89 and 92 are then out of engagement with the cash drawer. The latter is thus released at the right time and may be withdrawn from the cash register. On the cash drawer being again inserted, the projections on the same encounter a tooth 102 pivotally mounted on the suspended pawl 100, which tooth when the cash drawer is drawn out, gives way or is turned up towards the front, and thus affords no hindrance, but on the insertion of the cash drawer bears against a pin 103 on the suspension pawl 100 and thus cannot yield. Consequently the suspension pawl 100 is carried along with it and turned until it releases the projection 96 of the elbow lever 89 and this latter again comes into engagement with the projection 90 of the cash drawer thus again locking the latter. The cash drawer slides on the usual form of guide rollers such as 151 (see Fig. 1) and if desired an additional guide rod 153 may be provided. In order to prevent fraud or any improper handling, the following arrangement is adopted by means of which any return movement of the lever 30 before the completion of its forward movement is prevented. An elbow lever 105, Figs. 5 and 6, is provided on the front side of the carriage 27 the longer arm of which elbow lever is formed as a pawl 106. If the cash lever 30 be moved backward in the direction of the arrow 101, Fig. 6, the pawl 106 slips over the teeth of a fixed scale or bar 107. If however the further movement of the cash lever 30 be interrupted in an improper manner before the completion of this movement, the pawl 106 engages in one of the teeth of the scale or

bar 107, and prevents a movement in the opposite direction of the cash lever 30. Only at the end of the movement of the cash lever 30 in the direction of the arrow 101 does the pawl 106 come out of engagement with the teeth of the scale or bar 107 as the shorter arm of the pawl 105 encounters a pin 108 provided on the bar 107, so that the other arm of the elbow lever 105 forming the pawl 106 is elevated, and by its own weight the projection 109 on the said elbow lever 106 engages a projection 110 of a catch pawl 111 also mounted on the front end of the carriage 27, which pawl 111 holds the pawl 106 in an elevated position, so that the cash lever 30 can be moved forward in the direction of the arrow, Fig. 15. Only at the end of this forward movement does the pawl 106 again come into engagement with the teeth of the bar 107, the catch pawl 111 encountering a pin 112 provided on the bar 107, whereby the pawl is disengaged from the projection 109. An exactly similar locking mechanism is also provided at the other side of the machine as shown in Figs. 9 and 10, in order that when the forward movement of the cash lever in the direction of the arrow is commenced, it is impossible to make a movement of the lever in the opposite direction. This locking mechanism consists of exactly similar parts to those before described namely a toothed bar 107, a pawl lever 105, catch pawl 111, and contact pins 108 and 112.

In order to provide for the printing of a slip in connection with each operation of the machine, I provide a casing at the right-hand side of the machine as shown in Fig. 1, said casing having an opening 120 into which the slip may be inserted, and then said opening may be closed by means of a lid 121 which is hinged at 125; but as this slip printing mechanism constitutes no part of my present invention I shall not give any further description of the same.

While the mechanism here shown and described is admirably adapted to fulfil the objects primarily stated, it is to be understood that I do not care to confine myself to any one form of embodiment of the invention here disclosed, for it is susceptible of embodiment in various forms all coming within the scope of the claims which follow.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. In a cash register, the combination with a series of amount setting elements, of a special setting element, adjustable to a plurality of different operative setting positions, and means controlled by the displacement of any of said amount elements from normal position for locking said special element against return to normal position after it has been moved therefrom.

2. In a cash register, the combination with a series of amount setting elements, of a special clerks' setting element, a special transaction setting element, means for locking the special transaction setting element when the clerks' setting element is operated, and means for locking the clerks' special element when any one of the amount setting elements is operated.

3. In a cash register, the combination with an operating mechanism, of a series of amount setting elements, a special clerks' setting element, adjustable to a plurality of different operative setting positions, means for locking the amount setting elements until the clerks' setting element is operated, and means for preventing the return of the clerks' setting element to its normal position until the operating mechanism is actuated.

4. In a cash register, the combination with a series of adjustable amount setting elements, of a clerks' adjustable setting element, and a rock shaft common to both sets of elements, with provisions connected with said rock shaft for engaging said elements and locking the clerks' element in its set position after any one of said amount elements has been moved from normal position.

5. In a cash register, the combination with a series of setting elements, of means for returning said elements to their normal positions, a locking device intermediate said elements, and mechanism connected to the returning device for controlling the locking device.

6. In a cash register, the combination with a series of controlling elements arranged to be moved to different positions for different transactions, of locking devices for the different elements for compelling certain successive movements of same, mechanism for returning all the elements to their normal positions, and means for throwing out said locking devices during such return movements.

7. In a cash register, the combination with an operating handle, of a series of amount controlling elements, a special controlling element, interlocking devices between said amount elements and said special element for locking the latter after any one of the former has been moved from normal position, and means connected with said operating handle for enabling and disabling said interlocking means.

8. In a cash register, the combination with an operating handle, of a series of amount controlling elements, a clerks' controlling element and a special transaction controlling element, of interlocking devices between said various elements for locking the clerks' element when any one of said amount elements is operated and for locking said special transaction element when said clerks' element is operated, and means connected with said op-

erating handle for enabling and disabling said interlocking means.

9. In a cash register, the combination with an operating handle, of a series of amount controlling elements, a clerks' controlling element and a special transaction controlling element, of interlocking devices between said various elements for locking the clerks' element when any one of said amount elements is operated and for locking said special transaction element when said clerks' element is operated, and means connected with said operating handle for returning all of said elements to normal position and for causing the operative positioning of said interlocking means.

10. In a cash register, the combination with an operating mechanism having divided movements, of a series of adjustable setting elements, means for returning said setting elements to normal position upon the first portion of movement of said operating mechanism, a cash drawer, two latch devices for said drawer, means for operating one latch upon the aforesaid first portion of movement of said operating mechanism, means for operating the other latch upon the other portion of movement of said operating mechanism, and means for retaining the first operated latch in inoperative position until after the second latch has been operated.

11. In a cash register, the combination with an operating mechanism, of a cash drawer, two latch devices for said drawer, means for successively operating said latches by said operating mechanism, and means independent of said operating mechanism for retaining the first operated latch in inoperative position until the second latch has been operated.

12. In a cash register, the combination with an operating mechanism having divided movements, of a cash drawer, two latch devices for said drawer, means for operating one of said latches upon one portion of the movement of said operating mechanism, means for operating the other latch upon the other portion of movement of said operating mechanism, and means for latching the first operated latch in inoperative position until after the second latch has been operated.

13. In a cash register, the combination with an operating mechanism, of a cash drawer, two latch devices for said drawer, means for successively operating said latches by said operating mechanism, means for retaining the first operated latch in inoperative position until the second latch has been operated, and means for releasing the first operated latch upon the closing movement of the drawer.

14. In a cash register, the combination with an operating mechanism having divided movements, of a cash drawer, two latch devices for said drawer, means for op-

erating one of said latches upon one portion of the movement of said operating mechanism, means for operating the other latch upon the other portion of movement of said operating mechanism, means for latching the first operated latch in inoperative position until after the second latch has been operated, and means for releasing the first operated latch upon the closing movement of the drawer.

15. In a cash register, the combination with a series of amount setting elements adjustable to a plurality of different operative setting positions, of a special setting element also adjustable to a plurality of different operative setting positions, and means controlled by the displacement of any of said amount elements to any one of the said plurality of setting positions, for locking said special element against return to normal position after it has been moved therefrom.

16. In a cash register, the combination with differentially movable value, clerk's and transaction elements, of means preventing operation thereof, out of a predetermined order.

17. In a cash register, the combination with differentially movable value, clerk's and transaction determining elements, of means preventing operation of a clerk's element, after a value element has been moved from normal position, and means preventing operation of a transaction element after a clerk's element has been moved from normal position.

18. In a cash register, the combination with clerk's and value elements capable of assuming a plurality of different determining positions, means preventing movement of a value element until a clerk's element has been moved, and means preventing readjustment of a clerk's element while a value element is away from normal position.

19. In a cash register, the combination with a plurality of differentially movable value elements, an identifying element also movable differentially, means for locking the value elements in normal position until the identifying element has been moved, and means preventing readjustment of said iden-

tifying element while any value element is out of normal position.

20. In a cash register, the combination with a plurality of differentially movable controlling elements all normally operative, of means preventing them from being set except in a predetermined order.

21. In a cash register, the combination with a plurality of differentially movable controlling elements all normally operative, of means controlled by a movement of one of said elements for locking another element against subsequent operation.

22. In a cash register, the combination with two differentially movable setting slides, both normally operative, of locking means preventing them from being set except in a predetermined order.

23. In a cash register, the combination with two differentially adjustable setting slides, both normally operative, of means made operative by adjustment of one of said slides for preventing subsequent adjustment of the other slide.

24. In a cash register, the combination with a plurality of differentially adjustable controlling elements, of means made operative by adjustment of one of said elements for preventing subsequent adjustment of another of said elements.

25. In a cash register, the combination with a reciprocating element having a constant excursion, of an adjacent stationary rack, a pawl carried by said element and adapted to engage the rack and having a depending projection, a locking pawl having a depending projection, and pins on said rack positioned to engage said projections.

26. In a cash register, the combination with a cash safe having a movable part, and having two projections on said movable part, of separate locking devices for engaging said projections, and a common means for causing release of said locking devices.

In witness whereof I have hereunto set my hand in presence of two witnesses.

ERNST SEIPEL.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.