

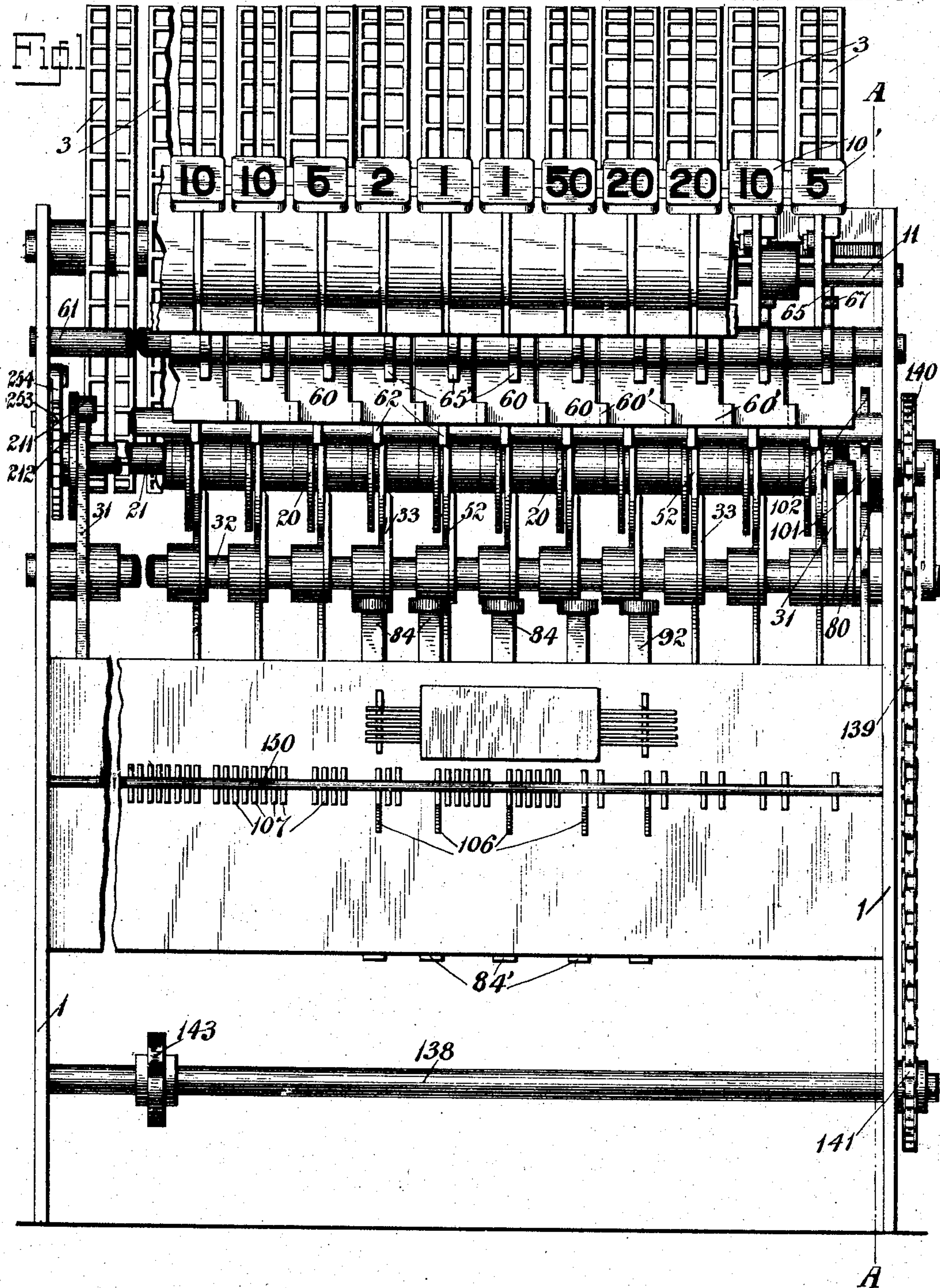
No. 778,176.

PATENTED DEC. 20, 1904.

I. S. DEMENT.  
MECHANICAL CASHIER.  
APPLICATION FILED SEPT. 11, 1903.

NO MODEL.

16 SHEETS—SHEET 1.



Witnesses  
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No. 778,176.

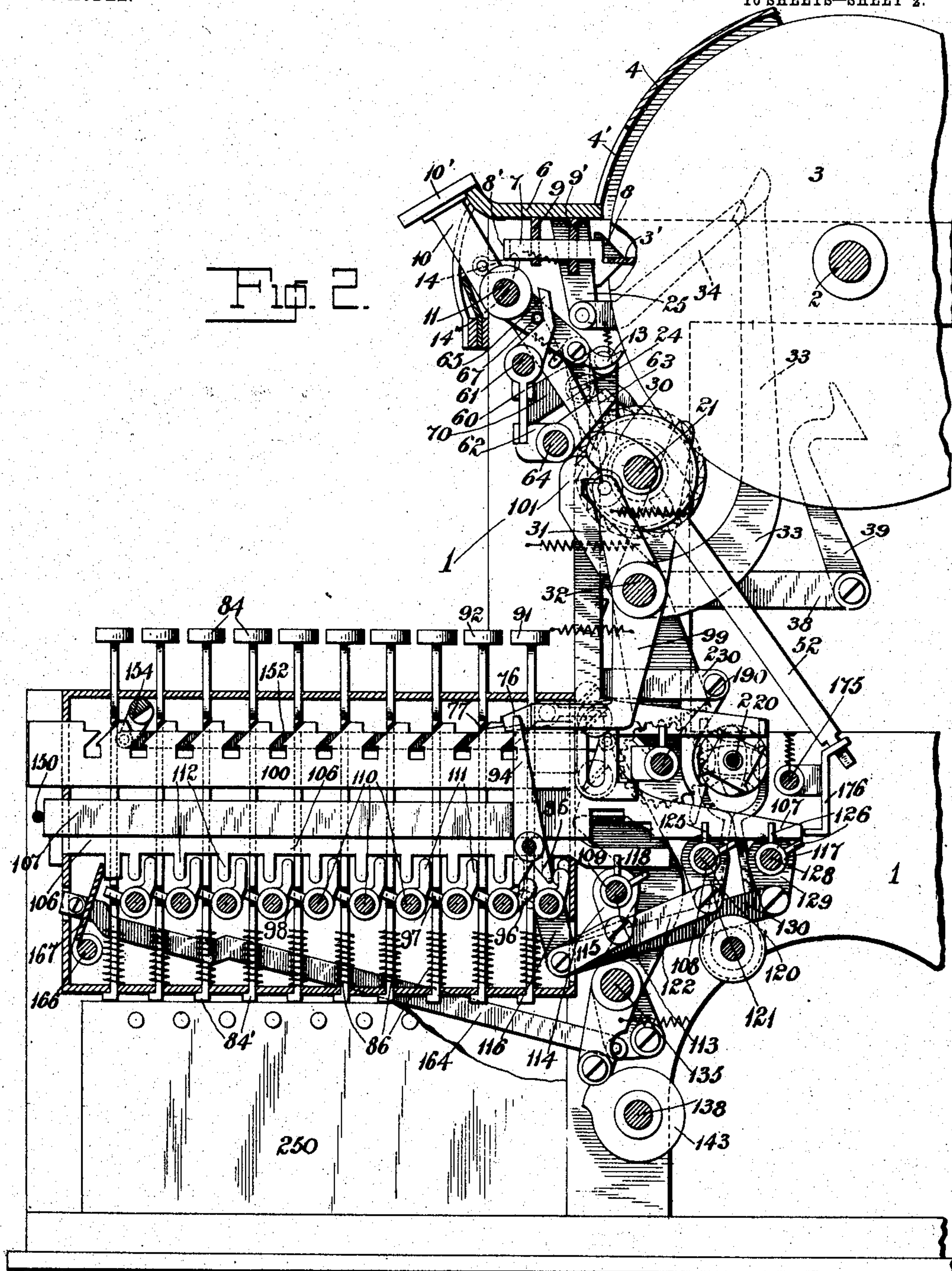
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NO MODEL.

16 SHEETS—SHEET 2.



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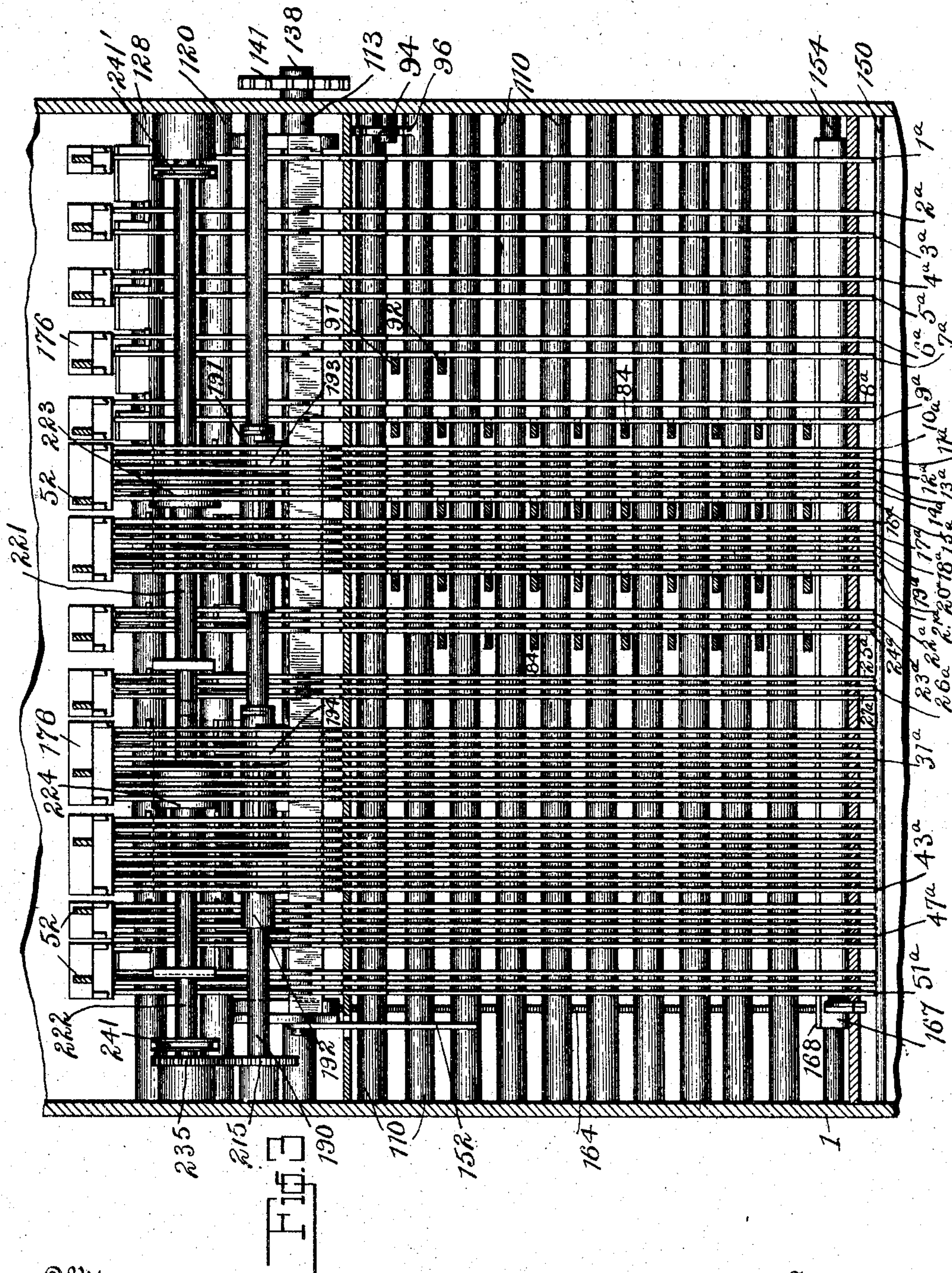
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NO MODEL.

16 SHEETS—SHEET 3.



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No. 778,176.

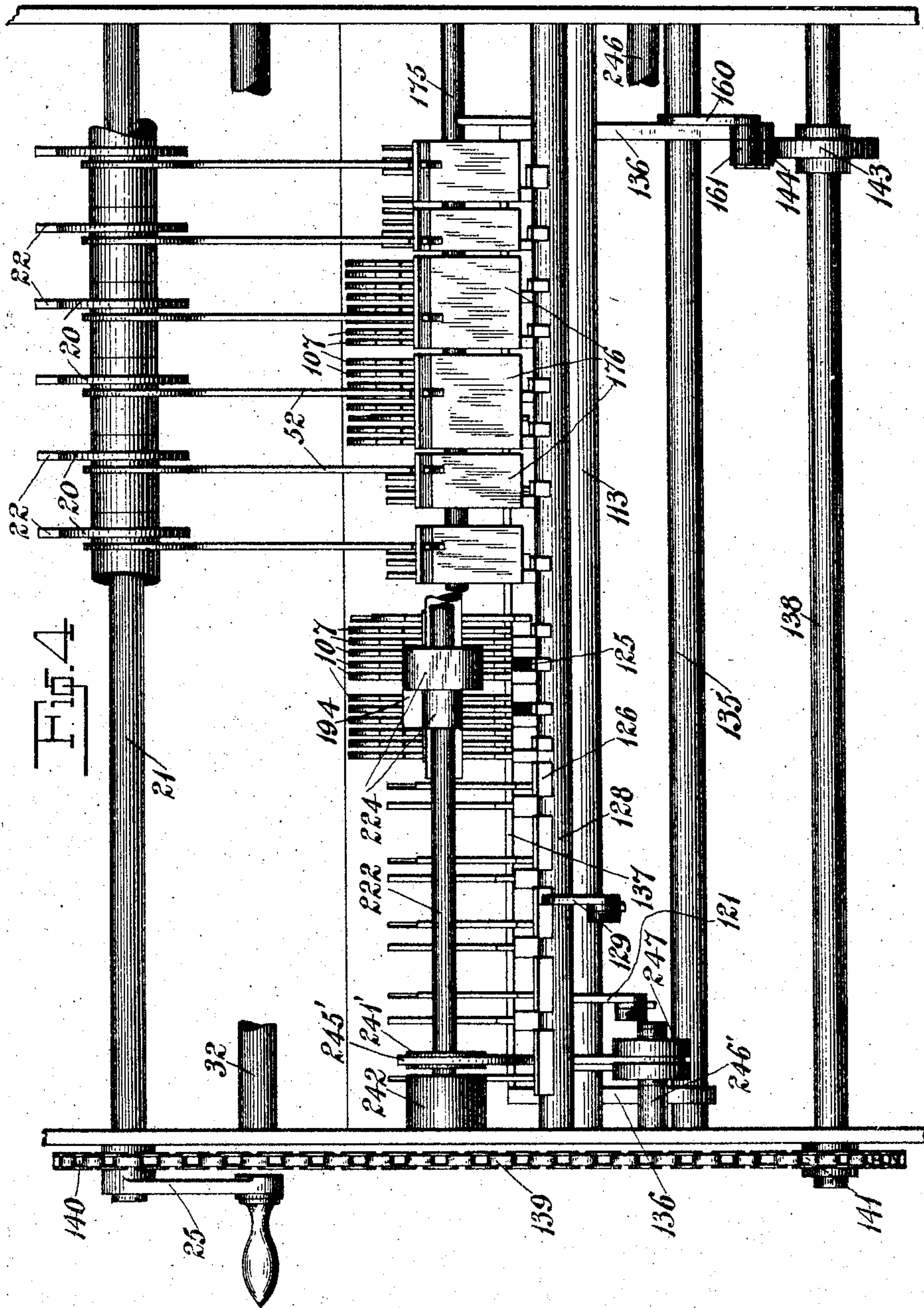
PATENTED DEC. 20, 1904.

I. S. DEMENT.  
MECHANICAL CASHIER.

APPLICATION FILED SEPT. 11, 1903.

NO MODEL.

16 SHEETS—SHEET 4.



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No. 778,176.

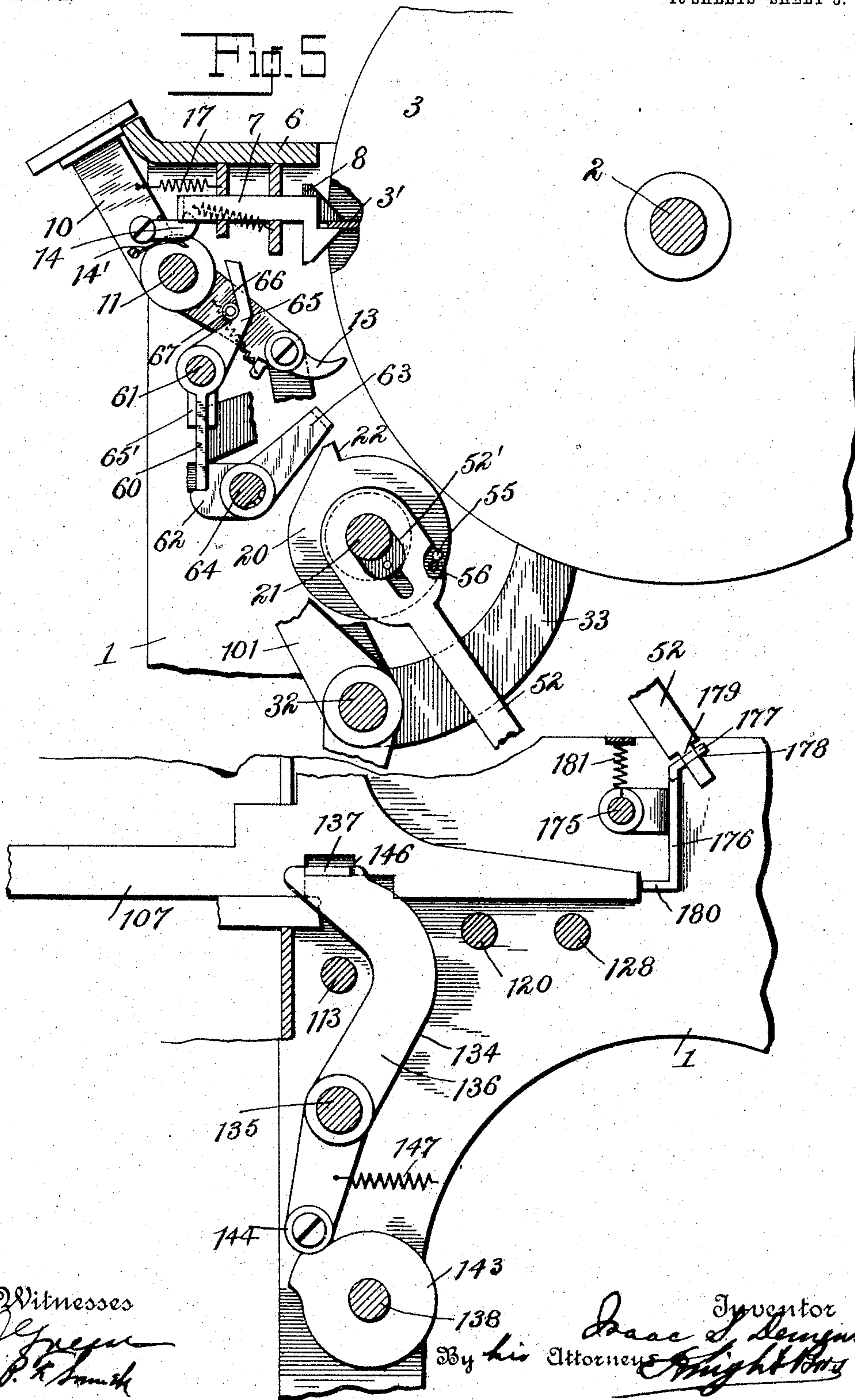
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NO MODEL.

16 SHEETS—SHEET 5.





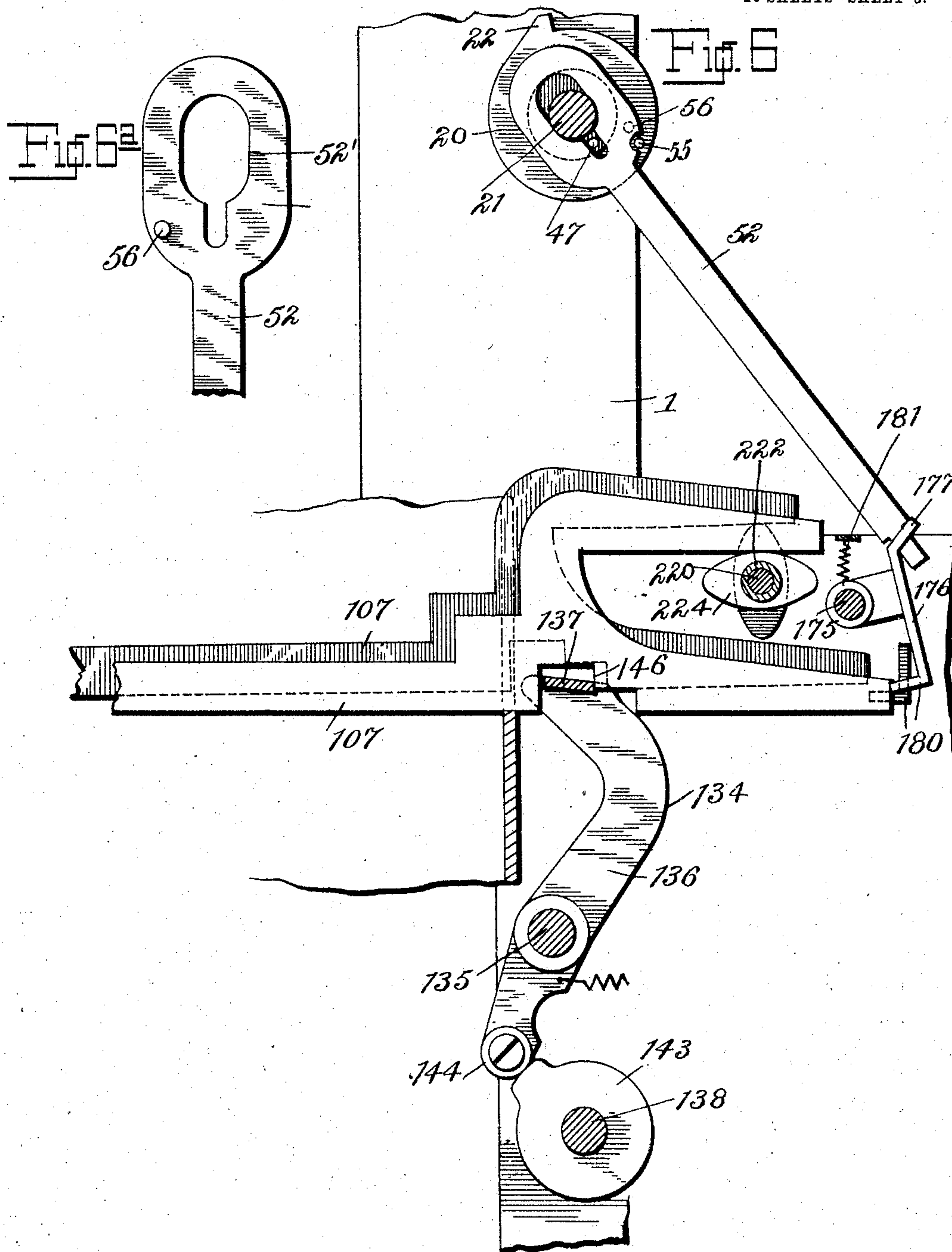
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I. S. DEMENT.  
MECHANICAL CASHIER.  
APPLICATION FILED SEPT. 11, 1903.

NO MODEL.

16 SHEETS—SHEET 6.



Witnesses

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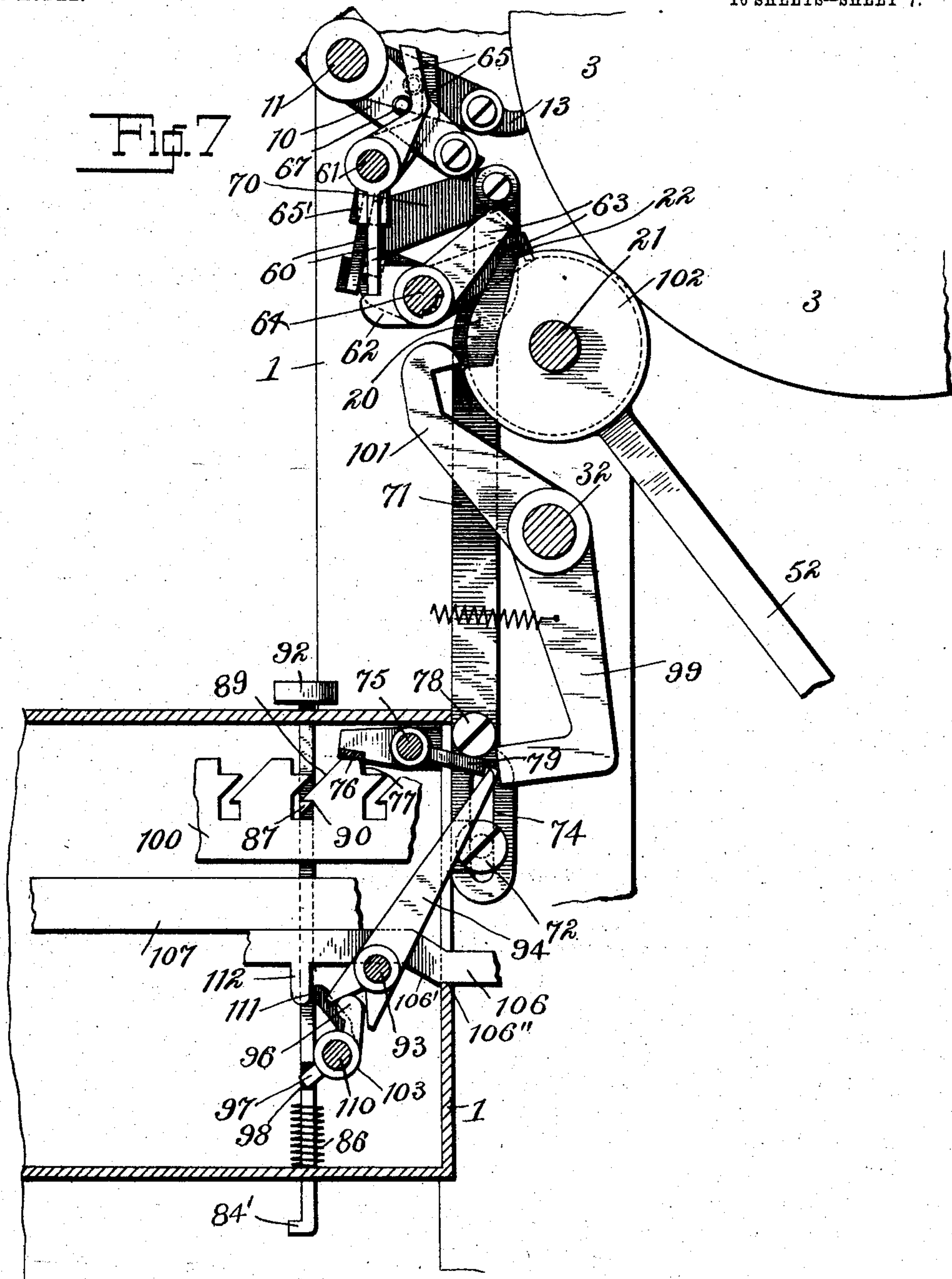
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I. S. DEMENT.  
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APPLICATION FILED SEPT. 11, 1903.

NO MODEL.

16 SHEETS—SHEET 7.



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No. 778,176.

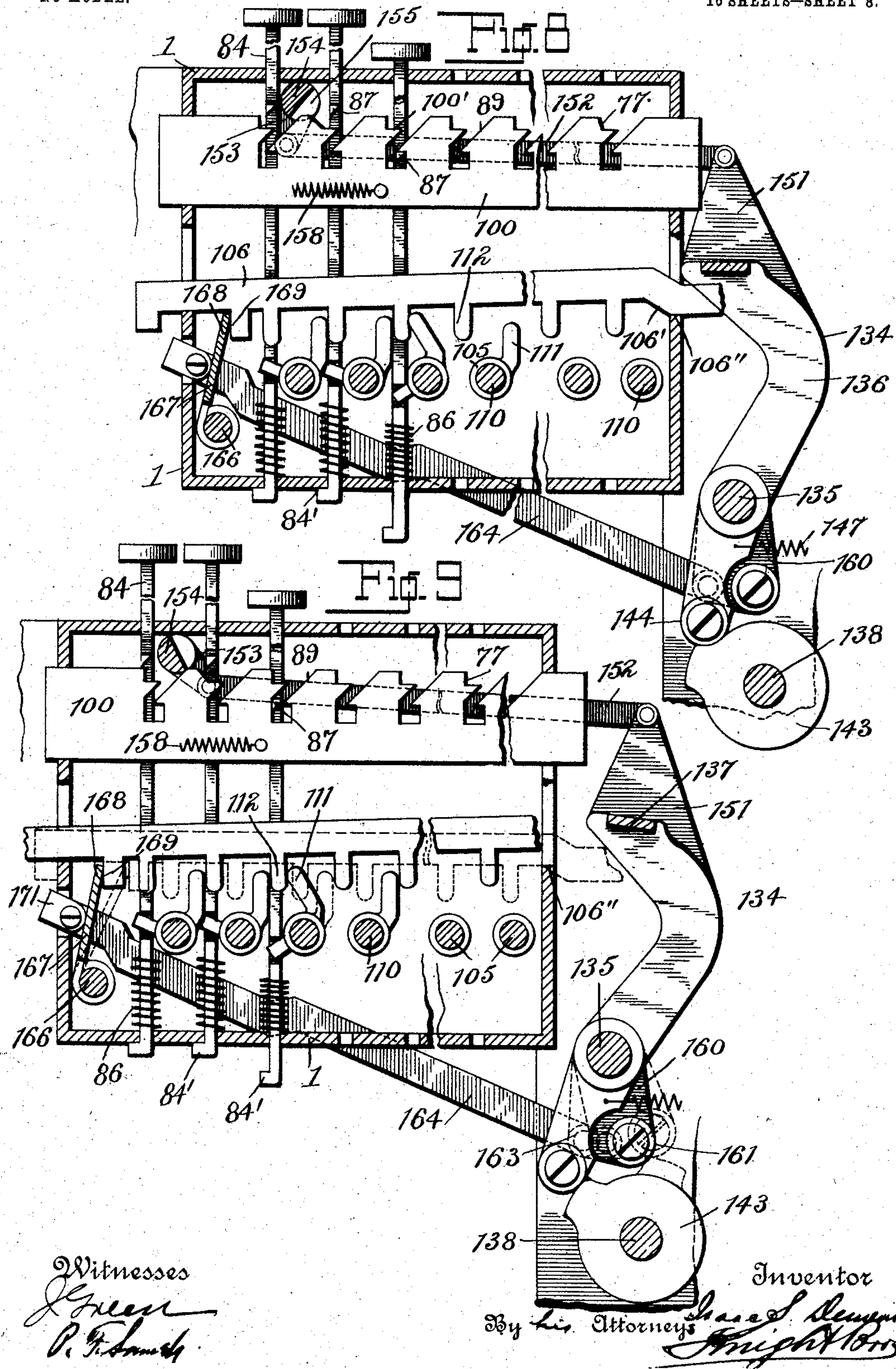
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NO MODEL.

16 SHEETS—SHEET 8.





No. 778,176.

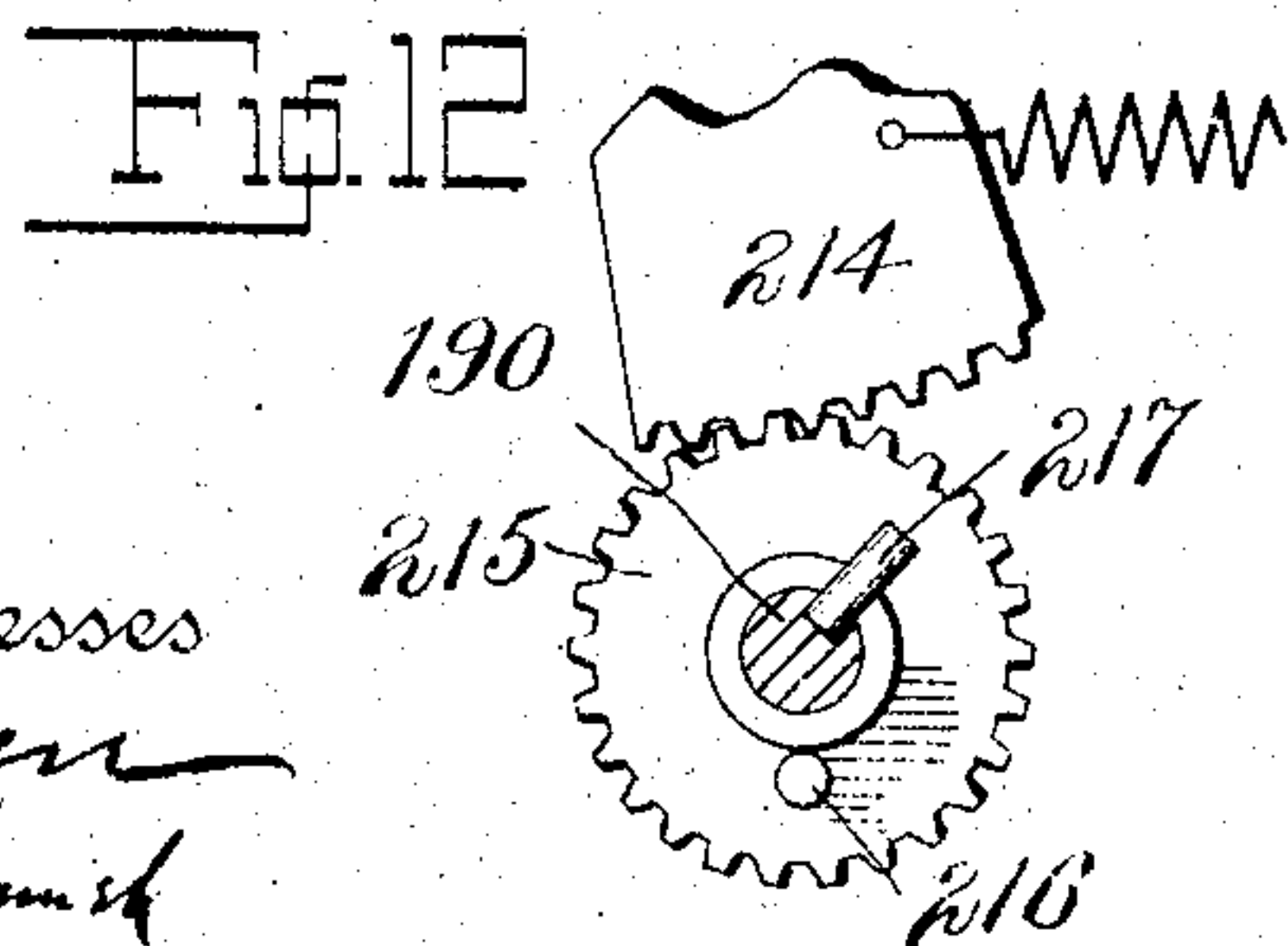
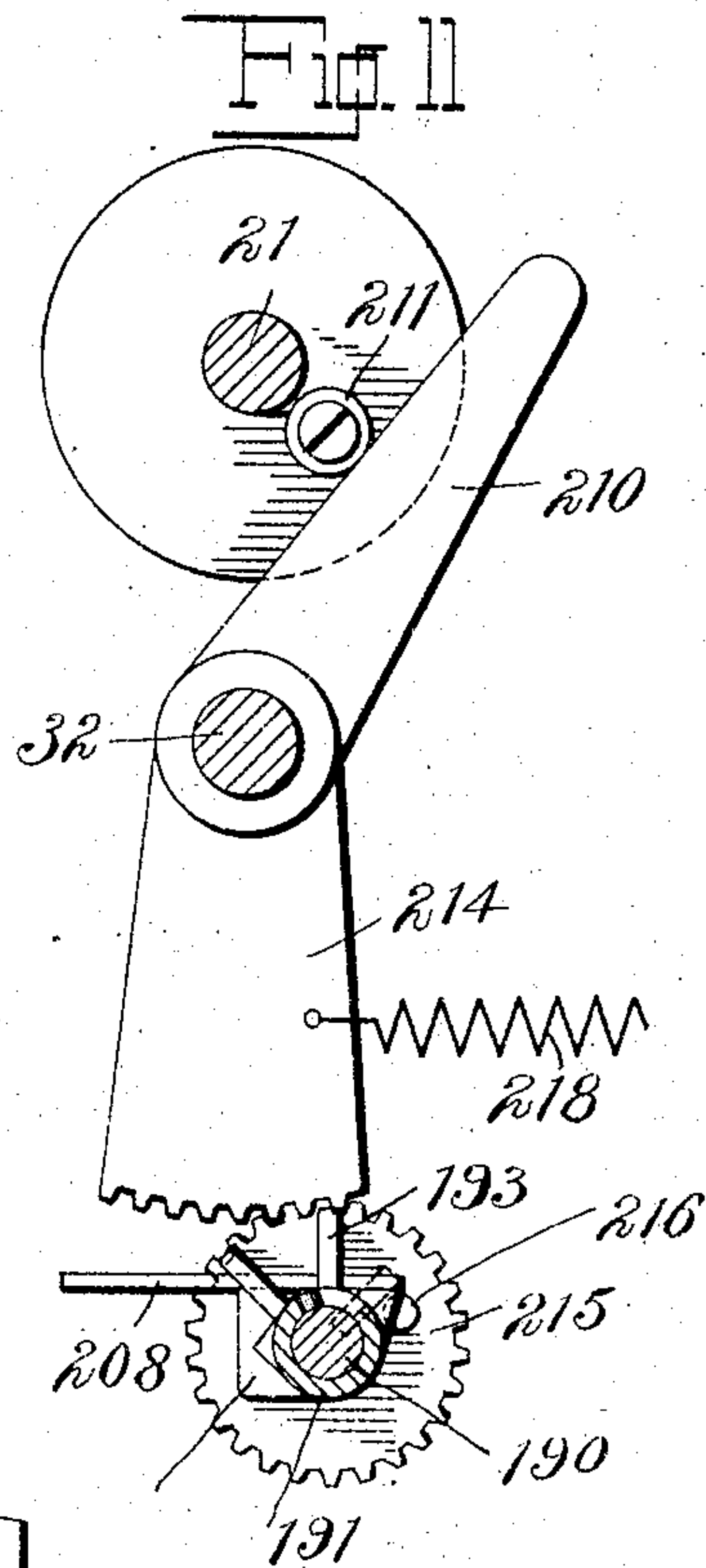
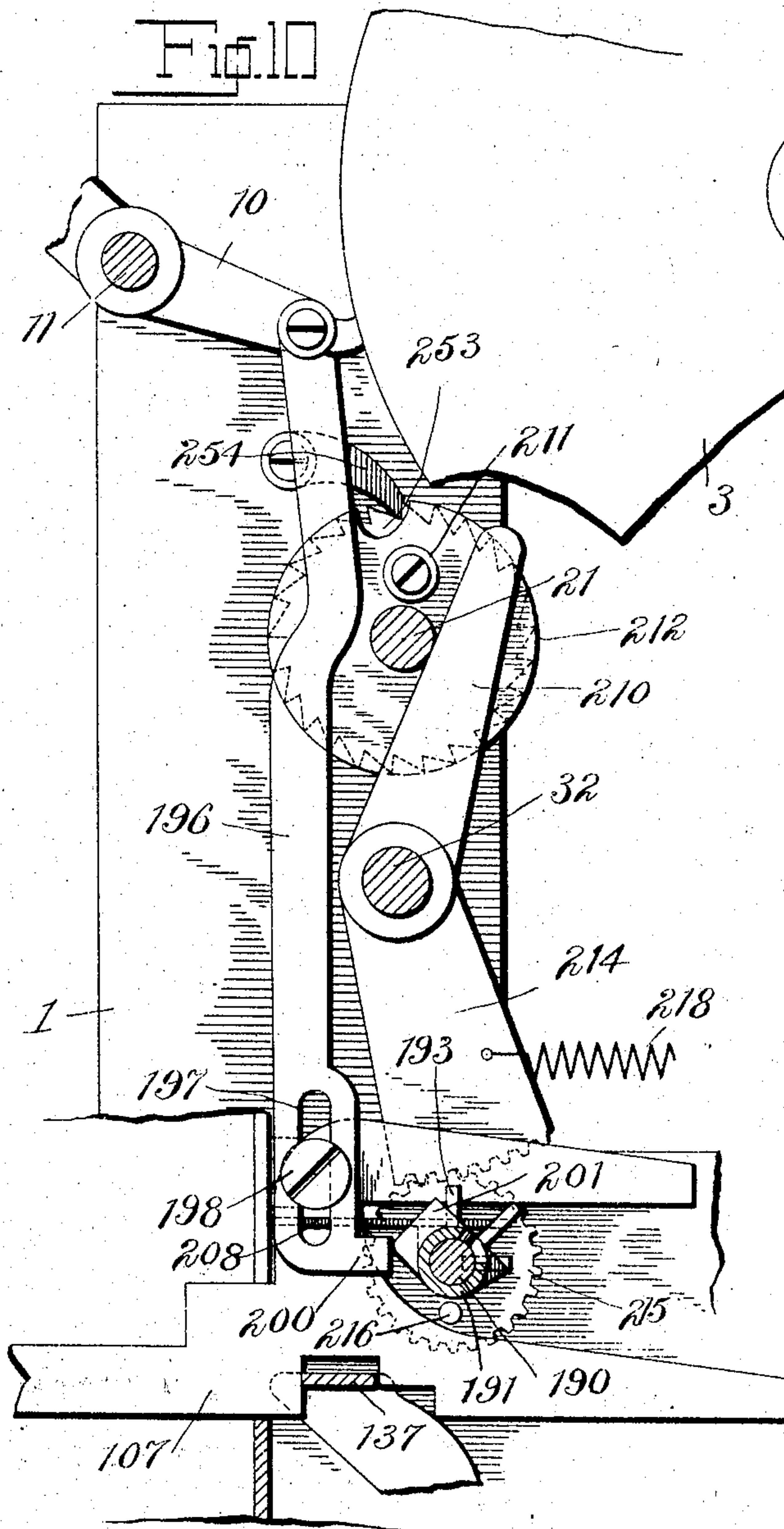
PATENTED DEC. 20, 1904.

I. S. DEMENT.  
MECHANICAL CASHIER.

APPLICATION FILED SEPT. 11, 1903.

NO MODEL.

16 SHEETS—SHEET 9.



Witnesses  
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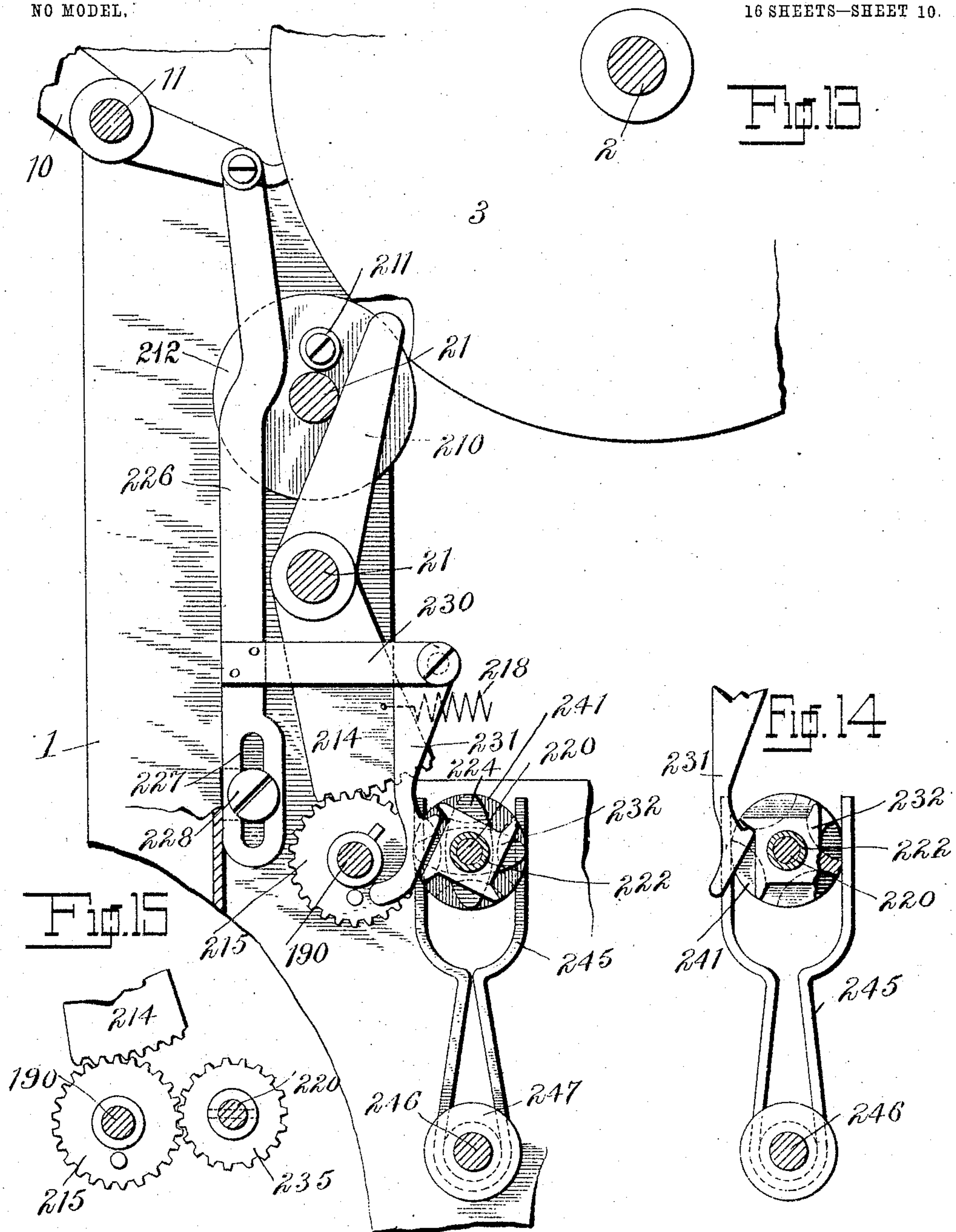
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I. S. DEMENT.  
MECHANICAL CASHIER.

APPLICATION FILED SEPT. 11, 1903.

NO MODEL.

16 SHEETS—SHEET 10.



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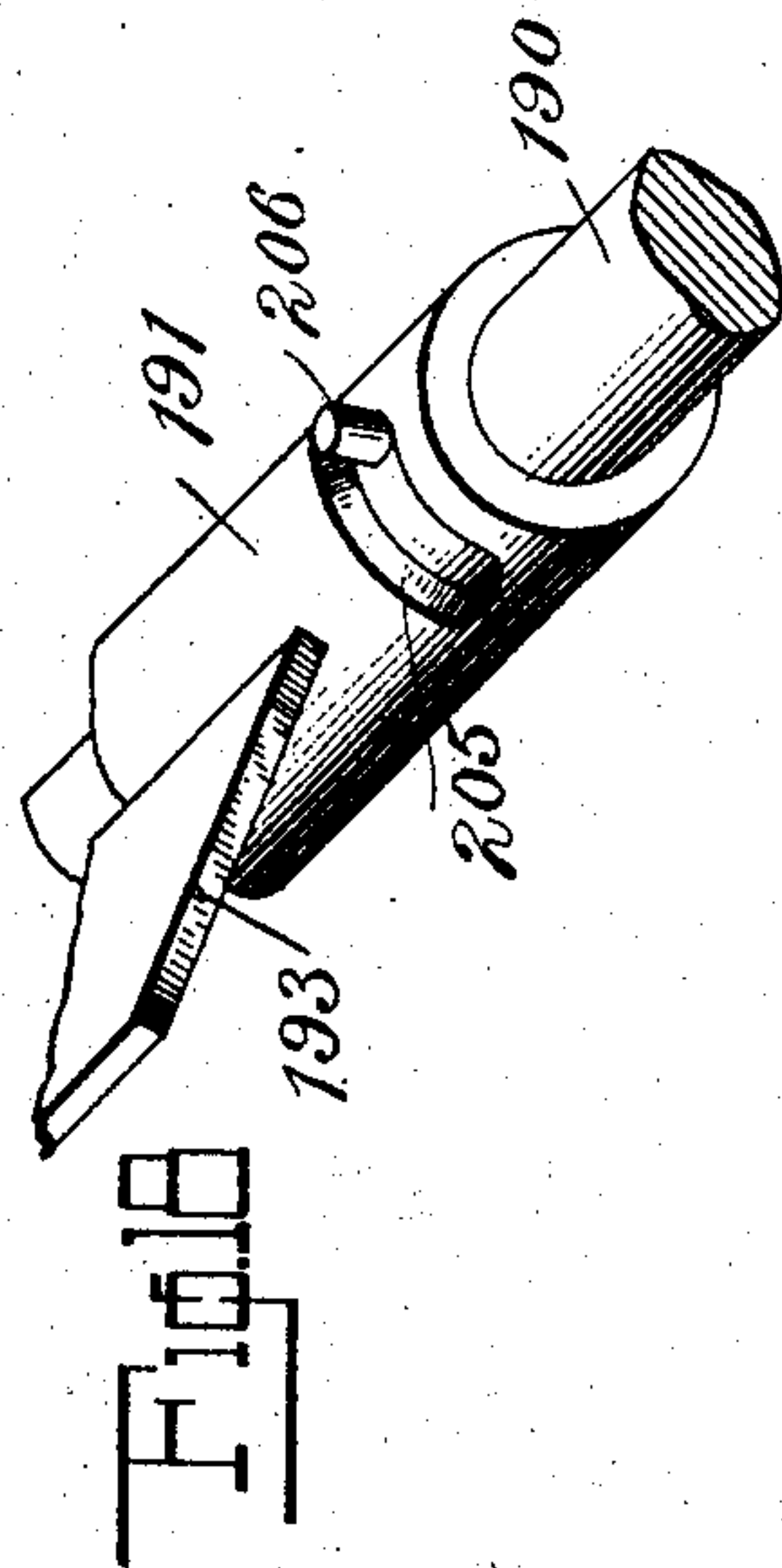
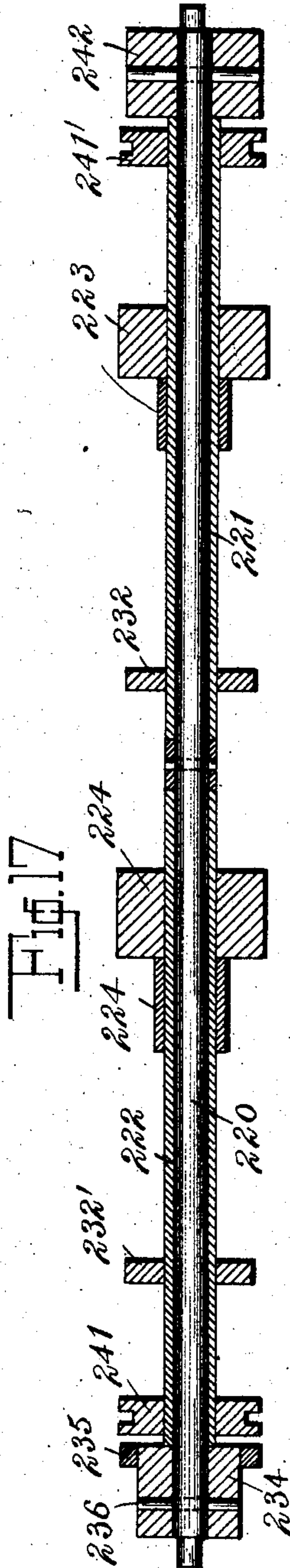
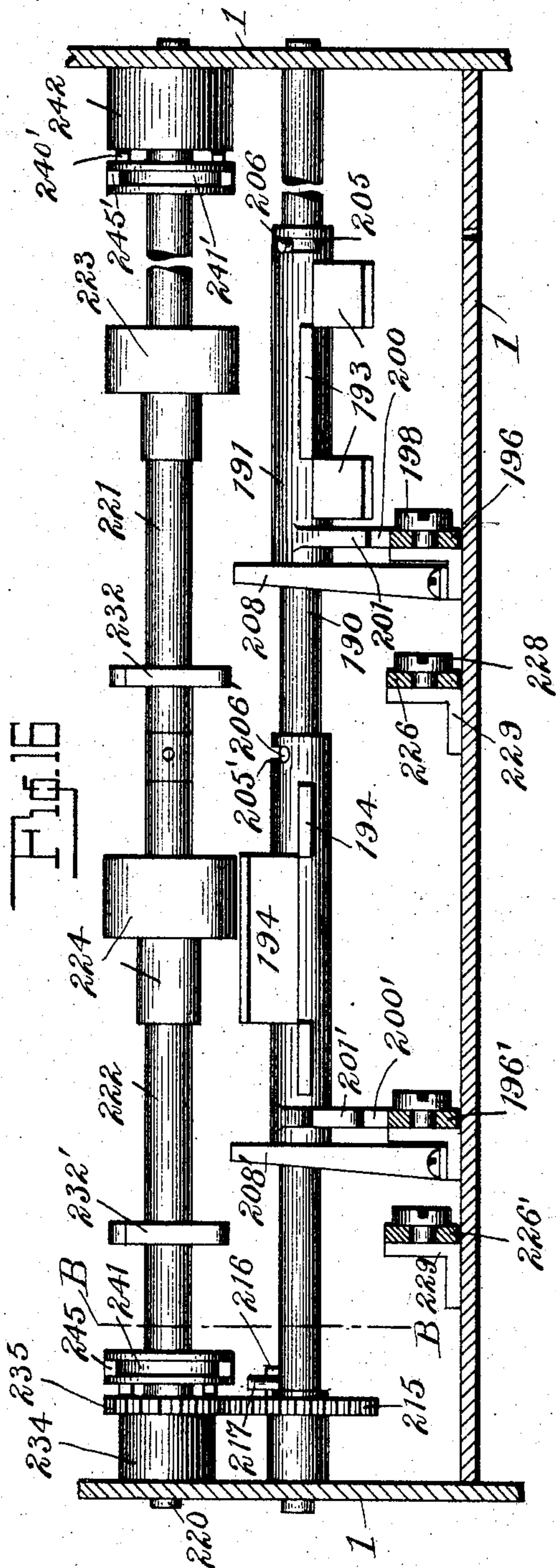
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APPLICATION FILED SEPT. 11, 1903.

NO MODEL.

16 SHEETS—SHEET 11.



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No. 778,176.

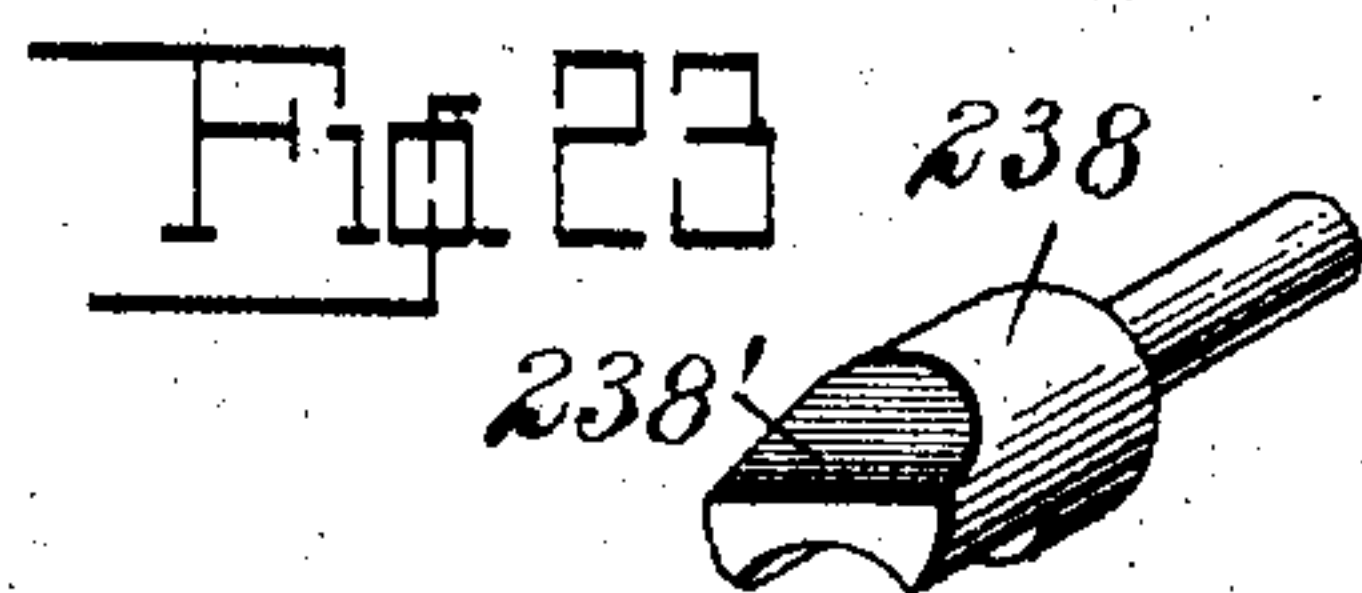
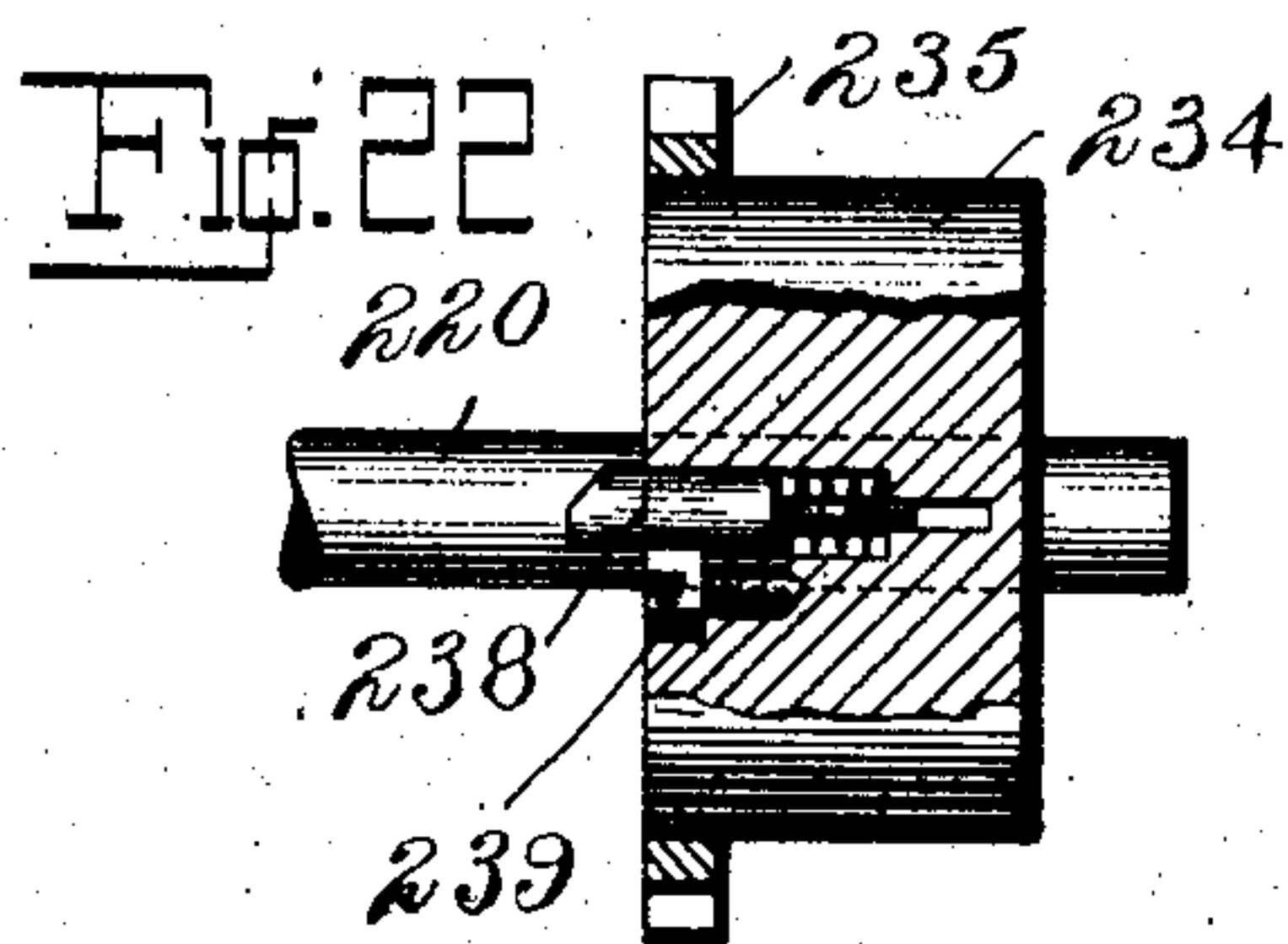
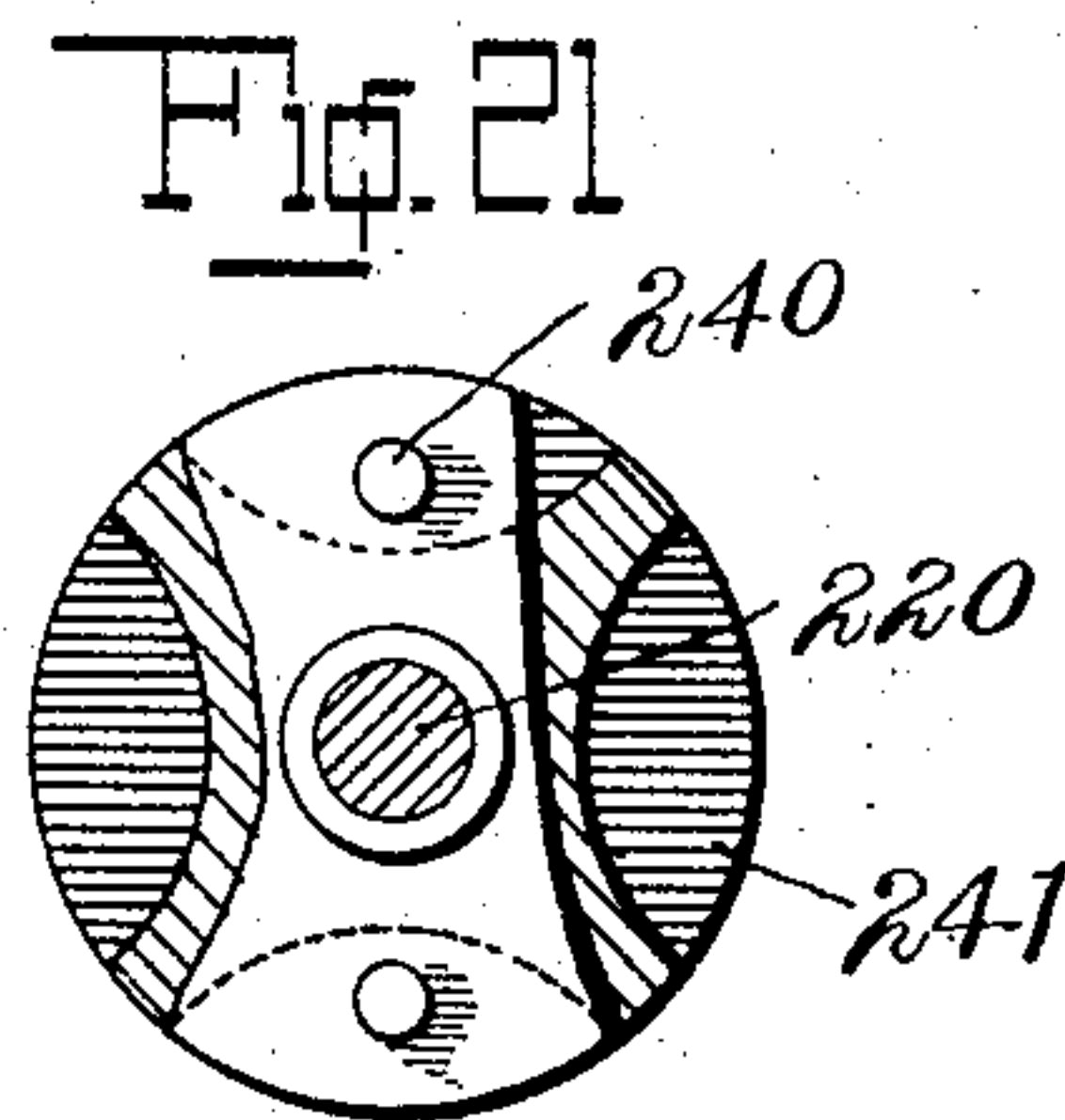
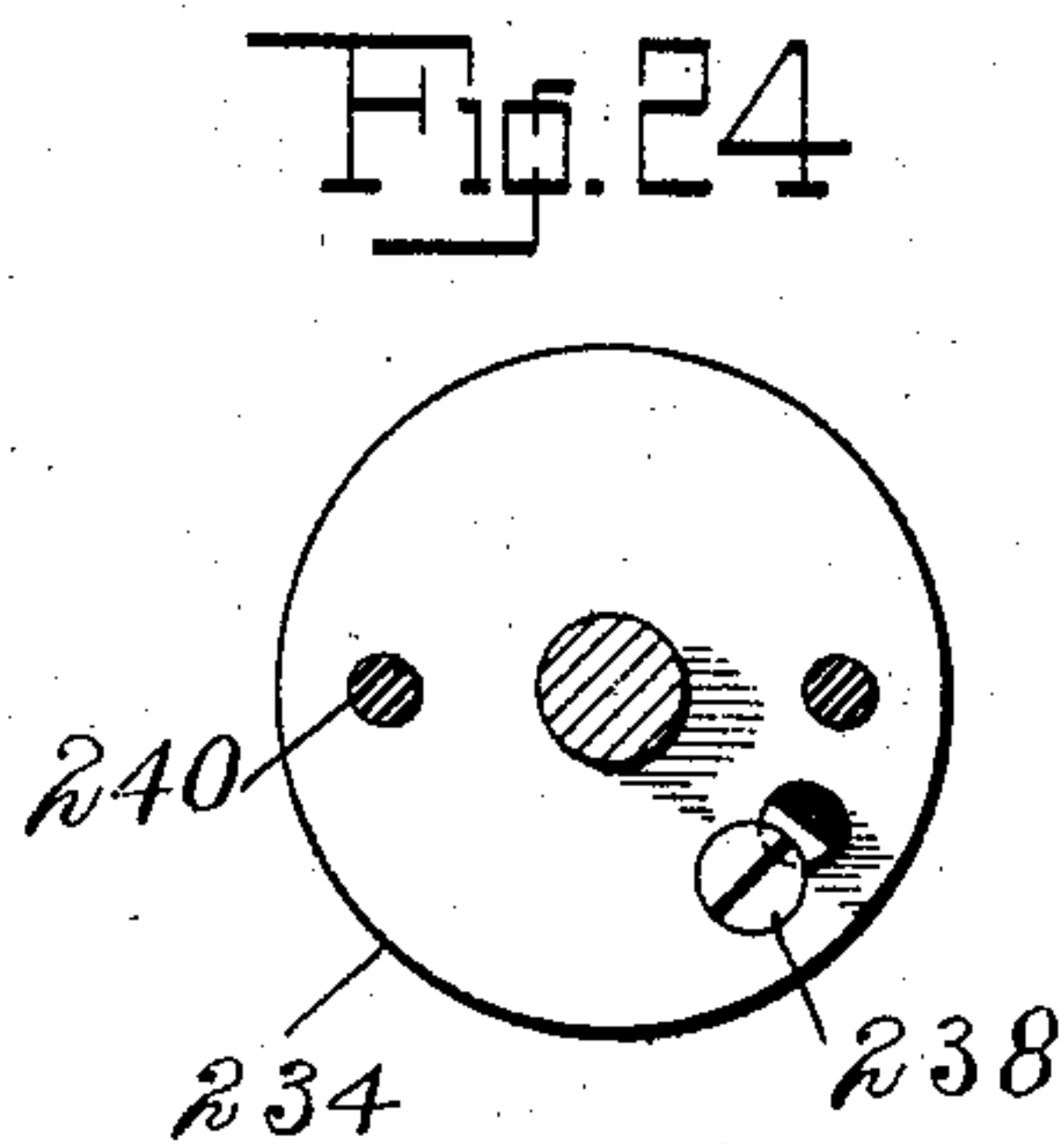
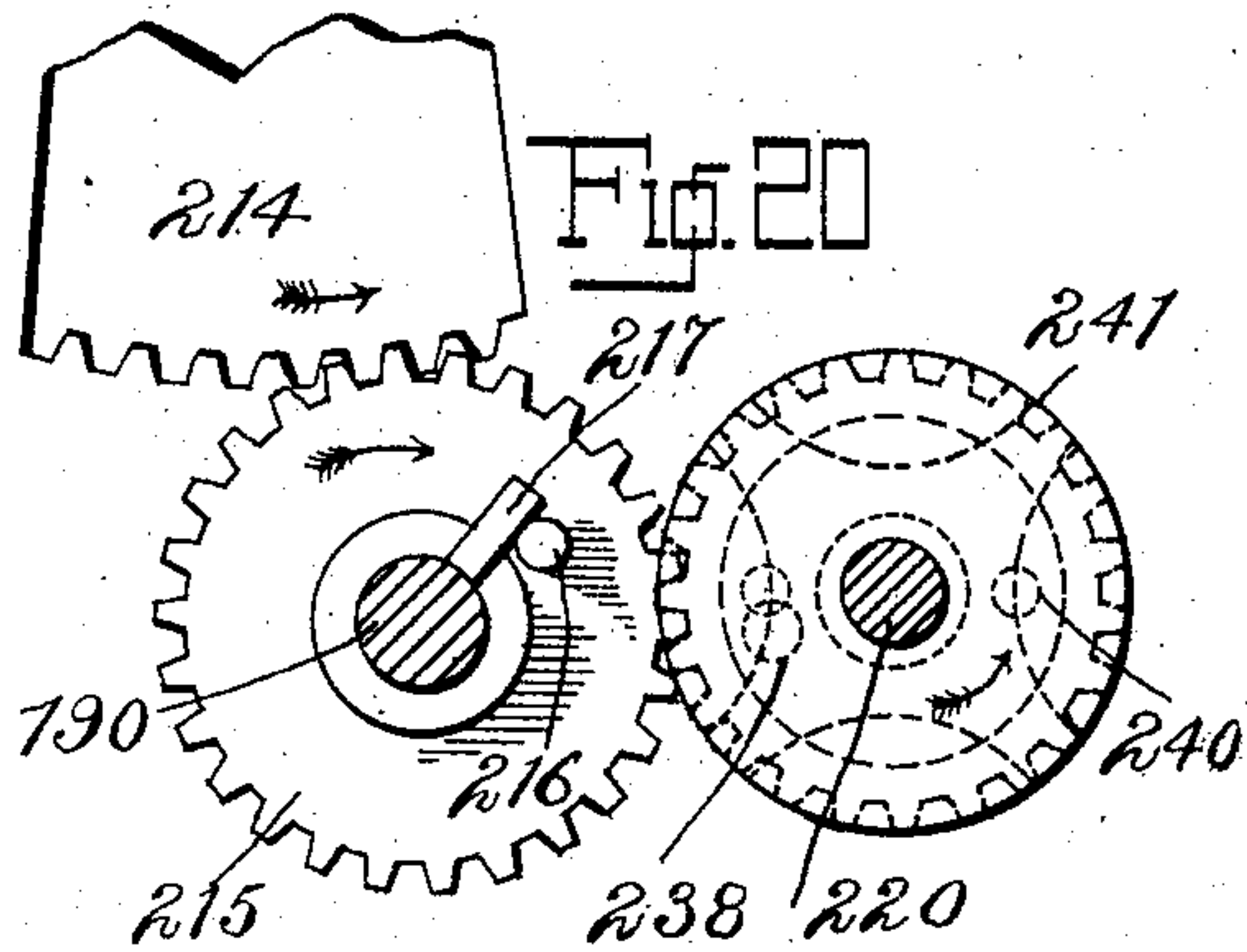
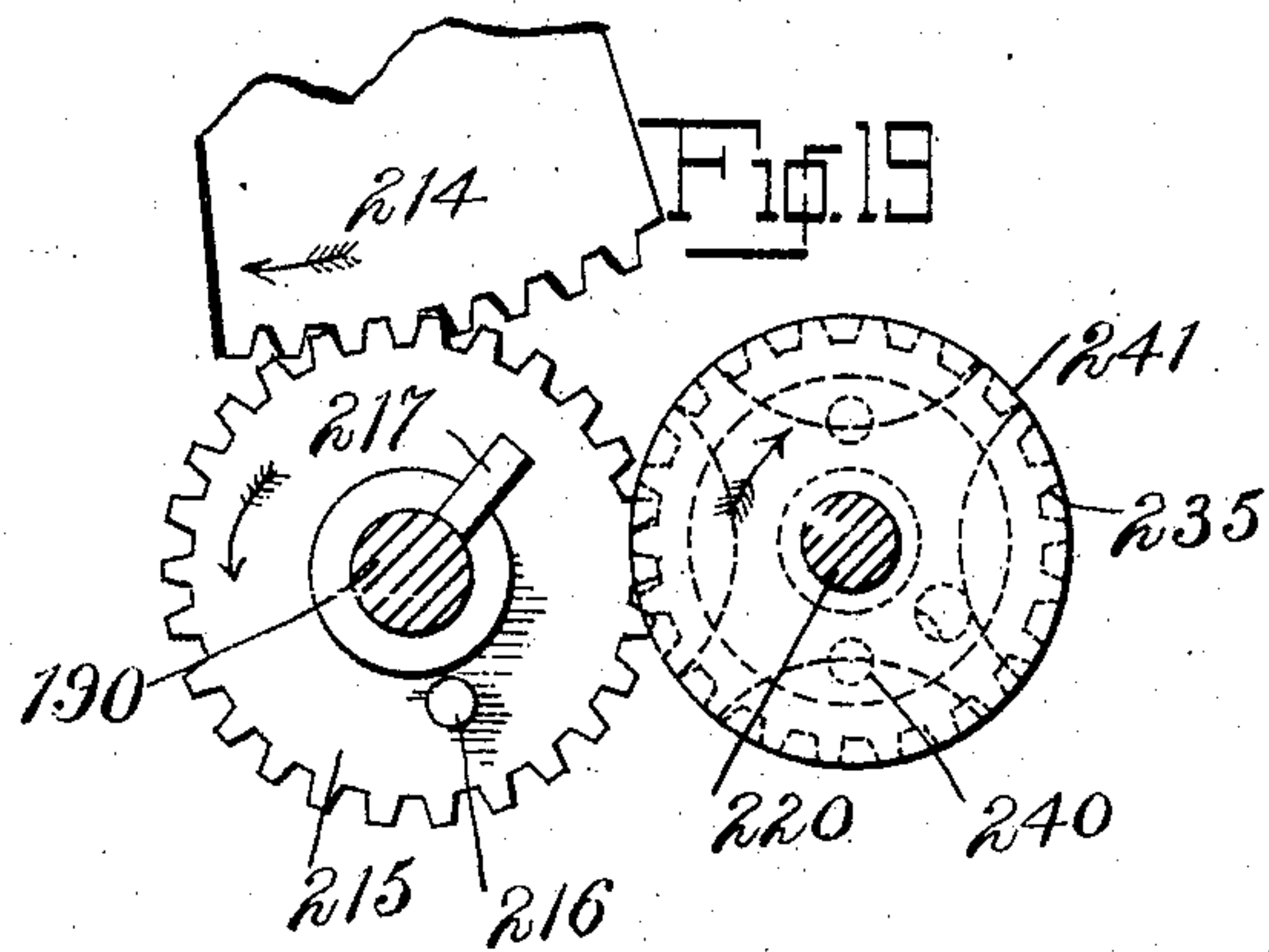
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I. S. DEMENT.  
MECHANICAL CASHIER.

APPLICATION FILED SEPT. 11, 1903.

NO MODEL.

16 SHEETS—SHEET 12.



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No. 778,176.

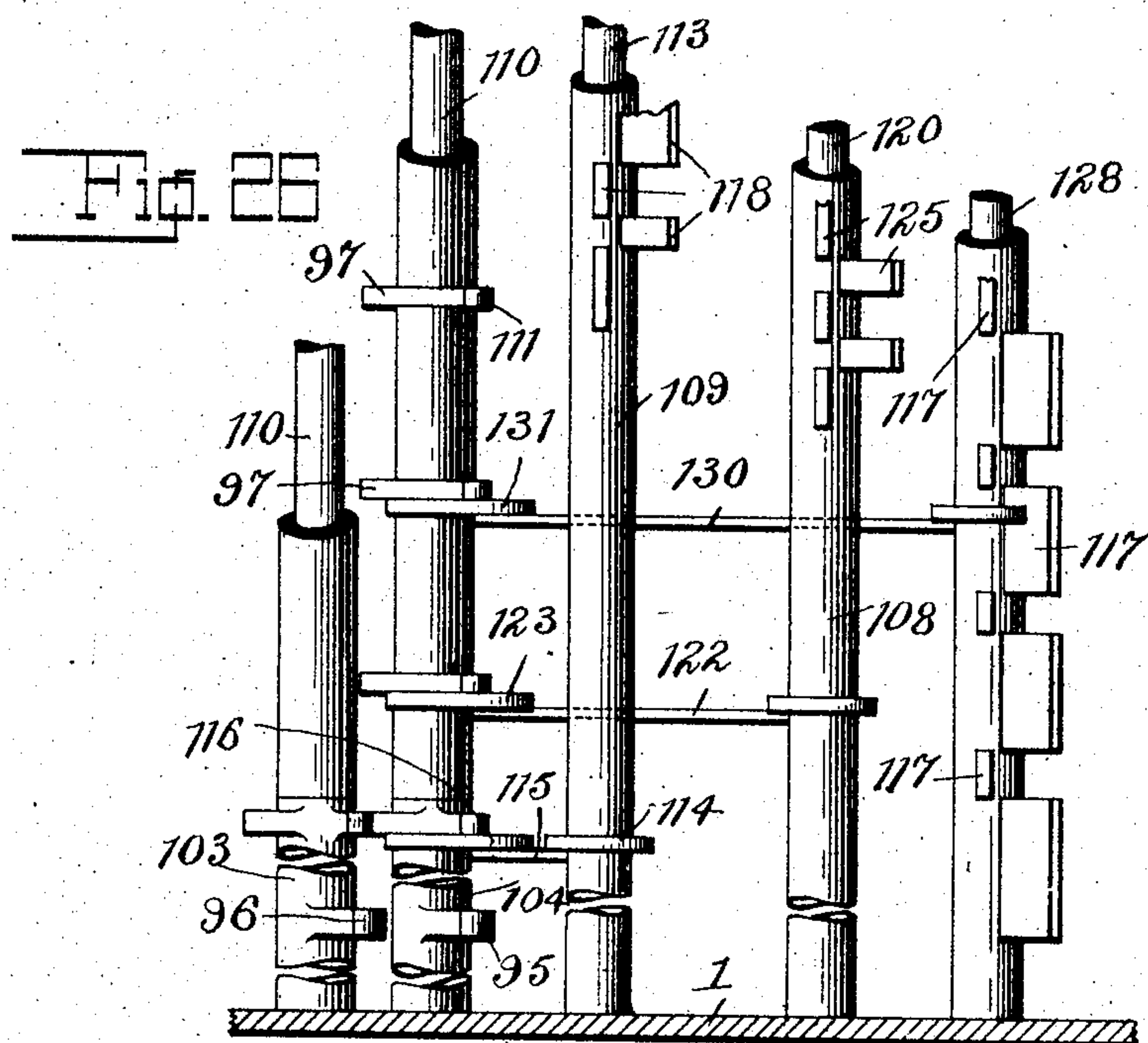
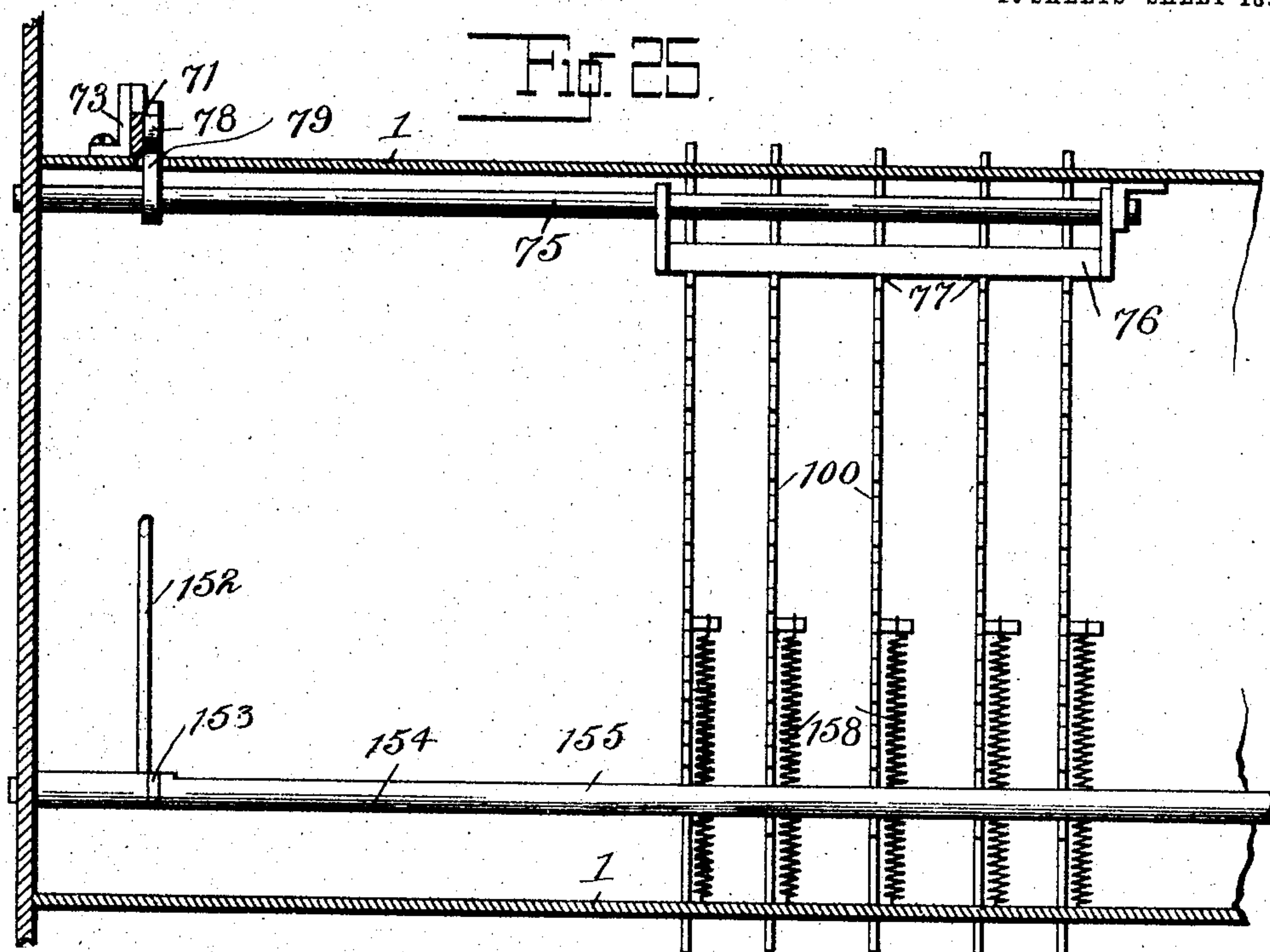
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I. S. DEMENT.  
MECHANICAL CASHIER.

APPLICATION FILED SEPT. 11, 1903.

NO MODEL.

16 SHEETS—SHEET 13.



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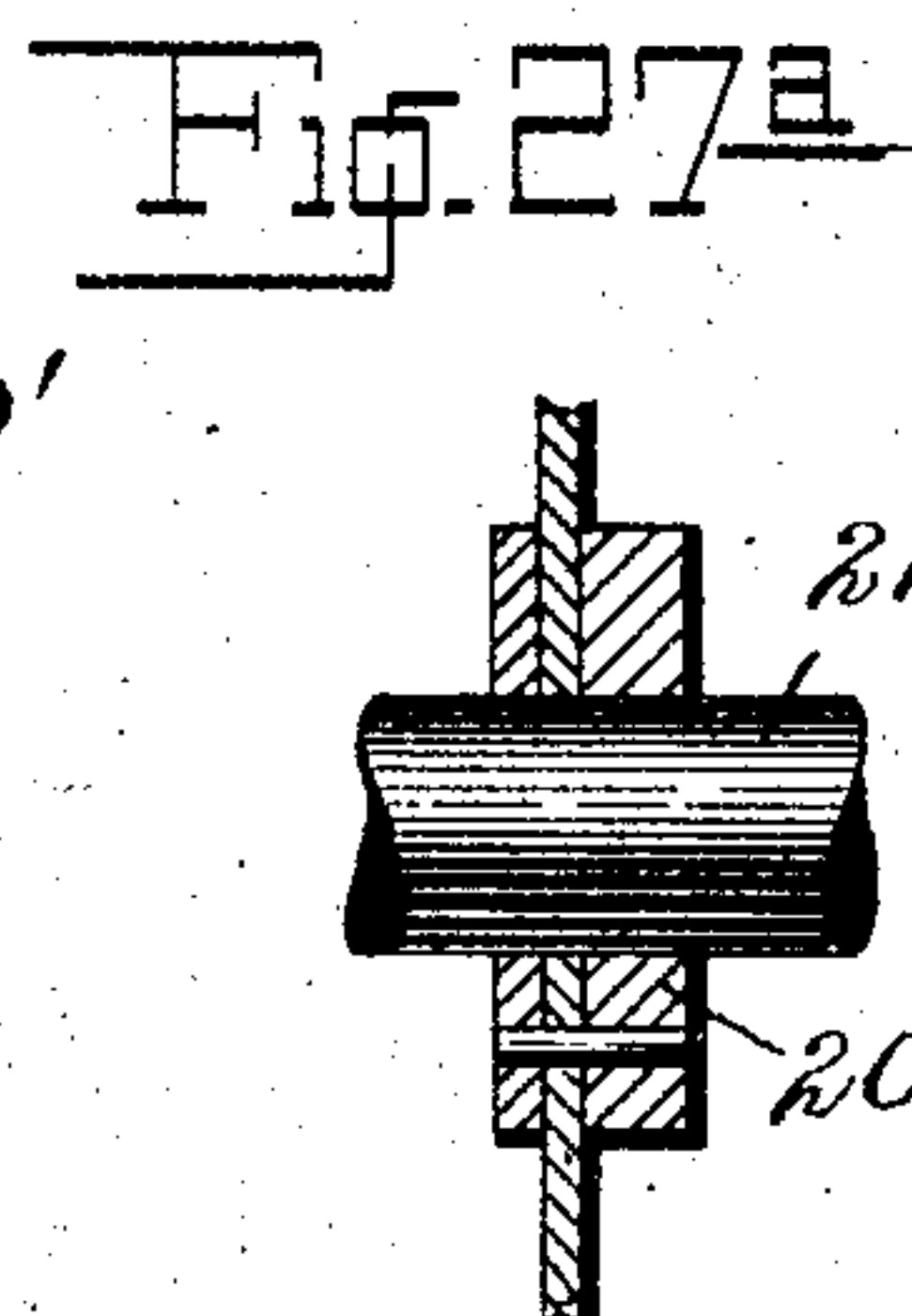
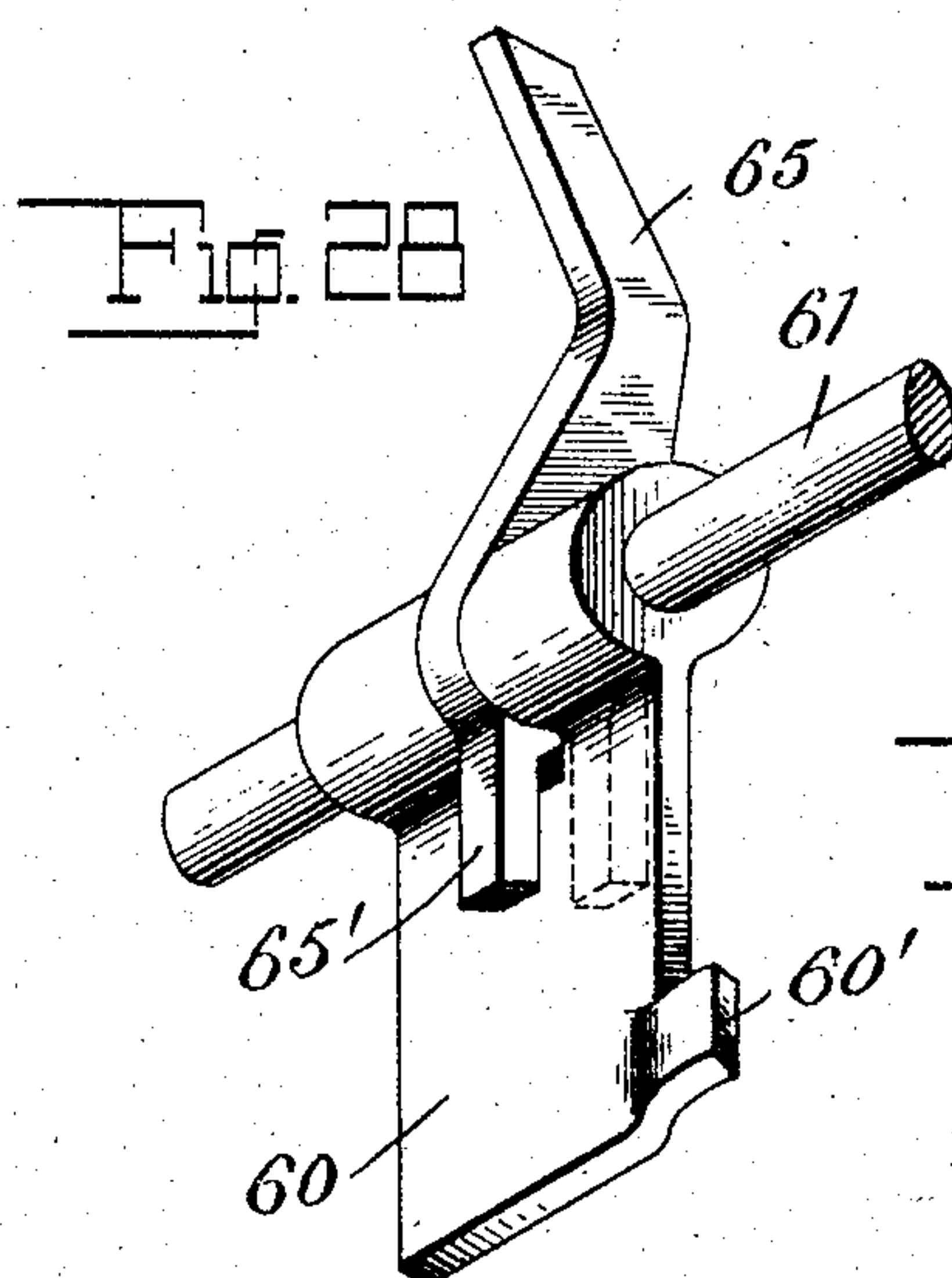
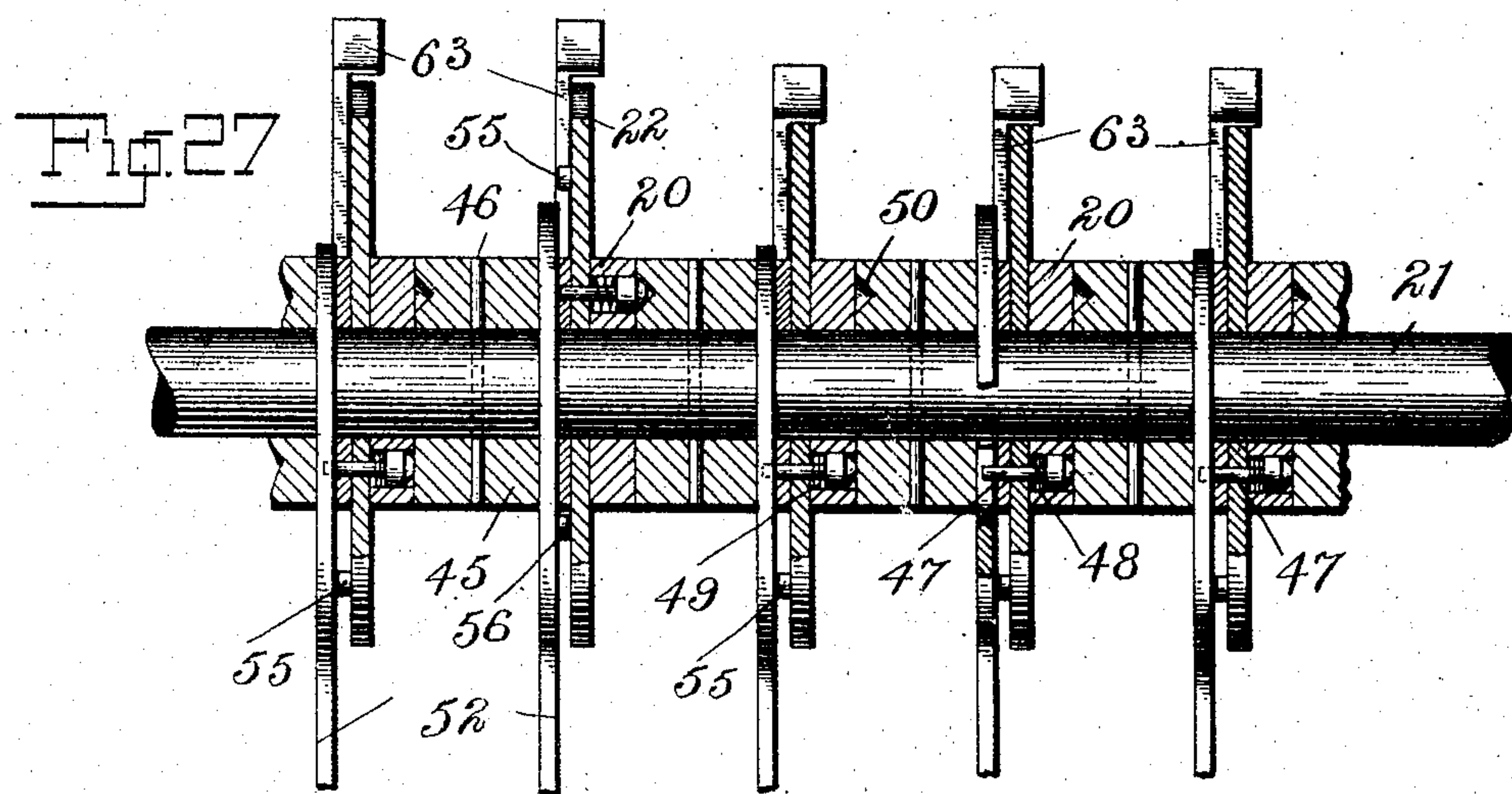
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MECHANICAL CASHIER.  
APPLICATION FILED SEPT. 11, 1903.

NO MODEL.

16 SHEETS--SHEET 14.



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No. 778,176.

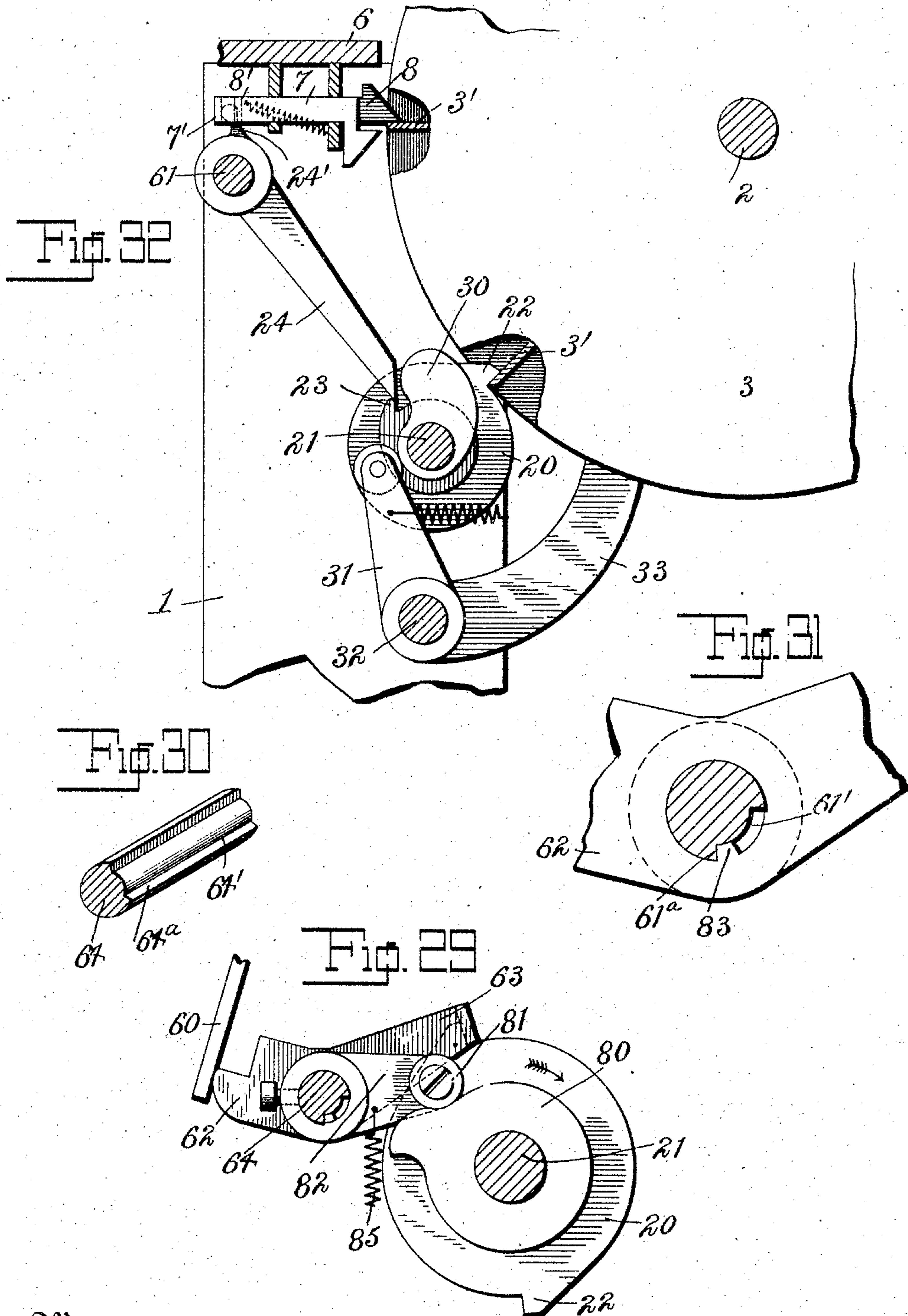
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I. S. DEMENT.  
MECHANICAL CASHIER.

APPLICATION FILED SEPT. 11, 1903.

NO MODEL.

16 SHEETS—SHEET 15.



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No. 778,176.

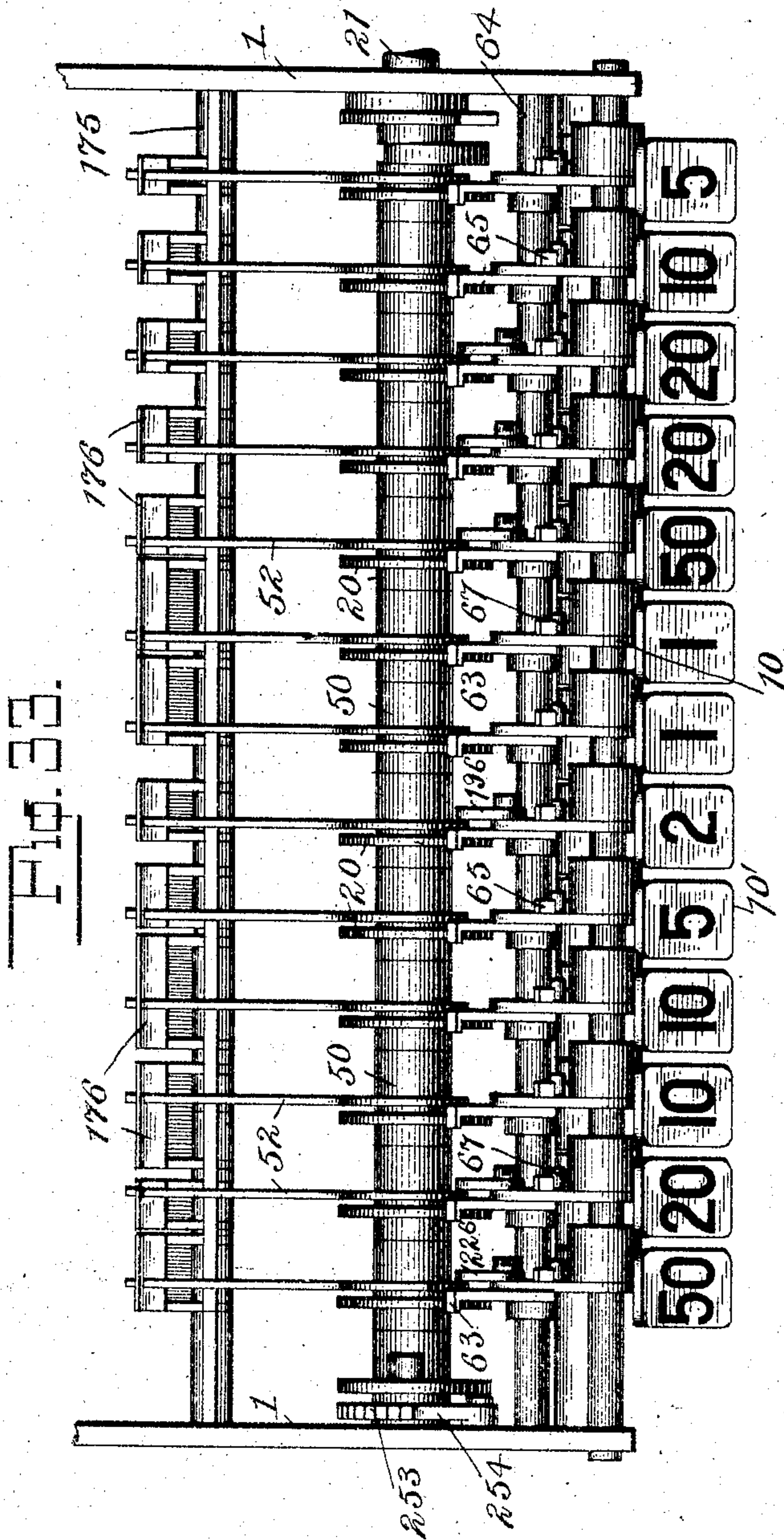
PATENTED DEC. 20, 1904.

I. S. DEMENT.  
MECHANICAL CASHIER.

APPLICATION FILED SEPT. 11, 1903.

NO MODEL.

16 SHEETS—SHEET 16.



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# UNITED STATES PATENT OFFICE.

ISAAC S. DEMENT, OF EAST ORANGE, NEW JERSEY, ASSIGNOR TO  
AMERICAN MECHANICAL CASHIER COMPANY, OF NEW YORK,  
N. Y., A CORPORATION OF NEW YORK.

## MECHANICAL CASHIER.

SPECIFICATION forming part of Letters Patent No. 778,176, dated December 20, 1904.

Application filed September 11, 1903 Serial No. 172,781.

*To all whom it may concern:*

Be it known that I, ISAAC S. DEMENT, a citizen of the United States, residing at East Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Mechanical Cashiers, of which the following is a specification.

The present invention relates to a machine adapted to receive sums of money, whether in coins or bills, convey them to a point or points where they will be secure from theft and accessible, if desired, for making change, and deliver to the purchaser the proper change.

General features of the cashier and operating parts of the machine were described in patents of Dement and Bassett, No. 618,932, Dement, No. 700,748, and Dement and Hull, No. 711,151.

In the accompanying drawings a complete mechanical cashier is shown, and only such parts of the registering devices are exhibited as seem necessary to an understanding of its connection with the cashier, reference being had to the above Letters Patent and to the machines well known to the public for a more full understanding of the combination of all parts of a mechanical cashier.

The machine herein shown and described is designed to meet the requirements of the French monetary system; but it should be understood that the machine is not confined to this particular monetary system.

In the accompanying drawings, Figure 1 is a front elevation of a mechanical cashier as it is constructed and arranged to embody the present invention. Fig. 2 is a vertical section on the line A A in Fig. 1 with all the parts in their normal positions. Fig. 3 is a plan view showing the arrangement of the tumblers and their relation with the permutator-shafts, cancellation-shafts, alternator-shafts, and the zero-shafts. Fig. 4 is a partial rear view showing the operating-shaft, the tumblers, and the manner in which the selectors are connected with the operating-shafts and the tumblers. Fig. 5 is a detail view, on an enlarged scale, of the selector mechanism and the cash-wheel-controlling mechanism. Fig. 6 is a de-

tail similar to Fig. 5, but showing only the selector mechanism after it has been operated. Fig. 6<sup>a</sup> is a detail of the enlarged end of the selector-bar that is engaged by the operating-shaft. Fig. 7 is a detail view showing the mechanism for lifting the locking device to free the key-locking bars and the mechanism that is operated to release the operating-shaft. Fig. 8 is a detail view showing the mechanism for resetting the under tumblers to normal position and moving the key-locking bars to release the keys after they have been depressed. Fig. 9 is a similar view showing the same parts after they have been operated. Fig. 10 is a detail view showing the cancellation-shaft in operated position. Fig. 11 is a detail view showing how the cancellation-shaft is restored to its normal position. Fig. 12 is a detail view of the cancellation-shaft in normal position. Fig. 13 is a detail view showing the mechanism for operating the alternator mechanism. Fig. 14 is a detail view of Fig. 13, showing the alternator-shaft after it has been partially operated. Fig. 15 is a detail view showing the relation of the alternator-shaft and the cancellation-shaft. Fig. 16 is a plan view in detail, showing the cancellation-shaft and the alternator-shaft. Fig. 17 is a longitudinal section of the alternator-shaft. Fig. 18 is a detail perspective view showing the relation of one of the wing-operating sleeves with the alternator-shaft. Fig. 19 is a detail section of the cancellation and alternator shafts on the line B B, Fig. 16, looking to the left. Fig. 20 is a similar view to Fig. 19, but showing the shafts in operated position. Fig. 21 is a detail view showing one of the disks for operating the sleeves on the alternator-shafts. Fig. 22 is a detail view, partially in section, of the operating-gear and collar on the alternator-shaft that carries a spring-actuated plunger-pin. Fig. 23 is a detail perspective view of said spring-actuated plunger-pin. Fig. 24 is a face view of the collar carrying the spring-actuated pin and showing the normal relation of the pins on the sleeve-operating disk. Fig. 25 is a detail plan view showing the means for holding the key-locking



bars in locked position. Fig. 26 is a partial plan view showing the relation of the zero and cancellation shafts. Fig. 27 is a vertical section of a portion of the operating-shaft, showing how the selector-bars engage the plunger-pins in the operator-disks for operating the cash-wheels. Fig. 27<sup>a</sup> is a detail sectional view at right angles to Fig. 27, showing how certain of the parts are secured together. Fig. 28 is a detail perspective view showing one of the dependent plates operated by the controller-key. Fig. 29 is a detail view showing how the operator-disk-engaging dog is restored to its normal position. Fig. 30 is a detail perspective view of the slotted shaft that supports the disk-engaging dogs. Fig. 31 is an enlarged detail view showing the relation of the dogs with the slotted shaft. Fig. 32 is a detail view showing the locking-dogs that engage the cash-wheels and means for operating the ejectors. Fig. 33 is a plan view of the controller-keys and their operating mechanism with certain parts removed for clearness.

1 is the fixed frame of the machine, having suitable shape to support the different moving parts of the machine hereinafter described.

A machine of this character comprises a plurality of cash-receptacles that are mounted side by side on a common axis. As the construction of the controlling and operating means is substantially identical for each such receptacle, I will herein describe only a single element, comprising a receptacle, the controller, which turns it forward in depositing or receiving the cash, and the operating means, whereby it is turned back to deliver the cash.

2 represents a shaft or axis on which the cash-receptacles are adapted to rotate independently. One of such receptacles is indicated at 3 and comprises a circumferential series of pockets formed by and between flanges, ribs, or walls 3', said pockets being brought successively in the rotation of the receptacle opposite an opening formed in front of the casing 4. When the pocket is in this position, money may be charged into or ejected from it through said opening, and in the latter case such money is received on a ledge 6.

It is desirable to normally lock the cash-receptacle from movement in either direction except as it is rendered necessary by the cash receiving and delivering operations. To this end I provide two sliding dogs or catches 7 and 8, sliding in guides 9 and 9' on the under side of the ledge 6 before engaging, respectively, with the top and bottom of a rib or wall 3' of a cash-pocket, thereby preventing the cash-wheel 3 from turning in either direction. Suitable springs engage the catches to normally throw them into position to engage the cash-wheel.

To turn the cash-wheel forward after cash has been deposited in a pocket, a controller is provided consisting of a key-lever 10, pivoted on a shaft 11, which is common to all the con-

trollers, said lever having at its rear end a latch 13, adapted when the controller key or handle 10' is depressed to engage a rib or wheel 3' on the cash-wheel and turn the wheel one step forward to bring another pocket opposite and remove the last-filled pocket from accessible position. To enable this movement of the receptacle to be effected, the catch 8 must first be drawn back, and the controller-lever 10 carries a latch or tripping device 14, that is normally held by a spring 14' in position to engage by its hook 14'' with a lip 7' on the dog 8'. (See Figs. 2 and 5.) When the controller-lever is pulled forward and downward, this latch draws the dog 8 forward to release the cash-wheel and allow the latter to be turned forward by the further movement of the controller, as above stated. In this further movement of the controller the latch 14 will be withdrawn from engagement with the dog 8 and allow the said dog to move forward and engage the next rib or pocket-wall 3' of the cash-wheel. As the controller completes its movement this rib 3' strikes the inclined end of dog 7 and presses the same forward, said dog then snapping back below said rib 3', which is then locked between the dogs 7 and 8. Controller 10 when released by the operator is returned to normal position by a spring 17, pivoted to the lever and a portion of the ledge 6.

The means provided to move the cash-receptacle backward to deliver cash comprises an operator device or disk 20, mounted on the operator-shaft 21, said shaft being operated by a handle 25. A projection 22 on the operator-disk engages a rib 3' on the cash-wheel to turn the wheel backward, and another projection 23 thereon engages a lever 24, which operates a finger 24', which in turn engages a lip 7' on dog 7 to press said dog forward to release the cash-wheel for such backward rotation. In said rotation the next upper rib 3' of the cash-wheel passes the inclined end of the catch or dog 8, and the latter snaps back over the rib, as shown in Fig. 32.

The ejection of money upon the ledge 6 is effected by the operating-shaft 21, which has mounted thereon a series of cams 30, adapted to engage an arm 31, pivoted on the ejector-shaft 32, which ejector-shaft in turn operates a series of ejector-arms 33, extending upwardly into the cash-receptacles in such position that when the ejector-shaft is rocked, by means of the cams 30, the ejector-levers will be moved forward in contact with any moneys that may be in the pockets that are exposed to the openings in the casing 4.

In some systems of coinage it is necessary that certain coins of the same denominational value, but of different sizes, be placed in the same cash-receptacle. When such is the case, the quick forward movement of the ejector-lever is very apt to eject the coins in such manner and with such force that the lighter



coin will be thrown over the coin-receiving ledge. In order to prevent such a condition, the ejector-lever is engaged by a spring-actuated arm 34, pivoted to an arm 35 dependent from the ledge 6, and is adapted to retard the action of the ejector-lever, so that the coins will be gently placed upon the ledge. Mounted on the ejector-shaft 32 are rock-arms 38, that have pivoted thereto ejector-arms 39, adapted to remove the surplus bills from the bill-receptacles when they are in excess of the required amount—that is, when the cash-receptacles have passed around to the position where the ejector-arms 39 will engage the bill. (See Fig. 2.)

The operating mechanism for turning back the cash-receptacle is mounted, as above stated, on the operating-shaft 21 and separate from the shaft carrying the controllers. As the construction and operation of the controller-keys and their parts and the operator-disks and means for controlling the same to move the cash-wheels are substantially identical for each controller-key, the following description will be of a single element comprising a controller-key, parts operatively controlled by it, an operator-disk, and the mechanism operatively connected therewith, this operating mechanism comprising a disk 45, fastened on the shaft 21 by a pin 46, an operator-disk 20, loosely mounted on said shaft and provided with a tooth or lug 22, adapted to engage the rib or wall 3' on the cash-wheel to effect the return movement thereof, and clutching means adapted to connect the disks 45 and 20 when a cash-wheel is operatively affected by the controllers and certain purchase-keys to be returned to deliver change. Said clutching means, Figs. 5, 6, 27, and 27<sup>a</sup>, consists of a plunger-pin 47, sliding in a hole 48 in disk 20 and pressed toward disk 45 by a spring 49, so as to force the end of said pin 47 into a hole or depression 50 in disk 45 when said hole is opposite the pin. The end of pin 47 and the depression 48 are beveled or rounded, so that as disk 20 starts to turn from this position it tends to cause the pin to ride out of the hole and disengage the clutch. A selector bar or plate 52 is guided by its slotted portion 52', sliding over the operating-shaft 21, and by its lower end engaging with and operated by the selector, as hereinafter more fully described. After the said selector-bar 52 has been lifted by the selector, as shown in Fig. 5, the plunger-pin 47 will be engaged by the selector-bar when the disk 20 rotates said plunger-pin. The disk 45 under these circumstances will carry with it the disk 20 and cause said disk to engage the cash-wheel and turn it back to cash-discharging position; but if the selector-bar 52 is in its lower position, as shown in Fig. 6, it will allow the plunger-pin to be disengaged from the two disks, and the disk 45 will turn on the operating-shaft without affecting the disk 20. On the disk 20 is a pin

55, that is adapted to engage a pin 56 on the selector-bar 52 when the selector-bar is down or in the position shown in Fig. 5. When the selector-bar is raised, as shown in Fig. 6, the pin 56 will be removed from the path of pin 55 and allow the disk to rotate without engaging the pin on the selector-bar. Thus it will be seen that the disk 20 can only be operated to engage the cash-receptacles to move them to discharging position when the selector-bar 52 has been raised and the disk 20 has been freed from its engaging dog. Fig. 27<sup>a</sup> shows how the component parts comprising the disk 20 are secured together and loosely mounted on the shaft 21.

The means for controlling the operating mechanism for turning back the cash-receptacle consists of a series of dependent plates 60, mounted on a shaft 61, the said plates being engaged on their bottoms by forwardly-projecting arms 62, forming part of the operator-disk-engaging dogs 63, said dogs being loosely mounted on a shaft 64. These disk-engaging dogs 63 are normally held out of engagement with the disks by means of the dependent plates 60; but when a controller-key is operated the upwardly-projecting cam-arm 65 of the dependent plate 60 is engaged by a cam-roller 67, mounted on the controller-bar 10. When the controller-bar 10 is depressed, the roller 67 will engage cam-arm 65 and remove the plate 60 from engagement with the forwardly-projecting arm 62 and allow said dog to drop over the projecting lug 22 on disk 20.

The dependent plates 60 have formed on their bottoms ears or lugs 60', which overlap each plate of lower denomination, so that when one of the controller-keys is depressed and the cam-arm 65 is operated by the controller-lever 10 to lift the dependent plate 60, corresponding to said controller-key, it will also lift all plates of a higher denomination and allow the dogs 63 to engage the disks 20 and prevent their rotation. The dependent plates 60 and the cam-arms 65 are preferably constructed in two parts—that is, the cam-arm is mounted on the shaft 61 and has a bifurcated portion 65', that engages the plate 60 to control its operation. In Fig. 5 the normal position of a dependent plate 60, a cam-arm 65, and a controller-lever is shown, and in Fig. 7 the same parts are shown in normal position and the dependent plate next above in denominational value and its controlling parts are shown as having been operated and a dog 63 thrown into engagement with the disk 20 to prevent its rotation. The dependent plate to the extreme left of the machine, or the one attached to the controller-key of highest denominational value, has connected therewith an arm 70, that is pivoted to an upwardly-projecting link 71, suitably guided at its bottom by means of a pin 72, held in a bracket 73, Fig. 25, and riding in a slot 74 in the link 71, Fig. 7.



Suitably journaled in the supporting-frame of the machine just above the individual key-locking bars is a shaft 75, that has mounted thereon a bail 76, (see Figs. 2, 7, and 25,) that is adapted to engage shoulders 77 on the individual key-locking bars 100 to prevent the purchase-keys from being depressed until a controller-key has first been operated to give the link 71 a downward thrust, which will cause the stud 78, secured to said link, to engage an arm 79, mounted on shaft 75, and rock said shaft, causing the bail to be lifted out of engagement with the individual key-locking bars. At no time can a purchase-key be depressed until one of the controller-keys has been pulled down after making a deposit and the parts just described operated to disengage the bail from the individual key-locking bars.

To return the dependent plates 60 and the dogs 63 to normal position and allow the bail 76 to engage the individual key-locking bars to prevent their operation, a cam 80 is employed that is mounted on the operating-shaft 21 and adapted to engage a cam-roller 81, journaled in an arm 82, that is secured to shaft 64. The shaft 61 has a longitudinal groove 64' therein, as shown in Fig. 30, in which freely ride projections 83, forming part of the dogs 63, as shown in Fig. 31. It will be noticed that after the dependent plates 60 are moved to free the dogs 63 and said dogs allowed to engage the projections 22 on the disks 20 the lugs 83 will be engaged by the lower surface 64" of the groove, so that when the arm 82 is lifted by the cam 80 the shaft 64 will be rocked, carrying with it the dogs 63, lifting them out of engagement with the disks 20 and returning the projecting arms 62 of the dogs to allow the dependent plates to assume their initial position thereon. The roller 81 on arm 82 is held in constant engagement with the cam 80 by means of a spring 85, that is attached to the arm 82, the other end of the spring being secured to the machine-frame. The dependent plates 60 will by force of gravity resume their normal position. The arm 70 will be lifted, which in turn will raise the link 71 under the influence of a spring 71', Fig. 7, and remove the stud 78 from contact with the arm 79 on shaft 75, allowing the bail 76 to drop by force of gravity into engagement with the shoulder 77 on the individual key-locking bars to prevent the purchase-keys from being manipulated until a controller-key has been operated. The means for releasing the purchase-keys 84 from the individual key-locking bars after the keys have been depressed and restoring the individual key-locking bars to their normal position will be hereinafter more fully described.

When the individual key-locking bars are free to allow the purchase-keys 84 to be depressed—that is, after the bail 76 has been lifted in the manner hereinbefore described—

depression of any one of said keys will cause the lateral projection 87 on the edge of the key-bar to engage an inclined surface 89 on the side of the locking-plate and move said plate toward the rear of the machine until the projection 87 passes under and is engaged by a shoulder 90 on the locking-bar, in which position the key will be held until the operating-handle has been turned to cause the said key to be released from engagement with the individual key-locking bars. (See Figs. 7 and 8.) It will be noticed by referring to Fig. 8 that when a key is depressed and an individual key-locking bar has been moved rearward it will be impossible to depress any other key in that row owing to the fact that a shoulder or projection 100' will be in the path of the lateral projection 87 on the key-bar and arrest the key before it could be depressed a sufficient distance to cause any operation of its coacting parts. This construction is found very necessary in order to prevent the possibility of the operator depressing two purchase-keys in the same row.

The purchase-keys are always depressed in order from the highest denomination down until the units-row is reached, where in this instance there are two keys, a "0" (indicated at 91) and "5," (indicated at 92,) either one of which must be depressed to conclude a purchase and to operate certain mechanism which will release the operating-shaft to permit the operating-handle to be turned. This mechanism for releasing the operating-shaft is operated by either one of the keys shown in the units-row in the following manner: Suitably mounted on a stud 93, secured to the side of the machine-frame, is an arm 94, the lower end of which is bifurcated, said bifurcations being engaged by fingers 95 and 96, forming part of sleeves 103 104, Fig. 26, loosely mounted on the "0" permutator-shaft 110, said sleeves being in turn controlled by the two keys in the units-row, (shown at "0" and "5," Figs 2 and 7.) When one of the said keys is depressed, it will rock a sleeve 103 by reason of a stud 97 on said sleeve projecting through a slot 98 in the shank of the key, as shown in Fig. 7. This rocking of the sleeve on the permutator-shaft will cause the finger 95 to engage one of the bifurcations on the arm 94 and tilt said arm rearwardly, thereby engaging and moving with it a downwardly-projecting arm 99, pivotally supported on the ejector-shaft 32, which in turn will operate a pawl 101, that forms part of the arm 99 and projects above the ejector-shaft 32, and remove said pawl from engagement with a single-tooth disk 102, mounted on the operating-shaft, thereby freeing the operating-shaft to permit the operating-handle to be turned to complete an operation of the machine.

Suitably secured in the frame of the machine is a number of permutator-shafts 110, that have loosely mounted thereon sleeves 105,



which are actively controlled by the purchase-keys 84 and have a capacity for operating the lower tumblers 106 to move them into position to cancel certain of the upper tumblers.

5 The purchase-keys 84 are slidably mounted in the frame of the machine and provided with return-springs 86 and shoulders 84', that engage the frame 1, to hold them in proper position and may also be provided with locking devices, as described in the patents above referred to. When a purchase-key 84 is depressed, it will rock the sleeves on one of the permutator-shafts 110, through the medium of the stud 97, causing an upwardly-projecting arm 111 to engage one of the projections 112 on a lower tumbler 106, moving said tumbler forward until the inclined edge 106' on said tumbler rides over the edge 106'' of the frame, thereby lifting the rearward end of the tumbler and in turn lifting certain of the upper tumblers into cancellation position. (See Figs. 8 and 9.) Some of the under tumblers 106 are also controlled by one of the zero cancellation-shafts, which will be hereinafter more fully described.

In the patents above referred to the construction and operation of the two sets of tumblers—upper and lower—differ from the present construction and operation in that in the former patents two sets of permutator-shafts were employed, being disposed one above the other, both sets of tumblers being controlled by said purchase-keys to effect the desired result when the machine is operated—that is, when the purchase-key was depressed certain of the upper tumblers were moved into operative position at the same time certain of the under tumblers were moved, operatively controlling certain of the upper tumblers to render them inoperative. In the present instance but one series of permutator-shafts is shown, these shafts being engaged by the purchase-keys to control the under tumblers only to move them into position to cancel or render inoperative certain of the upper tumblers. The tumblers 106 and 107 are guided in suitable slots in the frame of the machine, the tumblers being superimposed in said guides, so that when the rear end of the tumbler 106 is raised in the manner previously described it will carry with it the upper tumbler 107, placing the said tumbler in a position to render it inoperative.

The system of cancellation to bring about the desired result in the operation of this machine is the same as that described in the patents above referred to. In the present machine the tumblers are of practically the same shape as those of the patents referred to, but are grouped in a different manner and are operatively controlled by devices intended to simplify the manner of operating said tumblers to bring about the proper system of cancellation.

65 Extending transversely across the machine

under the rear ends of the tumblers and secured to the frame of the machine are three shafts, here termed the "zero cancellation-shafts" because the sleeves thereon are controlled by the "0" purchase-keys, as shown in Figs. 2, 3, 4, and 26. The shaft 113 has mounted thereon a sleeve 109, to which is attached a dependent arm 114, having pivoted thereto a link 115, said link in turn being pivoted to an arm 116, secured to the sleeve 103 on the zero permutator-shaft 110, said sleeve being operatively controlled by the "0" purchase-key in the units-row. When this "0" purchase-key in the units-row is depressed, it will rock the sleeve 103 on the permutator-shaft, said sleeve in turn rocking the arm 116, link 115, arm 114, and the sleeve 109 on the zero-shaft 113, causing the wings 118 on said sleeve 109 to lift certain of the under tumblers, thereby raising certain of the upper tumblers into inoperative position. The wings 118, attached to the sleeve 109, normally hold certain of the under tumblers in raised position or such position as will hold certain of the upper tumblers in inoperative position; but when the sleeve 109 on shaft 113 is rocked those tumblers that were normally held in raised or inoperative position will be lowered and one of the other wings 118 will engage certain other under tumblers to place certain other of the upper tumblers in inoperative position, allowing the first-mentioned set of tumblers to remain in operative position. Thus it will be seen that whenever the "0" purchase-key in the units-row is depressed certain of the tumblers will be canceled or rendered inoperative, while others will be moved into operative position.

The zero-shaft 120 has mounted thereon a sleeve 108, to which is attached a dependent arm 121, having pivoted thereto a link 122, said link in turn being pivoted to an arm 123, mounted on the zero permutator-shaft 110, said arm 123 being operatively controlled by the "0" purchase-key in the tens-row. When the "0" purchase-key in the tens-row is depressed, it will rock the stud 97, that is mounted on the permutator-shaft and suitably connected with the arm 123, in turn rocking said arm 123, link 122, arm 121, and sleeve 108, causing wings 125 to lift certain of the upper tumblers into inoperative position. The wings 125 on the sleeve 108 operate in the same manner as do the wings on sleeve 109—that is, they normally hold some of the upper tumblers in inoperative position—and when said sleeve is operated the tumblers normally held in inoperative position will be rendered operative, while certain other tumblers will be rendered inoperative.

Zero-shaft 128 has mounted thereon a sleeve 117, to which is attached a dependent arm 129, having pivoted thereto a link 130, said link in turn being pivoted to an arm 131, mounted on the zero permutator-shaft 110, said arm 131 being operatively controlled by the "0"



purchase-key in the hundreds-row. When the "0" purchase-key in the hundreds-row is depressed, it will through the medium of the wings on the sleeve 117 act upon certain of the upper tumblers to raise and lower them in exactly the same manner as does the operation of the "0" purchase-key in the tens-row.

Located under the zero-shaft 113 and secured in the frame of the machine is a fixed shaft 135, on which are loosely mounted arms 136, that support a bail-rod 137, adapted to engage the upper tumblers in the manner shown in Figs. 5 and 6. Directly under the fixed shaft 135 is a shaft 138, that is driven directly from the operating-shaft 21 by means of a chain 139, Fig. 4, engaging sprocket-wheels 140 and 141. Mounted on this shaft is a cam 143, that is adapted to engage an antifriction-roller 144, journaled in the dependent end of the bail-arm 136, said cam operating to rock the bail-rod when the operating-shaft is rotated. On the under sides of the upper tumblers are shoulders 146, that are adapted to be engaged by the bail-rod 137 when the tumblers are down or in operative position; but when the tumblers are raised into inoperative position or canceled the bail-rod will be disengaged from the said shoulder 146, as shown in dotted lines in Fig. 6. When the operating-shaft 21 is rotated, the shaft 138 will be rotated through chain 139 and the cam 143, which is normally in the position shown in Fig. 5, will be rotated, which will by reason of the cam projection engaging the antifriction-roller on the bail-arm 136 rock the bail-rod rearwardly, carrying with it all of the tumblers that are down or in operative position, causing the said tumblers to operate the selectors, as shown in Fig. 6 and herein-after more fully described. After the cam projection has passed the antifriction-roller the bail-rod will be moved forward by means of the spring 147 and carry with it all the tumblers that have been controlled by the bail-rod to operate the selectors and restore them to their initial position. When the upper tumblers are returned to their initial position by the bail-rod, their forward ends will engage a stop-rod 150, so that the shoulders 146 on said tumblers will be uniformly aligned to be engaged by the bail-rod when the tumblers are dropped into operative position.

It is clearly shown in Figs. 8 and 9 how the purchase-keys are engaged by the individual key-locking bars to be held in depressed position and also how the depression of said purchase-keys will operatively control the under tumblers to move the upper tumblers into inoperative position. These figures also show how the locking-bars are disengaged from the purchase-keys to allow said purchase-keys to be restored to their initial position by their springs 86 and also how the under tumblers are restored to their initial position—that is,

the position shown in dotted lines in Fig. 9. Extending upwardly from the bail-arm 136 is a plate 151, to which is pivoted a link 152, said link being pivoted at its forward end to a dependent rock-arm 153, said rock-arm being mounted on a rock-shaft 154, that is suitably journaled in the sides of the machine-frame. This rock-shaft 154 is mutilated or cut away—that is, the peripheral lines of the shaft have been changed to form an operating-shoulder, as shown at 155—to permit the individual key-locking bars 100 to move under the influence of a purchase-key when said purchase-key is depressed, as shown in Fig. 8. When the bail-rod 134 is rocked on the shaft 135, it will move the plate 137 rearwardly, carrying with it the link 152, rocking the arm 153 and turning the rock-shaft 154, so that the lower edge of said rock-shaft where it is cut away will engage a shoulder 156, Figs. 8 and 9, on the individual key-locking bar and move said locking-bar rearwardly, thereby freeing the lateral projection 87 on the purchase-key bar from the shoulder 90 on the locking-bar, allowing said lateral projection to rest against inclined shoulder 157, Figs. 8 and 9, on the locking-bar, as shown in Fig. 9. When the bail-rod is allowed to return to its normal position—that is, the position shown in Fig. 8—the link 152 will rock the arm 153 and return the rock-shaft 154 to its normal position, thereby permitting the spring 158, secured to said individual key-locking bar and the side frame, to pull the locking-bar forward, so that the lateral projection 87 on the purchase-key bar will ride up the inclined shoulder 157 and permit the said purchase-key bar to be disengaged from the individual locking-bar and resume its normal position.

Loosely mounted on the shaft 135 and dependent therefrom is an arm 160, having journaled in its lower end an antifriction-roller 161, which is adapted to be engaged by the projection on the cam 143 when said cam is operated. Pivoted to the arm 160 at 163 is a link 164, that projects at an angle upwardly and forwardly through the purchase-key-supporting frame of the machine. Secured to the frame 1 just below the under tumblers and in front of the purchase-keys is a shaft 166, upon which is mounted a plate 167, said plate extending across the machine in such manner that the upper edge 168 of said plate will engage projections 169 on the under tumblers 106. This plate 167 has a slot 170, Figs. 8 and 9, therein, through which passes the link 164, said link engaging the plate 167 by means of a block 171, secured to the end of said link and abutting the forward side of the plate. Thus it will be seen that for each revolution of the operating-handle the cam 143 will be rotated, causing the projection on said cam to engage the antifriction-roller on the arm 160, moving said arm rearwardly and carrying with it the link 164, said link in turn rocking



the plate 167, so that the projections 169 on all the under tumblers that have been operated will be engaged by the plate 167 and said under tumblers moved rearwardly into their normal position or the position shown in dotted lines in Fig. 9. The plate 167, which restores the under tumblers to their normal position, the link 164, and the arm 160 will remain in the position assumed after resetting the under tumblers until one of the under tumblers has been again operated or moved into the position shown in Fig. 8—that is, so that the antifriction-roller 161 will be in position to be engaged by the cam 143.

Secured in the sides of the machine above the zero cancellation-shaft 128 is a fixed shaft 175, that has loosely mounted thereon a number of devices that are termed "selectors" 176. The upper parts 177 of these selectors have slots 178 therein that are adapted to receive the reduced end 179 of the selector-bars 52. The lower portions 180 of said selectors are bent at right angles to the main portion of the selectors and are adapted to be engaged by the rear ends of the upper tumblers. When a controller-key has been operated and certain of the operator-disks 20 are rendered inoperative and certain of the purchase-keys have been depressed to cancel certain of the upper tumblers, all of those upper tumblers which have not been canceled remain in the position shown in Fig. 5 and when the operating-handle is rotated move rearwardly under the influence of the bail-rod 134, engaging the selectors at 180 and rocking said selectors on the shaft 175, thereby raising the selector-bars 52 and causing the pins 55 on the disks 20 to be disengaged from the pins 56 on the selector-bars 52. (See Fig. 6.) When the selector-bars 52 are lifted, the plunger-pins 47 will be held in engagement with the disks 45, secured to the operating-shaft 21, causing such operator-disks 20 which are not engaged by the dogs 63 to be turned with the operating-shaft, allowing the projections 22 on said operator-disks to engage one of the walls 3' of the cash-wheels and turn said cash-wheels back to discharging position. When the bail-rod 134 returns the upper tumblers to normal position, the selectors 176 will be returned to initial position by springs 181 attached thereto. It will be observed that even though some of the upper tumblers remain in operative position—that is, in position to be engaged by the bail-rod 134 and moved rearwardly to operate the selectors 176, raising the selector-bars 52 to disengage the pins 55 and 56—the operator-disks 20 cannot be rotated if the controller-keys 10 that are associated with said operator-disks have been operated and the dogs 63 have engaged the projections 22 on the said operator-disks.

From the above it will be seen that the tumblers which control the ejection of money are greater in number than the receptacles, that

in some instances a large number of tumblers coact with a single receptacle, and that sometimes one and sometimes other tumblers of the series pertaining to a given receptacle are adjusted to operate such receptacles, the particular tumblers thrown into action depending upon the adjustment of the different shafts and wings resulting from depressing different keys and operating different controllers or different combinations of controllers. These various adjustments are so numerous—almost illimitable—that they cannot be specifically set forth; but the result is that whichever may be the keys depressed or the controllers or combinations of controllers operated and which ever be the tumblers thrown out of action there will always be tumblers available for adjustment to control the operation of the ejector devices of each receptacle from which money must be discharged.

In the system of coinage employed by the machine herein described it is necessary to have an extra set of permutator-shafts in order to effect the proper system of cancellation, owing to the fact that the presence of the two and twenty francs and the five and fifty francs are a departure from the decimal order of the rest of the coinage. These shafts are journaled in the frame of the machine under the operating-shaft 21, and the forward shaft 190, or the one that is controlled by the two and twenty francs, is here termed the "cancellation-shaft." Loosely mounted on this shaft are sleeves 191 192, Fig. 16, said sleeves having radially-projecting wings 193 194, which are adapted to engage the upper tumblers to alternately place certain of said tumblers in operative and in inoperative position. The sleeve 191 is controlled by the two-franc controller-key, while the sleeve 192 is controlled by the twenty-franc controller-key. The mechanism for operatively connecting the two-franc and the twenty-franc controller-keys with the sleeves 191 192 is the same. So for clearness the description will be in the singular.

Pivoted to the lower end of the two-franc controller-key (see Fig. 10) is a dependent link 196, provided with a slot 197, that is engaged by a stud 198, said stud being supported by a bracket 199, Fig. 16, secured to the frame 1 of the machine. This pin-and-slot arrangement is for the purpose of guiding the link in its vertical movement when it is operated by the controller-key. When the two-franc controller-key is pulled down, it will lift the link 196 and cause the tooth 200 on the bottom of the link to engage the lug 201 on the sleeve 191 and rock said sleeve, thereby causing the wings 193 to change their position—that is, the wing that normally holds certain of the upper tumblers in inoperative position will allow said tumblers to be dropped to operative position and certain other tumblers that have been in operative position will be lifted



by the wings to inoperative position. In order to effect the desired result in making change, a certain number of the upper tumblers will have been cancelled and certain other upper tumblers that are necessary to effect the desired result will have been placed in position to operate the selectors, said selectors in turn selecting the cash-wheels to be returned to cash-discharging position. In one end of the sleeve 191 is a slot 205, in which freely rides a radially-projecting pin 206, that is secured to the shaft 190. Rocking the sleeve 191 by means of the link, as above set forth, will allow said sleeve to move freely on the shaft until the opposite end of the slot 205 engages the pin 206, where it will be arrested and remain until reset to normal position. The rocking operation of the sleeve 192 and wings 194 is effected in precisely the same manner as the sleeve 191 just described—that is, the tooth 200' on the link 195' will engage the projecting lug 201' on the sleeve 192 and lock it when the said link is raised. The slot 205' and the pin 206' operate in the same manner as the pin and slot in sleeve 190. In order to retain the sleeves in position after they have been rocked and after they have been returned to their normal position, leaf-springs 208 208' are secured to the frame of the machine and have their free ends resting on the top of said sleeves, as shown in Fig. 16.

The operating mechanism for returning the sleeves 191 192 to initial position after having been operated by their respective controller-keys consists of a cam-arm 210, mounted on the ejector-shaft 32 and projecting upwardly into the path of an antifriction-roller 211, which is secured to a disk 212, said disk being mounted on the operating-shaft 21 and controlled by the operation of the same. Dependent from the ejector-shaft 32 and forming part of the cam-arm 210 is a segment-gear 214, that meshes with and operates a gear 215, loosely mounted on the shaft 190. When the operating-shaft is rotated, it will cause the antifriction-roller 211 to engage the cam-arm 210 and rock the segment-gear 214, in turn rotating the gear 215, causing a pin 216 on said gear to engage a pin 217, secured to the shaft 190, returning said shaft to its initial position, carrying with it, by means of the pins 206 and 206', the sleeves 191 192, as shown in Fig. 11. When the operating-shaft has made a complete revolution, the segment-gear will be restored to its initial position (the position shown in Fig. 10, by means of a spring 218.) The gear 215 being free on the shaft will return with the segment-gear without affecting the said shaft 190, the parts remaining in the position shown in Fig. 12.

Adjacent to the shaft 190 is the shaft 220, which is controlled by the five and fifty francs, here termed the "alternator-shaft." Loosely mounted on this shaft are sleeves 221 222, said sleeves having secured thereto cams 223

224, that have four alternate points of contact, which are adapted to engage the upper tumblers and alternately place certain of said tumblers in operative and in inoperative position. The sleeve 221 is controlled by the five-franc controller-key, while the sleeve 222 is controlled by the fifty-franc controller-key. The mechanism for operatively connecting the five-franc and fifty-franc controller-keys with the sleeves 221 222 is the same; but the explanation will be in the singular.

Pivoted to the lower end of the five-franc controller-key is a dependent link 226, provided with a slot 227, which is engaged by a stud 228, said stud being supported by a bracket 229, Fig. 16, secured to the frame 1 of the machine. This pin-and-slot arrangement is for the purpose of guiding the link in its vertical movement when it is operated by the five-franc controller-key. Secured to the link above the slot is a rearwardly-projecting arm 230, that has dependent therefrom a pawl 231, adapted to engage a four-point ratchet-wheel 232, secured to the sleeve 221. (See Figs. 13 and 14.) When the controller-key is pulled down, it will lift the link 226, carrying with it, by means of the arm 230, the pawl 231, said pawl engaging one of the teeth on the four-point ratchet and giving the sleeve 221 a quarter-turn, thereby causing the cams 223 to shift their position—that is, the one that is normally holding certain of the upper tumblers in inoperative position will allow said tumblers to be dropped to operative position and certain other tumblers that have been in operative position will be lifted to inoperative position. In order to effect the required result in making change, a certain number of the upper tumblers will have been canceled and certain other upper tumblers that are necessary to effect the desired result will have been placed in position to operate the selectors, said selectors in turn selecting the cash-wheels to be returned to cash-discharging position. The sleeve 222, link 226', and the four-point ratchet 232' are operated by the fifty-franc controller-key in the same manner and for the same purpose as is the sleeve 221. The mechanism for restoring the sleeves 221 222 to initial position after having been operated by the controller-keys is the same as that employed to return the sleeves 191 192 to initial positions. The gear 215 on the shaft 190 meshes with a gear 235, that is secured, by means of a pin 236, to the shaft 220. The supporting-collar 234 of the gear 235 carries in a recess 237 a spring-actuated plunger-pin 238, which is held in position by a set-screw 239, said pin being adapted to engage one or the other of two pins 240, secured to the face of a circumferentially-grooved disk 241, fixed on the sleeve 222. When the sleeve 222 is operated by the controller-key mechanism, the disk carrying the pins 240 will be rotated and assume the position shown in Fig.



19—that is, they will be arranged with vertical relation to each other. When the segment-gear 214 is operated in the manner hereinbefore described, it will, through the medium of the gear 215, rotate the gear 235 in the direction of the arrow shown in Fig. 19, causing the plunger-pin 238 to engage the lower pin 240, turning the disk 241 and the sleeve 222 and giving the cams a quarter-turn, so that they will engage and hold out of operative position the same upper tumblers that they did previous to the operation hereinbefore described. When the segment-gear 214 is returned to initial position by spring 218, it will rotate the gears in the direction shown in Fig. 20 and cause the plunger-pin 238 to assume its initial position or the position shown in Fig. 19. By referring to Fig. 24 the initial position and relation of the pins 240 and the plunger-pin 238 is shown. It will be noticed that when the disk carrying the pins 240 is rotated the plunger-pin 238 will be in the path of one of the pins 240, but that said pin 240 will ride on the inclined face 238' of the plunger-pin, forcing said plunger-pin back into the recess 237 and allowing the pin 240 to pass the plunger-pin, so that when the gear 235 is operated it will engage pin 240 and restore it to its proper position. The restoring of the cams 223 on the sleeves 221 to their normal position after they have been operated by the five-franc controller-key is accomplished in the same manner as the restoring of the cams 224—that is, by turning the shaft 220 and the collar 242, carrying the plunger-pin, which is adapted to engage the pins 240' on the disk 241', forming part of the sleeve 221. In order to retain the cams 223 and 224 in the position to which they have been advanced, springs 245 245' are employed. These springs, preferably U shape, are supported on studs 246 246', fastened to the frame 1 of the machine, said springs being held in proper position by nuts 247 on said studs. The free ends of the springs are adapted to engage in the grooves of their respective disks in the manner shown in dotted lines in Fig. 13—that is, the disks 241 241' have four points of contact, two of which engage each side of the spring and hold the sleeve in proper position after they have been operated.

Located under the purchase-keyboard and operatively connected therewith is suitable registering and recording mechanism 250 for making a permanent record of the amount of purchase and displaying visual registering means. Inasmuch as this forms no part of the present invention, the operating mechanism of said register is not disclosed.

Secured to the operating-shaft 21 on the left side of the machine, adjacent to the frame 1 thereof, is a ratchet-wheel 253, and secured to the side frame of the machine is a pawl 254, that engages said ratchet for the purpose of

preventing backward rotation of the operating-shaft 21.

Operation: The general operation of the machine is as follows: Upon making a deposit of one franc in the proper cash-wheel 3 through the opening 4' in the casing the one-franc controller-key 10 corresponding to the cash-wheel in which the money has been placed is pulled down, which operation will cause the latch 14 to withdraw the sliding dog 8 from engagement with the upper wall 3' of the cash-wheel, said wheel being progressed by the latch 13 on the end of the controller-key engaging the under side of one of the walls 3' of said wheel. The upward movement of the lower part of the controller key-bar will cause the roller 67 to engage the cam-arm 65 and move all of the dependent plates 60 of higher denomination, and including the dependent plate of the one-franc controller-key which has been operated, out of engagement with the arms 62 on dogs 63 and allow said dogs to drop into engagement with the projections 22 on the operator-disks 20, permitting the operator-disks that are operated by the fifty, two twenty, ten, and five centime controller-keys to remain free to operatively engage the cash-wheels corresponding in value to said operator-disks. When the said one-franc controller-key is pulled down and the dependent plates operated, the arm 70, secured to the dependent plate of highest denominational value, will be operated, which in turn will depress the vertical link 32, causing the stud 78 to engage the arm 79, that operatively controls the bail 76 and lifts said bail out of engagement with the individual locking-bars to permit the depression of the purchase-keys. On depressing the key marked "5" in the tens-of-centime column it will operatively control one of the arms 111 on the permutator-shaft 110, lifting certain of the under tumblers and canceling or placing in inoperative position upper tumblers 9<sup>a</sup>, 6<sup>a</sup>, 4<sup>a</sup>, and 2<sup>a</sup>. (See Fig. 3.) The depression of the "0" key in the units-centime column will through its connecting mechanism operate the sleeve 109 on the zero-shaft 113 and cause certain of the wings on said sleeve to lift certain of the under tumblers, thereby canceling upper tumblers 9<sup>a</sup>, 7<sup>a</sup>, 5<sup>a</sup>, 3<sup>a</sup>, and 1<sup>a</sup>, said tumblers having been normally in operative position, and lower into operative position upper tumblers 8<sup>a</sup>, 6<sup>a</sup>, 4<sup>a</sup>, and 2<sup>a</sup>, which were normally in inoperative position. This will allow tumbler 8<sup>a</sup> only to remain in operative position. When the "0" key in the units-centime column is depressed, it will, by reason of being operatively controlled therewith, disengage the pawl 101 from the single-tooth disk 102 to permit the operating-handle to be rotated. Upon turning the operating-handle, cam 143 will operate the bail-rod 134, moving it rearwardly and carry-



ing with it the tumbler 8 and cause it to engage a selector, which operates a selector-bar 52, raising said selector-bar, so that the pins 55 and 56, located, respectively, on the operator-disk 20 and the said selector-bar, will be disengaged and the operator-disk 20 free to be rotated by the operating-shaft, allowing the projection 22 on the operator-disk to engage one of the walls of the fifty-centime cash-wheel and return said wheel to cash-discharging position, so that when the cam 30 on the operating-shaft operates the ejectors it will discharge the fifty-centime piece on the cash-receiving ledge. Continued rotation of the operating-handle will permit the bail-rod 134 to resume its normal position, carrying with it the tumbler 8 or any other tumblers that have been operated. At the same time the cam 143 will operate the link 164, pulling it rearwardly and moving with it the plate 167, that engages the projections on the under tumblers, and move all of said under tumblers that have been operated into normal position. The depressed purchase-keys are released from the individual key-locking bars by the shaft 154, which is operatively controlled by the rearward movement of the bail-rod and engages the individual key-locking bars to move them rearwardly, so that the purchase-keys can rise under the influence of their springs 86 and the individual key-locking bars be returned to normal position by suitable springs when the bail-rod moves to its normal position. When the operating-shaft has made a complete revolution, a single-tooth disk 102 will be engaged by the pawl 101, and the purchase-key having been released the bail 76 will engage the individual key-locking bars and prevent any of the purchase-keys from being depressed until a controller-key is again operated. The operation of the machine when the five and two franc controller-keys are pulled down is as follows: A five-franc piece having been deposited in the five-franc wheel and the five-franc controller-key operated, it will render inoperative all the operating mechanism above and including the five-franc controller-key. The next deposit of a two-franc piece would render inoperative the two-franc controller mechanism. These two deposits of five and two francs will leave operative all the operating mechanism of the two one-franc wheels, the fifty and two twenty, and the ten and five centime wheels. The deposit of the five-franc piece and the operation of the five-franc controller-key will give the cams on the alternator-shaft a quarter-turn, so that tumblers 13<sup>a</sup>, 14<sup>a</sup>, and 15<sup>a</sup> will be canceled. The deposit of the two-franc piece and the operation of the two-franc controller-key will operate the wings on the sleeves of the cancellation-shaft to cancel tumblers 10<sup>a</sup>, 11<sup>a</sup>, 12<sup>a</sup>, 19<sup>a</sup>, 20<sup>a</sup>, and 21<sup>a</sup>. The depression of the "5" purchase-key in the units-

franc column of the purchase-keyboard will cancel tumblers 10<sup>a</sup>, 14<sup>a</sup>, 15<sup>a</sup>, 16<sup>a</sup>, 19<sup>a</sup>, 22<sup>a</sup>, 26<sup>a</sup>, and 27<sup>a</sup>. The depression of the "6" purchase-key in the tens-of-centimes column will cancel tumblers 2<sup>a</sup>, 5<sup>a</sup>, 8<sup>a</sup>, and 9<sup>a</sup>. The depression of the "0" purchase-key in the units-centime column will partially rotate the zero units cancellation-shaft, which will cancel tumblers 20<sup>a</sup>, 17<sup>a</sup>, 14<sup>a</sup>, 11<sup>a</sup>, 9<sup>a</sup>, 7<sup>a</sup>, 5<sup>a</sup>, 3<sup>a</sup>, and 1<sup>a</sup>. This will leave tumblers 18<sup>a</sup>, 6<sup>a</sup>, and 4<sup>a</sup> to be operated, the tumbler 18<sup>a</sup> affecting the one-franc wheel, the tumbler 6<sup>a</sup> affecting the twenty-centime wheel, and tumbler 4<sup>a</sup> affecting the twenty-centime wheel. Thus it will be seen that by turning the operating-handle the tumblers 18<sup>a</sup>, 6<sup>a</sup>, and 4<sup>a</sup> will operate the selectors and permit the operator-disks to return the one-franc and two twenty-centime cash-wheels to cash-discharging position and discharge an amount of money that will be the difference between the amount deposited and the amount registered on the purchase-keys.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In a mechanical cashier, the combination of the cash-receptacles, controller-keys adapted to operate the cash-receptacles, a series of oscillating devices operatively controlled by the controller-keys, an operating-shaft, a series of operator-disks mounted thereon, and dogs or pawls adapted to engage the operator-disks but normally held out of engagement therewith by the oscillating devices.

2. In a mechanical cashier, the combination of the cash-receptacles, controller-keys adapted to operate the cash-receptacles, an operating-shaft, a series of operator-disks mounted thereon, dogs or pawls adapted to engage the operator-disks, a series of oscillating devices engaging the dogs or pawls to normally hold them out of engagement with the operator-disks, and means operatively connecting the oscillating devices and controller-keys.

3. In a mechanical cashier, the combination of the cash-receptacles, a controller-shaft adjacent thereto, a plurality of controller-keys mounted on said shaft and adapted to operate their related cash-receptacles, a series of oscillating devices in engagement with each other and operatively connected with the controller-keys, means for returning the cash-receptacles to cash-discharging position, and means intermediate to the oscillating devices and the cash-receptacles for rendering inoperative the means for returning the cash-receptacles to cash-discharging position.

4. In a mechanical cashier, the combination of the cash-receptacles, controlling-keys adapted to operate the cash-receptacles, a series of oscillating devices, means for returning the cash-receptacles to cash-discharging position, dogs or pawls operatively controlled by the dependent oscillating devices and adapted to



engage said means, and cams on the dependent devices operatively engaged by the controller-keys to oscillate said devices.

5 In a mechanical cashier, the combination of the cash-receptacles, the controller-keys, a plurality of oscillating devices, means for operatively engaging in each device with a controller-key, and means for engaging said devices with each other so that when a controller-key is operated, all the oscillating devices of higher denomination and including the device directly operated, will be oscillated.

15 6. In a mechanical cashier, the combination of the cash-receptacles, the controller-keys, a plurality of oscillating devices, means intermediate to the controller-keys, and oscillating devices for operatively controlling the said devices separately and collectively.

20 7. In a mechanical cashier, the combination of the cash-receptacles, the controller-keys, a plurality of devices operatively connected with the controller-keys, an operating-shaft, a series of operator devices mounted on said shaft, dogs or pawls adapted to engage said operator devices but normally out of engagement therewith, and means on the operating-shaft for releasing the dogs from the operator-disks.

30 8. In a mechanical cashier, a plurality of controller-keys representing different denominational values, a plurality of plates, a shaft for supporting them in operative relation with the controller-keys, each of said plates being provided with means for engaging the plate of higher denominational value.

40 9. In a mechanical cashier, a plurality of controller-keys representing different denominational values, a plurality of plates, their supporting-shaft, cam-arms mounted on said shaft and in engagement with the plates, and means on the controller-keys for operatively controlling the cam-arms and dependent plates.

45 10. In a mechanical cashier, the combination of the controller-keys, a plurality of oscillating devices controlled thereby, a keyboard mechanism comprising keys and key-locking plates, and a universal locking-bar operatively controlled by the oscillating devices to simultaneously lock or release all of the key-locking plates.

50 11. In a mechanical cashier, the combination of the controller-keys, a series of oscillating devices operatively controlled thereby, a keyboard mechanism comprising keys and key-locking plates, a bail adapted to engage the locking-plates, and means controlled by the devices and operatively connected with the bail.

60 12. In a mechanical cashier, the combination of the controller-keys, a plurality of oscillating devices controlled thereby, a purchase-keyboard comprising keys and key-locking plates, means for controlling the key-locking plates, a series of oscillating dependent devices, and a member operatively connected

with the dependent devices and operating the means for controlling the key-locking plates.

13. In a mechanical cashier, the combination of cash-receptacles, an operating-shaft, ejecting-levers operatively controlled by said operating-shaft, and a resiliently-supported auxiliary ejecting-lever controlled by the ejecting-lever.

75 14. In a mechanical cashier, the combination of the cash-wheels, their controlling mechanism, a main operating-shaft, a purchase or numeral keyboard mechanism comprising keys, locking devices and permutator-shafts, dogging means adapted to engage the operating-shaft, devices on the permutator-shaft operated by the keys, and an oscillating member operated by the devices on the permutator-shaft to control the dogging means.

85 15. In a mechanical cashier, the combination of the cash-wheels, means for moving the same to cash-discharging position, a plurality of coacting tumblers, a universal bail capable of engaging the operated tumblers and moving them into operative engagement with the means for moving the cash-wheels.

90 16. In a mechanical cashier, the combination of the cash-wheels, means for moving the same to cash-discharging position, two sets of coacting tumblers, a universal bail adapted to engage one set of said tumblers and move them into operative engagement with the cash-wheel-moving means, an operating-shaft, and means controlled by said shaft for operating the bail.

100 17. In a mechanical cashier, the combination of the cash-wheels, means for moving the same to cash-discharging position, two sets of coacting tumblers, a universal bail adapted to engage one set of said tumblers when they are moved to operative position by the other set of tumblers and move them into operative engagement with the cash-wheel-moving means, an operating-shaft, and means controlled by said operating-shaft to operatively engage the bail.

110 18. In a mechanical cashier, a keyboard mechanism comprising a plurality of groups of keys, a plurality of groups of lower tumblers operatively controlled by the said keys, a plurality of groups of upper tumblers operated by the under tumblers to render them operative and inoperative, an oscillating bail adapted to engage the upper tumblers, an operating-handle and its shaft, and a cam operated thereby to oscillate the bail.

120 19. In a mechanical cashier, a keyboard mechanism comprising a plurality of groups of lower tumblers, a plurality of groups of upper tumblers operated by the lower tumblers, means for operating the tumblers, an oscillating bail for moving the upper tumblers longitudinally, means for oscillating the bail, and means controlled by the bail-oscillating means for restoring the under tumblers to their initial position.



20. In a mechanical cashier, a keyboard mechanism comprising a plurality of groups of lower tumblers, a plurality of groups of upper tumblers operated by the lower tumblers, a main operating-shaft, a cam controlled thereby, and means controlled by the cam to restore the lower tumblers to their initial position.

21. In a mechanical cashier, a keyboard mechanism comprising a plurality of groups of purchase or numeral keys, a series of plates for locking said keys in depressed position, a mutilated rock-shaft adapted to engage the key-locking plates, an oscillating bail, a member connecting the bail and mutilated rock-shaft, and means for operating the oscillating bail.

22. In a mechanical cashier, a keyboard mechanism comprising a plurality of groups of purchase or numeral keys, a plurality of groups of lower tumblers, a plurality of groups of upper tumblers, oscillating wings supported in position to engage certain of the under tumblers, and means operatively connecting the wings with the zero-units purchase-key.

23. In a mechanical cashier, a keyboard mechanism comprising purchase or numeral keys, a plurality of upper and lower tumblers, two series of oscillating wings supported in position to engage certain of the upper tumblers, and means operatively connecting the wings with the zero, tens and hundreds purchase-keys.

24. In a mechanical cashier, the combination of the cash-receptacles, controller-keys adapted to operate the cash-receptacles, a plurality of groups of tumblers, oscillating wings supported in position to engage certain of the tumblers, means for operating said wings operatively controlled by certain of the controller-keys, a main operating-shaft, and means operated by said shaft to restore the said wings to initial position.

25. In a mechanical cashier, the combination of the controller-keys, a plurality of groups of tumblers, a shaft, oscillating wings mounted on said shaft in position to engage certain of said tumblers, and dependent members operated by certain of the controller-keys to engage and oscillate said wings.

26. In a mechanical cashier, the combination of the controller-keys, a plurality of groups of tumblers, a shaft, sleeves provided with oscillating wings mounted on said shaft, said wings adapted to engage certain of said tumblers, suitably-guided dependent members operatively controlled by certain of the controller-keys and engaging the sleeves to oscillate the same when the controller-keys are operated.

27. In a mechanical cashier, the combination of the controller-keys, a plurality of groups of bifurcated tumblers, oscillating winged sleeves and their supporting-shaft, reciprocating links operated by certain of the controller-keys for oscillating the sleeves in one direction, a main

operating-shaft, and a vibrating arm operated by the operating-shaft and operating the sleeve-supporting shaft to return the winged sleeves to their initial position after they have been operated by the controller-keys.

28. In a mechanical cashier, the combination of the controller-keys, a plurality of groups of tumblers, oscillating winged sleeves and their supporting-shaft, reciprocating links operating said sleeves and operatively connected with certain of the controller-keys, a main operating-shaft, a gear on the sleeve-supporting shaft, means for engaging and disengaging the gear and sleeve-supporting shaft, and means intermediate to the gear and main operating-shaft for operating said gear.

29. In a mechanical cashier, the combination of the cash-receptacles, controller-keys adapted to operate the cash-receptacles, a plurality of groups of bifurcated tumblers, winged sleeves and their supporting-shaft, rotating cams supported in position to engage certain of the tumblers, reciprocating links for operating said cams in one direction operatively connected to certain of the controller-keys, a main operating-shaft, and means on the sleeve-supporting shaft operated by the main operating-shaft and operatively controlling the rotating cams to rotate them until they resume their initial relation with the tumblers.

30. In a mechanical cashier, the combination of the cash-receptacles, controller-keys adapted to operate the cash-receptacles, a plurality of groups of bifurcated tumblers, rotatable sleeves and their supporting-shaft, cams carried by said sleeves and adapted to operate certain of the tumblers, clutch mechanism engaging the sleeve and sleeve-supporting shaft, a main operating-shaft, and means operated by the main operating-shaft and said clutch mechanism for operatively controlling the sleeves to rotate the cams until they resume their initial relation with the tumblers.

31. In a mechanical cashier, the combination of the controller-keys, a plurality of groups of bifurcated tumblers, rotatable sleeves and their shaft, cams carried by said sleeves, means operatively connecting the sleeves with certain controller-keys whereby the cams will be partly rotated when said controller-keys are operated, clutch mechanism engaging the cam-sleeves and sleeve-supporting shaft, a main operating-shaft, and means operated by the main operating-shaft controlling the clutch mechanism to rotate to their position of initial relation with the tumblers.

32. In a mechanical cashier, the combination of the controller-keys, rotatable sleeves and their shaft, cams carried by said sleeves, means operatively connecting the sleeves with certain controller-keys, and clutch mechanism mounted on said sleeve-supporting shaft and sleeves, an operating-shaft and means intermediate to the operating-shaft and clutch mechanism adapted to control the clutch mech-



anism and cause the parts thereof to operatively engage each other, thereby rotating said sleeves when said sleeve-supporting shaft is operated.

5 33. In a mechanical cashier, the combination of the controller-keys, rotatable sleeves and their shaft, cams carried by said sleeves, means operatively connecting the sleeves with certain controller-keys, clutch mechanism mounted on said sleeve-supporting shaft and sleeves,  
10 an operating-shaft, means intermediate to the

operating-shaft and clutch mechanism adapted to control the clutch mechanism and cause the parts thereof to operatively engage each other, thereby rotating said sleeves and cams, and 15 detent means for retaining the sleeves and ams in the desired position.

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Witnesses:

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