No. 785,385. PATENTED MAR. 21, 1905.

F. W. STEINACKER & I. CULVER.

CASH REGISTER.

APPLICATION FILED AUG. 26, 1904.

6 SHEETS—SHEET 1.

Fig. 1.

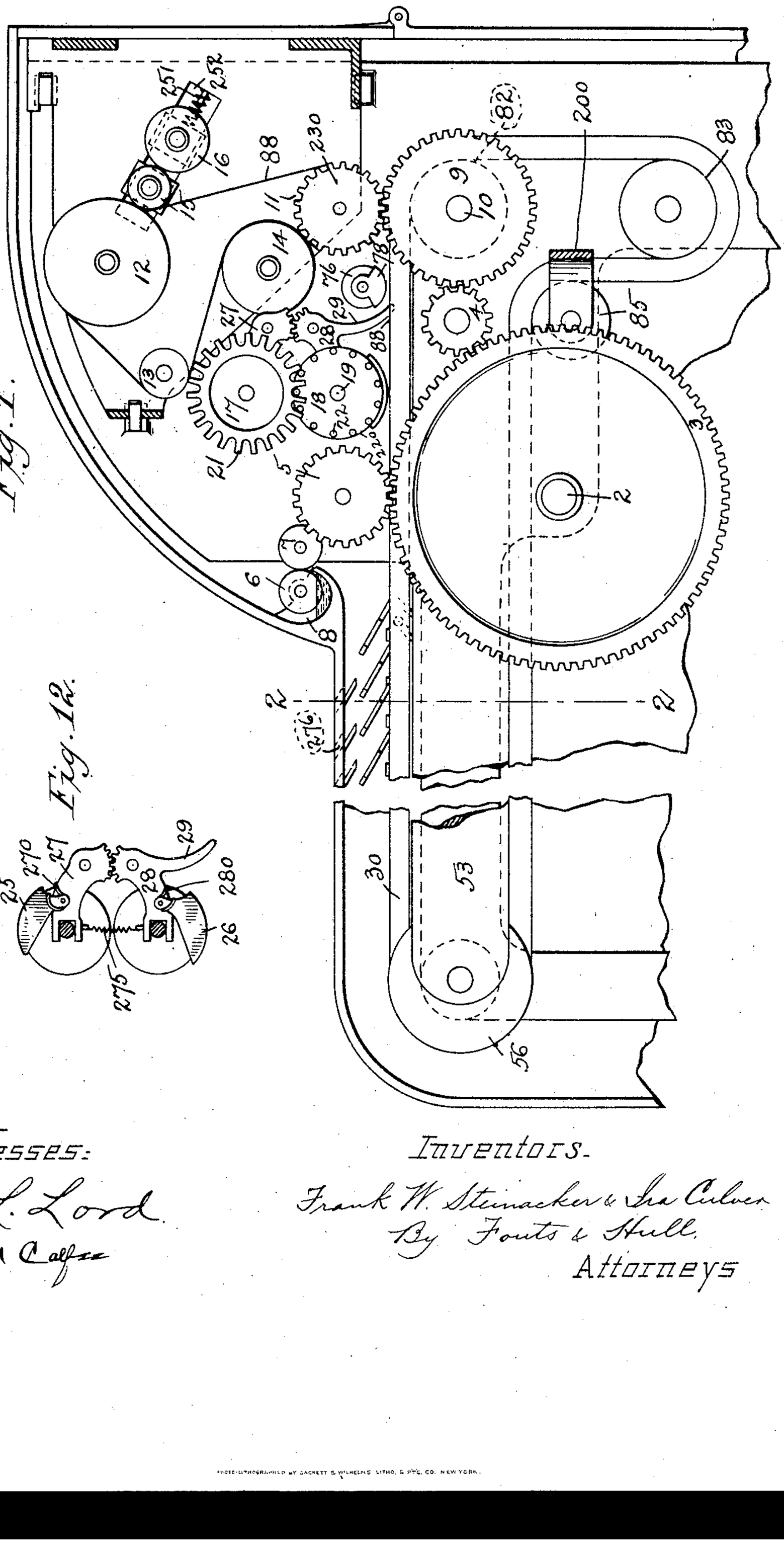

Fig. 12.

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PHOTO-LITHOGRAPHED BY SACHETT & WILHELMS LITHO. & PTG. CO. NEW YORK.

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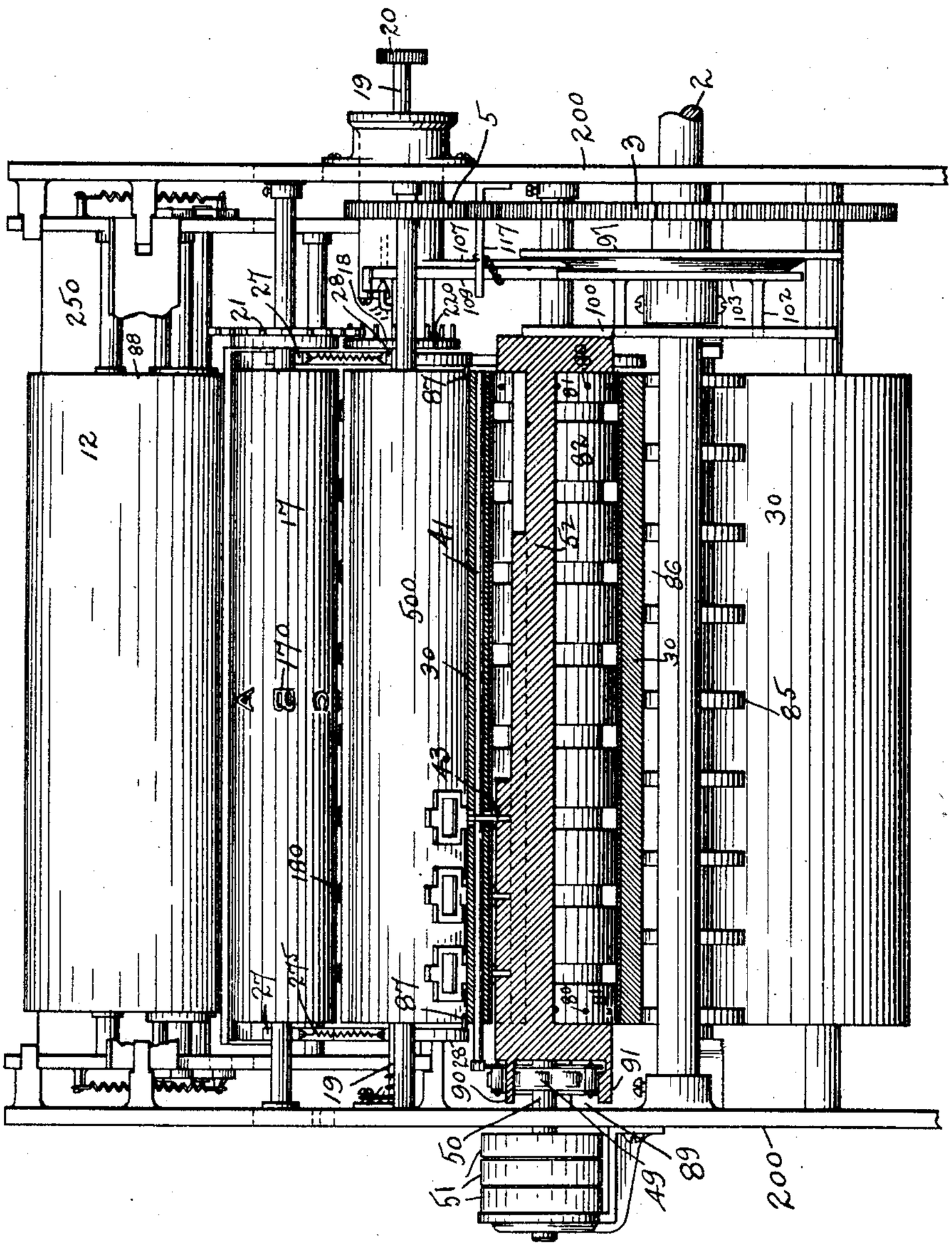
6 SHEETS—SHEET 2.

Fig. 2.



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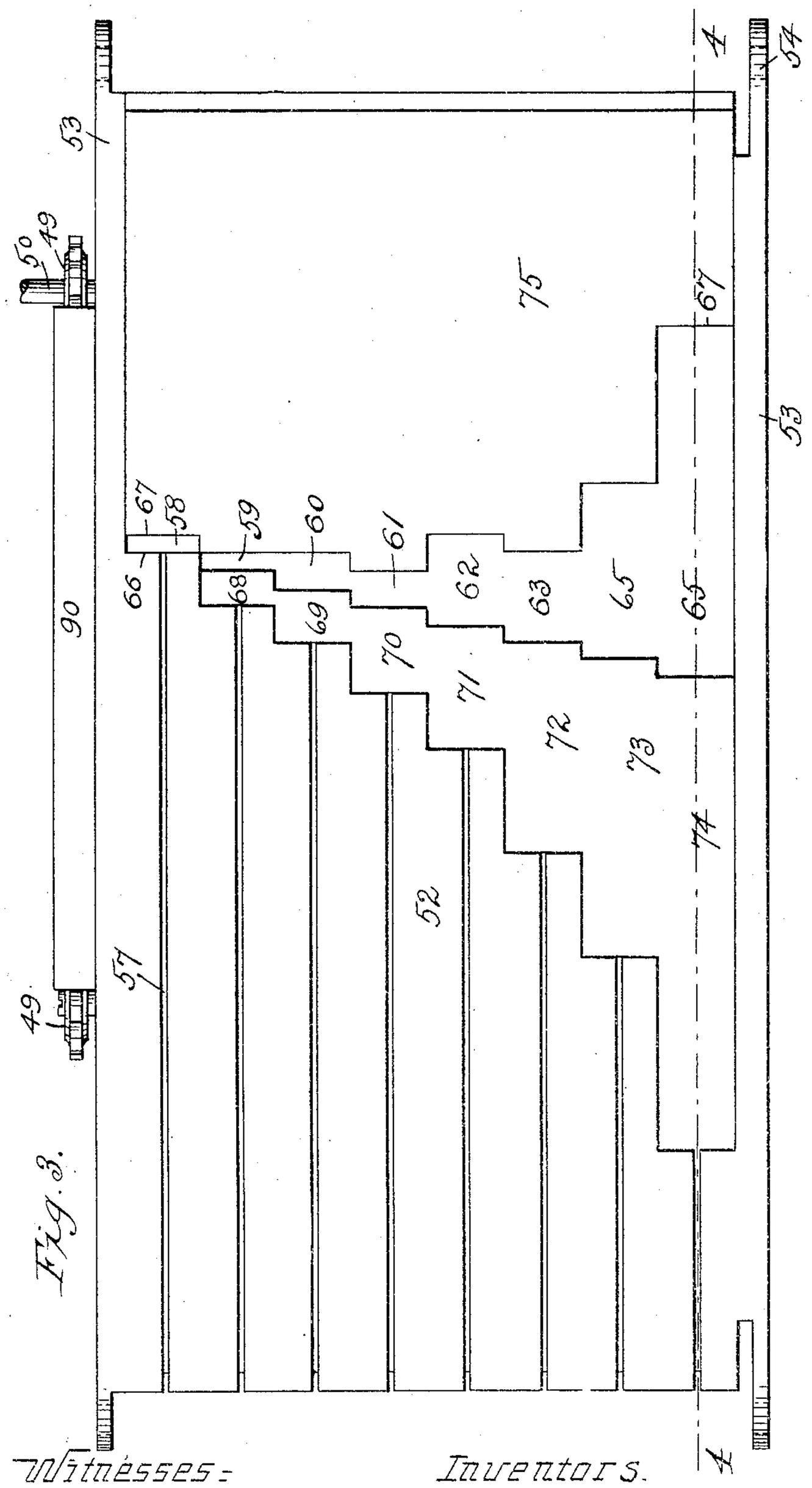

Fig. 3.

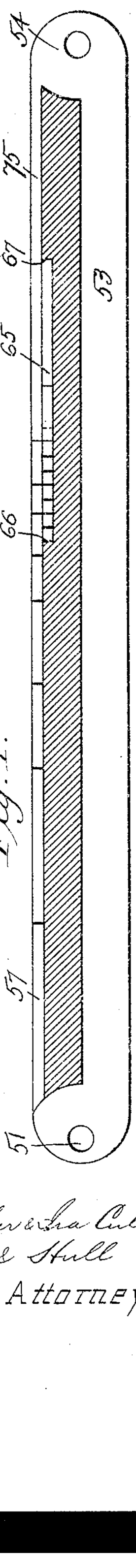

Fig. 4.

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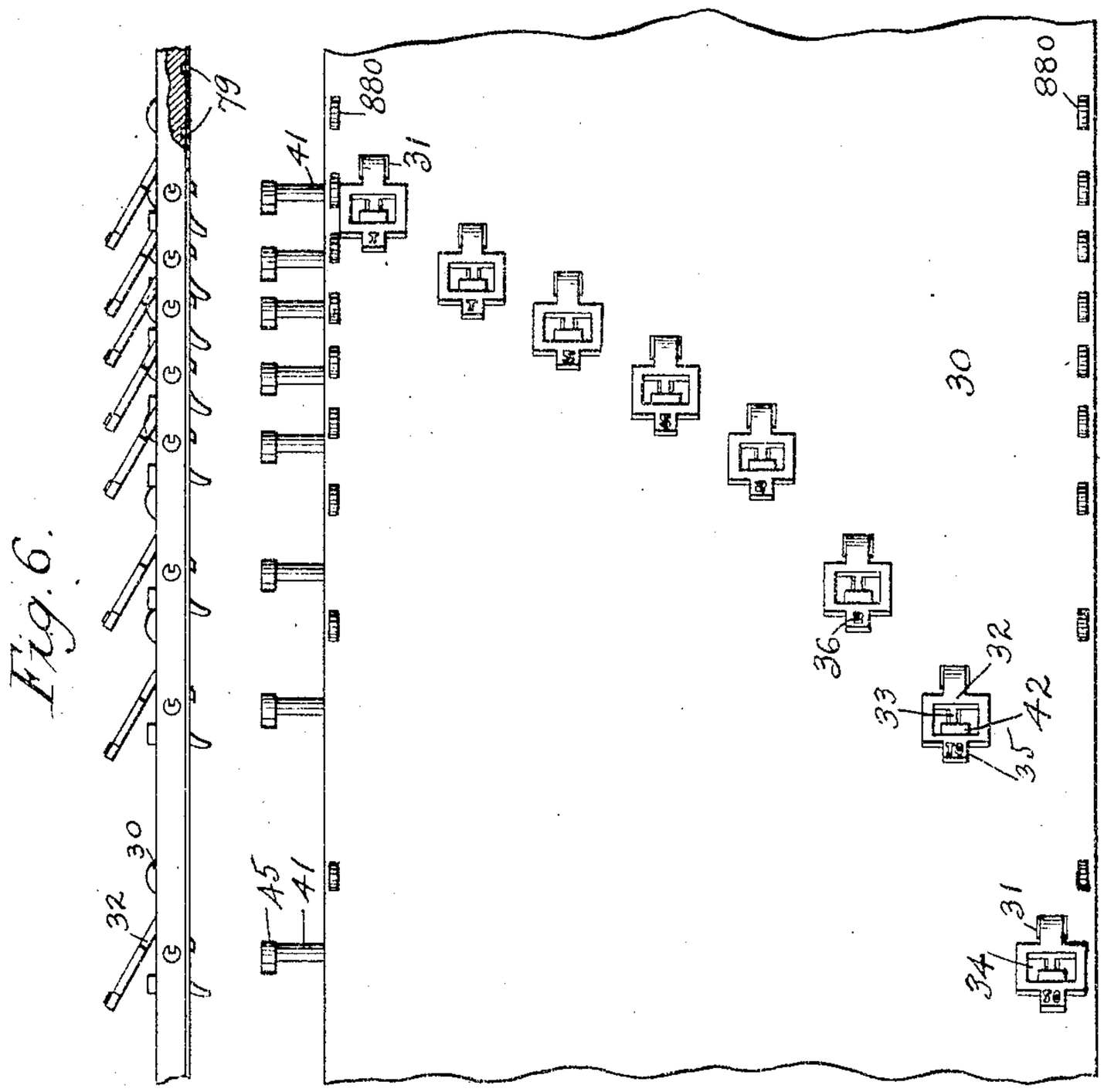

Fig. 6.

Fig. 5.

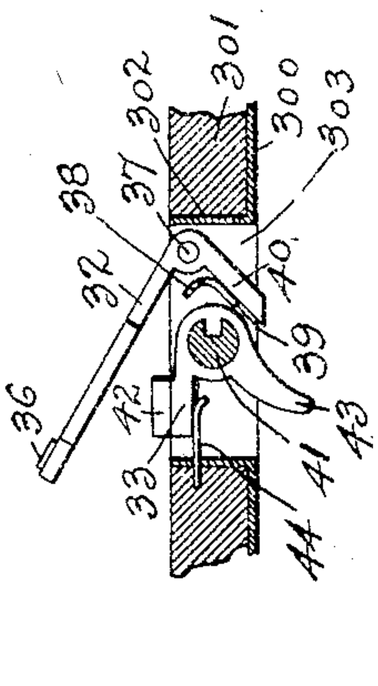

Fig. 7.

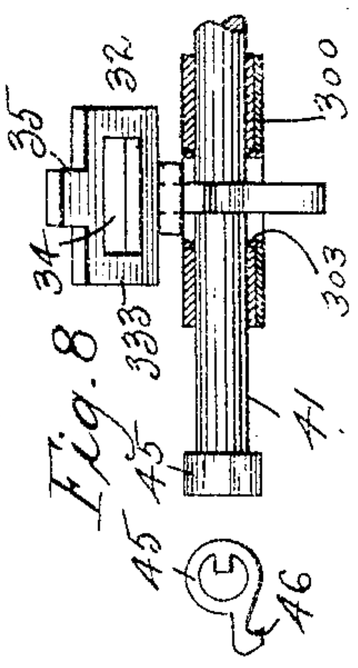

Fig. 8

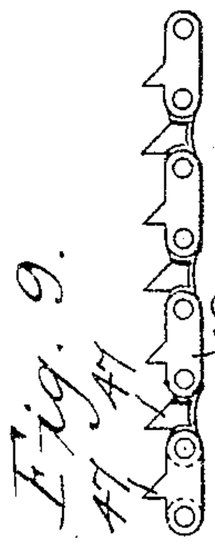

Fig. 9.

Fig. 10

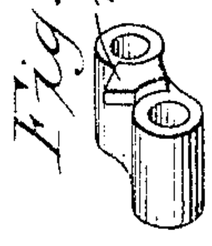

Fig. 11.

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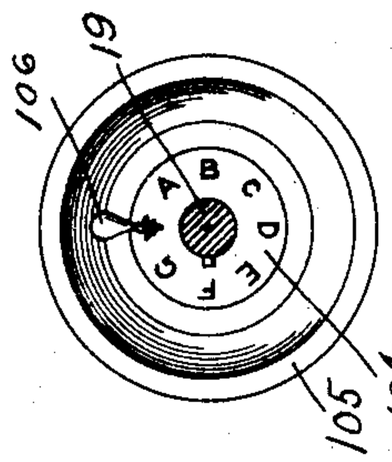


Fig. 15.

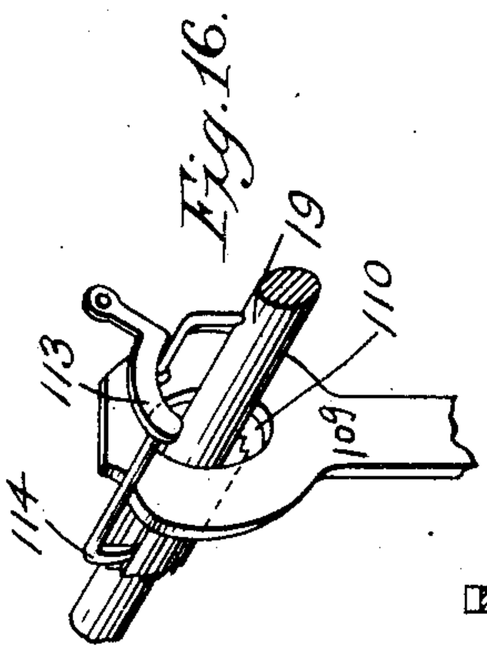


Fig. 16.

Fig. 17.

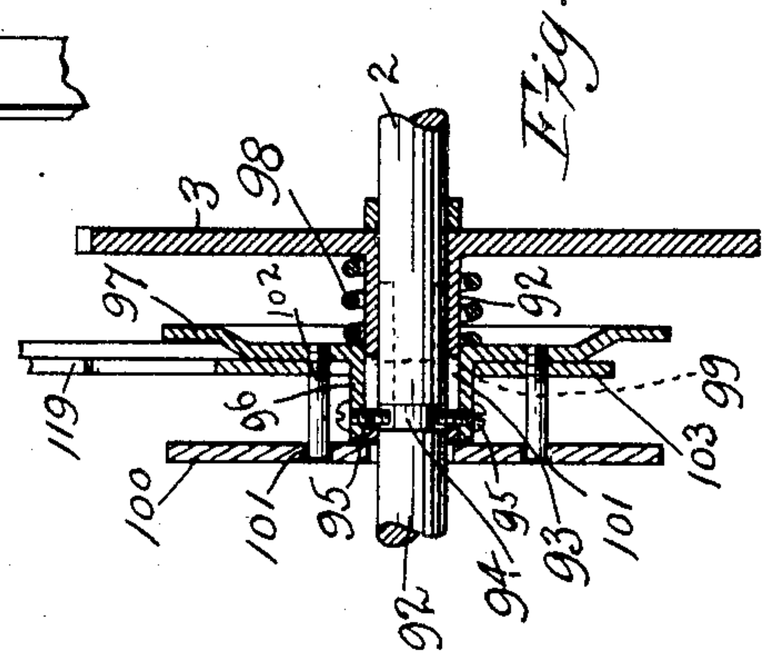


Fig. 18.

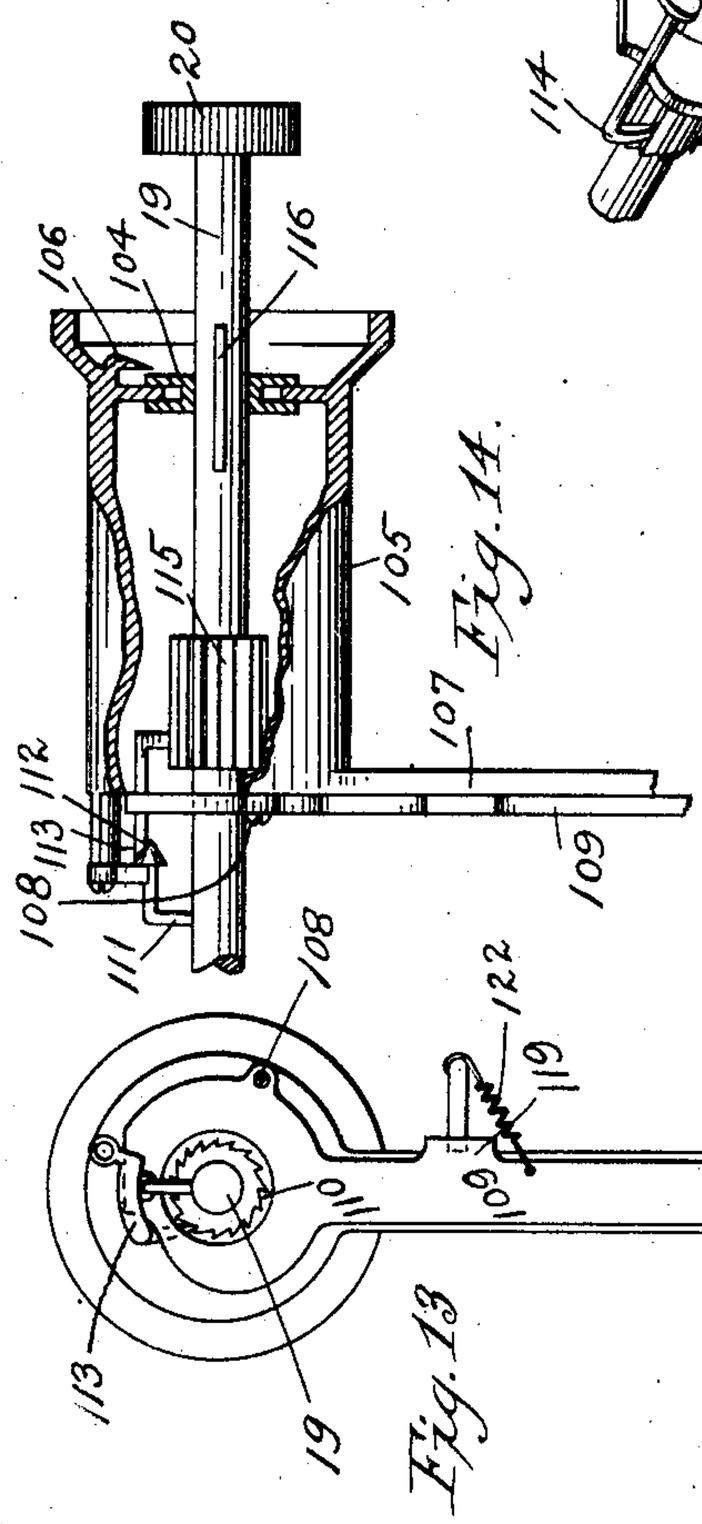
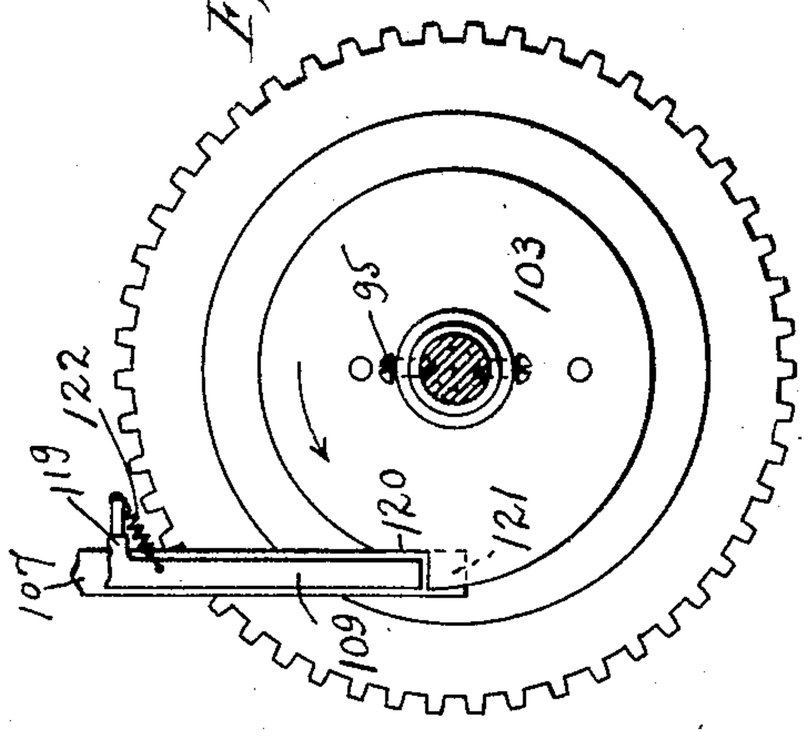


Fig. 14.

Fig. 13.

Fig. 19.



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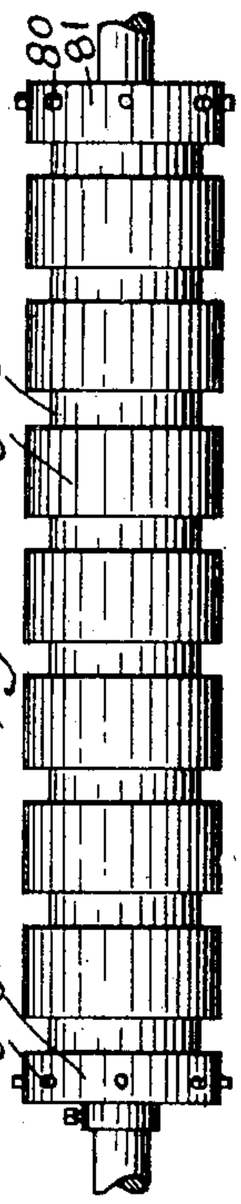

Fig. 23.

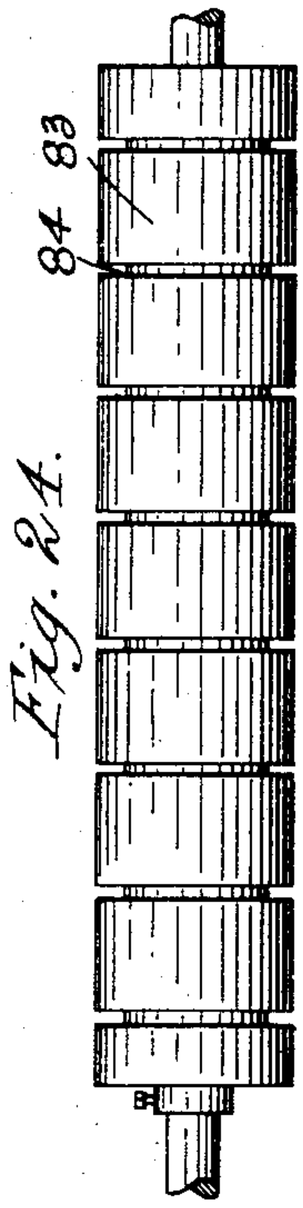

Fig. 24.

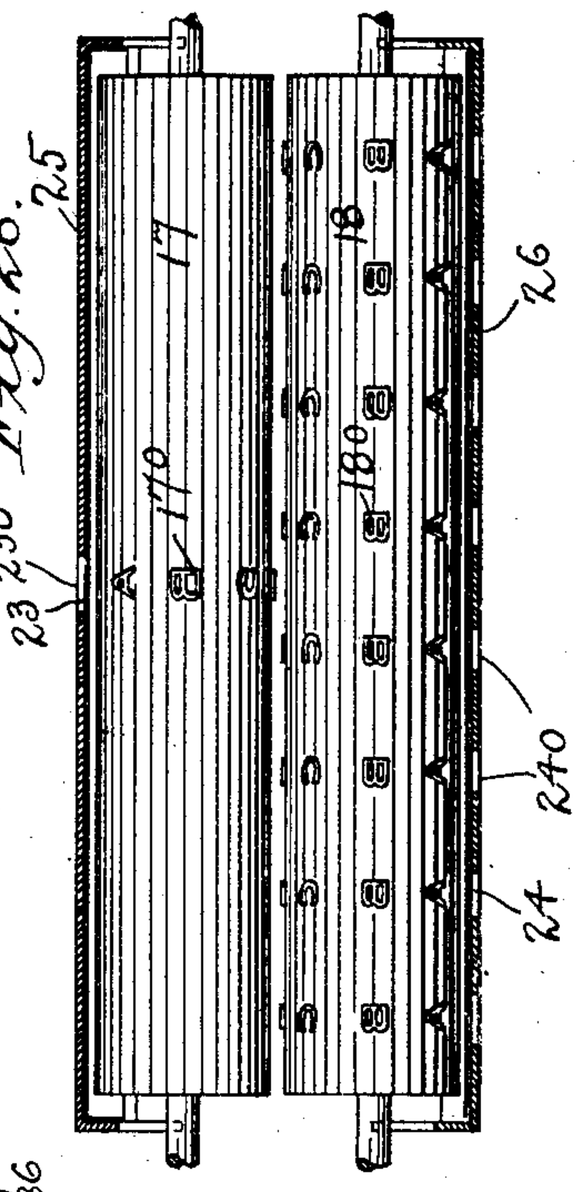

Fig. 26.

Fig. 22.

Fig. 20.

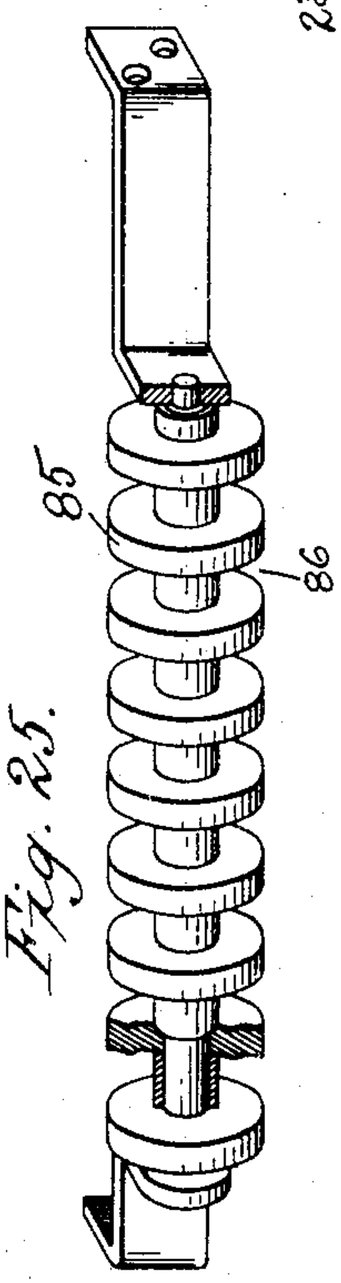

Fig. 25.

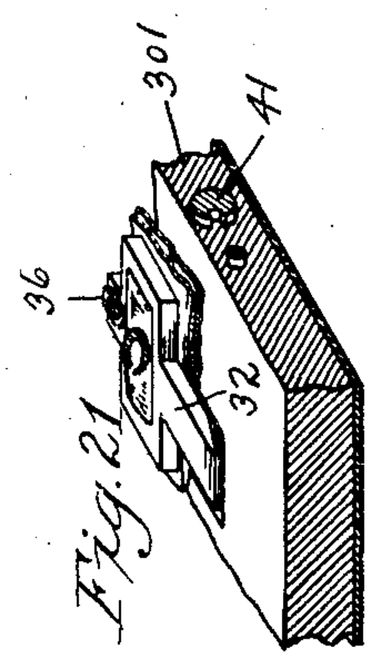

Fig. 21.

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No. 785,385. Patented March 21, 1905.

UNITED STATES PATENT OFFICE.

FRANK W. STEINACKER AND IRA CULVER, OF CLEVELAND, OHIO.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 785,385, dated March 21, 1905.

Application filed August 26, 1904. Serial No. 222,208.

To all whom it may concern:

Be it known that we, FRANK W. STEINACKER and IRA CULVER, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Cash-Registers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to cash-registers, and has for its object the production of a register which will register the value of money that may be inserted into the same, whether such money be in the form of bills or coins, which shall make a permanent record of the denominations of such bills or coins, which shall make a permanent record of the particular operator who inserts a bill or coin into the register and operates the latter, which may make a record from the bill or coin itself and which shall make on the bill or coin itself a record of the operator and which shall be provided with means whereby the operation of the register shall be prevented until the operator shall have set the operator-identifying mechanism.

The invention may be defined generally as consisting of the combinations of elements embodied in the claims hereto annexed.

Referring to the drawings, Figure 1 represents a side elevation of our machine with the side plates of the casing and frame removed. Fig. 2 represents a sectional view of the same on the line 2 2 of Fig. 1. Fig. 3 represents a plan view of the platform or differential device. Fig. 4 represents a sectional view of such platform on the line 4 4 of Fig. 3. Figs. 5 and 6 are respectively a plan view and a side elevation of a portion of the belt or carrier which carries the grippers and register-actuating shafts. Figs. 7 and 8 are respectively a side and a front elevation of the grippers for bills. Figs. 9 and 10 are respectively a side elevation and top plan view of the chain which operates the register-wheels. Fig. 11 is a detail of one of the link-blocks. Fig. 12 is a side elevation of the operator-identifying rolls and their operating means. Figs. 13 to 19 represent detail views of the parts which lock the register against operation until the operator has set his recording mechanism. Fig. 20 represents a form of gripping member which we may employ for coins. Fig. 21 represents a detail of a portion of the belt or carrier, showing a bill clamped between the grippers. Fig. 22 shows a detail of one of the belt-drive wheels. Figs. 23, 24, and 25 are elevations of drums over which the belt is driven. Fig. 26 is an elevation of the operator-recording rolls, the ribbon-holders being shown in section.

Describing the parts by reference-numerals, 1 represents the casing of the register, said casing having therein a frame 200. Journaled in the sides of said frame is the operating-shaft 2, said shaft having sleeved thereon a gear-wheel 3. Meshing with this gear-wheel are the gears 4 and 5, the latter carrying a pad 500. Weak acid may be supplied to the pad 500 by means of the rolls 6 and 7, the former of which is mounted so as to dip into the acid-receptacle 8 and is driven by frictional engagement with the roll 7, which is itself driven in like manner by the pad 500.

Meshing with the gear 4 is the gear 9, which is supported on a shaft 10, suitably journaled, as in the sides of the frame. This last gear in turn meshes with the gear 230 of a paper-feeding roll 11. The paper web 88 is wound on a drum 12, whence it passes, in the manner shown in Fig. 1, over the rolls 13 14, the record-receiving roll driven by the gear 230, and the rolls 15 and 16. The roll 15 is driven frictionally from the roll 12, and the roll 16 is driven frictionally from the roll 15, a suitable spring 251 being employed in each of the end bearings 252 to press the journal-boxes of said rolls in a direction to maintain the rolls in operative relation to each other and to the drive-roll 12.

17 and 18 designate the operator's recording-rolls. The former of these rolls is mounted in operative relation to but slightly separated from the roll 13. The latter roll is provided with a shaft 19, extending through the casing and provided with a milled head 20. The roll 17 is provided with a gear-wheel 21, meshing with pins 22 on a wheel 220, keyed to the shaft 19. The rolls 17 and 18 are provided, respectively, with ribbons 23 24, for

which holders 25 and 26 are respectively provided. The ends of the shafts for the rolls 17 and 18 are supported in the ends of intermeshing segment-arms 27 and 28, the latter having an operating-arm 29, for a purpose to be hereinafter described. The former of these rolls is provided with a single set of characters 170 for printing on the paper of the roll 13 the identifying character of the person who operates the machine. The latter roll is provided with as many sets of similar characters 180, reversely arranged and similarly spaced with reference to the characters 170, as there are holders or sets of grippers for money. The ribbon-holders are pivoted intermediate the ends and arbors of the segments 27 28, spring-clips 270 280, connected to the holders and segment-arms, maintaining said holders in operative relation to the rolls 17 18 and under certain circumstances permitting said rolls to be moved into contact with said holders. The holder 25 is provided with an opening 230 for permitting the selected character 170 to make its record on the roll 13 and the holder 26 with as many similar openings 240 as there are sets of characters 180 to permit the selected character or characters to make a record on the money in the grippers or holders.

Supported below the pad 500 and the roll 18 is the carrier 30, which is shown as a belt made, preferably, of a thin flexible metallic section 300 and a thicker section 301, which may be of leather or rubber or similar belting material. This belt is provided with rectangular openings 31, arranged in the manner shown in Fig. 5, for the reception of as many money holders or grippers as may be necessary to accommodate the different denominations of money to be inserted in the register. To form a suitable lining for these openings, the metal of the section 300 is punched upwardly at each end to form end lining-pieces 302, and additional side lining-pieces 303 may then be inserted. In each opening are journaled gripping members 32 33, which for convenience of description will be hereinafter referred to as the "upper" gripper and "lower" gripper, respectively. The upper gripper is journaled on a short shaft 37, extending through the side lining-pieces 303, and in the form shown more particularly in Figs. 7, 8, and 21 is particularly adapted for bills, consisting of an upper widened portion 333 above the carrier 30 (said widened portion having a slot 34 therethrough) and a lower extension 40 in the opening 31. Projecting above the widened portion of the gripper is a narrow extension 35, which carries a type 36, indicating the denomination of the bill inserted between the upper and lower grippers.

A spring consisting of an upper widened portion 38, extending across the opening 31 and engaging suitable slots in the side lining-pieces, and a lower narrow portion 39, engaging the extension 40 of the upper gripper, tends to bring said gripper into operative relation with the lower gripper 33.

The lower gripper 33 is splined onto the register-operating shaft 41, which extends through the belt and the side lining-pieces 303. This gripper is provided with an upward projection 42, somewhat smaller than the orifice 34 in the upper gripper, for a purpose to be hereinafter described, and is also provided with an extension or tail 43. A comparatively weak spring 44, which extends through one of the end lining-pieces 302 and into the belt, normally sustains the lower gripper in the position shown in Figs. 7 and 8. The shaft 41 extends transversely through the belt and is provided at one end with the collar 45, keyed to the said shaft and having a hook or lug 46 adapted to engage the lugs 47 of the register-operating chain 48. Both the side plates and blocks of this chain are provided with lugs 47. The chain is carried by suitable sprockets 49, one of which is rigid with the shaft 50 to operate the registering-wheels 51. These wheels may be mounted inside the casing and may be of any suitable construction.

The belt or carrier is provided with as many pairs of grippers as may be deemed necessary. As shown in Fig. 5 eight such pairs of grippers may be used, two for the accommodation of one-dollar bills, two for the accommodation of two-dollar bills, two for the accommodation of five-dollar bills, one for the accommodation of ten-dollar bills, and one for the accommodation of twenty-dollar bills. The lower member of each holder is provided with a register-operating shaft 41, hereinbefore described. To cause the grippers to firmly hold the bills and to register the values of the same, we may employ the differential mechanism shown in Figs. 2, 3, and 4. In said figures, 52 designates a platform, which is below and somewhat wider than the belt 30. This platform is provided with side members 53, which extend beyond the body of the platform proper and are provided with journals 54 for the shaft of the belt-operating and paper-feeding gears 80 and 9 and for the shaft of the drum 56. The upper surface of the body of the platform is provided with narrow slots 57, within which the extensions 43 of the lower grippers project, thereby enabling said grippers prior to operating the register to assume the position shown in Figs. 7 and 8. When the belt is in starting position the extensions 43 of the lower grippers are in the slots 57. Owing to the relatively great width of the extensions 40 of the upper grippers said grippers are maintained in the position shown in Figs. 7 and 8. Deep-recessed portions 58, 59, 60, 61, 62, 63, 64, and 65 are provided in the platform, each of said portions having shoulders 66 and 67 at the front and rear thereof, respectively. In advance of the deep recesses are shallower recesses 68, 69, 70, 71, 72, 73, and 74, said recesses being of the same depth as the slots 57.

In the rear of the deep recesses the platform is cut down at 75 to the same depth as the shallow recesses and the slots 57. No shallow recesses need be provided for the first pair of grippers, as said grippers when the belt or carrier is in starting position are close to the deep recess 58. The length of the deep recesses is sufficient to permit the shaft 41 to operate the register-chain a distance corresponding to the denomination of the bill inserted between the grippers. The recesses 58 and 59 will enable said chain to be moved the distance between a pair of the lugs 47 and cause the appropriate registering-wheel to be moved one space or number. The length of the recesses 60 and 61 is sufficient to cause said chain to be moved two spaces, with a corresponding movement of the register-wheel. The length of the spaces 62 and 63 is sufficient to cause a movement of the register chain and wheel a distance of five spaces. The length of the recess 64 is sufficient to cause said chain and wheel to be moved a distance of ten spaces, and the length of the recess 65 is sufficient to cause said chain and wheel to be moved a distance of twenty spaces before the extension 43 of the lower gripper is tripped by the shoulder 67 to disengage the hook or lug 46 from the chain-lug with which it may be in engagement.

The shallow recesses are located slightly in advance of the openings in the casing, whereby the spring 39 is enabled to depress the extension 40 of its upper gripper and cause the bill to be tightly clamped between the upper and lower grippers in the manner shown in Fig. 21 practically as soon as the belt is moved forward by its gear-wheels. As the shoulders 66 of the deeper recesses are in advance of the acid-roller 5, the bill will be firmly clamped between the upper and lower gripper before it reaches said roller, and as the recessed portion 75 at the rear of the platform is of sufficient depth to permit the extension 40 of the upper gripper to be depressed to its full extent the bill will remain firmly clamped between the grippers as it passes under the rollers 18, 76, and 11. The roller 76 is the inking-roller for the type 36, carried by the upper gripper. It is supported somewhat above the belt or carrier and is provided with a shield 78, by means of which only enough of its surface is exposed to apply ink to the type 36 on the upper gripper.

In order to drive the belt, we preferably provide the same with a series of holes 79, extending through the metal section of the belt adjacent each edge of the same, said holes being engaged by pins 80 on gears 81 at each end of the roller 82. The surface of the drum or roller 82 with which the gear 80 is connected is provided with cut-out or depressed portions 820 in the manner shown in Figs. 1 and 23 to permit the extensions 40 of the upper grippers to extend thereinto and insure the gripping of the bills as the belt passes over this roller. Below the drum or roller 82 is journaled the drum 83, the surface of said drum being formed like the front surface of the platform 52—viz., with narrow slots 84 for receiving the extensions of the lower grippers—said slots being too narrow to permit the extensions of the upper grippers to extend thereinto.

Below the bottom of the side member 53 of the platform is pivoted the idle roller or drum 85, said drum being provided with wide recesses 86 intermediate of its ends for the accommodation of the extremities of the upper grippers 32, which are passing around said drum in an inverted position. The surface of the roller or drum 56 corresponds to that of the roller or drum 83 and the front of the platform 52, whereby the grippers in passing over said drum may assume the open position shown in Figs. 7 and 8.

The tails 29 of the segments 28 are each provided with a lateral pin 87, projecting above the side of the belt or carrier. At a sufficient distance in advance of each pair of grippers there is provided on each side of said carrier or belt a cam 880, which is adapted to engage the pin 87, and thereby rock the segments 27 28 to separate the rollers or drums 17 18. This causes the upper drum to press its appropriate indicating character against the paper on the drum 13 and the roller 18 to press the corresponding character against the surface of the bill within the opening 34 in the upper gripper. When used for bills, the ribbon for this latter roller is saturated with quickly-fading ink, the object being to make a temporary record on the bill of the operator who has inserted the same into the register. The rollers 17 and 18 are kept together normally by means of a spring 275, extending between each pair of the segments 27 and 28. Two pairs of such segments are shown, one at each end of the rollers.

With the arrangement of parts as above described the operation is as follows: A bill having been folded up so that a number indicating its value is on the outside is inserted through a suitable opening 276 in the top of the casing between the appropriate pair of grippers, with said number opposite the slot 34 in the upper gripper. These openings in the casing are shown in dotted lines in Fig. 1. The shaft 2 is then operated, causing the belt or carrier to be driven by means of the pin-gears 81. As soon as this movement of the belt or carrier is started the extension of the upper gripper has been brought above a recess in the top of the platform, permitting its spring to force the said gripper against the bill which has been inserted between the upper and lower grippers. The projection 42 on the lower gripper forces the appropriate portion of the bill upwardly into the recess 34 in position to be operated upon by the soft

material on the acid-roll 3, as shown in Fig. 21. Thence the grippers travel to the roller 18, and just as said grippers reach said roller the appropriate cams 880 rock the segment-arms 28 to depress the roller 18 and press the appropriate operator-indicating character against the bill. At the same time the roller 17 is forced upwardly to cause the corresponding character to press against the paper on the roller 13. The manner in which these rollers 17 and 18 are adjusted to bring the appropriate characters into printing position will be described hereinafter. From this point the pair of grippers travels beneath the drum 76, said drum being a slight distance above the belt 30, so that the exposed inking-surface thereof will not press against the surface of the bill, but will engage the type 36, carried by the upper gripper. From this point the belt or carrier travels around the drum 82, and the pair of grippers passes beneath the roller 11. This roller is of soft material, around which passes the paper 88. The surface of the roller being of soft material and said roller being located in close proximity to the belt, an impression will be made on the paper on said roller from the acid-moistened figure on the bill, and a permanent record of the denomination of said bill will be further made by the type 36. As previously indicated, the surface of the drum 82 is recessed, whereby the bill is still firmly held between the grippers. The surface of the drum 83, however, is provided only with the slots 84 for the extensions of the lower grippers, and the extensions of the upper grippers are held out of gripping relation in the manner shown in Figs. 7 and 8. Such being the case, when the grippers have passed around the lower portion of the drum 83 they are inverted and the bill is free to drop into whatever receptacle may be provided therefor. If deemed necessary, a stripper may be provided between the drums 85 and 83 for positively removing the bills from the grippers.

As will be apparent, it is only when some medium, as a bill, is inserted between the projection 42 of the lower gripper and the slot 34 of the upper gripper that the shaft 41 will be rocked to cause the engagement of the lug 46 with the register-chain. It is only the grippers, therefore, which contain such bills that will effect registration. To avoid interfering with the chain by the lugs 46 when the grippers are below the platform, we may provide the platform with a recess 89 between the upper and lower flanges 90 and 91, within which the lower portion of the chain travels. The upper flange 90, as shown more particularly in Fig. 3, is shorter than the distance between the shafts of the sprockets 49, whereby the lower portion of the chain may travel below said flange.

As previously stated, when the register is not in operation the grippers are a slight distance in advance of the shallow recesses 68, 69, 70, 71, 72, 73, and 74. The length of these shallow recesses increases progressively, each recess being at least as long as the sum of the lengths of the shallow recess and registering recess immediately preceding. This construction is shown in Figs. 3 and 5, and by such construction bills may be inserted between as many pairs of grippers as desirable, and the single registering mechanism may register the values of all the bills or other money in the grippers by one operation of the belt or carrier.

In order to prevent the operation of the belt or carrier and of the registering mechanism until the operator shall have set the rollers or drums 17 and 18 to imprint his identifying-mark on the paper and bill, respectively, we have devised the following construction: Projecting through the side of the casing is the shaft 19 and milled head 20, hereinbefore described. The shaft 19 carries the roller or drum 18, and said roller or drum is geared to the roller or drum 17. The driving-gear 3 is not rigidly connected with the operating-shaft 2, but is provided with an elongated sleeve 92, said sleeve being provided with oppositely-located slots 93. Adjacent to the inner end of the sleeve 92 the shaft is provided with an annular groove 94, into which project screws 95, extending through a sleeve 96 on a clutch-disk 97. Between said clutch-disk and said driving-gear is the spring 98. The shaft 2 is provided with oppositely-located slots 99. Interiorly of the disk 97 a plate 100 is supported, as from the end of the platform 52. This plate is provided with holes 101, through which pins 102, connected with the disk 97, may extend. Adjacent said disk 97 and secured to the same, as by the pins 102, is a cam 103. With the parts in the position just above described it will be evident that the shaft 2 will rotate idly within the sleeve 92 without operating the recording or registering mechanisms. Splined to the shaft 19 is the dial 104, said dial having thereon characters corresponding to the different clerks or operators who operate the register. This dial and the shaft 19 are within a sleeve or casing 105 and are rotatable with respect to said sleeve or casing. A pointer 106 projects from a part of said casing above the dial. Depending from the casing 105 and rigid therewith is an arm 107. This arm engages the inner face of the clutch 97. Pivoted to the inner end of the sleeve 105, as at 108, is the arm 109, said arm being enlarged at the upper end and having an opening therethrough through which the shaft 19 loosely extends. It will be evident that if the sleeve 105 could be drawn outwardly the disk 97 would be operated to spline the gear 3 to the operating-shaft 2. In order to prevent such operation until the identifying-mark of some operator has been set to make its record, we provide

the shaft 19 with a pin 111, having a head 112, engaging a curved link 113, which may be pivoted to an inner extension of the sleeve 105. The end of said link opposite its pivot is provided with a detent-pawl 114, engaging an elongated ratchet 115 in such a manner as to prevent the rotation of the shaft 19 in a backward direction. The distance from the indicator 106 to the first character on the dial is sufficient to permit the head 112 to be disengaged from the link 113. The sleeve may then be withdrawn, the dial sliding on its elongated key or spline 116 to permit the clutch-disk 97 to clutch the gear-wheel 3 to its shaft. To retain said clutch in position until the shaft has been turned a sufficient distance to throw the pins 102 out of alinement with the holes 101 in the plate 100, we may provide a hook member 117, having a hook 118, adapted to engage a projection 119 on the member 109. As will appear from an inspection of Fig. 19, the cam-wheel 103 is provided with a substantially straight or vertical portion 120, engaging the lower end of the member 109. Almost immediately upon turning the shaft 2 the member 109 is rocked upon its pivot 108 by the cam-surface and is disengaged from the hook 118. The length of the ratchet 115 insures engagement therewith by the detent-pawl when the sleeve 105 is withdrawn to clutch the gear 3 to the shaft.

It will be seen from the above description that before the register may be operated the operator must rotate the shaft 19 a sufficient distance to set the rollers 17 and 18, so as to place his indicating device on said rollers in printing position. After this has been done he may rotate the operating-shaft 2. At the end of the rotation of said shaft the lower end of the member 109 slides off the end 121 of the cam 103 and then snaps back into the position shown in Fig. 19, a spring 122 being provided for this purpose. Simultaneously the pins 102 enter the holes 101, and the connection between the shaft 2 and the driving-gear 3 is broken.

In Fig. 20 we show a modification of the upper gripper or holding member which we may employ when the register is to be used for coins. In this case the upper end of said gripper 320 is enlarged to form a U-shaped receptacle 321 for the reception of the coin, (indicated in dotted lines at 322.) Six such grippers may be employed, one for each denomination of coin inserted into the register. One arm of the U is extended to form a base for the type 323 thereon which indicates the value of the coin in the receptacle. With the upper gripping or holding member above described we employ the same form of lower member as in the case of bills, and the only change that need be made in adapting the machine hereinbefore described for coins is the substitution of the upper gripper or holder shown in Fig. 20 for that shown in the other figures. While the money inserted in the register in the latter event may not be physically "between" the grippers, it is operatively between them, as the upper gripper can operate the lower only through the money in the receptacle 321 and the grasping of the money is accomplished only when the portion 42 of the lower gripper is in contact therewith.

With coins in the register above described, the roll 500 may be supplied with ink instead of acid, whereby a portion of the coin, as the upper periphery thereof, may be prepared to print an identifying-record of the coin on the paper on the roll or drum 11. The roll 76, as before, inks the type on the upper gripper, and a double record of the coin is made on the paper on the roll. When the same machine is used for both bills and coins, the roll 18 may be divided into two parts, one part being supplied with acid for the bills and the other part with ink for the coins.

From the foregoing description it will be apparent that we have produced a machine that will effectively register the value of money inserted therein, whether the money be in the form of coins or bills, or both, and that will automatically effect the registration of such money by the presence of a bill or coin in the holders or grippers forming part of the machine.

While we have described in detail the embodiment of our invention herein set forth, we do not propose to be limited to such details, except as the same may be included in the claims or may be rendered necessary by the prior state of the art.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a cash-register for bills, the combination of registering mechanisms, and means, dependent upon the insertion of a bill into said register, for operating said mechanism differentially according to the different denominations of the bills inserted thereinto.

2. In a cash-register for bills, the combination of registering mechanism, holders for the bills, and means for operating the registering mechanism differentially through the bills in such holders.

3. In a cash-register for bills, the combination of registering mechanism, and means, operated by the bills inserted into the register, for operating said mechanism differentially according to the denominations of such bills.

4. In a cash-register for bills, the combination of registering mechanism, means for temporarily retaining the bills inserted into said register, means for operating said mechanism differentially according to the denomination of the bills inserted into said retaining means, and means for releasing said bills after registration has been inaugurated.

5. In a cash-register for bills, the combina-

tion of a single registering mechanism, and means, dependent upon the insertion of bills into said register, for operating said mechanism differentially according to the denomination of the bills inserted thereinto.

6. In a cash-register for bills, the combination of registering mechanism, means for receiving a plurality of bills of different denominations inserted into said register, and means for operating said mechanism differentially and successively by the bills so inserted into the register.

7. In a cash-register, the combination of registering mechanism, a carrier, differential mechanism, means on said carrier for receiving money of different denominations, and means for moving said carrier a predetermined distance, the arrangement of parts being such that the different denominations of money on said carrier may be registered during a single operation of the same.

8. In a cash-register, the combination of supporting mechanism for the money inserted into the register, differential mechanism, means for moving one of said mechanisms a predetermined distance, and registering mechanism, the arrangement of parts being such that the different denominations of money inserted into said register may be registered during a single operation of the movable mechanism.

9. In a cash-register, the combination of grippers for receiving the money inserted into said register, registering mechanism, a shaft rigid with one of said grippers and adapted to engage said mechanism, and differential mechanism for causing said shaft to engage said mechanism.

10. In a cash-register, the combination of members between which the money is inserted, registering mechanism, means carried by one of said members for engaging said mechanism, and means, including the other member, for operating the said engaging means to engage the registering mechanism.

11. In a cash-register, the combination of a pair of gripping members between which the money is inserted, registering mechanism, means carried by one of said members adapted to engage said registering mechanism, and mechanism, comprising the other member, for operating the first-mentioned member to place its operating means in engagement with the registering mechanism, such operating mechanism depending for its operation on the presence of money in the grippers.

12. In a cash-register, the combination of a pair of gripping members for the money inserted into the register, a support for said members, differential mechanism, registering mechanism, a connection between one of said members and said registering mechanism adapted to engage said mechanism, and means for obtaining relative movement between the support and the differential mechanism to cause said connection to engage the registering mechanism and register the value of the money inserted between the gripping members.

13. In a cash-register, the combination of gripping members between which the money is inserted into the register, means for spreading said members to permit the insertion therebetween of the money to be registered, means for causing said members to grasp the money inserted therebetween, mechanism operated by said members for registering the value of the money inserted therebetween, and means for spreading said members to release the money after the registering mechanism has been placed in operation.

14. In a cash-register, the combination of registering mechanism, a carrier, a holder supported by said carrier, an operating-shaft connected to said holder, and differential mechanism for placing said shaft into and out of engagement with said registering mechanism.

15. In a cash-register, the combination of registering mechanism, a carrier, a holder supported by said carrier, an operating-shaft connected to said holder and journaled in said carrier, and differential mechanism for placing said shaft into and out of engagement with said registering mechanism.

16. In a cash-register, the combination of a casing having an opening for the insertion of money therethrough, traveling grippers, means for registering the value of the money inserted between the grippers, and means for separating said grippers when adjacent to the opening in the casing and for closing said grippers when they have been moved out of alinement with said opening.

17. In a cash-register, the combination of a casing having an opening for the insertion of money therethrough, traveling grippers, means operated by said grippers for registering the value of the money therein, means for separating said grippers when in alinement with the opening in the casing and for closing said grippers when they have been moved out of alinement with said opening, and means for subsequently separating said grippers to cause them to release the money contained therein.

18. In a cash-register, the combination of registering-wheels, means for operating said wheels, a carrier, said carrier having an opening therethrough, a pair of grippers pivoted in said opening, a spring for forcing one of said grippers toward the other, means for preventing such movement of the spring-pressed gripper until the carrier has been operated a predetermined distance, and means for thereafter permitting such movement of said gripper.

19. In a cash-register, the combination of a carrier, means for driving said carrier, holders carried by said carrier for the money inserted into the register, registering mechanism op-

erated by said carrier, and a differential device for causing said carrier to operate the registering mechanism to register the value of the money in said holders.

20. In a cash-register, the combination of a carrier, means for driving said carrier, a holder carried by said carrier for the money inserted into the register, registering mechanism, a connection between said carrier and said registering mechanism, and means for breaking such connection when the value of the money has been registered.

21. In a cash-register, a casing having an opening for the insertion of money into the register, an endless carrier in said casing having thereon a holder for the money inserted through the opening in the casing, means for causing said carrier to make a complete revolution, registering mechanism, and means for causing said carrier, during its revolution, to actuate the mechanism to register the value of the money carried by the holder.

22. In a cash-register, the combination of a pair of grippers between which money is inserted, registering mechanism, means connected with one of said grippers for operating said mechanism, and means, comprising the money inserted between the grippers, for actuating said operating means.

23. In a cash-register, the combination of a pair of grippers between which the money is inserted, registering mechanism, means connected with one of said grippers for operating the registering mechanism, means for resisting the movement of the last-mentioned gripper in a direction to place the operating means in engagement with the registering mechanism, and means, comprising the money inserted between the grippers, for causing such gripper to move in a direction to place such operating means in engagement with the registering mechanism.

24. In a cash-register, the combination of registering mechanism, a holder consisting of a pair of members between which money is inserted into the register, one of said members having an opening therethrough and the other member having a projection adapted to project into said opening when the said members are brought into close relation, means connected with one of said members for operating the registering mechanism, means for resisting the movement of such member to place the operating means in engagement with the registering mechanism, and means for forcing the other member toward such register-operating member.

25. In a cash-register, the combination of registering mechanism, an operating-shaft, a clutch for connecting said mechanism to said shaft, operator-recording mechanism, and means for preventing the operation of the clutch until said recording mechanism has been set to a predetermined position.

26. In a cash-register, the combination of registering mechanism, an operating-shaft therefor, a clutch for connecting said mechanism to said shaft, operator-recording mechanism, a shaft for setting said recording mechanism to make a record of the person operating the register, means for operating the clutch to connect the registering mechanism to the shaft, and means for preventing the operation of said last-mentioned means until the other shaft has been operated a predetermined distance.

27. In a cash-register, the combination of registering mechanism, a shaft therefor, a clutch for connecting said mechanism to the said shaft, operator-recording mechanism, a shaft for setting said recording mechanism to make a record of the person operating the register, a dial having thereon operator-identifying characters, an index coöperating with said dial, one of such indicating members being movable with the shaft, means for operating said clutch, and means for preventing the operation of said clutch until said index and an identifying character on the dial have been placed in indicating relation to each other.

28. In a cash-register, the combination of registering mechanism, a carrier for operating said mechanism, recording mechanism, means for placing said recording mechanism in a predetermined position, and means actuated by said carrier for operating said recording mechanism to produce a record.

29. In a cash-register, the combination of registering mechanism, a carrier for operating said mechanism, recording mechanism, means for placing said recording mechanism in a predetermined position, actuating means for said recording mechanism, and a cam on said carrier adapted to engage said actuating means.

30. In a cash-register, the combination of registering mechanism, a record-producing member, means for placing said member in a predetermined position, a record-receiving member, a carrier for the money inserted into the register, and means whereby said carrier may bring said members into operative relation.

31. In a cash-register, the combination of means for registering the value of the money inserted in said register, a roll having thereon suitable record-producing characters, means for supplying a marking fluid to said characters, and means for bringing said roll and money into contact.

32. In a cash-register, the combination of registering mechanism, a pair of juxtaposed rolls having thereon indicating characters, record-receiving devices normally separated from said rolls, and means for separating said rolls to bring the indicating characters thereon into operative relation to the record-receiving devices.

33. In a cash-register, the combination of means for registering the value of the money inserted in said register, and means for obtaining from the money itself a record of the value of the same.

34. In a cash-register, the combination of means for registering the value of the money inserted into said register, and means for placing on the money a record of the operator.

35. In a cash-register, the combination of means for registering the value of the money inserted into said register, means for recording the value of such money, and means for placing on the money a record of the operator.

36. In a cash-register, the combination of means for registering the value of the money inserted into the register, means for obtaining from the money itself a record of its value, and means for making a record of the operator.

37. In a cash-register, the combination of means for registering the value of the money inserted into the register, means for placing on the money a temporary record of the operator, and means for recording the value of the money.

38. In a cash-register, the combination of means for registering the value of the money inserted into the register, means for placing on the money a temporary record of the operator, and means for obtaining from the money itself a record thereof.

39. In a cash-register, the combination of registering mechanism, a carrier, grippers on said carrier for the insertion of money therebetween, actuating means for said registering mechanism connected to said carrier, means for causing said grippers to grasp the money until after registration has been started, and means for causing said grippers to thereafter release the money.

40. In a cash-register, the combination of a casing having an opening therein, a carrier in said casing adjacent said opening, gripping members on said carrier, means for moving said carrier a fixed distance, means for keeping said members separated when adjacent said opening, means for thereafter causing said grippers to approach each other, means for registering the value of the money between said grippers, and means for separating said grippers to cause them to release the money.

41. In a cash-register, the combination of a casing having an opening therein, a carrier in said casing adjacent said opening, a holder on said carrier for the money inserted into the register-opening, registering mechanism, means for operating said mechanism, and means for releasing the money from said holder after registration has been started.

42. In a cash-register, the combination of a carrier, grippers thereon for the money inserted in said register, means for moving said carrier a fixed distance, means for registering the value of the money between the grippers, means for separating said grippers during part of the travel of the carrier, and means for placing said grippers in clamping position during the remainder of the travel of the carrier.

43. In a cash-register, the combination of a carrier for the money inserted into the register, registering mechanism, means on said carrier adapted to operate said registering mechanism, and a fixed member adjacent said carrier having means for placing the operating means of the carrier into and out of engagement with the registering mechanism.

44. In a cash-register, the combination of a carrier for the money inserted into the register, a pair of members on said carrier between which money may be inserted, registering mechanism, means on said carrier adapted to operate said mechanism, and a fixed member adjacent said carrier having means for placing the operating means of the carrier into and out of engagement with the registering mechanism and with means for causing the members on said carrier to approach or recede from each other.

45. In a cash-register, the combination of a carrier for the money inserted into the register, a pair of members on said carrier between which money may be inserted, registering mechanism, a shaft on said carrier connected with one of said members and adapted to operate said registering mechanism, and a fixed member adjacent said carrier having means for causing said members to approach or recede from each other.

46. In a cash-register, the combination of a carrier for the money inserted into the register, a pair of grippers on said carrier between which money may be inserted, registering mechanism, means on said carrier adapted to operate said mechanism, a fixed member adjacent said carrier having means for placing the operating means of the carrier into and out of engagement with the registering mechanism, and means for causing said carrier to invert the grippers and to open the same when so inverted.

47. In a cash-register, the combination of a carrier for the money inserted into the register, a pair of members on said carrier between which money may be inserted, registering mechanism, means for operating said mechanism from said carrier, a fixed member adjacent said carrier and having means for placing the operating means into and out of engagement with the registering mechanism and with means for causing the members on the carrier to grasp the money inserted therebetween, a drum beyond said fixed member around which the carrier passes, and means on said drum for separating the money-carrying members to permit them to release the money.

48. In a cash-register, the combination of registering mechanism, a movable member and a fixed member, means carried by one of said members for temporarily retaining the money inserted into the register and for operating the registering mechanism, and means on said other member for placing said operating means into and out of engagement with the registering mechanism.

49. In a cash-register, the combination of registering mechanism, a movable member for the money inserted into the register and a fixed member, means carried by one of said members for operating the registering mechanism, and means carried by the other member for placing said operating means into and out of engagement with the registering mechanism.

50. In a cash-register, the combination of registering mechanism, a movable member and a fixed member, means carried by one of said members for temporarily retaining the money inserted into the register and for operating the registering mechanism, means carried by the other member for placing the operating means into and out of engagement with the registering mechanism, and means for releasing the money after registration has been started.

51. In a cash-register, the combination of a movable member and a fixed member, one of said members having a pair of grippers thereon, each of said grippers being provided with an extension adapted to engage the other member, and means carried by the latter member and adapted to engage said extensions of the grippers to produce varying movements thereof.

52. In a cash-register, the combination of registering mechanism, a movable member and a fixed member, grippers pivoted to one of said members and having extensions adapted to come into the path of the other member, means for causing one of said grippers to approach the other to grip the money therebetween, and means on the other member adapted to engage said extensions to permit or prevent such movement of the grippers.

53. In a cash-register, the combination of registering mechanism, a movable member and a fixed member, a pair of grippers pivoted to one of said members, each of said grippers having an extension, means for forcing one of said grippers toward the other to grasp the money inserted therebetween, register-operating means carried by the gripper-supporting member, and means, on the other member, for placing said operating means into and out of engagement with the registering mechanism and for resisting or permitting the operation of the gripper-actuating means.

54. In a cash-register, the combination of registering mechanism, a fixed member, a movable member, a pair of grippers carried by one of said members and having each an extension adapted to engage the other member, an operating-shaft connected with one of said grippers, means for resisting the movement of said gripper, means for forcing the other gripper toward the shaft-carrying gripper, and means carried by the other member to permit and prevent the movement of the last-mentioned gripper.

55. In a cash-register, the combination of a carrier, a pair of grippers pivoted to said carrier, one of said grippers having a narrow extension and the other having a relatively wide extension, a fixed member adjacent said carrier and having a narrow slot adapted to receive the depending portion of said former gripper, said slot being of less width than the depending portion of the other gripper.

56. In a cash-register, the combination of a carrier, a pair of grippers pivoted to said carrier, one of said grippers having a narrow extension and the other having a relatively wide extension, means for resisting the movement of the former gripper, means for forcing the other gripper toward said former gripper, a fixed member adjacent said carrier and having therein a slot for the reception of the depending portion of said former gripper, said slot being narrower than the width of the extension of the other gripper, and said fixed member also having a recessed portion for the extension of said other gripper.

57. In a cash-register, the combination of a carrier, a pair of grippers pivoted to said carrier, one of said grippers having a narrow extension projecting beyond said carrier and the other having a wider extension, means for resisting the movement of the former gripper, means for forcing the latter gripper toward the former gripper, a fixed member adjacent said carrier having therein a slot adapted to receive the extension of the former gripper, said slot being narrower than the extension of the latter gripper, said fixed member also having a recess of sufficient width to receive the extension of the latter gripper, and a drum beyond said fixed member around which the carrier is driven, said drum having therein a slot for the reception of the extension of the former gripper, said slot being narrower than the extension of the other gripper.

58. In a cash-register, the combination of a carrier, a pair of grippers pivoted to said carrier, one of said grippers having an extension projecting beyond said carrier and the other having an extension wider than the extension on the former gripper, registering mechanism, a shaft keyed to the former gripper and having means for engaging the registering mechanism, means for forcing the latter gripper toward the former gripper, a fixed member adjacent said carrier and having a slot of sufficient width to receive the extension of the former gripper but of insufficient width to receive the extension of the latter gripper, said fixed member also having a differential

recess of sufficient depth and width to enable the latter gripper to rock the former and bring the operating-shaft into engagement with the registering mechanism.

59. In a cash-register, the combination of a carrier, a pair of grippers pivoted to said carrier, one of said grippers having a narrow extension projecting beyond the carrier and the other having a wider extension, registering mechanism, a shaft keyed to said former gripper and having means adapted to engage the registering mechanism, means for forcing the latter gripper toward the former gripper, a fixed member adjacent said carrier, said member having a slot therein adapted to receive the extension of the former gripper but of insufficient width to receive the extension of the latter gripper, said fixed member having a differential recess for permitting the movement of the latter gripper to rock the former gripper and cause its shaft to engage the registering mechanism, and a drum beyond said fixed member around which the carrier is driven, said drum having on its surface narrow slots of sufficient width to receive only the extension of the former gripper and to exclude the extension of the latter gripper.

60. In a cash-register, the combination of registering mechanism, a carrier, a plurality of holders on said carrier for the money inserted into the register, means for operating the registering mechanism from said holders, and a differential device adjacent said carrier having means for actuating the register-mechanism-operating means.

61. In a cash-register, the combination of registering mechanism, a carrier, a plurality of grippers on said carrier, means connected with said grippers for operating the registering mechanism, a fixed member adjacent said carrier, said member having means coacting with said grippers to retain the money therebetween and differential means for placing the operating means in engagement with the registering mechanism.

62. In a cash-register, the combination of registering mechanism, pairs of grippers between which money is inserted into the register, means connected with said grippers for operating the registering mechanism, means tending to force one member of each pair of grippers into contact with the other, and a fixed member or platform adjacent said carrier having means for preventing such movement of the gripping members until after the money has been inserted therebetween and having differential means to place the operating means in engagement with the registering mechanism.

63. In a cash-register, the combination of a casing having therein a plurality of openings for the insertion of money into said register, a carrier adjacent said openings and having pairs of grippers each mounted to be brought into alinement with an opening, means for separating the grippers of each pair until after the money has been inserted therebetween, registering mechanism, means for operating said mechanism, and means for causing the grippers to grasp the money until after registration has been started and for thereafter releasing said money.

64. In a cash-register, the combination of a casing having therein openings for the insertion of money into the register, an endless carrier below said openings, said carrier having a pair of grippers corresponding to each opening, means for separating said grippers when in alinement with said openings, means for operating the said grippers to grasp the money inserted therebetween, means for registering the value of the money between each pair of grippers, means for retaining the money in place between said grippers until after registration has been started, means for thereafter releasing the money from said grippers.

65. In a cash-register, the combination of a casing having openings therein for the insertion of money into said register, an endless carrier adjacent said openings, pairs of grippers mounted on said carrier and positioned to be brought into alinement with openings in the casing, registering mechanism, means operated by said carrier for engaging said mechanism, means for separating the grippers when in line with the openings to permit the insertion of money therebetween, means for causing said grippers to grasp the money inserted therebetween to retain the same until after registration has been started, and means for thereafter causing said grippers to release the money.

66. In a cash-register, the combination of registering mechanism, a belt for the money inserted into said register, said belt consisting of a thin flexible metallic section and a section of leather or similar material, and a pin-wheel for driving said belt, said belt being provided with openings through the metallic portion thereof for engagement by said pin-wheel.

67. In a cash-register, the combination of registering mechanism, a belt for operating said mechanism, said belt having openings therein provided with thin metallic lining-pieces, grippers for the money inserted into the register, said grippers being pivoted in the metallic linings of the openings, and means for driving said belt.

68. In a cash-register, the combination of registering mechanism, a belt for operating said mechanism, said belt having openings provided with thin metallic lining members, grippers for the money inserted into the register, said grippers being pivoted in said lining members, and means for operating said gripping members to cause them to grasp or release the money inserted therebetween.

69. In a cash-register, the combination of registering mechanism, a belt, said belt hav-

ing therein openings provided with thin metallic lining members, a pair of grippers mounted in said openings, one of said grippers being keyed to a shaft extending through the lining members and provided with means for engaging the registering mechanism, and differential mechanism, for operating said shaft to engage said registering mechanism.

70. In a cash-register, the combination of registering mechanism, a belt, said belt having therein openings lined with thin metal, a shaft extending through each of said openings and provided with means for engaging the registering mechanism, a gripper mounted on said shaft, a spring supported in said opening and engaging said gripper to resist the movement of the same, another gripper pivoted in said opening, a stronger spring mounted in said opening and forcing the latter gripper toward the former, and a fixed member adjacent to said belt, said fixed member being provided with means for permitting and preventing the spring which is connected with the latter gripper from pressing the same toward the former gripper and with a differential device to permit the shaft to engage the registering mechanism.

71. In a cash-register, the combination of registering mechanism, a carrier for the money inserted into said register, means supported by said carrier for operating such mechanism, and a platform adjacent said carrier having differential means for placing said operating means into and out of engagement with the registering mechanism.

72. In a cash-register, the combination of registering mechanism, a carrier, means supported by said carrier for operating such mechanism, a pair of grippers on said carrier and a platform adjacent said carrier having differential means for placing said registering mechanism into and out of engagement with the registering mechanism and means for opening and closing said grippers.

73. In a cash-register, the combination of registering mechanism, a carrier for the money inserted into said register, means for actuating said mechanism from said carrier, a pair of grippers on said carrier, one of said grippers being pivoted to said carrier and having an extension projecting beyond said carrier, means for forcing said gripper toward the other gripper, and a platform adjacent said carrier having an elevated portion adapted to engage said extension to prevent movement of its gripper and with a recessed portion to receive said extension and permit movement of its gripper.

74. In a cash-register, the combination of registering mechanism, a carrier for the money inserted into the register, a shaft mounted on said carrier for operating the registering mechanism, a pair of grippers pivoted to said carrier, one of said grippers being rigid with the shaft and the other gripper having an extension adapted to project beyond the carrier, means for forcing said gripper toward the other gripper, and a platform adjacent said carrier having an elevated portion engaging said extension to prevent movement of its gripper and having also a recessed portion to receive the extension and permit movement of its gripper and having a deeper recessed portion to permit movement of the shaft-carrying gripper by the other gripper to place said shaft into and out of engagement with the registering mechanism.

In testimony whereof we affix our signatures in the presence of two witnesses.

FRANK W. STEINACKER.
IRA CULVER.

Witnesses:
ROBERT M. CALFEE,
J. B. HULL.