S. F. ESTELL.

REGISTERING BANK.

APPLICATION FILED OCT. 23, 1909.

988,933.

Patented Apr. 4, 1911.

4 SHEETS—SHEET 1.

Fig. 1.

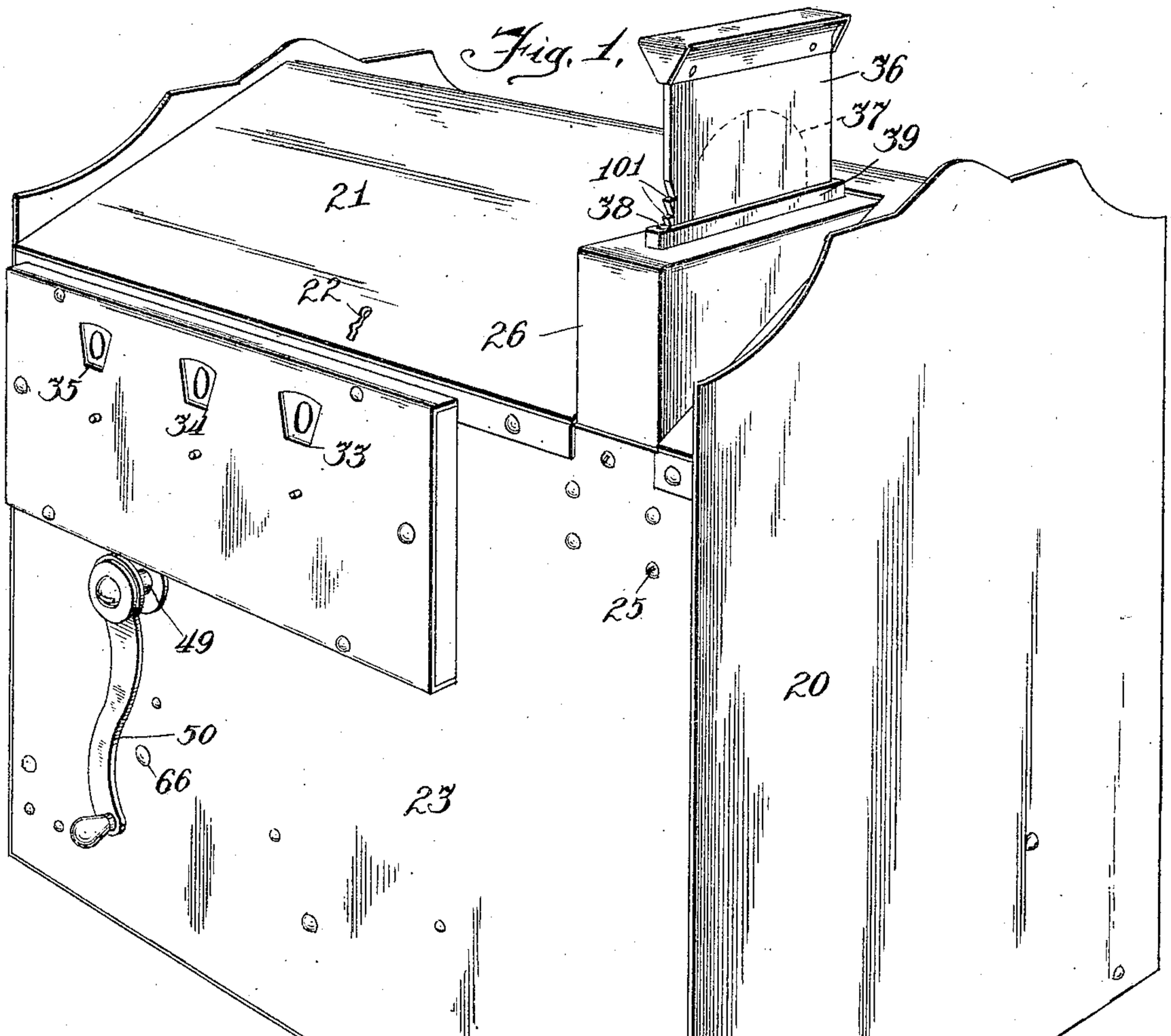


Fig. 2.

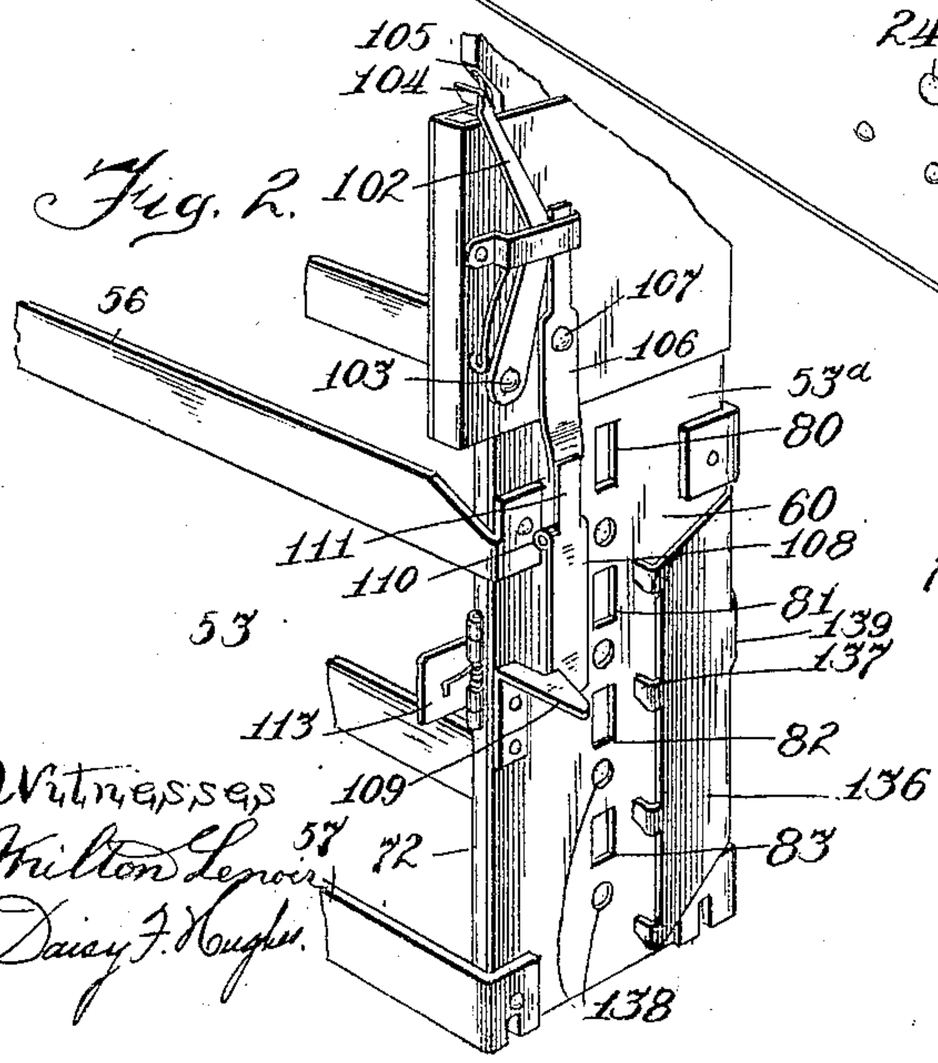


Fig. 3.

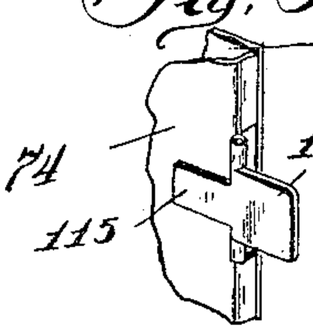
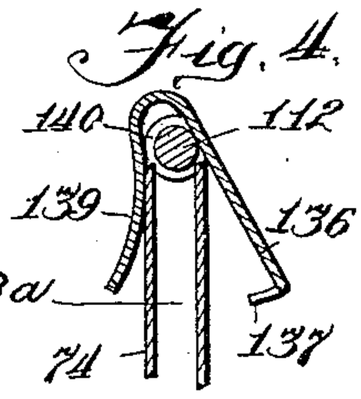


Fig. 4.



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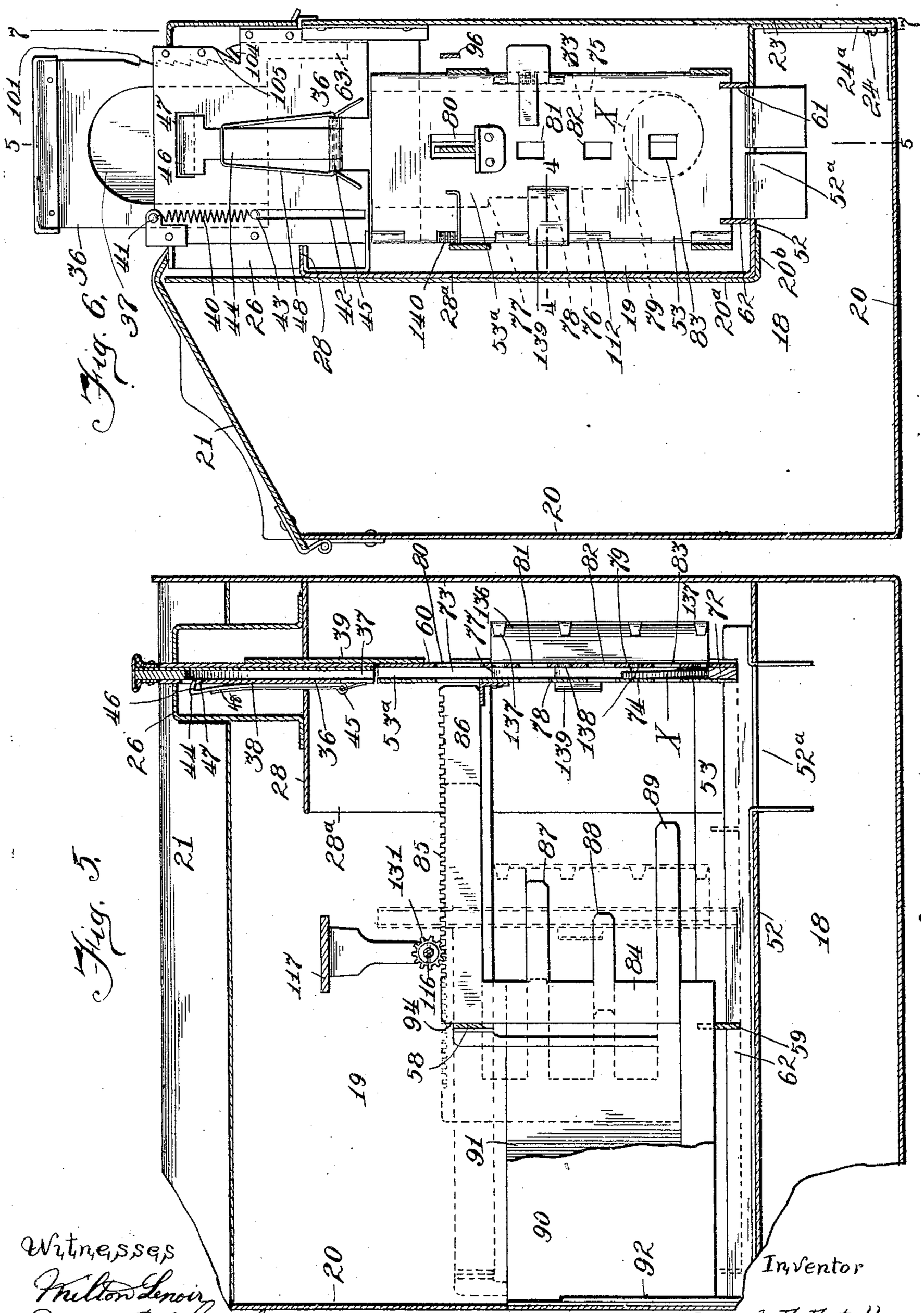
4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.

Fig. 7.

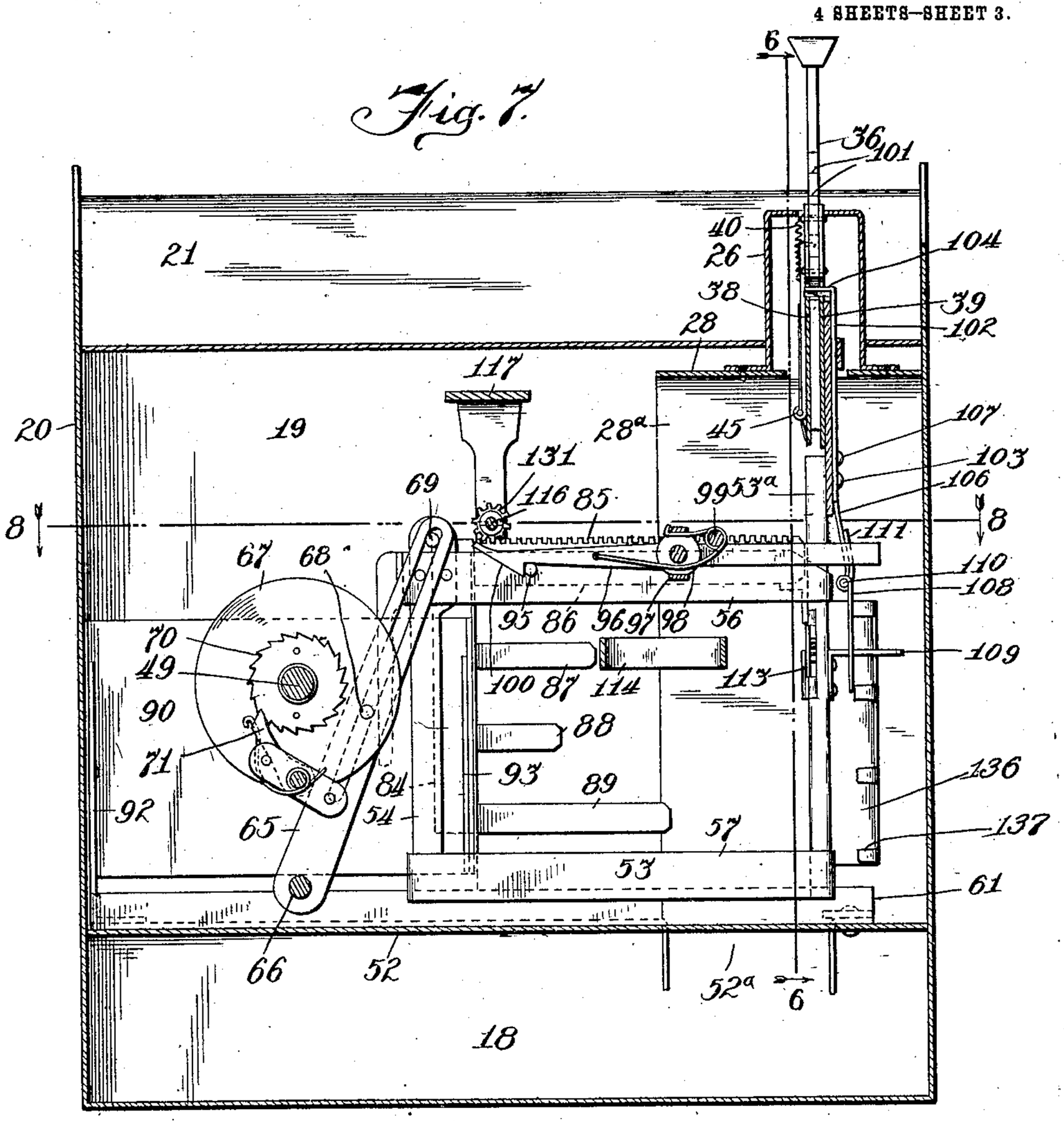
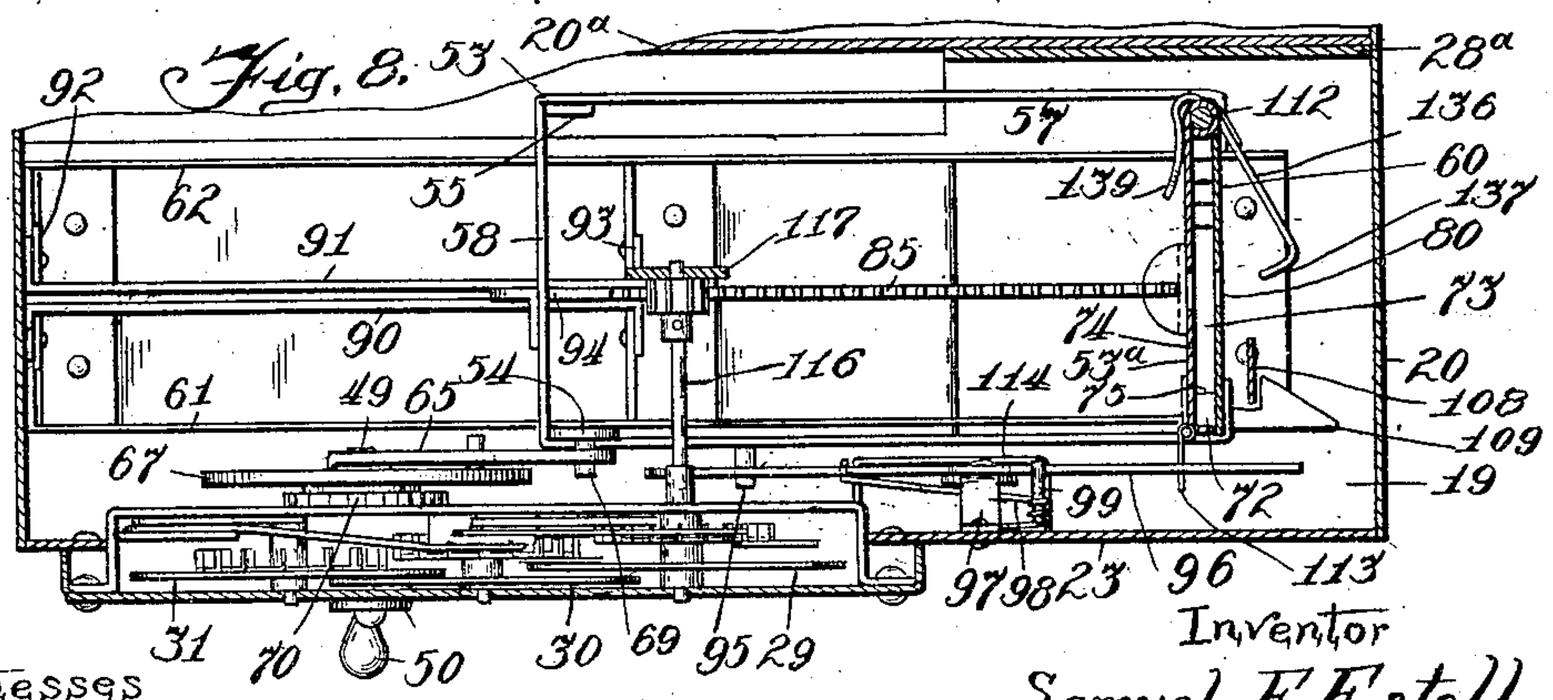


Fig. 8.



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4 SHEETS—SHEET 4.

Fig. 9.

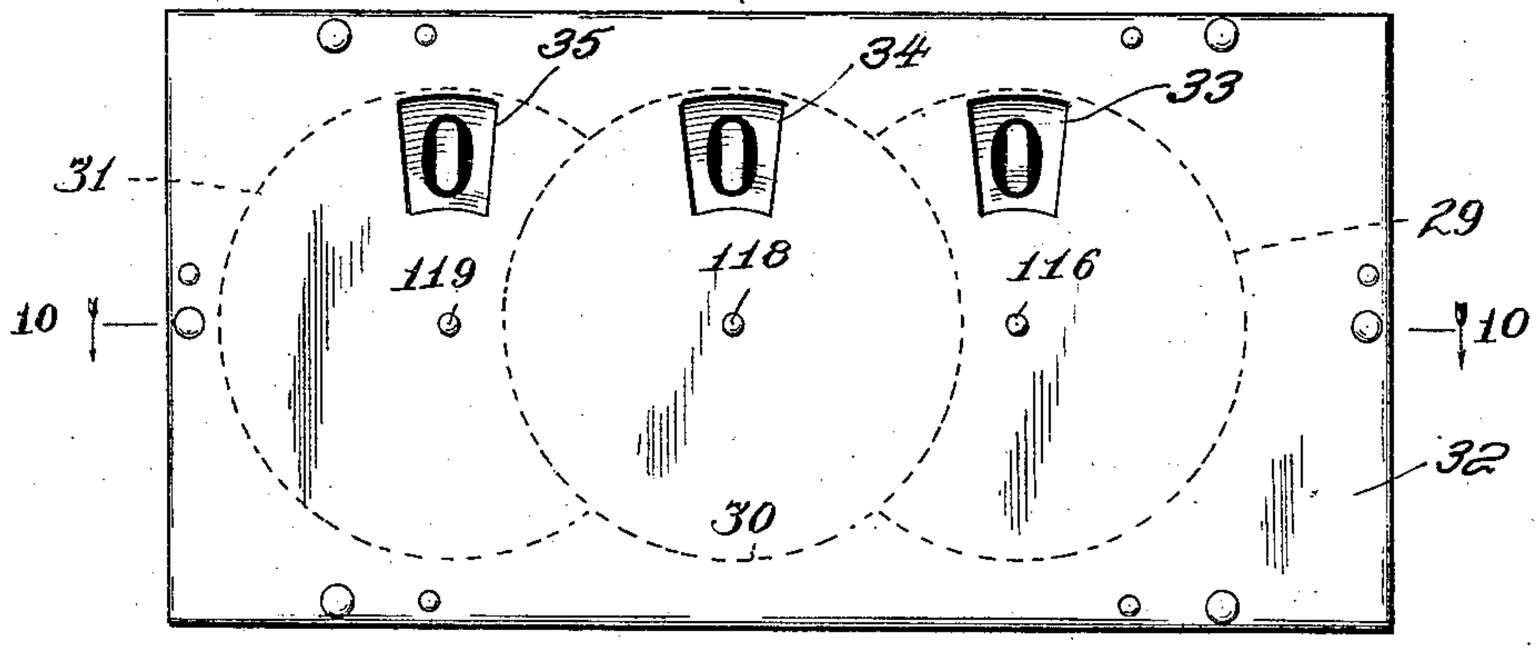


Fig. 10.

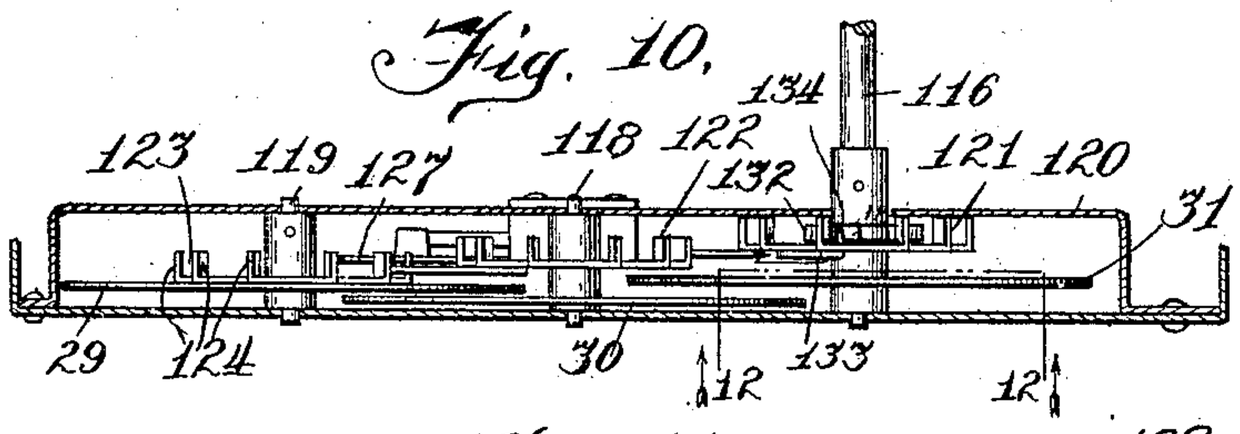


Fig. 11.

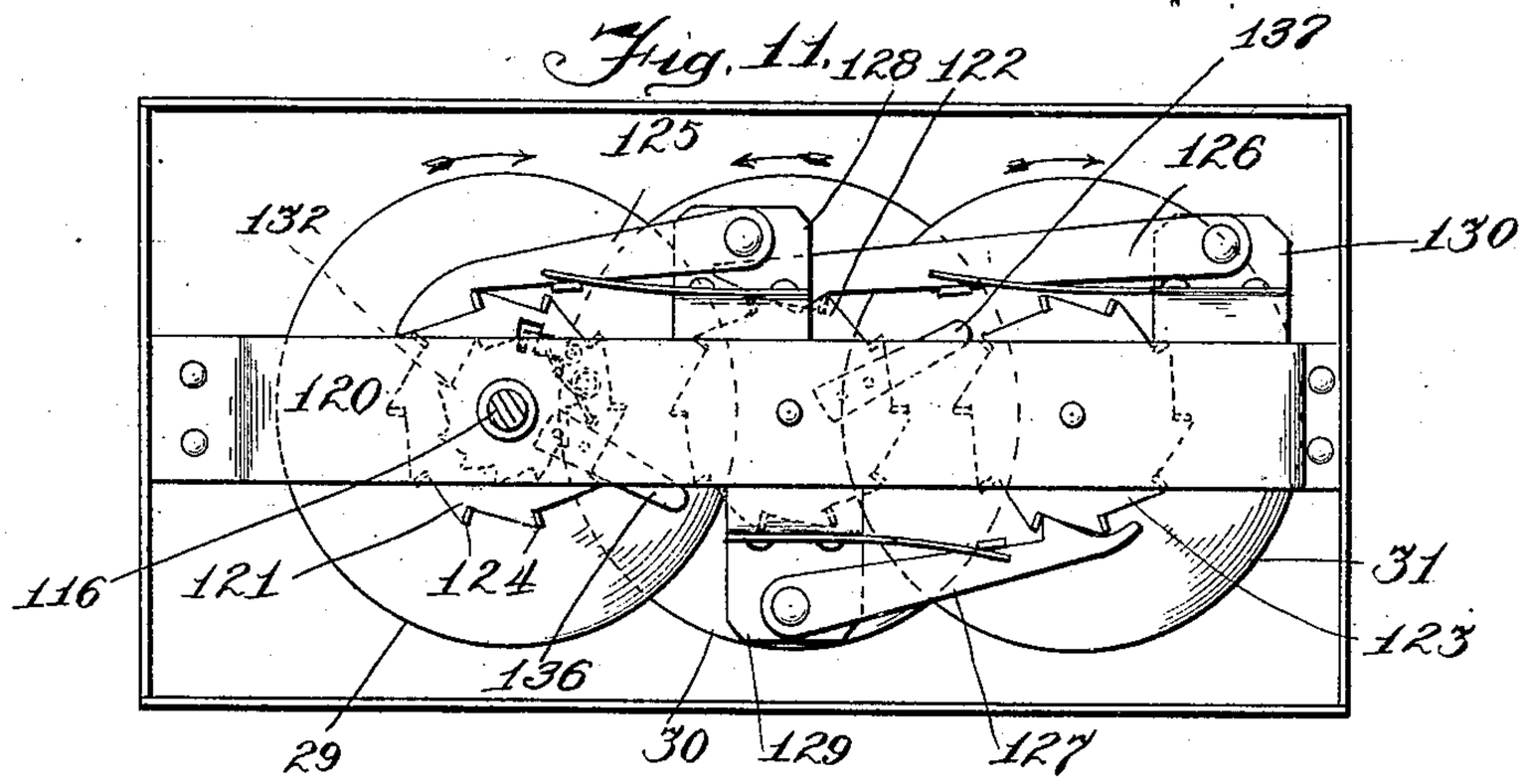
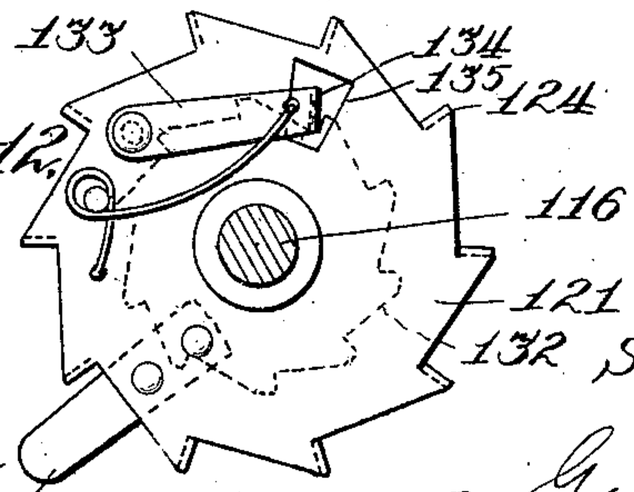


Fig. 12.



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UNITED STATES PATENT OFFICE.

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REGISTERING-BANK.

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To all whom it may concern:

Be it known that I, SAMUEL F. ESTELL, a citizen of the United States, and resident of Florence, county of Los Angeles, and State of California, have invented certain new and useful Improvements in Registering-Banks, of which the following is a specification, and which are illustrated in the accompanying drawings, forming a part thereof.

The invention relates to registering banks, and particularly to those adapted to receive coins of different denominations, and to register an amount appropriate to the valve of the coin received.

The object of the invention is to provide a bank of the type described which shall be of improved construction, and the invention is exemplified in the device hereinafter described and illustrated in the accompanying drawings, in which—

Figure 1 shows in perspective a bank embodying the features of the invention. Figs. 2 and 3 are perspective views illustrating details of the mechanism of the same; Fig. 4 is a detail sectional view taken on the line 4—4 of Fig. 6; Fig. 5 is a sectional view taken on the line 5—5 of Fig. 6; Fig. 6 is a sectional view taken on the line 6—6 of Fig. 7; Fig. 7 is a sectional view taken on the line 7—7 of Fig. 6; Fig. 8 is a plan sectional view taken on the line 8—8 of Fig. 7; Fig. 9 is a detail side elevation, of the device illustrated in Fig. 1; Fig. 10 is a plan sectional view taken on the line 10—10 of Fig. 9; Fig. 11 shows the parts illustrated in Fig. 10 in rear elevation; and Fig. 12 is a detail sectional view taken on the line 12—12 of Fig. 10.

The device illustrated in the drawings takes the form of a box or casing 20 having a hinged cover 21. Preferably the chamber of the box is divided into compartments 18, 19, the compartment 18 being for the permanent storage of coins, and the registering mechanism being housed within the compartment 19. As shown, a vertical partition wall 20^a is permanently mounted within the box and extends downwardly from the cover 21 nearly to the bottom of the box chamber. At its lower edge the partition wall 20^a is provided with a horizontal ledge 20^b. For completing the separation of the compartments 18, 19, a shelf 52 extends inwardly from the front wall 23 of the box and rests at its inner edge upon the ledge 20^b.

The front wall 23 of the box 20 is preferably made removable, as by being secured in place by screws 24, 25, which are accessible only from the interior of the box chamber when the cover 21 is opened. As shown the screws 24, 25, enter the front wall 23 through brackets, as 24^a mounted upon the inside of the box and covered by the wall 23 when it is in place. For convenience in the manufacture and assembling of the parts the coin-receiving and registering mechanism is carried entirely by the removable front wall 23. The shelf 52 conveniently serves as a support for certain of the parts of this mechanism and may be supplemented by a bracket plate 28 which projects inwardly from the front wall 23 adjacent one end, immediately below the cover 21, and is turned downwardly at its inner end, as at 28^a, where it is connected to the free edge of the shelf 52.

Coins are delivered to the registering mechanism housed within the compartment 19, through a chute 26 which projects upwardly from the bracket plate 28 through a slotted opening in the cover 21. When released by the registering mechanism, they are deposited in that part of the compartment 18 which is below the shelf 52 through an opening 52^a in the shelf. Preferably the cover 21 is secured in closed position by a lock 22.

Means are preferably provided for requiring coins to be deposited one at a time in the chute 26, and for closing the chute after a coin has been deposited therein until the registering mechanism has been operated and the coin delivered to the compartment 18 through the opening 52^a. As shown, a coin-carrier plate 36 is slidably mounted in the chute 26, preferably within a slideway which rises from the bracket plate 28 within the chute, and comprises a pair of plates 38, 39, located upon opposite sides of the carrier plate 36. The carrier plate 36 is normally supported in the elevated position illustrated in Figs. 1, 6 and 7 of the drawings by a spring 40, which re-acts between a pin 41 mounted on the plate 38 and a pin 43 mounted in the carrier and projecting through a slot 42 formed in the plate 38.

A recess 37 for coins is formed in a side face of the carrier plate 36, and extends downwardly to the lower end of the plate. Coins lodged in the recess 37 are prevented from moving downwardly through it into

the compartment 19 of the chamber of the box 20, when the carrier is in the elevated position illustrated in Figs. 1 and 6 of the drawings, by means of a stop finger 44. As shown, the stop finger 44 is hingedly connected to the plate 38, as at 45, Fig. 5, and extends upwardly therefrom along the face of the plate, its higher end 46 being overturned to enter the recess 37 through an aperture 47 in the plate. A spring 48, Fig. 6, bears upon the finger 44 to normally project the overturned higher end 46 of the finger into the recess 37. The overturned higher end 46 of the finger 44 is downwardly inclined, as most clearly shown in Fig. 5, whereby when a coin is firmly pressed upon it, as by means of pressure applied to the top of the carrier plate 36, the finger 44 is forced outwardly against the effort of the spring 48, by a cam action. If now the carrier plate be moved inwardly until the coin is passed beyond the overturned higher end of the stop finger 44, the coin will then fall by gravity along the recess 37, shown in Fig. 5 of the drawings. The higher end of the recess 37 is covered by the plate 38 and the entrance to the chute 26 is closed. For retaining the carrier plate in this position to prevent the insertion of another coin until the registering mechanism has been operated, ratchet teeth 101 are preferably formed upon one of the vertical edges of the carrier plate and a spring pawl arm 102 shown as being pivotally mounted upon the plate 39 at 103 (Fig. 2), carries a finger 104 for engaging the ratchet teeth 101 through a notch 105 in the plate 39. The registering mechanism employed receives the coin as it leaves the carrier plate 36 from the lower end of the recess 37, and is preferably of a form adapted to receive coins of different denominations and to register an amount appropriate thereto. The mechanism is most desirably operated by a crank-shaft 49 which projects through the front wall 23 of the box 20, and carries a hand-crank 50 upon its outer end. The registering is effected upon counter wheels or dials 29, 30 and 31. As shown, these dials are located in front of the wall 23 and are partially covered by channeled plate 32 mounted upon the outside of the wall 23 and having apertures 33, 34, 35 through which the characters upon the dials may be read.

A carriage generally designated by the numeral 53 is mounted to slide upon the shelf 52, as upon rails 61, 62, formed thereon, and is adapted to be reciprocated on the rails by turning the crank-shaft 49. Mounted in this carriage is a pocket 53ª having an open top and adapted to be located beneath the carrier plate 36, when the carriage is at rest, for receiving coins therefrom. The carriage 53 comprises an open rectangular frame work, including uprights as 54, 55, longitudinal frame members as 56, 57, and upper and lower cross members 58, 59. At one end of the carriage the longitudinal frame members 56, 57 are connected by means of a vertical plate 60, which constitutes a part of the pocket 53ª. For moving the carriage on the slideway 52, a slotted lever 65 is provided. As shown, this lever 65 is pivotally secured to the front wall 23 of the casing 20, adjacent its lower end, as at 66 (Fig. 7) to swing in a plane parallel with the wall 23, and between the inner end of the shaft 49 and the path of movement of the carriage 53. A crank-disk 67 mounted upon the inner end of the crank-shaft 49, carries a crank-pin 68 which enters the slot of the lever 65 intermediate its ends. A pin 69 mounted on the carriage 53, as upon the higher end of the upright 54, enters the slot of the lever 65 above the crank-pin 68. A ratchet wheel 70 and a coöperating spring-pawl 71 mounted on the crank-shaft 49 in front of the crank-disk 67 and on the inside face of the wall plate 23, respectively, permit the crank-shaft 49 to be turned in one direction only.

Seats for coins of different denominations are provided in the pocket 53ª. As shown, a plate 72 having a recess 73, open at its top, is secured to the wall plate 60, and the pocket is completed by means of a hinged cover-plate 74 mounted in front of the recessed plate 72. Preferably one of the side walls as 75, Fig. 6, of the recess 73 is inclined, and the opposite side wall 76 of the recess is provided with shoulders as 77, 78 and 79, whereby the pocket is made of smaller diameter at its foot than at its top, the coins of larger size as the twenty-five-cent, five-cent and one-cent pieces delivered to the pocket, being arrested by one of the shoulders 77, 78, 79, respectively, and coins of smaller sizes as the ten-cent piece, shown by dotted lines at X, Fig. 6, falling to the bottom of the pocket. The side walls of the pocket, as the wall plate 60 and the covered plate 74, are provided with registering apertures as 80, 81, 82, 83 in line with the seats provided in the pocket for coins of different denominations, as by the shoulders 77, 78, 79, the inclined side wall 75 and the bottom of the recess 73.

A movable rack plate 84 having a gear-rack 85 formed on its upper edge, and lugs as 86, 87, 88, 89 of different lengths in line with the apertures 80, 81, 82 and 83, respectively, is mounted for a sliding movement in front of the pocket 53ª. As shown, the rack plate 84 is supported within the carriage 53 between a pair of guide plates 90, 91, these guide plates being in turn supported by brackets as 92, 93, rising from the shelf 52. If the carriage 53 be advanced by rotating the crank-shaft 49 when no coins are in the pocket 53ª, the lugs 86, 87, 88, 89, will

enter the corresponding apertures 80, 81, 82, 83, in the walls of the pocket, and the rack plate 84 will not be moved. If, however, a coin is seated in the pocket, one of the apertures as 80, 81, 82, 83, will be closed thereby, and upon the advance of the carriage the corresponding lug 86, 87, 88 or 89 of the rack plate will be engaged with the face of the coin and the rack plate will be moved through a distance determined by the length of the lug 86, 87, 88, 89 with which such engagement is effected. During the return movement of the carriage, the forward edge, as 94, of the rack plate, will be engaged by the front wall of the carriage 53, as the cross member 58, Fig. 5, to return the rack plate to its normal position of rest.

Means are preferably provided for preventing the rotation of the crank-shaft 49 and movement of the carriage 53 except when the coin carrier plate 36 has been depressed. As shown, a stop pin 95 is mounted upon a side wall of the carriage 53 as upon the upper longitudinal member 56, Figs. 2 and 7, and a pivotally supported hooked lever 96 is provided for normally engaging the stop pin to hold the carriage against movement. The hooked lever 96 is most conveniently supported upon the side wall 23 of the casing 20, as by means of a bracket 97, and a spring 98 bears upon the lever for normally maintaining its hooked end in the path of the stop pin 95. A second stop pin 99 which, as shown, projects inwardly from the side wall 23, is employed for limiting the downward movement of the forward end of the lever, as by engaging the lever in rear of its pivot. When the coin carrier 36 is depressed, the forward end of the lever 96 is raised out of contact with the stop pin 95, as by the engagement of an extension 63 of the lower end of the carrier plate 36 with the rear end of the lever. The forward end of the lever 96 is inclined, as shown at 100, Fig. 7, whereby upon the return of the carriage 53, the lever is raised by a cam engagement of the stop pin 95 with the inclined end 100 of the lever, to permit the stop pin to pass the hook.

A lever 106 is provided for releasing the pawl 102 to permit the carrier plate 36 to be raised by the spring 40 upon the return of the carriage 53, as shown. This lever is pivotally secured to the plate 39 at 107, Fig. 2, and projects downwardly below the plate 39 where it is provided with a hinged extension 108, reaching into the path of a hooked cam lug 109 mounted on the carriage. The extension 108 of the lever 106 is connected to the lever by means of a spring hinge 110 and reaches above the hinge as shown at 111, to engage the body of the lever 106 and permit the flexing of the hinge 110 in one direction only. The spring hinge 110 normally maintains the lever 106 and its extension 108 in alinement. When the carriage 53 is moved forwardly, the hooked cam 109 engages the lever extension 108 and causes the flexing of the hinge 110 without swinging the lever 106 on its pivot 107. Upon the return of the carriage, the cam 109 engages the edge of the extension 108 to turn the lever 106 on its pivot and swing the pawl arm 102, whereby it is moved out of the path of the ratchet teeth 101 formed upon the edge of the coin carrier plate 31, thus permitting the coin carrier plate to be raised by the spring 40.

Provision is made for opening the pocket 53ª upon the return of the carriage 53 and for positively ejecting the coin from the pocket when open, to permit it to fall by gravity into the compartment 18 through the opening 52ª in the shelf 52. As shown, the cover plate 74 of the pocket (Figs. 4 and 8) is hinged to swing outwardly from the slotted plate 72, as by being connected to the plate 72 along one of its side edges by a spring hinge 112. A hinged lug 113 is mounted upon the free edge of the plate 74, and during the return movement of the carriage 53, contacts with a stop 114 mounted upon the inside face of the front wall 23, to swing the plate 74 on its hinge and thereby open the pocket. During the forward movement of the carriage the hinged lug 113 is turned on its pivot when it engages the stop 114, to permit it to pass the stop. The turning of the lug 113 in the other direction is, however, prevented by an arm 115, which extends backwardly from the lug pivot to engage the side face of the plate 74.

For ejecting the coin from the pocket 53ª when the cover plate 74 is opened, a plate 136 having lugs 137 adapted to enter the pocket through openings 138 in the plate 60 is hingedly mounted adjacent the edge of the plate as upon the pintle of the hinge 112. The plate 136 has an arm 139, Fig. 4, which extends in front of the cover plate 74 and is adapted to be engaged thereby to swing the plate 136 inwardly when the cover plate is opened. A spring 140 is preferably coiled about the pintle of the hinge 112 and reacts upon the plate 136 to normally maintain it in the position shown in Figs. 2 and 4. The lugs 137 and openings 138 are suitably positioned with reference to the coin seats formed in the pocket 53ª by the shoulders 77, 78, 79, and the bottom of the recess 73, to insure the engagement of a coin by one of said lugs when the plate 136 is moved inwardly, no matter which of the said seats it may have been lodged upon.

Preferably the counting mechanism is actuated by the return movement of the rack plate 84, the amount of movement given to

it being determined by the distance through which the rack plate has been moved during the outward movement of the carriage 53. As shown, the dial plate 29 is loosely mounted upon a shaft 116, Figs. 7 and 11. This shaft extends over the rack plate 84, and has its inner end journaled in an overhanging bracket 117 secured to the inside face of the removable front wall 23. The dial plates 30 and 31 are rotatably mounted upon spindles 118 and 119 fixed at one end in the housing 32 and at the other end in a strap 120, Figs. 10 and 11, which is carried by the housing 32 and extends over all of the dial plates. A ratchet wheel as 121, 122, 123 is fixed upon the hub of each of the dial plates 29, 30 and 31. These ratchet plates are preferably formed of sheet metal, and ratchet teeth as 124 are produced thereon from laterally directed lugs formed integral with the sheet from which the body of the wheel is made. Rotation of the dial plates 29, 30 and 31 in one direction is prevented by means of spring pawl arms as 125, 126 and 127, which engage the ratchet teeth 124, and are pivotally supported as upon brackets 128, 129 and 130 carried by the strap 120. The shaft 116 carries a pinion 131 which operatively engages the rack teeth 85 of the rack plate 84, the shaft 116 being thereby rotated when the rack plate 84 is moved in either direction. When the shaft 116 is rotated by outward movement of the rack plate 84, it turns loosely within the hub of the dial plate 29, and means are provided for causing the dial plate 29 to turn with the shaft 116 when it is rotated in the opposite direction by the return movement of the rack plate. As shown, a ratchet wheel 132 is fixed against rotation on the shaft 116 adjacent the hub of the dial plate 29, and a spring pawl 133 is mounted upon the ratchet wheel 121 for operatively engaging the teeth of the ratchet 132. As most clearly shown by Fig. 12 of the drawings, the spring pawl 133 is pivotally mounted upon the back of the ratchet wheel 121, and has an overturned end 134 which projects through a slotted opening 135 in the ratchet wheel 121 to engage the teeth of the ratchet 132. Most desirably the pinion 131 is of such size that it is turned through a complete revolution by a movement of the rack plate 84 produced by contact of the lug 89 with a ten-cent piece X, located in the pocket 53^a. The lugs 86, 87 and 88 are preferably proportioned in length to the denomination of the coins by which they are engaged, the lug 86 being longer than the lug 89 and effecting a movement of the rack plate 84 sufficient to turn the pinion 131 and the dial plate 29 through two and one-half revolutions. For giving the dial plates 30 and 31 a step-by-step movement, the dial plate 30 being advanced one step upon each complete revolution of the plate 29, and the dial plate 31 being advanced one step upon each complete revolution of the plate 30, an arm 136, 137 is carried by each of the ratchet wheels 121 of the adjacent ratchet wheels 122 and 123, respectively.

I claim as my invention:

1. In a money bank, in combination, a receptacle having an opening in its wall, a spring-retracted coin-carrier movable through the opening and adapted to close the same when advanced, a pawl for securing the carrier in advanced position, and crank-operated registering mechanism adapted to release the said pawl when the registering operation has been completed.

2. In a money bank in combination, a receptacle, a coin chute entering the chamber of the receptacle through a wall thereof, a carrier plate sliding in the chute, a side face of said plate being provided with a recess extending to the inner end of the plate, a movable stop finger reaching into the recess through the wall of the chute, and means for raising the stop finger upon the advance of the carrier plate in the chute.

3. In a money bank, in combination, a coin pocket having an openable side wall, registering mechanism operated by contact with a coin when located in the pocket, and an ejecting lug adapted to enter the pocket upon the opening of the side wall thereof.

4. In a money bank, in combination, a coin pocket comprising a pair of apertured plates hinged together, registering mechanism operated by contact with a coin through the aperture of one of the plates, and an ejecting lug adapted to enter the pocket through the aperture of the other plate upon the relative swinging of the plates to separate them.

5. In combination, three plates hinged together, one of the outer plates having an inwardly directed lug and the intermediate plate having an aperture in the path of said lug, a coin seat formed on that face of the intermediate plate remote from the plate having the lug, the said seat being normally covered by the third plate to form a pocket, and the two outer plates being connected to swing together.

6. In combination, a plate having a coin seat on one face thereof and an aperture in line with the said seat, and a member hinged to the plate and adapted to move over the seat through the aperture.

7. In a money bank, in combination, a receptacle having an opening in its wall, a coin carrier movable throughout the opening, manually actuated registering mechanism, and a latch for holding the registering mechanism against movement adapted to be released by the advance of the coin carrier.

8. In a money bank, in combination, a receptacle having an opening in its wall, a

spring-retracted coin carrier movable through the opening and adapted to close the same when advanced, a pawl for securing the carrier in advanced position, manually-actuated registering mechanism adapted to release the said pawl when the registering operation has been completed, and a latch for holding the registering mechanism against movement adapted to be released by the advance of the coin carrier.

9. In a money bank, in combination, a receptacle, a coin chute entering the chamber of the receptacle through a wall thereof, a carrier-plate sliding in the chute, manually-actuated registering mechanism including a movable carriage located within the chamber of the receptacle, and a hook engageable with the carriage to hold the same against movement lying in the path of the carrier-plate.

10. In a money bank, in combination, a receptacle having an opening in its wall, a spring-retracted coin carrying plate movable through the opening and adapted to close the same when advanced, a pawl for securing the said plate in advanced position, a lever for swinging the pawl adapted to yield in one direction, manually-actuated registering mechanism including a reciprocable carriage located within the chamber of the receptacle, a hook engageable with the carriage to hold the same against movement lying in the path of the coin-carrying plate, and a hooked cam mounted on the carriage for engaging with the pawl lever.

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