R. & J. W. CAIRNS.

COIN DELIVERY MACHINE.

APPLICATION FILED OCT. 27, 1913.

1,104,405.

Patented July 21, 1914.

5 SHEETS—SHEET 1.

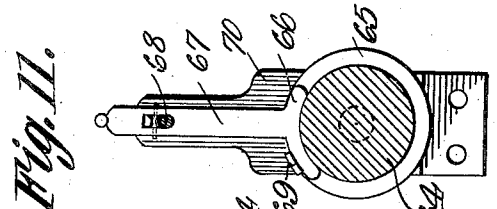


Fig. 11.

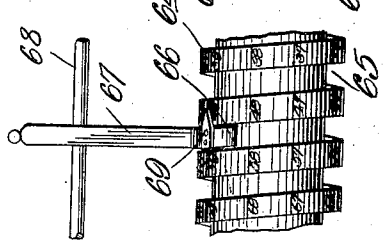


Fig. 10.

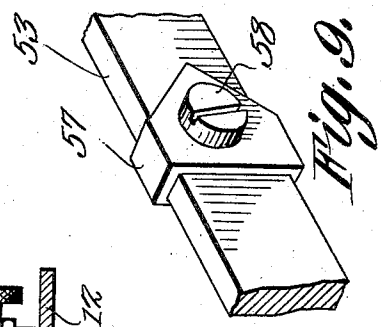


Fig. 9.

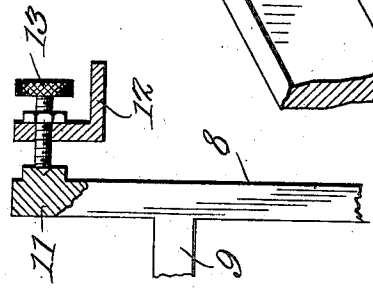


Fig. 8.

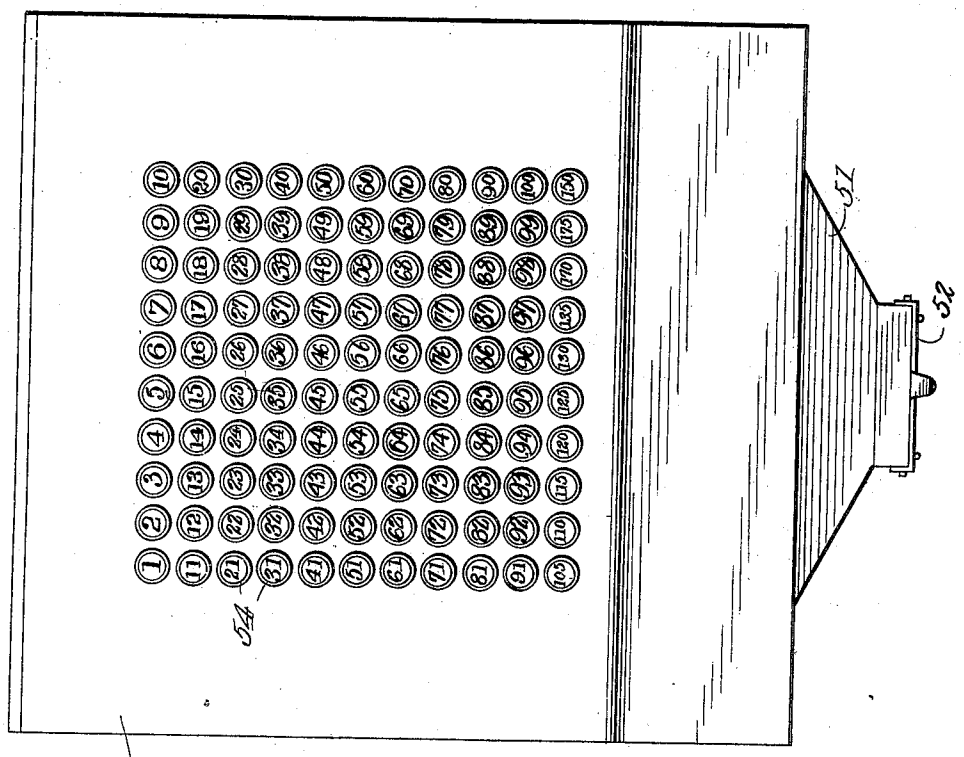


Fig. 1.

Witnesses
H. B. Wooden.
Margery C. Lucas.

Robert Cairns Inventors
Joseph W. Cairns
by Miller B. Stevens & Co.
Attorneys.

THE NORRIS PETERS CO., WASHINGTON, D. C.

R. & J. W. CAIRNS.

COIN DELIVERY MACHINE.

APPLICATION FILED OCT. 27, 1913.

1,104,405.

Patented July 21, 1914.

5 SHEETS—SHEET 2.

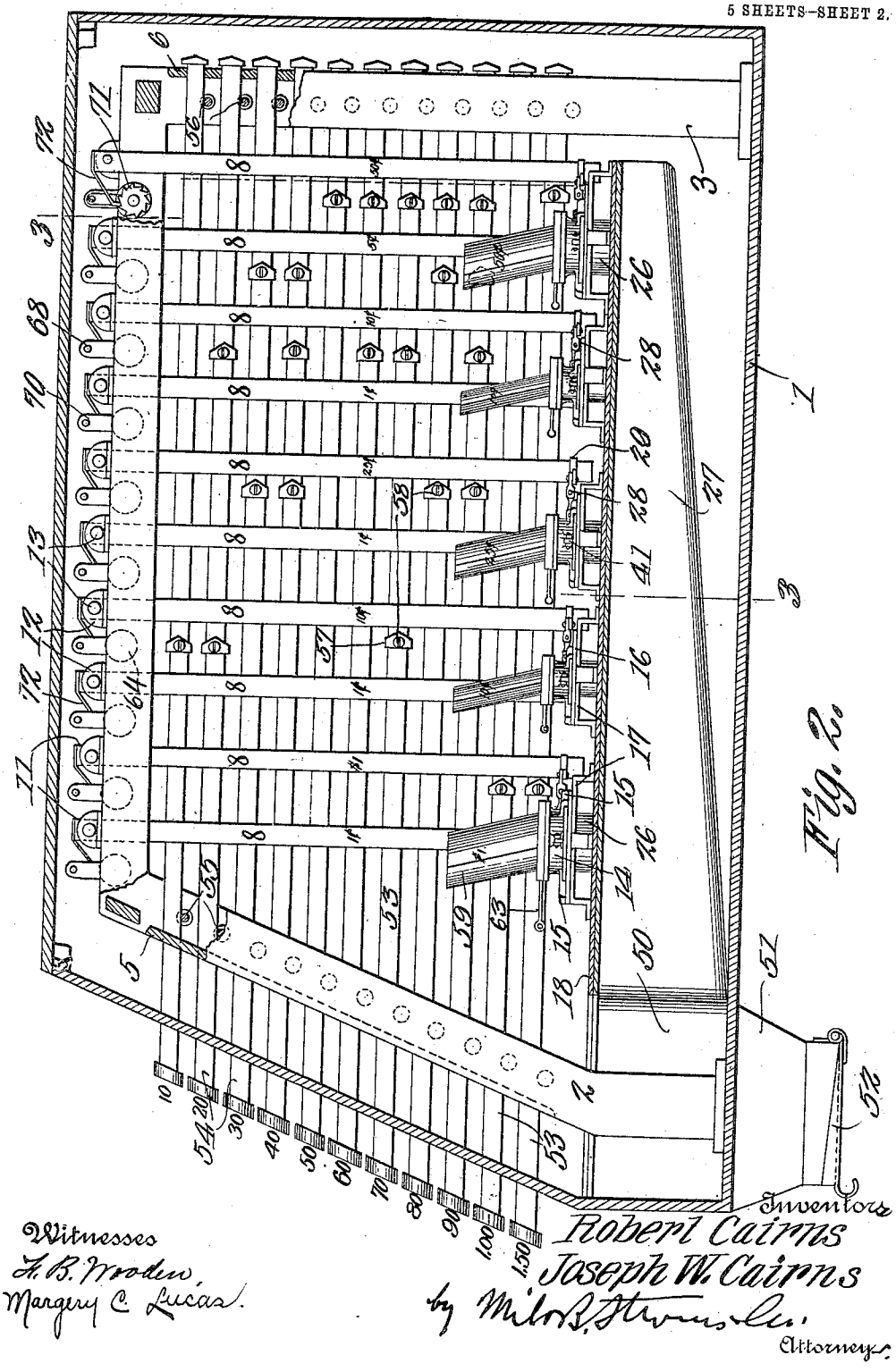


Fig. 2.

Witnesses
H. B. Wooden.
Margery C. Lucas.

Inventors
Robert Cairns
Joseph W. Cairns
by Miller B. Stevenson.
Attorneys.

THE NORRIS PETERS CO., WASHINGTON, D. C.

R. & J. W. CAIRNS.

COIN DELIVERY MACHINE.

APPLICATION FILED OCT. 27, 1913.

1,104,405.

Patented July 21, 1914.

5 SHEETS—SHEET 3.

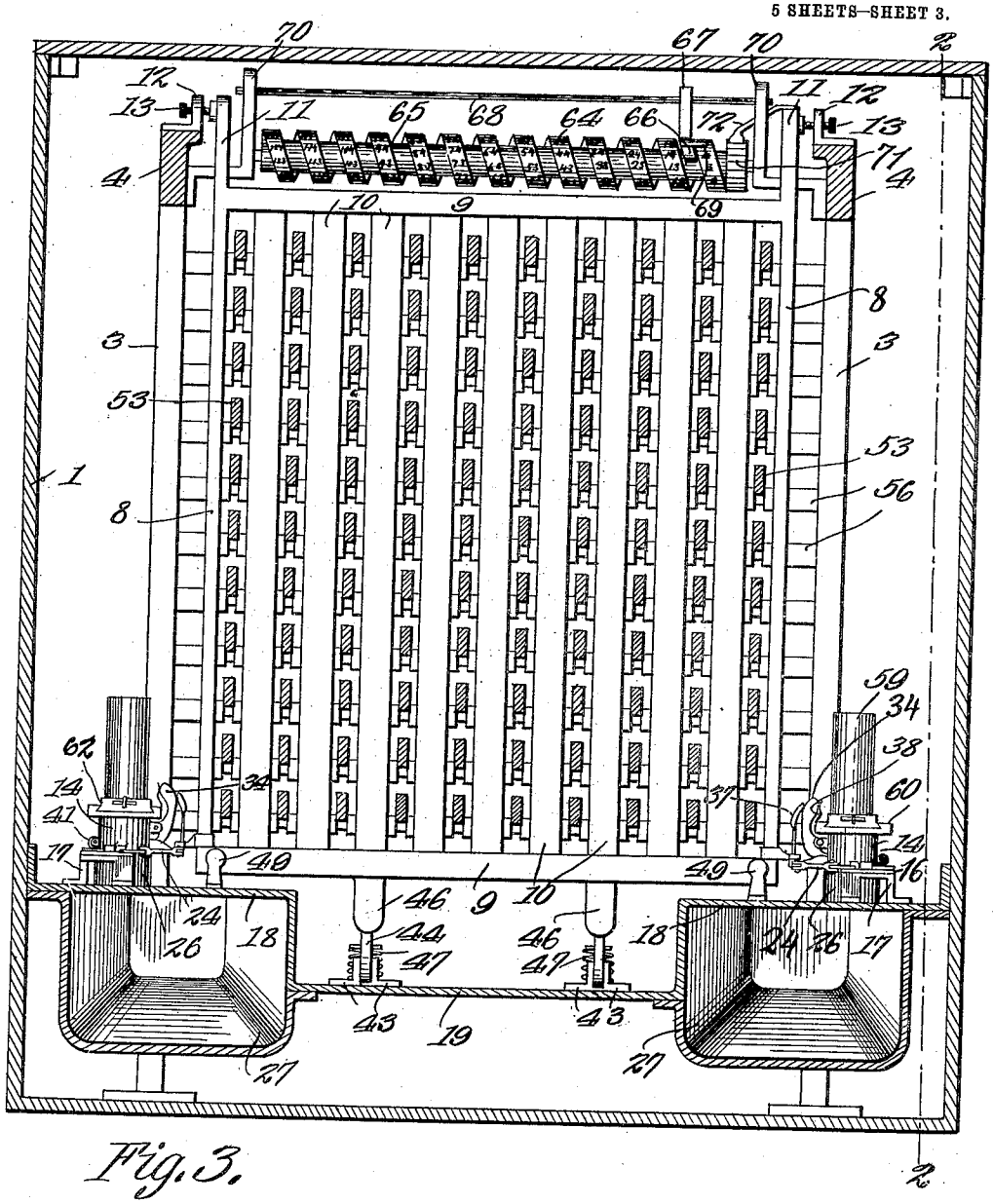


Fig. 3.

Witnesses
H. B. Wooden
Margery C. Lucas.

Robert Cairns Inventors
Joseph W. Cairns
by Wilson B. Stevens Co.
Attorneys.

THE NORRIS PETERS CO., WASHINGTON, D. C.

R. & J. W. CAIRNS.

COIN DELIVERY MACHINE.

APPLICATION FILED OCT. 27, 1913.

1,104,405.

Patented July 21, 1914.

5 SHEETS—SHEET 4.

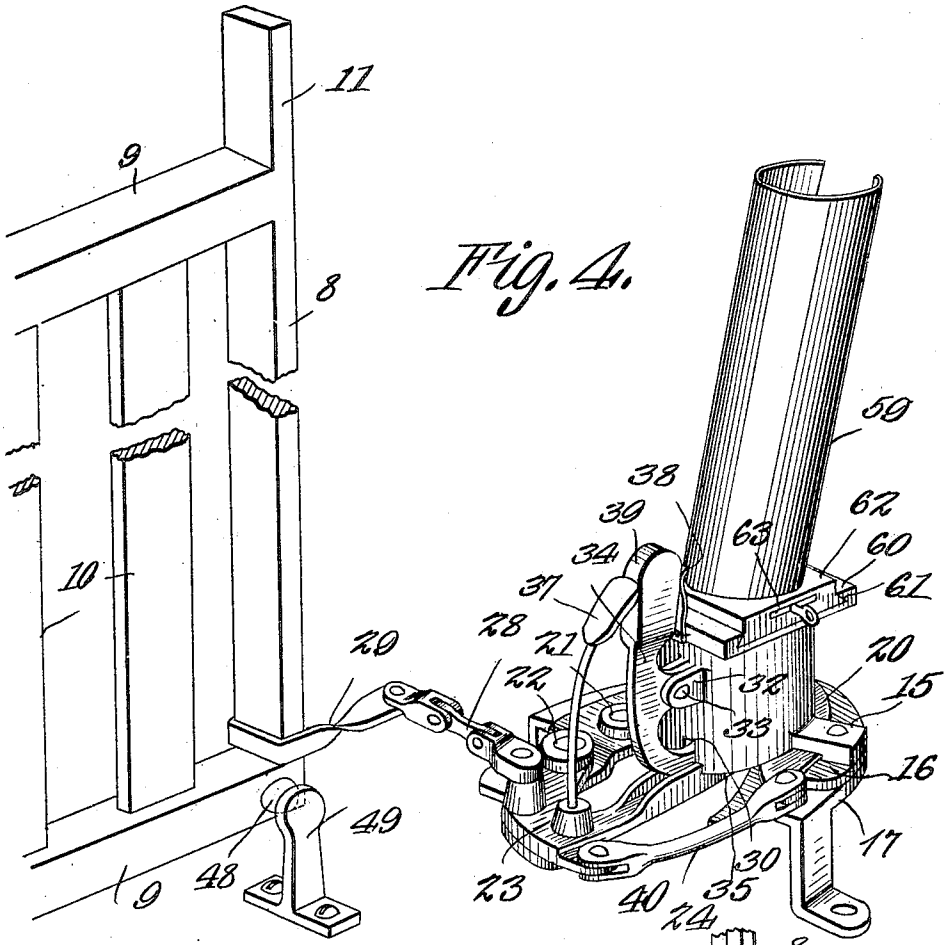


Fig. 4.

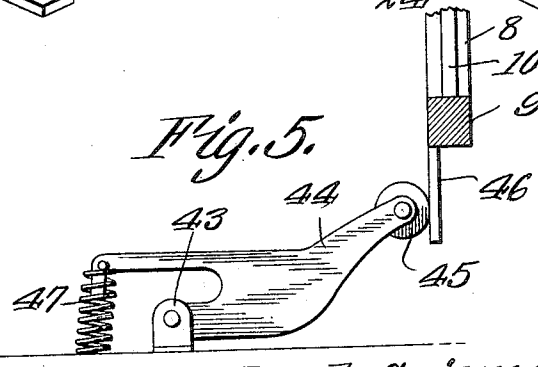


Fig. 5.

Witnesses
F. B. Wooden
Margaret C. Lucas.

Robert Cairns Inventors
Joseph W. Cairns.
by Miller & Thomas
Attorneys

THE NORRIS PETERS CO., WASHINGTON, D. C.

R. & J. W. CAIRNS.

COIN DELIVERY MACHINE.

APPLICATION FILED OCT. 27, 1913.

1,104,405.

Patented July 21, 1914.

5 SHEETS—SHEET 5.

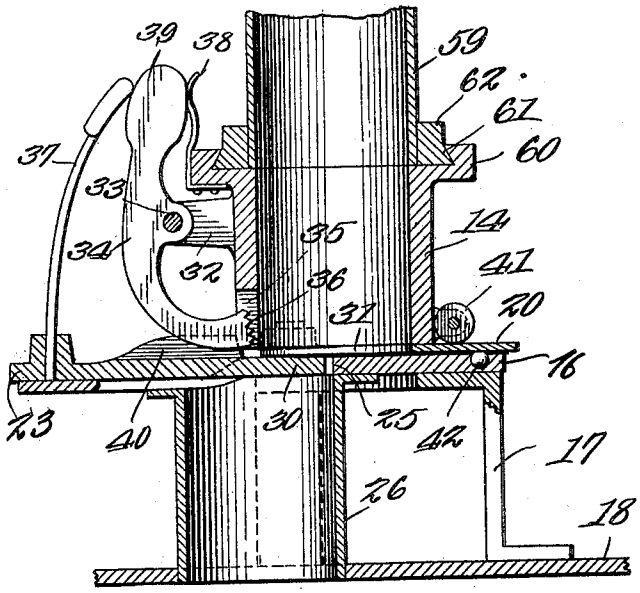


Fig. 7.

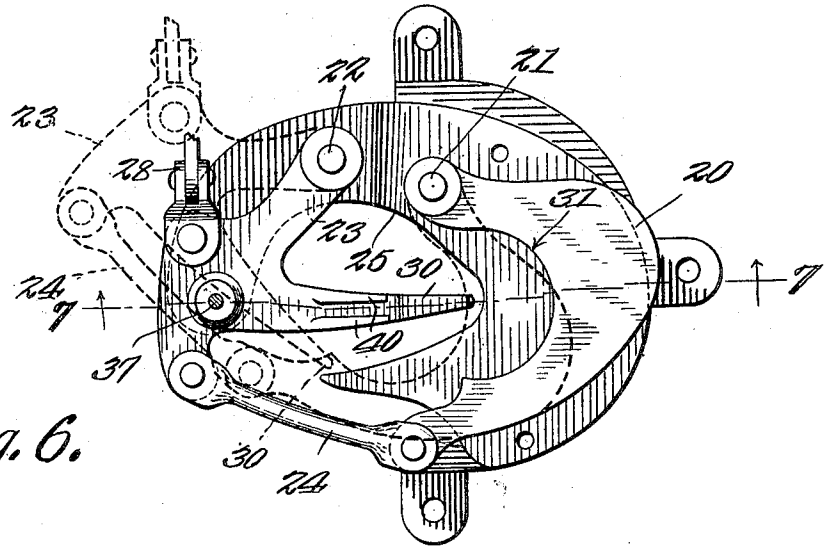


Fig. 6.

Witnesses
H. B. Woodson.
Margery C. Lucas.

Robert Cairns Inventors
Joseph W. Cairns
by Wilson Stevens & Co.
Attorneys.

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ROBERT CAIRNS AND JOSEPH W. CAIRNS, OF WATERTOWN, WISCONSIN.

COIN-DELIVERY MACHINE.

1,104,405. Specification of Letters Patent. **Patented July 21, 1914.**

Application filed October 27, 1913. Serial No. 797,510.

To all whom it may concern:

Be it known that we, ROBERT CAIRNS and JOSEPH W. CAIRNS, citizens of the United States, residing at Watertown, in the county of Jefferson and State of Wisconsin, have invented certain new and useful Improvements in Coin-Delivery Machines, of which the following is a specification.

This invention relates to machines or apparatus for delivering coins, and more particularly to those which are commonly known as change-makers, a coin, or a series of coins having an aggregate value equal to the difference between the cost of the goods purchased and the amount tendered in payment thereof, being automatically delivered by pressure on a key or keys.

The object of the present invention is to provide a coin-delivery mechanism which can be rapidly operated, and to this end it consists in a series of coin-receptacles, each of said receptacles having an ejecting slide provided with an actuator, some of which latter are constructed to actuate more than one slide so that several coins will be ejected simultaneously. By this arrangement of parts it is possible, by the movement of a single actuator, to eject several coins of different denominations, the aggregate value of which will be equal to the amount of change desired.

The invention also has for its object to provide a novel and improved ejector mechanism, and, furthermore, to provide a device which registers the amount of money discharged from the machine.

Other objects and advantages of the invention will be pointed out in the detailed description appearing hereinafter, and in order that the invention may be better understood, reference is had to the accompanying drawings, in which—

Figure 1 is a front elevation of the machine; Fig. 2 is a longitudinal section on the line 2—2 of Fig. 3, and partly broken away; Fig. 3 is a cross-section on the line 3—3 of Fig. 2; Fig. 4 is a detail in perspective showing one of the coin receptacles and the ejecting mechanism thereof; Fig. 5 is an elevation of a device for restoring the ejector actuating mechanism to normal position; Fig. 6 is a plan view of one of the coin ejectors; Fig. 7 is a vertical section on the line 7—7 of Fig. 6; Fig. 8 is a detail, partly in section, showing the pivotal support of the swinging member of one of the actuators of the coin ejectors; Fig. 9 is a perspective view of a fragment of a member which operates the swinging member; Fig. 10 is an elevation of a fragment of the registering device, and Fig. 11 is an end view of said device.

Referring specifically to the drawings, 1 denotes a suitable casing which incloses the coin-delivery mechanism and other parts of the machine. In the casing is mounted a frame composed of front and rear upright bars 2 and 3, respectively, and a top connecting bar 4. Two of these frame members are provided, the same being spaced laterally a sufficient distance to accommodate the parts to be presently described. The front bars 2 are connected by a transverse plate 5, and a similar plate 6 connects the rear bars 3. The bars 2 and 3 are suitably secured to the bottom of the casing 1 on the inside thereof.

Between the top bars 4 is pivoted a series of swinging frames composed of end bars 8, top and bottom connecting bars 9, and intermediate bars 10 extending between the top and bottom bars. The intermediate bars of the respective frames are in alinement and uniformly spaced apart. The end bars have top extensions 11 rising above the top bars 9. Angle brackets 12, mounted on top of the bars 4, carry screws 13 having pointed ends which seat in pivot recesses in the parts 11, said screws forming the pivotal supports of the swinging frames. The frames swing in a vertical plane between the front and rear walls of the casing 1. Each of the herein-described swinging frames is connected to a coin ejector operating in conjunction with a coin receptacle, which will now be described.

The coin receptacle comprises a short cylindrical tube 14 having outstanding lugs 15 at the bottom whereby it is fastened on top of a base plate 16, which latter, in turn, is supported on a stand 17 mounted on a plate 18 secured to the side walls of the casing 1 and having a dropped middle portion 19. The bottom of the tube 14 is spaced sufficiently from the base plate 16 to accommodate an ejector slide 20 pivoted at 21 to the base plate to swing in a horizontal plane. To the base plate is also pivoted at 22, to swing in a horizontal plane, an arm 23 which is connected by a link 24 to the slide 20. The base plate 16 has an aperture 25, a portion of which is directly under the tube 14,

and the area of this aperture is such as to permit the coins in the tube to drop therethrough. From the aperture 25 depends a tube 26 which is offset slightly to one side of the tube 14 and opens into a coin chute 27, the top of which latter is the plate 18, and said plate having an opening in which the lower end of the tube 26 seats. A series of links 28 connect the arm 23 with an arm 29 secured to and projecting from one of the end bars 8 of the swinging frame. The coin tube 14 and the ejecting mechanism are located alongside the swinging frame and the link connection 28 is so arranged that the arm 23 is swung when the frame carrying the bar 8 is swung, the link connection allowing the rising and falling motion of the frame when the latter swings. From that side of the arm 23 which faces the slide 20 projects a finger 30 which is adapted to come beneath the tube 14 when the slide 20 is retracted. The edge of the slide which engages the coin is concave, as indicated at 31.

On the outside of the tube are ears 32 between which is pivoted, as indicated at 33, a lever 34, adapted to have its lower end swing into the tube 14, close to the bottom thereof and above the slide 20, through a slot 35 in the tube. This lever is designed to hold the pile of coins in the tube while the lowermost coin is being ejected. The extremity of the lever which enters the tube is serrated, as indicated at 36, to better grip the coins. From the arm 23 rises a finger 37 adapted to engage the upper end of the lever to swing its coin-engaging lower end out of the tube. A spring 38 pressing against the upper end of the lever tends to swing the same in a direction to insert its lower end into the tube. The upper end of the lever may also be counterweighted for this purpose, as indicated at 39. On the finger 30 are two spaced guide ribs 40 between which the lower end of the lever swings.

The slide 20 is normally retracted, in which position the finger 30 is extending beneath the tube 14 across the open space formed by the aperture 25. The base plate 16 extends partly across the bottom of the tube. With the parts in this position, the finger 37 engages the upper end of the lever 34 and holds its lower end withdrawn from the tube. If now the frame to which the arm 23 is connected by the links 28 is swung rearward, said arm is swung in a direction to withdraw the finger 30 from beneath the tube 14, as shown by dotted line in Fig. 6, and at the same time the finger 37 is withdrawn from the lever 34 to allow its lower end to swing into the tube. As son as the arm 23 starts to swing, the slide 20 moves beneath the tube 14 and pushes the lowermost coin therein laterally until said coin drops through the aperture 25 into the tube 26, and at the same time the end 36 of the lever 34 engages the lowermost one of the pile of coins in the tube and holds the same. When the swinging frame returns to its normal position, the arm 23 is swung to again bring the finger 30 beneath the tube, and the slide 20 is retracted. At the same time the finger 37 strikes the lever 34 and swings it to withdraw the end 36 from the tube. The parts are now back to their normal position ready for the ejection of another coin.

The tube 14 carries an anti-friction roller 41 which engages the top of the slide 20, and the base plate 16 has a socket for a ball 42 on which the slide rests, whereby the latter is made to work smooth and easy.

The coin receptacles and the parts associated therewith are located on opposite sides of the swinging frames and are connected alternately to opposite ends thereof, as there is not room for all on one side.

Back of each swinging frame, at the bottom thereof, and pivoted to ears 43, mounted on the part 19 of the plate 18, is located a device which returns the frame to its normal position. This device is a lever 44 carrying a roller 45 at one end which engages a depending projection 46 on the bottom bar 9 of the frame. The other end of the lever is engaged by a spring 47 which tends to swing the lever to keep the roller against the part 46. When the frame is actuated to operate the coin ejector 20, the lever swings against the tension of the spring 47, and when the actuating member of the frame is released, the spring, through the lever and its roller, swings the frame back to its normal position. These devices are arranged in two rows, taking each frame in alternation, as there is not enough room for their location in one row. The ends of the bottom bars 9 have cushions 48 to strike bumper posts 49 at the limits of the swing of the frame, thus preventing clashing of the parts and making the operation of the mechanism smooth.

There is a coin chute 27 beneath each row of coin tubes 14. The two coin chutes slope down toward the front of the machine and merge here into one outlet 50 from which depends a hopper 51 into which the coins drop. The hopper depends from the bottom 7 of the casing 1, and has a spring-hinged lid 52, which, when it is opened, allows the coins to drop into the operator's hand.

The actuating means for the swinging frames which operate the coin ejectors 20 are horizontal bars 53 which are slidable longitudinally. These bars pass through slots in the front wall of the casing and are provided on the outside thereof with push-buttons or keys 54. The bars also pass through slots in the plates 5 and 6, and between the bars 2 are mounted transverse rollers 55 which are grooved and engage-

able by the bars to ease the motion thereof. Similar rollers 56 extend between the rear bars 3.

The motion of the bars 53 is communicated to the swinging frames by means of collars 57 secured to the former by screws 58. The bars 53 extend between the intermediate bars 10 of the frame and the collars are adapted to engage two adjacent ones of said bars, whereby the frames are swung rearward when the bars 53 are pushed inward by pressure against the push-buttons 54.

It will be noted that some of the bars 53 carry only one collar 57 and therefore actuate only one frame, whereas other ones of the bars have two or more collars and thus actuate a corresponding number of frames.

Fig. 2 of the drawings shows two coin tubes 14 designed to hold dimes, one coin tube to hold dollars, another tube to hold quarters, and another tube to hold half-dollars. The bar 53 having a coin value of ten cents, has its collar 57 set to engage the swinging frame which is connected to the coin ejector 20 of the dime-tube. The bar having a coin value of twenty cents has two collars set to engage the swinging frames of the coin ejectors associated with the two dime-tubes. Thus when the first-mentioned bar is actuated, one dime is ejected, and when the second-mentioned bar is actuated, two dimes are ejected, one from each dime-tube. The bar having a value of thirty cents effects the delivery of a quarter and a nickel, and so on. Each one of the series of bars has a different coin value, the push-buttons 54 being suitably inscribed, as shown in Fig. 1 to indicate the value of the respective bars, and each bar carries one or more collars 57 suitably positioned to actuate the ejector or ejectors of the coin or coins corresponding in value to the coin-value of the bar. In Fig. 2 all the collars 57 have not been shown in order not to obscure the parts, and in this view only the dollar, half-dollar, quarter, and the two dime-tubes 14 are shown, the cent and nickel tubes being on the other side of the machine.

Above each coin tube 14 is removably mounted a magazine 59 to hold a supply of coins. In order to support the magazine on the tube, the latter has an outstanding top flange 60 provided with an undercut slideway 61 designed to receive a block 62 which carries the magazine, the latter being a tube which seats in an aperture in the block, the aperture being in alinement with the coin tube. The block 62 carries a slide 63 which is adapted to be moved across the interior of the tube 59 to retain the pile of coins therein, when said tube is removed, and upon pulling the slide out, the coins are released and allowed to enter the tube 14. At the close of the day's business the slide will be advanced into the tube 59, after which the latter may be removed with the coins it contains. The coins remaining in the tube 14 can be quickly discharged by pressure on a few push-buttons 54 to actuate the coin ejectors.

A registering mechanism is also provided which counts the number of times each coin ejector has been actuated, a counter being provided for the actuating device of each ejector. Each register or counting device comprises a cylinder 64 having a helical groove 65 in which seats a shoe 66 carried by a stem 67 slidably mounted on a rod 68 extending parallel to the axis of the cylinder. The shoe carries a pointer 69 which indicates on a continuous line of numbers commencing with 1 at one end of the cylinder and continuing around the cylinder helically in uniformly spaced relation, to the other end thereof. The cylinder has a step-by-step rotary motion, the steps corresponding to the spacing of the numbers, in view of which each step of the cylinder brings the number next to the preceding one opposite to the pointer 69, the latter, by reason of the fact that the shoe 66 seats in the groove 65, following the helix in which the numbers are arranged. The cylinder 64 is journaled at its ends in bearing brackets 70 carried by the top bars 4, said brackets also supporting the rod 68. On one end of the cylinder 64 is a ratchet wheel or disk 71 which is engageable by a spring pawl 72 fastened to the top end of the top extension 11 of one of the end bars 8 of the swinging frame to which the coin ejector 20 is connected. Thus, when the frame swings to effect the discharge of a coin, the cylinder 64 is rotated one step, and as each swinging frame is provided with a registering mechanism, the total number of coins ejected from each coin tube 14 will be registered.

We claim:

1. A coin-delivery apparatus comprising a series of parallel swinging frames, each frame having spaced bars and said bars of the respective frames being in alinement, a coin ejector connected to each frame, longitudinal bars slidably mounted between the aforesaid spaced bars and having abutments engageable therewith, certain ones of the bars having more than one abutment to engage a corresponding number of bars of different swinging frames simultaneously.

2. A coin-delivery apparatus comprising a series of parallel swinging frames, each frame having spaced bars and said bars of the respective frames being in alinement, a coin ejector connected to each frame, said coin ejectors being located alternately on opposite sides of the series of frames, longitudinal bars slidably mounted between the aforesaid spaced bars and having abutments engageable therewith, certain ones of the bars

having more than one abutment to engage a corresponding number of bars of different swinging frames simultaneously.

3. A coin-delivery apparatus comprising a supporting frame having front, rear and side members, a series of parallel swinging frames between the side members, each frame having spaced bars and the bars of the respective frames being in alinement, transverse supports between the front and rear supporting frame members, longitudinal bars slidably mounted on said supports and located between the aforesaid spaced bars, said longitudinal bars having abutments engageable with the spaced bars, certain ones of the longitudinal bars having more than one abutment to engage a corresponding number of bars of different swinging frames simultaneously, and a coin ejector connected to each swinging frame.

4. The combination with a coin receptacle, of a swinging coin ejector, a pivoted coin-supporting member swinging into the receptacle to engage the coin next to the one being ejected, a swinging member operatively connected to the coin ejector and having a projecting member extending beneath the receptacle when the ejector is retracted, and means on the swinging member to retract the supporting member when the ejector is retracted.

5. The combination with a coin receptacle, of a swinging coin ejector, a pivoted coin-supporting member normally tending to swing into the receptacle, a swinging member operatively connected to the coin ejector, and having a projecting member extending beneath the receptacle when the ejector is retracted, and means on the swinging member engageable with the coin-supporting member to swing the same out of the receptacle when the ejector is retracted.

6. The combination with a coin receptacle, of a swinging coin ejector, a pivoted coin-supporting member normally tending to swing into the receptacle, a swinging member operatively connected to the coin ejector, and having a projecting member extending beneath the receptacle when the ejector is retracted, said projecting member having guide ribs between which one end of the coin-supporting member works, and a finger on the swinging member engageable with the coin-supporting member to swing the same out of the receptacle when the ejector is retracted.

7. A coin-delivery apparatus comprising a series of coin receptacles, an ejector associated with each receptacle, operating devices for the ejectors, each of said operating devices including a swinging frame, a pawl carried by said frame, a registering cylinder having a helical groove, a ratchet wheel mounted on the cylinder engageable by the aforesaid pawl, and a slidable pointer indicating on the cylinder and having a shoe fitting in the groove thereof.

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

ROBERT CAIRNS.
JOSEPH W. CAIRNS.

Witnesses:
ARCHIE ERICKSON,
EMIL TANCK.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."