

G. W. HOLLINGSWORTH.
AUTOMATIC CHANGE MAKER.

APPLICATION FILED MAR. 9, 1909. RENEWED SEPT. 28, 1912.

Patented May 25, 1915.

3 SHEETS—SHEET 1.

1,140,458.

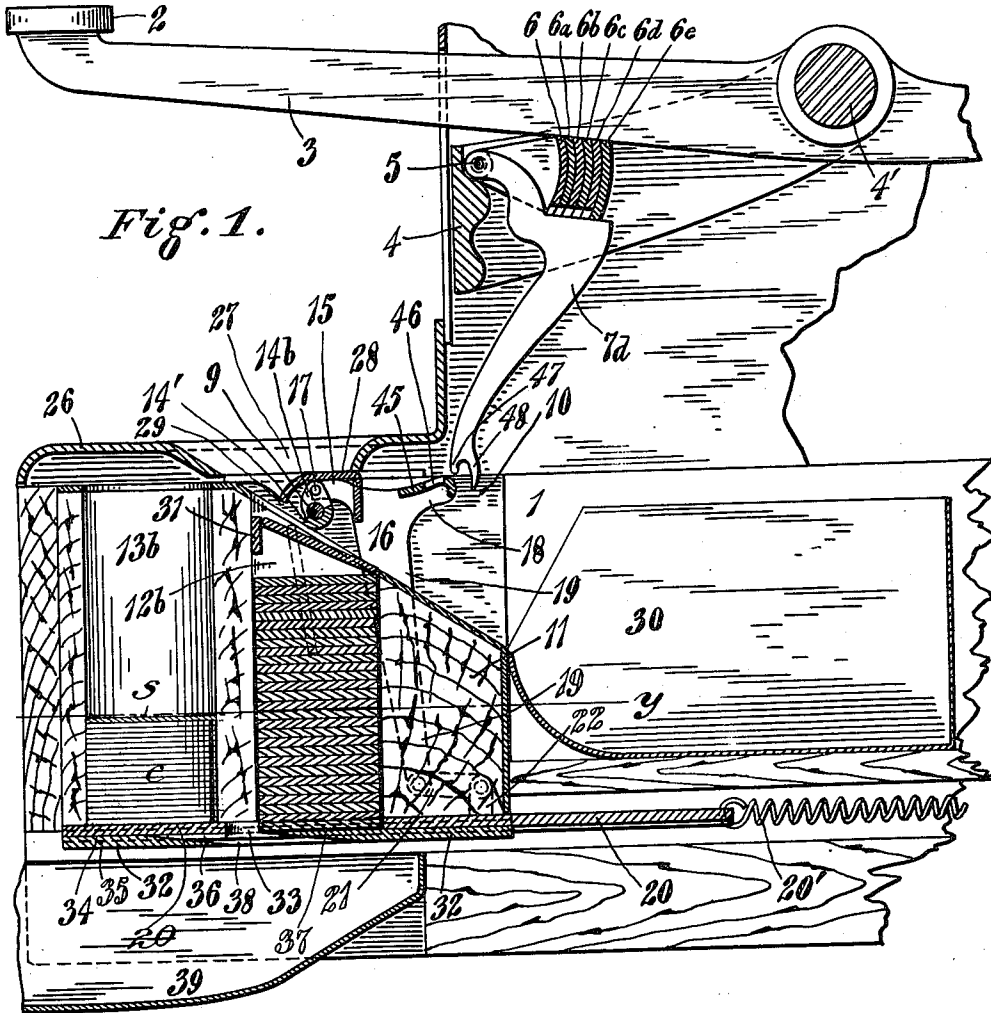


Fig. 1.

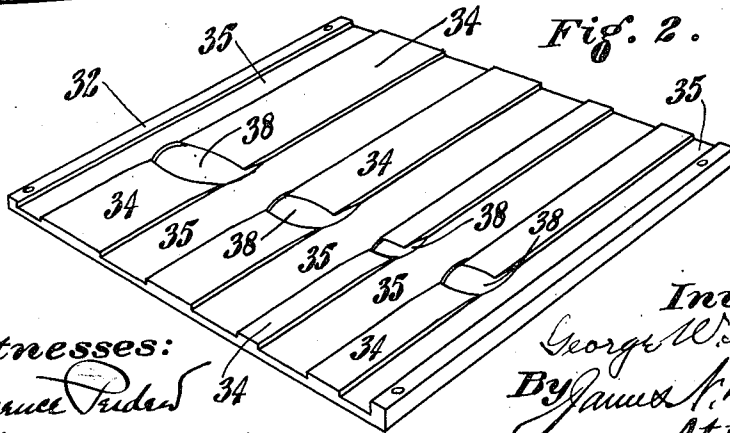


Fig. 2.

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3 SHEETS—SHEET 2.

Fig. 3.

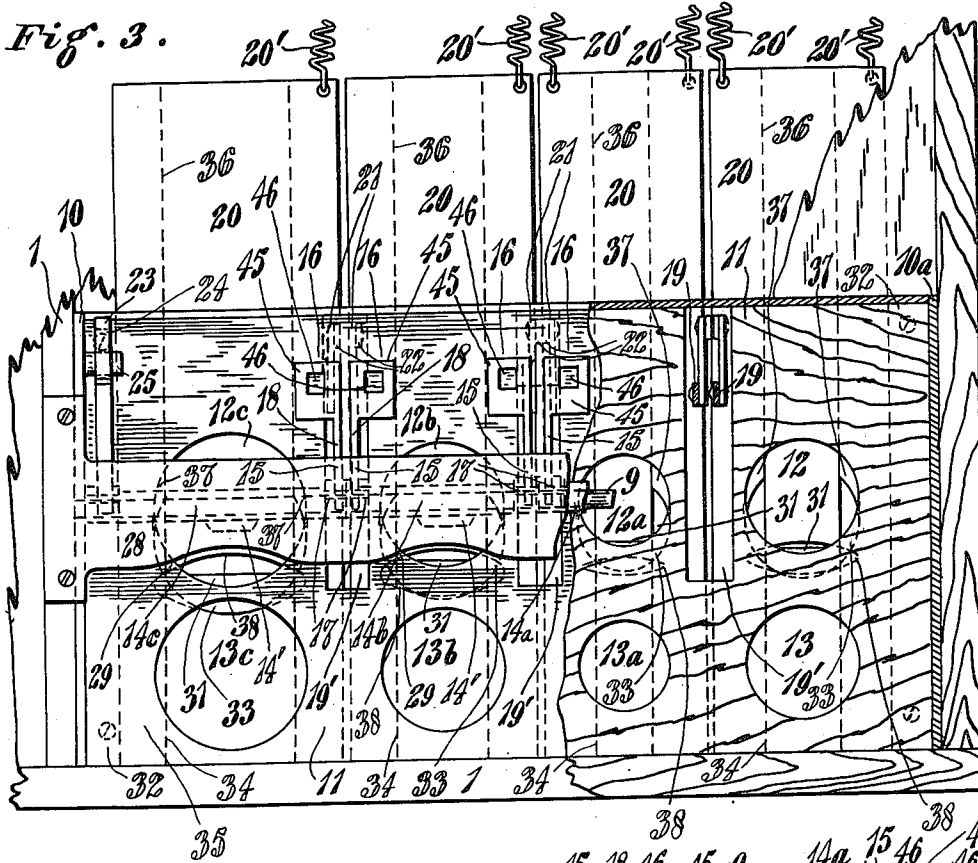


Fig. 6.

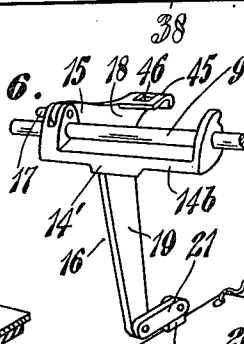


Fig. 7.

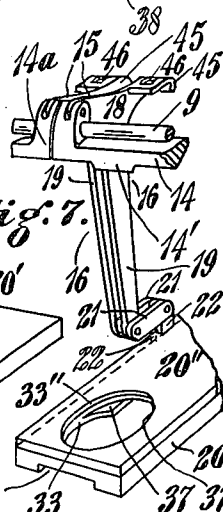


Fig. 5.

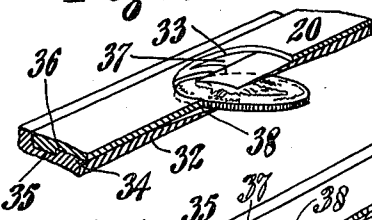
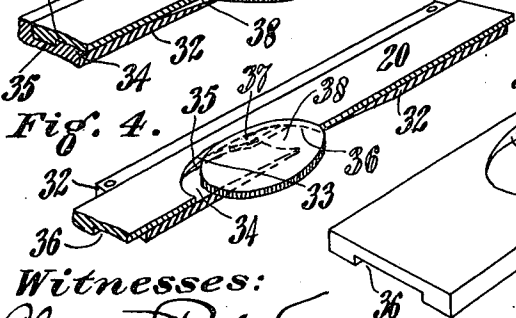


Fig. 4.



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3 SHEETS—SHEET 3.

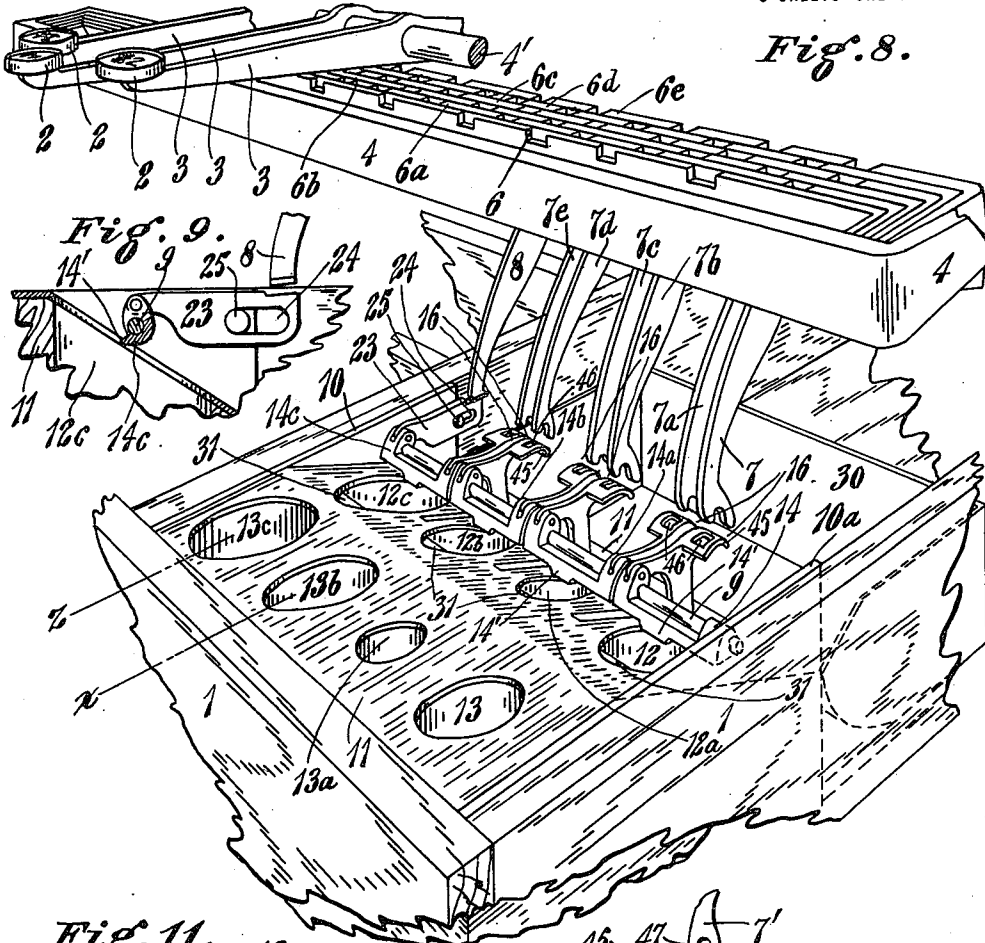


Fig. 8.

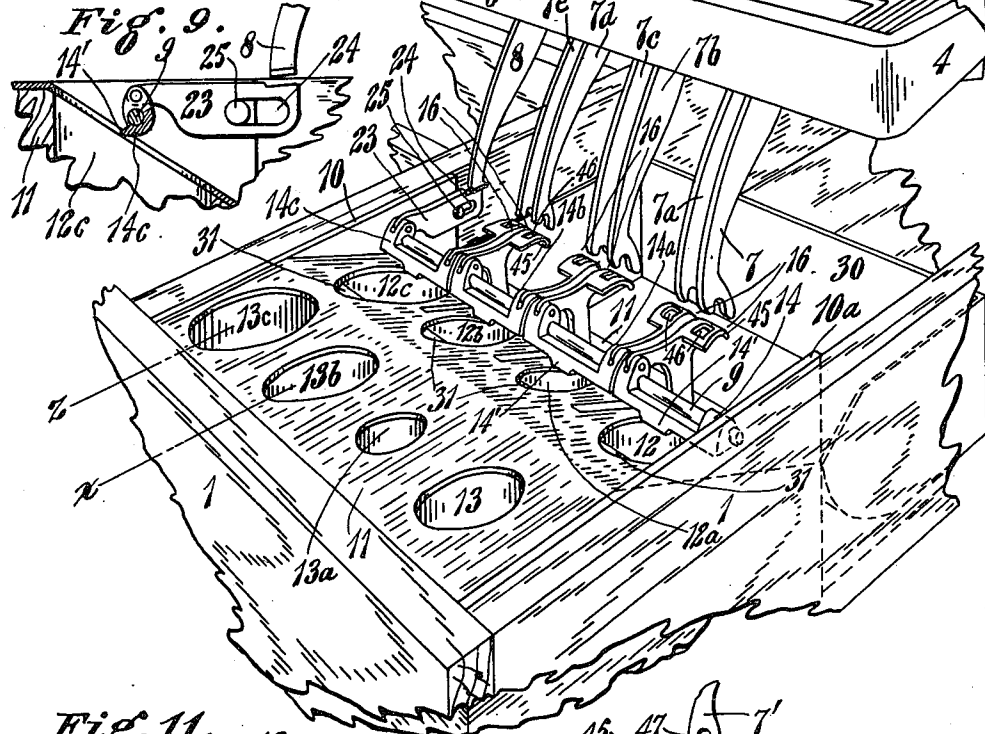


Fig. 9.

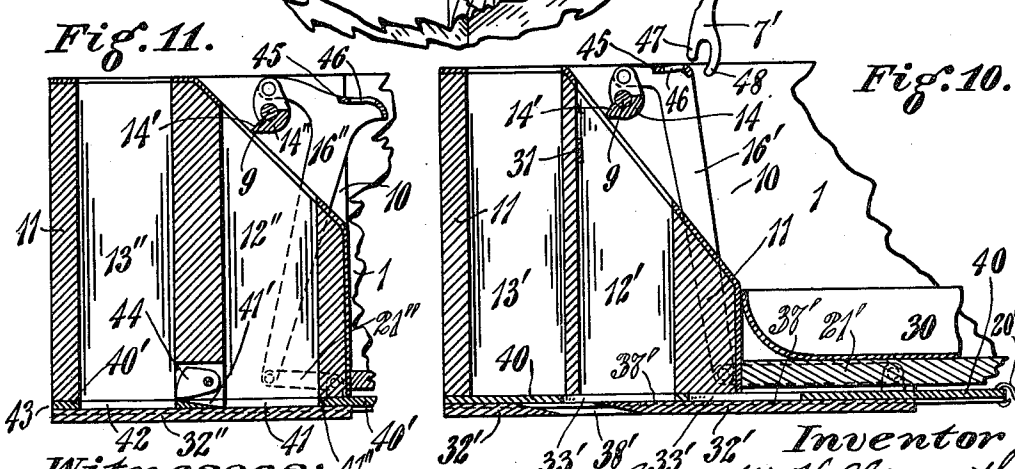


Fig. 10.

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UNITED STATES PATENT OFFICE.

GEORGE W. HOLLINGSWORTH, OF CINCINNATI, OHIO, ASSIGNOR TO THE NATIONAL CASH REGISTER COMPANY, OF DAYTON, OHIO, A CORPORATION OF OHIO, (INCORPORATED IN 1906.)

AUTOMATIC CHANGE-MAKER.

1,140,458.

Specification of Letters Patent.

Patented May 25, 1915.

Application filed March 9, 1909, Serial No. 482,222. Renewed September 28, 1912. Serial No. 722,955.

To all whom it may concern:

Be it known that I, GEORGE W. HOLLINGSWORTH, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Automatic Change-Makers, of which the following is a specification.

This invention relates to change makers, and particularly to my former patent, for automatic change makers, No. 590,435, dated September 21, 1897, and its object is to lessen the liability of error, either intentional or unintentional, in its operation, as well as to improve the construction of the various parts and their mechanical arrangement with relation to each other.

The invention consists in the combination with a cash drawer, of a coin tube or magazine and coin ejecting mechanism therefor, accessible for removal of the coins only from the interior of the drawer.

The invention also consists in the construction and arrangement of parts of the coin receiving and ejecting mechanism, as well as the peculiar arrangement of their combination with the operative mechanism of a cash registering device as will hereinafter be more fully set forth and claimed.

The invention also consists of coin ejecting mechanism adapted to cooperate with a plurality of coin holders to eject coins from the different holders in succession to empty one after another.

In the drawings: Figure 1 is a vertical section through part of my improved change making device and part of a cash registering device in combination therewith, the section being taken on a line corresponding to the line *x* of Fig. 8. Fig. 2 is a detail perspective view of the slide carrier. Fig. 3 is a plan view, partially in horizontal section on a line corresponding to the line *y* of Fig. 1, the drawer being removed from the cash register. Fig. 4 is a longitudinal sectional perspective view of part of the slide carrier and one of the slides illustrating how the coin, or slug, as here illustrated, is carried forward, and showing it at the point where the slide is about to start backward. Fig. 5 is a similar view illustrating the slide as having started backward and having allowed the coin, as here illustrated, to drop down into the oblique slot in the slide carrier, to

be ejected. Fig. 6 is a detail perspective view of one of the slides and part of the operative mechanism therefor. Fig. 7 is a similar view, illustrating the arrangement of the double slide and operative mechanism therefor. Fig. 8 is a general perspective view of parts of my improved change making apparatus and parts of a cash register and the mechanism for transmitting the operation of the cash register to the change making apparatus. Fig. 9 is a partial cross section on a line corresponding to the line *z* of Fig. 8, more clearly illustrating the arrangement of the key locking device. Fig. 10 is a vertical section on a line extending from the front to the rear through the coin tubes, illustrating the construction of my improved device with a slide having two coin receiving openings. Fig. 11 is a similar view, illustrating the construction of the device with a slide adapted to eject coins from either of the coin tubes, but constructed and operating differently than the slide illustrated in the previously described figures.

As illustrated, my improved change making apparatus is installed in the cash drawer 1 of a cash register of well known construction, having the keys 2 on key bars 3, which, when the keys are depressed, serve to register various amounts and also, ordinarily, serve to release the cash drawer and allow it to open for the insertion or removal of the cash either in the form of coins or paper, but, with the use of my change maker, does not thus automatically open. A bar 4 which extends transversely of the cash register, and, as shown, is mounted on the shaft 4' forming part of the cash registering mechanism, carries the fulcrums 5 common to the selectors 6, 6^a, 6^b, 6^c, 6^d, and 6^e, and the ejecting mechanism operating trips or fingers 7, 7^a, 7^b, 7^c, 7^d, and 7^e, as well as the key locking finger 8.

A shaft 9 extends transversely of the apparatus, and, as here shown, is journaled in plates 10 and 10^a, at the sides of the apparatus. These plates 10 and 10^a flank the block 11 which contains the current coin tubes or magazines 12, 12^a, 12^b and 12^c, and the auxiliary coin tubes or magazines 13, 13^a, 13^b and 13^c, designed for receiving nickels, dimes, quarters and half-dollars, respectively. The current and auxiliary coin

tubes comprise a housing for the coins. As shown, the shaft 9 passes transversely of the apparatus, as above referred to, and lies approximately over the centers of the current tubes or magazines and below the plane of the surface of the block 11 which is inclined rearwardly in the region of the current coin tubes. Rotatably mounted on the shaft 9 over the current tubes or magazines 10 12, 12^a, 12^b and 12^c are the rotatable sections 14, 14^a, 14^b and 14^c, respectively, which in the aggregate occupy the entire length of the shaft 9 between its bearings in the plates 10 and 10^a and are held against lateral movement thereby. As herein shown, each section 15 has two members extending above the shaft 9 and each member is bifurcated to receive the end of one arm 15 of a slide operating bell crank 16, this arm being pivoted 20 therein on a pin 17 which thus forms a fulcrum for the bell crank. Each section on the shaft 9 also has a downwardly extending arm 14' which is adapted to be engaged by coins inserted in the current tube to 25 rotate the section on the shaft.

Each of the bell cranks 16 has two other arms 18 and 19, the arm 18 being short, as is the arm 15, and being adapted to be engaged by the lower end of its corresponding trip or finger 7, 7^a, 7^b, 7^c, 7^d, or 7^e, as the case may be, one of said bell cranks being provided for each trip or finger. The arms 19, as shown, extending into slots 19' in the block 11, are much longer, in order 35 that they may increase the movement of the trip or finger sufficiently to provide the proper amount of movement for the ejector slides 20, to which they are connected by means of links 21 pivoted to their free ends and to upwardly extending lugs 22 on the sides of the ejector slides. These ejector slides are pulled back by springs 20'.

As is described in my former patent, the ejector slide to be operated is selected by 45 means of one of the selectors, which transmits the motion of the key bar 3 to the trip or finger 7, a particular selector being depressed by a particular key only if it has an upward projection under said key and a 50 particular selector depressing its particular trip or finger through its means for engaging with said trip or finger. When a selector is thus depressed and depresses the trip or finger, the lower end of the trip or finger 55 is carried forward so that it is over the part of the arm 18 with which it is adapted to engage, and then, upon the further depression of the key bar, coming into contact with the transverse bar 4, and depressing it, the 60 fulcrum 5 of the trip or finger is depressed, causing the trip or finger to move downward bodily and to depress the arm 18 and draw the lower end of the arm 19 of the bell crank forward, bringing the ejector slide 20 with it. 65 The foregoing description of parts being

equally applicable to the device embodied in my former patent, hereinbefore mentioned, is only given for the purpose of facilitating references in the following description, 70 which has to do with marked improvements, that, in combination with the above described parts, accomplish the object of the present invention. It may also be well understood from my previous patent that the bell cranks 16 may be drawn forward out of 75 reach of the trips or fingers 7 by rotating the sections, as the section 14, in which the bell cranks are eccentrically fulcrumed, this rotation taking place every time a coin is inserted into one of the current coin tubes or 80 magazines, due to the engagement of the edge of the coin with the downwardly projecting arm of the section over the tube. This feature is primarily intended to prevent the ejection of a coin of the same denomination as that inserted, or of larger denomination, but not to operate the sections 85 over the tubes receiving coins of lower denomination, and the manner of operation of this feature as it goes to accomplish the object of making change is fully and clearly 90 set forth in my previous patent above referred to. It will thus be seen that the section over the half-dollar tube will be operated upon the operation of any of the other 95 sections. It will also be observed that it is desirable to prevent the registering of a sale without the insertion of a coin into the cash drawer. This is insured by providing a key locking bar 23 having a slot 24 through 100 which a pin 25, mounted in the side plate 10, projects. This bar 23 is fulcrumed in the member of the section 14^c adjacent to the plate 10 and is thus drawn forward when the section is rotated, as hereinbefore described, and this section being rotated every 105 time any of the sections are rotated, the bar will be drawn forward every time a coin is inserted into any of the coin tubes. This bar 23 is provided with means for engaging 110 with the lower end of the trip or finger 8, and as this trip is fulcrumed on the transverse bar 4 which must be depressed if the keys are operated, it will be seen that when the bar 23 is in its rearward position and 115 the lower end of the trip 8 engages with it, the keys cannot be operated. However, when a coin is inserted into any of the current coin tubes, the bar will be drawn forward out of the way of the trip 8 and allow the 120 bar to be depressed, the amount of the sale registered, and the ejector slide operating mechanism to be operated in the manner described.

The plate 26, mounted, as usual, over the 125 forward part of the cash drawer, on the cash register, is provided with an opening 27 which may be merely wide enough and long enough to allow access to the current coin tubes or magazines thereunder. As will be 130

noted, the entire coin receiving and coin ejecting mechanism is mounted below the upper edges of the sides of the drawer allowing the drawer to be closed, and thus the cash contained therein, as well as the means for ejecting it therefrom, is entirely concealed. A plate 28 is mounted over the shaft 9 and the sections mounted thereon, and obstructs the entrance to the current coin tubes excepting through slots 29 left between the forward edge of said plate and the upper sloping side of the block in which the coin tubes are contained. Thus, to insert a coin it is necessary for it to engage its edge with the arm on the rotatable section and thus arrange the bell cranks for operating the proper ejector slides, as well as to release the keys of the cash register.

The coin entering through the slot falls into the current coin tube, taking up a horizontal position, and the coins lie one over the other therein. The slanting surface in the region of the current coin tubes, while incidentally allowing convenient space for the adjacent operating mechanism, is primarily intended to cut the tops of the current tubes obliquely and thus to permit coins in excess of the capacity of the current tube to slide on backwardly, off the block 11, which contains the coin tubes, to be received into a suitable tray 30 in the cash drawer. However, it will be seen that the current coin tube might receive coins enough to bring the upper side of the uppermost coin above the rear edge of the upper end of the coin tube, which would result in stopping the next coin inserted and clogging the entrance to the tube, as well as preventing coins from passing backward into the tray 30. Such a possibility is prevented by providing a rearwardly extending lug 31 on the forward or higher wall of the current coin tube, near its top, at such a point as will cause a coin, upon the preceding coin having reached a level which prevents this coin from falling past this projection, to rest with its rearward edge on the upper surface of the uppermost preceding coin and with its forward part on said projection in an inclined position, as shown in section in Fig. 11. Then subsequent coins so engage with this inclined coin that they will slide over it into the tray 30, as required. The auxiliary coin tubes are for receiving a supply of coins while the cash drawer is open and thus to supply coins when their respective current coin tubes become empty. Thus, the supply of coins of any denomination is rendered more nearly continuous so that the convenience and accuracy of operation of the apparatus is increased.

For the purpose of informing the user that the auxiliary tube or magazine has also become exhausted, when this is the case, a

slug, of marked difference in appearance from the coins, may be placed on top of the coins in the auxiliary tubes and this slug will be delivered by the coin ejecting mechanism in the same manner as are the coins, which, being noticed, will give a signal for refilling the auxiliary magazine.

It will be understood that a certain key of the cash register, such as the "No sale" key may be made to operate all of the selectors, this feature of the operation being advantageous in delivering change to the full amount of a coin inserted. However, this feature also becomes additionally useful in connection with the use of slugs, as above mentioned, since, when a slug is delivered as a signal that the auxiliary tube is empty, the slug may be inserted into the current coin tube corresponding to the auxiliary tube from which the slug was ejected and the "No sale" key, or other key for this purpose, depressed, upon which change equivalent to the coin which should have been delivered, had both of the tubes not been empty, will be ejected for the purpose of completing the change for that sale. This will leave the slug in the current tube and this slug will be delivered therefrom upon the next operation of the ejecting mechanism of that tube. In this way the slug is made to operate in conjunction with the parts of the register and change maker to facilitate the completion of the change and is also made to give an additional signal which will be useful in case the operator, during the manipulation of the apparatus with the use of the slug, forgets the fact that the auxiliary tube is empty.

The ejector slides 20 are slidable forwardly and rearwardly in the slide carrier 32 which is secured to the lower side of the block 11. As shown, in Figs. 1 to 8, inclusive, each coin ejecting slide is provided with an opening 33 elongated from the front to the rear of the slide with semicircular ends and straight sides connecting them so that it is practically elliptical in shape. The slide carrier is provided with raised surfaces 34 in the groove 35 in which the slides are carried, and each slide has a recess 36 to fit over a corresponding raised part of the carrier. The elliptical opening 33, however, does not extend completely through the slide throughout its extent, but lugs 37 are left at its sides toward the rear of it, these lugs being so shaped that the opening which is constituted extending entirely through the slide forwardly of them will just pass the coin that is to be ejected by the slide. The normal position of the slide is such that the semi-circular rear end of the opening 33 coincides with the current coin tube or magazine. Thus, the lowermost coin inserted into this magazine will rest partly on the raised surface 34 of the slide carrier and

partly on the upper surfaces of the lugs 37, as may be best noted in Figs. 1 and 4 of the drawings. Then, when the ejecting slide is carried forward by the operation of the bell crank which is connected to it, this coin will be carried forward by the engagement of the rear end of the opening 33. The parts of the device are so proportioned that when the slide 20 reaches its forward limit of movement, the semi-circular rear end of the opening 33 coincides with the auxiliary coin tube or magazine. Thus any coins in the auxiliary or forward tube will then rest on this coin which has been brought forward from the current tube.

The slide carrier 32 is provided with rearwardly downwardly extending slots 38 passing through it in alinement with, and of equal width with, the elliptical openings 33 in the slides. These slots are so located in the slide carrier that when the slide is in its forwardmost position and the coin in the rearward part of the elliptical opening 33 is under the forward or auxiliary tube, the forward part of the coin will be resting on the raised surface 34 of the slide carrier immediately forward of the beginning of the backward and downward inclination of the slot 38. With the coin thus supported forwardly by this part of the raised surface 34, when the slide starts on its return backward movement, the coin, will be left there until the forward semi-circular end of the opening 33 engages with the forward edge of the coin and pushes it through the slot. When the coin passes through the slot it falls into a suitable open receptacle 39 mounted on the under side of the cash register casing.

Should there be no coins in the current tube or magazine, the opening 33 will, of course, pass forward empty, upon which, coming coincident with the forward or auxiliary tube or magazine, it will receive the lowermost coin therefrom and will then, upon its return backward movement, deliver this coin in the same manner as it delivers a coin which it has carried forward from the current magazine. Thus, the uninterrupted delivery of coins of any particular denomination is not dependent upon the rate at which such coins are inserted into the machine during the transaction of business, but may be insured by filling the auxiliary reservoir from the reserve of coins on hand at the beginning of the business, as hereinbefore mentioned. Also, should a coin, at any time, fail to be delivered from the current tube, due to its taking up a wrong position therein, which position cannot be readily controlled by inserting the coins through the slots 29, a coin is sure to be delivered from the auxiliary tube. At the same time, this reserve in the auxiliary tube is not drawn upon as long as coins are being

received and inserted into the current tube during the transaction of the business, and properly delivered therefrom.

Coins received in excess of the capacity of the current tube in which they belong will readily pass backward to the tray 30 from which they may be taken and inserted into the auxiliary tube should this tube be exhausted. The filling of this tube, should it be exhausted during the day, is readily accomplished by merely opening the cash drawer and inserting the coins into the open top of the tube.

As set forth in my former patent, in connection with the making of change for certain coins received, it is necessary to discharge two of the coins of like denomination, such as two dimes as change for a quarter, upon a five cent sale. This is effected preferably by the use of two slides, as the slides 20 and 20'', illustrated in Fig. 7 of the drawing. When two slides are thus provided, both are provided with bell cranks connected to them by links and fulcrumed adjacent to each other as is best illustrated in Fig. 7 of the drawings. In this case, the upper slide 20'' is the auxiliary one, and the slot 33'', with which it is provided, has no lugs such as the lugs 37.

One of the other constructions which will accomplish the purpose of discharging two coins of the same denomination at the same operation is illustrated in Fig. 10 of the drawings, where the slide 40 is provided with two openings 33', having lugs 37' therein, similar to the openings 33 hereinbefore described. The current and auxiliary coin tubes 12' and 13', respectively, are located in the same positions as are the two tubes above described, and the slide carrier 32' is provided with an obliquely extending slot 38', as hereinbefore described. However, the slide 40 must move a distance sufficient to bring its rearward slot 33' coincident with the forward or auxiliary tube 13', which, when the parts are properly proportioned, will be about twice the distance that it should move if it had only one slot as above described. This greater movement is given to it by providing a bell crank 16' of different proportions than the bell crank 16 used where only one slot is provided in the slide. The bell crank is operated by the trip or finger 7' in the manner hereinbefore set forth.

The manner of selecting the parts to be operated to optionally discharge one or two coins, being fully treated in my former patent, need not be herein set forth, it being sufficient to state that such means may be readily applied either to the selection of the proper bell crank to operate either or both of the slides when two slides are used, or to operate a slide with two slots through half of its stroke, or through its entire stroke

as may be required. It will also be understood that such a slide may be provided with more than two openings, and operated through a sufficient distance to discharge a coin from each opening with which it is provided, and from either of two coin tubes or magazines. In any case, the construction of the slide carrier and the peculiar manner of ejecting the coin remains the same. However, the coin may be ejected from the current tube, or, the current tube being exhausted, from the auxiliary tube, by providing a modified ejector slide 40', as illustrated in Fig. 11, which has a rearward opening 41 normally coincident with the current coin tube 12'', and a forward opening 42 normally coincident with the forward or auxiliary coin tube 13''. The slide is provided with a bell crank 16'' connected to the slide by a link 21'' and fulcrumed in a section 14'' in the usual manner. A downwardly and rearwardly extending groove 41' is provided in the upper surface of the slide 40', beginning adjacent to the rear of the forward opening 42 and extending down to the forward edge of the rearward opening 41. The stroke of this slide 40' is such that the rearward opening 41 will be brought coincident with the forward or auxiliary tube 13''. Thus, the lowermost coin in the current tube 12'' will be brought under the auxiliary tube 13'' when the slide is pushed forward in the operation of the device, while the lowermost coin of the auxiliary tube 13'' will be carried forward in the forward opening 42 of the slide and discharged forwardly of the forward termination 43 of the slide carrier 32''. A pawl 44 is mounted in a slot between the current tube 12'' and the auxiliary tube 13'' pivoted at its end, and free to rise and fall at its front end, and when the slide 20'' starts backward this pawl 44 drops behind the rear edge of the coin, which has been carried under the auxiliary tube in the rearward opening 41 in the slide, and prevents the coin from returning with the slide. Then the forward edge of the coin slides up on the incline of the groove 41' in the slide, so that it is raised into the auxiliary tube or magazine 13''. A recess 41'' is left in the slide at the rear of the opening 40 so that the pawl 44 may fall behind the coin as stated.

While the parts of my improved change maker are shown and specifically described as located in a cash drawer, and while certain of its features of novelty are particularly adapted for combining it with a cash drawer and with the mechanism of a cash register, it will be understood that these features also adapt it for use independently of a cash drawer, as, for, instance, they may be used in conjunction with a cash registering mechanism, but located in a compartment separate from the cash drawer.

The bell cranks, preferably, are provided with broad surfaces in the region of the terminations of their rearwardly extending arms 18 in the form of push plates 45, these push plates being provided with openings 46 in which the ends of the trips or fingers may engage to operate the bell cranks. By having these push plates, the bell cranks are adapted to be operated by the pressure of the finger, so that the coin ejecting mechanism may be operated independently of the keys of the cash register, when the drawer is open, which advantage is highly desirable in counting the coins or in making change independently of the registering of the sale, if such should be desired. The coins may be counted far more rapidly and accurately with my improved apparatus than by hand. While thus especially convenient for manipulation independently of the cash registering mechanism when the drawer is open, the operation of the change making mechanism independently of the cash registering mechanism is rendered impossible when the drawer is closed. The drawer may be provided with any well known means for locking or otherwise fastening it in closed position, either to prevent the opening of the drawer or to render such opening so inconvenient as to discourage tampering with the contents by any one so disposed.

Where change makers have been provided on cash drawers heretofore, the ejector slides have been accessible for operation exteriorly of the drawer. In my improved change making apparatus, in the construction of the ejector slides, the only parts which are accessible from the outside of the drawer are such that they may not be operated to eject a coin by direct engagement of the fingers, the only means for operating them throughout their full stroke, which is necessary to eject a coin, being the bell cranks, which are entirely within the drawer, and inaccessible when the drawer is closed, excepting through the operation of the cash register keys.

Although the ejecting mechanism of the change maker is fully under the control of the cash register mechanism, the opening and closing of the drawer in which the ejecting mechanism is contained is not interfered with. The lower end of each trip or finger such as the trip or finger 7 is bifurcated, having a forward short member 47 and a rearward longer member 48, this rearward longer member 48 being adapted to engage with the rearward part of the push plate 45 and limit the forward movement of the trip or finger under the action of the keys through the selectors, and thus position it, so that upon further depression of the key the forward shorter member 47 will enter the recess or opening 46 in the push plate and effect efficient engagement between the

trip or finger and the bell crank to operate said crank and eject the coin.

It will be understood from the above description, that considerable modification of the parts and their arrangement is possible without departing from the scope and spirit of the invention, and I do not wish to be understood as limiting myself to the illustrations and specific description, but

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

1. In an automatic change maker, the combination of a housing comprising two coin tubes holding coins of like denomination and having a discharge outlet therefor, whereby said coins are discharged bodily from either of said tubes through said outlet, a discharge slide common to both tubes provided with a coin receiving aperture, said aperture oscillating between and registering with each of said tubes, and means for operating said slide, substantially as set forth and for the purposes specified.

2. In an automatic change maker, the combination of a housing comprising two coin tubes holding coins of like denomination and having a discharge outlet therefor, discharge slides common to both of said tubes for discharging coins bodily therefrom, each slide being provided with a coin receiving aperture for each coin to be discharged from either of the tubes by said slide at a single operation thereof comprising movement of the apertures of the slides from one tube to the other and return, thereby insuring the filling of said apertures and the discharge of said coins at a single operation, and means for operating said slide, substantially as set forth and for the purposes specified.

3. In an automatic change maker, the combination of a housing comprising a current coin tube and an auxiliary tube and having a discharge outlet common to both, a slide common to both tubes having an aperture oscillating between and registering with each of said tubes for discharging coins from the current tube until it is exhausted, and then for discharging coins from the auxiliary coin tube, substantially as set forth and for the purposes specified.

4. In an automatic change maker, the combination of a housing comprising two coin tubes and having a discharge outlet common to both, a discharge slide common to both tubes having an aperture oscillating between and registering with each of said tubes adapted to discharge coins from one of the tubes until said tube is empty and then from the other tube until all the coins are discharged, and a slug in said last mentioned tube adapted to be discharged after all the coins are discharged to indicate that

both tubes are empty, substantially as set forth and for the purposes specified.

5. In an automatic change maker, the combination of a housing comprising two coin tubes holding coins of like denomination and having a discharge outlet therefor situated in the base intermediate between the two coin tubes, whereby said coins are discharged bodily from either of said tubes through said outlet, a discharge slide common to both tubes provided with a coin receiving aperture, said aperture oscillating between and registering with each of said tubes, and means for operating said slide, substantially as set forth and for the purposes specified.

6. In an automatic change maker, a tube adapted to receive coins, the keys of a cash registering device, means actuated by operations of said keys for discharging coins from said tube, mechanism interposed in the entrance of the tube adapted to be positively operated by the coins when inserted into the tube, and an operative connection between said mechanism and the keys of the cash registering device whereby the operation of said keys is controlled by said mechanism as operated by the engagement of the coins therewith.

7. In an automatic change maker, cash registering keys, a cash drawer, one or more coin tubes, and coin ejecting mechanism which is contained in the drawer and concealed and operated only by the register keys when the drawer is closed and exposed so as to be operated independently of said keys when the drawer is open, substantially as set forth and for the purposes specified.

8. In an automatic change maker, the combination with a cash drawer, of coin tubes, ejector slides, bell cranks having arms connected to the slides, and having other arms provided with finger pushes accessible only from the interior of the drawer.

9. In an automatic change maker, a cash drawer, a series of coin tubes provided with ejecting mechanism in said cash drawer, selecting devices arranged outside of said drawer, keys of a cash registering device adapted to operate said selecting devices, sections of a shaft interposed in the entrance of said tubes to limit the action of the selectors, and interposed mechanism operating said ejecting mechanism.

10. In an automatic change maker, a series of coin tubes each adapted to receive a coin of different denomination, ejecting mechanism therefor, controlling means for each ejecting mechanism interposed in the entrance of the tube to which it belongs, means for operative engagement between the ejecting mechanisms of the several tubes, the keys of a cash registering device

adapted to operate the ejecting mechanism, and means for rendering the keys of said cash registering device inoperative, adapted to be actuated upon the operation of the controlling means for the ejecting mechanism:

11. In an automatic change maker, the combination of a coin tube and a discharge slide therefor, a bell crank adapted to actuate the discharge slide and having an arm provided with a recess, the keys of a cash registering device, a bar adapted to be depressed by the operation of the cash registering device keys, a trip connected to the bar having its lower end bifurcated, with a longer member and a shorter member, the shorter member being adapted to enter the recess with which the arm of the bell crank is provided and the longer member being adapted to position the trip so that the shorter member may enter said recess.

12. In an automatic change maker, the combination with coin tubes and ejecting mechanism therefor, the keys of a cash registering device, means for operative engagement between the cash registering device and the ejecting mechanism, and means for rendering the cash registering mechanism keys inoperative, said means for operative engagement between the cash registering mechanism and the ejecting means and the means for rendering the cash registering mechanism inoperative being controlled by the engagement of coins inserted into the tube.

13. In an automatic change maker, coin tubes, ejector slides, bell cranks having arms connected to the slides, the keys of a cash registering mechanism, means for operative engagement between said keys and the bell cranks, movable fulcrums for the bell cranks adapted to be moved by the engagement of coins inserted into the tubes, a slidable bar adapted to be moved through the movement of the movable fulcrums and means for engagement between the keys of the cash registering mechanism and said slidable bar to control the operation of said keys.

14. In an automatic change maker, the combination with a series of keys, of a bar transverse thereto and adapted to be moved thereby, a coin tube, operative mechanism interposed at the entrance to the coin tube and adapted to be operated by engagement of coins inserted into the tube, a finger connected to said transverse bar, a locking bar with which said finger is adapted to engage, the locking bar being adapted to be withdrawn by the operation of the mechanism interposed in the entrance to the coin tube, said bar when engaged by said finger preventing the operation of said keys, and when withdrawn by said mechanism being out of position for engagement with the finger, whereby said keys may be operated.

15. In an automatic change maker, the combination with a series of keys, a bar transverse thereto, a series of coin tubes, a shaft interposed in the entrance to said tubes in common thereto, a series of sections rotatable on said shaft, one of each of which is over one of said coin tubes, and adapted to be engaged and rotated by coins inserted into the tubes, means whereby each of the sections may receive motion from one of the others, a slidable bar connected to one of said sections, and a finger connected to the transverse bar, the slidable bar being adapted to engage with the finger to prevent the movement of the finger and the transverse bar to which it is connected and the transverse bar being adapted to prevent the operation of the keys, said slidable bar being adapted to be drawn out of position for engagement with the finger, by the rotation of the sections on the shaft as engaged by the coins, to allow the operation of the keys.

16. In an automatic change maker, the keys of a cash registering device, a cash drawer, a coin tube in said cash drawer to receive the cash, mechanism interposed in the entrance of the coin tube adapted to be operated by the coins when inserted into the tube, and operative connection between said mechanism and the keys of said cash registering device, whereby the operation of said keys is controlled by said mechanism as operated by the engagement of the coins therewith.

17. In an automatic change maker, the combination with the keys of a cash register and a drawer slidable into and out of said change maker, of change making mechanism in the cash drawer, and means for operative engagement between the mechanism of the keys of the cash register and the change making mechanism, said means for operative engagement being normally out of engagement with the change making mechanism to allow the drawer to slide in and out, and being adapted to make engagement with the change making mechanism when the keys of the cash register are operated.

18. In an automatic change maker, the keys of a cash registering mechanism, a slidable cash drawer, coin ejecting mechanism in the cash drawer, and a trip operated by said keys provided with means for positioning it to engage with the coin ejecting mechanism, and with means for engaging with said ejecting mechanism, upon the operation of the keys of the cash registering mechanism.

19. In an automatic change maker, the keys of a cash register and a slidable cash drawer, coin ejecting mechanism in the cash drawer, and means for operative engage-

- ment between said keys and the coin ejecting mechanism, adapted to engage with the coin ejecting mechanism only upon the operation of said keys and to normally remain out of engagement with said coin ejecting mechanism to allow the drawer to slide in and out, said means for operative engagement between said keys and the coin ejecting mechanism being the only means accessible for operating said coin ejecting mechanism when said drawer is closed.
20. In an automatic change maker, the keys of a cash register, and a slidable drawer, a coin ejecting slide in the bottom of the drawer, a slide carrier supporting the coin ejecting slide and having a slot adapted to allow the passage of a coin from said slide exteriorly of the cash drawer, but adapted to prevent the direct engagement of the fingers with said slide from the exterior of the cash drawer, operative mechanism for the slide contained within the cash drawer, and means for operative engagement between the operative mechanism of the slide and said keys, said operative mechanism and operative engaging means being accessible for actuation only by the operation of said keys, when the drawer is closed.
21. In a machine of the class described, the combination with two coin tubes, of a coin ejector adapted to eject coins from either tube, the selection of the tube to be ejected from being automatically controlled by the coins in one of the tubes.
22. In a machine of the class described, the combination with the operating mechanism of a cash register, a cash drawer, coin receptacles in the cash drawer, and coin ejectors manually operative independent of the operating mechanism only when said cash drawer is open.
23. In a machine of the class described, the combination with cash register operating mechanism including keys, of coin ejecting devices operative thereby, and means for preventing operation of said mechanism constructed to be rendered ineffective on the insertion of coins into the machine.
24. In a machine of the class described, the combination with normally ineffective manipulative devices for controlling the operation of a cash register, change ejecting mechanism, and means whereby the insertion of a coin into the machine renders the manipulative devices effective.
25. In a machine of the class described, the combination with the operating mechanism of a cash register, of a movable cash drawer having coin receptacles, coin ejecting mechanism, and said operating mechanism including means for selectively controlling the ejection of coins from said cash drawer.
26. In an automatic change maker, the combination with a plurality of coin receptacles, of a single coin ejector constructed to cooperate with both of said receptacles in such manner that the ejection of coins from one receptacle by said ejector is automatically controlled by the coins in another receptacle.
27. In an automatic change maker, the combination with two coin tubes, of a discharge slide common to both tubes and operative to discharge coins from one of said tubes until it is empty and then automatically from the other tube until all the coins are discharged.
28. In a machine of the class described, the combination with a coin receptacle, of a reciprocating coin ejector and a cooperating guide constructed so that movement of the ejector in one direction effects removal of a coin from the receptacle and in the other direction removal of the coin from the ejector.
29. In a machine of the class described, the combination with the keys of a cash register, of a cash drawer, and change delivering devices carried in said drawer and operable by the register keys.
30. In a machine of the class described, the combination with the keys of a cash register, of a cash drawer, and change delivering devices carried in said drawer and comprising ejecting mechanism actuated by operations of the register keys.
31. In a machine of the class described, the combination with the operating devices of a cash register, of a cash drawer, coin receptacles in the cash drawer, and means for ejecting coins from said receptacles, said means being operable only by the register operating devices when the drawer is closed and operable independent of said operating devices only when the drawer is open.
32. In a machine of the class described, the combination with the operating devices of a cash register, of a cash drawer, change making devices contained in said drawer and comprising a plurality of coin ejectors, and selectors actuated by said operating devices controlling the operation of the coin ejectors when the drawer is closed, said ejectors being operable independent of the selectors when the drawer is open.
33. In a machine of the class described, the combination with the amount entering devices of an accounting mechanism, of a receptacle arranged to be opened and closed, and change making devices contained in said receptacle operable only by said amount entering devices when the receptacle is closed and operable independent of said entering devices only when the receptacle is open.
34. In a machine of the class described, the combination with the manipulative amount entering devices of an accounting mechanism, of a receptacle arranged to be opened and closed, change making devices

contained in said receptacle and comprising ejectors operable only by said amount entering devices when the receptacle is closed and operable independent of the entering devices when the receptacle is open.

35. In a machine of the class described, the combination with register operating devices, of a receptacle arranged to be opened and closed, change making devices contained in said receptacle and comprising a series of coin ejectors, and selectors actuated by the register operating devices and effective to control said ejectors when the receptacle is closed and ineffective when the receptacle is open.

36. In a machine of the class described, the combination with a plurality of receptacles for coins of the same denomination, of devices for ejecting coins therefrom arranged to automatically empty said receptacles one after the other in an invariable sequence, and means for operating the ejecting devices.

37. In a machine of the class described, the combination with a plurality of coin tubes for holding coins of the same denomination, of an invariably moved coin ejector coöperating therewith to automatically empty said tubes one after the other in an invariable sequence, and means for impart-

ing an invariable movement to the coin ejector.

38. In a machine of the class described, the combination with two coin tubes for holding coins of the same denomination, of a coin ejector coöperating therewith and arranged to eject a coin from either tube at an operation, the tube to be ejected from being automatically determined by the presence or absence of coins in one of the tubes.

39. In a machine of the class described, the combination with two coin tubes, of a coin ejector common to the tubes and arranged to automatically eject coins from either tube, said tubes being immovable with reference to the coin ejector.

40. In a machine of the class described, the combination with two coin tubes, of a reciprocating coin ejector common to the two tubes arranged to eject coins from one of the tubes while moving in one direction or to eject coins from the other tube while moving in the other direction if the coins have all been ejected from the first mentioned tube.

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Witnesses:

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