June 2, 1931. R. KUENSTLER 1,807,789

CHANGE MAKING DEVICE

Filed Oct. 4, 1930 4 Sheets-Sheet 1

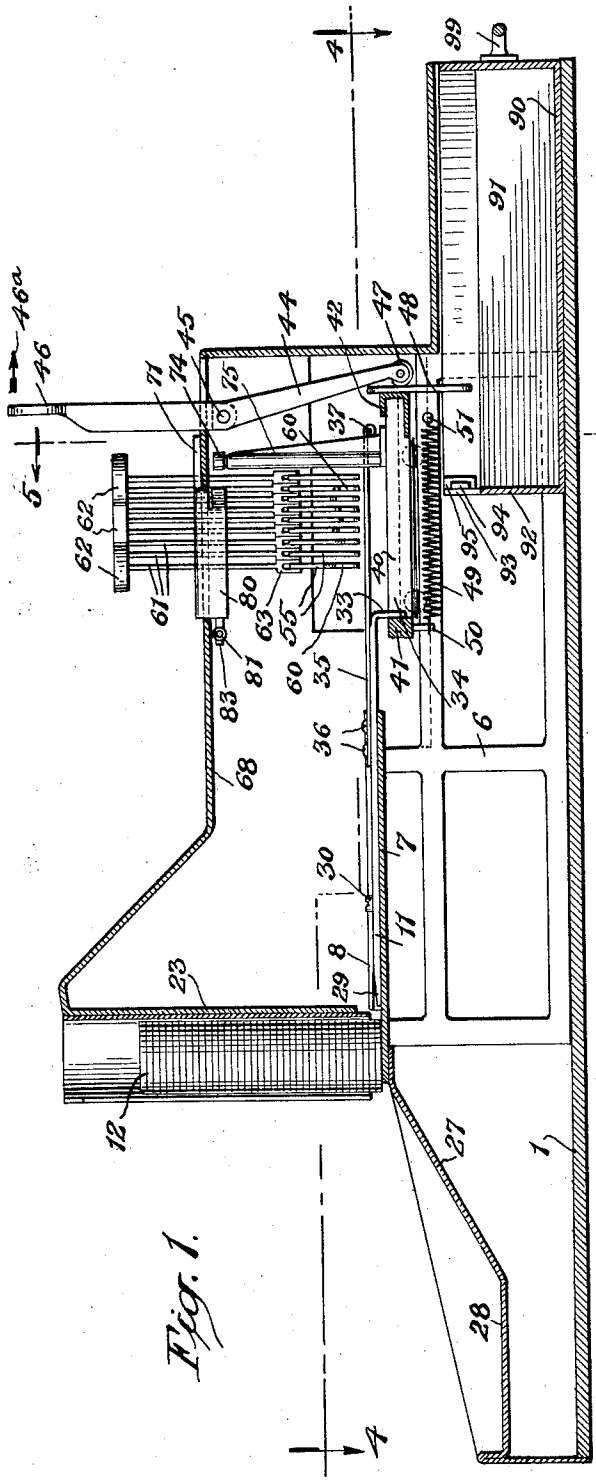


Fig. 1.

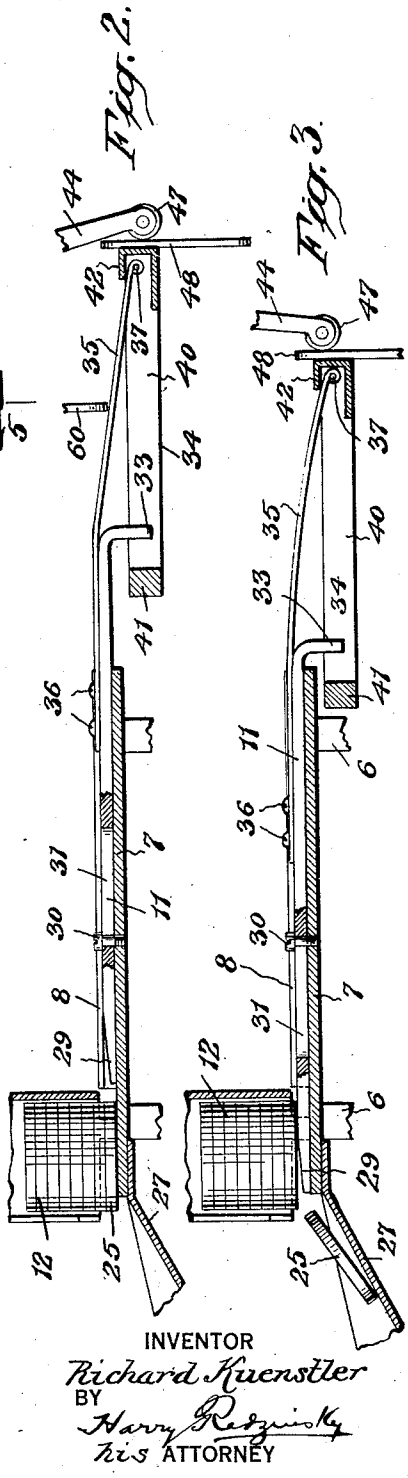


Fig. 2.

Fig. 3.

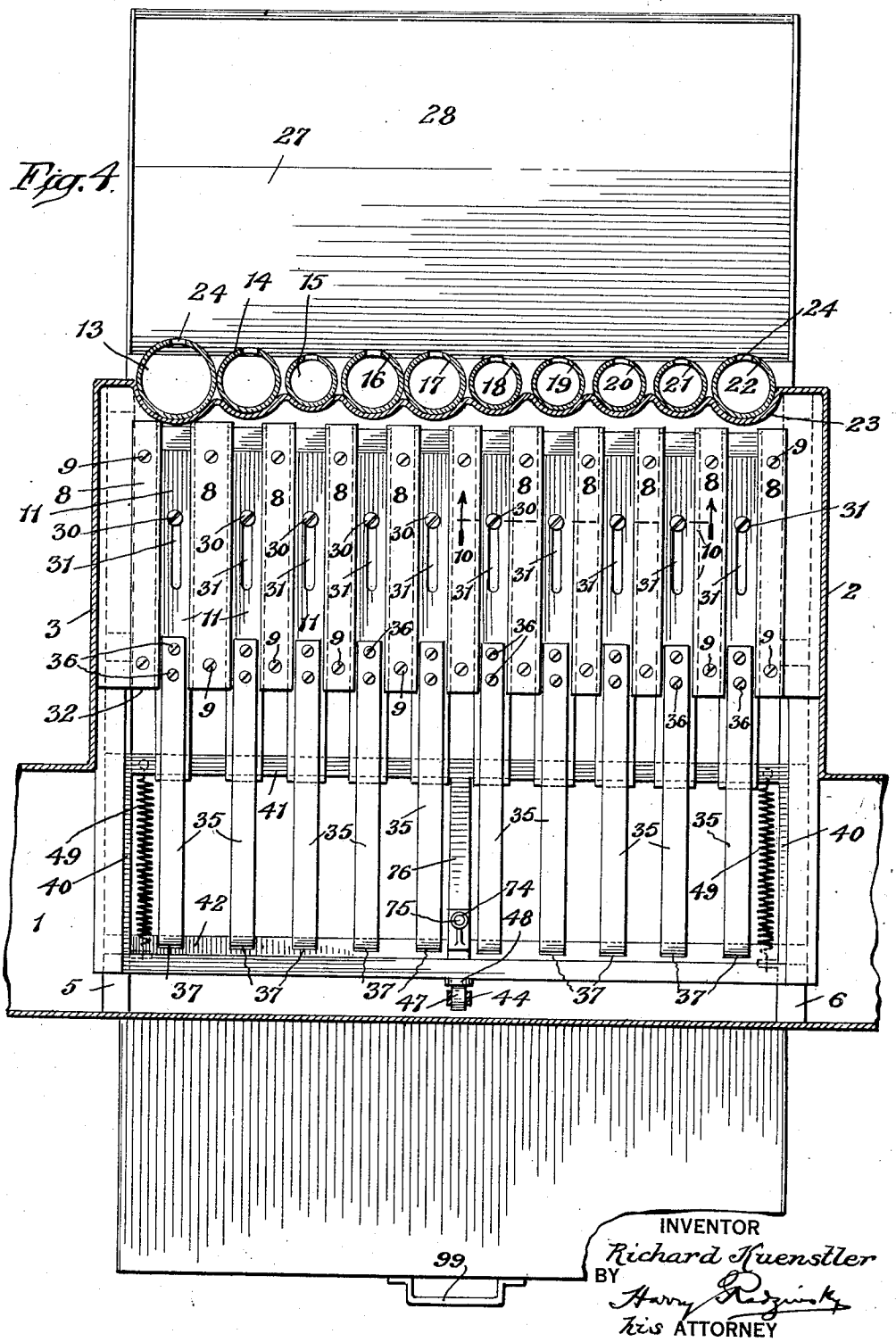
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CHANGE MAKING DEVICE

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Fig. 4.



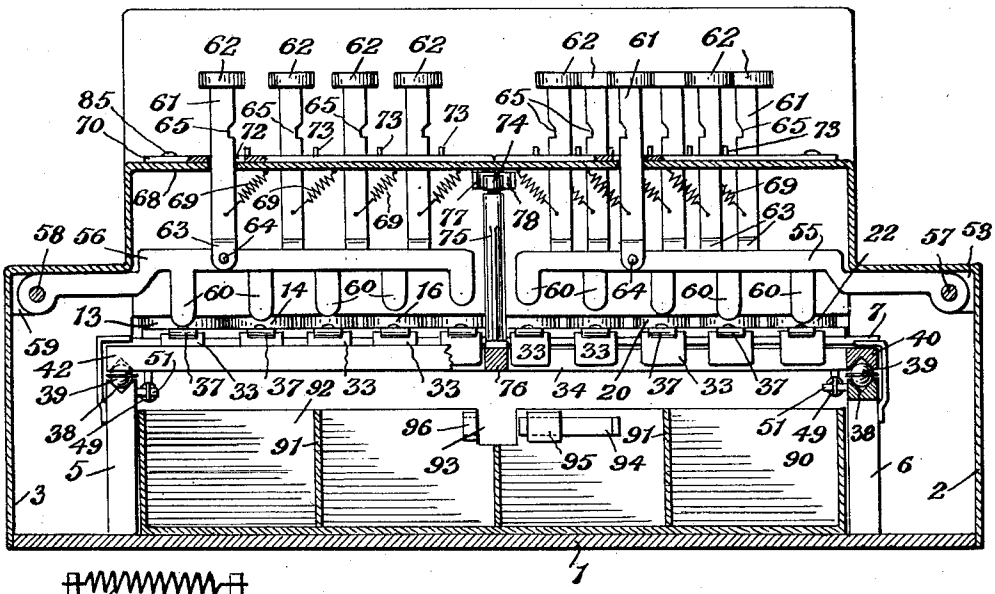
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June 2, 1931. R. KUENSTLER 1,807,789

CHANGE MAKING DEVICE

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Fig. 5.



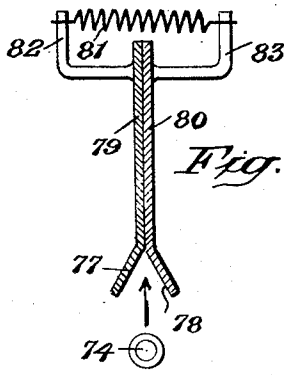


Fig. 6.

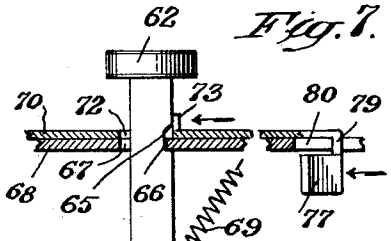
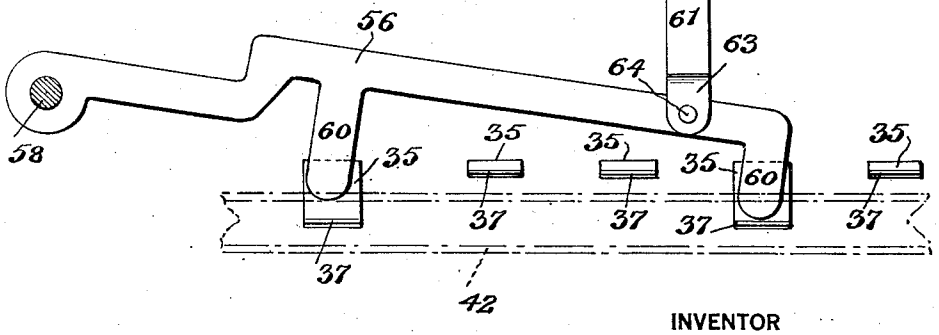


Fig. 7.



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CHANGE MAKING DEVICE

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Fig. 8.

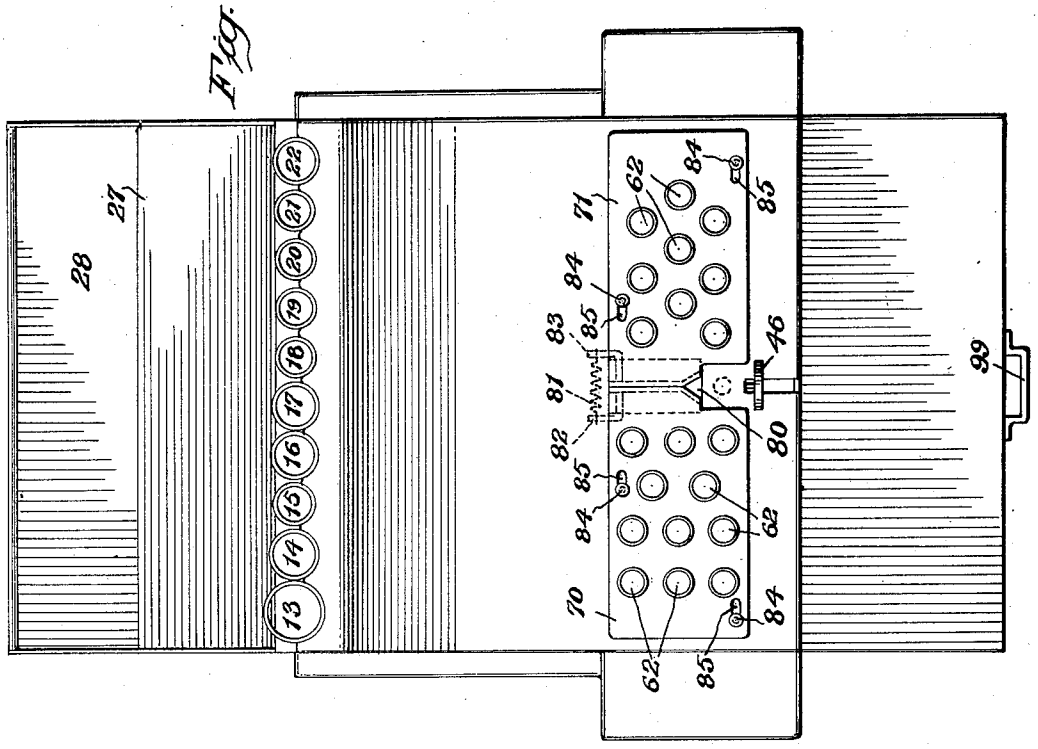
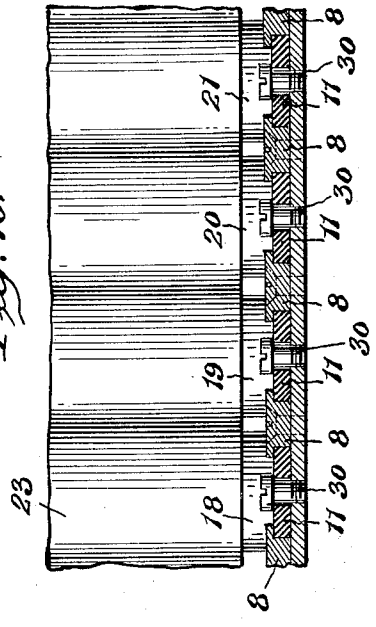


Fig. 10.



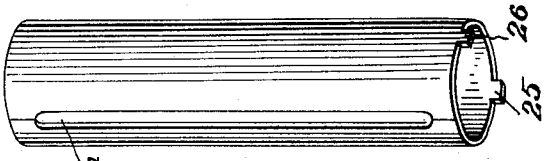


Fig. 9.

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UNITED STATES PATENT OFFICE

RICHARD KUENSTLER, OF WASHINGTONVILLE, NEW YORK

CHANGE-MAKING DEVICE

Application filed October 4, 1930. Serial No. 486,312.

This invention relates to an improvement in a machine for counting and changing coins. It has for its object the production of an exceedingly simple device of this character, and one which will be unfailing in operation and always accurate in dispensing the proper amount of change. A further object of this invention is to provide a change-making device, which may if desired be used in combination with a cash drawer or the like so that a closing movement of the drawer will serve to eject the selected amount of cash in coin from the machine.

With these objects and such other objects as may hereinafter appear, in view, I have devised the particular arrangement of parts set forth below and more particularly pointed out in the claims appended hereto.

Reference is to be had to the accompanying drawings, forming a part hereof in which

Figure 1 is a longitudinal sectional view of a change-making device, made in accordance with my invention;

Figure 2 is a sectional view of the plate which supports the coin-ejectors, the slide-actuator and one of the slides at the beginning of its movement toward the coin magazine;

Figure 3 is a similar sectional view showing the slide ejecting a coin;

Figure 4 is a sectional view on the line 4—4 of Figure 1, looking in the direction of the arrows;

Figure 5 is a sectional view on the line 5—5 of Figure 1, looking in the direction of the arrows;

Figure 6 is a view showing the means for operating the key-release plates;

Figure 7 is a view showing one of the levers for depressing the slide-springs and the key connected to said lever, and attendant mechanism;

Figure 8 is a plan view of the machine;

Figure 9 is a perspective view of one of the coin-magazines; and

Figure 10 is a sectional view on the line 10—10 of Figure 4, looking in the direction of the arrows.

Throughout the various views of the drawings, similar reference characters designate similar parts.

In the embodiment of my invention as disclosed in the accompanying drawings, 1 indicates a base plate of a suitable casing within which the mechanism of my change-making device and a sliding cash-drawer is adapted to be contained. Such casing may be of any suitable contour, the same being dependent upon the size of and the particular purpose to which the device is to be put. In the structure shown, said casing is provided with side walls 2 and 3, and an elevated top plate 68.

Contained within the casing thus described, is a pair of spaced supporting members or brackets 5 and 6, the top of these members being connected by a supporting or base plate 7. Said base plate 7, which is more clearly disclosed in Figures 4 and 10, is provided with a plurality of undercut strips 8, said strips being secured to the top face of the plate 7 by means of screws 9 or other like fastening means. The strips 8 are so spaced relative to one another that they provide grooves 10 between them, within which slides 11 are adapted to reciprocate, which slides act as ejecting members for the purpose of ejecting successive coins from coin stacks that are positioned on the machine as will be described.

The coin stacks just referred to are disclosed at 12 and these stacks, consisting of piled coins of different denominations, are held in a row of coin-magazines or tubes 13 to 22 inclusive. Said coin-magazines or tubes are held in an aligned row, as disclosed in Figures 4 and 8 of the drawing and are supported over the base plate 7 by being welded or otherwise attached to a grooved vertical plate 23 provided on the casing of the machine. One of these coin tubes is shown in detail in Figure 9, where it will be seen that the same is of simple tubular form of a diameter to closely encompass the particular coins for which it is intended and is provided with an elongated inspection slot 24 in order to render visible the coins within the tube so that the amount therein can be determined at a glance. The lower end of each

of the coin tubes is preferably provided with a pair of dependent lugs 25 and 26, the purpose of these lugs being to hold the lowermost coin in alignment with the others in the stack and permit a smooth ejection of said lowermost coin as will be pointed out.

It will be seen from the drawings that for each of the vertically disposed coin-tubes, I provide one of the slides 11 so that when a slide is thrust forward, the same will move below a coin tube and the end of said slide will abut against the lowermost coin 25 in said tube and eject the same in the manner clearly disclosed in Figures 2 and 3. The ejected coin (or number of coins, as I eject a selected number at once) will fall on an inclined supporting tray 27 and from thence to a flat portion 28 of said tray where, since the coins are spread out flat, the amount may be counted at a glance by the person receiving the change, and removed. To facilitate the ejection of successive lowermost coins from the stacks, I provide the respective slides 11 with a tapered contacting end 29.

To restrict the sliding movement of the slides 11 I provide a stop screw 30 for each slide, said screws extending upwardly from the base plate 7 and fitting freely within a slot 31 provided in each slide.

The inner end of each one of the slides projects beyond the inner edge 32 of the base plate 7, and said inner end of each slide 11 is bent downwardly as at 33 so as to be engaged by a sliding carriage 34 and withdrawn from its position of coin-ejection. Each slide 11 also carries a flat spring finger 35 which is attached to the upper face of the slide as by the screws 36. The outer or free end of each of the springs 35 is curled as disclosed at 37 or else is provided with a head of some sort. From the foregoing, the construction of each slide, or coin-ejector, will be clearly comprehended. Each slide consists of a flat strip portion 11, having a tapered coin-engaging end 29, a downwardly bent opposite end 33 and a flat spring member 35 which extends out beyond the downwardly bent end 33 for a purpose to be explained.

The side supports 5 and 6 have their top faces provided with a guide-way by being grooved as at 38 and ball-bearings 39 are carried in these grooves, said bearings supporting the side bars 40 of the sliding carriage or actuator 34. Said side bars 40 are connected by longitudinal end members 41 and 42 to form the carriage. The member 41 may be of solid construction, the member 42 being preferably channel-shaped as is clearly disclosed in Figure 2.

The carriage 34 is arranged to be reciprocated on its supports 5 and 6, the same being easily movable on its ball-bearing supports, said carriage being intended to shift a selected number of coin-ejecting slides 11 forward to eject selected coins when the carriage is moved toward the coin stacks, and adapted to withdraw said slides when it is moved in the reverse direction. Said carriage 34 is shifted toward the coin stacks by means of a lever 44 which is pivoted to the casing as at 45, the upper end of said lever terminating in a flat part or handle 46 for manual engagement, the lower end of the lever being provided with a pivoted roller 47 adapted to bear against a contact plate 48 provided on the cross-member 42 of the carriage. From the construction just described, it will be seen that the carriage 34 will be moved on its support toward the coin stacks by moving the lever 44 in the direction of the arrow 46*a* in Figure 1. The carriage is restored to its normal position, as shown in Figure 1, by means of springs 49, one end of each of said springs being connected to a pin 50 on the carriage 34, the other end being connected to a pin 51 provided on the supports 5 and 6.

The function of the sliding carriage 34 will now be clear. Under the impulse of manual pressure applied to the lever 44, the carriage 34 is thrust forwardly in the direction of the coin stacks. On its movement in that direction, it forces toward the coin-stacks, such coin-ejecting slides 11 as have been selected and held in position to receive the thrust of the carriage. After the slides thus projected toward the coin stacks by movement of the carriage 34, have ejected the lowermost coin from their respective stacks, the carriage moves back to its former position, such rearward movement being caused by the springs 49. On such rearward movement, the slides that were moved forward are drawn backwardly, the cross member 41 on the carriage 34 engaging with the downwardly bent portion 33 on the slides and drawing them backward with it as it moves rearwardly under the pull of the springs 49. The manner in which the slides are selected for coin ejection will now be described.

A reference to Figures 1, 5 and 7 discloses two groups of depression levers, one of these groups of levers being designated by the numeral 55 and the other by the numeral 56. Those levers within the group 55 are each pivoted at one of their ends on a shaft 57, suitably mounted in ears 58 on the casing of the machine adjacent to the side wall 2. The ends of the levers comprised within the group 56 are similarly pivotally mounted on a shaft 58 held in ears 59 provided at the opposite side wall 3 of the casing. The two groups of levers just described, extend outwardly from their respective pivots and overlie the spring fingers 35 provided on the coin-ejection slides 11. These levers 55 and 56 act to select and depress the spring fingers 35, thus causing said fingers to be flexed downwardly and their ends to be brought into alignment with the channelled cross member 42 of the carriage 34, so that said member 42

engages against the ends 37 of the springs thus depressed and on the movement of the carriage 34 toward the left of Figures 1, 2 and 3, the carriage shifts the slides whose springs are thus engaged and causes said slides to eject the lowermost coin in their respective stacks.

Each one of the levers in the two groups 55 and 56 is provided with one or more downwardly extended projections 60. The number of projections 60 arranged on each lever is dependent upon the number of slides to be operated upon by the particular lever upon which the projections are formed. For instance, in Figure 7, the lever 56 therein shown, is provided with two projections 60. Thus when said lever 56 is depressed through a key device to be hereafter described, it will serve to depress the spring fingers 35 on the two slides, that are located directly below the two projections, those two slides being for instance, a slide that ejects nickels from a nickel stack and a slide that ejects dimes from a dime stack. The result is that when the lever of Figure 7 is depressed, fifteen cents will be ejected. From the illustration just given, it will be apparent that any combination of change in coin can be ejected by depressing one or more of the depression levers according to the arrangement of projections on the depressed levers. An endless number of combinations can be arranged merely by arranging the downwardly extending projections on the levers 55 and 56 to suit requirements. While I have shown these projections as being integral with the levers, it will be understood that the same may be made separate and removable and can be held in position by set screws so that they may be shifted to suit requirements. The number of depression levers employed can also be varied, the amount so employed being dependent upon individual requirements.

To each of the depression levers in the groups 55 and 56 is attached an operating key, said key consisting of a stem 61, to the upper end of which is provided a head 62 and to the lower end a clevis 63 that is pivoted as at 64 to the lever which the key operates. The stem 61 is formed with a notch 65 in one of its edges and said notch is adapted to engage with the edge 66 of a slot 67 in the top plate 68 of the casing, through which said stem passes. A spring 69 extends between the stem 61 and the plate 68 and tends to draw the stem 61 upward and consequently to also draw the notch 65 into engagement with the edge 66 when the key is manually depressed. Movable on top of the casing plate 68 is a pair of key-release plates 70 and 71, there being one of these key-release plates for each group of keys, the keys on the levers 55 comprising one group, and those on the levers 56 comprising the other. These two plates are each slotted as at 72 to permit the stems 61 of their keys to pass through, and at each slot is a projection 73 which is adapted to exert pressure against the stem 61, and when the plates 70 and 71 are shifted as indicated by the arrows in Figure 7, said projection forces the notch 65 out of engagement with the edge 66 of the plate 68 so that the key, being thus freed, springs upwardly under the impulse of its spring 69 to its normal raised position. The plates 70 and 71 are shifted to release the depressed keys, by means of a roller 74 that is provided on the upper end of an upright 75 that is fixed on and carried by an intermediate cross piece 76 provided on the sliding carriage 34. When the carriage 34 is moved toward the left of Figure 1, this roller 74 comes into contact with a pair of cam surfaces 77 and 78 that are provided on downward extensions 79 and 80 of the plates 70 and 71, such extensions being movable in an opening 80 provided for them in the top plate 68 of the casing. The plates 70 and 71 are normally held together by a spring 81 that extends between and connects an arm 82 on the plate 70 with a similar arm 83 on the plate 71. Movement of the plates 70 and 71 toward and away from each other is restricted by slots 84 which receive pins 85 projecting from the face of the casing plate 68.

From the foregoing, the manner in which my improved change-making device operates, will be readily understood. The coin-magazines 13 and 22 inclusive are filled with stacks of coins, each stack containing coins of different denomination, with some of the stacks containing similar coins. As an example, the magazine 13 may contain half-dollars; the magazine 14 may contain quarters; the magazine 15 may contain dimes; the magazines 16 and 17 may each contain nickels; the magazines 18, 19, 20 and 21 may contain pennies and the magazine 22 may contain nickels. It will of course be understood that the above is merely an example of coin placement as many other arrangements may be desirable according to particular usage. Assuming that it is desired to provide sixty-five cents in change. We seek a key bearing the legend "65" and depress such key. If necessary two keys, the total of which is sixty-five cents may be used. If one key is used, said key would be one carrying three projections 60, one of which would depress the spring 35 on a slide 11 that ejects a fifty-cent piece from the stack 13. Another projection 60 on the selected lever would depress a spring finger 35 on the slide that ejects a dime from the stack 15 and a third projection 60 would depress a spring 35 on a slide that would eject a nickel from the stack 16. The key thus depressed would be held down by reason of the engagement of its notch 65 with the edge 66 of its slot 67. After the key is depressed, the hand lever 44 would then be manipulated by

pushing it to the right in Figure 1. This movement of the hand lever would serve to move the carriage 34 toward the coin-stacks and as this movement of the carriage 34 began, the headed ends 37 of the particular springs 35 that were depressed by the key would engage with the channel member 42 of the carriage 34 (see Figure 2). As the movement of the carriage 34 in the direction of the coin stacks continues, the roller 74 that is carried by said carriage, is brought into contact with the cam surfaces 77 and 78 of the key-release plates 70 and 71, the two plates being thus spread apart by such action. The spreading of these plates brings one of the projections 73 against the depressed key and shifts it, causing its disengagement from the edge 66, so that the key begins to rise. Thus, shortly after the depressed springs 35 are engaged by the channel member 42, the key or keys which depressed those particular springs is released and is permitted to rise. As further movement of the carriage 34 continues, the slides which are being moved by said frame reach their respective coin-magazines and eject the lowermost coins therefrom, such ejected coins being thrown out on the inclined portion 27 of the receiving tray and fall to the flat surface 28 thereof where they are recovered by the person to whom the change is issued. As soon as the coins are ejected, manual pressure on the lever 44 is released and the carriage 34 moves rearwardly under the impulse of the springs 49 to the right in Figure 1. On such reverse movement, its cross member 41 engages with the downwardly bent ends 33 of the slides which the carriage just moved, and draws said slides back to their former normal position.

The simplicity of the structure which I have herein described, will be very apparent from the foregoing description. By the simple pressure of one or more keys, and the movement of the ejector carriage, the desired amount of change will be ejected, the coins so ejected being deposited in side-by-side relationship on the tray before the recipient so that he may at a glance count the change which he receives. Almost any combination of coins may be arranged by merely suitably arranging the coin magazines and the projections on the depression levers.

I have thus far described my coin-changing device as an independent instrumentality intended for manual operation. It may also be adapted for use in connection with a cash drawer, or a drawer that contains paper money or currency, so that the act of closing the drawer will automatically eject the desired change in coin. This arrangement is disclosed in Figures 1, 5 and 8, where it will be seen that the casing which contains the change-making device is made of such proportions as to accomodate a drawer 90 within it. Said drawer is suitably partitioned as at 91 to receive bills of different denominations and is provided with an operating handle 99. The back 92 of the drawer is cut out as at 93 and a slidable member 94, movable in guides 95 and 96, is adapted to be moved across to cover such cut-out portion when the drawer is to be rendered operative for actuating the change-making device. It will be seen that when the member 94 is moved across the cut-out portion 93 to close the same, the drawer will, on being closed, bring the back of said member 94 against the lower part of the plate 48 on the carriage 34, causing said carriage to be moved inwardly and eject the coins that have been selected by a previous depression of the proper key. When the drawer is again drawn out, the springs 49 restore the carriage 34 to its normal position.

With the construction just described, a person desiring to receive both bills and change, presents his request to the operator of the device, who draws open the bill drawer, presses the necessary key or keys to provide the correct amount of change in coins. He then closes the drawer, such action ejecting the coins. Should the operator not desire to use the drawer for the purpose of operating the change-making device, the drawer can be rendered inoperative thereon, by merely drawing aside the member 94 to uncover the opening 93 through which the plate 48 on the carriage 34 freely passes.

While I have shown and described one embodiment of my invention, it is obvious that the same is not to be restricted thereto but is broad enough to cover all structures coming within the scope of the annexed claims.

What I claim is:—

1. A device of the class described comprising coin-stack supports, means for ejecting coins from each of the stacks, said ejection means having normally elevated parts, a slide for moving the coin-ejectors, and means for selecting and depressing the elevated parts on certain of said coin-ejectors to locate said depressed parts in the path of movement of the slide.

2. In a device of the class described, a support, a plurality of coin-holders arranged thereon, a slidable member movable on the support beneath each of the coin-holders and adapted to eject the lowermost coin therefrom, a movable ejection member for operating the slides, contact members carried by the slides, said members being normally held in an elevated position out of the path of movement of the ejection member and means for moving selected contact members downward and into the path of movement of the ejection member.

3. In a device of the class described, a coin-magazine, a slide movable relative thereto for ejecting successive coins from the maga-

zine, means for shifting the slide to cause coin ejection and movable leaf spring means on the slide for causing said slide to be operated by the slide-shifting means.

4. In a device of the class described means for supporting stacked coins, slides for ejecting coins from said stacks, a reciprocating carriage, spring members carried by the slides, said spring members being normally held out of the path of movement of the carriage, and means for selecting and flexing certain of said spring members to cause the same to be held in contact with the carriage and shifted thereby on the movement of the carriage.

5. In a device of the class described, coin-supporting means, coin-shifting means comprising a slide movable below the coin support for successively ejecting coins therefrom, an actuating member, a spring tongue carried by the slide and means for flexing the tongue to bring the same within the path of movement of the actuating member.

6. In a device of the class described, coin supporting means, coin-shifting means comprising a series of slides movable below the coin-support for successively ejecting coins therefrom, a sliding actuating member, a spring tongue carried by each of the slides, means for flexing said tongues to bring the same within the path of sliding movement of the actuating member, said tongue-flexing means being operated by a plurality of manually operated keys.

7. In a device of the class described, the combination with coin-ejecting members, of a reciprocating slide for shifting said members, contact means carried by the coin-ejecting members, said contact means being normally held in an elevated position over and above the path of movement of the slide, and a series of operating keys for depressing the contact means on said coin-ejecting members and holding the same within the path of movement of the slide.

8. In a device of the class described, a row of coin-magazines, a slidable member movable relative to each of said coin-magazines for ejecting successive coins therefrom, a spring tongue carried by each of said slidable members, means for depressing selected tongues, a carriage movable relative to the coin-magazines, said carriage being adapted to engage depressed tongues and shift the slidable members to which said tongues are attached in one direction, and means on the slides for engagement by the carriage for shifting said slides in a reverse direction.

9. In a device of the class described, the combination with coin-ejecting members, of a reciprocating slide for shifting said members, movable flexible contact members carried by the coin-ejecting members, said contact members being normally held in an unflexed condition out of the path of movement of the slide, and a series of operating keys for flexing the contact members on said coin-ejecting members and holding the same within the path of movement of the slide, some of said keys being adapted to flex several contact members.

10. In a device of the class described, a row of coin-magazines, a slidable member movable relative to each of said coin-magazines for ejecting successive coins therefrom, a spring tongue carried by each of said slidable members, means for depressing selected tongues, a carriage movable relative to the coin-magazines, said carriage being adapted to engage depressed tongues and shift the slidable members to which said tongues are attached in one direction, means on the slides for engagement by the carriage for shifting said slides in a reverse direction, and means carried by the carriage for releasing the pressure of the tongue-depressing means after the carriage has started its movement in one direction.

11. In a device of the class described, a series of coin stacks, a slide movable relative to each of said stacks for ejecting successive coins therefrom, each of said slides being provided with a spring tongue, a carriage, levers overlying said tongues and means on each of said levers for depressing certain tongues to cause said tongues to be engaged by the carriage, keys for depressing said levers, and means for releasing depressed keys after the carriage has engaged the tongues that were depressed by the movement of such keys.

Signed at the city, county, and State of New York this 3rd day of October, 1930.

RICHARD KUENSTLER.