C. D. RICHARD.

MONEY CHANGING MECHANISM.

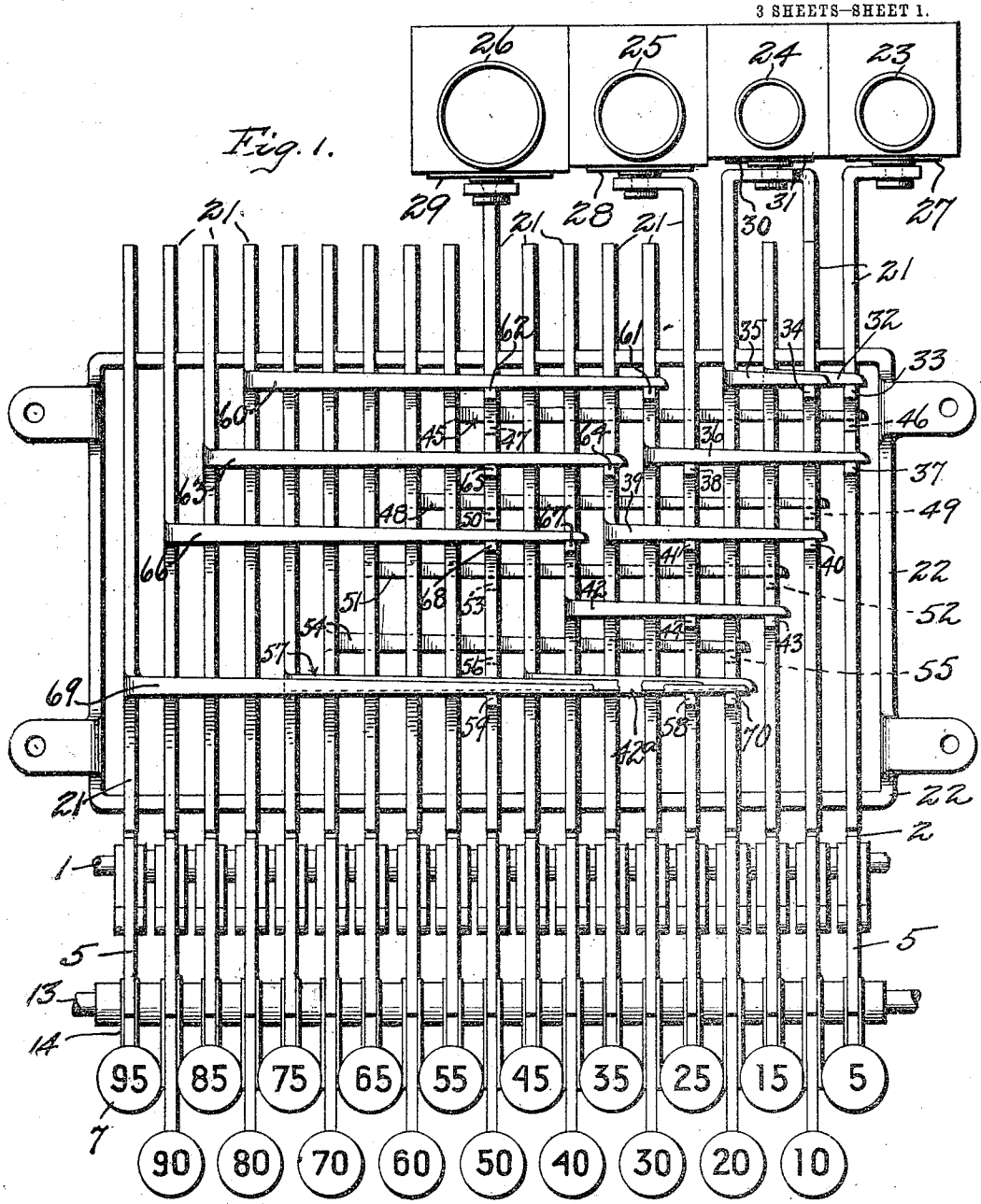
APPLICATION FILED NOV. 14, 1911.

1,046,022.

Patented Dec. 3, 1912.

3 SHEETS—SHEET 1.

Fig. 1.



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3 SHEETS—SHEET 2.

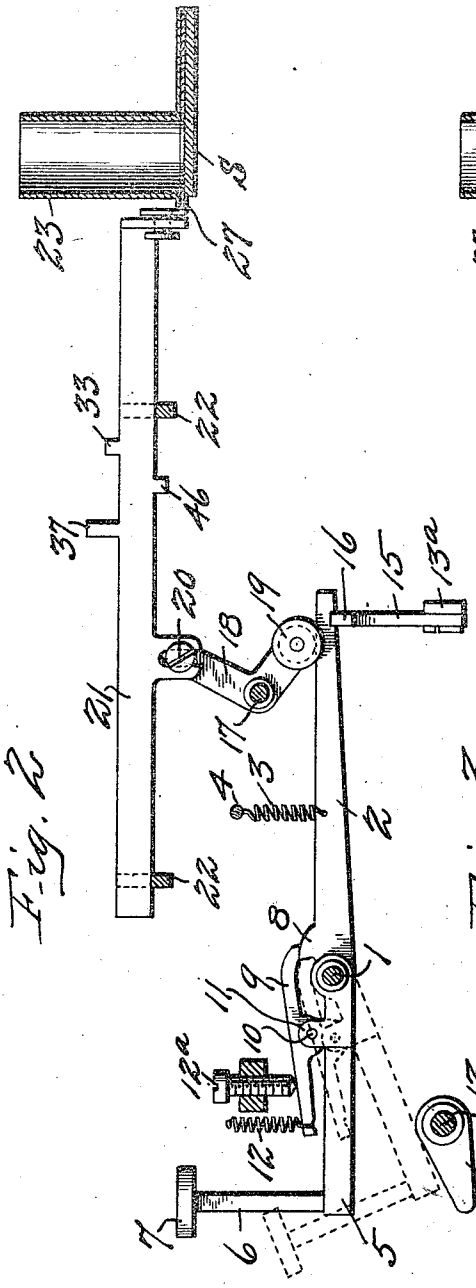

Fig. 2.

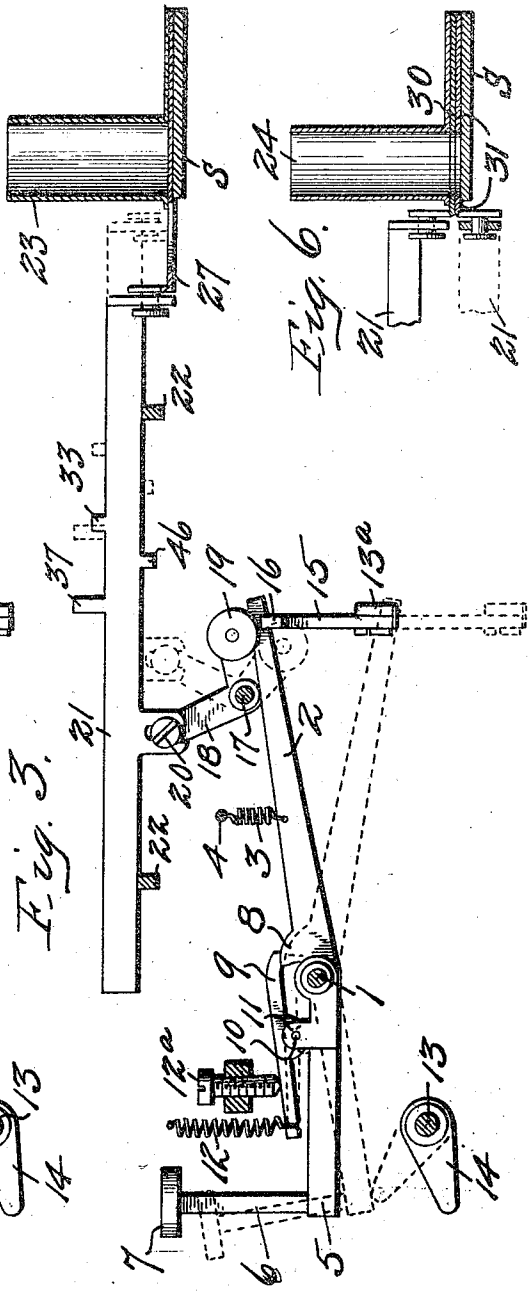

Fig. 3.

Fig. 6.

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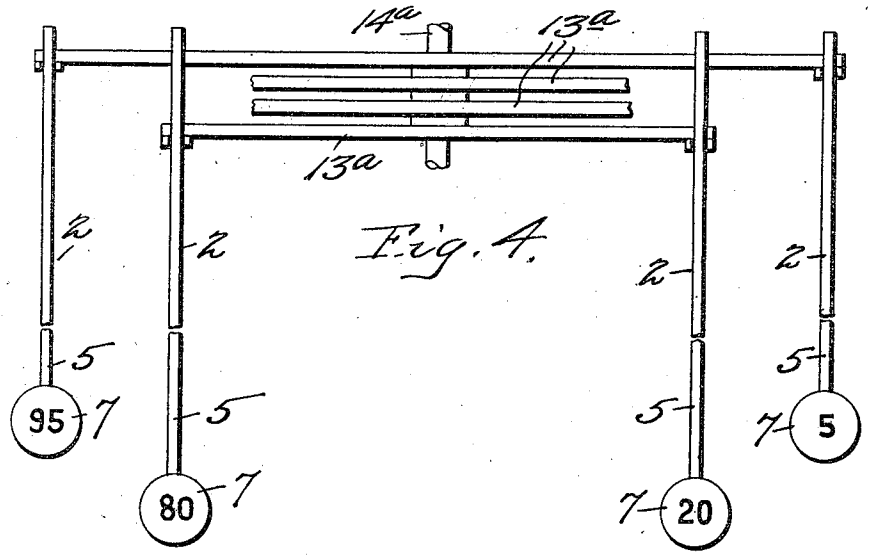
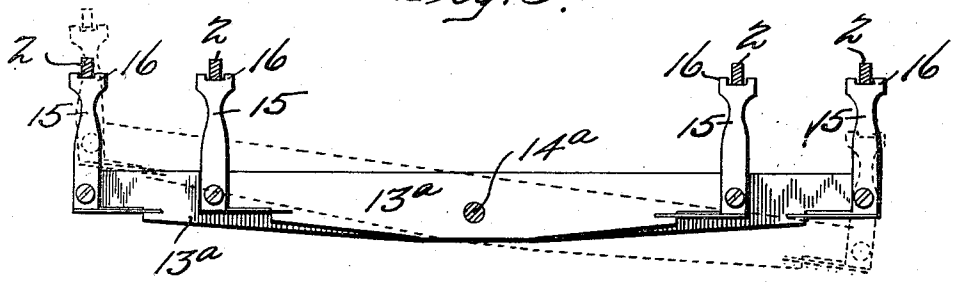


Fig. 4.

Fig. 5.



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UNITED STATES PATENT OFFICE.

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MONEY-CHANGING MECHANISM.

1,046,022. Specification of Letters Patent. Patented Dec. 3, 1912.

Application filed November 14, 1911. Serial No. 660,233.

To all whom it may concern:

Be it known that I, CHARLES DONAT RICHARD, a citizen of France, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Money-Changing Mechanism, of which the following is a specification.

The present invention relates in general to money changing devices, and more particularly to that type of money changers which operate automatically to deliver a coin or series of coins having an aggregate value equivalent to the difference between the amount purchased and the amount tendered in payment for the purchase.

Among the objects of the invention is to provide a money changing device which is comparatively simple in its construction, which can be easily and quickly manipulated, which is not liable to get out of repair, and which will operate in a positive and reliable manner to deliver the proper amount of change without danger of error.

A further object of the invention is to provide a change making device which is strong and compact in its construction, and which is adapted to be employed in connection with some conventional form of cash register so as to automatically deliver the proper amount of change at the same time that the amount of the purchase is rung up on the cash register.

With these and other objects in view, the invention consists in certain novel combinations and arrangements of the parts as will more fully appear as the description proceeds, the novel features thereof being pointed out in the appended claims.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawings, in which:—

Figure 1 is a top plan view of the frame upon which the various coin bars are slidably mounted, the coin holding tubes and finger levers or keys being also shown. Fig. 2 is a detail view of one of the coin bars and actuating levers, the finger lever being shown by full lines in its normal position, and by dotted lines in the position assumed after being depressed. Fig. 3 is a similar view, the actuating lever being shown by full lines in the position assumed when forced upwardly to actuate the reciprocating coin bar, and by dotted lines in a depressed position. Fig. 4 is a plan view of a selected few of the differential levers and operating levers. Fig. 5 is a sectional view through the shaft upon which the differential levers are mounted, and Fig. 6 is a detail sectional view showing the two ejecting slides employed in connection with the tube which holds the ten cent pieces.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Referring more particularly to Figs. 2 and 3 of the drawing, the numeral 1 designates a transverse shaft upon which a series of rearwardly extending levers 2 are pivotally mounted, the said levers being normally held yieldingly in a raised position by means of springs 3 which are connected to a rod 4. A finger lever 5 is provided for each of the main levers 2, the said finger levers being also mounted upon the shaft 1 and projecting forwardly therefrom in a reverse direction from the levers 2. Each of the finger levers 5 is provided with an upwardly projecting arm 6 having a finger piece 7 at the top thereof, alternate finger pieces being deflected outwardly slightly farther than the remaining finger pieces so that the various finger pieces will form a two row key board, as shown more clearly in Fig. 1. The present machine is merely intended to illustrate certain principles of the invention and has been simplified as much as possible in order to avoid all unnecessary complications. It has been assumed that the purchaser will tender a dollar and that the amount of his purchase will be either five cents or some multiple thereof. The various finger pieces 7 are accordingly numbered by fives from 5 to 95 inclusive. Each of the main levers 2 is provided adjacent the pivot end thereof with a nose 8 adapted to be engaged by a pawl 9 upon the corresponding finger lever 5. These pawls 9 are pivotally mounted between their ends, as indicated at 10, upon ears 11 projecting from the finger levers, the noses of the pawls normally bearing loosely upon the top of the projections 8, while the rear ends of the pawls are connected to tension springs 12 which normally exert an upward pull thereon. It will thus be apparent that when the finger lever 5 is depressed by pushing

downwardly upon the corresponding finger piece 7, the nose of the pawl will be brought into engagement with the projection or shoulder 8 of the main lever 2, as indicated by dotted lines in Fig. 2. A cam shaft 13 extends transversely under the various finger levers 5, and is provided with a cam finger 14 for each of the levers.

After the key or lever 5 which corresponds to the amount of the purchase has been depressed so as to bring the pawl 9 thereof into engagement with the shoulder 8 of the lever 2, the cam shaft 13 is rotated so as to swing all of the cams 14 upwardly. Those keys or levers 5 which have not been depressed and locked in a lowered position by means of the pawls 9 are not influenced by the cams 14, although any of the keys or levers 5 which have been previously depressed will be engaged and forced upwardly by the corresponding cams 14. As the previously depressed lever or key 5 is thus forced upwardly, the corresponding lever 2 is moved downwardly, as indicated by dotted lines in Fig. 3. On the same movement the locked pawl 9 is automatically disengaged from the nose or shoulder 8 by coming into contact with a stationary stop, such as the screw 12^a. Each of the levers 2 is connected by a transversely disposed differential lever 13^a to its complemental lever, the sum of the coin values of the two levers being equal to 100 or one dollar. These various differential levers 13^a are shown as mounted upon a shaft 14^a which is arranged parallel to the levers 2 and at right angles to the shaft 1. It will also be observed that the differential levers 13^a are all pivoted at an intermediate point in their length, the ends of the said levers being provided with upwardly projecting pivoted arms 15 which are notched or forked at their upper ends as indicated at 16 so as to engage the lower edge of the levers 2. It will thus be apparent that when one of the levers 2 is forced downwardly by the action of the corresponding cam 14, the differential lever 13^a connecting the said lever 2 to the complemental lever 2 will be tilted so as to force the said complemental lever 2 upwardly into the position shown by full lines on Fig. 3. A transverse shaft 17 extends over the free ends of the levers 2 and has a series of bell crank levers 18 mounted thereon, one of the said bell crank levers being provided for each of the main levers. The lower end of each of the bell crank levers is provided with a flanged roller 19 which engages the corresponding lever 2, while the upper end of each of the bell crank levers has an operative connection, as by means of a pin and slot arrangement 20, with a reciprocating coin bar 21. One of these reciprocating coin bars 21 is provided for each of the keys 5 and levers 2, the said bars being arranged parallel to the levers and being slidably mounted upon a frame 22.

The rear of the machine is provided with a ledge or suitable supports upon which a series of coin tubes are mounted, the 5 cent tube being designated by the numeral 23, the 10 cent tube being designated by the numeral 24, the 25 cent tube being designated by the numeral 25, while the 50 cent tube is designated by the numeral 26. An ejecting slide 27 is mounted at the bottom of the 5 cent tube 23 so as to operate in the usual manner to eject a nickel when it is reciprocated. In a similar manner, an ejecting slide 28 is mounted at the base of the 25 cent tube 25 and an ejecting tube 29 at the base of the 50 cent tube 26. The 10 cent tube 24 is provided with a pair of ejecting slides 30 and 31, either one of which will eject a dime when operated, two dimes or twenty cents being ejected when both of the slides are simultaneously operated.

The 5 cent coin bar 21 is connected directly to the ejecting slide 27 of the 5 cent tube 23. It will thus be apparent that should the purchaser tender a dollar and make a ninety-five cent purchase so that the 95 cent key 5 would be depressed by the operator, the differential lever 13^a would cause the 5 cent lever 2 to be forced upwardly so as to reciprocate the 5 cent slide 21 and eject a nickel when the cam shaft 13 is rotated. The correct amount of change would thus be automatically delivered. The 10 cent slide 21 is connected to the ejecting slide 31 of the 10 cent tube 24 so that a dime will be ejected when this slide is manipulated. Owing to the action of the differential lever and the mechanism previously described, it will be understood that this slide will be automatically operated so as to deliver a ten cent piece when the 90 cent key 5 is depressed previous to operating the cam shaft 13. The 15 cent reciprocating bar 21 is provided with a lateral arm 32 which extends over the 5 cent and 10 cent bars and is adapted to engage an abutment 33 on the 5 cent bar and a corresponding abutment 34 on the 10 cent bar. It will thus be obvious that when the 15 cent bar is reciprocated, the arm 32 will cause both the 5 cent bar and 10 cent bar to be simultaneously reciprocated, thereby ejecting both a dime and a nickel.

The 20 cent bar 21 is provided with an arm 35 adapted to engage the abutment 34 of the 10 cent bar, and is also connected directly to the ejecting slide 30 of the 10 cent tube 24. When this 20 cent slide is reciprocated both of the ejecting slides 30 and 31 of the 10 cent tube will accordingly be simultaneously operated so as to eject two dimes or twenty cents. The 25 cents reciprocating bar 21 is connected directly to the ejecting slide 28 of the 25 cent tube 25 so as to eject a 25 cent piece when operated. The

30 cent reciprocating bar 31 is provided with a lateral arm 36 adapted to engage an abutment 37 upon the 5 cent bar and an abutment 38 on the 25 cent bar so as to operate both of the said bars and eject 30 cents when it is reciprocated. In a similar manner, the 35 cent bar 21 is provided with an arm 39 adapted to engage an abutment 40 on the 10 cent bar and an abutment 41 on the 25 cent bar; the 40 cent bar 21 with an arm 42 adapted to engage an abutment 43 on the 15 cent bar and an abutment 44 on the 25 cent bar; the 45 cent bar with an arm 42ª engaging abutments 58 and 70 respectively on 25 cent and 20 cent bars; while the 50 cent bar is connected directly to the ejecting slide 29 of the 50 cent tube 26. The 55 cent bar 21 is provided with an arm 45 which is arranged under the various bars and engages a shoulder or abutment 46 on the bottom of the 5 cent bar and an abutment 47 on the bottom of the 50 cent bar. The 60 cent bar 21 is provided with an arm 48 also extending under the bars and adapted to engage an abutment 49 on the 10 cent bar and an abutment 50 on the 50 cent bar. The 65 cent bar is provided with an arm 51 adapted to engage an abutment 52 on the 15 cent bar and an abutment 53 on the 50 cent bar. The 70 cent bar is provided with an arm 54 adapted to engage an abutment 55 on the 20 cent bar and an abutment 56 on the 50 cent bar. The 75 cent bar is provided with an arm 57 adapted to engage an abutment 58 on the 25 cent bar and an abutment 59 upon the 50 cent bar. The 80 cent bar is provided with an arm 60 adapted to engage an abutment 61 on the 30 cent bar, and an abutment 62 on the 50 cent bar. The 85 cent bar is provided with an arm 63 adapted to engage an abutment 64 on the 35 cent bar and an abutment 65 on the 50 cent bar. The 90 cent bar is provided with an arm 66 adapted to engage an abutment 67 on the 40 cent bar and an abutment 68 on the 50 cent bar. The 95 cent bar is provided with an arm 69 adapted to engage an abutment 70 on the 20 cent bar, the abutment 58 on the 25 cent bar, and the abutment 59 on the 50 cent bar.

From the foregoing description, it will be obvious that when any one of the reciprocating coin bars 21 is operated, a coin or number of coins will be ejected from the coin holding tubes, the aggregate value of the coins ejected being equivalent to the value of the bar 21. It will also be obvious that owing to the action of the differential levers, when any one of the keys or levers 5 is depressed, the complemental lever 2 and corresponding coin bar 21 will be operated when the cam shaft 13 is rotated. For instance, should the 15 cent key 5 be depressed, and the cam shaft operated the 85 cent lever 2 would be forced upwardly so as to actuate the 85 cent bar 21 and eject 85 cents in coin upon the operation of the cam shaft 13, thereby automatically delivering the correct change, it being assumed that one dollar is tendered by the purchaser. In a similar manner, should the 75 cent key or lever 5 be depressed, the differential lever would cause the 25 cent lever 2 to be raised so as to eject 25 cents upon the operation of the cam shaft 13.

It is thought that the operation of the device which has been described will be entirely clear from the foregoing description. It will be understood, however, that this machine merely illustrates fundamental principles and that many changes and alterations can be made therein without departing from the spirit of the invention.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A money changing device, including a lever, a second lever mounted to swing in one direction independently of the first lever, means for causing the first lever to be moved upon the return of the second lever, and coin ejecting mechanism actuated by the movement of the first lever.

2. A money changing device, including a lever, a second lever mounted to swing in one direction independently of the first lever, means for causing the first lever to be moved upon the return of the second lever, means for returning the second lever to its original position, and coin ejecting mechanism actuated by the movement of the first lever.

3. A money changing device, including a lever, a second lever mounted to swing in one direction independently of the first lever, means for causing the first lever to be moved upon the return of the second lever, a cam for positively returning the second lever to its original position, and coin ejecting mechanism actuated by the movement of the first lever.

4. A money ejecting device, including a lever, a second lever mounted to swing in one direction independently of the first lever, one of the said levers being provided with a shoulder, a pawl upon the opposite lever for engagement with the said shoulder for causing the first lever to swing with the second lever upon the return movement of the second lever, and coin ejecting mechanism actuated by the movement of the first lever.

5. A money changing device, including a lever, a second lever mounted to swing in one direction independently of the first lever, one of the said levers being provided with a shoulder, a pawl mounted upon the opposite lever for engagement with the said shoulder for causing the first lever to move with the second lever upon the return of the

second lever, a cam for forcing the second lever back to its original position, and coin ejecting mechanism actuated by the movement of the first lever.

6. A money changing device, including a shaft, a lever pivotally mounted upon the shaft and extending in one direction therefrom, a second lever also pivotally mounted upon the shaft and extending in the opposite direction therefrom, the second lever being adapted to move in one direction independently of the first lever, and one of the said levers being provided with a shoulder, a pawl upon the opposite lever for engagement with the shoulder to cause the first lever to move with the second lever upon the return movement of the second lever, a cam for forcibly returning the second lever to its original position, and coin ejecting mechanism actuated by the movement of the first lever.

7. A money changing device, including a series of levers each having a coin value, an operative connection between each lever and its complemental lever, the sum of the coin values of any two complemental levers being some fixed amount, means for operating any one of the levers, the complemental lever being simultaneously operated and the two levers moving in different directions, and mechanism actuated by the movement of the complemental lever for ejecting coin to the amount of the coin value of the complemental lever.

8. A money changing device, including a series of levers each of which has a coin value, a differential lever producing an operative connection between each lever and its complemental lever, the sum of the coin values of any two complemental levers being some fixed amount, means for moving any one of the levers in one direction, the complemental lever being simultaneously moved in the opposite direction, and means actuated by the movement of the complemental lever for ejecting coin to the amount of the coin value of the complemental lever.

9. A money changing device, including a series of levers each of which has a coin value, a transversely disposed differential lever between each lever and its complemental lever, the sum of the coin values of any two complemental levers being some fixed amount and the differential levers being pivoted at points between their ends, means carried by the ends of the differential levers for engaging the respective levers, means for operating any one of the levers in one direction, the complemental lever being simultaneously operated in the opposite direction through the medium of the differential lever, and means actuated by the movement of the differential lever for ejecting coin corresponding in amount to the coin value of the differential lever.

10. A money changing device, including a series of levers each of which has a coin value, an operative connection between each lever and its complemental lever whereby when a lever is moved in one direction its complemental lever is moved in the opposite direction, the sum of the coin values of any two complemental levers being some fixed amount, a reciprocating coin bar for each of the levers, an operative connection between each of the levers and the corresponding coin bar, means for operating any one of the levers, the complemental lever being simultaneously moved and actuating its coin bar, and means actuated by the movement of the coin bar for ejecting coin to the amount of the value of the coin bar.

11. A money changing device, including a series of levers each of which has a coin value, an operative connection between each lever and its complemental lever whereby when the lever is moved in one direction the complemental lever is moved in the opposite direction, means for actuating any one of the levers, a reciprocating coin bar for each of the levers, bell crank levers between each of the levers and the corresponding reciprocating coin bar whereby the movement of the complemental lever will actuate the coin bar, and means actuated by the coin bar for ejecting coin corresponding in amount to the coin value thereof.

12. A money changing device, including a series of levers each of which has a coin value, an operative connection between each lever and its complemental lever whereby when a lever is moved in one direction the complemental lever is moved in the opposite direction, the sum of the coin values of any two complemental levers being some fixed amount, a finger lever for each of the levers, the said finger levers being adapted to move in one direction independently of the first mentioned levers, means for causing the first mentioned levers to be moved upon the return movement of the finger levers, a reciprocating coin bar for each of the levers, an operative connection between each lever and the respective reciprocating coin bar, the said coin bars being actuated by the movement of the lever which is a complement to the lever operated by the finger lever, and means actuated by each coin bar for ejecting an amount of coin corresponding to the coin value thereof.

13. A money changing device, including a series of main levers each of which has a coin value, a transversely disposed differential lever between each lever and its complemental lever, the said differential levers being pivoted between their ends so that when a lever is operated the complemental lever will be moved in the opposite direction, the sum of the coin value of any two complemental levers being some fixed amount, a

finger lever for each of the main levers, the said finger levers being mounted to move in one direction independently of the main levers, means for moving each main lever upon the return movement of the corresponding finger lever, a reciprocating coin bar for each of the main levers, an operative connection between each of the main levers and the respective reciprocating coin bar, the said reciprocating coin bars being actuated by the movement of the lever which has a complemental relation to the lever operated by the finger lever, and means actuated by the movement of the coin bar for ejecting an amount of coin corresponding to the coin value of the bar.

14. A money changing device, including a shaft, a series of main levers pivoted upon the shaft and projecting upon one side thereof, each of the said main levers having a coin value, a transversely disposed differential lever producing an operative connection between the complemental main levers, the said differential levers being pivoted between their ends so that when one main lever is moved in one direction the complemental main lever is moved in the opposite direction, and the sum of the coin values of any two complemental levers being some fixed amount, and a finger lever pivoted upon the shaft of each of the main levers, the said finger levers projecting upon the opposite side of the shaft and being adapted to move in one direction independently of the main levers, means for causing the levers to move with the finger levers upon the return movement of the finger levers, a cam shaft extending transversely along the finger levers and provided with cams adapted to engage the finger levers to return them to their original position, a reciprocating coin bar for each of the main levers, an operative connection between each of the reciprocating coin bars and the corresponding main lever, the said coin bars being actuated by the movement of the lever which has a complemental relation to that one of the main levers actuated by a finger lever, and means actuated by the movement of the coin bar for ejecting coin equivalent to the coin value of the bar.

15. A money changing device including a frame, a series of reciprocating coin bars mounted upon the frame and having different coin values, a series of coin holding tubes, ejecting slides mounted upon the coin holding tubes and connected to those reciprocating coin bars having corresponding values, lateral arms carried by the remaining coin bars and projecting across certain of the coin bars, abutments upon certain of the coin bars adapted to be engaged by the said arms for causing a selected series of bars to be operated simultaneously with each of the said remaining bars, the said series of bars ejecting a number of coins having a value equivalent to the coin value of the bar, and mechanism for actuating the reciprocating bars.

16. A money changing device including a frame, a series of substantially parallel reciprocating coin bars slidably mounted upon the frame and having different coin values, a series of coin holding tubes, ejecting slides mounted upon the coin holding tubes and connected to those reciprocating coin bars having corresponding values, lateral trip arms projecting from the remaining coin bars and extending transversely across the coin bars, the said trip arms being arranged out of the path of the coin bars so as not to interfere with the action thereof, abutments upon certain of the coin bars, the said abutments being arranged in the path of the trip arms so as to cause a selected series of coin bars to be operated simultaneously when one of the coin bars provided with a lateral arm is operated, the said series of coin bars ejecting a number of coins having a value equivalent to the coin value of the bar with the lateral arm, and mechanism for actuating the reciprocating coin bars.

17. A money changing device, including a shaft, a series of main levers pivoted upon the shaft and projecting upon one side thereof, each of the main levers having a coin value, a transversely disposed differential lever producing an operative connection between each of the main levers and the complemental lever, whereby when one main lever is moved in one direction, the complemental main lever will be moved in the opposite direction, the sum of the coin values of any two complemental levers being a fixed sum, a finger lever pivoted upon the shaft for each of the main levers, the said finger levers projecting upon opposite sides of the shaft and being adapted to be moved in one direction independently of the main levers, means for locking the main levers with the finger levers upon the return movement of the finger levers, cams for returning the finger levers back into their original position, a reciprocating coin bar for each of the main levers, the said bars having coin values corresponding to the respective main levers, an operative connection between each of the coin bars and the respective main lever, the said coin bars being actuated by the movement of the main lever which has a complemental relation to that main lever actuated by the return of the finger lever to normal position, a series of coin tubes for holding coins of different denominations, an ejecting slide for each of the coin tubes, the said ejecting slides being connected to the reciprocating coin bars of a corresponding value, lateral arms projecting from the remaining coin bars, abutments upon the various coin bars for engagement with the lat-

eral arms whereby when one of the said remaining coin bars is actuated a series of coin bars of smaller coin values will be automatically actuated to eject a number of coins having an aggregate value equivalent to the coin value of the bar.

18. A money changing device, including a frame, a series of levers mounted upon the frame and each having a coin value, differential means producing an operative connection between each lever and its complemental lever, the sum of the coin values of any two complemental levers being some fixed amount, a reciprocating coin bar for each of the levers, the said reciprocating coin bars having coin values corresponding to the coin values of the levers, an operative connection between each lever and the reciprocating coin bar, a series of coin holding tubes, ejecting slides mounted upon the tubes and connected to those reciprocating bars having corresponding values, trip arms projecting laterally from the remaining coin bars and extending across certain of the coin bars, abutments upon the coin bars for engagement with the laterally projecting trip arms to cause a selected series of bars to be operated simultaneously when one of the coin bars with a lateral arm is operated, the said series of bars ejecting a number of coins having a value equivalent to the coin value of the bar, and means for actuating any one of the levers, the before mentioned differential mechanism serving to simultaneously operate the complemental lever and the coin bar corresponding to the complemental lever.

19. A money changing device, including a frame, a series of levers mounted upon the frame each having a coin value, a reciprocating coin bar for each of the coin levers, the said reciprocating coin bars having corresponding coin values, an operative connection between the coin levers and reciprocating coin bars, a series of coin holding tubes, ejecting slides mounted upon the coin holding tubes and connected to those reciprocating coin bars having corresponding values, trip arms projecting laterally from the remaining coin bars, abutments upon certain of the coin bars for engagement with the laterally projecting trip arms for causing a selected series of coin bars to be operated simultaneously when one of the coin bars provided with a lateral arm is operated, the said series of bars ejecting a number of coins having a value equivalent to the coin value of the bar with the lateral arm, and mechanism for operating the levers.

20. A money changing device, including a frame, a series of levers mounted upon the frame and each having a coin value, differential means producing an operative connection between each lever and its complemental lever, the sum of the coin values of any two complemental levers being some fixed amount, means for moving any one of the levers, the complemental lever being simultaneously moved, a series of coin holding tubes, ejecting slides mounted upon the coin holding tubes, and selective mechanism operated by the movement of the complemental lever for causing the ejecting slides to eject coin to the amount of the value of the complemental lever.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

CHARLES DONAT RICHARD.

Witnesses:
LOUIS GIARD,
GEO. J. CORBETT.