No. 757,362. PATENTED APR. 12, 1904.

L. SUMNER.

COIN COUNTING AND DELIVERY MACHINE.

APPLICATION FILED JUNE 6, 1903.

NO MODEL. 4 SHEETS—SHEET 1.

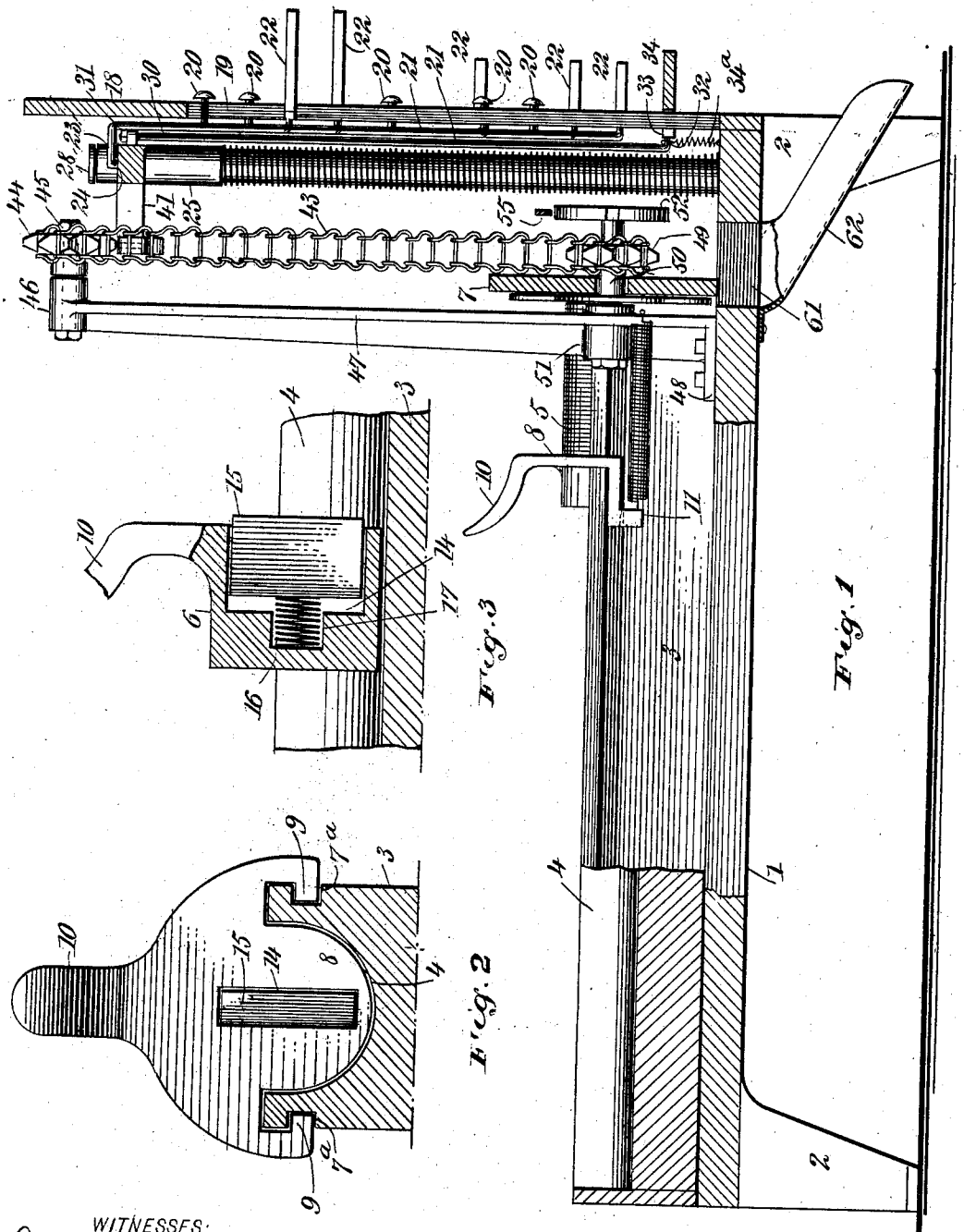


Fig. 1

Fig. 3

Fig. 2

WITNESSES:

John A. Bergstrom

E. E. Ellis

INVENTOR

Lawson Sumner

BY Munn & Co

ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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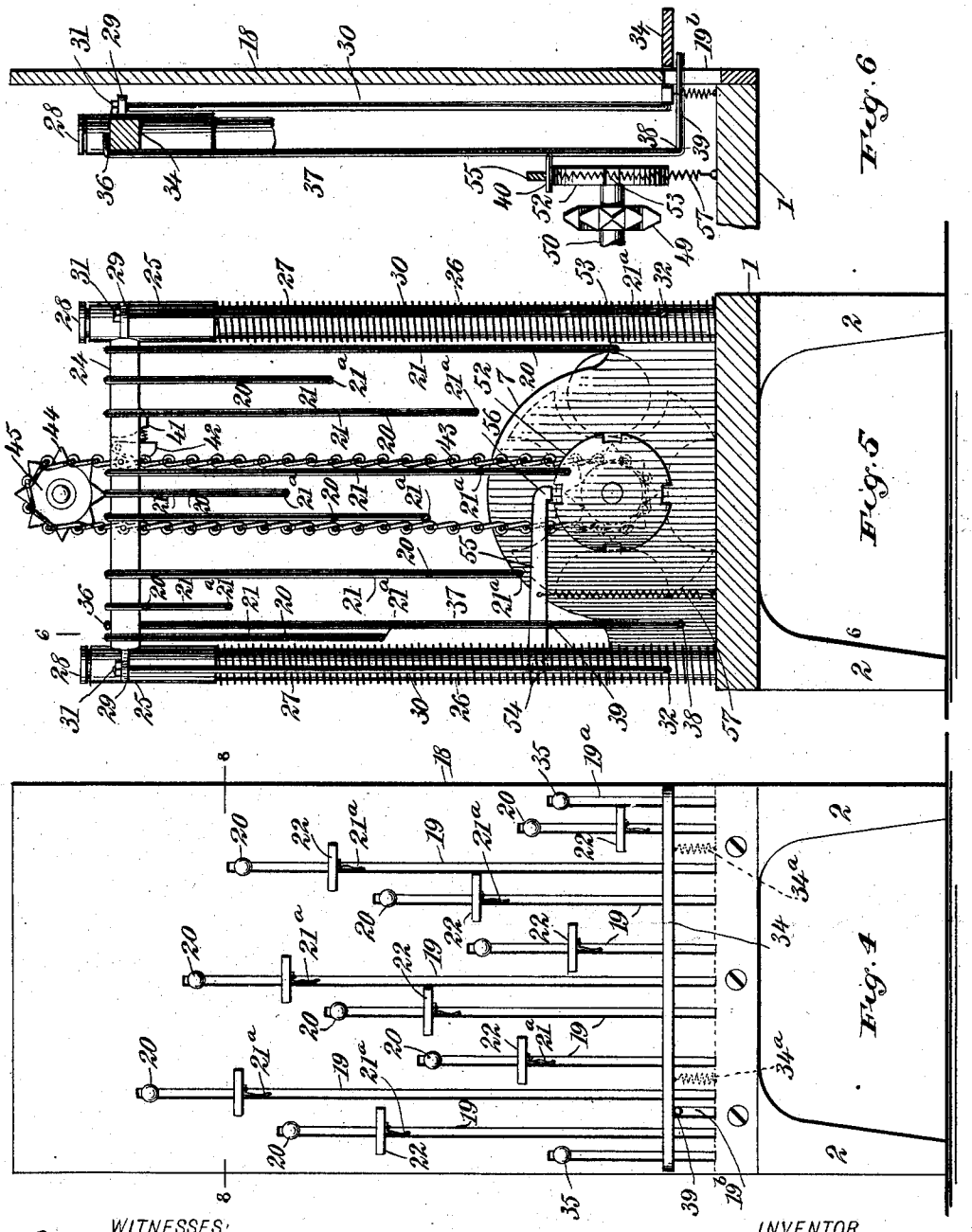


Fig. 6

Fig. 5

Fig. 4

WITNESSES:

John A. Brayton

E. E. Ellis

INVENTOR

Lawson Sumner

BY Munn & Co

ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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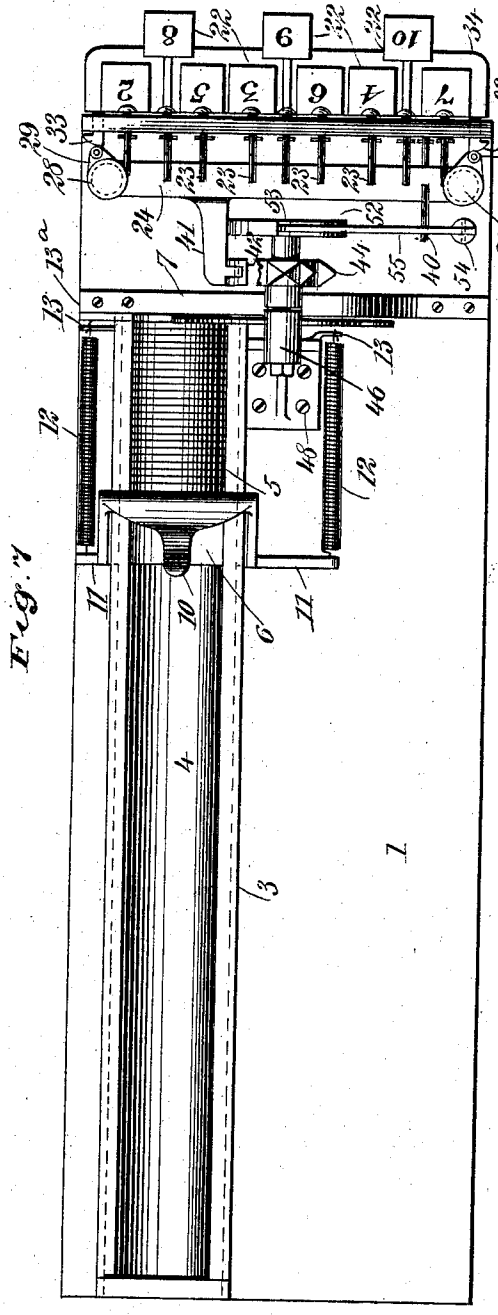


Fig. 1.

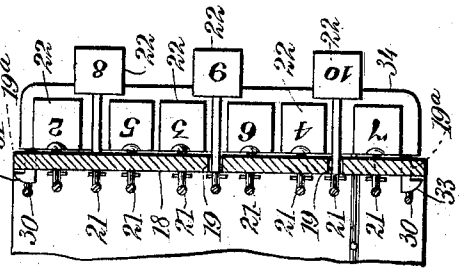


Fig. 8.

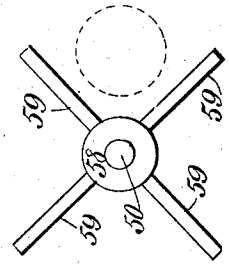


Fig. 10.

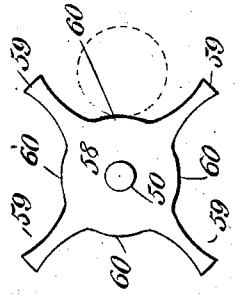


Fig. 9.

WITNESSES:

Joshua Stephens

E. E. Ellis

INVENTOR

Lawson Sumner

BY Munn & Co.

ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 757,362. PATENTED APR. 12, 1904.

L. SUMNER.

COIN COUNTING AND DELIVERY MACHINE.

APPLICATION FILED JUNE 6, 1903.

NO MODEL. 4 SHEETS—SHEET 4.

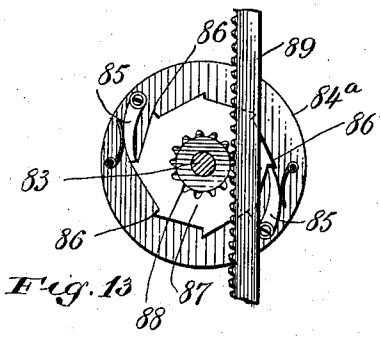


Fig. 13

Fig. 11

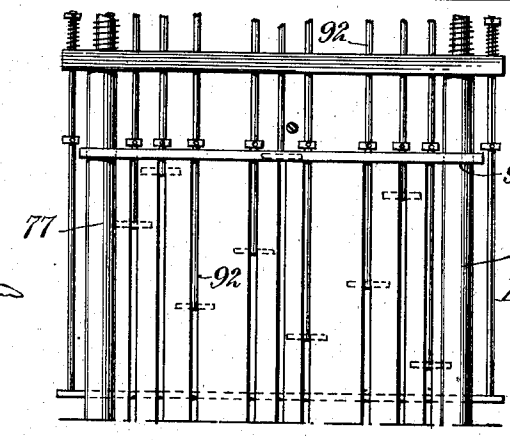


Fig. 12

WITNESSES:

John A. Bergholm

E. E. Ellis

77 INVENTOR

Lawson Sumner

BY Munn & Co

ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 757,362. Patented April 12, 1904.

UNITED STATES PATENT OFFICE.

LAWSON SUMNER, OF COLORADO SPRINGS, COLORADO.

COIN COUNTING AND DELIVERY MACHINE.

SPECIFICATION forming part of Letters Patent No. 757,362, dated April 12, 1904.

Application filed June 6, 1903. Serial No. 160,328. (No model.)

To all whom it may concern:

Be it known that I, LAWSON SUMNER, a citizen of the United States, and a resident of Colorado Springs, in the county of El Paso and State of Colorado, have invented a new and Improved Coin Counting and Delivery Machine, of which the following is a full, clear, and exact description.

This invention relates to counting and delivery machines for coins; and it consists, substantially, in the construction, organization, and combinations of parts hereinafter particularly described, and pointed out in the claims.

One of the principal objects of the invention is to overcome numerous disadvantages and objections found to exist with many machines hitherto devised for similar purposes and to provide a comparatively inexpensive machine of this kind which is accurate as well as effective and reliable in operation, which comprises but few elements or parts not easily broken or liable to get out of order, and which may be easily manipulated and quickly regulated according to requirements.

A further object of the invention is to provide a machine of the character referred to which is simple, besides being compact and light in weight and possessing the capacity for long and repeated service.

The above and additional objects are attained by means substantially such as are illustrated in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a part longitudinal sectional elevation of a coin counting and delivery machine embodying my improvements. Fig. 2 is an enlarged view in detail of the coin-trough and the follower or feed device for the coins, the former element being in transverse section and the latter element in end elevation. Fig. 3 is an enlarged longitudinal sectional view in detail, showing a part of the coin-trough, together with the follower or feed device for the coins and the locking device for the rotatable ejector device. Fig. 4 is a front elevation of the machine, showing the construction of the keyboard more clearly. Fig. 5 is a similar view of the machine, partly in transverse section and minus the keyboard shown in the preceding figure. Fig. 6 is a vertical sectional view in detail, taken substantially in the plane of line 6 6 of Fig. 5. Fig. 7 is a top plan view of the machine complete and ready for operations. Fig. 8 is a horizontal sectional plan view of certain parts of the machine, taken substantially in the plane of line 8 8 in Fig. 4. Fig. 9 is an enlarged detail view representing one form of ejector device for the coins. Fig. 10 is a similar view representing another form of ejector device, and Figs. 11, 12, and 13 are views representing modifications of certain features of the machine.

Before proceeding with a more detailed description it may be stated that in each of the embodiments of my improvements herein shown I preferably employ a suitable base upon which the different elements of the machine are mounted or supported, said elements including a trough for containing any desired quantity of coins of predetermined denomination, and working in proximity to the discharge end of said trough is a coin-ejector device of special embodiment, as will be hereinafter explained. I employ a series of key-levers, also of special construction and organization, each of which when depressed constitutes practically a prime mover for the principal working parts of the machine, said levers being, in connection with actuating devices, for the operating mechanism of said ejector device and having variable movement by which said ejector device may be moved to a different extent for each lever, thereby enabling any desired number of coins to be discharged from the machine at one time, according to the particular lever manipulated, it being here mentioned that each of said key-levers is provided with a digit or finger-piece, preferably having thereon a designation of the particular quantity of ejected coins represented by that lever. Included in the said series of key-levers is what I term an "initial" lever, in that the depression thereof causes the ejectment of but one coin from the machine, and coacting with all of said levers is a movable member for operating a stop device whereby the ejector device is brought to

a state of rest on completion of the operative movement of each of said key-levers, it being remarked that the motion of this latter device is in one direction only and that the operation thereof is positive and steady and without tendency to binding either of the ejector device itself or of the coins operated upon.

In the preferred form of my invention I employ a follower or feed device for the coins in the trough, combined with which is an abutment or base for the coins as they are gradually moved along the trough by said follower, all as will presently be explained.

The machine may be variously constructed, and hence, while I have herein represented my improvements in certain preferred embodiments, it will be understood, of course, that I am not limited to the precise details thereof in practice, since immaterial changes therein may be resorted to coming within the scope of my invention.

Reference being had to Figs. 1 to 10, inclusive, of the accompanying drawings by the designating characters marked thereon, 1 represents a base or platform, which may, if desired, be mounted on supporting-legs 2 and which may also be formed either of metal or wood or any other desired material. This base or platform is of suitable width and of any preferred dimensions from the forward to the rearward end thereof, and located thereon substantially parallel with one of its longer edges is a trough 3, which is provided in the upper surface thereof with a longitudinal recess 4, which is concave and substantially semicircular in form transversely throughout, the sides of said recess conforming practically to one-half the circumference or edge of a coin of any predetermined denomination—as a dime or a quarter of a dollar, for instance—a number or quantity of such coins being indicated in the trough at 5 (see Figs. 3 and 7) and which are constantly acted upon by a follower or feed device 6 in such manner that the innermost coin of the lot is always kept pressed against the corresponding surface portion of an adjacent abutment 7 therefor, as and for the purpose hereinafter more fully explained, it being noted (see Fig. 2) that each side of the trough 3 is provided near the upper edge thereof with a longitudinal groove 7^a, while the said follower or feed device is constructed with a member 8 snugly fitting within the said recess 4 of the trough and also with inwardly-projecting longitudinal ribs or tongues 9, which slide or work within said grooves. The follower is formed, preferably, with a thumb-piece 10 and is provided on either side thereof at the rearward or outer end of each of the ribs or tongues 9 with substantially a right-angled projection 11, (see Fig. 7,) to which is connected one end of a spring 12, the other end of which is connected at 13 to a stationary part of the machine, said springs tending to draw the follower inwardly to constantly urge the coins along in the same direction. The said follower or coin-feed device is constructed on the inner surface thereof with a recess 14, in which is seated a movable block 15, which is constantly acted upon by a spring 16, contained or working within a subrecess 17, formed in the inner wall of the said recess 14, the purpose of which block and spring will be presently described. Secured to the front end of the base or platform 1 in any suitable manner is the lower end of a vertically-disposed keyboard 18, which is formed therethrough with a plurality of vertical slots 19 of different heights, excepting the two outermost ones, (indicated at 19^a,) which are of substantially the same height, as shown, (see Fig. 4,) and working in said slots are headed guide-pins 20, projecting outwardly from a series of vertical key-levers 21, each having connected thereto at 21^a a horizontal digit or finger-piece 22, said levers being bent or otherwise formed at their upper ends at 23 by which to engage with a vertically-slidable cross-beam 24, which is provided at the ends thereof with vertically-disposed sleeves 25, working upon standards or uprights 26, mounted at the forward part of the base or platform 1 a suitable distance apart, said standards being provided with springs 27, the lower ends of which bear upon the base, while the upper ends thereof bear against the lower ends of said sleeves, tending to normally maintain the latter and the said cross-beam in the upper positions thereof, (indicated in Figs. 1 and 5,) it being noted that said standards are provided at their upper ends with heads 28 or other means for limiting the upward movement of the parts just referred to. The said sleeves 25 are provided near the upper ends thereof with lateral projections 29, which are perforated to receive the upper ends of vertically-movable rods 30, lying alongside and practically parallel with said standards 26, the upper ends of said rods being headed or provided with nuts 31 to effect proper connection of the same with said projections and the lower ends thereof being connected at 32 to arms 33, projecting inwardly from the ends of a horizontal key-plate 34, extending across the front of the lower part of the said keyboard 18, said arms being guided between the sides or edges of the slots 19^a in said keyboard and said rods being provided with headed pins 35, also working in said slots and limiting the upward movement of the rods. The key-plate 34 and rods 30 constitute what I have above termed the "initial" key-lever, and it will be seen that this plate is in a plane below all the digits or finger-pieces 22, said plate being common to all the key-levers 21, as hereinafter explained, since the same is depressed by one of the digits or finger-pieces 22 each time one of the said key-levers 21 is operated. Also connecting with the said vertically-slidable cross-beam 24, preferably reversely to the manner in

which the upper ends of the key-levers are connected therewith, is the upper bent end 36 of a vertical rod 37, which has bent therefrom at 38 (see Fig. 6) a forwardly-projecting portion 39, which extends beneath plate 34 and is guided in a slot 19[b] in the keyboard, said rod being provided with a rearwardly-extending pin 40, the function of which will be explained later on. The vertically-slidable cross-beam 24 is provided on the inner edge and somewhat to one side of the longitudinal center thereof with a rearwardly-extending arm 41, having at its end, preferably, a pivoted spring-actuated pawl 42, adapted for engagement with the links of a sprocket-chain 43, which engage with the teeth 44 of a sprocket-wheel 45, the spindle or shaft of which is mounted in a bearing 46 therefor supported at the upper end of an upright 47, secured at its lower end to the base 1 at 48. (See Figs. 1 and 7.) The links of said sprocket-chain 43 also engage with the teeth 49 of a lower sprocket-wheel, having its spindle or axle 50 passing through an opening therefor in the hereinbefore-mentioned coin-abutment 7, with one end thereof supported in bearings 51 on one side of said upright 47 (see Fig. 1) and its other end provided with, preferably, a circular plate or disk 52, having notches 53 in its edges, which are disposed, preferably, at diametrically opposite points to each other. Pivoted at 54 (see Fig. 5) is a lever 55, having at its free end a tooth 56, adapted to enter said notches, said lever being acted upon by a spring (or weight) 57, tending to carry the lever downwardly; but normally this lever is maintained in position to free said tooth from said notches by means of the hereinbefore-mentioned rearwardly-extending pin 40 on the rod 37. Also fitted to said spindle or axle 50 on the opposite side of said abutment 7 is an ejector device 58, (shown in detail in Figs. 9 and 10,) said device consisting, preferably, of a central body portion having arms 59 projecting radially from the edges thereof at determinate points, said arms being herein shown in each instance as four in number, although it is evident that as many of them may be employed as desired, according to the particular diameter of coins to be operated upon thereby, care being had, of course, to have them the proper distance apart to enable the coins to be rapidly forced into the spaces between them immediately following the successive ejectment of the foremost of the coins by contact of the arms therewith. As shown in Fig. 9, the edges of the central body portion of said ejector device between the said arms thereof may be given a slight outward curve or bulge at 60, which construction tends to cause a rolling action between such edges and the edges of the coins, thus facilitating the free ejectment and delivery of the coins through an opening 61 in the adjacent part of base 1. (See Fig. 1.) The said ejector device is preferably made thin enough to insure striking engagement of edge portions of the said arms thereof with the thinnest standard coins or with such as may have become considerably worn, and thus will the effectiveness of the said device be apparent. The spaces between the said arms 59 are also, preferably, wide enough to enable the block 15 of the follower or feed device 6 to enter between any two of the arms, and thus when the last coin has been expelled or ejected from the recess 4 in the trough 3 said block will serve to lock the ejector device automatically against movement, thereby preventing the machine from being operated except in the manner intended. As shown in Fig. 1, a chute 62 is preferably employed to guide and deliver the coins into the hands of the operator; but this may be dispensed with and the coins received directly into the hand from said opening 61. As thus constructed and organized it may be stated that in virtue of the fact that the vertical movement of the elements herein designated as the "initial" key-lever is less than the corresponding movement of each of the key-levers 21 it follows that on depressing the plate 34 the ejector device will be actuated to a limited extent only, the different parts being so proportioned and timed in their operations as that the said device at this time will serve to eject but one coin from the trough, immediately succeeding which ejectment the lot of coins in the trough will be forced forwardly, so that the next coin in order will be held in proper position against the abutment 7 by pressure of the springs of the follower feed device for the coins, and so on. In thus depressing the said plate 34 the said cross-beam is carried downwardly therewith by means of the rods 30, and consequently the pawl 42 on the arm 41, engages with the proper one of the links of the sprocket-chain 43, and these devices thereby actuate said chain and both sprocket-wheels to move the ejector device, as just explained. As the said plate and actuating devices for the said ejector device are thus carried downwardly the rod 37 is likewise caused to move downwardly, and consequently the spring 59 operates to force the tooth 56 of lever 55 into one of the notches 53 of disk 52 at the proper time to bring the ejector device temporarily into locked engagement therewith. As soon as the plate 34 is released, however, the several parts (excepting the ejector device) are reversely operated by means of sleeves 25 and springs 27 so as to carry the said parts to the first positions thereof, as is apparent, and it will be noted that the digits or finger-pieces 22 are each provided with a numeral designating the particular number of coins which will be counted and delivered from the machine when that particular lever is depressed or manipulated. For economy of space said digits or finger-pieces are assembled in the

order herein shown, (see Figs. 7 and 8,) some working comparatively close to the outer face of the keyboard, while others are extended outwardly beyond the first, so as to pass each other in operating the different key-levers 24. The operation just explained is substantially the same whenever any of said levers 21 are drawn downwardly by pressure on the finger-piece thereof, the said plate 34 being in such case depressed by contact of said finger-piece therewith, as is apparent, thus to operate the devices for effecting stoppage of the ejector device instanter on the accomplishment of the movement thereof necessary to eject a number of coins corresponding to the particular number represented by the particular lever manipulated. For instance, the fourth lever 21 from the left is capable (due to the height of its slot 19) of being moved to an extent to operate the ejector device to be rotated until the arms thereof have dislodged and ejected six coins, whereupon such device is brought to a stop, the said lever being at this time at the limit of its downward movement, and so on with each lever, the number of coins ejected each time varying with the particular key-lever actuated. With each upward or return movement of the said cross-beam 24 the pawl 34 slips past the links of the sprocket-chain, as will be understood, of course.

In the form of my invention shown in Figs. 11 to 13, inclusive, the mode of operation is substantially the same as already explained; but in said figures the embodiment is somewhat more compact, although including all the essential elements of the form first described. Thus in said Fig. 11 the base of the machine is indicated at 70, being elevated upon side pieces 71 beneath the same, said side pieces being constructed with a throat 72 for enabling the placing of the fingers of the hand beneath an opening (not shown) in said platform for the reception of coins ejected from the lower part of the trough 73. Said trough is supported, preferably in an inclined position, by means of an upper horizontal frame-plate 74, held by a rearward post 76 and standards or uprights 77. (Shown in Fig. 12, which is a section on the line 12 12 in Fig. 11.) In this form of my invention the ejector device is shown at 78 as horizontally disposed and carried by the lower part of a vertical shaft 79, having its lower end turning at 80 in a bearing therefor provided in said base 70. The upper end of said shaft is provided with a beveled gear-wheel 81, which is recessed in its top to receive the lower end of a pillar 82, fitted in the frame-plate 74, said pillar serving as a bearing for one end of the spindle 83 of another beveled gear-wheel 84, loose on the spindle and meshing with the first and being integral with a disk 84ª, having on its outer face a series of spring-pressed pawls 85, which are engaged by the teeth 86 of a ratchet-wheel 87, which in turn is rigid with a pinion 88, the teeth of which are in mesh with the teeth of a vertical rack-bar 89, said pinion being rigid with the spindle 83. In this embodiment of the machine the lower end of the rack-bar is rigid with a key-plate 90, which is engaged by collars 91, provided on each of the series of key-levers 92, having digits or finger-pieces 93. Each time one of said key-levers is depressed the collar thereon causes the plate 90 to descend with it, as well also as the rack-bar, and thus will the ejector device be operated through the described intermediate devices, as is apparent without further description, it being understood that the present modification is intended principally to illustrate a trough in which the coins are fed to the ejector device by gravity instead of positively, as in the first instance described, and also to indicate a different form of operating mechanism for said ejector device, the latter working in a horizontal plane rather than in a vertical plane, as before. It may be stated that in Fig. 13 the rack-bar is omitted merely for the purpose of clearness of illustration of other parts.

In order to prevent the key-plate 34 from dropping of its own weight, I preferably provide supporting-springs 34ª therefor resting on the base, and to prevent falling of the remaining key-levers 21 after any one of the series has been depressed I preferably employ for each of said levers a friction-spring 21ª, attached to the lever and pressing against one of the edges or sides of the slot 19 for that lever. Still further, to prevent the coins being thrown out at the side of the machine I preferably insert a strip 13ª, of wood or other material, intermediate the end of the coin-trough at that side and the adjacent portion of the abutment 7. (See Fig. 7.)

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of operating key-levers, and means for actuating said ejector device therefrom, said key-levers having different degrees of movement, to cause the ejector device to be moved by each of them to a different extent, to deliver from the machine a different and determinate number of said coins.

2. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of operating key-levers, means for operating the ejector device, and an actuator for said means, coacting with each of the key-levers, the latter having different degrees of movement, to cause the ejector device to be moved by each of them to a different extent, to deliver from the machine a different and determinate number of said coins.

3. A coin counting and delivery machine,

comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a feed device for the coins, a series of operating key-levers, and means for operating said ejector device therefrom, said key-levers having different degrees of movement, for causing the ejector device to be moved by each of them to a different extent, to deliver from the machine a different and determinate number of said coins.

4. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a spring-actuated follower for feeding the coins to the ejector device, a series of operating-levers, means for operating said ejector device, and an actuator for said means, coacting with each of said key-levers, the latter having different degrees of movement to cause the ejector device to be moved by each of them to a different extent, to deliver from the machine a different and determinate number of said coins.

5. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of operating key-levers, means for operating the ejector device therefrom, and means for locking said ejector device against movement in either direction, immediately succeeding the ejectment of the last coin from the trough.

6. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a feed device for the coins, a series of operating key-levers, means for actuating the ejector device therefrom, and means, carried by said feed device, for locking said ejector device against movement in either direction, immediately succeeding the ejectment of the last coin from said trough.

7. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a spring-actuated feed device for the coins, a series of operating key-levers, means for operating the ejector device therefrom, and an independently-spring-actuated device, carried by said feed device, for locking the said ejector device against movement in either direction, immediately succeeding the ejectment of the last coin from the trough.

8. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of operating key-levers, means for operating the ejector device therefrom, and means for locking this device against movement in either direction, immediately succeeding the ejectment of the last coin from the trough, said key-levers having different degrees of movement, to cause the ejector device to be moved by each of them to a different extent, to deliver from the machine a different and determinate number of said coins.

9. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of depressible key-levers, means for actuating said ejector device therefrom, and means for checking the movement of the ejector device at the limit of depression of each of said levers.

10. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of depressible key-levers, means for actuating said ejector device therefrom and means for checking the movement of the ejector device at the limit of depression of each of said levers, said means including a notched disk, a spring-controlled lever having a tooth for entering said notches, and a vertically-movable rod engaging said lever, and actuated by the rise and fall of each lever.

11. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of depressible key-levers, means for actuating said ejector device therefrom, and means for checking the movement of this device at the limit of depression of each key-lever, said levers having different degrees of movement, to cause the ejector device to be moved by each of them to a different extent, to deliver from the machine a different and determinate number of said coins.

12. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of depressible devices, for actuating said ejector device, means for checking the movement of the ejector device at the downward limit of each of said depressible devices, one of the latter being common to all the others and depressed by each of the others of the series thereof, and a device coacting with said common depressible device, for operating said means for checking the movement of the ejector device, substantially in the manner set forth.

13. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a spring-actuated feed for the coins, an abutment for the latter, a series of operating key-levers, and means for actuating the ejector device therefrom, said key-levers having different degrees of movement to cause the ejector device to be moved by each of them to a different extent, to deliver from the machine a different and determinate number of said coins.

14. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of depressible key-levers, and

an endless movable sprocket-chain, combined with a depressible beam, and a spring-controlled pawl, for actuating the ejector device from the key-levers, the latter having different degrees of movement, to cause said ejector device to be moved by each of them to a different extent, to deliver from the machine a different and determinate number of said coins.

15. A coin counting and delivery machine, comprising a base having an opening therein, a trough on the base, for containing a quantity of coins, the discharge end of said trough leading to said opening, an ejector device at said discharge end of the trough, a keyboard having vertical slots therein, of different heights, a series of operating key-levers having numbered digits and provided with guides working in said slots, and means for actuating the ejector device from the key-levers, to cause said device to be moved by each of the latter to a different extent, to deliver from the machine a different and determinate number of said coins.

16. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of operating key-levers, and means for actuating said ejector device therefrom, said key-levers having different degrees of movement, to cause the ejector device to be moved by each of them to a different extent, to deliver from the machine a different and determinate number of said coins, and said means being constructed in part of a spring-retracted vertically-movable beam.

17. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of operating key-levers, and means for actuating said ejector device therefrom, said key-levers having different degrees of movement, to cause the ejector device to be moved by each of them to a different extent, to deliver from the machine a different and determinate number of said coins, and said means being constructed in part of a spring-retracted vertically-movable beam, the levers being bent to engage said beam.

18. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of operating key-levers, and means for actuating said ejector device therefrom, this device being constructed of a body portion having arms radially disposed thereto at suitable distances apart.

19. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of operating key-levers, and means for actuating said ejector device therefrom, this device being constructed of a body portion having radially-disposed arms, the edges of said body portion intermediate the arms being bulged or outwardly curved.

20. A coin counting and delivery machine, comprising a trough for containing a quantity of coins, an ejector device at the discharge end thereof, a series of operating key-levers, and means for actuating the ejector device therefrom, said key-levers having different degrees of movement to cause the ejector device to be moved by each of them to a different extent, to deliver from the machine a different and determinate number of coins, and said ejector device being constructed of a body portion having radial arms.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LAWSON SUMNER.

Witnesses:

FREDK. W. TOERGE,

EUGENE W. ILLINS.