No. 843,225. PATENTED FEB. 5, 1907.

J. W. MEAKER.

COIN HOLDING AND DELIVERING MACHINE.

APPLICATION FILED OCT. 16, 1905.

3 SHEETS—SHEET 1.

Fig. 1.

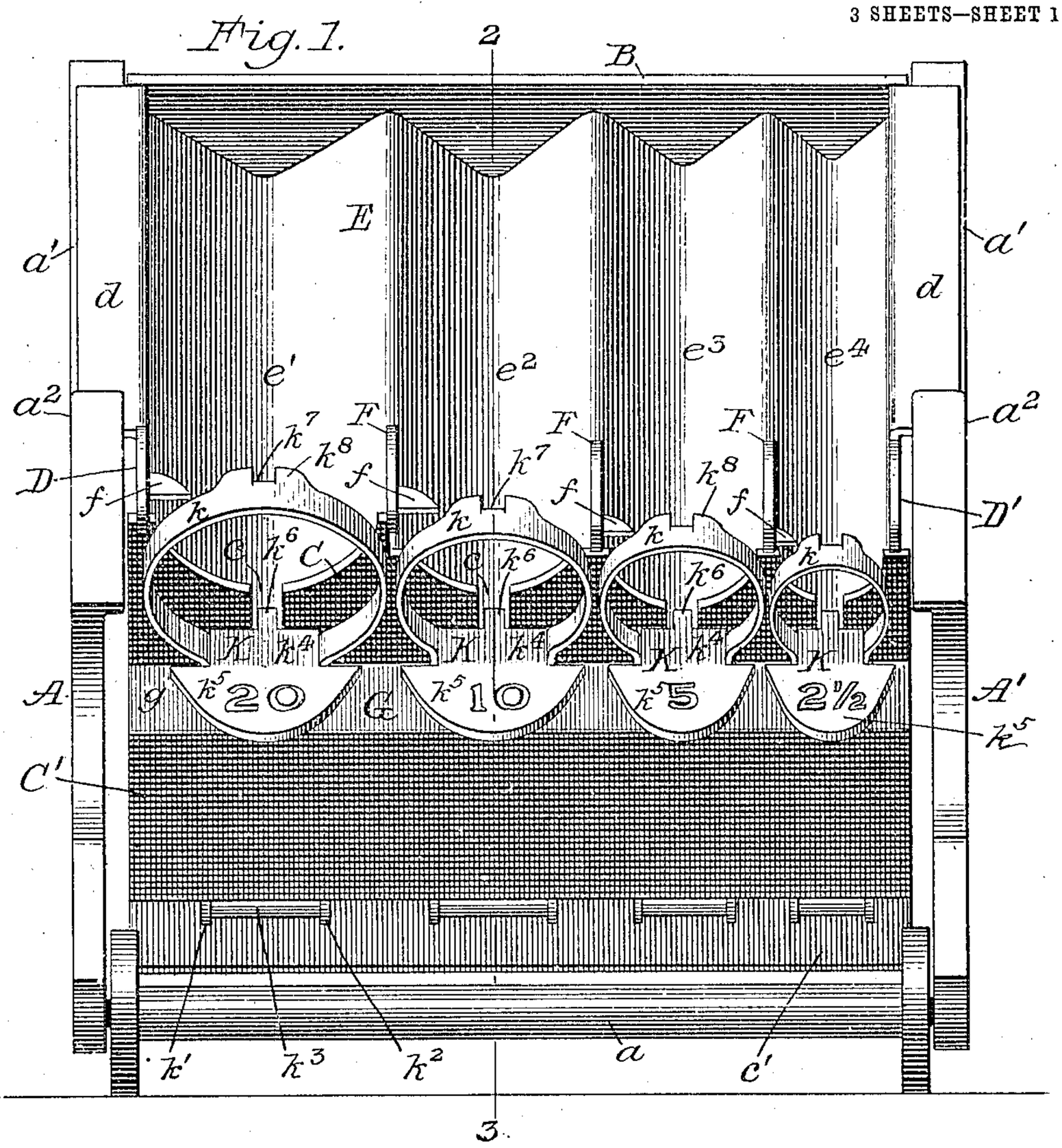
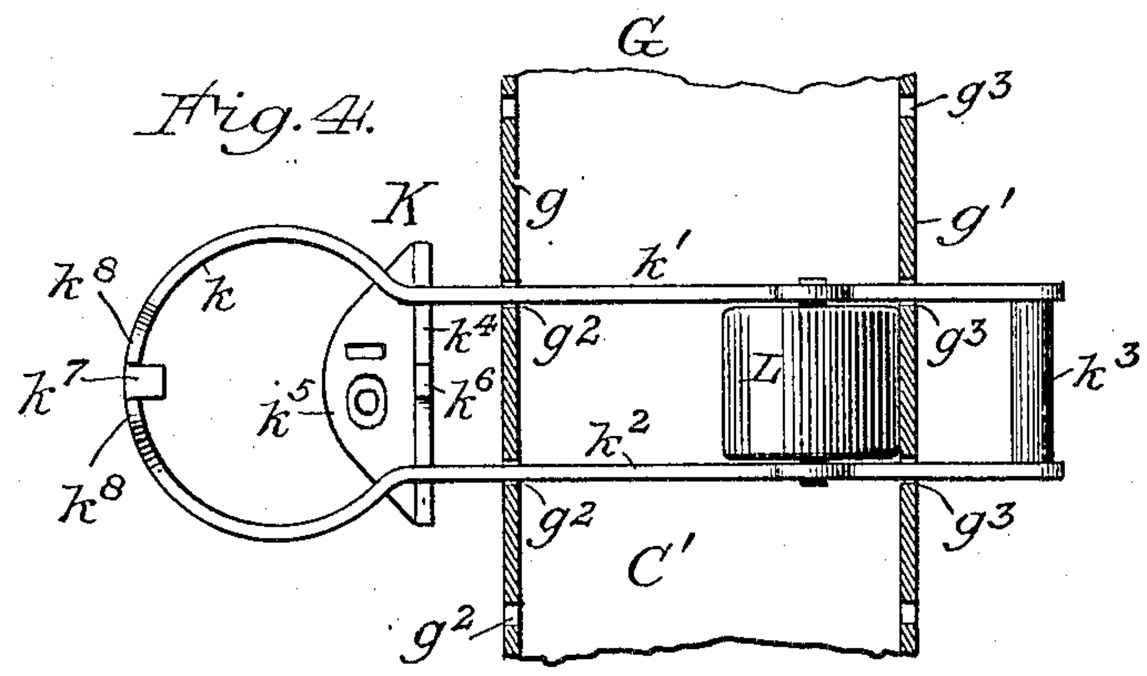


Fig. 4.



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3 SHEETS—SHEET 2.

Fig. 2.

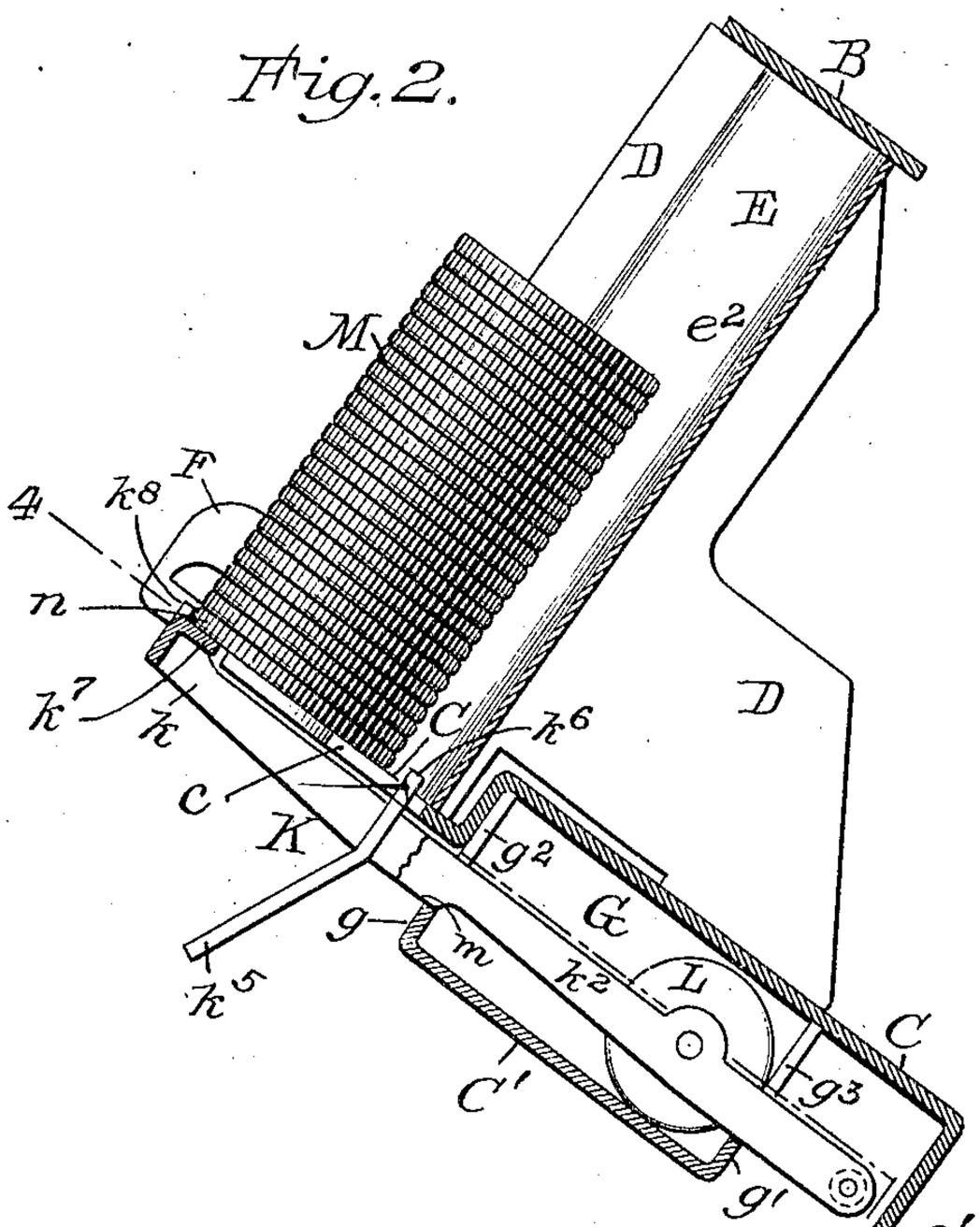
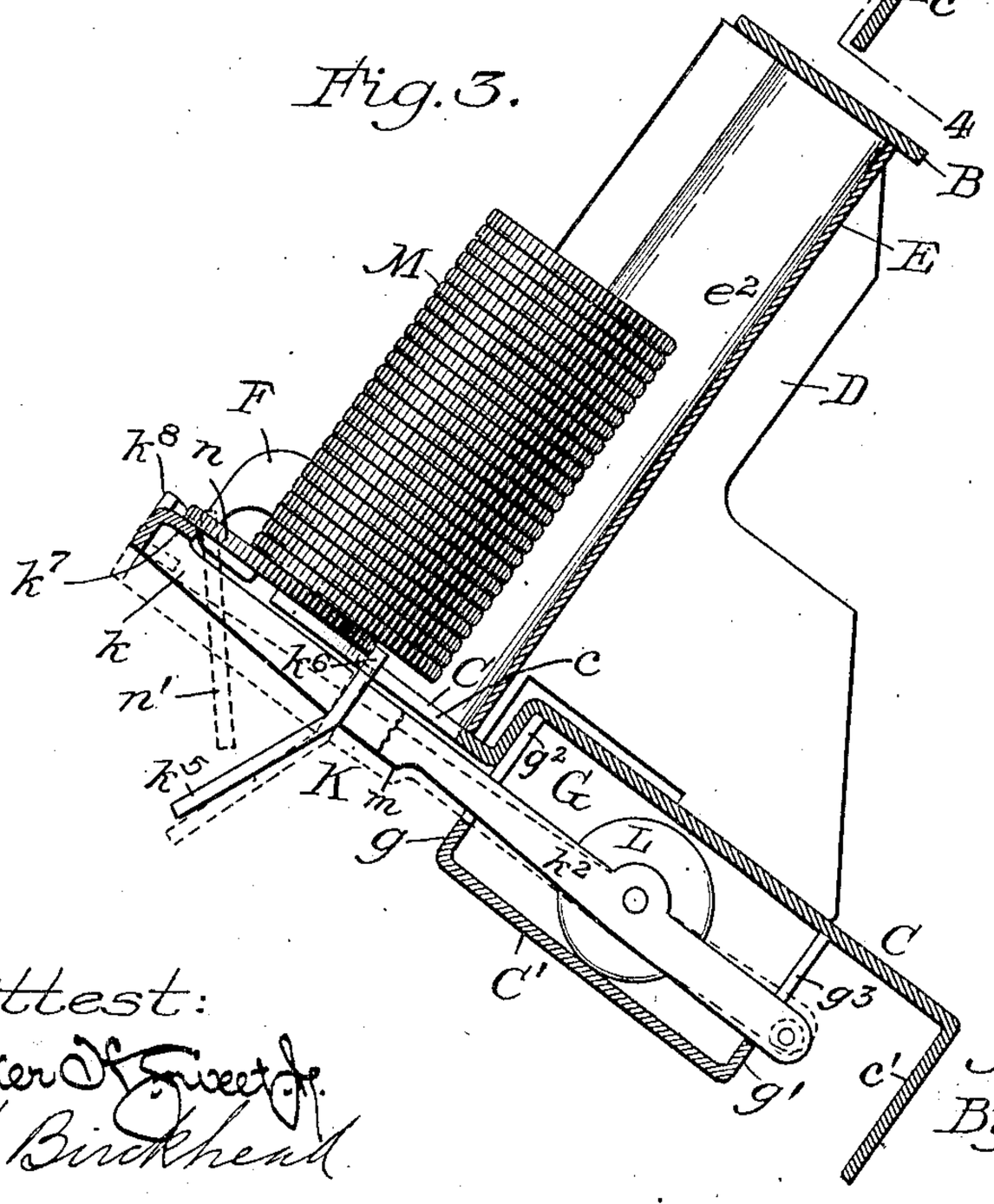


Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 5.

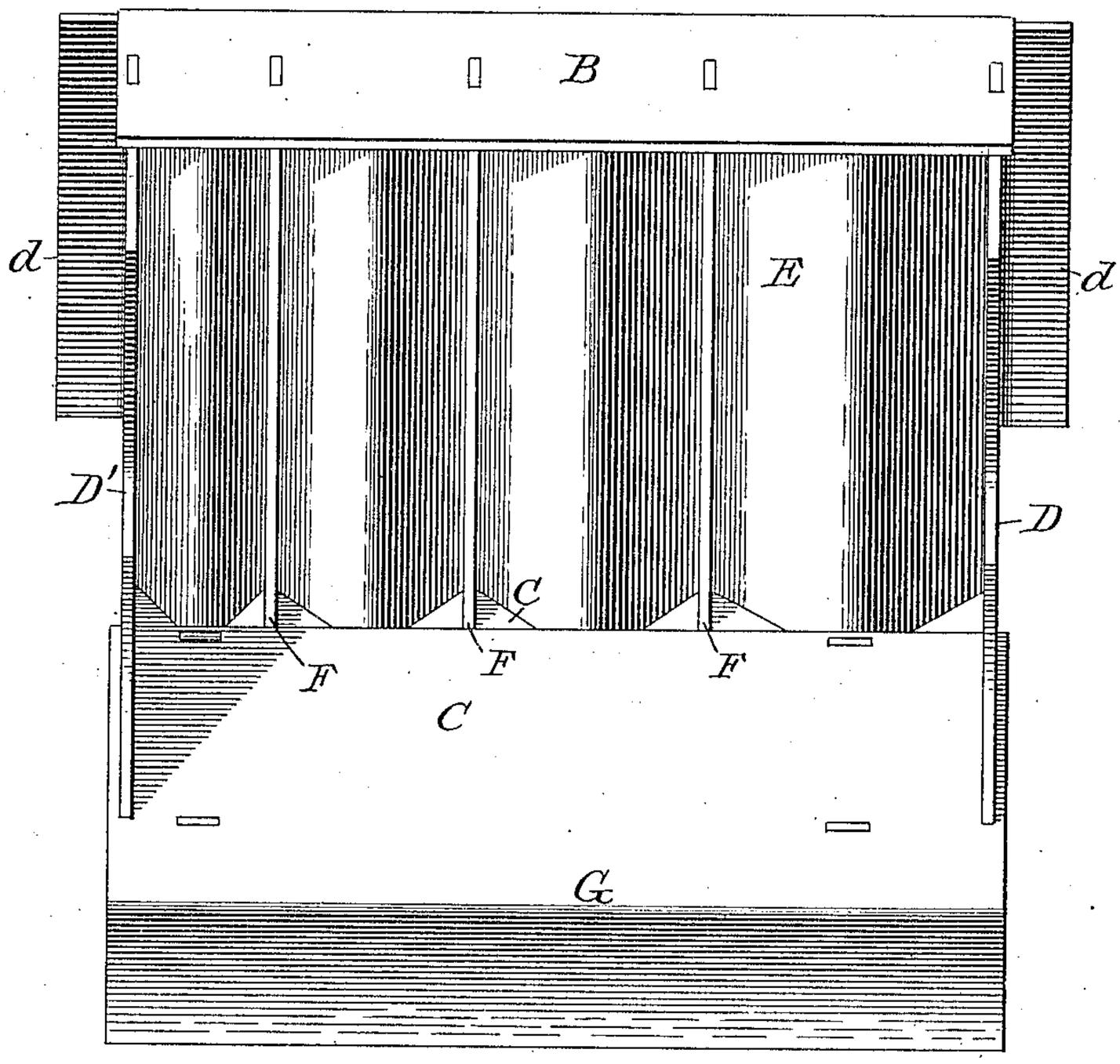
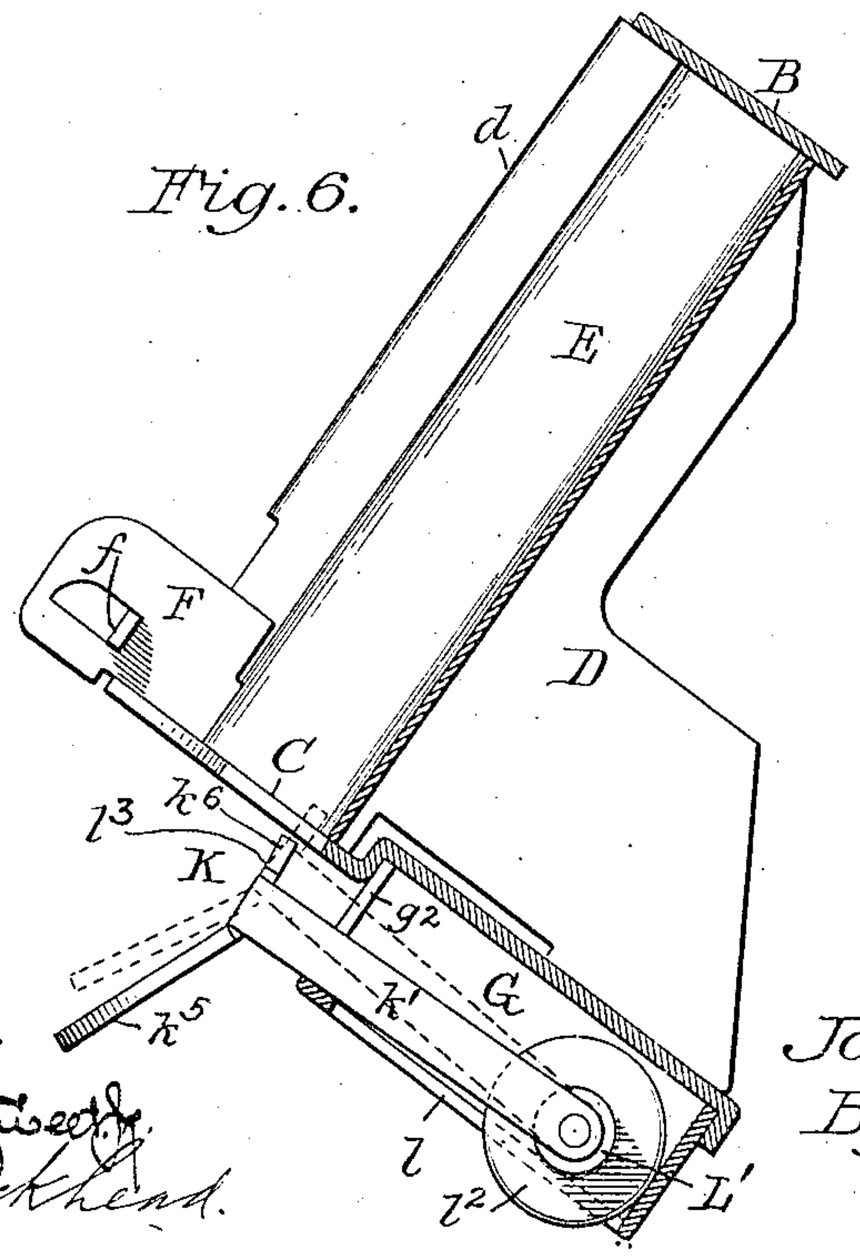


Fig. 6.



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UNITED STATES PATENT OFFICE.

JOHN W. MEAKER, OF DETROIT, MICHIGAN, ASSIGNOR TO MEAKER SALES COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

COIN HOLDING AND DELIVERING MACHINE.

No. 843,225. Specification of Letters Patent. Patented Feb. 5, 1907.

Application filed October 16, 1905. Serial No. 282,992.

To all whom it may concern:

Be it known that I, JOHN W. MEAKER, a citizen of the United States, formerly of Chicago, Illinois, and now residing at Detroit, in the county of Wayne and State of Michigan, have invented new and useful Improvements in Coin Holding and Delivering Machines, of which the following is a specification.

In an application for Letters Patent filed by me on the 12th day of October, 1905, Serial No. 282,426, I show and describe a coin holding and delivering machine having an automatically-retracted coin-ejecting key carrying a coin-ejector which is maintained in engagement with the coin or coins to be ejected by the hand of the operator used in operating the key and which is free to fall beneath the coins remaining in the coin-receptacle when the key is released by the operator to permit it to return to its normal or retracted position.

My present invention relates to a coin-ejecting key or key mechanism having the same above-stated general characteristics as the key or ejecting mechanism disclosed in my aforesaid application for Letters Patent, but differing therefrom both in construction and in mode of operation, the object of the present invention being to simplify the construction and improve the operation of change-making machines, as will hereinafter appear.

The invention consists in the matters hereinafter described, and pointed out in the appended claims.

Referring to the accompanying drawings, which illustrate the preferred embodiments of my invention, Figure 1 is a front elevation of a coin holding and delivering machine designed for holding and delivering United States gold coin. Figs. 2 and 3 are sectional views of the secondary frame of the machine on line 2 3 of Fig. 1, illustrating different positions of the coin-ejecting key. Fig. 4 is a sectional view of the secondary frame of the machine, taken on line 4 4 of Fig. 2. Fig. 5 is a rear elevation of the secondary frame of the machine removed from the main frame; and Fig. 6 is a sectional view corresponding to Fig. 2, illustrating a modified form of the coin-ejecting key.

I have illustrated my invention as embodied in a machine designed for holding and delivering gold coin; but it is to be understood that it may be applied to machines for holding and delivering silver and copper coins—such, for instance, as the machine illustrated in Letters Patent No. 790,218, granted to me May 16, 1905.

In the machine illustrated A and A′ indicate two vertical parallel end plates connected together by two or more rods *a*, (only one of which is illustrated in the drawings,) the said end plates and connecting-rods constituting the main frame of the machine, which affords a support for a detachable secondary frame in which the coin receptacles or grooves are located and in which the coin-ejecting mechanisms are mounted. Said secondary frame comprises a longitudinal top plate B, a longitudinal bottom plate C, end plates D and D′, and a vertically-corrugated plate E. The top and bottom plates B and C extend across the front of the machine between the end plates A and A′ of the main frame with their front margins horizontal and parallel with each other. Both plates B and C are inclined from their front margins downwardly and rearwardly, the front margins of the top plate being located rearwardly of the front margin of the bottom plate. The vertically-corrugated plate E is secured between the top and bottom plates B and C and inclines downwardly and forwardly from its upper to its lower edge. The outwardly-facing grooves in said plate E constitute the coin-holding grooves or receptacles of the machine, the bottoms of which, on which are supported the columns or piles of coins placed in said grooves, being formed by the front marginal part of the bottom plate C. The end plates D and D′ of the secondary frame are secured to the top and bottom plates B and C, and the front margins of said end plates are bent outwardly at right angles to the plates to form flanges *d* on the plates, which flanges rest against the inclined front edges *a′* of the end plates A and A′ of the main frame, said plates A and A′ being provided with shoulders a^2, one on each, for engaging the lower end of the flanges *d d* and supporting the secondary frame, as illustrated and described in my aforesaid application for patent.

The corrugated plate E, as shown in the drawings, is shaped to form four coin-receiving grooves or troughs, which face outwardly

toward the front of the machine and the bottoms of which are formed by the continuous bottom plate C, extending forwardly far enough for the purpose. The several coin grooves or receptacles (lettered in the drawings e' to e^4) are made of varying sizes to receive coins of different sizes and denominations. In the machine shown, which is intended for United States gold coins, the grooves e' to e^4 are respectively appropriated to twenty-dollar, ten-dollar, five-dollar, and two-and-one-half-dollar gold pieces.

Above the forward part of the bottom plate C, between the several coin-receiving grooves in the corrugated plate E, are located vertical partition-plates F, which project forwardly from the angles of said corrugated plate between the grooves and are provided at or near their forward ends with stop lugs or projections f, which project laterally from said plates F toward the center lines of the several grooves. Said lugs or projections f are intended to prevent the delivering at one time from the lower ends of the grooves (by the action of the ejecting or delivery devices to be described) of more than a single coin or other desired number of coins. The stop f, which projects toward the center of the groove e', is formed on a projection of the end plate D. The lower edge of the stops f is located at a distance above the top surface of the bottom plate C a distance equal to the thickness of the coin which the particular groove is intended to hold and deliver, so that only a single coin can pass between said lug and the upper surface of said plate. Where two, three, or more coins are to be ejected at once from a groove, said stop projection f is located a distance above the top surface of the bottom plate equal to the combined thickness of the number of coins which are to be ejected at one time from the groove.

The features thus far described are substantially as described in my aforesaid application for patent.

Now referring to the devices for ejecting the coins from the several grooves or receptacles, these will be alike for all of the coin-receiving grooves and only one will therefore be described in detail. The ejecting device as a whole is termed by me the "coin-ejecting key," and it consists of an automatically-retracted slide carrying an ejector which is adapted to engage the lowermost coin or coins in the receptacle and eject said coins therefrom when the key is pulled forward, said ejector being freely movable by means of said key into and out of the plane of said coin or coins, the said slide being also provided with a finger-piece adapted to be engaged by the finger of the operator's hand used in drawing the key forward and through which the operator maintains the ejector in engagement with the coin or coins being ejected, the organization being such that the ejector will drop beneath the coins remaining in the receptacle when the key is released by the operator for permitting it to return to its normal or retracted position. Any preferred means may be employed for causing the key to automatically return to its retracted position; but I prefer that it be arranged to return by gravity, as hereinafter described.

As illustrated in the drawings, all of the keys are slidably mounted below and at the rear of the coin receptacle or grooves, and for this purpose the bottom plate C of the secondary frame of the machine extends rearwardly from the receptacles sufficiently to afford a support for a plate C', which has its front and rear margins bent upwardly thereto and secured to the under side of the plate C to form a box or box-like structure G, extending across the secondary frame for supporting and partially housing all of the keys of the machine. The box G, allowably closed at its ends, has its top wall formed by the plate C and its bottom and its front and rear walls g and g' formed by the plate C'. Said box is inclined downwardly and rearwardly, as shown, in order that the coin-ejecting keys may be normally held by gravity in a retracted position and also to permit them to automatically return to such position after they have been moved for ejecting a coin.

The main or body portion of the coin-ejecting key K is preferably made from a strip of metal bent into the form illustrated in Fig. 4, the central portion of the metal strip being bent to form the loop or ring k at the forward end of the key and the two ends of the strip being bent back to form the two parallel arms k' and k^2, which are slidably mounted in slots g^2 and g^3, formed in the front and rear walls g and g' of the box G. The rear ends of the arms k' and k^2 project beyond the rear wall of said box and are connected together outside of said box by a rod or bar k^3, which by contact with said rear wall serves to limit the forward movement of the key. The projecting rear ends of all of the keys are covered and protected by the plate C, which is extended rearwardly beyond the box G and bent downwardly, as at c', as clearly shown in Figs. 2 and 3. A plate k^4 is rigidly secured between the arms k' and k^2 in front of the box G, and said plate extends below the main portion of the key to form a finger-piece k^5, by means of which the key is drawn forward. Projecting upwardly from the plate k^4 is an ejector k^6, which engages the lowermost coin or coins in the receptacle and by means of which said coin or coins are pushed forward from the receptacle. The loop or ring k, forming a forward extension of the ejecting-key, is made large enough to permit the coins to pass therethrough into the hand of the operator, and at a point opposite the ejector k^6 said ring or

loop k is provided with an inwardly-projecting ledge or lug k^7, which forms a support for the front marginal edge of the coin being ejected by the key, and at each side of said ledge or lug k^7 the ring k projects above said lug, as at k^8, to engage the front edge of the coin and prevent it from being thrown forward by the key, as will be hereinafter explained.

Mounted between the arms k' and k^2 of the key and journaled therein is a roller L, which rests upon the bottom wall of the box G and serves to limit the rearward movement of the key by contact with the rear wall g' of said box, the inclination of the box being such as to cause the key to normally rest with said roller in contact with said rear wall, as illustrated in Fig. 2. The main purpose of said roller is to reduce the friction between the key and its supports; but it also serves as a weight which assists in returning the key to its retracted position after it has been drawn forward for ejecting a coin.

When the key is in its retracted position, the ejector k^6 projects through a slot c in the bottom plate C behind the lowermost coin or coins of the stack of coins M, Fig. 2, in the coin-receptacle, and the lug k^7 on the forward extension of the key is just beneath the front margin of the lowermost coin. The ejector k^6 projects above the bottom plate C a sufficient distance to engage the coin or coins to be ejected, and its upward movement is limited by the upper edge of the plate k^4, which contacts with the under surface of the bottom plate C at each side of the slot c, as best illustrated in Fig. 1. In the retracted position of the key the ejector k^6 is held in its elevated position by a cam-surface m, formed on the bottom edges of the arms k' and k^2, which normally rest on the bottom walls of the slots g, in which said arms are slidably mounted. At the rear of said cam-surfaces m said arms are slightly reduced in vertical dimensions to permit the forward end of the key to drop when the key is pulled forward, as illustrated in dotted lines in Fig. 3.

To eject a coin, the operator places a finger of his upwardly-open hand behind the finger-piece k^5 and draws the key forward, during which movement the ejector k^6 will be maintained in engagement with the lowermost coin or coins n by the pressure of the operator's finger, and said coin or coins will be carried forward from beneath the stack or pile of coins far enough to be removed from the supporting bottom plate C and drop into the open hand of the operator. When the coin is discharged into the hand, the key is released by the operator and its forward end drops to the position indicated in dotted lines in Fig. 3, permitting the ejector to pass freely beneath the coins remaining in the receptacle in the rearward or return movement of the key.

In the forward movement of the key the entire key is carried upwardly from the position illustrated in Fig. 2 to the position illustrated in Fig. 3, the roller L traveling up the inclined bottom wall of the box G and the key being guided by the slots g^2 and g^3, in which it is slidably mounted. As soon as the key is released by the operator it will return by its own weight to its initial retracted position, and as it approaches the limit of its rearward movement its front end will be raised by the cam-surfaces m on the arms k' and k^2, so that the ejector k^6 will be in proper position to engage the next coin or coins to be ejected.

For preventing the coins from being thrown too far forward or thrown beyond the operator's hand by a quick forward movement of the key I have provided the latter with the ring portion k at its forward end, which is provided with the lug k^7 and the upwardly-projecting portions k^8 k^8, hereinbefore referred to. Said upwardly-projecting portions k^8 k^8 serve as stops for arresting the forward movement of the coin being ejected, and the lug k^7 serves to support the forward marginal edge of the coin until it has been carried beyond the supporting bottom plate C, so that the forward edge of the coin will be upheld while the rear edge drops down, as illustrated in dotted lines at n' in Fig. 3. The coin will thus be compelled to drop close to the finger-piece of the key into the operator's upwardly-open hand and cannot be projected beyond the operator's hand no matter how quick or with what force the key may be operated.

In Fig. 6 I have illustrated a coin-ejecting key embodying the main features of my invention in a modified form. In this instance the key K is provided with a pair of arms k', which are slidably mounted in slots k^2 in the front wall of the box G, but instead of said arms extending through the rear wall of the box, as before described, they extend only far enough in the box to form supports for the roller L', which rests on the bottom wall of the box at each side of a slot l, said slot being occupied by an annular projecting portion l^2 of the roller, which travels in said slot, and thus serves to guide the rear end of the key, and which also serves as a weight, as in the key before described. The front end of the key is provided with an ejector k^6 and a finger-piece k^5 and has a limited vertical movement, its downward movement being limited by the bottoms of the slots g^2, in which the arms k' of the key are mounted. The upward movement of the key is limited by the engagement of a shoulder l^3 with the under surface of the bottom plate C, but said forward end of the key normally rests in its lowest position, in which position the ejector k^6 is below the plane of the lowermost coin in the coin-receptacle, as illustrated in said Fig. 6. When the key is drawn forward for eject-

ing a coin, the pressure of the operator's fingers on the finger-piece k^5 first causes the forward end of the key to be lifted, so that the ejector k^6 will be in proper position to engage and eject the coin, and as the forward movement is continued the ejector will be maintained in engagement with the coin being ejected until the key is released by the operator's hand to permit it to return to its retracted position, and when so released the forward end of the key will drop, so that the ejector may freely pass beneath the coins remaining in the receptacle.

In the key illustrated in Fig. 6 the ejector is raised into the position for engagement with the coin or coins to be ejected by force of the operator's finger and at the beginning of the forward movement of the key, instead of by means of a cam acting at the end of the rear movement of the key, as in the figures previously described, while in both constructions the ejector is maintained in engagement with said coin or coins in their forward movement by the operator's finger.

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

1. The combination with a receptacle for a stack or pile of coins constructed to permit the discharge of one or more coins from the lower end thereof, of a slidably-mounted, automatically-retracted coin-ejecting key carrying an ejector to engage the lowermost coin or coins in the receptacle, said key being vertically movable for carrying the ejector into and out of the plane of said coin or coins to be ejected, said key having a finger-piece adapted to be engaged by a finger of the operator for operating the key and through which the operator sustains the ejector in the plane of the coin or coins being ejected.

2. The combination with a receptacle for a stack or pile of coins constructed to permit the discharge of one or more coins from the lower end thereof, of an automatically-retracted, coin-ejecting key carrying a coin-ejector to engage the lowermost coin or coins in the receptacle, said key being vertically movable for carrying the ejector into or out of the plane of said coin or coins when moved from its retracted position, and a finger-piece adapted to be engaged by a finger of the operator for operating the key and through which the operator sustains the ejector in engagement with the coin or coins being ejected.

3. The combination with a receptacle for a stack or pile of coins constructed to permit the discharge of one or more coins from the lower end thereof, of an automatically-retracted, coin-ejecting key carrying a coin-ejector to engage the lowermost coin or coins in the receptacle, said key being freely movable for carrying the ejector into or out of the plane of said coin or coins when moved from its retracted position, a finger-piece adapted to be engaged by a finger of the operator for operating the key and through which the operator maintains the ejector in engagement with the coin or coins being ejected, and means for automatically raising said key during its rearward movement.

4. The combination with a receptacle for a stack or pile of coins constructed to permit the discharge of one or more coins from the lower end thereof, of an automatically-retracted, coin-ejecting key, slidably mounted at the rear of said receptacle and movable beneath the same, the forward end of said key having a limited vertical movement when the key is moved from its retracted position, a coin-ejector carried by said forward end of the key, and a finger-piece also at the forward end of the key adapted to be engaged by a finger of the operator for operating the key and through which the forward end of the key is maintained by the operator in its elevated position.

5. The combination with a receptacle for a stack or pile of coins constructed to permit the discharge of one or more coins from the lower end thereof, of an upwardly and forwardly inclined guideway at the rear of said receptacle, and a coin-ejecting key slidably mounted in said guideway, said key being normally held in its retracted position by the inclination of said guideway.

6. The combination with a receptacle for a stack or pile of coins constructed to permit the discharge of one or more coins from the lower end thereof, of an upwardly and forwardly inclined guideway at the rear of said receptacle, a coin-ejecting key slidably mounted in said guideway and having its forward end arranged to move beneath said receptacle, said forward end of the key being freely movable toward and from the plane of the lowermost coin in the receptacle when the key is moved from its retracted position, a coin-ejector carried by the forward end of the key, and a finger-piece also carried by the forward end of the key adapted to be engaged by a finger of the operator for operating the key and through which the forward end of the key is maintained by the operator in its elevated position during such forward movement.

7. In a coin holding and delivering machine, the combination of a coin-receptacle having a slotted bottom plate upon which the coin rests, an upwardly and forwardly inclined guideway supported by said bottom plate at the rear of said receptacle, a coin-ejecting key slidably mounted in said guideway and normally held in its retracted position by the inclination of the guideway and having its forward end arranged to move beneath said receptacle, a finger-piece at the forward end of said key adapted to be engaged by a finger of the operator for operating the key, and a coin-ejector carried by

said forward end of the key arranged to project through the slot in said bottom plate.

8. In a coin holding and delivering machine the combination of a receptacle for a stack or pile of coins constructed to permit the discharge of one or more coins from the lower end thereof, of an upwardly and forwardly inclined box at the rear of the receptacle, and a coin-ejecting key slidably mounted in and partially housed by said box, said key being held in its retracted position by the inclination of said box.

9. In a coin holding and delivering machine, the combination of a receptacle for a stack or pile of coins adapted for the discharge of one or more coins from the lower end thereof, said receptacle having a bottom plate upon which the coins rest, an upwardly and forwardly inclined box at the rear of said receptacle supported by a rearwardly-extending portion of said bottom plate, a coin-ejecting key slidably mounted in said box and partially housed thereby, the forward end of said key being provided with a finger-piece and with an ejector adapted to engage the lowermost coin or coins in said receptacle.

10. The combination with a receptacle for a stack or pile of coins adapted for the discharge of one or more coins from the lower end thereof, of a coin-ejecting key having a roller mounted thereon and forming a pivotal support therefor, an upwardly and forwardly inclined guideway in which said roller is mounted, and a coin-ejector and a finger-piece at the forward end of the key.

11. The combination, with a receptacle for a stack or pile of coins adapted for the discharge of one or more coins from the lower end thereof, of an upwardly and forwardly inclined support, a coin-ejecting key having a roller mounted thereon which travels on said support, the forward end of the key being arranged to move below the coin-receptacle and having a coin-ejector and a finger-piece projecting therefrom.

12. The combination with a receptacle for a stack or pile of coins adapted for the forward discharge of one or more coins from the lower end thereof, of an automatically-retracted, coin-ejecting key provided with a finger-piece below the coin-receptacle and adapted to be drawn forward by a finger of the operator's upwardly-open hand applied to said finger-piece, an ejector carried by said key and adapted to engage the lowermost coin or coins in the receptacle and to eject said coin or coins therefrom into the upwardly-open hand of the operator, and means for arresting the forward movement of the coin or coins ejected.

13. The combination with a receptacle for a stack or pile of coins adapted for the forward discharge of one or more coins from the lower end thereof, of an automatically-retracted, coin-ejecting key provided with a finger-piece below the coin-receptacle and adapted to be drawn forward by a finger of the operator's upwardly-open hand applied to said finger-piece, an ejector carried by said key and adapted to engage the lowermost coin or coins in the receptacle and to eject said coin or coins therefrom into the upwardly-open hand of the operator, and a stop carried by said key for arresting the forward movement of the coin or coins ejected.

14. The combination with a receptacle for a stack or pile of coins adapted for the forward discharge of one or more coins from the lower end thereof, of an automatically-retracted, coin-ejecting key provided with a finger-piece below the coin-receptacle and adapted to be drawn forward by a finger of the operator's upwardly-open hand applied to said finger-piece, an ejector carried by said key and adapted to engage the lowermost coin or coins in the receptacle and eject said coins therefrom into the upwardly-open hand of the operator, a stop carried by said key in advance of said coin or coins for arresting the forward movement thereof, and a support for the marginal edge of the lowermost coin being ejected.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHN W. MEAKER.

Witnesses:
WM. P. LANE,
CHRIS. J. SANNER.