No. 790,218. PATENTED MAY 16, 1905.

J. W. MEAKER.

COIN HOLDING AND DELIVERING MACHINE.

APPLICATION FILED JULY 11, 1904.

4 SHEETS—SHEET 1.

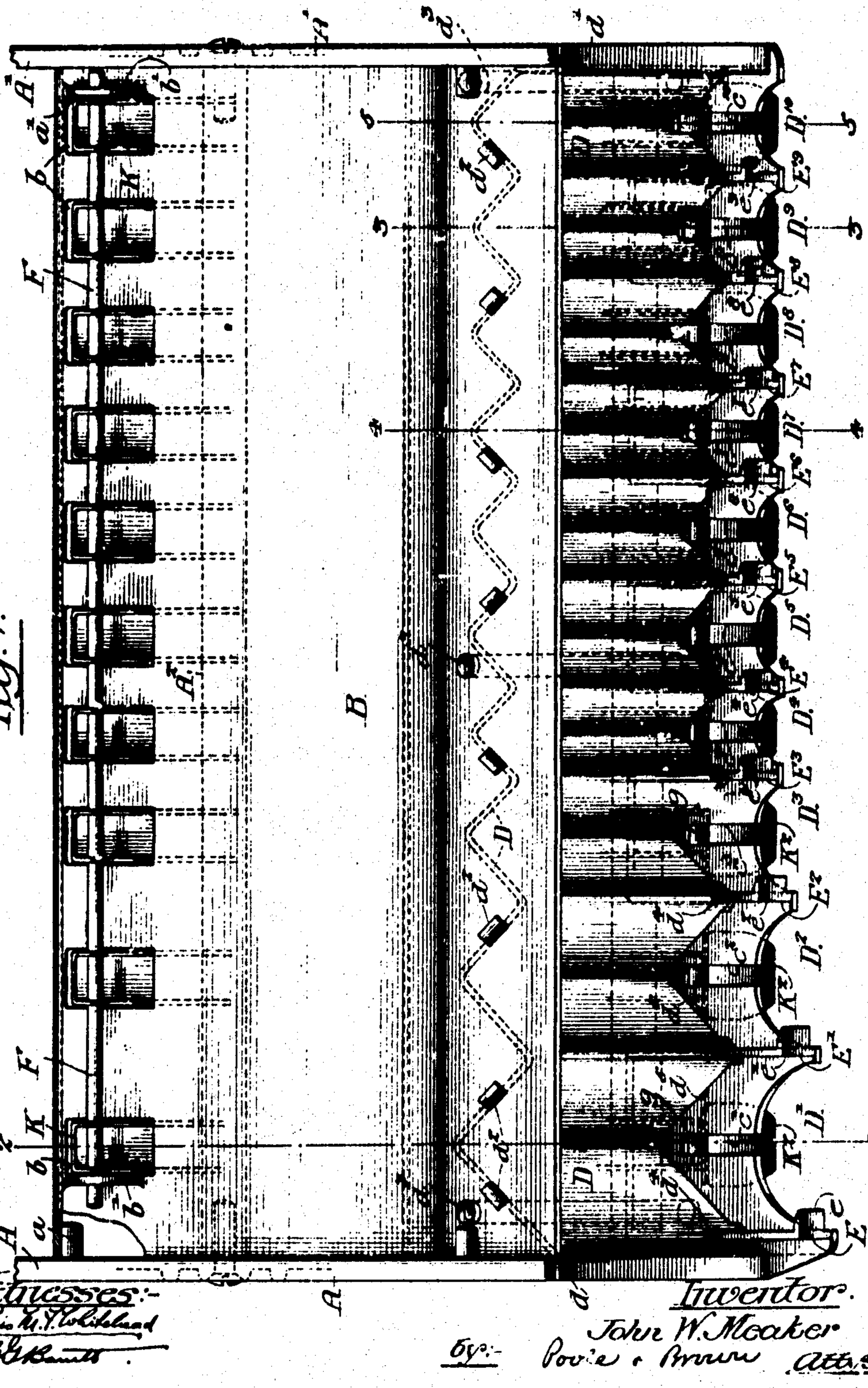

Fig. 1.

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4 SHEETS—SHEET 2.

Fig. 6.

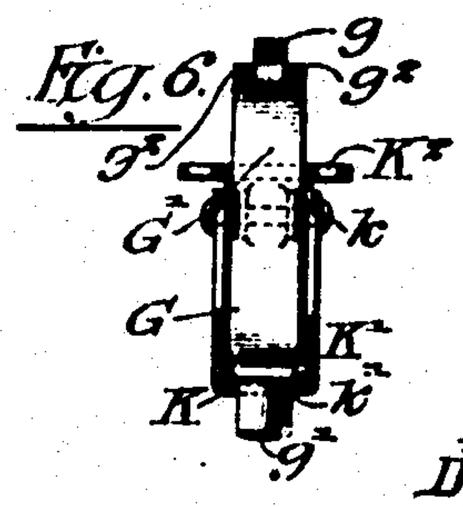


Fig. 2.

Fig. 3.

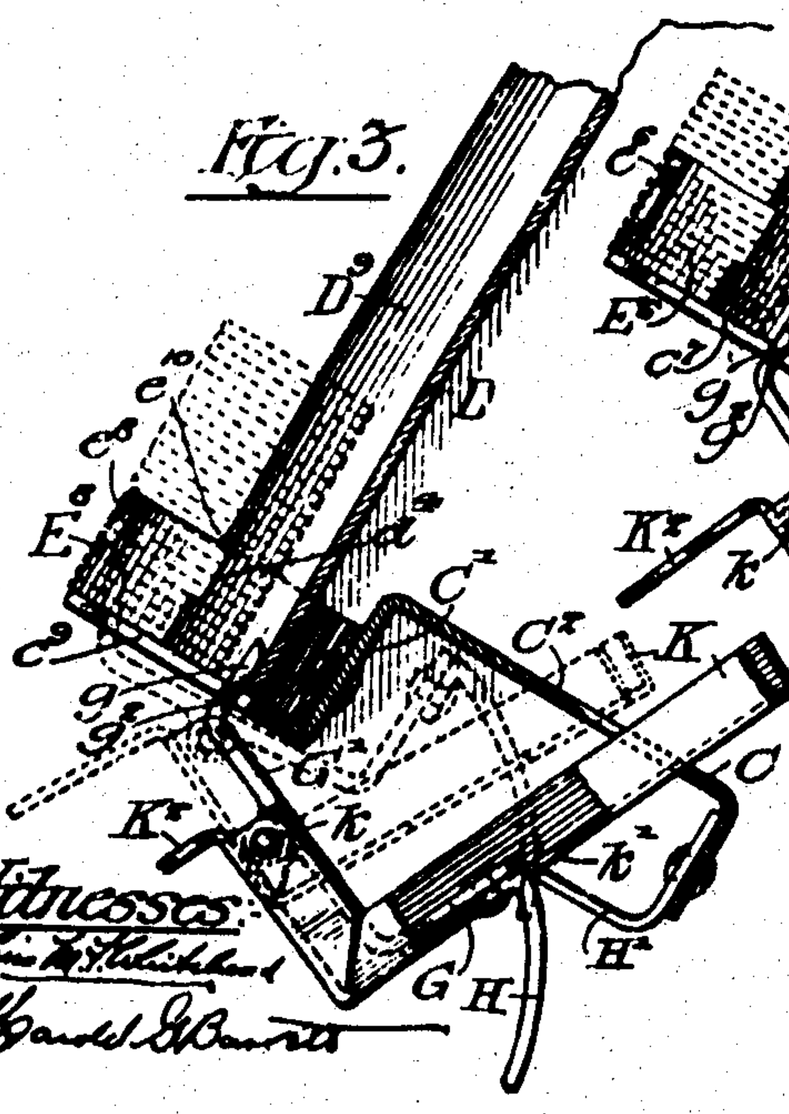


Fig. 4.

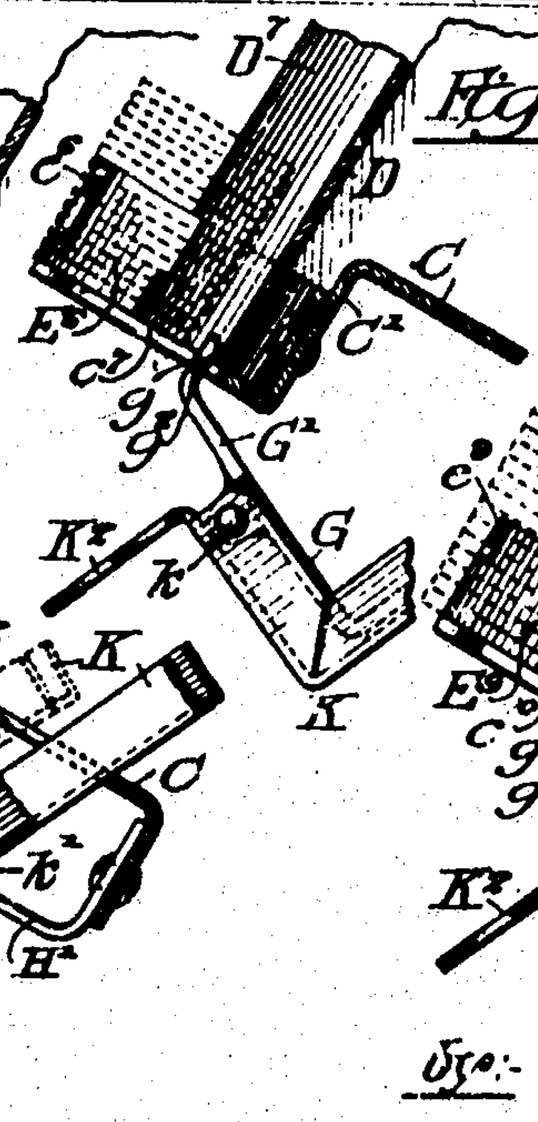
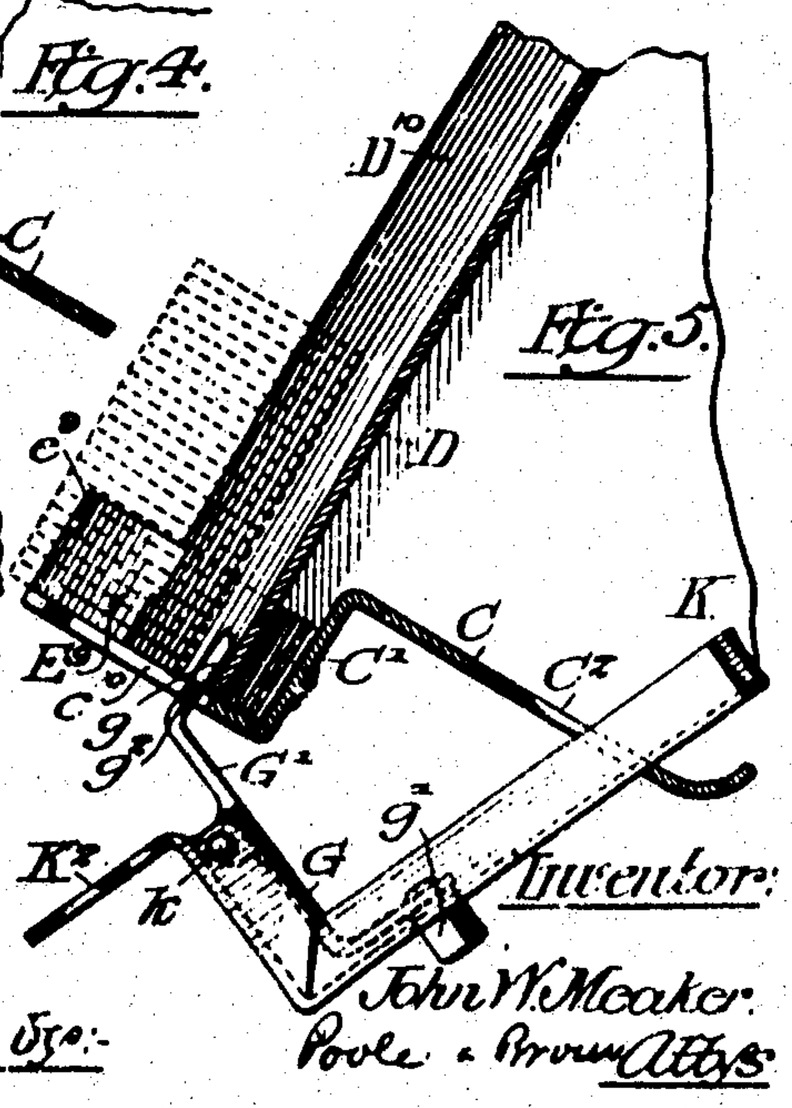


Fig. 5.



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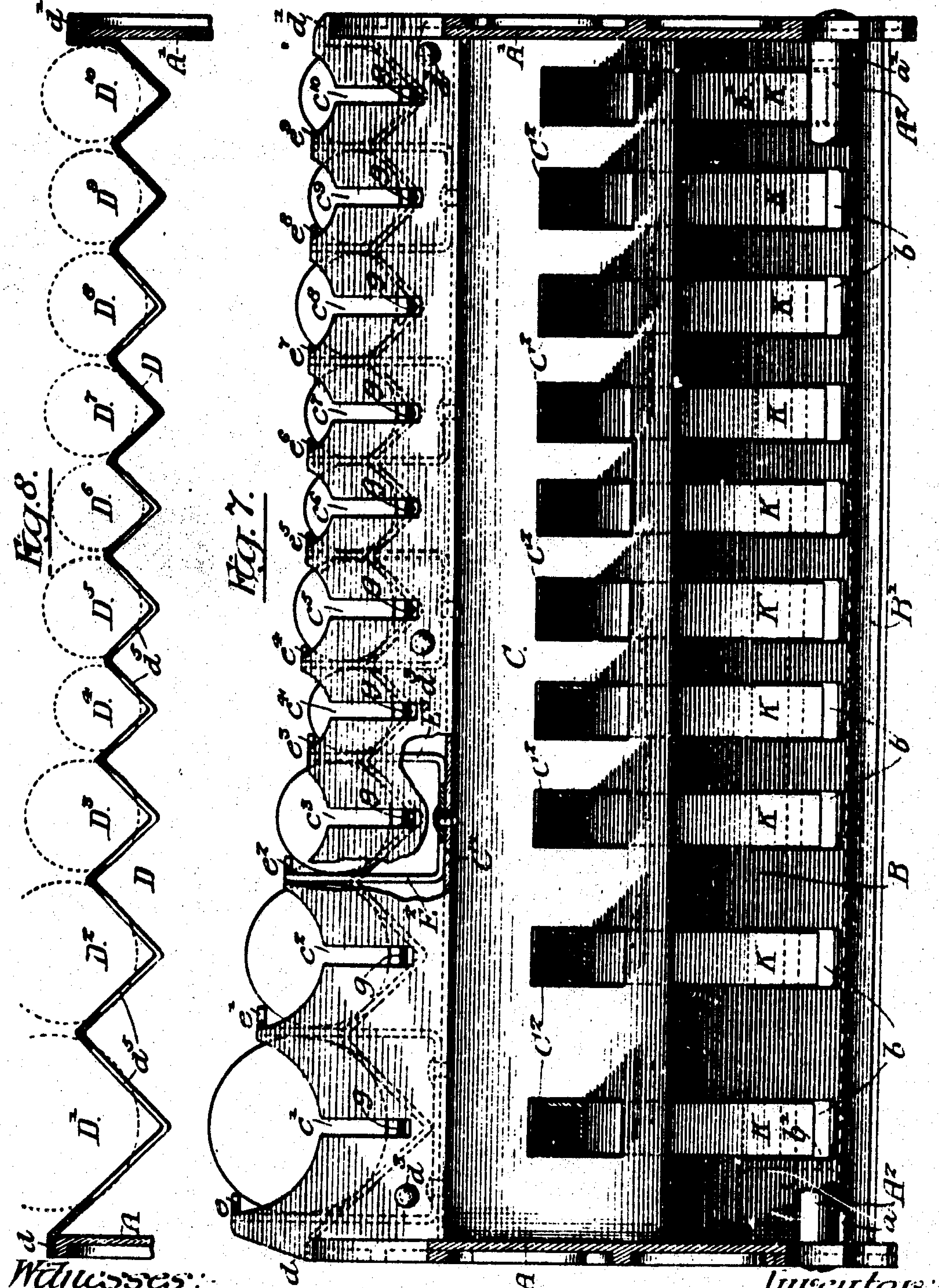
4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

Fig. 9.

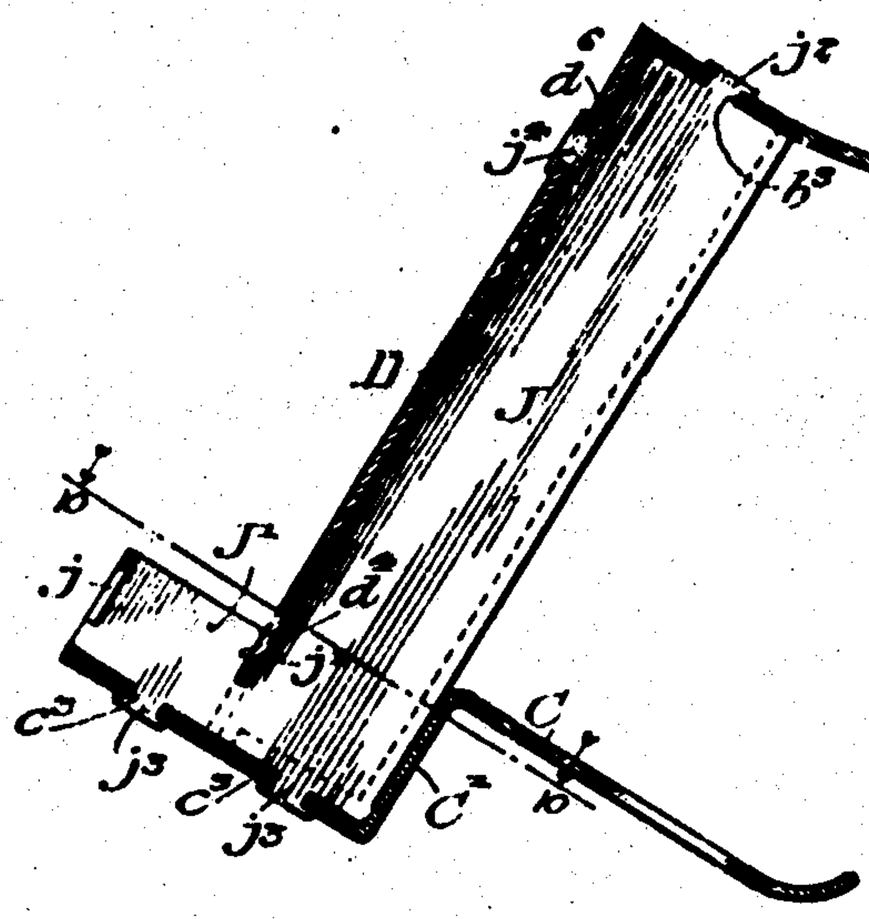


Fig. 10.

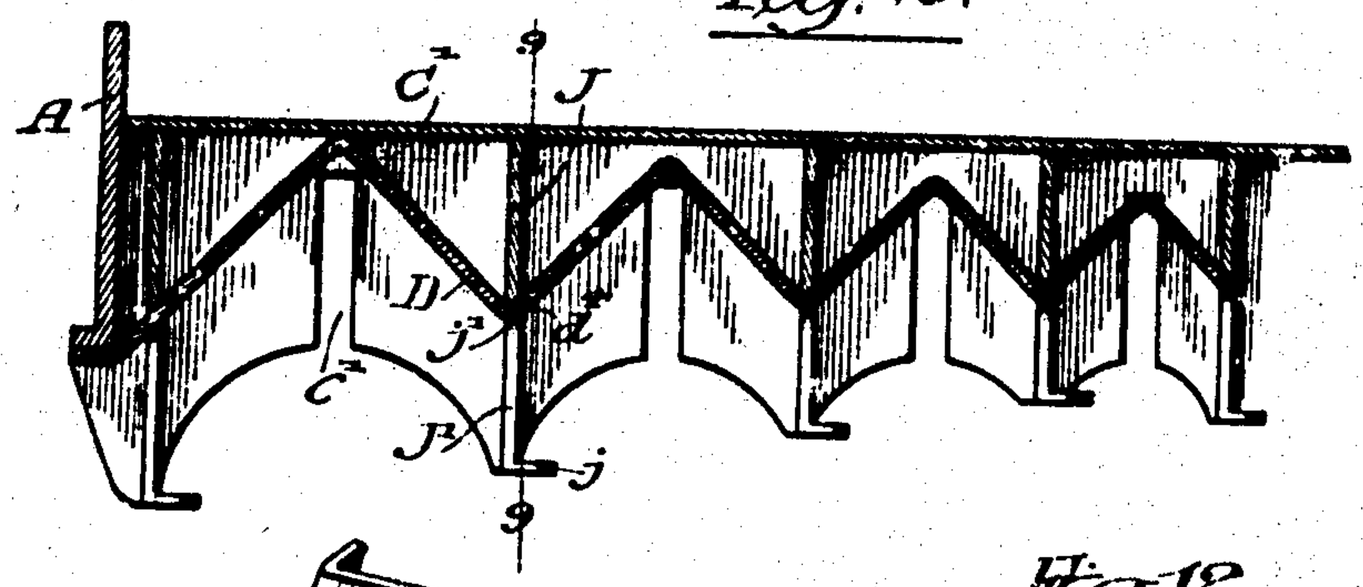


Fig. 11.

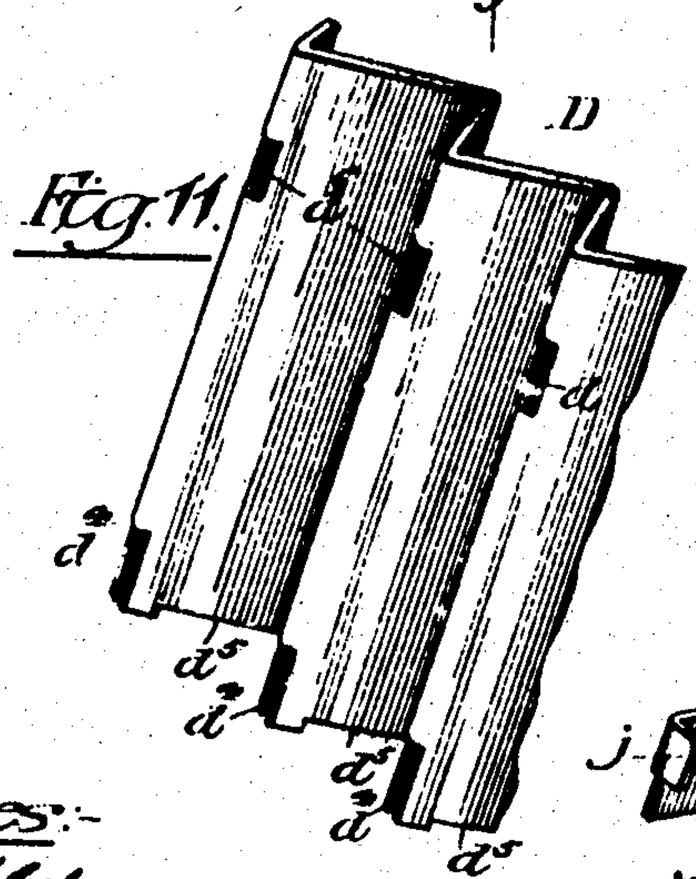
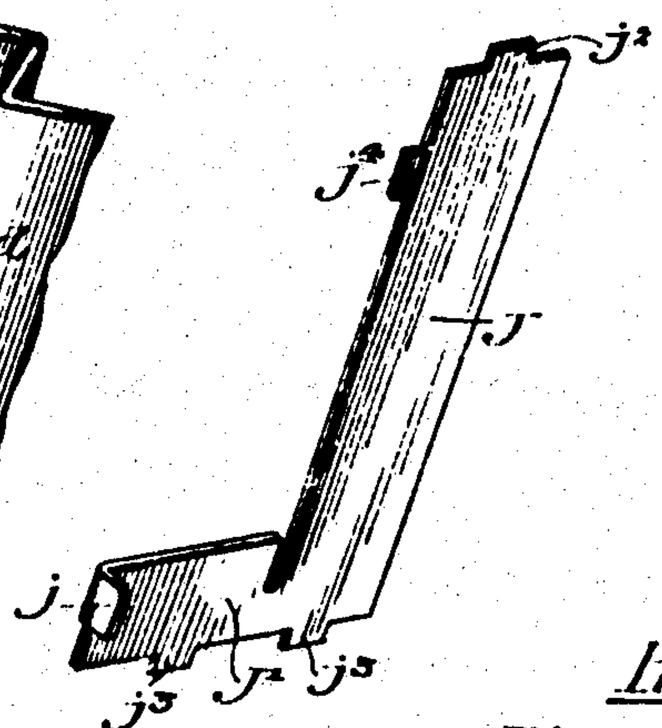


Fig. 12.



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No. 790,218. Patented May 16, 1905.

UNITED STATES PATENT OFFICE.

JOHN W. MEAKER, OF CHICAGO, ILLINOIS, ASSIGNOR TO CHARLES CLARENCE POOLE, TRUSTEE, OF EVANSTON, ILLINOIS.

COIN HOLDING AND DELIVERING MACHINE.

SPECIFICATION forming part of Letters Patent No. 790,218, dated May 16, 1905.

Application filed July 11, 1904. Serial No. 216,148.

To all whom it may concern:

Be it known that I, JOHN W. MEAKER, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Coin Holding and Delivering Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to a change-making machine of the kind having in usual practice a plurality of receptacles adapted to hold stacks or piles of coins and having means for delivering one or more coins from the lower ends of the several coin-piles into the hand of the operator used in working the keys.

The invention concerns the construction of the receptacles, both individually and as a series, the grouping of the receptacles, the coin-delivering mechanism, and the general and the particular construction of the machine and of its parts.

The object of the invention is to improve the construction, the operation, and the usefulness of such machines; and the invention consists in the matters pointed out in the several claims appended to the following description of the particular form or forms of the invention selected for illustration thereof in the accompanying drawings.

In the drawings, Figure 1 is a plan view of a machine embodying the invention. Fig. 2 is a vertical cross-section thereof, taken upon line 2 2 of Fig. 1. Figs. 3, 4, and 5 are detail sections taken upon lines 3 3, 4 4, and 5 5 of Fig. 1. Fig. 6 is a detail section taken upon line 6 6 of Fig. 2. Fig. 7 is a sectional plan view looking upwardly toward the bottom plate of the coin-delivering device, said section being taken upon the section-line 7 7 of Fig. 2. Fig. 8 is a detail section through the lower ends of the coin-receiving grooves, taken upon the line 8 8 of said Fig. 2. Fig. 9 is a sectional view showing the top and bottom plates and corrugated front plate only of the machine illustrated in the foregoing figures, together with a different construction in the means for joining said parts, the section being taken upon line 9 9 of Fig. 10. Fig. 10 is a fragmentary sectional view of the parts shown in Fig. 9, taken upon the section-line 10 10 of said Fig. 9 looking downwardly. Fig. 11 is a perspective view of a part of the corrugated plate shown in Figs. 9 and 10. Fig. 12 is a perspective view of one of the connecting-plates shown in said Figs. 9 and 10.

Describing the particular machine shown in the drawings as one embodiment of my invention, A A' indicate two vertical parallel end frame-plates which are joined by cross-pieces, one of which is indicated by A^2 and which with the cross-pieces constitute the main frame by which the operative parts of the machine are supported.

B designates a top frame-plate and C a bottom frame-plate of a secondary frame for supporting a series of piles of coins of various denominations. Said plates B and C extend across the front of the machine between the end frame-plates A and A', with their front margins horizontal and parallel with each other, the plates being inclined from their front margins downwardly and rearwardly and the front margin of the top plate being set back farther than the front margin of the bottom plate.

D indicates a vertically-corrugated plate which extends across the front of the machine between the said top plate B and bottom plate C, to which is secured the plate D, having its grooves or corrugations extended from its upper to its lower edge and being inclined downwardly and forwardly from its upper to its lower edge. The outwardly-facing grooves in said plate D constitute the coin-holding grooves or receptacles of the machine, the bottoms of which, on which are supported the piles or columns of coins placed in the said grooves, being formed by the front marginal part of the bottom plate C.

The three plates B, C, and D, with their connecting means, constitute a rigid secondary frame which is made separate from the main frame of the machine and which is adapted to be inserted and supported in place

in said main frame. As one convenient means of supporting said secondary frame in the main frame I have shown the end margins of the corrugated plate D as having outwardly-bent flanges *d d'*, Fig. 8, which fit against front-inclined edges of the plates A A' and rest at their lower ends upon suitable shoulders on said plates, the said plates A A' being additionally shown as having inwardly-extending studs *a a'*, Figs. 2 and 7, which project beneath the bottom of the rear edge of the top plate B and in front of a depending flange B' at the rear edge of said plate. The studs *a a'* thus removably hold the secondary frame firmly in place with the flanges *d d'* in contact with the front edges of the end plates A and A' of the main frame. The corrugated plate D is shown as attached to the top plate by having at its upper edge studs d^3 d^3, which extend through apertures in the said top plate, above which they are headed, and the top and bottom plates are shown as connected by means of rods d^4, which are riveted at their ends to the plates. The plate D is shown as held in place with respect to the bottom plate by means hereinafter to be described.

The corrugated plate D, as shown in the drawings, is shaped to form ten coin-receiving grooves or troughs, which face outwardly or toward the front of the machine and the bottoms of which are formed by the continuous bottom plate C, extended forwardly far enough for this purpose. The several coin grooves or receptacles, lettered in the drawings from D' to D^{10}, are made of varying sizes to receive coins of different sizes and denominations. In the machine shown, which is intended for United States coins, the grooves marked D' to D^6 are respectively appropriated to silver dollars, half-dollars, twenty-five-cent pieces, dimes, nickel five-cent pieces, and cents. The four grooves at the right-hand side of the machine, marked D^7 D^8 D^9 D^{10}, are respectively intended for the delivery of two one-cent pieces at once, a single nickel five-cent piece, four cents at once, and four nickels at once. This arrangement of the coin-holding grooves is designed to facilitate change-making with a minimum number of motions by the delivery simultaneously from two or more receptacles of coins adapted to make varying sums and in such manner that the coins from a plurality of receptacles will fall together into the hand of the operator used to operate the coin-ejecting devices, as will hereinafter more fully appear. The arrangement of the grooves for columns of coins and the ejecting capacities of the several ejecting devices may of course be varied.

Above and in contact with the forward part of the bottom plate C, between the several coin-receiving grooves in the plate D, are located vertical partition-plates E to E^9, which project forwardly from the salient angles of said plate D and are provided with stop lugs or projections *e* to e^9, which project laterally from said plates E to E^9 toward the center lines of the several grooves with which said plates E to E^9 are associated and in front of the coin piles in said grooves. Said lugs or projections *e* to e^9 are intended to prevent the delivery at one time from the lower ends of the grooves (by the action of the ejecting or delivery devices hereinafter described) of more than one or other desired number of coins. The lower edges of the stop projections *e* to e^6 and e^7 belonging to these grooves from which it is desired to eject one coin only at a time are located at a distance above the top surface of the bottom plate C equal to or slightly greater than the thickness of the single coins which the several grooves are intended to hold, while the stop projections e^8, e^8, and e^9 are severally located at a distance above the top surfaces of the bottom plate equal to or slightly greater than the combined thickness of the plural number of coins which are to be ejected together from the several receptacles to which they belong. In the particular construction shown said bottom plate C is at the rear of the plate D bent upwardly and then rearwardly, so as to form a rising part C' at about right angles to the front and rear portions of said plate, and the partition-plates E to E^9 extend through notches d^5, formed in the bottom edge of the corrugated plate D at the salient angles between the grooves therein and reach to the said rising part C' of the said bottom plate to which their rear ends are attached. As a preferable construction and as clearly shown in Fig. 7 the plates E to E^9 are connected in pairs by connecting parts which extend lengthwise of the bottom plate, giving a sectionally U form to the parts forming the joined pairs of plates, and said connecting parts are secured to the rising part C' by means of rivets, as shown, or other fastening means. At the intersections of the partition-plates E to E^9 with the corrugated plate D the partition-plates are provided with notches e^{10} in their upper edges to receive the lower marginal corrugated plate above the notches d^4 in the lower edge of the latter, so that the parts have interlocking relation, as seen in Figs. 1 and 2. Such interlocking of the partition-plates with the lower edge of the corrugated plate D serves to hold the latter in place with relation to the bottom plate.

The forward margin of the bottom plate C' is shown as having concave notches opposite the several coin-holding grooves, so that while said bottom plate will afford proper support for the piles of coins resting thereon relatively short outward movements of the lowermost coin of any of the piles will release the same from the plate and permit it to drop.

Now referring to the keys shown for ejecting the coins from the several receptacles these are alike in the case of the several coin-

receiving grooves of the plate D and are lettered alike in the drawings, with certain exceptions, as will be hereinafter mentioned. The main part of each coin-ejecting key consists of a pivoted lever K. Said levers K are arranged in an upwardly and rearwardly inclined position behind the several coin-receptacles and with their lower ends directed forwardly beneath the lower ends of said coin-receptacles, and they are pivotally supported at their upper ends with their pivotal axes horizontal and at a distance rearward from their lower ends, so that their lower ends are adapted to swing downwardly and rearwardly by their own weight or gravity. At their said lower and forward ends the levers K are provided with forwardly-directed parts K', on which are formed or attached downwardly-extending finger-pieces K² for engagement by the fingers of the operator. On the free ends of said levers K are also mounted ejectors G, formed as levers and pivoted between their ends to the levers K by means of transverse horizontal pivot-pins *k*. The ejectors G have upwardly-extending arms G', provided with coin-engaging fingers *g*, which project through slots *c'* to *c*¹⁰, which are formed in the bottom plate C and extend inwardly from the forward edge of said bottom plate to points back of the inner edges of the coins in the superjacent grooves. The said levers G, as here shown, are also provided with weights *g'* on their rear arms, which by their gravity tend to hold the forward arms G' pressed upwardly against the bottom plate C, with the ejecting-fingers *g* thereof extending through the slots in said bottom plate. The levers K have a swinging or oscillatory movement through arcs limited by suitable stops and are so arranged that when at the rearward limit of their movement the fingers *g* on the ejecting-levers G will rest in the rear ends of the slots *c'* to *c*¹⁰ and behind the coins resting on the bottom plate C. When either key is drawn forwardly, the finger *g* on the ejecting-lever thereof will be slid outwardly in the slot in which it runs until it is carried far enough forward to free the bottom coin or number of coins engaged thereby from beneath the coins above it. In such forward movement of the ejecting-lever its coin-ejecting finger *g* will be restrained from rising too far by sliding contact of upwardly-facing shoulders *g*² *g*³ of the lever G with the lower surface of the bottom plate C at either side of the slot therein. As soon as the bottom coin or group of coins of the pile has been ejected by the finger from beneath those above it the pile remaining drops and rests upon the bottom plate, and as the key is allowed to drop backward the ejecting-finger will freely recede beneath the coin-pile which has descended by its weight to the bottom of the groove. Having passed the rear edge of the lowermost coin, the ejector-finger will again rise under the action of the weight *g'* into position to engage said coin or as many coins as it is intended to eject, this being the position of the parts illustrated in Fig. 2.

Referring now to certain illustrated details of construction in the parts above described, the key-levers K are shown as being each made of a strip of sheet metal having its side edges bent upwardly at right angles to its middle portion, so as to form flanges giving to the arm the necessary strength and rigidity. The top plate B near its rear edge is provided with a series of slots or apertures *b*, each adapted for the passage of the upper end of one of the levers K, and the several levers working in these slots *b* are engaged with a single pivot-rod F, located above the top surface of the said top plate B and supported at its ends in lugs *b' b'*, upturned at the outer margins of the end slots *b b*. The said pivot-rod F is shown as passing through bearing-apertures formed in the side flanges of the levers K near the upper ends of the same, giving a desirable breadth of bearing on the pivot, and the side edges of the slots or apertures *b b* serve to confine the upper ends of the levers K from lateral movement on the pivot-rod F. The bottom plate C is also shown as having slots C⁸ C⁸, through which the levers K pass near their lower ends, said slots having parallel sides forming lateral guide-surfaces for the said levers, by which they are held from sidewise movement when they are operated. The ends of said slots C⁸ C⁸ are shown as forming stops to limit the swing of the said actuating-levers.

The pivots *k* for the ejecting-levers G are shown as being inserted through the vertical flanges of the parts K' of said key-levers K and as engaging lugs or ears formed upon the levers G by lateral projections on the levers, which are bent at right angles to the body portions thereof, as clearly seen in Fig. 6. The lower or rear ends of the arms G² of the said ejector-levers G are shown as being deflected rearwardly, and the weights *g'* are shown as secured to the arms and as extending downwardly through longitudinal slots *k'*, formed in the web portions of the levers K.

In the case of the keys which are designed for the discharge of more than one coin the coin-ejecting fingers *g* on the levers G are made of such length that they will rise above the bottom plate C far enough to engage the number of coins desired to be discharged at one time from the coin-grooves. As shown, for instance, in Fig. 4, which is a sectional view of the lower end of the coin-groove D' from which two one-cent pieces are to be discharged at once, said finger *g* is made long enough to engage the rear edges of the two lowermost coins of the pile resting on the bottom plate C, so that when the actuating-lever G is thrown forward two coins will be forced together from beneath the pile resting in the groove, the stop projection *c*⁸ in this case hav-

ing its lower edge at a distance above the bottom plate C suitable to let two coins pass beneath it, as clearly seen in Fig. 4, but to stand in the way of and to hold from outward movement the coin or coins immediately above the two that are to be ejected.

Fig. 3 is a sectional view of the lower end of the groove D^9, which, as here shown, is designed for the delivery of four one-cent pieces at once. In this instance the finger *g* is long enough to engage the four lowermost coins of the pile and the stop projection e^3 has its lower edge at a distance above the top of the plate C equal to or slightly greater than the thickness of a pile of four one-cent coins.

The sectional view Fig. 5 shows the lower part of the coin-groove D^{10}, which, as here shown, is designed for holding nickel five-cent pieces, of which four "nickels" are to be discharged at once. The slots thereof are the same as those shown in Fig. 3, with the exception of the necessary modification in size required for nickels.

In the case of each of the coin-grooves from which only a single coin is to be discharged at one time the lower edge of the corrugated plate D at the parts thereof which form the side walls of the grooves and which are engaged by the lateral margins of the coins is cut away, as clearly seen in Fig. 2, so as to form an opening above the bottom plate C slightly greater in vertical width than the thickness of the coin, the edges of the cut-away parts of the plate constituting downwardly-facing shoulders or ledges d^5, Fig. 2. This is in order that when a single coin only is left on the bottom plate it will slip or be jarred slightly backward, so that its rear edge will be caught beneath the shoulders d^5, and thereby held from rising under the upward pressure of the retreating ejecting-finger, and will thus be held positively in position to be engaged by said finger when the latter is next advanced. Such downwardly-facing shoulders are not necessary in case of the grooves designed to deliver two or more coins at once, because the weight of the plural coins will always be sufficient to prevent them from being lifted by the upward pressure of the coin-ejecting finger in its retreat beneath them.

In Fig. 3 I have shown an additional improvement embracing a downwardly and forwardly curved guide-arm H, which is attached to or forms a continuation of the ejecting-lever G, and which, as said lever is bodily moved, is adapted to slide in contact with a stationary guide-plate H', arranged with its upper edge in position to engage said guide-arm H, the curvature of such arm H being such that as the main key-lever K is swung outward and the shoulders on the ejecting-lever slide along the bottom surface of the plate C the surface of the guide-arm H will always remain in contact with the edge of the guide-plate H'. The purpose of this construction is to avoid possibility of the forward end of the ejecting-lever G being thrown so far downwardly in the backward swing of the key-lever K that the ejecting-finger *g* will not have time to rise into its proper position to engage the lowermost coin or coins when the key is again drawn forward, as in the case when the same key is given two or more movements in rapid succession. The guide-arm H when arranged in contact with the guide-plate H' in the manner described prevents excessive downward movement of the forward end of the ejecting-lever G in its rearward movement, and thereby insures the prompt return of the ejecting-finger to its upward or engaging position when the actuating-lever reaches the rearward limit of its movement.

The advantage gained by employing the four coin-holding grooves D^7, D^8, D^9, and D^{10}, or a similar mixed series, in addition to the series of coin-holding grooves at the left of these, which are designed for delivering single coins of the several denominations to be used, is to bring keys in juxtaposition in various coin-value groups, and to thereby enable change in smaller sums to be delivered from the machine by single or few movements of the hand, while enabling the hand which is used to operate the key-levers for this purpose to receive the coins so discharged, and generally to enable the making of change to be accomplished by a lessened number of movements of the hand.

As hereinbefore stated, the groove D^7, as here shown, is to hold cents, and its accompanying ejector is adapted to discharge two coins at a time. Similarly, the groove D^8 is for nickels, and its ejector is contrived to discharge the coins singly. The groove D^9 is to hold cents and is to discharge four coins at a time, and the groove D^{10} is for nickels and is to discharge four coins at one time. When two cents are desired, they are taken by once operating the key-lever belonging to the groove D^7. If three cents are desired, the keys belonging to the grooves D^6 and D^7 are operated at once. If four cents are desired, the key belonging to the groove D^9 is operated. Five cents may be obtained by operation of the key of either one of the nickel-holding grooves D^5 or D^8. Six cents are obtained by actuating at the same time the adjacent keys belonging to the grooves D^5 and D^6. Seven cents are obtained by simultaneously operating the adjacent keys belonging to the grooves D^7 D^8. Eight cents are obtained by simultaneously operating the keys belonging to the three adjacent grooves D^6, D^7, and D^8. Nine cents are obtained by operating at the same time the keys belonging to the adjacent grooves D^8 D^9. Eleven cents are obtained by operating the keys of the grooves D^4 and D^8, either simultaneously or successively, these keys being near enough together

to permit simultaneous operation, if desired. Twelve cents may be obtained by operating twice both the keys belonging to the grooves D^5 and D^6. To obtain thirteen cents, the four keys belonging to the grooves D^4, D^6, D^7, and D^8 may be operated at the same time to deliver two nickels and three cents, or two key movements may be made, one of the dime-column key and another of the keys belonging to grooves D^6 and D^7 for the delivery of three cents. Fourteen cents may be obtained by twice simultaneously operating the two keys of the grooves D^6 and D^7 or by first discharging a dime and then four cents at once. Fifteen cents will be obtained by operating the keys of the grooves D^4 and D^5 at one motion of the hand. Sixteen cents are obtained by operating at one motion of the hand the three keys belonging to the grooves D^4, D^5, and D^6. Seventeen cents may be conveniently obtained by operating at the same time the two keys belonging to the grooves D^4 D^5 and separately the nearby key of D^7. Nineteen cents will be obtained by only two movements, one of the two keys of grooves D^4 and D^5 and another of the key of groove D^9. Twenty cents are obtained by once operating the key belonging to the four-nickel groove D^{10}, or, of course, by twice operating the key of the dime-groove D^4. Other amounts from twenty cents to twenty-four cents are obtained by combinations like those described, and the same is true when other odd amounts above twenty-five cents are called for, it being obvious that by the use of such or similar additional grooves D^7 to D^{10} larger sums may be obtained in most cases by only two or three motions of the hand, one motion in such cases being to deliver a larger coin, as a silver dollar, half-dollar, or quarter-dollar, and another motion or two motions to deliver the fractional amount in minor coins. The coins delivered by neighboring simultaneously-actuated keys will be received in the same hand by which the keys are operated.

Since expedition with accuracy is a primary object of change-making machines, it is obviously a material advantage in such devices to provide duplicates of some of the smaller-coin receptacles in the series, to provide for the discharge of different numbers of coins from the duplicated receptacles, and to arrange the keys of the added receptacles in such relation as will furnish frequently-desired combinations or value groups of keys in juxtaposition, because by these means fewer key movements are required in most change-making operations. The juxtapositional order of the added receptacles and their keys with respect to each other and to the main denominational series is important, because it is from this that the upturned palm of the same hand by which the operator fingers the keys is enabled to receive the coins from a plurality of receptacles simultaneously discharged by a single movement of the operator's hand, and this advantage is fully secured in practice only by a mixed or irregular order of the duplicated and smaller-coin receptacles, as, for example, herein shown. I believe I am the first to so mix a series of coin-receptacles having unequal discharging capacity in a machine to be manually operated and to deliver the coins into the hand which operates the keys, and consequently the first to obtain this highly-valuable practical result, and inasmuch as such result does not call for the precise irregularity of denominational arrangement and the precise variation in discharging capacity of the duplicate receptacles shown and above described I wish to broadly claim this feature without restriction to the particular arrangement and capacity variation herein illustrated.

An important advantage is gained by the construction described, by which the series of coin-holding receptacles is formed by means of the corrugated plate shaped to form a series of coin-holding grooves, for the reason that such a corrugated plate provides not only an exceedingly cheap and simple means of constructing such a series of coin-holding grooves, but also affords an exceedingly compact construction, being one in which the coin-columns may stand as close to each other as possible without actual contact of the coins in adjacent columns. The machine itself is thus made of narrow width in proportion to the number of coin-receptacles therein, and the coins ejected from two or more adjacent receptacles fall so close together as to be readily received into the hand which operates the keys, either separately or in groups of two or possibly more.

An advantage is also gained by using the vertical partition-plates arranged to project forwardly from the salient angles of the corrugated plate to support the stop projections, which prevent the discharge of more than one or a desired number of coins at once, because such plates occupy spaces not materially wider than those necessarily present between the coin piles or columns to prevent their contact with each other, and proper supporting means for the stop projections is thereby provided in a very simple and compact construction.

An important advantage is also gained in a construction embracing a corrugated plate, a top plate *a*, and bottom plate, all secured together to form a secondary frame by supporting the pivots of the several key-levers from said secondary frame, for the reason that the keys in that case are made a part of the independent secondary structure with the coin-receptacle of which said keys are to perform their function, thereby insuring permanent accuracy of key operation, greatly simplifying the construction of the machine as a whole, and facilitating the assemblage and the separation of its parts.

Another advantage is also gained in point of simplicity and cheapness of construction by providing the top plate with slots to receive the upper ends of the key-levers and hold them in properly-spaced relation on the pivot-rod F and likewise by extending the bottom plate rearwardly and providing therein guide-grooves for the lower ends of the several key-levers.

A further and important advantage is gained in the construction of the key-levers with side flanges, because said flanges not only give stiffness to the levers as a whole, but also afford simple and convenient means for making the pivotal connection of said levers with the machine-frame and with the coin-ejecting levers, such pivotal joints being respectively formed by pivots which pass through the said flanges at the upper and lower ends of the key-levers.

Another important feature of my invention is embodied in the construction shown, by which the keys which are moved by the operator's fingers in effecting the discharge of the coin are retracted by gravity and are so pivoted that their free or moving ends are located beneath and (when retracted) somewhat to the rear of the lower ends of the coin-holding grooves and are adapted to be drawn forwardly and upwardly to effect the discharge of the coin, this feature of the construction having the advantage that when the fingers are placed in position to engage and pull outwardly on the keys the hand is brought into position palm upward to receive the ejected coin or coins. This construction and arrangement of the keys also has the advantage that the coin-ejecting fingers, which are operated through the movement of said keys in performing their coin-discharging function, move in the same general direction as the key-levers, so that said ejecting-fingers may be directly connected with the forwardly-projecting lower ends of the keys, and thereby have the same extent of movement as the latter.

In Figs. 9, 10, 11, and 12 I have shown a construction in means for connecting the top plate B, the bottom plate C, and the corrugated front plate D, which differs from that shown in the hereinbefore-mentioned figures of the drawings and which is designed to afford a very simple and inexpensive way of connecting said parts, as well as for connecting the vertical partition-plates E to E⁵ with the other parts and sustaining them in position thereon.

As shown in Figs. 9 to 11, the plate D is made as hereinbefore described, with the exception that it has no attaching-lugs at its upper edges, but is provided at its forwardly-projecting angles with apertures d^4. Said corrugated plate D and the top and bottom plates B and C are in this instance joined by means of connecting-plates J, arranged in vertical planes extending from front to rear of the machine, (or parallel with the end frame-plates thereof,) their upper ends fitting against the lower surface of the forward part of the top plate and their lower ends against the top surface of the front marginal part of the bottom plate. Said plates J are behind the corrugated front plate D and enter the rear angles of said corrugated plate, being provided with lugs j^4, which pass through the apertures d^4 in the latter, where they are fastened by heading down the lugs at the front of plate D. The vertical plates E to E⁵ are in this instance replaced by similar forward projections J', formed on the lower ends of connecting-plates J, which for convenience are lettered alike in said Figs. 9 to 12, although a series of them are used, varying in size to meet the requirements of the different coin-piles, as are the several plates E to E⁵ hereinbefore described. The forwardly-projecting parts J' are each provided with a laterally-bent lug, (marked j in the drawings,) which correspond in function with the lugs or stop projections e to e^5 heretofore described. At the angle between the front edge of the plate J and the top edge of the projection J' is formed a downwardly-extending notch j^5, which interlocks with a notch d^4, extending upwardly from the lower margin of the plate D at the salient angle of said plate in the same manner as do the corresponding notches or slots d^4. (Shown in Figs. 1 to 5.) At their upper ends the plates J are provided with tongues j^2, which extend through apertures b^3 in the top plate B and are upset or riveted at their upper ends to fasten said plates rigidly to the said top plate. At their lower ends the plates J are provided with similar tongues j^3 j^3, which extend downwardly through apertures c^3 c^3 in the bottom plate C and which are likewise riveted or upset at their ends to secure the plates J rigidly to said bottom plate.

It will be obvious from the construction described that the plates J, provided with holding lugs or tongues which are engaged with the top and bottom plates B and C and the corrugated plate D, serve to rigidly connect said several plates with each other. Moreover, as the forward projections J', bearing the stop projection j, are made integral with the plates J said plates also serve as a means for rigidly supporting said stop projections.

The plates J, with their projections J', may be readily formed by a stamping operation, and the entire structure, consisting of the top plate B, bottom plate C, and corrugated plate D, with the stop projections, (marked j in Figs. 9 to 12,) may be very cheaply made and assembled with small expenditure of time and labor, giving great advantage in point of simplicity and cheapness of construction in the manufacture of the machine.

I claim as my invention

1. The combination, with a receptacle for an automatically-descending pile of coins, adapted for the forward discharge of one or more

coins from the lower end thereof, of a coin-ejecting key comprising a self-retracted member 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, and an ejector vibratorily supported on the self-retracted member above its finger-piece, and adapted to engage and eject the lowermost coin from the receptacle into said upwardly-open hand of the operator and, in the rearward movement of said self-retracted member, to pass freely beneath the remaining pile of coins.

2. The combination, with a receptacle for a gravity-descending pile of coins, adapted for the forward discharge of one or more coins from the lower end thereof, of a coin-ejecting key embracing a gravity-retracted, pivoted lever having a finger-piece below the receptacle and adapted to be drawn forward by the hand of the operator applied to the finger-piece to effect the discharge of the coin, and an ejector movably supported on the lever, said ejector being adapted to engage and eject the lowermost coin in the receptacle and, in the rearward movement of said lever, to pass freely beneath the descended pile of coins.

3. The combination, with a generally upright receptacle for a pile of coins adapted for the forward discharge of one or more coins from the lower end thereof, of a coin-ejecting key comprising a pivoted gravity-retracted lever which extends behind the receptacle from an elevated pivot, said lever being provided with a finger-piece at its lower end beneath the receptacle by which said lever may be drawn forward by the hand of the operator applied thereto for the discharge of the coin into the same open hand that is used to operate the key, and a coin-ejector pivoted to and supported by the lever above the finger-piece of said lever whereby said ejector is adapted to engage and eject the lowermost coin in the receptacle upon the forward movement of the lever and, in the rearward movement of said lever, to pass freely beneath the descended pile of coins

4. The combination, with a coin-holding receptacle provided with a forwardly and rearwardly slotted bottom plate on which rest the coins therein, of coin-ejecting means comprising a main forwardly and rearwardly movable member provided with a pivoted unbalanced ejecting-lever having a coin-ejecting finger adapted to project through the slot in the bottom plate and also having an upwardly-facing shoulder adapted for guiding contact with said bottom plate.

5. The combination, with a coin-holding receptacle provided with a forwardly and rearwardly slotted bottom plate on which rest the coins therein, of coin-ejecting means comprising a main lever pivotally supported at the rear and above the level of the bottom of said receptacle, said main lever having at its forward end a pivoted, unbalanced ejecting-lever provided with a coin-ejecting finger adapted to project through the slot in the bottom plate and having an upwardly-facing shoulder adapted for guiding contact with said bottom plate.

6. The combination, with a coin-holding receptacle provided with a bottom plate on which rest the coins in the receptacle, of coin-ejecting means comprising a main lever pivotally supported at the rear and above the level of the bottom of said receptacle, said main lever having, at its forward end, a finger-piece and a pivoted ejecting-lever weighted at its rear end, provided at its forward end with a coin-ejecting finger and having a curved arm, said bottom plate of the receptacle having a slot through which said finger projects, and a stationary bearing-surface with which the curved arm of the ejecting-lever engages to limit the downward movement of the finger end of said ejecting-lever in the rearward movement of the same.

7. A change-making machine comprising a coin-holding receptacle adapted for the forward discharge of coins from the bottom thereof, of coin-ejecting means embracing a main lever which is pivotally supported at the rear of and above the bottom of the receptacle and which has its lower end directed forwardly beneath the bottom of the receptacle, and provided with a finger-piece, and an ejecting-lever pivoted between its ends to the forwardly-directed part of the main lever and having at its front end a coin-ejecting finger which is normally lifted by the greater weight of its rear arm.

8. The combination with a coin-holding receptacle adapted for the forward discharge of coins from its lower end, of coin-ejecting means comprising a main lever which is pivotally supported at the rear of and above the bottom of the receptacle, and which extends downwardly from its pivot with its lower end directed forwardly below the bottom of the receptacle, and a weighted coin-ejecting lever pivoted to the forwardly-extending part of said main lever, said main lever consisting of a piece of sheet metal having its side edges bent to form stiffening-flanges, and said ejecting-lever being pivoted to the main lever by a pivot-pin extending through the side flanges of the same.

9. The combination with a coin-holding receptacle adapted for the forward discharge of coin from its lower end, of coin-ejecting means comprising a main lever which is pivoted at the rear of and above the bottom of the receptacle, said main lever extending downwardly from its pivot with its lower end directed forwardly below the lower end of the receptacle, and a coin-ejecting lever pivoted to said main lever, said main lever consisting of a piece of sheet metal having its side margins bent to form stiffening-flanges between

which the said actuating-lever is pivoted, said ejecting-lever having a rearwardly-extending arm and the said main lever having a slot between its flanges through which said arm projects.

10. A change-making machine comprising a coin-holding receptacle adapted for the forward discharge of coins from the lower end thereof, the bottom of which is formed by a plate which extends rearwardly from the lower end of the receptacle, and coin-ejecting means embracing a key-lever pivotally supported at a point at the rear of and above the bottom of said receptacle, and which extends downwardly from its pivotal point with its lower end below the level of the lower end of the receptacle, the rearwardly-extending part of said bottom plate being provided with a guide-slot for the key-lever.

11. A change-making machine comprising a top plate, a bottom plate, a corrugated plate which extends between and which is connected with said top and bottom plates to form a series of coin-holding receptacles, and coin-ejecting means embracing a series of main levers pivoted to said top plate and having their lower and forward ends located below the bottom plate, and provided at their said forward ends with finger-pieces.

12. A change-making machine comprising a top plate, a bottom plate and a corrugated plate forming a series of coin-holding grooves, and coin-ejecting means embracing a series of key-levers, the said top plate being extended rearwardly from the top of the corrugated plate and being provided with a series of slots for the passage of the upper ends of the said key-levers and a pivot-rod located above said top plate and engaging the upper ends of said levers.

13. A change-making machine comprising a corrugated plate shaped to form a series of grooves, a bottom plate on which the coins rest and a series of parallel, transversely-arranged partition-plates projecting forwardly from the salient angles of the corrugated plate and provided with laterally-projecting lugs at a distance above the bottom plate and constituting coin-stops.

14. A change-making machine comprising a corrugated plate adapted to form a series of coin-holding grooves, a bottom plate which forms a support for the coins in said grooves, and a series of vertical plates which project forwardly from the corrugated plate and are provided with laterally-projecting lugs forming coin-steps; the bottom edge of the corrugated plate and the top edges of the partition-plates being provided with notches to afford interfitting connection of said plates.

15. The combination with a coin-holding receptacle adapted for the forward discharge of coins from the bottom thereof, and provided with a slot in its bottom wall, of a forwardly and rearwardly movable member provided with an ejecting-finger adapted to move in said slot, said receptacle having above the bottom thereof a downwardly-facing ledge or shoulder adapted to hold from upward movement the rear edge of a coin resting on said bottom wall.

16. A change-making machine comprising a main frame consisting of end plates and means rigidly connecting the same, a corrugated plate forming a series of coin-holding receptacles, top and bottom plates secured to said corrugated plate and constituting with said top and bottom plates a rigid secondary frame or structure separate from the main frame, and means on the said main and secondary frames adapted for interlocking engagement, permitting the said secondary frame to be inserted as a whole into and removed from the said main frame.

17. A change-making machine comprising a main frame consisting of end plates and means rigidly connecting the same, a corrugated plate forming a series of coin-holding receptacles, top and bottom plates secured to said corrugated plate and constituting with said top and bottom plates a rigid secondary frame or structure separate from the main frame, key-levers pivoted to said secondary frame, and means on the said main and secondary frames adapted for interlocking engagement, permitting the said secondary frame to be inserted as a whole into and removed from the said main frame.

18. A change-making machine comprising top and bottom plates and an intermediate corrugated plate shaped to form a series of grooves and a series of parallel, transversely-arranged vertical plates projecting forwardly from the salient angles of the corrugated plate and provided with laterally-projecting lugs at a distance above the bottom plate to constitute coin-stops, the several parts here enumerated being rigidly connected together to form a secondary frame adapted for support in a separate main frame of a money-changing machine.

19. A coin-holding device comprising a top plate, a bottom plate, a corrugated plate shaped to form a series of coin-holding grooves, and means for connecting said parts consisting of strips extending from the top to the bottom plate behind the corrugated plate and provided at their top and bottom ends with lugs inserted through and riveted in apertures in said top and bottom plates.

20. A change-making machine comprising a top plate, a bottom plate, a corrugated plate shaped to form a series of coin-holding grooves, and means for connecting said parts consisting of strips extending from the top to the bottom plate behind the corrugated plate and provided at their top and bottom ends with lugs inserted through and riveted in apertures in said top and bottom plates, said connecting-strips being provided at their lower ends

with integral, forwardly-extending parts having lateral projections forming coin-stops.

21. In a change-making machine having receptacles for stacks of coins of the various denominations to be used, and having a separate key for each receptacle, said keys being arranged in a row and in position to deliver the coins from the receptacle into the upwardly-open hand used in operating them, additional receptacles and keys for denominational duplicates arranged sufficiently close together to permit of a simultaneous discharge of coins from adjacent receptacles into the hand of the operator, said additional receptacles having unequal discharging capacity, whereby coins may be simultaneously delivered into the operating-hand equal to varying divisions of the larger denominations or to multiples of the lowest.

22. In a change-making machine having receptacles for stacks of coins of the various denominations to be used and having a separate delivery-key for each receptacle said keys being arranged in a row and in position to deliver the coins from the receptacles into the upwardly-open hand used in operating them — a series of additional coin-receptacles and keys for denominational duplicates of some of those of the main series and arranged in line with the latter, and in such close relation to each other as to permit of a simultaneous discharge into the hand of the operator of coins from adjacent receptacles, at least one of said additional receptacles being adapted to simultaneously discharge a plurality of coins, and said receptacles being in part arranged in irregular denominational order, whereby additional value groups of adjacent receptacle-keys are formed, capable of simultaneous operation by reason of their juxtaposition, and the number of key movements required in general change-making is materially reduced.

23. In a change-making machine having receptacles for stacks of coins of the various denominations to be used, and a separate key for delivering from each receptacle — the keys being arranged in a row and in position to deliver the coins into the upwardly-open hand used in operating them — said series of coin-receptacles containing denominational duplicates at least two of which are adapted to discharge a plurality of coins and being in part arranged in irregular denominational order, and in such close relation to each other as to permit of a simultaneous discharge of coins from adjacent receptacles into the hand of the operator, whereby the number of key movements required in general change-making is materially reduced.

24. In a change-making machine having a series of coin-holding receptacles adapted for coins of various denominations to be used, each provided with a hand-operated ejecting-key adapted to deliver a single coin, an additional number of receptacles one of which is provided with an ejecting-key adapted to deliver two coins at a time, another with an ejecting-key adapted to deliver one coin at a time, and a third with an ejecting-key adapted to deliver four coins at a time — said keys being arranged in a row and in position to deliver the coins into the upwardly-open hand used in operating them and in such close relation to each other as to permit of a simultaneous discharge of coins from adjacent receptacles into the hand of the operator — whereby various value groups of adjacent receptacle-keys are formed, capable of simultaneous operation by reason of their near relation to each other and the number of key movements required in general change-making is materially reduced.

In testimony that I claim the foregoing as my invention I affix my signature, in the presence of two witnesses, this 7th day of July, A. D. 1904.

JOHN W. MEAKER.

Witnesses:
C. CLARENCE POOLE,
GERTRUDE BRYCE.