

No. 675,233.

Patented May 28, 1901.

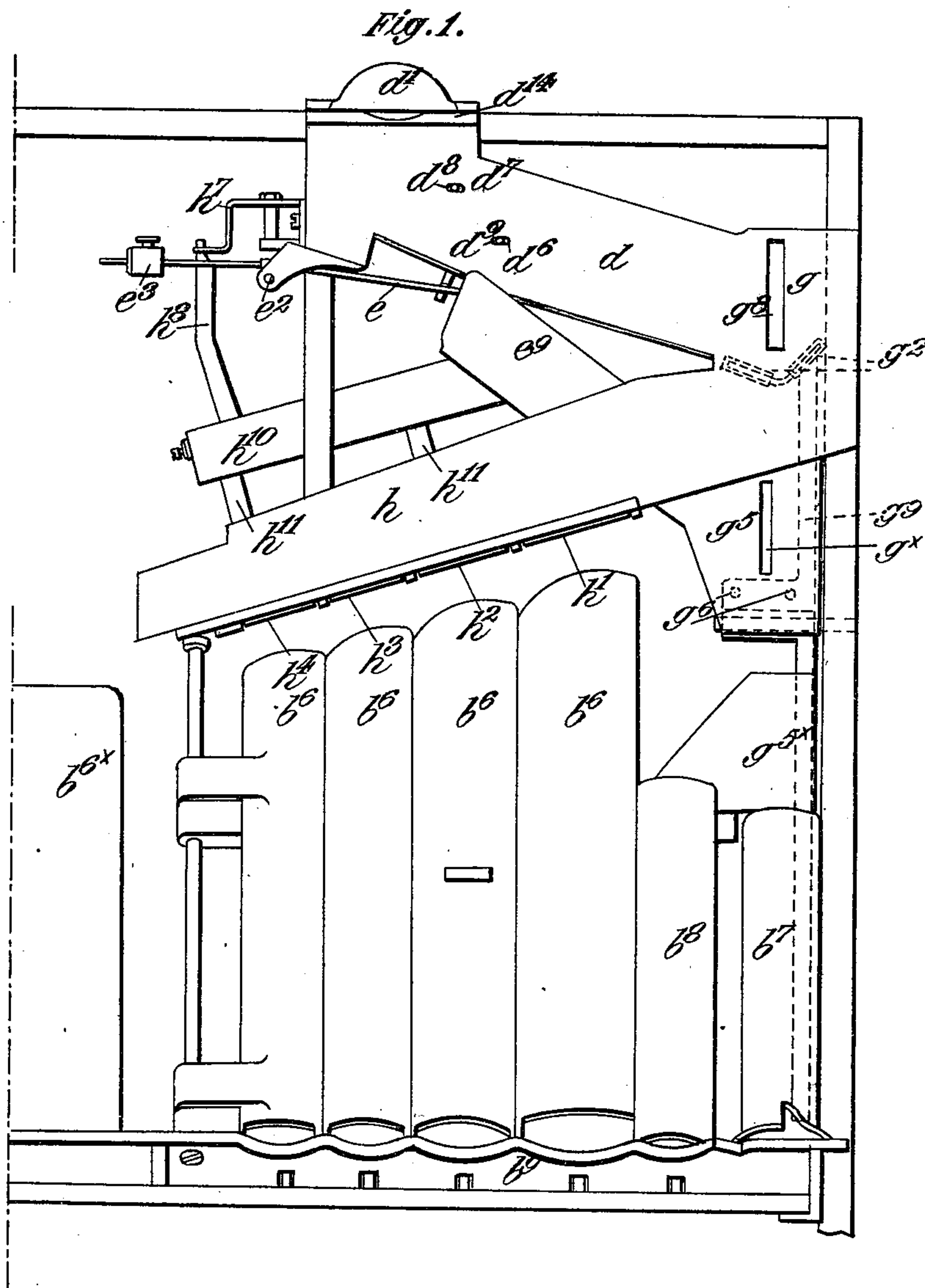
E. MORIARTY.

MACHINE FOR RECEIVING, DELIVERING, SORTING, AND REGISTERING COINS.

(No Model.)

(Application filed Dec. 27, 1897.)

6 Sheets—Sheet 1.



Witnesses
J. E. Parker.
R. E. Robinson

Inventor
Edward Moriarty
By James L. Norris.
Atty.

No. 675,233.

Patented May 28, 1901.

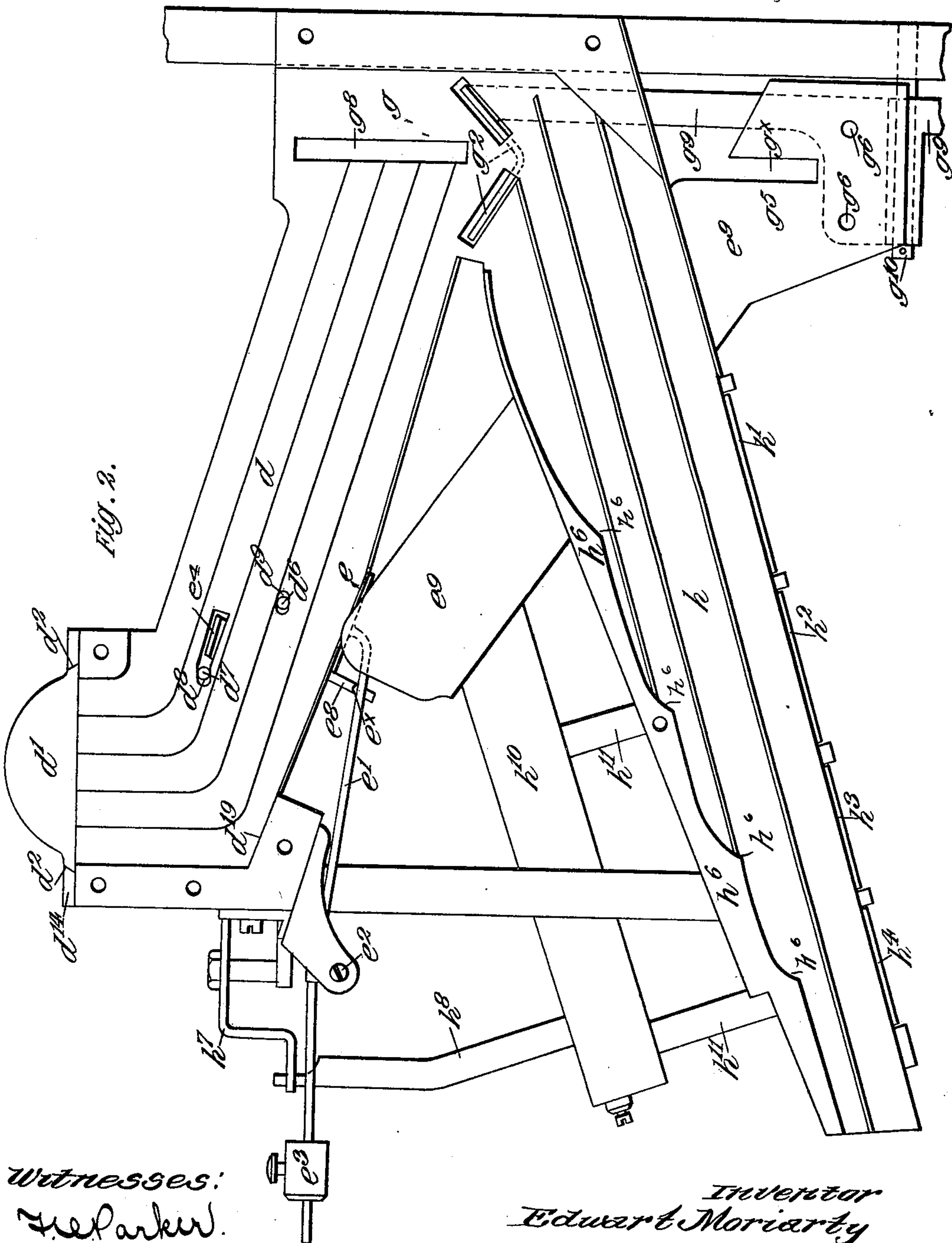
E. MORIARTY.

MACHINE FOR RECEIVING, DELIVERING, SORTING, AND REGISTERING COINS.

(No Model.)

(Application filed Dec. 27, 1897.)

6 Sheets—Sheet 2.



Witnesses:
J. E. Parker.
R. E. Robinson.

Inventor
Edward Moriarty
By James L. Norris
Atty.

No. 675,233.

Patented May 28, 1901.

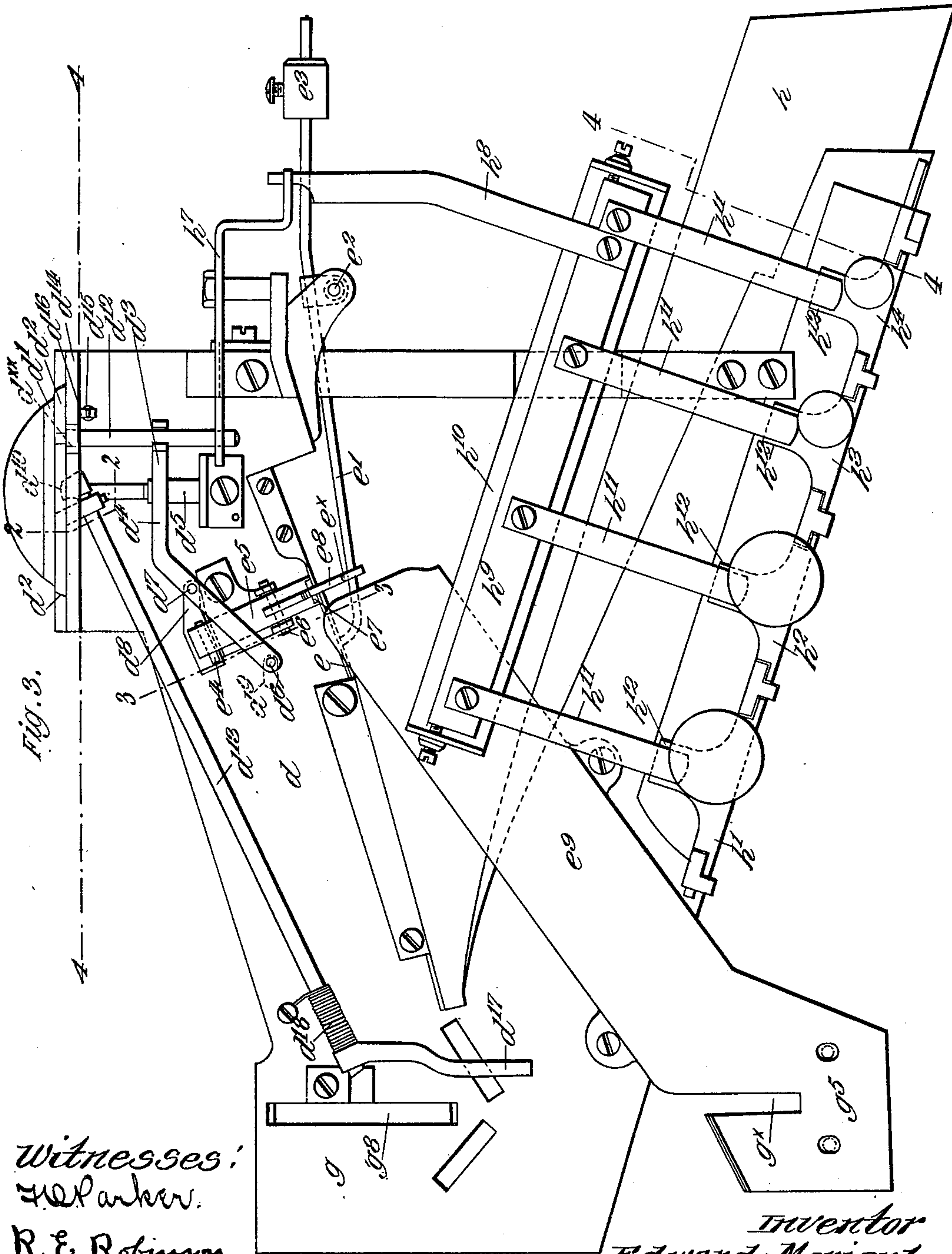
E. MORIARTY.

MACHINE FOR RECEIVING, DELIVERING, SORTING, AND REGISTERING COINS.

(Application filed Dec. 27, 1897.)

(No Model.)

6 Sheets—Sheet 3.



Witnesses:
J. Parker.
R. E. Robinson

Inventor
Edward Moriarty
By James L. Norris.
Atty.

No. 675,233.

Patented May 28, 1901.

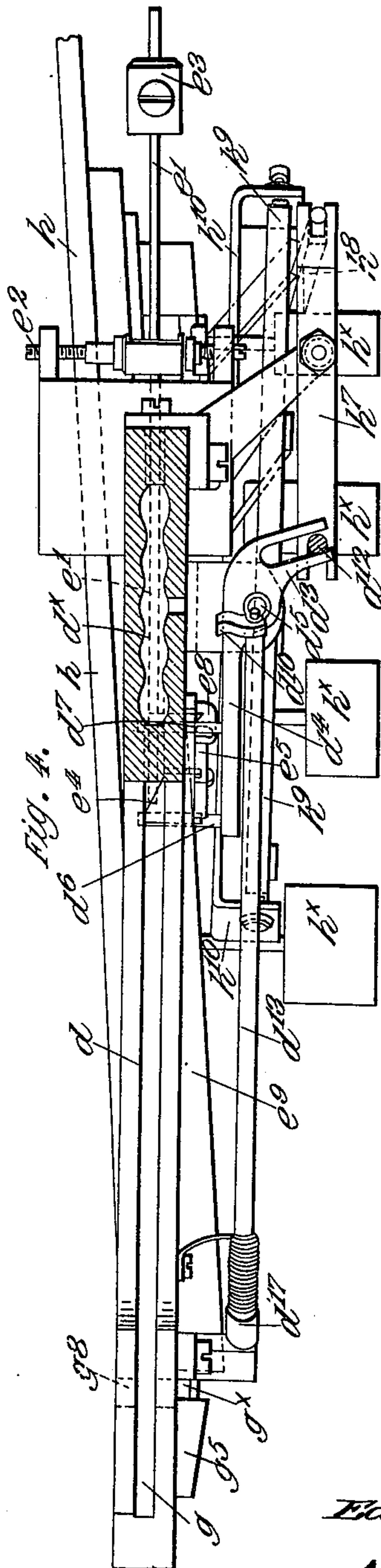
E. MORIARTY.

MACHINE FOR RECEIVING, DELIVERING, SORTING, AND REGISTERING COINS.

(Application filed Dec. 27, 1897.)

(No Model.)

6 Sheets—Sheet 4.



Witnesses:
H. Parker.
R. E. Robinson.

Inventor
Edward Moriarty.

By James L. Norrie
Atty.

No. 675,233.

Patented May 28, 1901.

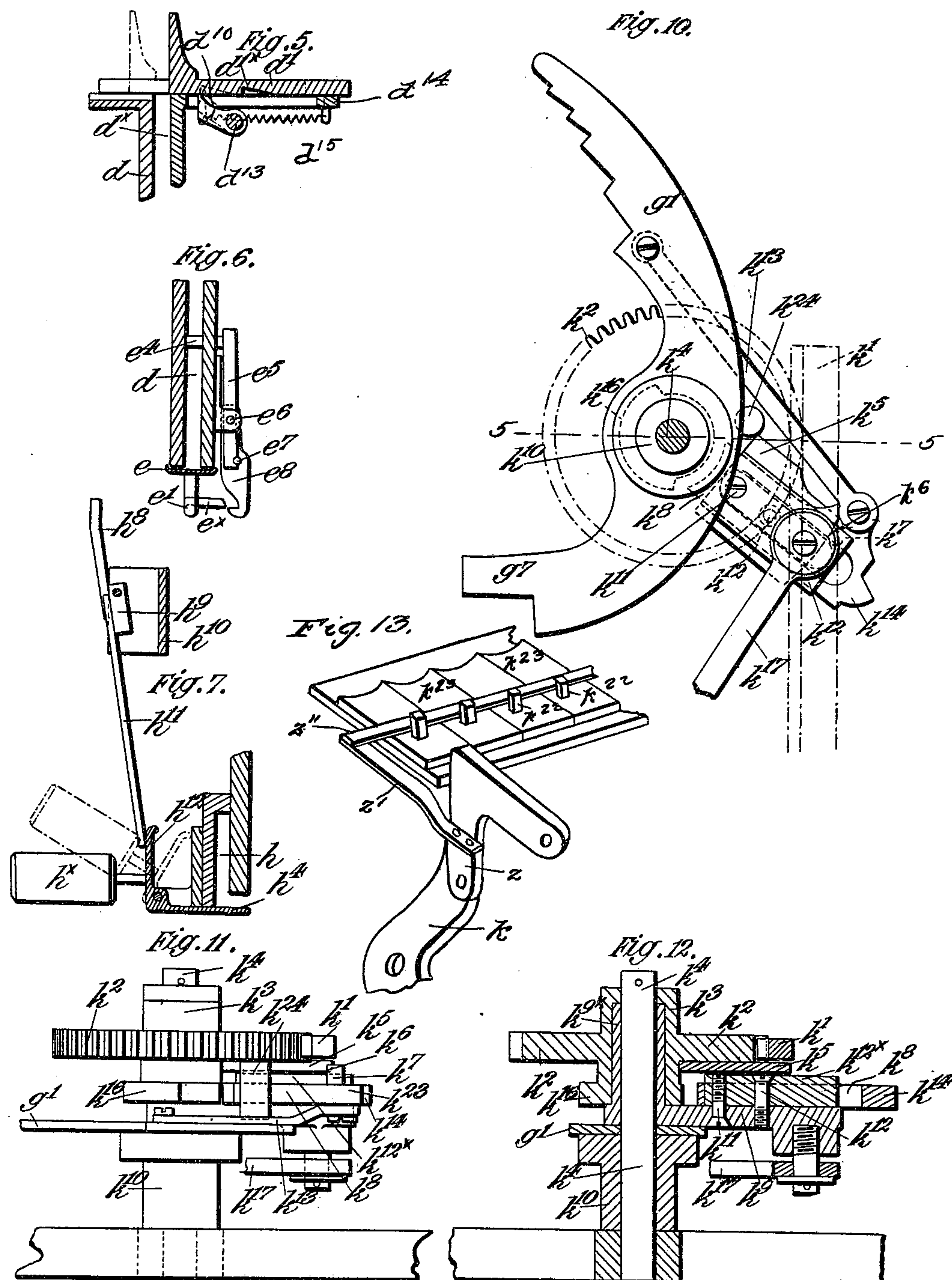
E. MORIARTY.

MACHINE FOR RECEIVING, DELIVERING, SORTING, AND REGISTERING COINS.

(No Model.)

(Application filed Dec. 27, 1897.)

6 Sheets—Sheet 5.



Witnesses:
J. Parker.
R. E. Robinson.

Inventor
Edward Moriarty.
By James L. Norris.
Atty.

No. 675,233.

Patented May 28, 1901.

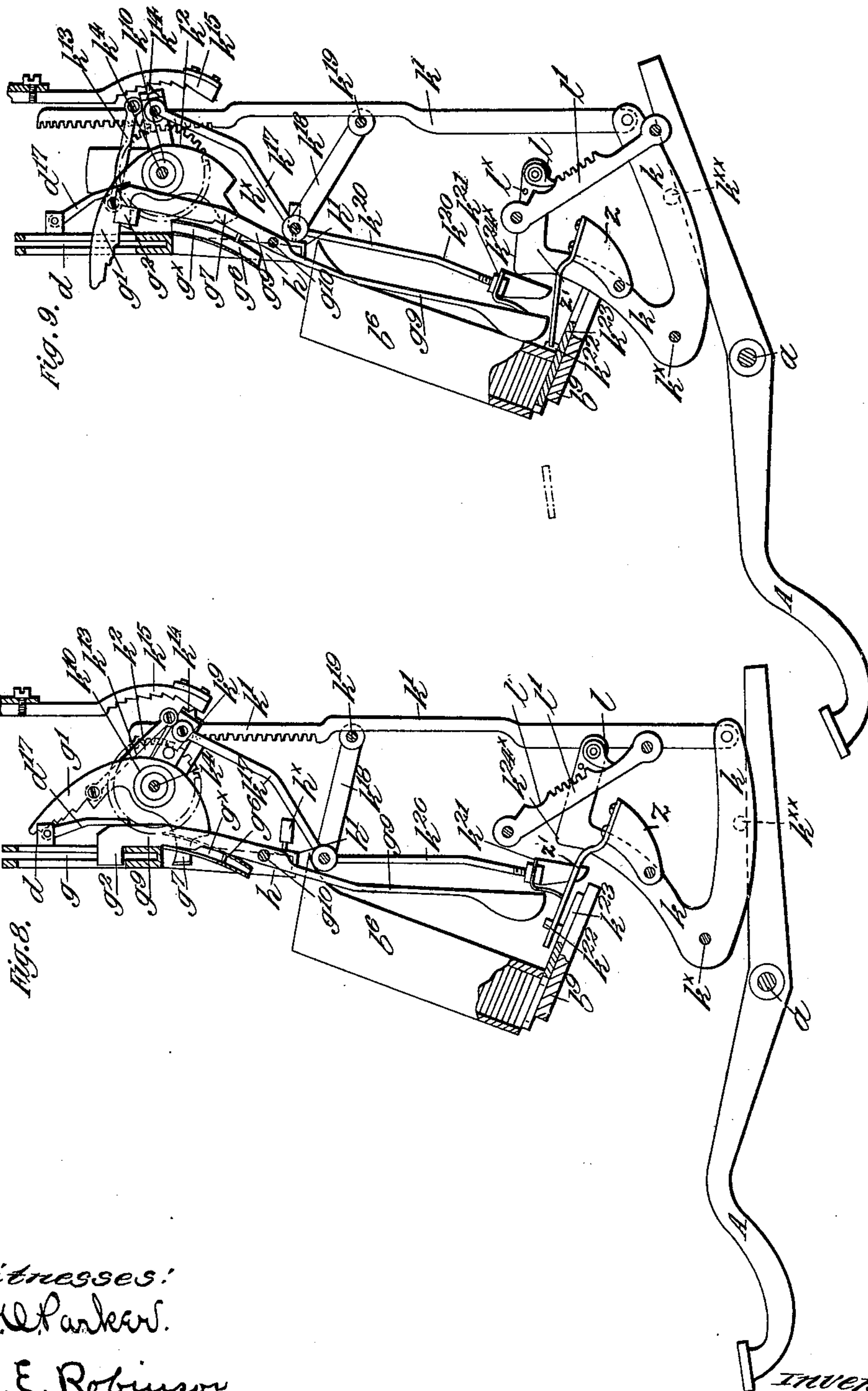
E. MORIARTY.

MACHINE FOR RECEIVING, DELIVERING, SORTING, AND REGISTERING COINS.

(No Model.)

(Application filed Dec. 27, 1897.)

6 Sheets—Sheet 6.



Witnesses:

F. E. Parker.

R. E. Robinson

Inventor
Edward Moriarty
By James L. Norris.
Atty.

UNITED STATES PATENT OFFICE.

EDWARD MORIARTY, OF LONDON, ENGLAND.

MACHINE FOR RECEIVING, DELIVERING, SORTING, AND REGISTERING COINS.

SPECIFICATION forming part of Letters Patent No. 675,233, dated May 28, 1901.

Application filed December 27, 1897. Serial No. 663,794. (No model.)

To all whom it may concern:

Be it known that I, EDWARD MORIARTY, a subject of the Queen of Great Britain, residing at 180 North End road, Fulham, London, England, have invented certain new and useful Improvements in and Relating to Machinery for Receiving, Delivering, Sorting, and Registering Coins, (for which I have obtained Letters Patent in Great Britain, No. 7,811, dated April 18, 1895,) of which the following is a specification.

This invention relates to machines for receiving and sorting coins and directing the same to various receivers or storage-receptacles and delivering for the coins received an equivalent value of other coins of lower denominations, usually termed "giving change."

The machine herein described may be fitted into any suitable form of case to be used simply as a change-giving machine which will on depression of a key-lever or movement of some equivalent mechanical part deliver coins of lower denominations equivalent in value to a coin of higher denomination previously inserted in a slot provided for its reception; or the machine may form part of a cash register, recorder, or indicator and operate simply as an adjunct thereto or be integrally combined therewith, so as to operate by the movement of any one of the key-levers with which such cash-registers are usually provided. When so used, the attendant need have no access to the money-drawer, since change, if required, is had by the action of the said key-levers and can only be had after the coin for which change is required has been placed in the slot. Such change is automatically delivered to the full value by the depression of a key-lever bearing an indication of an amount corresponding with the amount of the purchase. The attendant by depressing said key-lever thereby records and indicates the purchase and receives the full change, from which he deducts the amount of the purchase, which amount he then places in a suitable till, forming part of the machine or separate therefrom, and hands the balance to the purchaser.

Whether the said machine be combined to operate with a cash-register or not, it comprises, essentially, two main parts or devices, one for distributing the coins inserted into the aforesaid slot, so that they will be sorted

in accordance with their value and deposited in coin-storage receptacles provided for their reception, and another for expelling from said coin-storage receptacles the requisite coins to serve as change for the coin inserted into said slot, the aforesaid parts or devices being brought into operation by the insertion of the coin into the said slot and the actuation of a key-lever, as will be hereinafter fully described.

In the accompanying drawings, Figure 1 is a front elevation of the upper portion of the improved machine. Fig. 2 is a front elevation, on a larger scale, of the coin-distributing part of the machine. In this view the front cover-plate of the coin-distributor is removed in order to exhibit the interior of the chutes forming part thereof; Fig. 3, a rear elevation of the coin-distributor. Fig. 4 is a horizontal section taken approximately on the line 4 4 of Fig. 3. Fig. 5 is a cross-section taken approximately on the line 2 2 of Fig. 3. Fig. 6 is a cross-section taken approximately on the line 3 3 of Fig. 3. Fig. 7 is a cross-section taken approximately on the line 4 4 of Fig. 3. Fig. 8 is a side elevation, partly in section, illustrating the change-giving mechanism. Fig. 9 is a similar view showing the parts in another position. Fig. 10 is a side elevation of the change-giving finger and parts in immediate connection therewith drawn on a larger scale. Fig. 11 is a plan of Fig. 10, and Fig. 12 is a horizontal section taken approximately on the line 5 5 of Fig. 10. Fig. 13 is a perspective view of a portion of the ejector mechanism.

d is the coin-receiving chute of the coin-distributor, into which the coins for which change is to be given are inserted through a slot d^x at the upper part of said chute. The floor of this chute is inclined in order that the coins may run down by their own weight, and the inner walls are ribbed, as represented in Fig. 2, to prevent greasy or wet coins from adhering to them. d' is a sliding plate for closing the said slot d^x when a coin has been inserted, said plate working in dovetail grooves or guides d^2 in a plate d^{14} , extending horizontally from the upper part of the chute d . The said plate d' normally lies in a position to keep the slot d^x uncovered by the action of a spring d^{15} and carries a downwardly-projecting pin d^{12} , Figs. 3 and 4, which passes through a slot

d^{xx} in the arm d^{14} and is embraced by a fork d^3 , connected to a rod d^1 , pivoted on the post d^5 . This rod d^1 carries two pins or fingers d^6 d^7 , projecting through slots d^8 d^9 in the back wall of the chute, so that when a coin is dropped through the slot into the chute said pins retain it in the chute until the plate d' has been moved by hand to cover the slot. This action will cause the pin d^{12} to shift the arm d^4 and withdraw the pins d^6 d^7 from arresting the coin, and the latter will therefore be permitted to roll along the chute and reach a chamber g , hereinafter described.

The plate d' when drawn forward over the slot is held from returning by a pawl d^{10} , Fig. 5, on the end of a rocking shaft d^{13} , which pawl projects through a slot in the plate d^{14} and engages with a recess or shoulder d'^x on the under side of plate d' . The other end of the shaft d^{13} carries an arm d^{17} for rocking the shaft and releasing the plate d' , whereupon the latter will be drawn back into its normal position by the spring d^{15} , connected to it and to a pin d^{16} on the plate d^{14} . A spring d^{18} , surrounding the said shaft d^{13} , operates to keep the pawl in its engaging position. The floor of the chute d is inclined at d^{19} , Fig. 2, toward the inner end of a lever, which I term the "gold-balance." This lever consists of a plate e , carried by a rod e' , which is pivoted at e^2 and which carries an adjustable balance-weight e^3 . The pin d^6 is so located with reference to the balance-plate e that coins arrested by said pin will remain in close proximity to said balance-plate ready to pass onto the same when next released by the removal of said pin from their path. The pin d^7 is so located that it will arrest all coins larger than the largest gold coin used—for instance, a five-dollar piece. Through the slot d^8 , immediately beside the pin d^7 , there projects into the chute a plate e^4 , having an inclined inner edge, Fig. 4. This plate e^4 is attached to a rocking bar e^5 , Figs. 3, 4, and 6, which is hinged at e^6 on the same pivot as that which carries a hook e^8 . The lower part of the said hook is adapted to lie beneath or engage with a pin e^x , projecting from the rod e' of the gold-balance. A transverse pin e^7 on the hook e^8 lies opposite the lower end of the bar e^5 to enable the latter to operate the hook and disengage it from the gold-balance at the proper time. So long as the plate e^4 on the bar e^5 projects into the chute the lower end of the said bar prevents the hook e^8 from engaging with the gold-balance, so that the latter is free to descend under the weight of a suitable coin; but when a coin larger than that which is intended to depress the gold-balance passes along the chute d said coin deflects the plate e^4 and pushes away the upper part of bar e^5 , thus turning said bar about its pivot and causing the hook e^8 to come beneath the pin e^x and lock the gold-balance, so that the afore-said larger coin will pass over the plate e without depressing the gold-balance. The largest gold pieces and other coins smaller in size

will pass onto the plate e of the balance without moving the bar e^5 , because their diameter is less than the distance between the floor of the chute d and the plate e^4 . Consequently the said hook e^8 remains in its unlocked position. The gold pieces are sufficiently heavy to depress the plate e , and they thus escape through the opening in the floor of the chute d closed by said plate e and fall into the chute e^9 and reach a chamber g^5 . The silver pieces and other coins that are lighter in weight than the gold coins will pass over the plate e without depressing the gold-balance sufficiently to escape through the opening in the floor of the chute d and will therefore pass along the said chute d to the chamber g .

The chute d , as aforesaid, runs direct to the chamber g , wherein the coins that pass along said chute come to rest, while a finger g' , Figs. 8 and 9, enters a slot g^8 in said chamber and descends upon the edge of the coin resting in such chamber. This chamber is located above another chute h , from which it is separated by a removable detent-plate g^2 , which serves to retain the coin in said chamber g while the said finger g' acts thereon. The said detent-plate is connected with a lever g^9 , Figs. 8 and 9, by which it is at the required times, as hereinafter explained, moved from its stopping position relatively to the coin to liberate the same and suffer it to pass into and along the chute h . This chute is provided with movable counterweighted or mechanically-moved bottoms h' h^2 h^3 h^4 , which are located at parts of the chute that gradually decrease in height to arrest the coins according to their diameter over the mouths of the coin-storage receptacles b^6 , to which they respectively appertain.

The gold coins escaping from the chute d into the chute e^9 and passing to the chamber g^5 , as aforesaid, are by two pins or equivalent devices g^6 , projecting from the said lever g^9 , arrested in such chamber until the portion g^7 of the finger g' has descended in the slot g^x and acted thereon, as hereinafter stated.

It will be understood that though I have spoken of separate chambers g g^5 for the silver and gold coins, respectively, this division is an arbitrary one and is governed more especially by the consideration that it is desirable for the accurate action of the change-finger g' and of the coin-distributor, so that as far as possible coins of nearly the same size should not coöperate with the same parts of such finger and so should not go into the same chamber or into the same distributor-chute. Advantage is thus taken of difference in specific weights to carry coins of different metals into different channels by the action of the gold-balance e' , as aforesaid. My invention is not intended to be confined to two chutes for coins of two metals. Any required number of chutes for coins of any number of metals may be employed.

I will now describe how the change-finger g' and the change-giving mechanism operate

to cause the proper amount of change to be expelled from the machine in accordance with the value of the coin inserted in the slot d^x .

In Figs. 8 and 9, k represents a rocking frame, which is hinged at k^x and raised when any one of the key-levers A of the machine is depressed, it being understood that there are any desired number of these key-levers mounted upon a fixed rod a , extending across the machine, and that the inner ends of said key-levers lie beneath a transverse rod k^{xx} , carried by the frame k , so that the operation of any of the key-levers will cause said frame to be rocked. Pivottally connected to the frame k is a rack-bar k' , which is adapted to rise and fall by the rocking of said frame k . At its upper end said rack-bar is formed with teeth, which gear with the teeth of a pinion k^2 , attached to a boss k^3 , Figs. 11, 12, and 13, revolving loosely on a sleeve k^{9x} , mounted on a shaft k^4 , which is supported by the frame of the machine. The pinion k^2 or its boss has fixed to it a sector-shaped plate or cam k^5 , the outer end of which is provided with a notch k^6 , in which loosely rests a pin k^7 , carried by a radially-sliding plate k^8 , which is slotted to receive guide-pins k^{11} k^{12} , connected with a guide-plate k^{12x} , which by said pins is attached to a radial arm k^9 , that forms part of the sleeve k^{9x} , turning loosely on the shaft k^4 , as aforesaid. The finger g' , with its extension g^7 , is attached to a sleeve k^{10} , which also turns loosely on the said shaft k^4 . A lug k^{23} on the plate k^8 is attached to the finger g' by a rod k^{13} . On the end of the plate k^8 is a tooth or dog k^{14} , and on the frame of the machine is fixed a curved ratchet-bar k^{15} , Figs. 8 and 9, whose center is in the axis of the shaft k^4 . On the sleeve k^3 is an eccentric or cam k^{16} , which when the plate k^8 is caused to slide outwardly (which it does when the finger g' or its extension g^7 is stopped by coming against a coin in the chamber g or g^5) to bring its tooth k^{14} into engagement with the curved ratchet-bar k^{15} will pass behind the inner end or heel of said plate k^8 and prevent its return. When the frame k is raised by the depression of one of the key-levers A, the pinion k^2 is turned by the rack k' , and the plate or cam k^5 , which is connected with the said pinion, turns also and carries with it the pin k^7 of the radially-sliding plate k^8 . The said radially-sliding plate k^8 and the radial arm k^9 , carrying it, thus move together, and through the intervention of the rod k^{13} likewise turn the finger $g' g^7$. This finger thus moves down the slots $g^8 g^x$ in the chambers g and g^5 until the edge of the said finger rests on the edge of a coin in the one or other of these chambers. When the said finger meets the edge of the coin, the latter prevents its being moved farther, and thus arrests its motion. The movement of the other parts, however, continues and causes, first, the rod k^{13} to push longitudinally outward the sliding plate k^8 , thus bringing the tooth or dog k^{14} into engagement with the ratchet-bar k^{15} at some

position higher or lower, according to the diameter of the coin which stopped the finger $g' g^7$. This longitudinal outward movement of the sliding plate k^8 causes its pin k^7 to be shifted out of the recess k^6 in the plate or cam k^5 and permits the latter to move past the pin k^7 , thus permitting the pinion k^2 to continue its movement while the other parts remain stationary. The longitudinally-sliding plate k^8 is locked in its outward position of engagement with the ratchet-bar k^{15} , first, by the exterior edge of the plate or cam k^5 coming behind the pin k^7 , and, secondly, by the eccentric or cam k^{16} moving around behind the heel of the plate k^8 , as above stated. The frame k is therefore able to perform a full stroke regardless of the position in which the finger $g' g^7$ is stopped by the coins. To the radial arm k^9 is attached a rod k^{17} , which is connected to a rocking frame k^{18} , Figs. 8 and 9, whose fulcrum is at k^{19} . From this frame is suspended another frame k^{20} , which carries a transverse member k^{21} , extending across the machine. It will be obvious from this construction that the height to which this cross member k^{21} is raised will depend upon the distance to which the finger $g' g^7$ has been moved before being arrested by a coin, and consequently upon the diameter and value of the coin within the chamber g or g^5 . The various coin-receptacles b^6 are mounted upon a transverse support b^9 , forming part of the framing of the machine, and working upon said support are a number of what I term "ejectors" k^{23} , equal in number to that of the coin-receptacles. These ejectors are in the form of slides adapted to enter the lower part of each coin-receptacle and are of such a thickness as to push from the latter the lowermost coin when said slide is pushed into its corresponding coin-receptacle. Each of the said slides is furnished with an upright pin or dog k^{22} , which is of a different length to that of the pins or dogs of the other slides, so that the extent to which the transverse member k^{21} is raised by the movement of the finger $g' g^7$ regulates the number of the pins or dogs k^{22} that will lie in the path of said transverse member. Therefore when during the concluding portion of the stroke of the frame k the elbow k^{24x} thereof strikes and pushes forward the said transverse member, the latter will act upon the various dogs that lie in its path. Consequently these ejectors carrying said dogs will be pushed forward into their corresponding coin-receptacles and deliver therefrom change equivalent to the value of the coin inserted into the machine and at such time resting in the chamber g or g^5 . The rocking frame k has on its ends lugs z , from which the arms z' extend, the arms being united by a bar z'' , adapted to engage behind the dogs k^{22} of the slides, so as to draw the slides backward on the rocking of the frame k as a key-lever is depressed. The change having been thus given by the machine, it is necessary to release the coin from the chamber g or g^5 . For this purpose

one end of the member k^{21} is adapted as it completes its forward movement to push forward the lower weighted end of the lever g^9 . This lever is fulcrumed at g^{10} and carries the pins g^6 and the plates g^2 , by which the coin in the chamber g or g^5 is supported, as hereinbefore explained. Thus when the said lever g^9 is acted upon by the member k^{21} , as aforesaid, these pins and plates are withdrawn from the chambers g or g^5 , respectively, and permit the coin to escape. If it be a gold coin, it will run directly into its appropriate coin-receptacle. If it be a silver coin, it will enter the chute h and by said chute be stopped in accordance with its diameter immediately above its proper coin-receptacle, ready to fall thereinto when the movable floors h' h^2 h^3 h^4 are opened at the next operation of the machine, as hereinafter explained. As the frame k returns the rack-bar k' to its normal position on the release of the key-lever the pinion k^2 and the cams k^5 and k^{16} also return, and a pin k^{21} , Figs. 10, 11, and 12, on the pinion k^2 meets the radial arm k^9 and returns that also and with it the contiguous parts. The longitudinally-sliding plate k^8 on the return of the parts is unlocked by the removal of the eccentric k^{16} and plate k^{18} from behind it and its pin k^7 , and therefore is free to be pushed back by the action of the inclined face of the tooth of the ratchet k^{15} acting on the dog k^{14} as the said radial arm descends.

The gold coins when liberated fall into a chute leading to the base of the machine, where the cash-drawer is, or, if desired, the five-dollar and two-and-one-half-dollar pieces may be separated in any suitable manner and the two-and-one-half-dollar pieces be led through a guide g^{5x} to a storage tube or receptacle b^8 and the five-dollar pieces to a storage tube or receptacle b^7 , Fig. 1, said receptacles being similar to one of the storage tubes or receptacles b^6 . The silver coins when liberated run into the chute h and, if of the smallest diameter, escape from the end of said chute into the receptacle b^{6x} . If the said coins be of a larger diameter, they will be arrested by one or other of the depressions h^6 , Fig. 2, in the roof of the chute and lie over the floors h' h^2 h^3 h^4 , according to their size, these floors being provided with balance-weights h^x , which normally operate to keep the floors in their closed position. To open said floors and permit of the falling of the coins into their coin-receptacles, the said floors are provided with lugs h^{12} , Figs. 3 and 7, which under the action of the weights h^x abut against arms h^{11} , depending from a rocking bar h^9 , hinged in a frame h^{10} , said rocking bar being furnished with an arm h^8 , that engages with the forked outer end of a lever h^7 . This lever h^7 is adapted to turn in a horizontal plane and is actuated by the aforesaid pin d^{12} , depending from the sliding plate d' —that is to say, when the said plate d' is drawn forward to close the coin-slot d^x its pin d^{12} moves the lever h^7 in a direction to cause the arm h^8 to turn the rock-

ing bar h^9 , whereby the arms h^{11} carried thereby press the lugs h^{12} inwardly and so open the floors against the resistance of the weights h^x . As before stated, the said plate d' is held in its forward position by the catch d^{10} , carried by the shaft d^{13} . This catch is shifted to liberate the plate d' and permit its spring d^{15} to return it to its normal position by the action of the weighted arm or lever g^9 , which as it moves into the position represented by Fig. 9 brings its projection g^2 against the arm d^{17} and by pushing the latter causes the shaft d^{13} to turn and remove the catch from the plate d' . The said plate in returning to its normal position operates the lever h^7 through its pin d^{12} and causes the hinged floors of the chute h to return to their closed position.

l , Figs. 8 and 9, is a pawl, and l' is a fixed toothed bar carried by the framing of the machine, so that as the frame k performs its upward movement the said pawl will come into engagement with the teeth of the toothed bar and prevent the return of the frame unless its full upward stroke be completed, in which case the said pawl will pass out of engagement with the teeth and reach the part l^x , where it can turn about its pivot and permit the frame to return without meeting with impediment. This renders it necessary that a full or complete stroke shall be given to the key-levers A in order to cause the machine to perform its function, as is well understood.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In a machine for delivering coins of lower denominations in return for a coin of higher denomination, the combination of a coin-receiving chute, means for temporarily retaining a coin at a definite position in said chute, a movable finger constructed to engage the periphery of the coin when in said position and to be arrested thereby, a series of coin-storage tubes for storing coins in columns of different denominations, a coin-ejector for each storage-tube, devices between the said finger and the ejectors for causing the operation of certain ejectors to be dependent on the arrest of said finger by contact with the periphery of the coin, and means for operating the finger and ejectors, substantially as described.

2. In a machine for delivering coins of lower denominations in return for a coin of higher denomination, the combination of a coin-receiving chute, means for temporarily retaining a coin at a definite position in said chute, a movable finger constructed to engage the periphery of the coin when in said position and to be arrested thereby, a series of coin-storage tubes for storing coins in columns of different denominations, a chute extending over the receiving-mouths of the storage-tubes and having means for arresting the coins according to their diameter over the mouths of the storage-tubes and delivering said coins into the appropriate storage-tubes,

a coin-ejector for each storage-tube, devices between the said finger and the ejectors for causing the operation of certain ejectors to be dependent on the arrest of said finger by contact with the periphery of the coin, and means for operating the finger and ejectors, substantially as described.

3. In a machine for delivering coins of lower denominations in return for a coin of higher denomination, the combination of a coin-receiving chute, means for temporarily retaining a coin at a definite position in said chute, a movable finger constructed to engage the periphery of the coin when in said position and to be arrested thereby, a series of coin-storage tubes for storing coins in columns of different denominations, a chute extending over the receiving-mouths of the storage-tubes and having depressions for arresting the coins according to their diameter over the mouths of the storage-tubes, movable floors for said depressions, for delivering the coins to the appropriate storage-tubes, a coin-ejector for each storage-tube, devices between said movable finger and the ejectors for causing the operation of certain ejectors to be dependent on the arrest of said finger by contact with the periphery of the coin, and devices for operating the finger, the floors and the ejectors, substantially as described.

4. The combination of an inclined chute having depressions for arresting coins according to their diameter, opening and closing floor-plates under said depressions, means for delivering coins of different diameter to said chute, devices for operating the floor-plates to release the arrested coins, coin-storage receptacles arranged in a rack and having the mouths at their upper ends arranged, respectively, under and receiving the coins from the floor-plates, an ejector at the lower end portion of each coin-storage receptacle, and means for operating said ejectors, substantially as described.

5. The combination with a chute adapted to receive a coin, a chamber alined with said chute, retaining-pins closing the base of said chamber, a pivoted finger adapted to be rocked athwart said chamber and to be arrested by a coin therein, a plurality of coin-tubes adapted for the storage of columns of coins each of a specific denomination, sliding bars adapted to eject coins from the base of each column respectively, dogs of different height one on each sliding bar, a cross-bar connected to said finger to be lifted or lowered in accordance with the movement of the finger and means for lateral movement of the bar after the finger is arrested by a coin in the chamber for the operation by the bar of the corresponding dogs for the delivery of the equivalent change, substantially as described.

6. The combination with a chute having a slot for reception of a coin, branch chutes therefrom, means automatically operated by weight or size of inserted coin to deflect certain denominations of inserted coins from the

main chute into one or other of the branch chutes, chambers alined with said chutes, means for temporarily retaining the coin in the respective chamber, a pivoted finger adapted to be rocked athwart said chambers and to be arrested by a coin in any of said chambers, a plurality of coin-tubes adapted for the storage of columns of coins each of a specific denomination, sliding bars adapted to eject coins from the base of each column respectively, dogs of different height one on each sliding bar, a cross-bar connected to said finger to be lifted or lowered in accordance with the movement of the finger and means for lateral movement of the bar after the finger is arrested by a coin in the chamber for the operation by the bar of the corresponding dogs for the delivery of the equivalent change, substantially as described.

7. The combination with a chute adapted to receive a coin, a chamber alined with said chute, means for temporarily arresting the coin in said chamber, a swinging finger constructed to bear against the periphery of the coin in said chamber, a plurality of coin-storage tubes means controlled by said finger for delivering from said tubes change equivalent to the coin in said chamber, a further chute adapted to receive the coin when released from said chamber, a roof to said further chute having a series of step-like depressions to arrest the coin at different positions according to its diameter, and means for delivering the coin from said chute to the coin-storage tube corresponding to its denomination, substantially as described.

8. The combination with a main chute having an entrance-slot for reception of a coin, branch chutes for coins of different metals, counterbalanced floor-plates in the main chute adapted to be influenced respectively by coins of different weight, deflectors in said main chute influenced by said counterbalanced floor-plates to separate coins to their respective chutes, a series of coin-storage tubes arranged, respectively, under said floor-plates, an ejector for each storage-tube, and means for operating the floor-plates and the ejectors, substantially as described.

9. A chute having a removable floor, two fixed continuous side walls and a roof having a series of step-like depressions to arrest coins at different places along the length of the chute according to their respective diameter in combination with means for moving the floor and a plurality of coin-storage tubes beneath said chute and respectively placed each to receive coins of similar diameter when dropped from said chute, substantially as described.

In witness whereof I have signed this specification in presence of two witnesses.

EDWARD MORIARTY.

Witnesses:

R. HADDAN,
CHAS. ROCHE.