

No. 613,844.

Patented Nov. 8, 1898.

M. B. MILLS.

BOGUS COIN DETECTOR FOR COIN OPERATED VENDING MACHINES.

(Application filed July 1, 1898.)

(No Model.)

5 Sheets—Sheet 1.

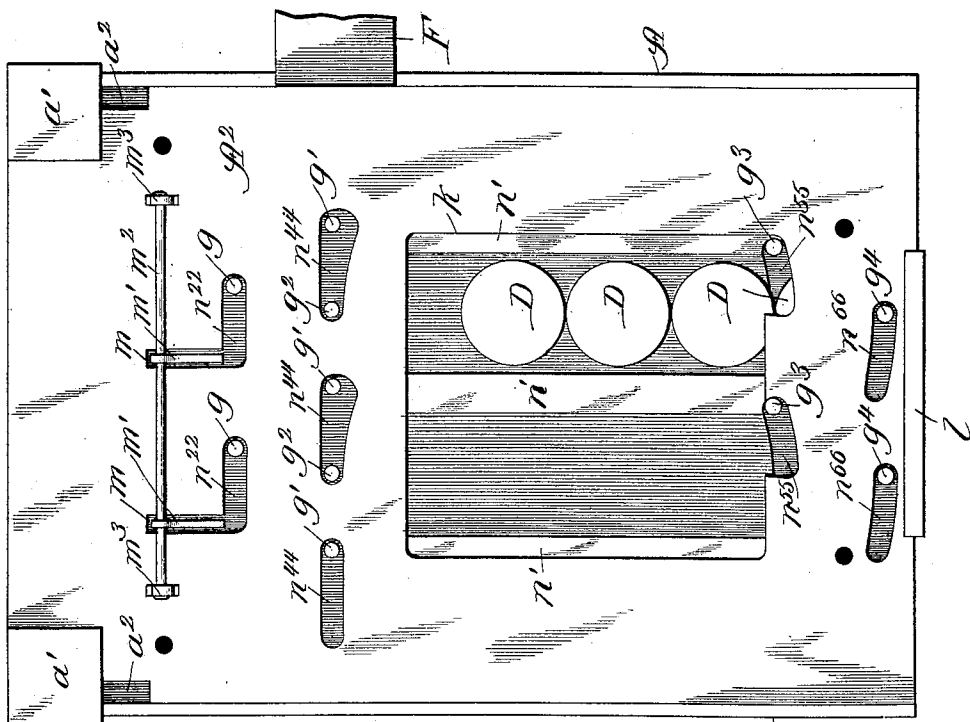


Fig. 2.

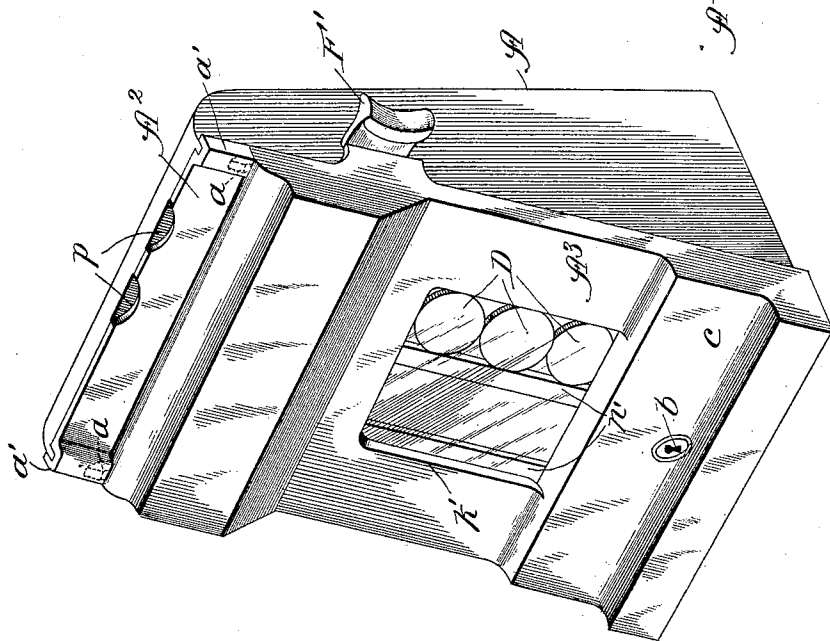


Fig. 1.

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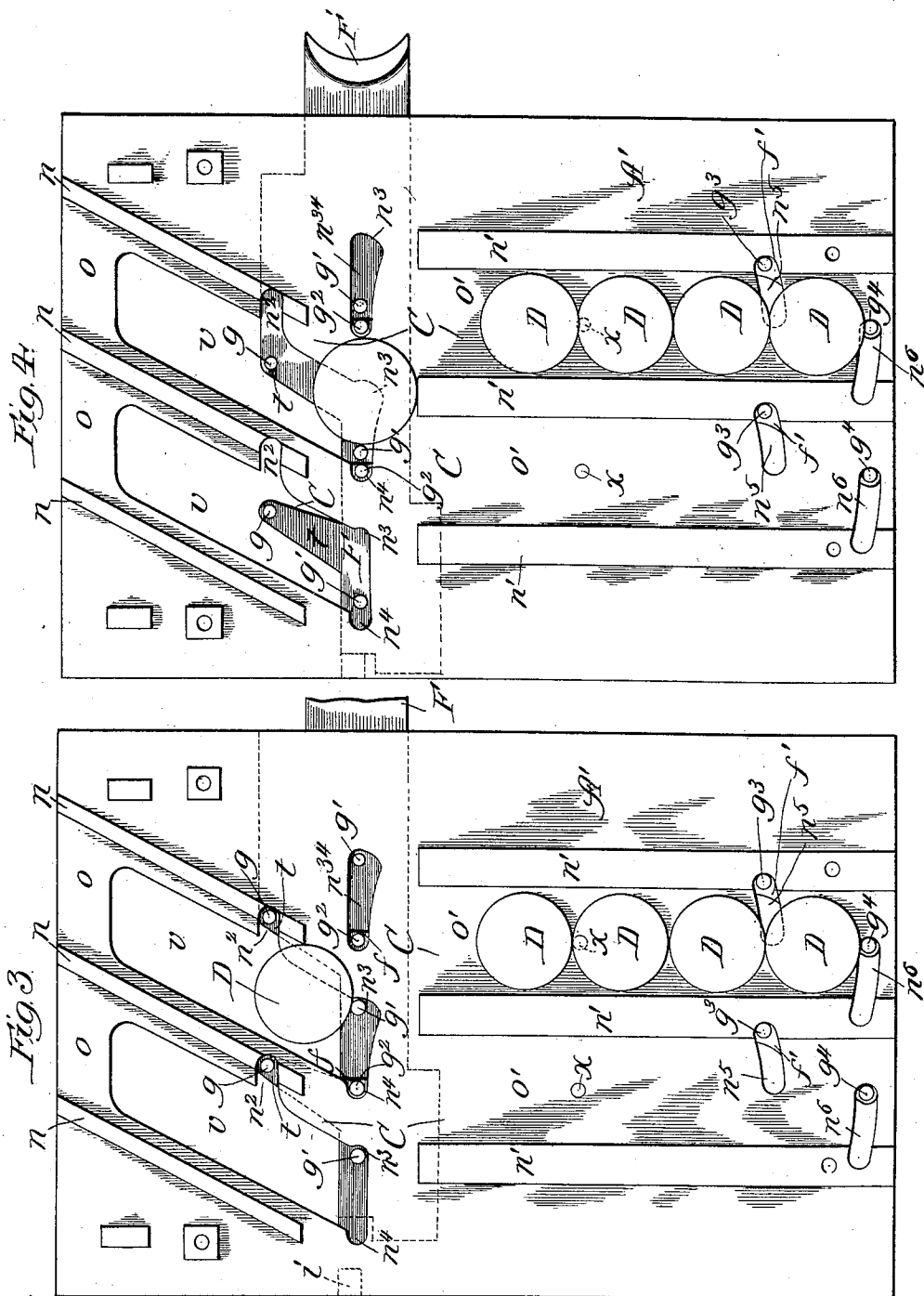
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5 Sheets—Sheet 2.



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Fig. 6.

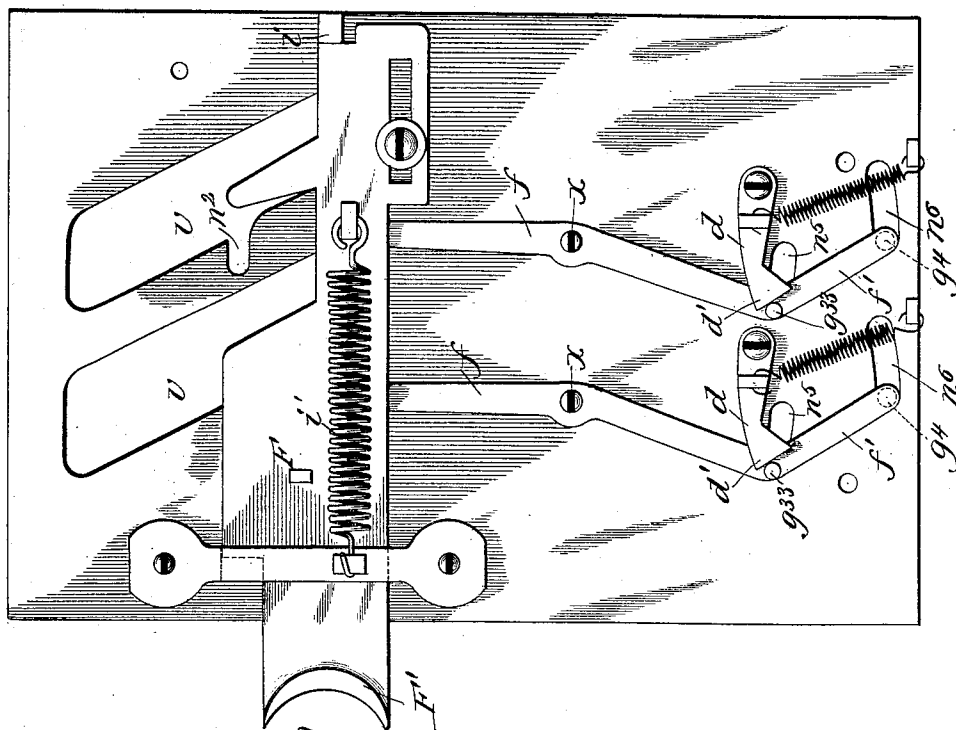
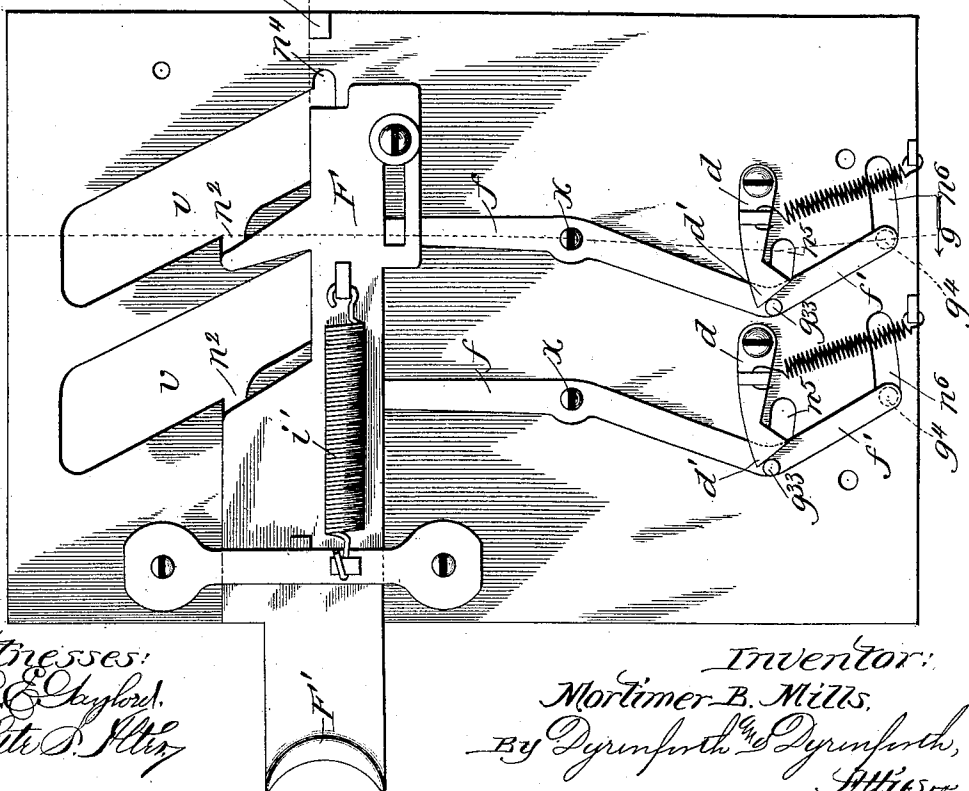


Fig. 5.



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Fig. 8.

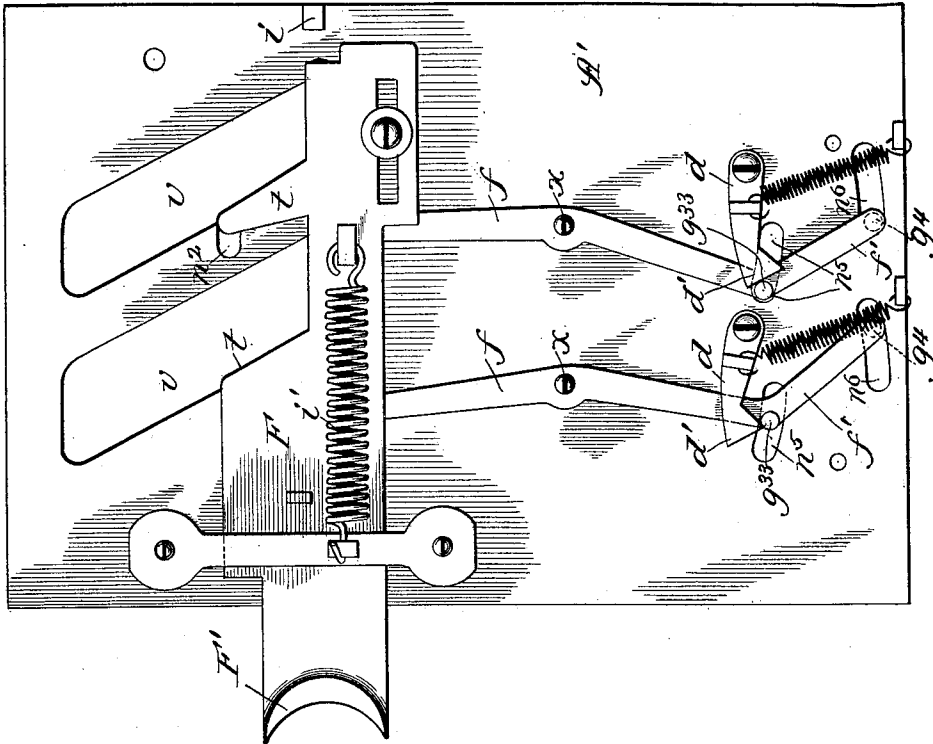
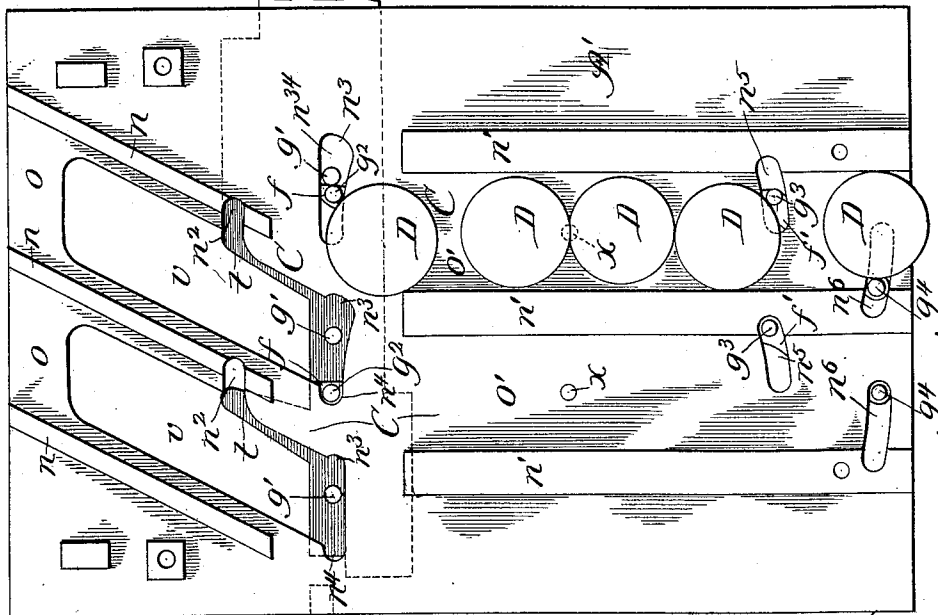


Fig. 7.



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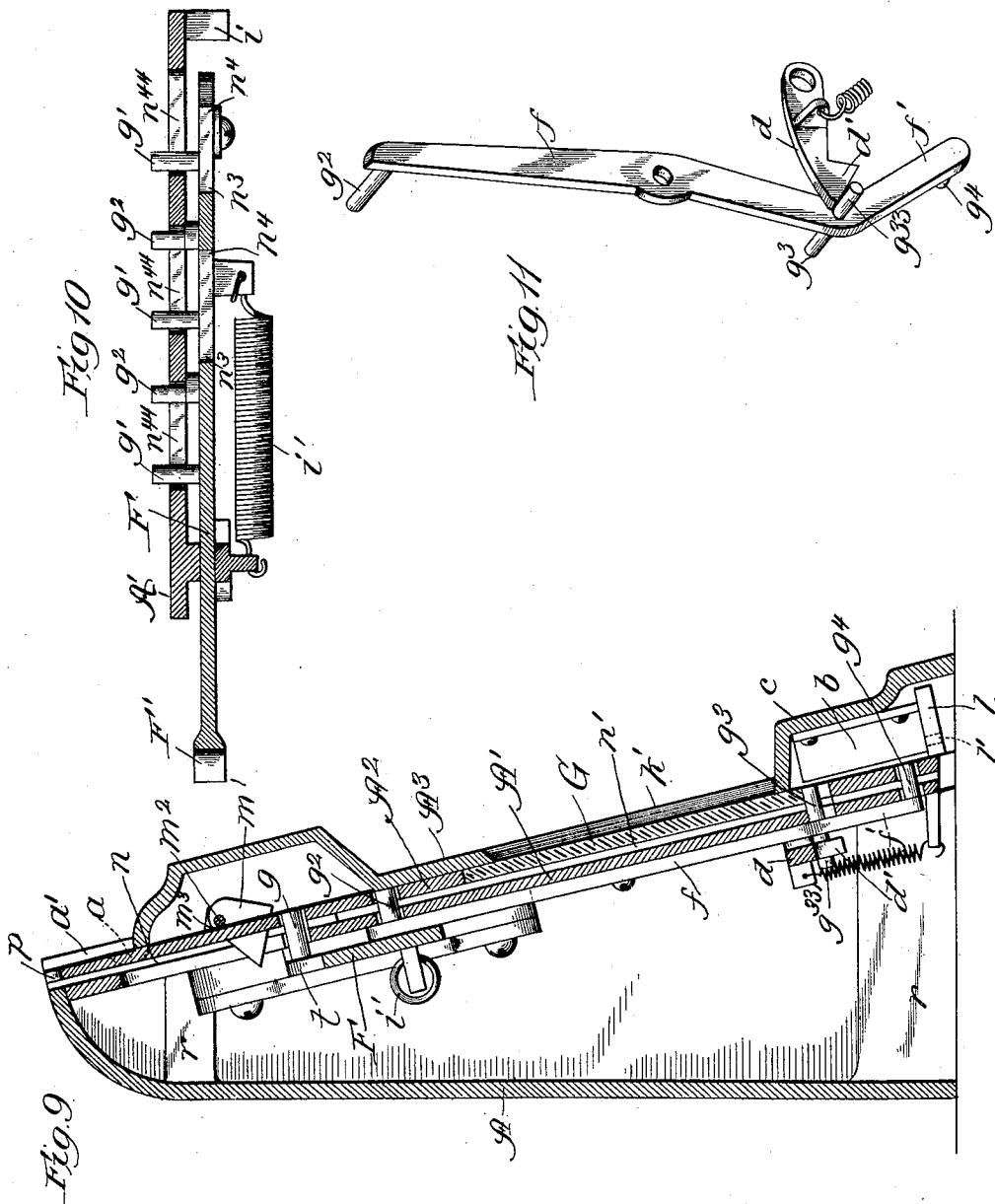
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5 Sheets—Sheet 5.



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UNITED STATES PATENT OFFICE.

MORTIMER B. MILLS, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE MILLS NOVELTY COMPANY, OF SAME PLACE.

BOGUS-COIN DETECTOR FOR COIN-OPERATED VENDING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 613,844, dated November 8, 1898.

Application filed July 1, 1898. Serial No. 684,976. (No model.)

To all whom it may concern:

Be it known that I, MORTIMER B. MILLS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Bogus-Coin Detectors for Coin-Operated Vending-Machines, of which the following is a specification.

The object of my invention is to provide as an attachment for use with coin-operated vending-machines generally a device through which the coin for paying the purchase price of the article to be delivered and for rendering the machine operative to produce the delivery must be passed in view and shall remain in view until the machine has been operated one or more times by another inserted coin or other such coins. Thus in the event that a would-be purchaser inserts a bogus coin into the detector it is presented to view therein and so remains during one or more operations of the machine. Moreover, when the machine to which my improved attachment is applied is adapted to vend two or more articles, each controlled through a different passage or chute, when the attachment is equipped accordingly with a plurality of coin-insertion slots and passages or chutes, the arrangement of the detector is such as to permit the coin or token last inserted previous to operating the machine to occupy a higher plane in its chute in the detector than the uppermost coin in the other detector-chute or either of the other of such chutes, thereby to make it indisputably clear which of the array of coins or tokens was last inserted, so that the fraud, if any occurs, may be fastened with certainty upon the guilty person.

Referring to the accompanying drawings, Figure 1 is a perspective view of my improved detector attachment; Fig. 2, a view of the same in front elevation with the separable cover removed; Fig. 3, a similar view of the same with the cover and chute-covering plate removed, showing the stud details of the operating mechanism in their normal relative positions; Fig. 4, a view like that presented by Fig. 3, but showing the aforesaid details in the relative positions they assume with the operating-handle pushed in less than the entire extent of its inward throw to initially re-

lease an inserted coin; Fig. 5, a view in rear elevation of the plate shown in Fig. 3, showing the details on that side in their normal relative positions; Fig. 6, a view in rear elevation of the same plate, showing the said details in the relative positions they occupy when the operating-handle is pushed in to move the stud details to the relative positions in which they are shown in Fig. 4; Fig. 7, a view like that presented by Fig. 3, but showing the stud details in the relative positions they occupy when the operating-handle has been released and is returning to its normal position; Fig. 8, a view in rear elevation of the plate shown in Fig. 7, with the mechanism on the rear side of the plate in the condition to which it is brought by pushing in the operating-handle to its full extent; Fig. 9, a section taken at the line 9 on Fig. 5 and viewed in the direction of the arrow; Fig. 10, a section taken at the line 10 on Fig. 5 and viewed in the direction of the arrow, and Fig. 11 a perspective view of the stud-carrying lever and the spring-controlled cam-dog which completes the throw in one direction of the lever.

A is the case, preferably cast, of metal, with lugs *r*, one of which is provided near each corner inside the case to receive fastening-screws. The preferred shape of the case is tapering, as shown, and in its upper end, in the forward edge of the top, it is provided with one or more recesses, (two are shown,) each to form, with the chute-covering plate A^2 , hereinafter described, a coin-insertion slot *p*. To the lugs *r* is fastened the chute-plate A' , and the chutes *C* are formed on the outer surface of the plate. Each chute comprises an upper, preferably oblique, section *o* and a lower vertical section *o'*. The section *o* is produced between parallel ledges *n*, cast on the surface of the plate a distance apart approximately corresponding with the diameter of the coin *D* of the denomination for use with the machine, and the surface of the plate between the ledges should be longitudinally open, as shown at *v*, to a width that will cause smaller coins inserted into the chute to drop through the opening. The lower chute-section *o'* is produced between parallel ledges *n'*, cast on the face of the plate A' the same dis-

tance apart as the ledges n and in break-joint or non-coincident relation to the latter. In one side of each chute-section o is a notch n^2 , and that section is notched at opposite sides of its lower end, as shown at n^3 and n^4 , thereby producing an elongated opening at the base of the opening v or above the lower chute-section. Adjacent to the lower end of the first chute-section, thus widened as to its opening v by the notches n^3 n^4 , is a slot n^{34} in the plate A' . In each chute-section o' are provided the two elongated slots n^5 and n^6 on different planes and extending, respectively, into the opposite ledges n' of each chute-section.

The plate A^2 , fastened in the case over the chute-plate A' to cover it, contains, coincident with each chute-section o , a vertical slot m , through which projects a coin-deflecting tappet m' , loosely pivoted eccentrically upon a rod m^2 , supported at its ends in lugs m^3 on the front side of the plate, the eccentric hanging of the tappets causing them to project through the slots m into the paths through the chute-sections o for a purpose hereinafter described. Extending at a right angle from each slot m in the plate A^2 is a horizontal slot n^{22} , coinciding with a notch n^2 in a ledge n , and coincident with the widened lower end of the opening v in each chute-section o and with the recess n^{34} in the chute-plate there is provided in the plate A^2 a horizontally-elongated slot n^{44} . Furthermore, the plate A^2 contains an opening k over the lower chute-sections o' in the plate A' , in the lower edge of which opening are formed recesses n^{55} n^{56} , coinciding, respectively, with the slots n^5 n^6 in the chute-plate, and in the lower part of the chute-covering plate (which is provided centrally with a bolt-slot l' , Fig. 9, in a lug l for the lock hereinafter described) are slots n^{66} n^{66} , coinciding, respectively, with the slots n^6 n^6 in the plate A' .

On the back of the plate A' is confined to be reciprocated longitudinally a push-bar F , extending horizontally across the plate in alinement with a stop i near one edge of the plate, the opposite end of the bar projecting beyond the right-hand edge of the plate to form the operating-handle F' , and the bar is controlled by a spring i' , tending to resist forcing it inward by pushing the handle F' and to return it when released after being so pushed. Projecting upward from the upper edge of the push-bar, at intervals apart corresponding with the space between a pair of the upper chute-section ledges n , are fingers t t , extending at the angle of or parallel with the said ledges and carrying studs g g to project in the normal retracted position of the push-bar F through the notches n^2 in the plate A' and into the slot n^{22} in the plate A^2 . There also extend forward from the body of the push-bar studs g' , each of two being in oblique relation to the corresponding stud g to project through the respective notches n^3 at the bases of the chute-openings in the plate A' and one to project through the slot n^{34} in

said plate and each projecting into a slot n^{44} in the plate A^2 .

Levers f f , having angular extensions f' f' at their lower ends, are fulcrumed at x , between their extremities, to the back of the plate A' to extend at their upper ends between the push-bar and chute-plate, and they carry at their upper ends studs g^2 g^2 , which respectively project, normally, through a notch n^4 at the lower end of the second chute-opening v and through the slot n^{34} at the end thereof opposite that through which a stud g' projects. The studs g^2 also extend into the coincident slots n^{44} n^{44} in the plate A^2 . At the upper end of the lower angular extension of each lever f is a stud g^3 , projecting through a slot n^5 in the plate A' and into a recess n^{55} in the plate A^2 , and at the lower end of each such angular extension is a stud g^4 , passing through a coincident slot n^6 in the plate A' and into a slot n^{66} in the plate A^2 . On the back of each lever extension f' , shown as coincident with the stud g^3 thereon, there is a projecting tooth g^{38} to be engaged by a spring-controlled dog d , having the V-shaped cam-head d' .

The opening k in the plate A^2 is shown in Fig. 9 as covered with glass G .

As will be understood, the smaller openings in the plate A^2 for accommodating the various studs would not have to be provided were the plate arranged to be less close, as to its inner surface, to the plate A' , though it is preferred to have it quite close for the sake of compactness.

A^3 is the cover, preferably of the shape illustrated and containing an opening k' coincident with the glass-covered opening in the plate A^2 . In its chambered lower end c , at its center, the cover A^3 contains a key-operated lock b of ordinary construction, having a bolt adapted to be shot by turning the key into the retaining-slot l' in the flange l , which projects from the lower edge of the plate A^2 , for fastening the cover when adjusted in place by introducing hooks a , projecting from the upper edge of the cover, near its opposite ends, into slots a^2 in the opposite edges of the plate A^2 underneath ears a' on the opposite ends of that plate near its upper edge, which ears overlap the edges of the sides of the case A .

The operation is as follows: My improved device is intended to seat on a coin-operated vending-machine of any suitable variety, with the lower end of its chute or of each chute C over the entrance for a coin into the vending-machine. By inserting a coin D of proper denomination into a slot p it drops down the respective upper inclined chute-section o till it encounters and is arrested by the stud g' in its path, as shown in Fig. 3. This coin, being of greater diameter than the opening v in the chute, is not interfered with by the tappet m' in its path, but passes it without material obstruction, though if a coin of smaller denomination be inserted in striking the tap-

pet the latter will be sure to tip or deflect it, thereby causing it to drop through the opening v , thus intercepting it from affording a medium through which to operate the detector, as hereinafter described. With the inserted coin resting on the stud g' the operator pushes in the bar F at the handle F' , thereby removing that stud away from supporting the coin and also correspondingly moving the stud g immediately and obliquely above it to bear against the upper edge of the coin and insure its descent in case it should stick from any cause. As the stud g' moves away from the coin the latter drops between that stud and the next adjacent stud g^2 on the upper end of a lever f and is dropped against the upper end of a ledge n' , as shown in Fig. 4, meantime forming a bridge between the two studs g' and g^2 . When the push-bar is released to permit it to be retracted by the recoil force of the spring i' , the consequent pressure of the stud g' against the coin is transmitted to the stud g^2 , thereby turning the lever f , carrying it to the position in which it is represented in Figs. 7 and 8, with the stud g^2 bearing against or in the return-path of the next adjacent stud g' , so that when the bar F is next pushed in for another operation the stud g' on it, against which the stud g^2 bears, will be returned to its normal position in the notch n^4 , and the lever f will be turned accordingly. By thus under the retractive force of the spring i' moving the two studs g and g^2 , embracing the coin, the latter is carried till it clears the ledge n' and is brought coincident with the chute-section o' between its ledges. Turning the upper end of the lever f in the manner described by the interposition of the coin between the two studs under the retractive force of the push-bar-controlling spring turns the lower end of the lever in the contrary direction to bring the stud g^3 in the slot n^5 into the path through the chute-section o' , as shown in Fig. 7, and the stud g^4 in the slot n^6 out of that path or into the left-hand end of its slot. Thus when the coin drops from between the studs g' g^2 into the chute-section o' it encounters and is arrested therein by the stud g^3 . The V-shaped cam-head d' on the spring-dog d is provided to release from between the studs g' g^2 the coin as soon as it has been brought coincident with the upper end of the chute-section o' , and to that end the coin-releasing throw of the lever is completed by the spring-controlled cam-dog. Thus as the lever f is being turned by the outward movement of the spring-controlled push-bar the tooth g^{33} near the lower end of the lever bears against the outer beveled edge of the cam-head d' , thereby raising the dog on its pivot till the tooth passes the apex of the head, at about which time the location of the coin while being carried will be approximately central with the top of the chute-section. On reaching the apex of the cam-head the recoil of the spring controlling the dog will snap the head over the tooth g^{33} ,

bringing its inner inclined or cam edge to bear against it, and thereby pull the lever over to the end of its throw, the extent of which is greater than the diameter of the coin, the release of which from between the studs g' g^2 is thus insured to permit it to drop in the lower chute-section. In its position of resting against the stud g^3 in the chute-section o' the inserted coin remains in view through the glass-covered opening in the front of the detector until the push-bar F is again operated. By again pushing in the operating-handle the stud g^2 , which is against the stud g' , is returned from the position shown in Fig. 7 to the normal position shown in Fig. 3, thereby turning the lever f to retract the stud g^3 into its normal position at the right-hand end of its slot n^5 , Figs. 3 and 4, thus withdrawing it from supporting the coin, which drops in the chute-section o' till it encounters and is arrested by the stud g^4 , brought into its path by so turning the lever f . There the coin remains, hidden behind the plate A^2 below the opening k therein, until, on inserting another coin D into the same slot p and pushing in the bar F to introduce the coin between the studs g' and g^2 and releasing the bar for its retraction to bring the coin to the chute-section o' , the lever f is again turned accordingly and removes the stud g^4 from supporting the previously-introduced coin, which then drops into the vending-machine referred to.

The foregoing describes the operation of my improved device under the insertion of a coin into one chute, which may be the only one contained in the device, though it is preferred, for the reason hereinafter explained, that there shall be provided in the detector two or more of the chutes C , the first, or that at the left-hand side, equipped with the studs g g' g^3 g^4 , each of the others with the additional stud g^2 , projecting from the upper end of a lever f , and a slot n^{34} being provided at the right-hand end of the series of chutes, with a stud g^2 and a stud g' projecting through it. Moreover, it is to be understood that preparatory to placing the device in use the coin-chute or each coin-chute should have inserted into it two or several coins D , to rest one upon the other, with the lowermost resting on the lower stud g^4 , which latter coin will always be the one to drop into the vending-machine with each coin-insertion into and operation of the detector, whereby the last-inserted coin will remain in view for a prolonged period.

Where there are provided two or more of the coin-chutes C , as for use with a vending-machine adapted to deliver a corresponding number of different, or different varieties of, articles, each from a different supply, the advantage is afforded that the last-inserted token in one chute C occupies a plane higher than that of the uppermost coin in either of the other chutes, thereby placing beyond dispute which token was last inserted, so that if

it be a bogus coin the attempt to pass it may be fastened with certainty on the guilty person. There is also the advantage in having the cover A³ separable that the interior of the device is readily accessible, as for removing false tokens and for other purposes without disturbing the mechanism.

The general arrangement of the mechanism involved in my improved device constitutes my invention, which is not, however, to be understood as limited to the particular details, which may be variously modified and some of which may even be dispensed with without departure from my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a detector for coin-operated vending-machines, the combination with a case, of a transparently-covered chute-plate provided with a coin-chute formed of communicating upper and lower sections non-coincident with each other, a push-bar carrying studs projecting through elongated openings above the lower chute-section, and a lever fulcrumed between its ends and carrying at its upper end a stud projecting through one of said openings to cooperate with said studs, and toward its lower end a stud projecting through an elongated slot in the lower chute-section, substantially as described.

2. In a detector for coin-operated vending-machines, the combination with a case, of a transparently-covered chute-plate provided with a coin-chute formed of an upper oblique chute-section and a lower vertical chute-section communicating but non-coincident therewith, a push-bar carrying studs projecting through elongated openings above the lower chute-section, and a lever fulcrumed between its ends and carrying at its upper end a stud projecting through one of said openings to cooperate with said studs, and toward its lower end a stud projecting through an elongated slot in the lower chute-section, substantially as described.

3. In a detector for coin-operated vending-machines, the combination with a case, of a transparently-covered chute-plate provided with a coin-chute formed of communicating upper and lower sections non-coincident with each other, the upper section having a coin-discharge opening in its base, a push-bar carrying studs projecting through elongated openings above the lower chute-section, and a lever fulcrumed between its ends and carrying at its upper end a stud projecting through one of said openings to cooperate with said studs, and toward its lower end a stud projecting through an elongated slot in the lower chute-section, substantially as described.

4. In a detector for coin-operated vending-machines, the combination with a case, of a transparently-covered chute-plate provided with a coin-chute formed of an upper chute-section and a lower chute-section communicating but non-coincident therewith, the up-

per section having a coin-discharge opening in its base, a deflecting-tappet extending into the path through said upper chute-section, a push-bar carrying studs projecting through elongated openings above the lower chute-section, and a lever fulcrumed between its ends and carrying at its upper end a stud projecting through one of said openings to cooperate with said studs, and toward its lower end a stud projecting through an elongated slot in the lower chute-section, substantially as described.

5. In a detector for coin-operated vending-machines the combination with a case, of a transparently-covered chute-plate provided with a coin-chute formed of an upper chute-section and a lower chute-section communicating but non-coincident therewith, a push-bar carrying studs projecting through elongated openings above the lower chute-section, and a lever fulcrumed between its ends, carrying at its upper end a stud projecting through one of said openings and provided at its lower end with an angular extension having studs near its opposite ends projecting through elongated slots respectively toward opposite sides of the lower chute-section, substantially as described.

6. In a detector for coin-operated vending-machines, the combination with a case, of a transparently-covered chute-plate provided on one surface with a plurality of coin-chutes each having an insertion-slot and formed of communicating upper and lower sections non-coincident with each other, a push-bar carrying studs, one for each chute, projecting through elongated openings in the lower ends of the upper chute-sections, and an additional stud projecting through an elongated slot in said plate to one side of the chutes, and levers fulcrumed between their ends on the back of said plate and carrying at their upper ends studs projecting through said elongated openings except the first, and through said slot, said levers carrying, toward their lower ends, studs projecting through elongated slots in the lower chute-sections, substantially as described.

7. In a detector for coin-operated vending-machines, the combination with a case, of a transparently-covered chute-plate provided on one surface with a plurality of coin-chutes each having an insertion-slot and formed of an upper chute-section and a lower chute-section communicating but non-coincident therewith, a push-bar carrying studs, one for each chute, projecting through elongated openings in the lower ends of the upper chute-sections, and an additional stud projecting through an elongated slot in said plate to one side of the chutes, and levers fulcrumed between their ends on the back of said plate and carrying at their upper ends studs projecting through said elongated openings, except the first, and through said slot, said levers carrying, toward their lower ends, studs projecting through elongated slots in

the lower chute-sections, substantially as described.

8. In a detector for coin-operated vending-machines, the combination with a case, of a transparently-covered chute-plate provided on one surface with a plurality of coin-chutes each having an insertion-slot and formed of an upper chute-section having a coin-discharge opening in its base and a lower chute-section non-coincident with said upper section, a push-bar carrying studs, one for each chute, projecting through elongated openings in the lower ends of the upper chute-sections, and an additional stud projecting through an elongated slot in said plate to one side of the chutes, and levers fulcrumed between their ends on the back of said plate and carrying at their upper ends studs projecting through said elongated openings except the first and through said slot, said levers carrying toward their lower ends, studs projecting through elongated slots in the lower chute-sections, substantially as described.

9. In a detector for coin-operated vending-machines, the combination with a case, of a transparently-covered chute-plate provided on one surface with a plurality of coin-chutes each having an insertion-slot and formed of an upper chute-section and a lower chute-section communicating but non-coincident therewith, a push-bar carrying studs, one for each chute, projecting through elongated openings in the lower ends of the upper chute-sections, and an additional stud projecting through an elongated slot in said plate to one side of the chutes, and levers fulcrumed between their ends on the back of said plate, carrying at their upper ends studs projecting through said elongated openings, except the first, and through said slot, and provided at their lower ends with angular extensions having studs near their opposite ends projecting through elongated slots respectively toward opposite sides of the lower chute-sections, substantially as described.

10. In a detector for coin-operated vending-machines, the combination with a case, of a transparently-covered chute-plate provided with a coin-chute formed of communicating upper and lower sections non-coincident with each other, a push-bar carrying studs projecting through elongated openings above the lower chute-section, a lever fulcrumed between its ends and carrying at its upper end a stud projecting through one of said openings and toward its lower end a tooth and a stud projecting through an elongated slot in the lower chute-section, and a spring-controlled cam-headed dog engaging said tooth, substantially as described.

11. In a detector for coin-operated vending-machines, the combination with a case, of a transparently-covered chute-plate provided with a coin-chute formed of an upper oblique chute-section and a lower vertical chute-section communicating but non-coincident there-

with, a spring-controlled push-bar carrying studs projecting through elongated openings above the lower chute-section, a lever fulcrumed between its ends and carrying at its upper end a stud projecting through one of said openings and provided at its lower end with an angular extension having studs near its opposite ends, projecting through elongated slots respectively toward opposite sides of the lower chute-section, and a tooth, and a spring-controlled dog having a cam-head engaging with said tooth, substantially as described.

12. In a detector for coin-operated vending-machines, the combination with a case, of a transparently-covered chute-plate provided with a coin-chute formed of communicating upper and lower sections non-coincident with each other, the upper section having a coin-discharge opening in its base notched at one side, a spring-controlled push-bar carrying, on its body portion, studs projecting through elongated openings above the lower chute-section, and an oblique finger provided with a stud projecting through the opening in said upper chute-section coincidently with the notch therein, and a lever fulcrumed between its ends and carrying at its upper end a stud projecting through one of said elongated openings and provided at its lower end with an angular extension having studs near its opposite ends projecting through elongated slots respectively toward opposite sides of the lower chute-section, substantially as described.

13. In a detector for coin-operated vending-machines, the combination with a case of a chute-plate provided on its front surface with a coin-chute formed of communicating upper and lower sections non-coincident with each other, a chute-covering plate provided with a glass-covered opening, a spring-controlled push-bar carrying studs projecting through elongated openings in said chute-plate above the lower chute-section, a lever fulcrumed between its ends and carrying at its upper end a stud projecting through one of said chute-plate openings to cooperate with said studs, and provided at its lower end with an angular extension having studs near its opposite ends projecting through elongated slots in the lower chute-section, respectively toward its opposite sides, and a removable open-faced cover on the case provided with a lock, substantially as described.

14. A coin-detector for coin-operated vending-machines comprising, in combination, a case A, a chute-plate A' containing the slot n^{84} and having coin-chutes C formed of the sections o , having the openings v provided with notches n^2 n^3 n^4 , and the sections o' having the slots n^3 n^6 , a chute-covering plate A² having an opening k , a spring-controlled push-bar F carrying studs g' and fingers t provided with studs g , tappets m' projecting through slots in the plate A² into the paths

through the upper chute-sections, levers f fulcrumed on the back of the chute-plate and carrying studs g^2 at their upper ends and provided with angular extensions f' carrying
5 studs g^3 and g^4 and teeth g^{33} , spring-controlled cam-headed dogs d engaging said teeth, and a removable open-faced cover A^3 , the whole

being constructed and arranged to operate substantially as described.

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In presence of—
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DAN W. LEE.