(No Model.)

3 Sheets—Sheet 1.

J. G. MacPHERSON.

COIN CONTROLLED VENDING APPARATUS.

No. 482,875. Patented Sept. 20, 1892.

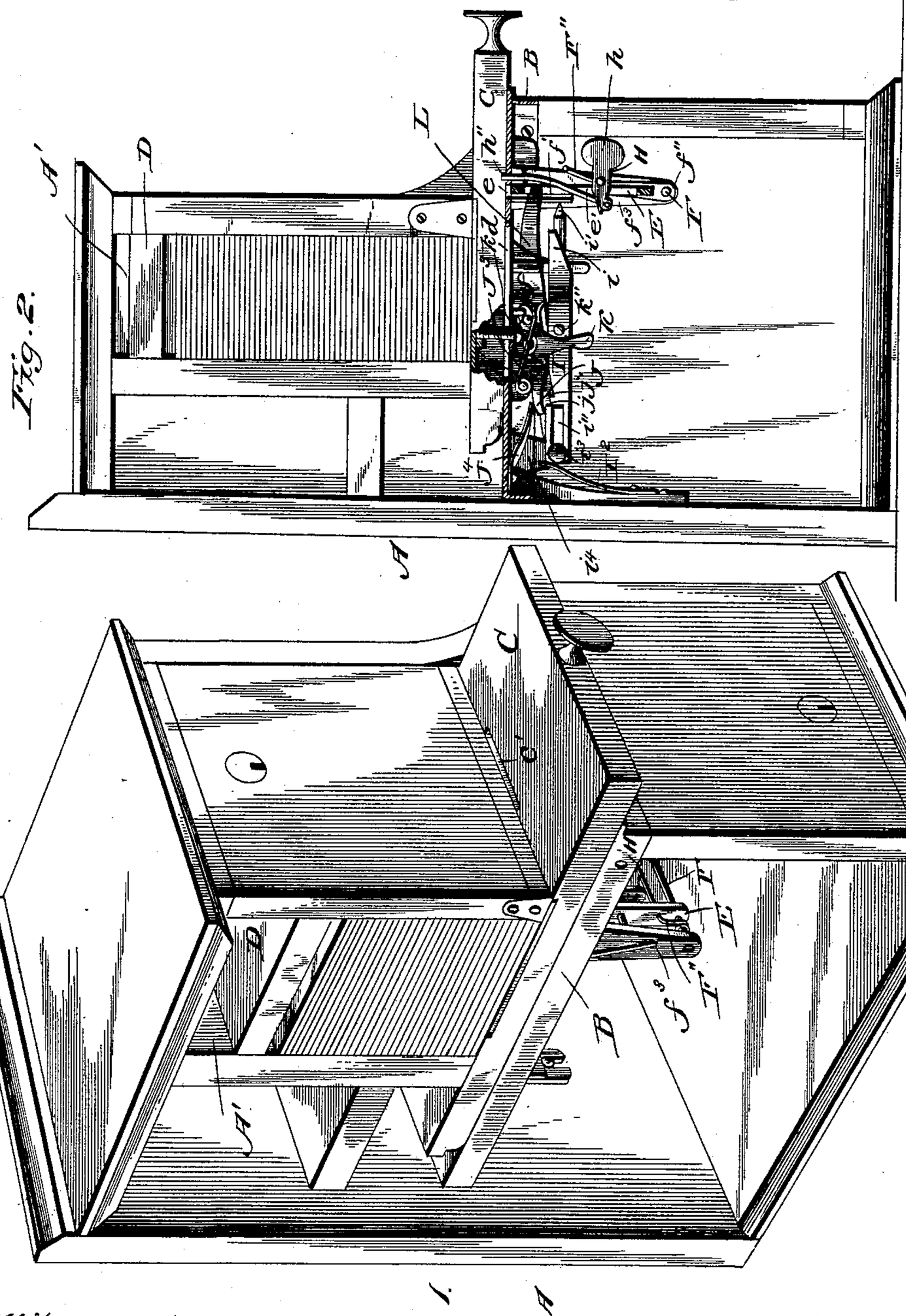

Fig. 2.

Fig. 1.

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(No Model.) 3 Sheets—Sheet 2.

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COIN CONTROLLED VENDING APPARATUS.

No. 482,875. Patented Sept. 20, 1892.

Fig. 3.

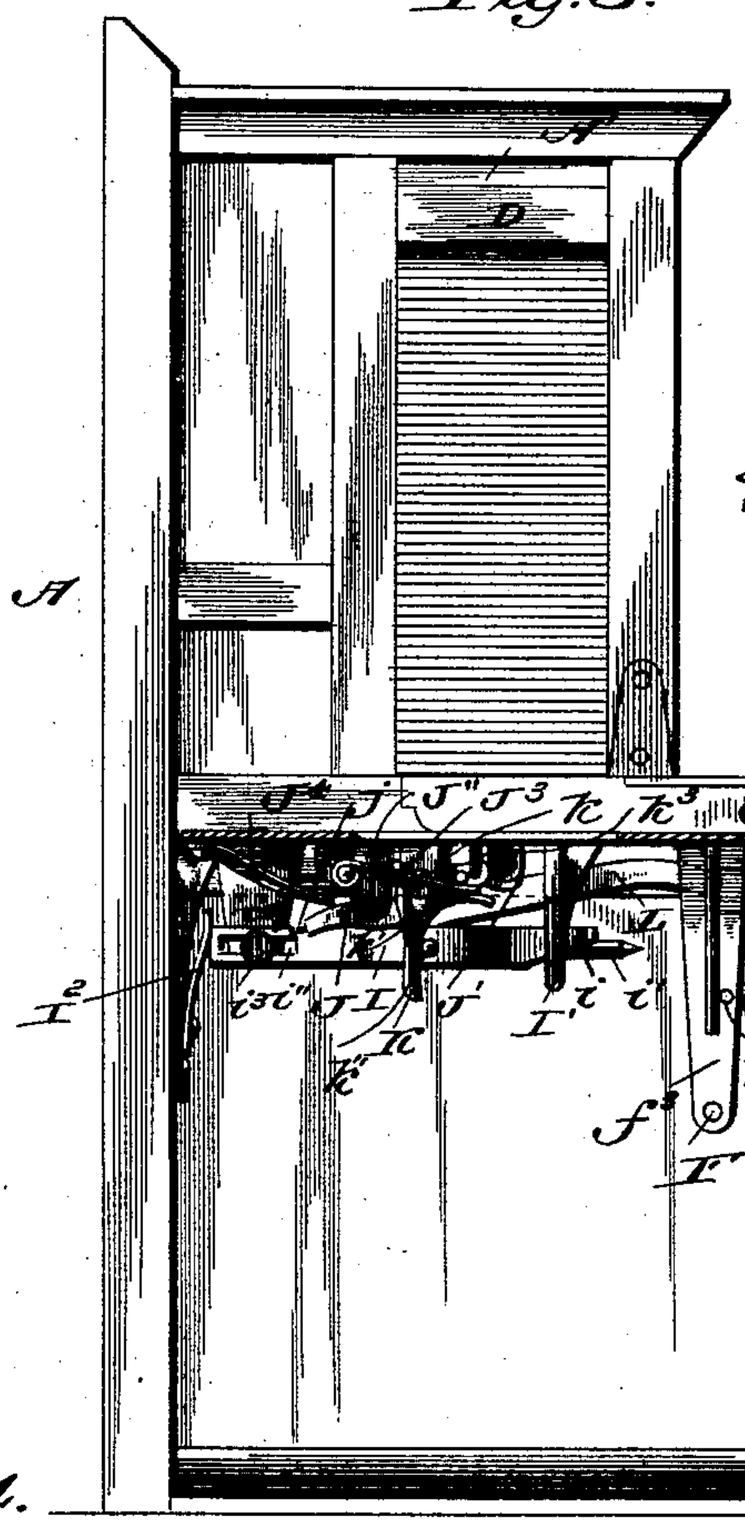
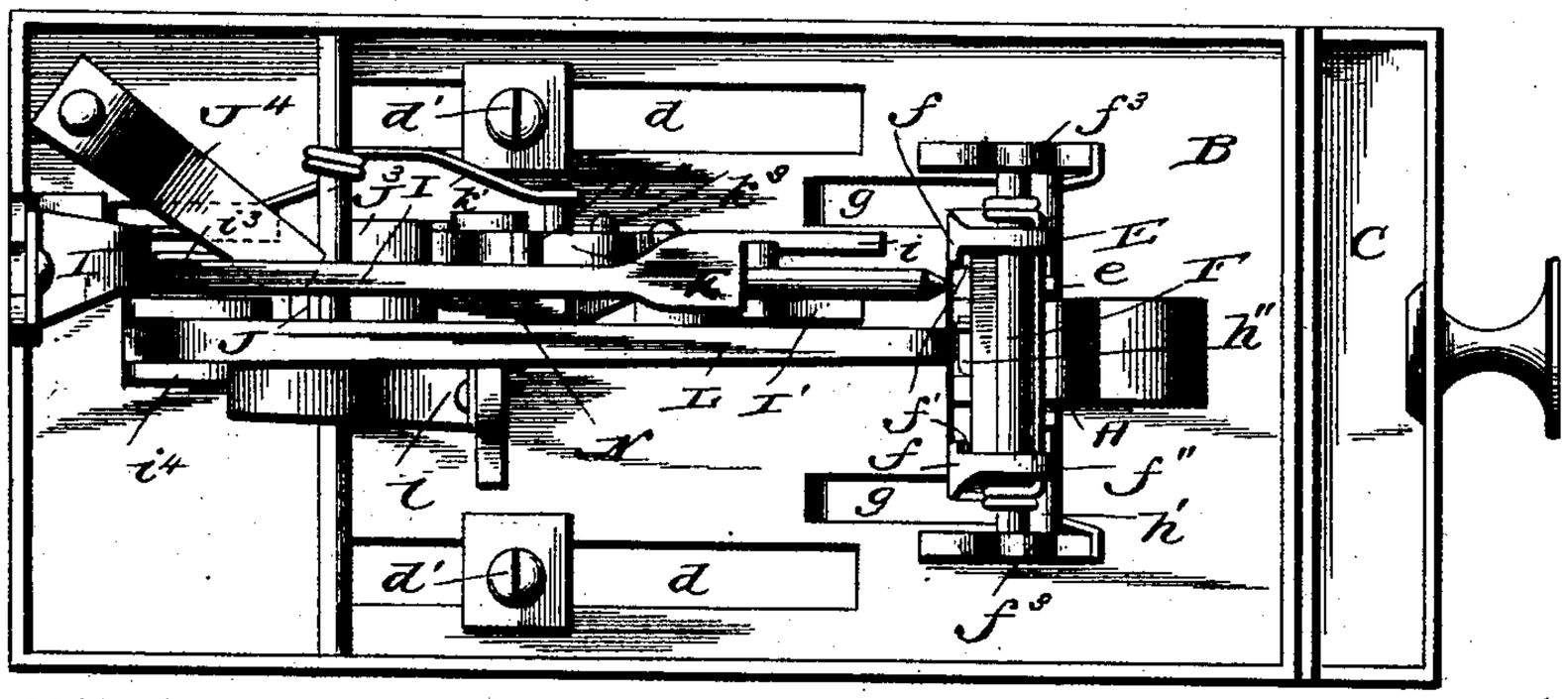


Fig. 8.

Fig. 4.



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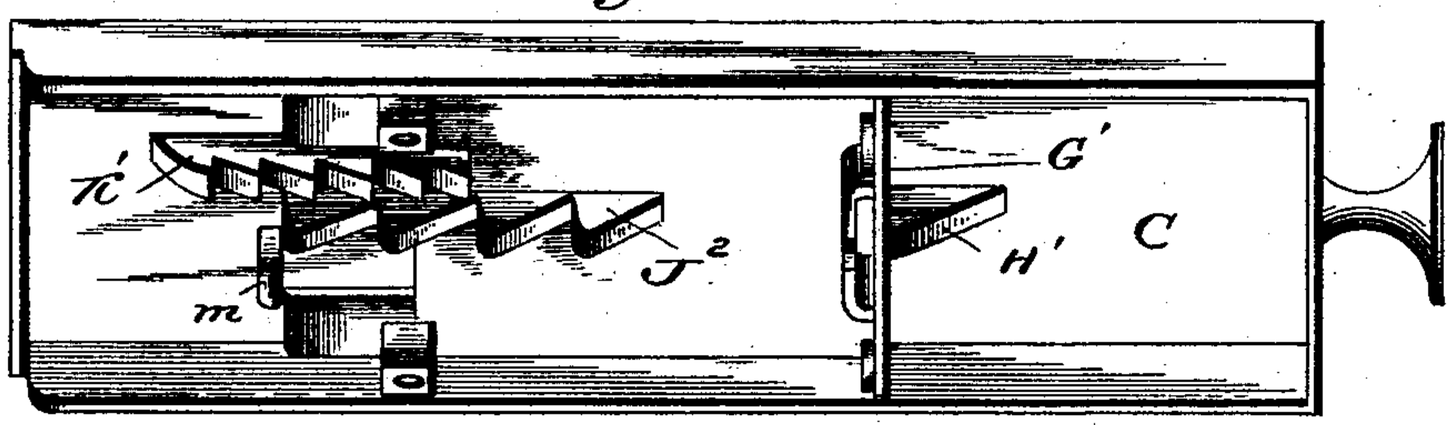
(No Model.) 3 Sheets—Sheet 3.

J. G. MACPHERSON.

COIN CONTROLLED VENDING APPARATUS.

No. 482,875. Patented Sept. 20, 1892.

Fig. 5.



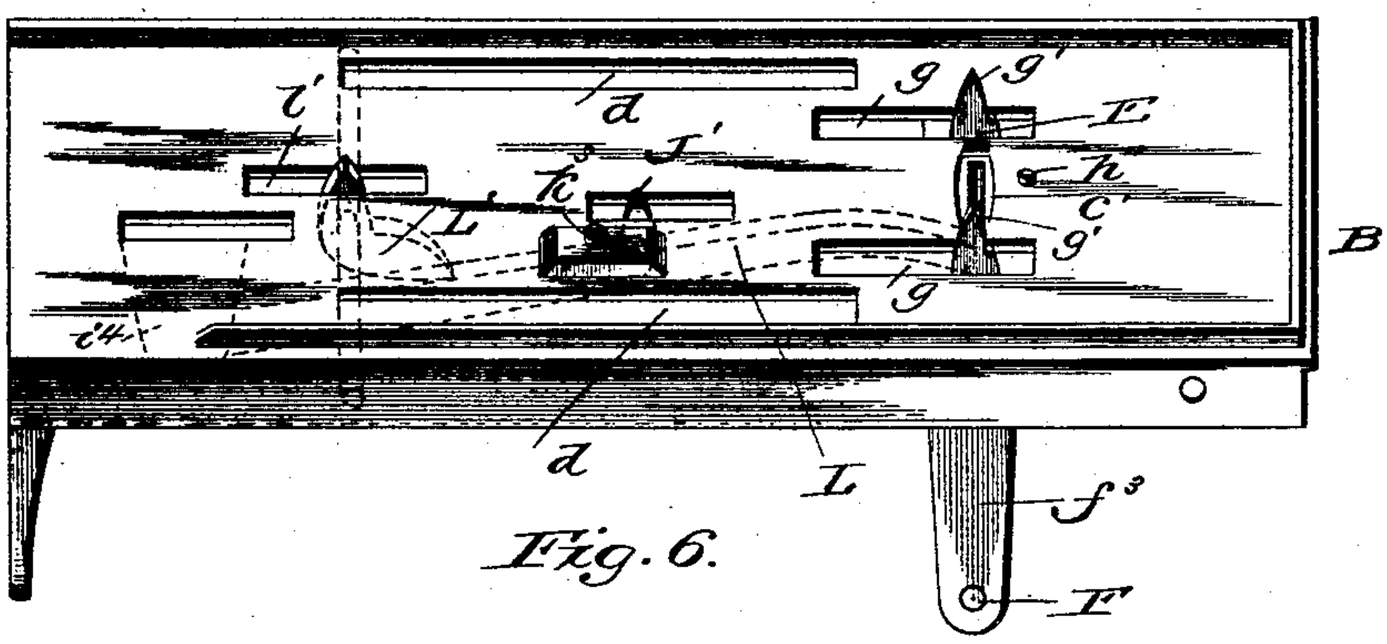


Fig. 6.

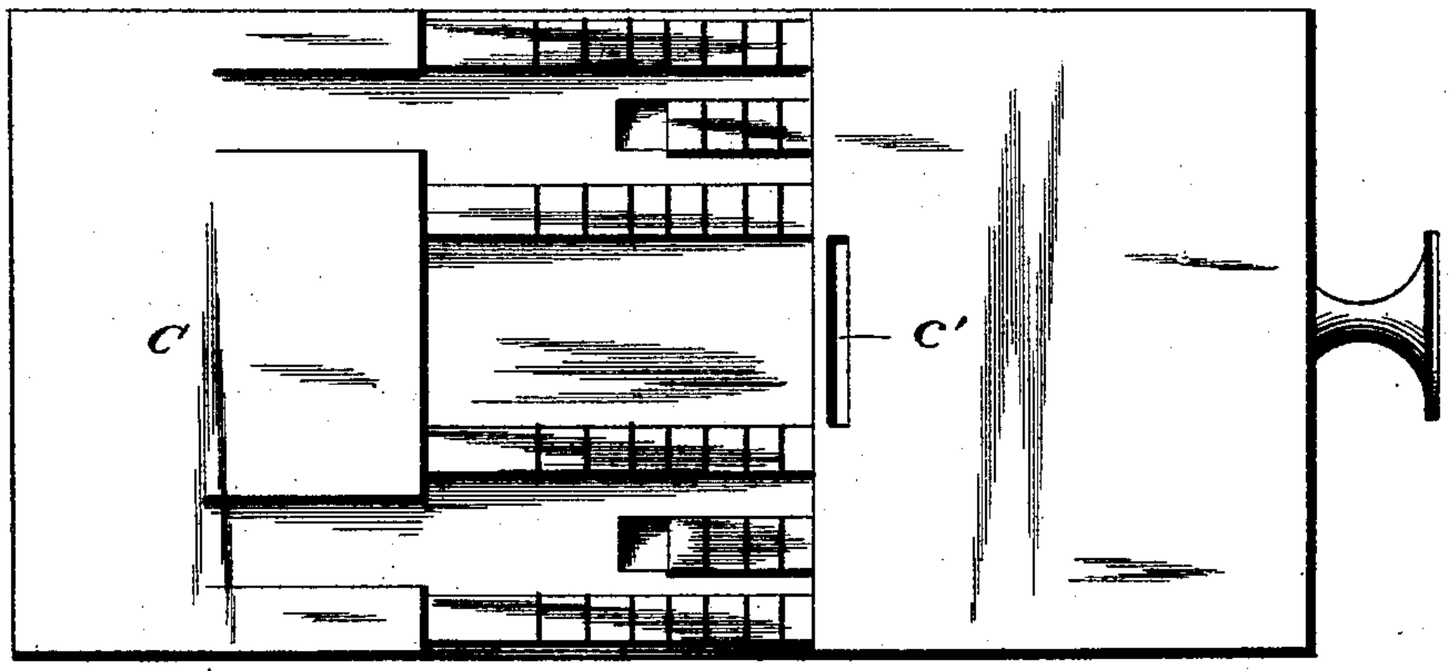
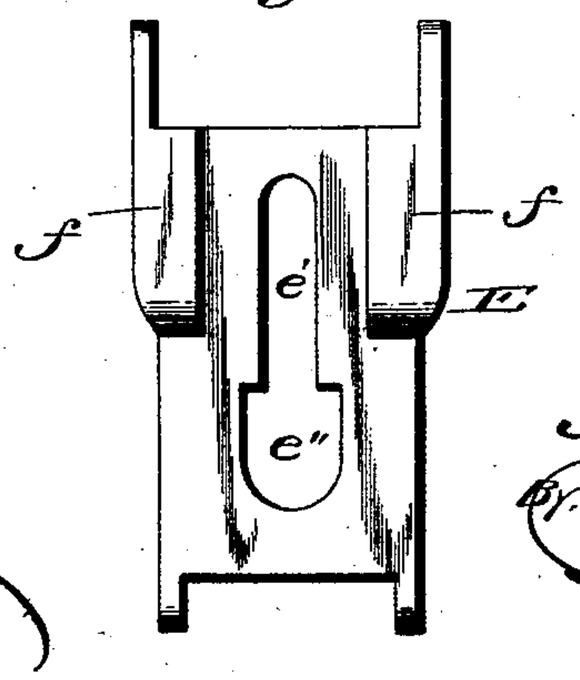


Fig. 7.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN G. MACPHERSON, OF MCKEESPORT, PENNSYLVANIA.

COIN-CONTROLLED VENDING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 482,875, dated September 20, 1892.

Application filed May 27, 1892. Serial No. 434,597. (No model.)

To all whom it may concern:

Be it known that I, JOHN G. MACPHERSON, a citizen of the United States, residing at McKeesport, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Coin-Controlled Vending Apparatus; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in coin-controlled vending apparatus; and it is more particularly designed as an improvement on the machine which forms the subject-matter of United States Letters Patent issued to me on the 9th day of February, 1892, and numbered 468,724.

The object of the present device is to secure greater security against fraud by the use of novel mechanism which can be operated to release the delivery-slide only upon the deposit of a coin of the proper denomination in the machine, such checking mechanism being inoperative when a smaller coin than the proper one is used, and also serving the important function of preventing the withdrawal of the proper coin by means of an attached string or wire after the same has been deposited in the coin-slot and operated to release the checking mechanism.

With these and other ends in view the invention consists in the combination, with a delivery-slide and a movable coin-holder adapted to receive the coin from the delivery-slide, of a positively-movable plunger or puncturing-rod adapted to be moved inward or rearward by the impact thereon of the proper coin in the coin-holder and to release the safety-latch or detent from the delivery-slide, means for impelling the plunger or rod to its initial position after the coin has been discharged and the coin-holder is returned to its normal position, and an ejector mechanism operated by slide-controlled devices which are positively actuated to cause the ejector-bar to sweep through the coin-holder and prevent the coin from being retained or held therein.

The invention further consists in the novel combination of devices and peculiar construction and arrangement of parts, as will be hereinafter fully described, and more particularly pointed out in the claims.

To enable others skilled in the art to understand and practice my invention, I have illustrated the same in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a perspective view, with one of the side walls of the casing removed, of a coin-actuated vending apparatus embodying my improvements. Fig. 2 is a vertical sectional view showing the position of the coin-controlled devices before a coin has been deposited in the coin-slot of the slide. Fig. 3 is a sectional view similar to Fig. 2, but with the delivery-slide drawn outward and the coin-controlled mechanism in the position which it assumes with the slide in its projected position. Fig. 4 is a detail view on an enlarged scale, showing the coin-controlled devices in plan, in order to more clearly illustrate the relative arrangement of the parts of such mechanism. Fig. 5 is a perspective view looking at the opposing sides or faces of the delivery-slide and the bed or plate which holds the coin actuated or controlled devices. Figs. 6 and 7 are detail views of parts of my improved apparatus. Fig. 8 is a detail view of a part of the puncturing and stripping arm and devices carried thereby.

Like letters of reference denote corresponding parts in all the figures of the drawings, referring to which—

A designates the case or shell of my coin-controlled vending-machine, which is in all essential particulars similar to the case of the machine embraced in my prior patent hereinbefore referred to. In this case or shell is arranged the horizontal bed-plate or platform B, on which are supported practically all of the coin-controlled devices of the machine, and above this plate or platform is arranged the delivery-slide C, which is adapted to travel back and forth in a right line within suitable ways or guides on the bed-plate or the casing A of the machine. Above this movable delivery-slide C said casing A is provided with a vertical compartment A′, in which are placed the articles to be vended, and on the top of the stack or pile of articles is placed a weight-

ed follower D, which serves to depress the lowermost article of the stack into the pocket or recess *c*, formed in the upper face of the slide at a point therein sufficiently close to the coin-slot *c'*, so that the slide can be drawn outward far enough to permit of ready access to the article for the purpose of removing the same from the pocket of the delivery-slide, as will be understood.

For the purpose of connecting the slide to the bed-plate or platform and at the same time permit the slide to have the necessary back-and-forth movements I connect the slide to the bed-plate by means of the pin-and-slot connections shown in Fig. 4, consisting of the longitudinal slots *d* in the bed-plate, near the side edges thereof, and the pins or screws *d'*, secured in the slide and working in the slots *d d*, although this particular connection is not strictly necessary, as equivalent connections may be used.

Near the forward end of the bed-plate or platform, which is concealed beneath the slide, I provide a vertical coin-slot *e*, with which the coin-slot *c'* in the delivery-slide is adapted to align or coincide, in order to permit the coin to pass from the slot in the slide to and through the slot in the bed-plate, and immediately beneath the coin-slot in the bed-plate is arranged a vertical swinging coin-holder E, which is normally in position to receive the coin directly from the aligned coin-slots of the slide and bed-plate. This swinging coin-holder is shown in detail in Fig. 7 of the drawings, and it preferably consists of a single plate or casting provided with a central longitudinal slot *e'*, enlarged or widened somewhat at its lower end, as at *e''*, and said coin-holder is further provided at its side edges with the parallel vertical flanges *f f*, which terminate above the upper edge of the widened lower end *e''* of the slot in said coin-holder, the inner edges of the longitudinal side flanges being grooved at *f' f'* to adapt a coin to fit in said grooves and be thereby retained in the coin-holder. The lower end of this coin-holder is provided with depending ears or lugs *f''*, through which is passed a horizontal pivot-pin or shaft F, which is journaled or secured in depending hangers f^3, which are rigid or integral with the bed-plate or platform, thus pivotally connecting the swinging coin-holder to the bed-plate, and this coin-holder is normally forced or held in such position relative to the coin-slot *e* in said bed-plate that its grooved flanges receive the coin from said slot by means of a spring F'', which is coiled around the shaft or pin F and has its arms bent or twisted to bear against the coin-holder at an intermediate point of its length, all as clearly shown in the drawings.

In the bed-plate, on opposite sides of the transverse coin-slot *e* therein, are provided longitudinal short slots *g g*, and in these slots operate or work the cam-lugs *g' g'*, which are cast or made integral with the upper part of the coin-holder, at the sides thereof, and these cam-lugs ride or are pressed by the spring of the coin-holder against a transverse depending flange G' on the lower side of the delivery-slide, close to the coin-slot *c'* therein, so that as the slide is moved rearward the depending flange will force the coin-holder through its lugs *g' g'* with it toward the rear, thus moving the coin-holder out of its vertical position into an inclined position, so as to release or discharge the coin after the plunger-bar has been forced rearward and the coin-holder released by the forward movement of the delivery-slide.

The coin-holder is locked in a slightly-inclined position at a point where a weighted lever does not extend through its vertical slot. Hence the coin is free to fall by gravity when the slide and coin-holder have begun their forward or outward motion, said coin-holder being unlocked or released from its inclined locked position by suitable devices actuated from the delivery-slide. The locking device for the coin-holder consists of a balanced lever H, which has a heavy weighted end *h*, arranged in advance of the coin-holder, and said balanced lever is pivoted or fulcrumed at an intermediate point of its length to the hangers F^3, as at *h'*. The short arm or end of the balanced lever projects through and is free to operate in the widened or enlarged lower end of the longitudinal slot in the coin-holder, so that as the coin drops into the grooved flanges its lower edge will rest upon and be sustained by the weighted lever. Thus the coin will be held in the flanges and on the balanced lever while the coin-holder is swung rearward. To the short end or arm of the balanced lever is connected a vertical operating-rod *h''*, which extends through and plays freely in an aperature in the bed-plate, in advance of the coin-slot *e* therein, and on the upper extremity of this operating-rod bears or rides an inclined or cam lug H', which is integral or rigid with the delivery-slide, in advance of the coin-slot *c'* therein, the inclination of the face of said lug being such that the operating-rod will not be affected as the coin-holder and the slide are moved rearward; but on the forward movement of the slide the lug depresses the operating-rod, which in turn lifts the weighted end of the lever, and thus throws the end of the lever that engages the coin so that the lever is depressed to assist in discharging the coin from the coin-holder.

I designates the endwise-movable plunger or puncturing-bar, which is arranged in a horizontal position in rear of the coin-holder. This horizontal bar or plunger is provided at its forward end with a lateral guide projection *i* and with a pointed puncturing end *i'*, and said guide and pointed end are fitted in the lower forked end of a vertical rigid guide-piece I', which depends from the stationary bed or platform. The rear end of this plunger or bar is provided with a longitudinal slot *i''*, in which works a fixed pin or bolt

i^3, rigidly secured in a depending arm or lug i^4 on the rear part of the bed-plate, so as to support and guide the rear end of the bar or rod; and said bar is furthermore pressed forward normally by means of a flat leaf-spring I^2, having one end secured rigidly to the rear part of the bed-plate and its other free end bearing against the rear extremity of the plunger-bar. In its upper side or edge the plunger-bar is furthermore provided with the notches or seats $j\,j'$, arranged one in rear of the other, the deeper notch j' being in advance of the shallow notch j, and in one or the other of these notches is adapted to engage the dog or detent J, which is pivoted at an intermediate point of its length, as at j'', to a fixed depending lug j^3 on the bed-plate. The lower rear end of the detent has a projecting nose-shaped end adapted to take snugly into one of the notches or seats, while its forward end is curved or extended above the pivot or fulcrum j'', so that it is in the path of a bell-crank J', having its lower arm adapted to ride on the detent and its upper arm in the path of a series of teeth constituting one of the racks on the slide C—that is, the rack J^2 thereon—the function of the bell-crank and rack being to release the detent from the shoulders of the plunger-bar after the coin-holder has been returned to its initial position and when the delivery-slide is drawn outwardly. The lower bevel-nose end of the detent is normally pressed downward upon the upper edge of the plunger-bar by means of the spring J^4, one end of which is fastened to the bed-plate, and the other end bears upon the detent, as shown.

The plunger bar or rod is adapted to operate on its inward or rearward movement the locking device of the delivery-slide, said locking device consisting of the bell-crank lever K, which is pivoted at k to a fixed lug on the platform and having its lower vertical arm normally pressed by the spring k' against the stud k'' on the side of the plunger-bar and with its other arm having the locking-pin k^3 pivoted thereto, said locking-pin being normally elevated or raised to engage with the series of teeth constituting the rack-bar or the rack K' on the under side of the slide, said rack K' having its teeth arranged or inclined in the reverse order or direction to the inclination of the teeth of the rack J^2. It is evident that the spring holds the bell-crank lever K in such position that the locking-pin will be engaged with the teeth of the rack K' to prevent outward movement of the slide; but when a coin of the proper denomination is deposited in the coin-holder and the lever H is released thereby the inward thrust of the delivery-slide will force the coin-holder inward, thus bringing the coin to bear against the pointed end of the spring-pressed plunger, which in turn will be forced back by the impact of the coin itself, so that the stud thereon will move the bell-crank K and withdraw its locking-pin from the path of the shoulders of the rack K', thus admitting of the farther inward movement of the plunger-bar without hinderance from the locking devices of the delivery-slide. The plunger or puncturing-bar is so proportioned and arranged that its pointed end will lie just the proper distance from the face of the coin-holder to adapt a proper coin to be deposited in the holder, so that on the slightest inward thrust of the coin-holder the coin will be brought against the pointed end of the puncturing bar or rod, and if the coin be a proper one for which the machine is designed the metal will be of such hardness that the pointed end of the puncturing-bar will not penetrate the coin; but, on the contrary, the impact or pressure of the hard-metal coin will be sufficient to press back the puncturing-bar on the continued inward movement of the slide. If a coin of less value or a smaller coin of greater value is deposited in the machine, its thickness will not be such that the puncturing-bar will be forced rearward by the impact of the coin, and thus when the coin-holder is moved to its inclined position such improper coin will be caused to drop out of the coin-holder, and should a spurious piece—such, for instance, as a soft-lead disk such as is sometimes used to defraud machines of this kind—be deposited in the machine the puncturing-bar will have sufficient resistance through its spring to penetrate such soft-metal disk, and thus prevent the operating parts from having the necessary movements to free or release the slide.

I will now proceed to describe the ejector mechanism by which a coin is positively forced or ejected from the coin-holder should it fail to drop or fall therefrom by gravity when the coin-holder assumes its inclined position. It sometimes happens that evil-disposed persons will attempt to defraud a coin-controlled machine by means of a proper coin attached to a slender wire or string, which upon being deposited in the machine will release the locking mechanism or mechanisms to permit the article to be secured, after which the coin can be withdrawn by the use of such slender wire or cord. It is my object to prevent this by the use of a novel ejector mechanism, which is positively operated to strip the coin out of the holder each time the coin-holder and the plunger-bar are forced inward from their normal positions. This ejector mechanism consists of an ejector bar or lever L, which is pivoted at its inner rear end to a lug or support on the lower side of the bed-plate, and the forward end of this lever or bar works in a position so as to strike or impinge against the upper edge of the coin in the coin-holder when such ejector-bar is depressed. This ejector-bar is normally elevated by means of a spring l, attached to the bed-plate and bearing against a fixed stud on the side of the ejector bar or lever, and against the upper edge of the lever bears or rides an operating-piece L', pivoted at an intermediate point of

its length and working in a slot l' in the bed-plate, the upper end of said operating-piece being in the path of a depending tooth m, that is rigid or integral with the delivery-slide and arranged at a point thereon in rear of the racks, so that while the detent is still engaged with the plunger-bar to restrain the same in its retracted position the operating-piece serves to depress the ejector-bar and causes the same to strip the coin off the coin-holder before the plunger or puncturing bar is allowed to return to its initial position. When the puncturing or plunger bar is moved forward to its initial position, the ejector-bar is prevented from being depressed by means of a latch N, which is pivoted at an intermediate point of its length on the side of the plunger bar or rod, so as to move therewith, and one end of this latch is in the path of a stud n on the plunger-bar, while the other end of the latch is in the path of a stud n' on the ejector-bar, when the parts are in normal position—that is, with the plunger-bar projected close to the coin-holder; but when the plunger-bar is moved rearward and it is desired to bring the ejector-lever into operation, the latch having been moved rearward with the plunger-bar, its forward end is out of the path of the stud n' on the ejector-bar and the latter is free to have the desired movements without hinderance from the plunger-bar, which is still retained in its retracted position and remains therein until the ejector-bar has been returned by its spring to its raised position.

This being the construction of my improvements, the operation thereof is as follows: Normally the delivery-slide is locked from retrograde or inward movement by the locking devices and the coin-slot c' in said slide is in line with the coin-slot e in the bed-plate and with the coin-holder moved forward to align with the coincident coin-slots. As soon as a coin of the proper denomination is deposited in the machine it immediately falls into the coin-holder and rests upon the end of the balanced lever, thus depressing the same and withdrawing the locking-pin thereof from the path of the projecting rib on the lower face of the slide. The slide can now be moved inward gradually, and on this inward movement the coin-holder is tilted by reason of its lugs engaging with the slide and the plunger-bar is forced inward by the impact or pressure of the coin against the pointed end of said rod or bar, this inward movement of the plunger bringing its stud into action against the bell-crank to withdraw the locking-pin from engagement with the rack on the delivery-slide. The slide can thus be forced inward to its fullest extent, the plunger and coin-holder moving therewith and the detent slipping into the notches or teeth on the upper edge of the plunger-bar to retain the same in its retracted position, and the slide is now drawn outward, thus bringing into action the cam or lug to free the balanced lever from the coin and the cam or tooth to depress the ejector-lever and clear the coin-slot, if the coin has not already dropped from the coin-holder, and allow the coin-holder to return to its normal position, and as the slide continues to move forward the bell-crank will operate the detent to free the plunger or puncturing bar, which can thus be shot by its spring to its normal position relative to the coin-holder.

I am aware that changes in the form and proportion of parts and details of construction of the mechanism herein shown and described as an embodiment of my invention can be made without departing from the spirit or sacrificing the advantages of my invention, and I therefore reserve the right to make such modifications as fairly fall within the scope of my invention.

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

1. In a coin-controlled vending-machine, the combination, with an endwise-movable delivery-slide and locking means therefor, of a pivoted swinging coin-holder below the slide and arranged to allow the passage of the coin therethrough and a puncturing-bar or plunger adapted to be retracted by the impact of a coin in said coin-holder and arranged to release the locking mechanism of the slide, substantially as and for the purpose described.

2. In a coin-controlled vending-machine, the combination, with an endwise-movable delivery-slide and locking means therefor, of a pivoted swinging coin-holder below the slide and arranged to allow the passage of the coin therethrough and a puncturing-bar or plunger in the path of said coin-holder and adapted to be retracted only by the impact or pressure of the coin while contained within the coin-holder, substantially as and for the purpose described.

3. In a coin-controlled vending apparatus, the combination, with a delivery-slide, of a coin-holder arranged to be moved with the slide, a puncturing-bar or plunger in the path of the coin-holder and adapted to be retracted only by the impact or pressure of the coin therein, and an ejecting mechanism operating to strip the holder of the coin while the puncturing-bar is in its retracted position, as and for the purpose described.

4. In a coin-controlled vending apparatus, the combination, with a delivery-slide, of a coin-holder adapted to move with the slide and having the coin-actuated locking means, a puncturing-bar in the path of the coin-holder, a detent operated by the slide to restrain the puncturing-bar while the slide and coin-holder are returned to their normal positions, and a locking mechanism operated by the plunger-bar on the inward thrust of the same and the coin-holder, as and for the purpose described.

5. In a coin-controlled vending apparatus, the combination, with a delivery-slide, of a swinging coin-holder movable with the slide,

a puncturing-bar in the path of the coin-holder and adapted to be retracted by the impact or pressure of a coin in said holder, an ejector lever or bar having means to be operated by the slide, a detent for restraining the puncturing-bar while the ejector-lever is being operated, and a latch between the puncturing-bar and the ejector-lever, which permits the ejector-lever to be depressed only while the puncturing-bar is retracted, as and for the purpose described.

6. In a coin-controlled vending apparatus, the combination of a bed-plate having the coin-slot, the delivery-slide also provided with a coin-slot, the swinging coin-holder pivoted below the bed-plate in suitable bearings thereon and having a spring which normally holds the coin-holder in position to receive from said coin-slots, a balanced lever carried by the coin-holder and having one end thereof arranged in the path of the coin to be deposited in the coin-holder, a locking-pin connected to and movable by the balanced lever, a puncturing-bar in the path of the coin-holder, and locking devices operated by the puncturing-bar, as and for the purpose described.

7. In a coin-operated vending apparatus, the combination, with a bed-plate and the delivery-slide, of the pivoted coin-holder arranged to receive from the coin-slots in said plate and slide, an endwise-movable puncturing-bar guided on the bed-plate and arranged in the path of the coin-holder, and a pivoted lever arranged to be operated by the retracted movement of the puncturing-bar and having the locking-pin adapted to engage with one or a series of projections on the delivery-slide, as and for the purpose described.

8. In a coin-operated vending apparatus, the combination, with a bed-plate and the delivery-slide, of the pivoted coin-holder, an endwise-movable puncturing-bar arranged in the path of the coin-holder, a detent adapted to retain the puncturing-bar and having a bell-crank in the path of a projection on the slide to release the detent from the puncturing-bar, and a locking mechanism normally engaged with the slide and adapted to be released upon the inward movement of the puncturing-bar, as and for the purpose described.

9. In a coin-controlled vending apparatus, the combination, with a bed-plate and the delivery-slide, of the pivoted coin-holder, a puncturing-bar in the path of the coin-holder, a detent for the puncturing-bar, and an ejector arranged to clear the coin from the coin-holder and having an operating-piece in the path of a tooth on the slide, as and for the purpose described.

10. In a coin-controlled vending apparatus, the combination of a slotted bed-plate, a slotted delivery-slide, a pivoted coin-holder having a pressure-spring to hold the same in line with the coin-slots in said plate and slide, a locking mechanism carried by the coin-holder, a puncturing-bar in the path of the coin-holder and having the safety-latch, and an ejector-bar adapted to be restrained by the safety-latch of the puncturing-bar and having means to be operated by the slide only when the puncturing-bar and the latch are retracted, as and for the purpose described.

11. In a coin-controlled vending apparatus, the combination of a bed-plate, a slide, a pivoted coin-holder, an endwise-movable puncturing-bar having the lateral stud n, the ejector-lever likewise having the stud n', a latch movable with the puncturing-bar and adapted to be freed from the stud of the ejector-bar when the puncturing-bar is retracted, a detent for engaging the puncturing-bar, and independent operating mechanisms for the puncturing-bar and the ejector-lever, as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN G. MACPHERSON.

Witnesses:
D. R. WOOD,
S. W. HARTT.