

H. C. FLEMING.

COIN CONTROLLED MECHANISM FOR AUTOMATIC VENDING MACHINES.

APPLICATION FILED FEB. 20, 1909.

Patented Oct. 25, 1910.

973,492.

2 SHEETS—SHEET 1.

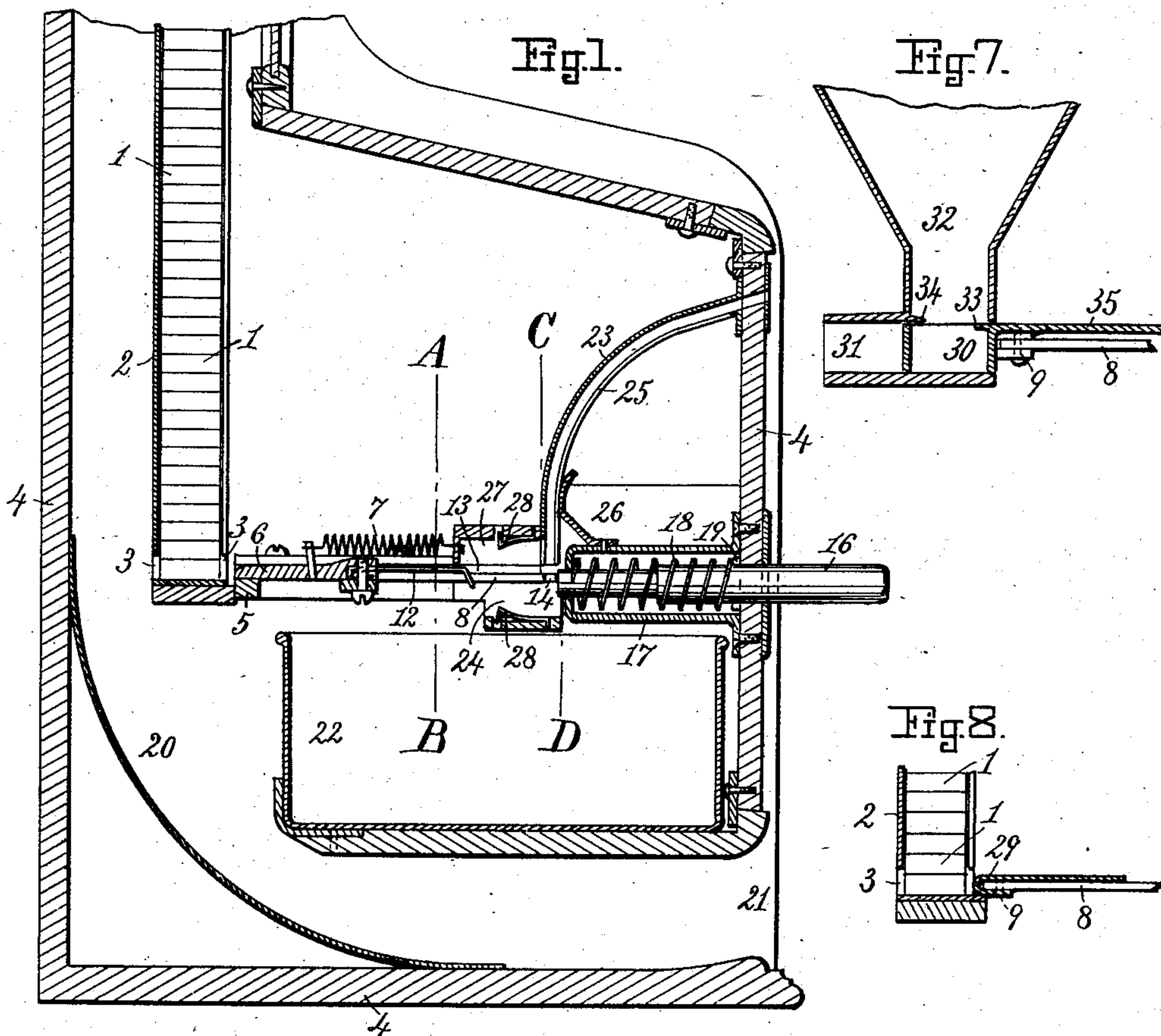


Fig. 2.

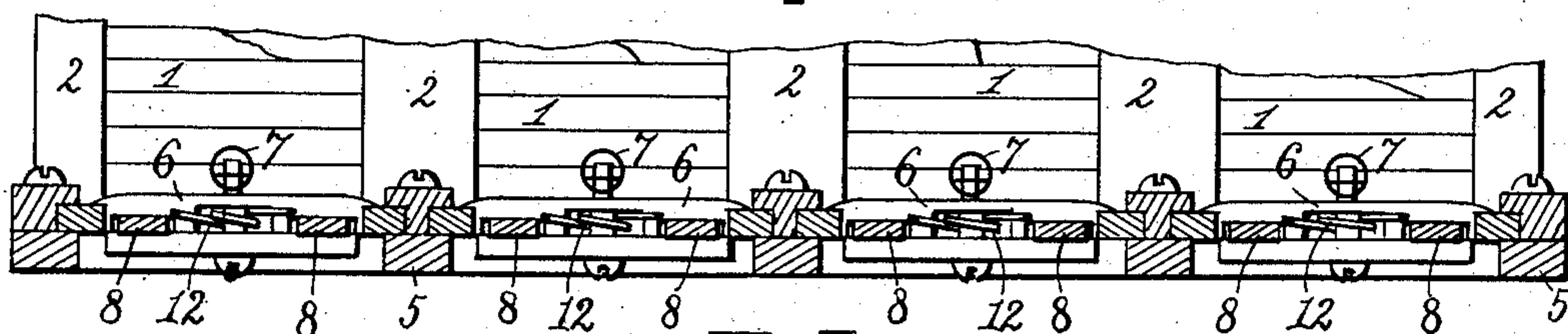
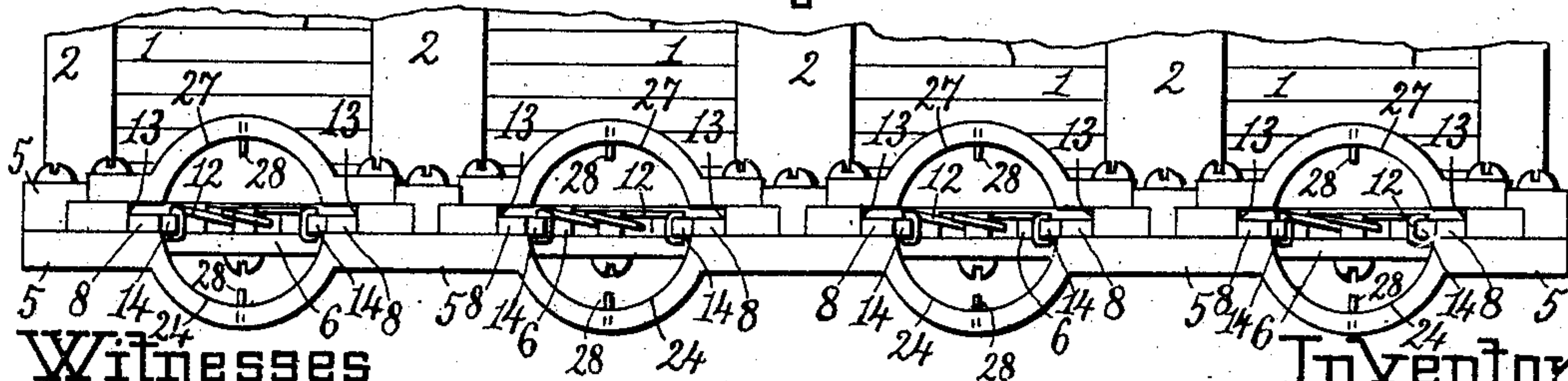


Fig. 3.



Witnesses

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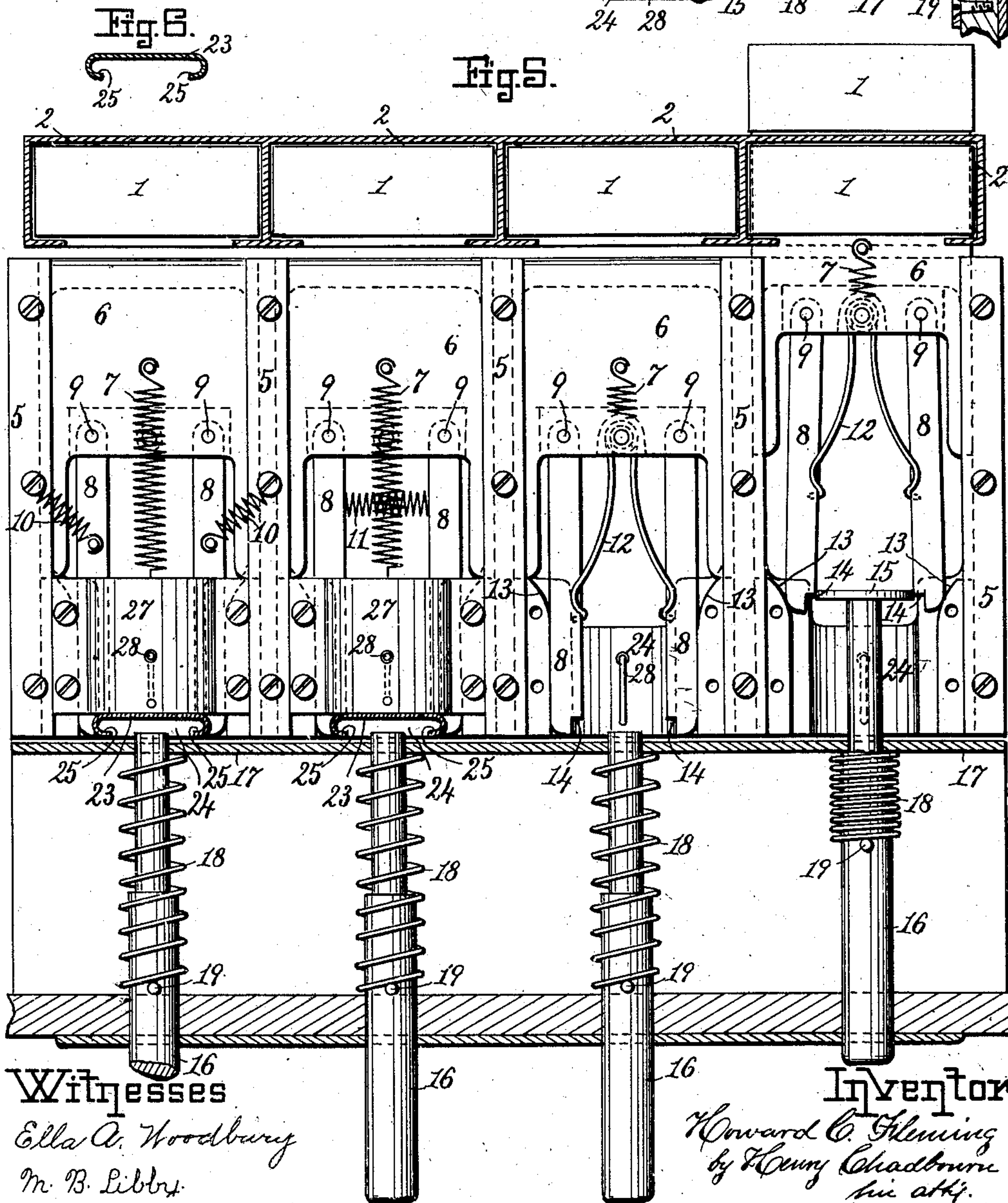
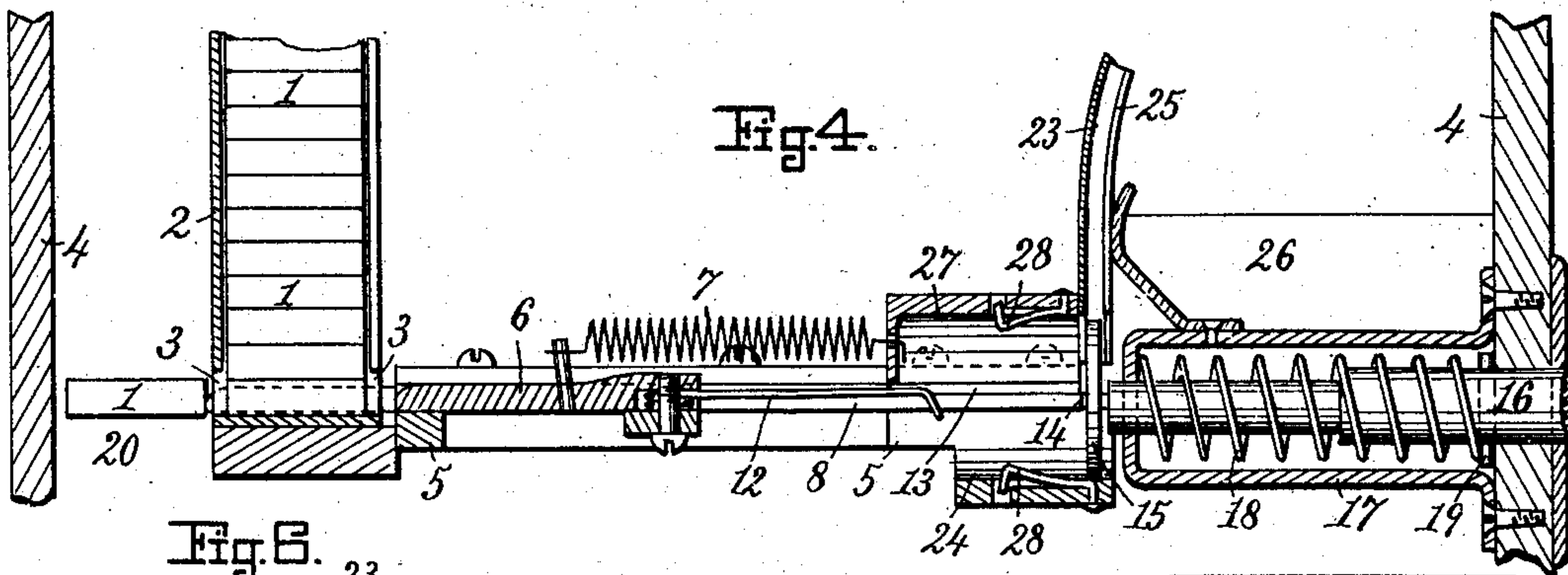
Howard C. Fleming  
by Henry Chadbourne  
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# UNITED STATES PATENT OFFICE.

HOWARD C. FLEMING, OF WATERTOWN, MASSACHUSETTS.

COIN-CONTROLLED MECHANISM FOR AUTOMATIC VENDING-MACHINES.

973,492.

Specification of Letters Patent.

Patented Oct. 25, 1910.

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*To all whom it may concern:*

Be it known that I, HOWARD C. FLEMING, of Watertown, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Coin-Controlled Mechanisms for Automatic Vending-Machines, of which the following is a specification.

This invention relates to improvements in coin-controlled mechanisms for automatic vending machines, and has for its objects to provide mechanisms whereby a coin which is introduced within the machine cannot be withdrawn therefrom excepting from the coin receptacle or safe; whereby the article to be sold by the machine and contained therein, cannot be taken therefrom without the introduction of a coin of the proper denomination which when introduced therein and moved sufficiently in the direction to discharge one of such articles cannot be returned so as to cause the discharging of another article but will have to be dropped into the coin receptacle or safe; to prevent the clogging of the machine by the introduction of paper, cloth, or other articles within the coin tube; and to otherwise improve machines of this class as will appear by the complete description of the same herein contained.

The invention consists of the novel arrangements, constructions and combinations of parts substantially as described herein-after and particularly set forth in the claims annexed hereto, and it is carried out substantially as illustrated on the accompanying drawings which form an essential part of this specification and whereon like characters of reference refer to like parts wherever they occur thereon.

On the drawings: Figure 1 represents a portion of a vertical section of a machine for automatically vending small packages of gum, chocolate and similar articles, showing the machine as being provided with my improved coin-controlled mechanism. Fig. 2 represents a vertical section of the improved coin-controlled mechanism and a portion of the tubes containing the articles to be automatically sold, on the line A—B in Fig. 1, but showing the same on an enlarged scale from that shown in Fig. 1. Fig. 3 represents a vertical section of the same parts as shown in Fig. 2 but on the line C—D shown in Fig. 1, also showing the same on an enlarged scale from

that in Fig. 1. Fig. 4 represents an enlarged vertical section similar to that shown in Fig. 1 of the coin-controlled mechanism, the tube containing the articles to be sold and a portion of the case. Fig. 5 represents a plan view of the parts shown in Fig. 4 on the same scale as that in Fig. 4. Fig. 6 represents a cross section of the coin tube through which the coin is introduced into the coin-controlled mechanism. Figs. 7 and 8 represent detail sectional views of different forms of plungers and receptacles for different kinds of articles which may be sold by my improved mechanism, the former view arranged for the sale of salted peanuts, small candy and similar articles which will require the discharging of a plurality of the articles for a single coin, and the latter view arranged so as to reduce the necessary depth of the inclosing casing.

Referring to Figs. 1 to 6 inclusive on the drawings, the packages 1 of gum, chocolate, or other articles to be sold by the machine are arranged in one or more piles one package above another and the piles of packages are placed within tubes 2. Any desired number of the tubes 2 with their contained packages 1 may be used in the machine according to the number of different articles to be sold by the machine or the increased amount of the sales of any one kind of article. The lower end of each tube 2 is provided with an opening 3 of sufficient size to allow the bottom package contained therein to be moved sideways through said opening leaving the remaining packages of the pile within the tube.

The machine is provided with a casing 4 of any desired or suitable shape to contain the improved coin-controlled mechanism and the series of tubes 2 with their contained packages 1.

Within guides in a frame 5 secured to the interior of the casing 4, are mounted the plungers 6, one plunger for each tube 2, and which plungers are so arranged that their back ends are capable of being reciprocated backward and forward through the openings in their respective tubes 2. The plungers 6 are normally held in their forward position by means of the springs 7 secured thereto and to a stationary part of the frame 5, so that the rear end of the plunger for each tube is in front of the opening in the respective tube 2, thus preventing the bottom packages 1 from being dis-



charged through the front of said tubes. Two levers 8 are fulcrumed at 9 to the front part of each plunger and they extend toward the front of the machine. These levers are acted upon by suitable spiral springs 10, as shown at the left of Fig. 5, or by a single spiral spring 11, as shown between the levers on the next plunger to the right on Fig. 5, or by a suitable rat-trap spring 12 as shown on the other parts of the drawings, and in such a manner that their forward ends are normally forced apart with a yielding pressure. The forward ends of the levers 8 rest against cam surfaces 13 on the frame 5 and the movements of said levers are controlled by said cam surfaces. The cam surfaces 13 are so shaped that the forward ends of the levers 8 will be pressed toward each other and held in that position against the pressure of the springs acting thereon, during the time that the attached plunger is in its forward position and until said plunger nearly reaches its rear position, when said cam surfaces will allow the forward ends of said levers to be forced apart by the action of said springs. The forward end of each lever is preferably notched on the edge, as shown at 14, forming a ledge thereon for a purpose to be understood by the completed description of the machine, but these notches may be dispensed with and the extreme forward ends of the levers form a substitute for the ledges formed by said notches. When the levers 8 are forced toward each other by the action of the cam surfaces 13, their ends are in such relation to each other that the coins 15 used in the operation of the machine, when standing on their edge between said levers, as shown in Figs. 4 and 5, will rest against the ledges formed by the notches in the levers, when such notches are used, or against the ends of the levers if the notches are dispensed with, substantially as shown.

Push rods 16 are mounted within bearings in the casing 4 and within brackets 17 secured to the interior of the casing, which push rods are free to be reciprocated longitudinally within said bearings. The forward ends of the push rods project somewhat outside the casing and the rear ends of said rods are normally held slightly in front of the coin 15 when in the position between said levers, as shown in Figs. 1, 4 and 5. The push rods are normally held in their forward position by means of the springs 18 upon said rods, which springs rest against the surface of the bracket 17 and against a pin 19 or shoulder on said rods. When the push rod is moved longitudinally inward against the influence of the spring 18 and a coin has been placed between the two levers 8 into the position shown in Figs. 4 and 5, the inner end of the push rod will engage or come against the

surface of said coin and a further inward movement of said rod will cause the coin to be moved inward. As the coin rests against the ledges formed on the forward ends of the levers 8 by the notches therein or against the ends of said levers, the inward movement of the coin, caused by the pressure and inward movement of the push rod, will cause a similar movement to be imparted to the levers and the plunger 6 attached to said levers. This movement of the plunger will cause its rear end to enter the opening 3 in the tube 2 and by coming against the bottom package 1 within said tube will force the bottom package out through the opening in the back of the tube 2 until said package, by its own weight, will drop through the passage 20 within the casing 4 to a position where it may easily be reached from outside said casing through the opening 21 therein. When the levers 8 have been moved inward or backward by this action of the push rod nearly to the end of said movement, the cam surfaces 13 will allow the forward ends of the levers 8 to be spread apart by the action of the spring or springs acting on said levers. This spreading of the forward ends of the levers will move the ledges thereon or the ends of the levers from engagement with the coin and will allow the coin to drop into a coin receptacle or safe 22 within the casing. The removal of the coin from between the levers 8 will allow the spring 7 to return the plunger and the attached levers to their forward positions withdrawing the rear end of the plunger from the tube 2, allowing another package of the pile of packages in said tube to drop to a position directly in the path of the movements of the plunger ready to be discharged by the next backward movement of the plunger and causing the cam surfaces to press the ends of the levers toward each other so that they will be in position to receive the next coin which may be introduced into the machine. A withdrawal of the pressure from the push rod 16 will allow the spring 18 to return the push rod to its normal or forward position, it being limited in this forward movement by the pin 19 coming into contact with the interior of the casing or by any other common and well-known means. Thus package after package may be discharged from the tube by inward or backward movements of the push rod, provided however that the push rod and plunger are coupled together by the introduction of a coin between the levers 8, but as the coin is automatically dropped into the coin receptacle at the end of each backward movement of the push rod whenever a coin is so introduced, it will be seen that it will be necessary to supply another coin before the plunger can be moved by a movement of the push rod otherwise the push rod will simply



reciprocate within the space between the two levers 8 and fail to move the plunger.

In order to properly locate a coin between the forward ends of the levers 8 from outside the casing of the machine, I provide a coin tube 23 leading from the exterior of the casing to a position directly above the space between the notches in the ends of the levers 8 or the space directly in front of the ends of said levers when such notches are not used, and I also form the frame 5 semi-tubular below this space substantially as shown at 24 in Fig. 3. By this arrangement a coin inserted within the tube 23 will drop from the lower end of the tube into the tubular portion 24 of the frame and this tubular portion will hold the coin so that it will rest against the ledges on the levers 8 or against the ends of the levers when no notches are used and said coin will be directly back of the inner end of the push rod 16.

In order to prevent the withdrawal of the coin by means of a wire or other implement after it has passed down the coin tube, I prefer to make the tube more or less curved or crooked substantially as shown, and in order to prevent the clogging of the machine by the introduction of pieces of paper, cloth, or pieces of metal, buttons or other articles not the same size and dimensions as the coin for which the machine is intended, I prefer to form the tube so that the under side thereof will be open nearly the entire width of the tube only leaving sufficient of the under side to form ledges substantially as shown at 25 in detail on Figs. 6, which ledges will preferably only be wide enough to keep and properly guide the desired coin to its position in front of the levers and behind the push rod but which will allow all other articles to drop through the open underside of the tube and into a receptacle 26 within the casing provided for the reception of such articles, thus leaving the tube clear for the reception of the proper coin at all times.

In order to guide the coin and prevent it from leaving its position between the levers 8 during the backward movement of the plunger and until said levers are withdrawn from such coin as above described, I provide the frame 5 with a semi-tubular shield 27 which in connection with the semi-tubular portion 24 of the frame forms a tubular passage through which the coin passes during its backward movement with the plunger in discharging the packages. This tubular portion of the frame extends from a position under the coin when it is introduced between the levers to a position nearly under the coin when it is dropped into the coin receptacle from between said levers. Thus the coin is guided by a tubular portion of the frame during nearly the entire length

of its movement with the plunger in discharging the packages. The tubular shield 26 extends beyond the position at which the coin is dropped into the coin receptacle or safe and prevents any liability of the coin springing beyond the coin receptacle, thus insuring the deposit of the coin within said receptacle.

In some cases the packages 1 will drop through the passage 20 and be discharged before the plunger has been moved back far enough to release the coin from the levers 8 and in such cases it might be possible to release the pressure from the push rod and allow the plunger and push rod, with the coin still held between the levers, to be returned to their forward positions by the combined actions of the springs 7 and 18. In such a case the coin could be reciprocated backward and forward within the tubular portion of the frame and thus discharge package after package from the pile of packages within the tube 2 by the introduction of a single coin and the machine be robbed of the article to be sold thereby. In order to prevent this robbing of the packages from the machine and to insure the discharging of but one package only by the introduction of a single coin, I introduce one or more yielding projections 28 within the tubular passage in the frame, which projections are preferably made by springs so shaped as to present an inclined surface to the coin while moving backward within said passage but which will yield easily by the action of the coin on said inclined surface allowing the coin to easily and readily pass such projections, but said projections are so shaped as to present a flat surface substantially at right angles to the line of movement of the coin, against which the coin will strike whenever there is a tendency or attempt to return the coin to a position directly under the coin tube 23. These projections are introduced within the tubular passage so as to limit the forward movement of the coin somewhere between the position of the coin when the plunger has slightly entered the tube or sufficiently to prevent the pile of packages from dropping within the tube 2, and before the coin reaches the position at which it is liable to cause the discharge of the bottom package of the pile of packages into the passage 20. By this construction it will be seen that it is impossible for a person to reciprocate a coin within the tubular passage within the frame and secure the discharge of more than one package from the tube 2 but that it will require the introduction of an additional coin for each package discharged.

Thus far I have described my improvements as arranged in a machine in which an increase in the depth of the machine is not essential but it is possible to reduce the



necessary depth of the machine very materially and also to reduce the size of the plunger so as to be used in discharging very small articles such as a match, a toothpick, or any similar article, and I have shown the construction of such a plunger in Fig. 8, in which the levers 8 are secured to the rear end of the plunger 29 and which plunger is made from sheet metal or other thin material having sufficient of the plunger to project in front of the connection with the levers 8 to support the pile of articles left within the tube 2. By this construction the depth of the casing can be very materially reduced.

The machine has been described thus far as being adapted to discharge one article at a time or several articles put into a single package, but the mechanism is also applicable to machines in which it is desired to discharge a number of articles from a mass of such articles at each operation of the machine, as is the case when selling small candies, salted peanuts, and similar articles from a receptacle containing a quantity of such articles. In Fig. 7 I have shown a plunger which I prefer to use in the sale of such small articles from bulk. In such a construction the plunger 30 is made in the form of a bottomless box to which the levers 8 are attached. This plunger reciprocates within a tubular guide 31 extending backward from the lower end of the receptacle 32 containing the bulk of the articles to be sold or discharged by the machine. This guiding tube is of such a length as to contain the entire box portion of the plunger so that the articles cannot be discharged before communication with the receptacle has been completely cut off. In order to prevent these small articles from clogging the movement of the plunger, I provide the plunger with a cutter or separator 33 and the receptacle with the cutter or separator 34 which act as shears when they are brought together by the reciprocations of the plunger, and either cut the small articles or force them apart thus enabling the plunger to complete its full movement and preventing the clogging of the movement of the plunger.

In order to prevent the bulk of the articles from being discharged while the articles are being discharged from the box portion of the plunger, I provide the plunger with a guard 35 which is moved under the receptacle when the box portion of the plunger is moved to a position so as to discharge the contents of the box portion.

Having thus fully described the nature,

construction and the operation of my invention, I wish to secure by Letters Patent and to claim:

1. In a coin-controlled mechanism for an automatic vending machine, a coin tube, a reciprocating discharging plunger, a push-rod, two spring-pressed levers fulcrumed to and carried by said plunger extending from said plunger and having their free ends normally held under the end of the coin-tube, and cams acting on said levers holding them so that a coin dropped through said tube will take a position between said push rod and the free ends of said levers engaging said levers thus coupling the push rod and plunger together to allow the operation of the plunger by the push rod, but releasing said coin after the plunger has performed its duty.

2. In a coin-controlled mechanism for an automatic vending machine, a coin tube, a reciprocating discharging plunger, a push rod, two spring-pressed levers fulcrumed to and carried by said plunger having their ends notched extending from said plunger and having their free ends normally held under the end of the coin tube to receive and hold a coin between them, and cams acting on said levers holding them so that a coin dropped through said tube between the notched surfaces of the levers will take a position in front of said levers between the push rod and free ends of the levers engaging said notched surfaces thus coupling the push rod and plunger together to allow the operation of the plunger by the push rod but releasing said coin after the plunger has performed its duty.

3. In a coin-controlled mechanism for an automatic vending machine, a coin tube, a reciprocating discharging plunger, a push rod, two levers attached to said plunger having notches at their ends to receive a coin dropped through said tube and coupling the discharging plunger and push rod so that the plunger may be reciprocated by pressure on the push rod, a tubular passage through which the coin passes while moving with the plunger, and yielding projections in said passage allowing the free passage of the coin in one direction but engaging the front of said coin and preventing its return movement.

In testimony whereof I have affixed my signature, in presence of two witnesses.

HOWARD C. FLEMING.

Witnesses:

JOHN F. TUFTS,

HENRY CHADBURN.