No. 625,803. Patented May 30, 1899.

F. F. PULVER.

VENDING MACHINE.

(Application filed Dec. 29, 1897.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

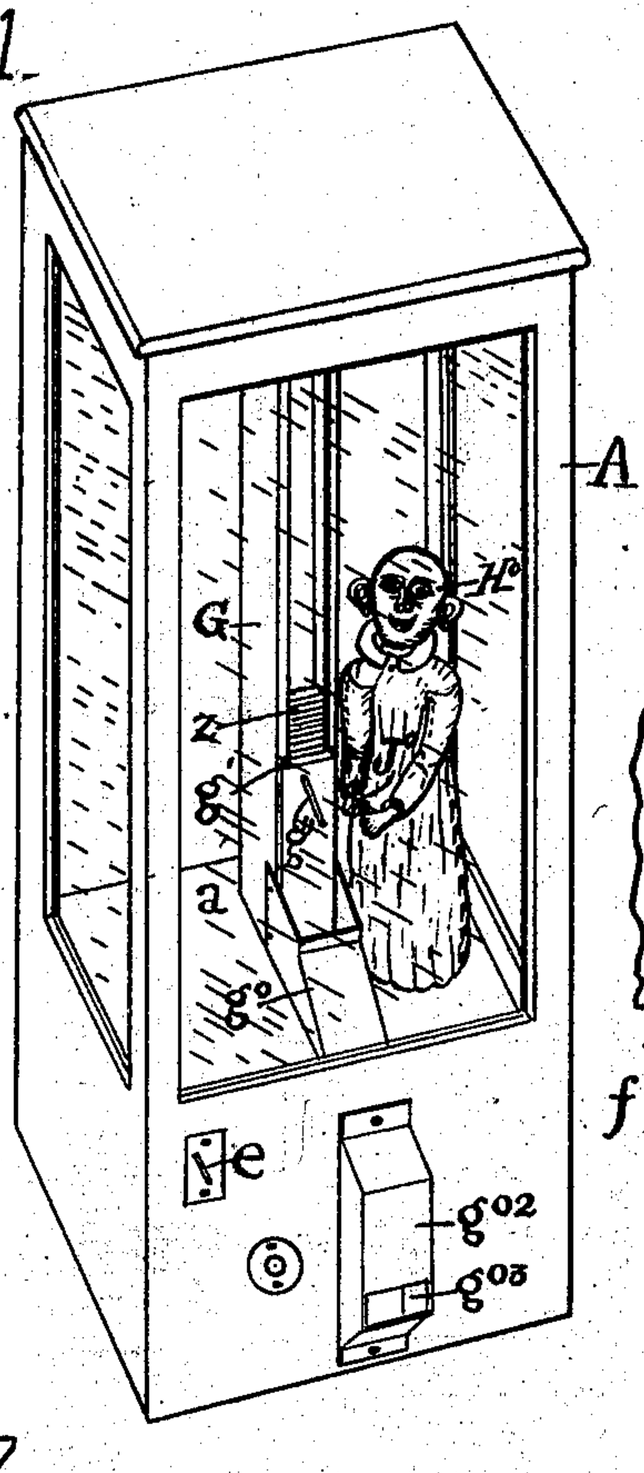


Fig. 3.

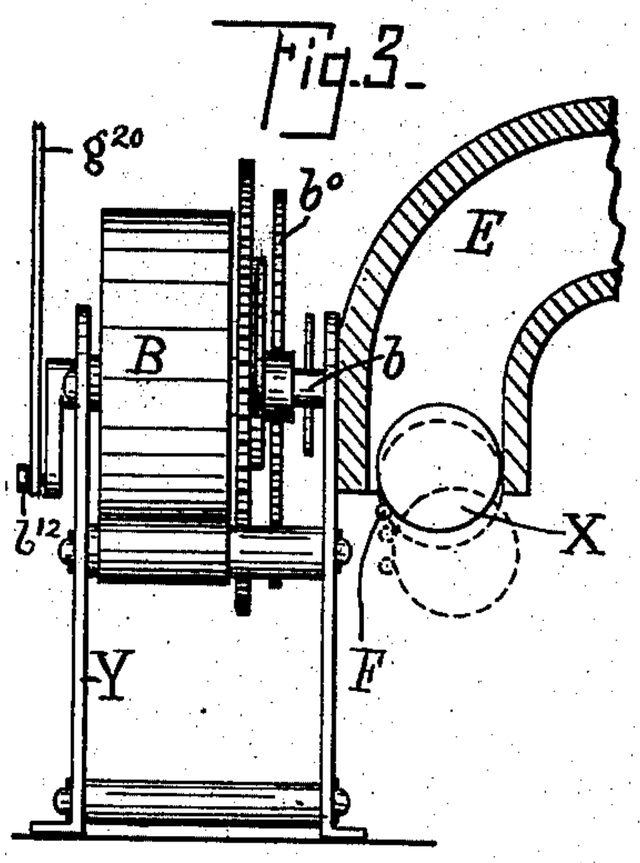


Fig. 4.

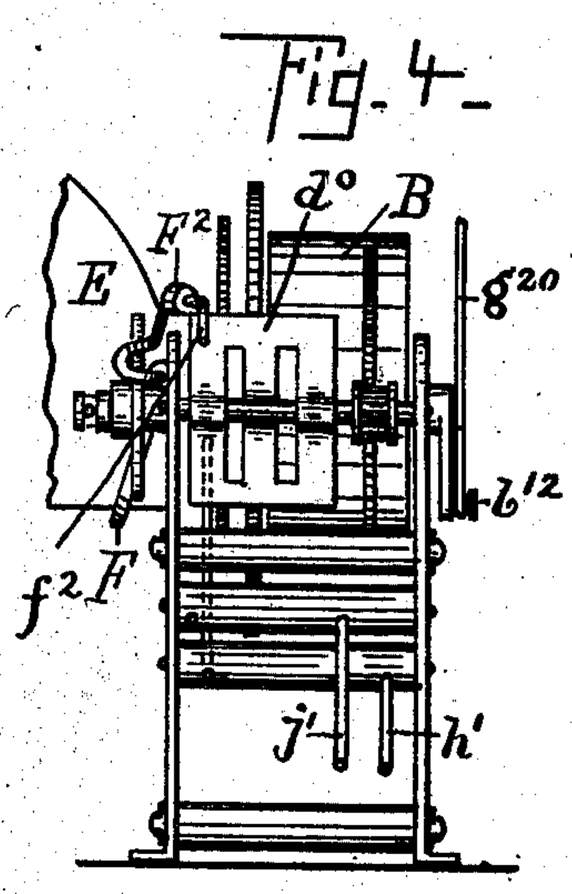
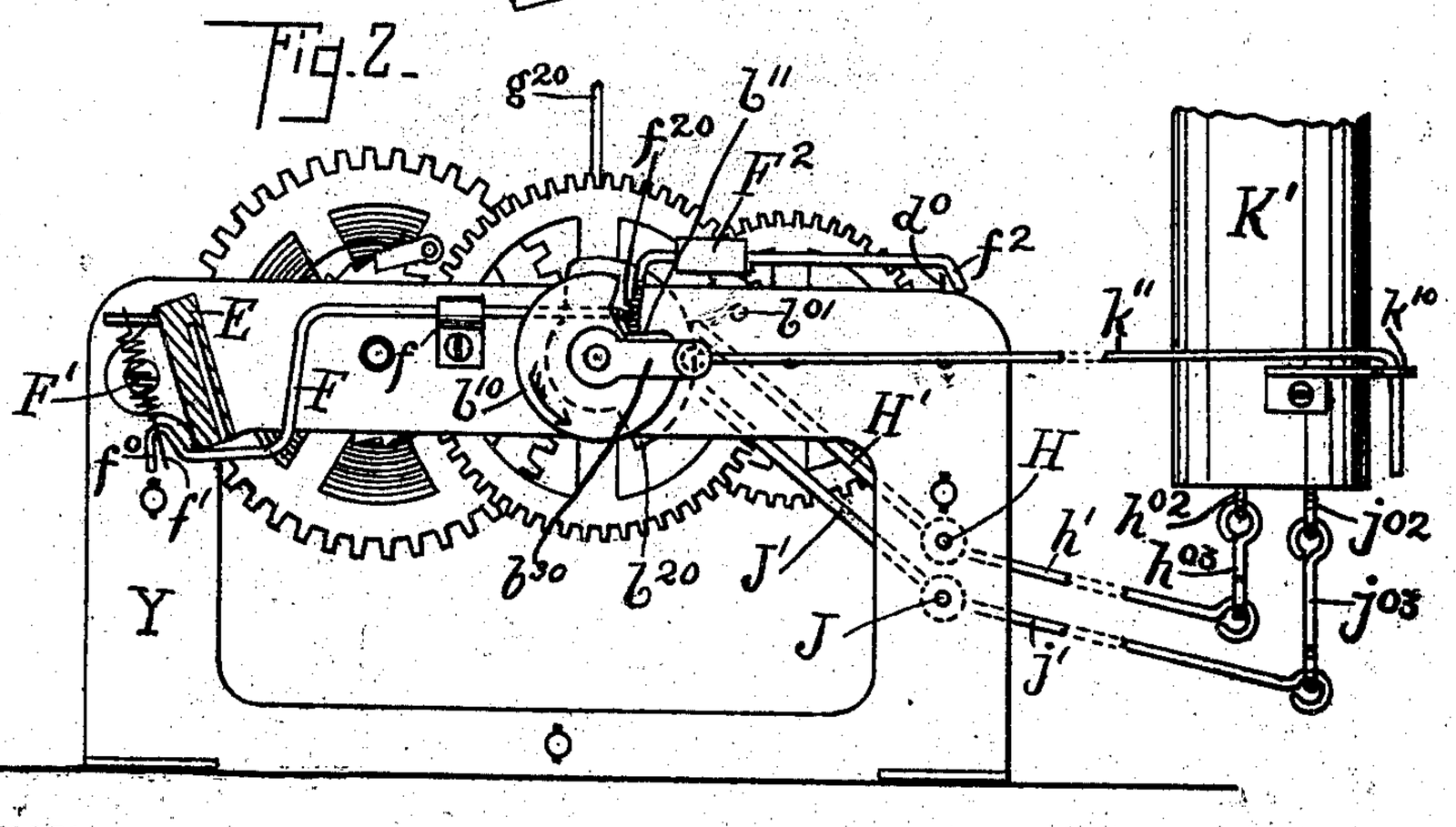


Fig. 2.



WITNESSES

Francis Russell.

Jacob A. Milenthal

INVENTOR

Frank F. Pulver

BY

Osgood & Davis

HIS ATTORNEYS

No. 625,803. Patented May 30, 1899.

F. F. PULVER.

VENDING MACHINE.

(Application filed Dec. 29, 1897.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 5.

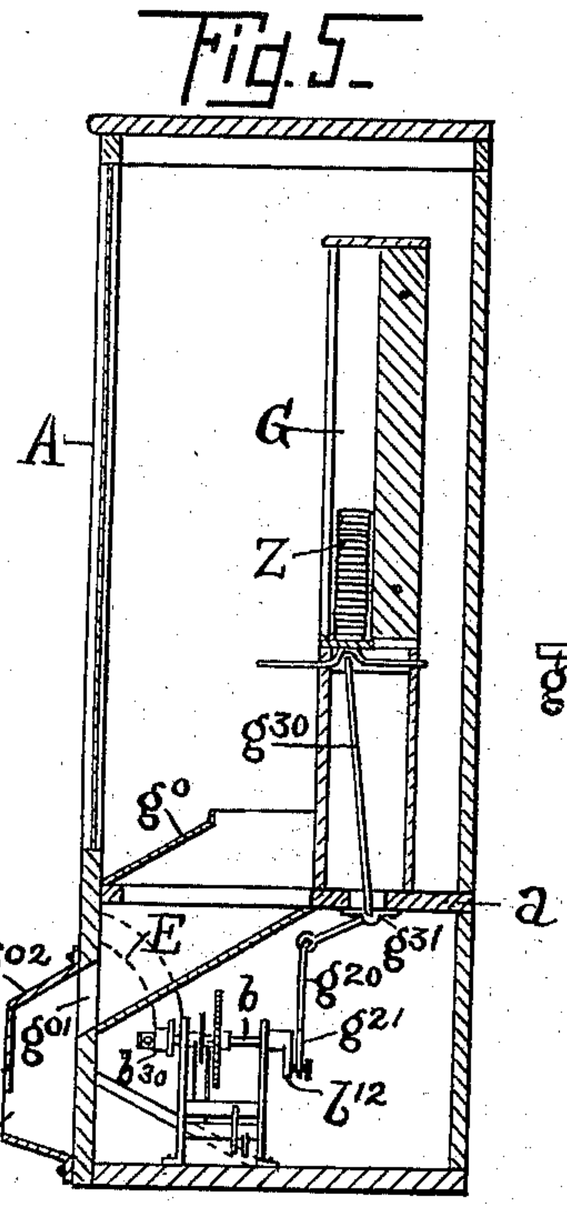


Fig. 8.

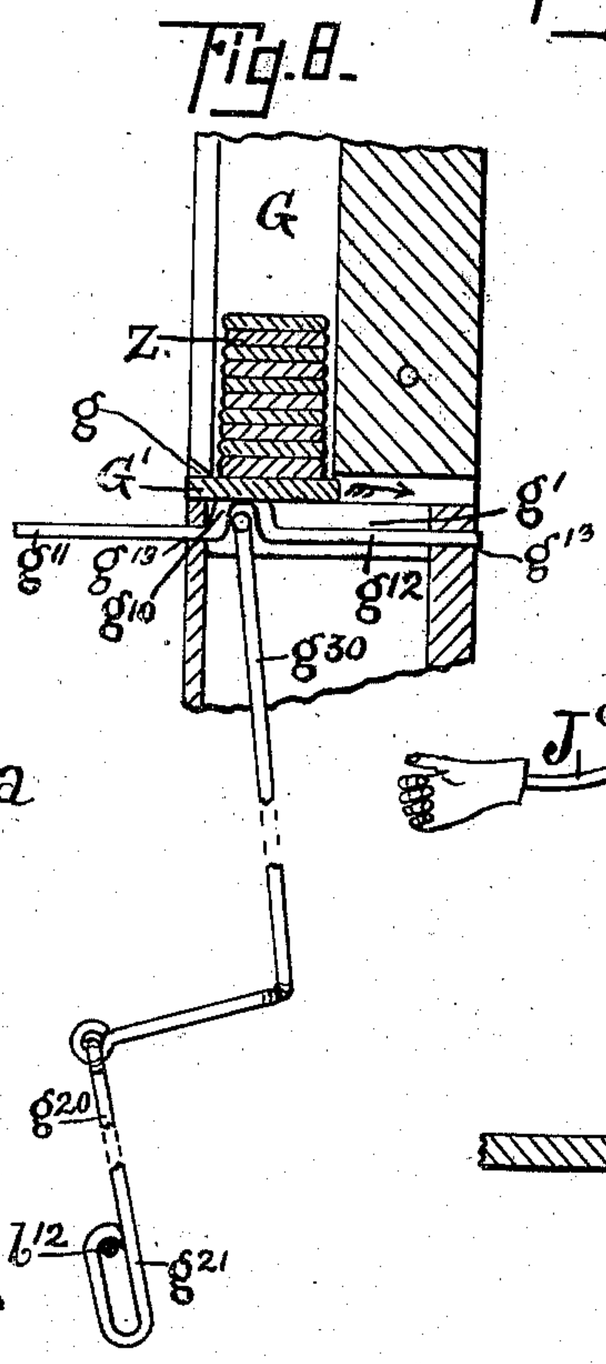


Fig. 6.

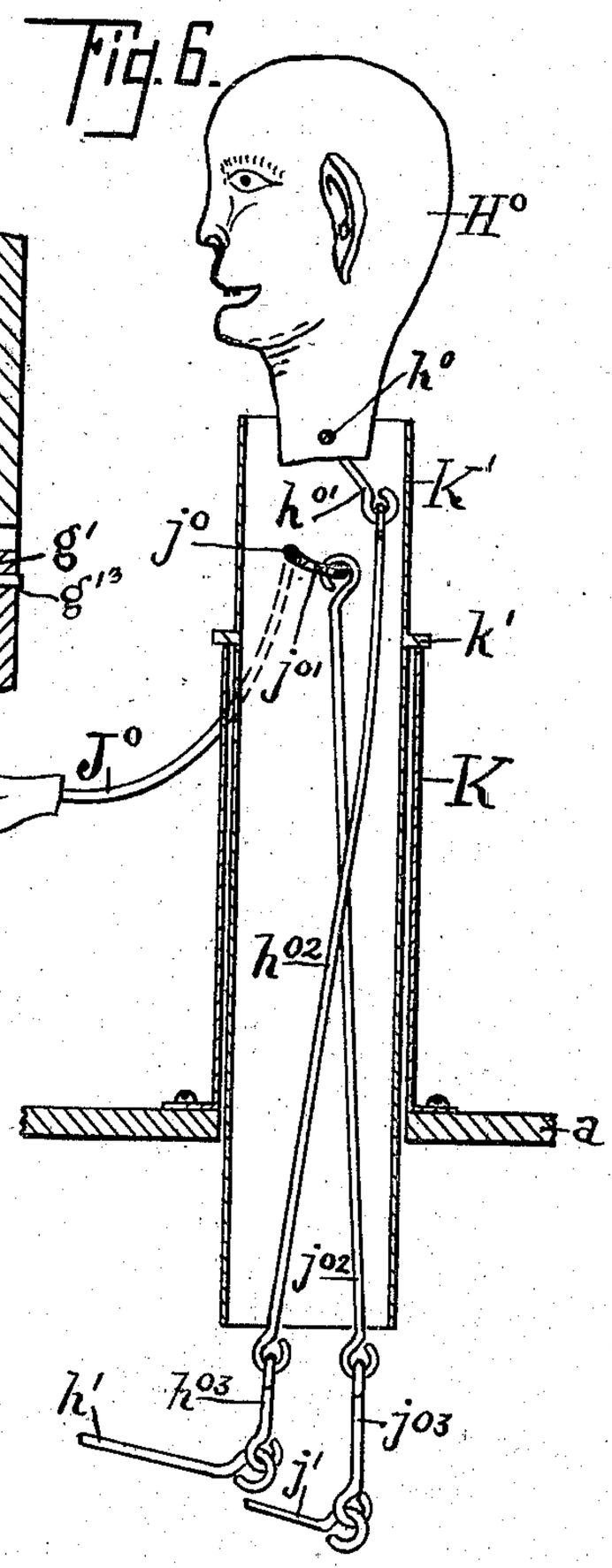


Fig. 9.

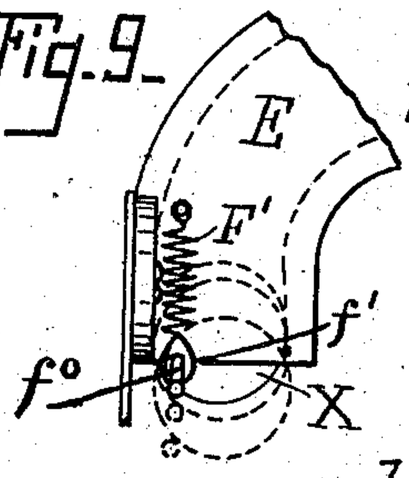
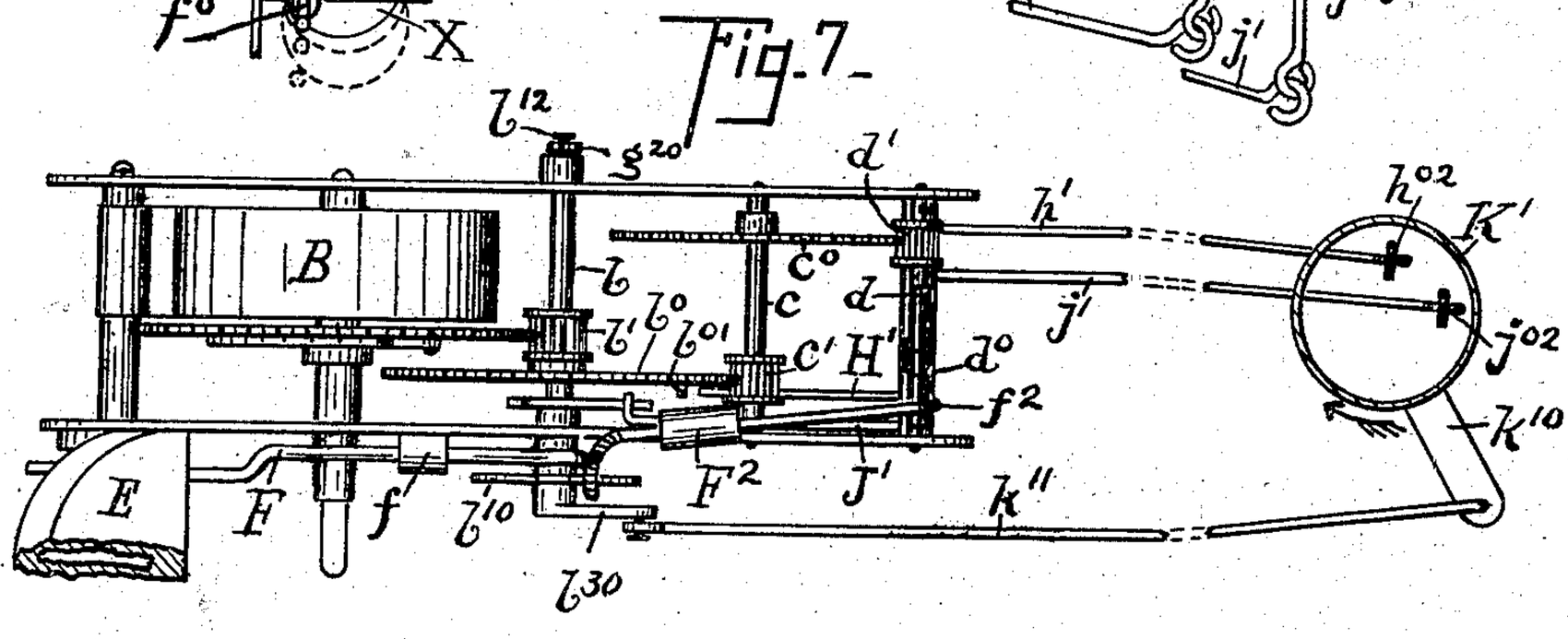


Fig. 7.



WITNESSES

Francis Bissell.

Jacob A. Milenthal

INVENTOR

Frank F. Pulver

BY

Osgood & Davis

HIS ATTORNEYS

UNITED STATES PATENT OFFICE.

FRANK F. PULVER, OF ROCHESTER, NEW YORK, ASSIGNOR TO HENRY H. PULVER, OF SAME PLACE.

VENDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 625,803, dated May 30, 1899.

Application filed December 29, 1897. Serial No. 664,493. (No model.)

To all whom it may concern:

Be it known that I, FRANK F. PULVER, a citizen of the United States, and a resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Vending-Machines, of which the following is a specification.

This invention relates to coin-controlled vending-machines; and it consists in an automatic device controlled by the passage of the coin therethrough for delivering packages of vendible articles—such, for instance, as chewing-gum—wherein, if so desired, the same motor which produces the package-delivering operation actuates also an automaton.

In the drawings, Figure 1 is a perspective view of the whole device, showing the front thereof. Fig. 2 is a side elevation of the motor and its connections. Fig. 3 is an end elevation of the motor, showing the end of the coin-chute. Fig. 4 is another end elevation of the same motor. Fig. 5 is a vertical section through the machine on a plane situated between the automaton and the package-container as shown in Fig. 1. Fig. 6 is a vertical section through the automaton, showing the internal operating connections thereof. Fig. 7 is a top plan of the motor and its connections. Fig. 8 is a sectional view of the package-container, one of the sides being removed; and Fig. 9 is a detail view of the coin-chute and a portion of the catch for holding the motor in check.

In the drawings, A is the casing of the whole machine, and *a* is a transverse deck dividing the casing into an upper and lower compartment. In the lower compartment is the motor, having the spring-drum B, provided with a gear-wheel, as shown, which meshes with a pinion b' upon the driving-shaft *b*, which operates the various connecting mechanisms. The driving-shaft *b* bears a gear-wheel b^0, which meshes with the pinion c' upon a third shaft *c*. The shaft *c* bears a gear-wheel c^0, meshing with the pinion d' upon a fourth shaft *d*, carrying a suitable fan device d^0 for regulating the speed of revolution of the shaft *b*. This particular arrangement of shafts and pinions is not essential in my device, but any automatic motor may be employed having a shaft arrangement suitable for cranks and cams, such as hereinafter described, and a governor or speed-regulator.

A coin-chute E is provided, which has an exterior inlet orifice or slot *e* of suitable size to admit a coin of the required denomination. This coin-chute leads to the interior of the machine, and at its inner or discharge end is adjacent to the lever F, which is normally held in a position to obstruct the passage of the coin X from out of said chute. The lever F is balanced or pivoted in any suitable manner, such as in the block *f*, and in order to retain the lever in its normal position for obstructing the end of the coin-chute it is provided with a spring F′ or counterweight F^2, or both. In the form shown the spring F′ is fastened at one end to the frame Y of the motor or clock-movement, and the end f^0 of the lever is hooked through an eye f', Fig. 9, in the free end of the spring, thus permitting a certain amount of free movement of the end of the lever before the spring is put in tension, as hereinafter described. The other end of the lever f^2 is also hooked and extends to the fan d^0 and is adapted to hook over the edge of the wing or wings thereof, and when in this position of course holds the motor in check. If, however, the lever F is tilted about its fulcrum at *f*, so as to raise the end f^2, the fan is released and the motor is permitted to operate. The counterweight F^2 is adjustable along the lever F and is set at such a position thereon that the weight of the selected coin X pressing upon the lever as the coin issues from the discharge end of the chute E will tilt the lever and release its end f^2 from the fan d^0.

In Fig. 3 the lever F is shown in full lines in its normal position for obstructing the passage of the coin X. The weight of the coin in operating the lever F to a degree sufficient to release the fan carries the end f^0 downward until it rests against the lower portion of the loop f', and in this position (shown in dotted lines in Fig. 3) the issuance of the coin into the interior of the case A is still obstructed, the tension of the spring F′ being sufficient to retain the coin in the middle position.

(Shown by dotted lines in Fig. 3.) Upon the end of the shaft b is a cam b^{10}, which revolves in the direction shown by its arrow in Fig. 2. This cam is a circular disk provided with the notch b^{11}, and in this notch, in the normal position of rest of the machine, lies a projection f^{20} of the lever F, which is on the same side of the fulcrum f as the counterweight F^2. When the machine is set in motion, however, and the cam b^{10} revolves in the direction shown by its arrow, the projection f^{20} of the lever F is raised by the action of the side of the notch b^{11} and the end f^0 is lowered against the tension of the spring F′ until the end f^0 takes a position indicated by the lowest dotted lines in Fig. 3, whereupon the coin is permitted to drop from the chute into the interior of the casing A. The rotation of the shaft b and cam b^{10} continues until the position of the cam is such that the projection f^{20} may again drop into the notch b^{11}, whereupon the fan-arrester f^2 of the lever drops into the position for stopping the movement of the fan, which of course stops the motor.

Above the deck a is a vertical package-container G, in which a column of packages Z may be placed. In the normal position of rest of the machine the packages rest upon a block G′, which is of a thickness equal to or slightly less than the thickness of a package. This block slides to and fro upon supports g', and the block has attached to its lower side the upper portion of a U-shaped bend g^{10} of a bent wire whose ends g^{11} and g^{12} extend through perforations g^{13} in the front and back of the package-container G and act as guides for the movement of the block G′. When the package-container is moved in the direction of the arrow in Fig. 8 to the limit of its backward movement, a package drops down upon the supports g' in front of the block, and when the block is again moved in a direction opposite to the arrow in said figure the lowermost package of the column is pushed from under the remainder of the packages by the movement of the block and is forced out through an orifice g in the front of the package-container. The package falls from the orifice g into a chute g^0 and through an orifice $g^{0'}$ in the front of the casing A, as seen in Fig. 5, and from said orifice it drops into a retainer g^{02}, having an outward opening g^{03}, through which the package may be removed by the purchaser. On the end of the shaft b which is opposite the end bearing the cam b^{10} there is a crank b^{12}. This crank operates a pitman g^{20} by means of an eye g^{21} on the end of the pitman of such size that there is a certain amount of play as between the crank and pitman, and hence the pitman is operated only when the crank is at or near two opposite positions in its revolutions. The pitman g^{20} operates a bell-crank lever g^{30}, pivoted, as at g^{31}, to the deck a and extending upward within the casing of the package-container G and into a socket formed by the U-shaped bend g^{10}, connected with the package-ejecting block G′. As the crank b^{12} revolves, the bell-crank g^{30} being in the position of rest, as shown in Figs. 3 and 5, and the block G′ being underneath the column of packages Z, the block G′ is moved backward in the direction shown by the arrow in Fig. 8 until it is moved out from under the bottom of the column of packages Z and a package drops in front of said block. By reason of the loose connection between the pitman g^{20} and crank b^{12} a period of rest occurs at this position of the parts and the packages in the column have time to settle downward. After a brief period of rest the continued rotation of the crank b^{12} operates to depress the pitman g^{20} and the bell-crank lever and to eject a package from the orifice g of the package-container. The position of the crank is so adjusted that when the fan-wheel is arrested by the fall of the end f^2 of the lever F the block G′ remains under the column of packages Z. This arrangement is not essential, since the parts may as well be stopped in the other extreme position of the ejector-block G′. I provide, further, an automaton with means for producing movements thereof from the same automatic mechanism which causes the delivery of the packages.

Upon the deck a I place a vertical supporting-tube K. This tube contains another tube K′, having a flange k', which rests upon the upper edge of the tube K and is thus supported. Upon the upper end of the tube K′ I fix a movable part, as the head H^0 of the automaton, which is pivoted to the tube K′, as by a transverse pivot h^0. An arm $h^{0'}$ is attached to the head H^0, and this arm is connected with a connecting-rod h^{02}, which passes downward through the tube K′ and into the lower compartment of the case A.

In the upper end of the tube K, I also set an arm $j^{0'}$, which has an extension passing outward through the side of the tube and so forms a pivot j^0, which continues as the arm J^0 and hand of the automaton. The arm $j^{0'}$ within the tube K′ is provided with a connecting-rod j^{02}, which passes downward through the tube and out of the lower end thereof.

Upon suitable bearings—as, for instance, in the motor-frame Y—are two rock-shafts H and J, set parallel to the axis of the operating-shaft b. These rock-shafts carry arms h' and j', extending to a point substantially under the tube K′, and for convenience in order to disconnect the parts the ends of the arms h' and j' are connected by links h^{03} and j^{03} with the ends of the rods h^{02} and j^{02}, respectively. When the connecting-rod j^{02} is pulled downward, the arm J^0 of the automaton is raised to a position adjacent to the head H^0 of the automaton, and when the connecting-rod rises again the arm J^0 drops back to its former position, thus indicating a gesture, such as a salute. So, also, when the rod h^{02} is moved upward by the movement of the arm h' the head H^0 of the automaton is rocked upon its pivot h^0 and the automaton appears

to bow. The rock-shafts H and J bear, respectively, other arms H′ and J′, extending in a different direction from the rock-shafts than the arms h' and j' and are operated by mechanism in the motor carried, preferably, upon the operating-shaft b. Upon the shaft b is a cam b^{20}, which in the normal position of rest acts upon the arm H′ to tilt the rock-shaft H and raise the connecting-rod h^{02}. When the shaft b revolves, the free end of the arm H′ drops off the raised edge of the cam b^{20} and in so doing permits a movement of the head H^0 of the automaton. The head is so set on its pivot h^0 that it is not balanced thereon, but on being released tilts forward. Of course the cam b^{20} may be used to operate the device either as just described or to cause a positive movement of the head from a position of rest. In the drawings the normal position of rest shows the parts in the first-described position with the arm H′ lifted and upon the raised portion of the cam.

The arm J′ for moving the arm J^0 of the automaton is actuated by a pin $b^{0'}$ upon the side of the spur-wheel b^0 upon the shaft b. This pin in the revolution of the spur-wheel in the direction shown by its arrow in Fig. 2 comes in contact with the free end of the arm J′ and moves it, lifting the arm and pulling the connecting-rod J^{02} downward, thus lifting the arm J^0 of the automaton. When the pin passes the end of the arm J′, the parts are carried back by means of the weighted end of the arm J^0 or by a counterweight in any other position—as, for instance, upon the arm j''.

Upon the same end of the shaft b^0 as the cam b^{10} is a crank b^{30}. A connecting-rod k^{11} extends from this crank and connects with an arm k^{10}, extending radially from the lower portion of the tube K′. As the cam b^{30} revolves the tube K′ will thus be turned about a vertical axis.

The movements of the head and arm of the automaton and its turning, as just described, may be timed in any desirable manner by setting the cam b^{20} or pin $b^{0'}$ and the crank b^{30} in such positions as may be desirable. In the present case, however, the automaton turns from the position facing the front of the casing A to a position facing toward the package-container G, then bows its head, and while turning back to its original position raises its hand or arm J^0 to make the salute, as mentioned above.

The operation of the machine is as follows: A coin of suitable size and weight is inserted through the slot e, rolls down the chute E, strikes the arm F, and moves said arm far enough to release the fan d^0 from the action of the hook f^2 of the lever F, thus starting the motor, whereupon the automaton immediately commences to turn in the direction shown by the arrow in Fig. 7. Soon after the motor begins to move the cam b^{10} lifts the lever F until the projection f^{20} rides upon the upper circular edge of said cam, thus depressing the end f^0 and putting the spring F′ under tension and releasing the coin X by the depression of the end of the lever F upon which it has been resting, whereupon the coin falls into the lower compartment of the case A. When the motor starts, the bell-crank g^{30} moves the block G′ backward and from under the column of packages Z, whereupon the column settles down upon the supports g'. As the motor continues to act, turning the automaton about its vertical axis, the head of the automaton nods and the lowermost package of the column is ejected, falling into the chute g^0 and then into the delivery-box g^{02}, whence it may be removed by hand through the opening g^{03}. Meantime the automaton has been turning about its vertical axis back to its original position and its arm J^0 has been raised to produce the salute. The revolution of the shaft b continues, bringing the arms H′ and J′ back to their original positions after producing the movements above mentioned, and the cranks b^{12} and b^{30} have acted, respectively, to eject the package, as above described, and to return the automaton to its original position facing toward the front of the case A. The cam b^{10}, when the parts reach their normal position of rest, permits the projection f^{20} to drop into the notch b^{11} of the cam by the action of the spring F′ and of the counterweight F^2, permitting the end f^2 to extend into the path of the fan d^0 and to stop it, whereupon the machine is ready for another operation.

It will be noticed that the machine is automatic throughout upon the release of the motor by the action of the coin inserted through the slot e. The spring-drum B contains a spring of suitable strength and length to permit many operations of the machine, and the number of possible operations thereof may always correspond to the number of packages in the package-container G.

What I claim is—

1. In a coin-controlled vending-machine, the combination of a chute E having the inlet-slot e and extending into the interior of the casing of the device, an automatic motor having a rotary governing-fan d^0, a lever F having an end f^2 for engaging said fan and a portion extending adjacent to the interior orifice of the chute E and adapted to obstruct the passage of a coin therefrom and also adapted to be tilted by said coin to release said fan, a shaft b forming part of the motor and bearing a cam b^{10} having a notch b^{11}, a projection f^{20} on the lever F adapted to set in said notch when the parts are at rest and to ride out of said notch and upon the edge of said cam by rotation thereof, a spring F′ having a fixed attachment in the machine and adapted to be put in tension when the lever F is lifted by the cam b^{10}, a package-container, an ejecting-slide in said container, a bell-crank lever for operating said slide, and a connection between said shaft b and said bell-crank lever.

2. In a coin-controlled vending-machine, the combination of a package-ejecting means,

a motor for operating said package-ejecting means, means for holding said motor in check adapted to be released by action of a coin thereon, an automaton comprising a vertical tube K, an interior tube K′ supported by and within said tube K, connections from the inner tube K′ to said motor for turning the same about a vertical axis, a movable head H^0, having a transverse pivot h^0 in said tube K′, a rock-shaft H, connections between said rock-shaft and said part H^0 extending through the tube K′, and means operated by said motor for operating said rock-shaft.

3. In a coin-controlled vending-machine, a package-container, a device for ejecting packages therefrom, an automatic motor for operating said device, means for holding the motor in check and adapted to be released by the action of the coin thereon, a shaft, *b*, forming part of said motor, and an automaton, consisting of a vertical tube K′ supported in the casing and adapted to be turned on a vertical axis, connections with the shaft *b* for turning said tube, movable parts for said automaton comprising a head H^0 and an arm J^0, pivoted in said tube, connecting-rods for operating said head and arm extending through the tube, rock-shafts H and J for operating said connecting-rods, and a cam b^{20} and a pin $b^{0'}$, carried by said shaft for operating said rock-shafts.

FRANK F. PULVER.

Witnesses:
C. SCHUYLER DAVIS,
C. R. OSGOOD.