

No. 785,805.

PATENTED MAR. 28, 1905.

C. T. FRANTZ.
VENDING MACHINE.

APPLICATION FILED SEPT. 22, 1902.

3 SHEETS—SHEET 1.

Fig. 1.

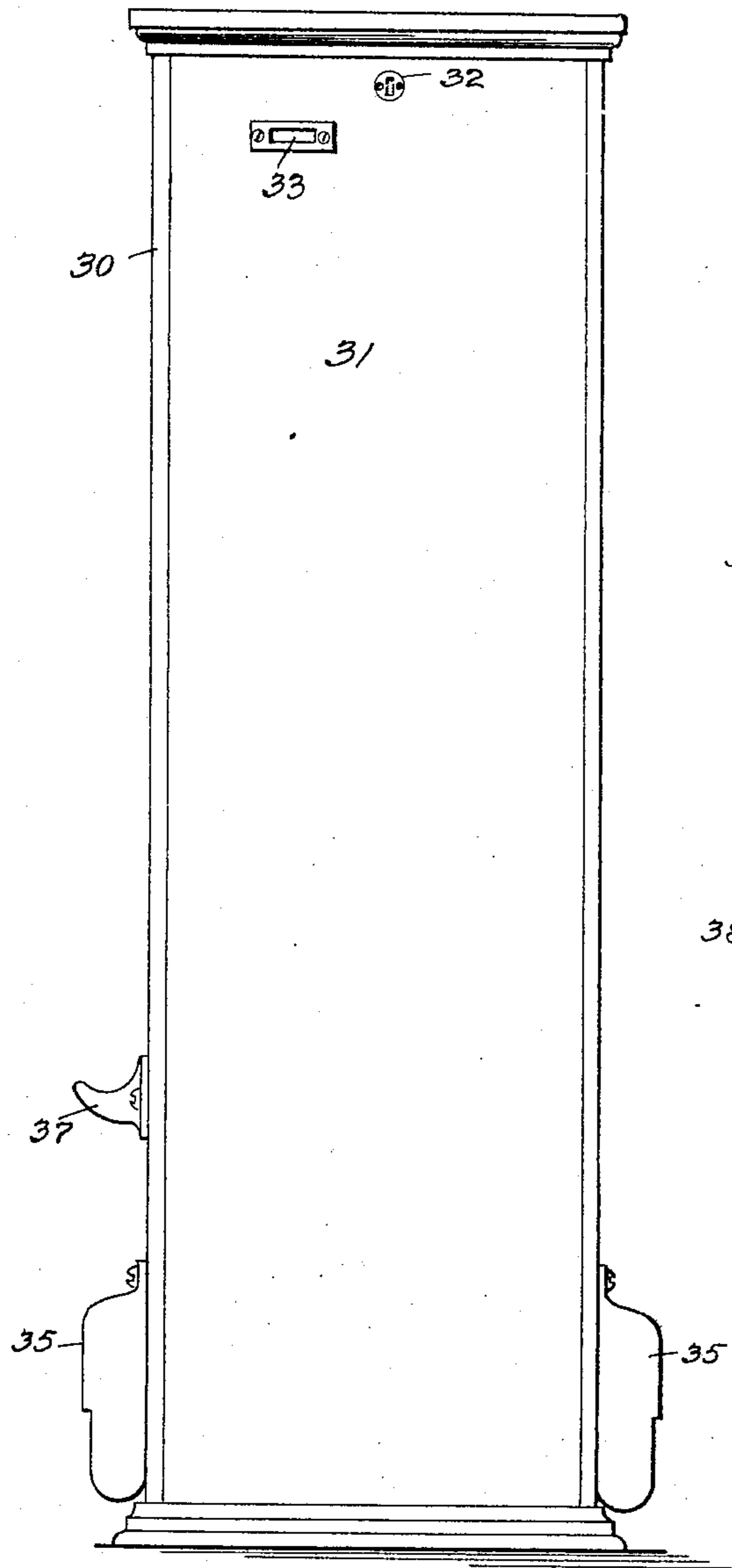
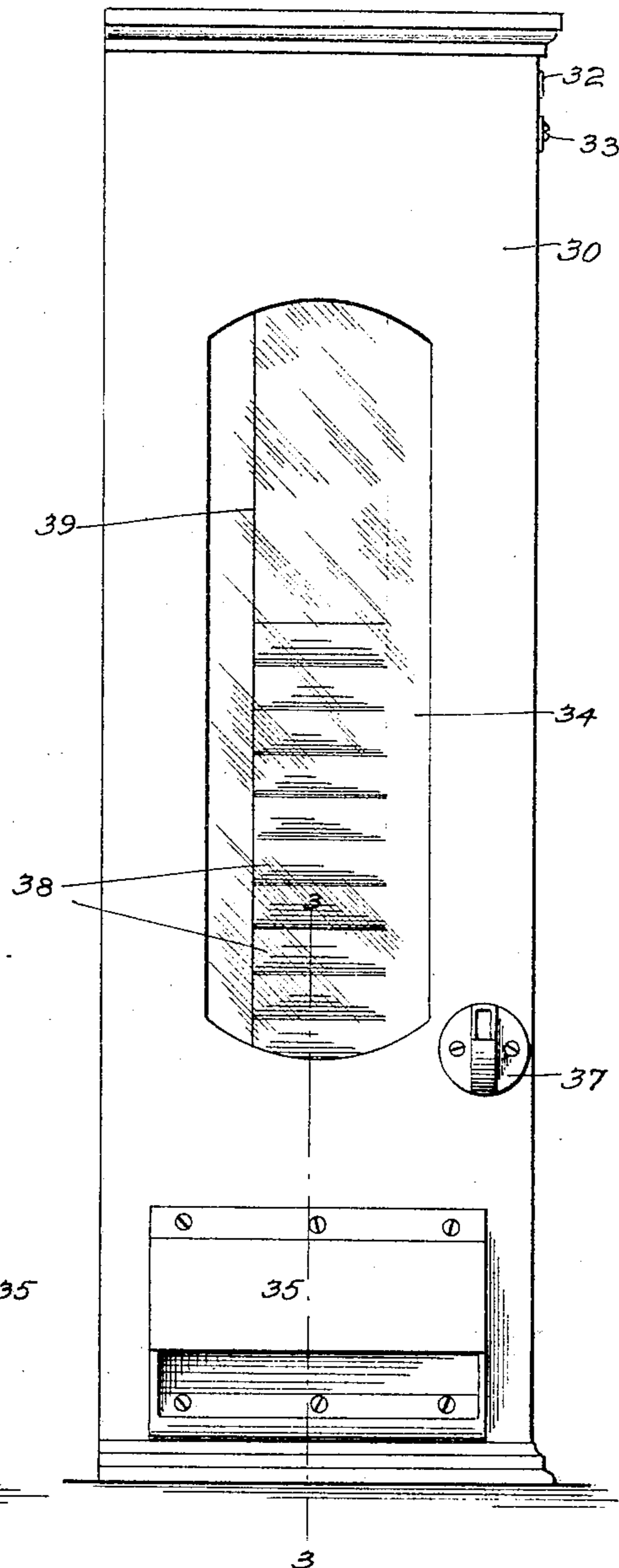


Fig. 2.



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Henry Love Clarke
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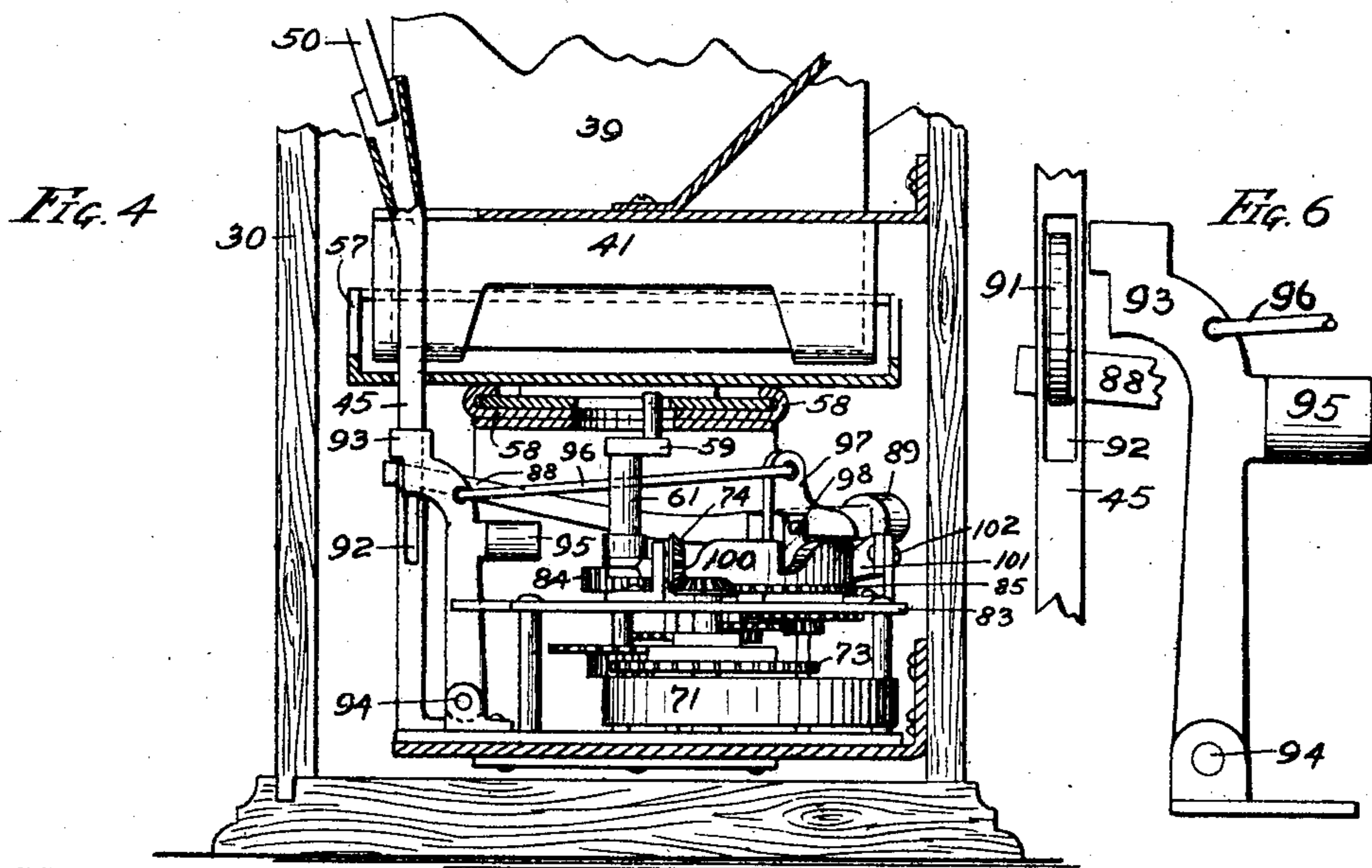
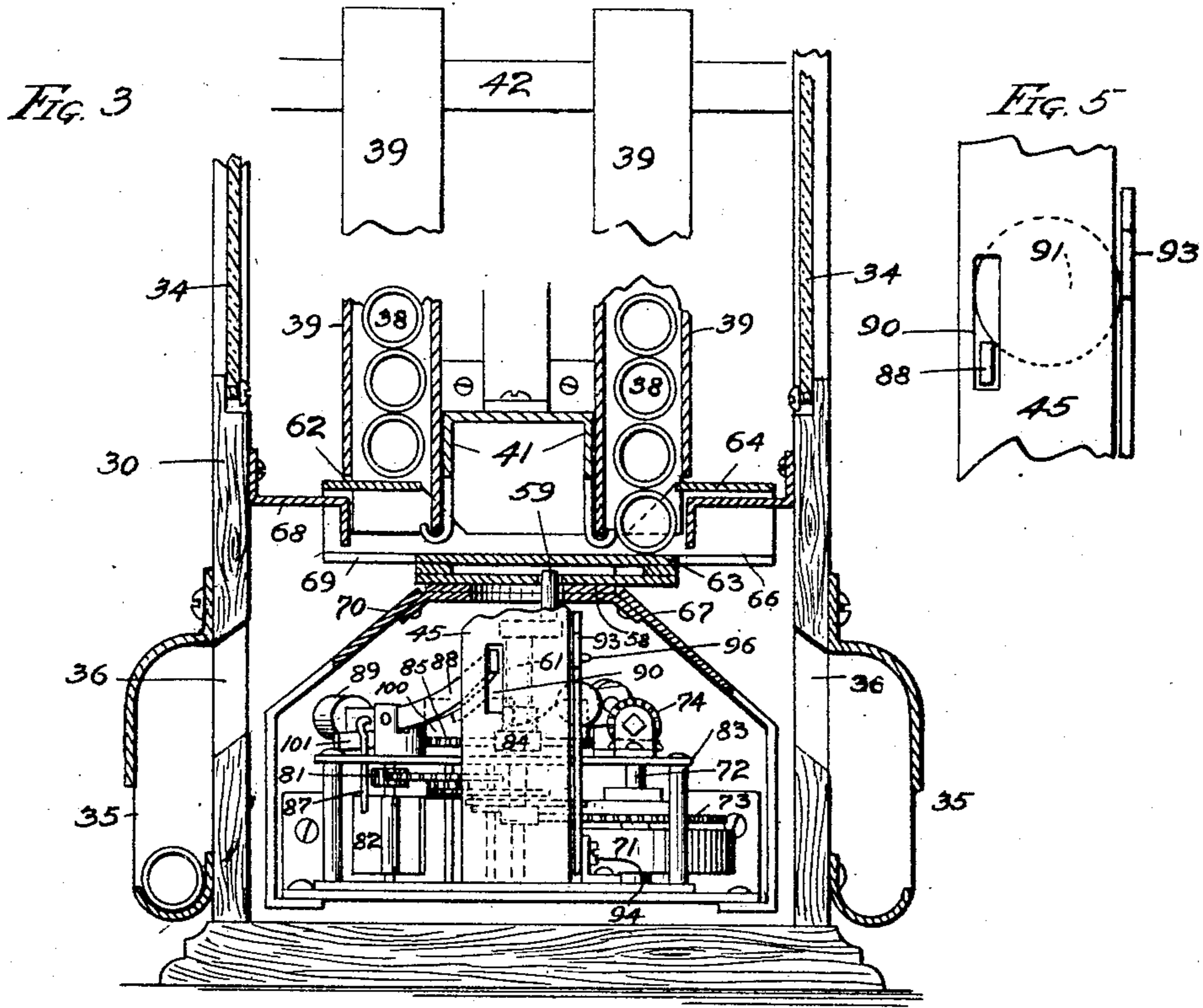
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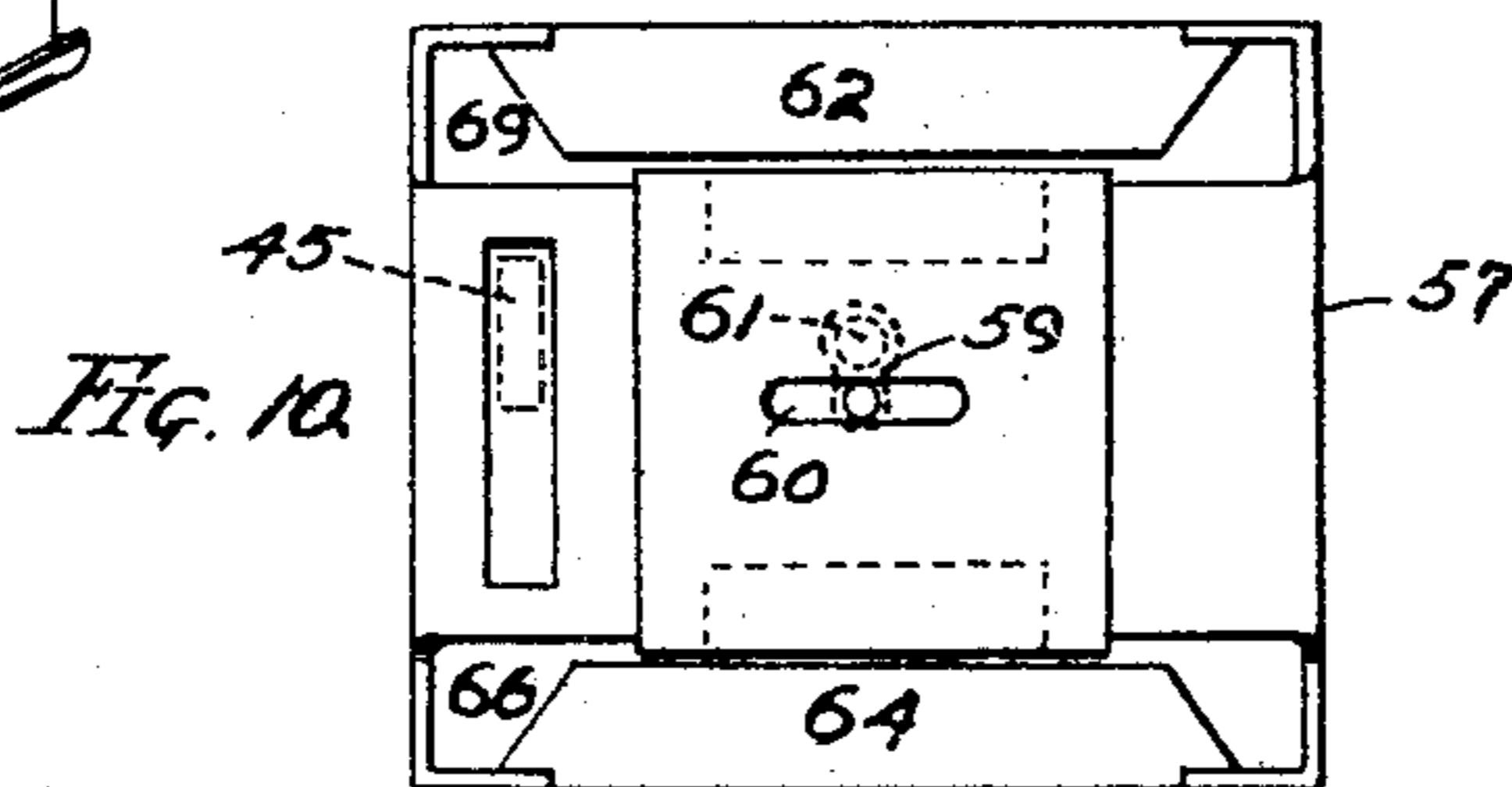
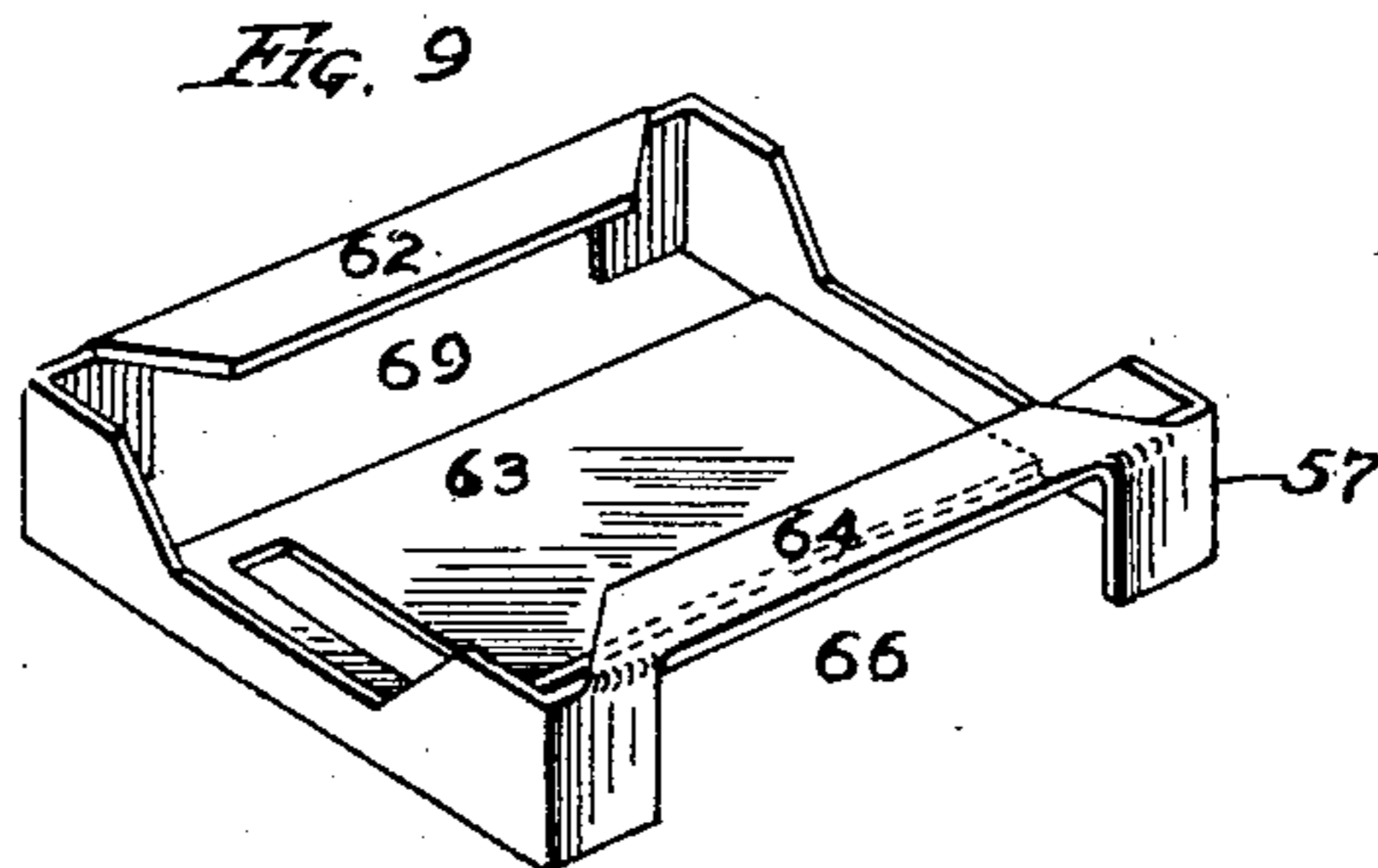
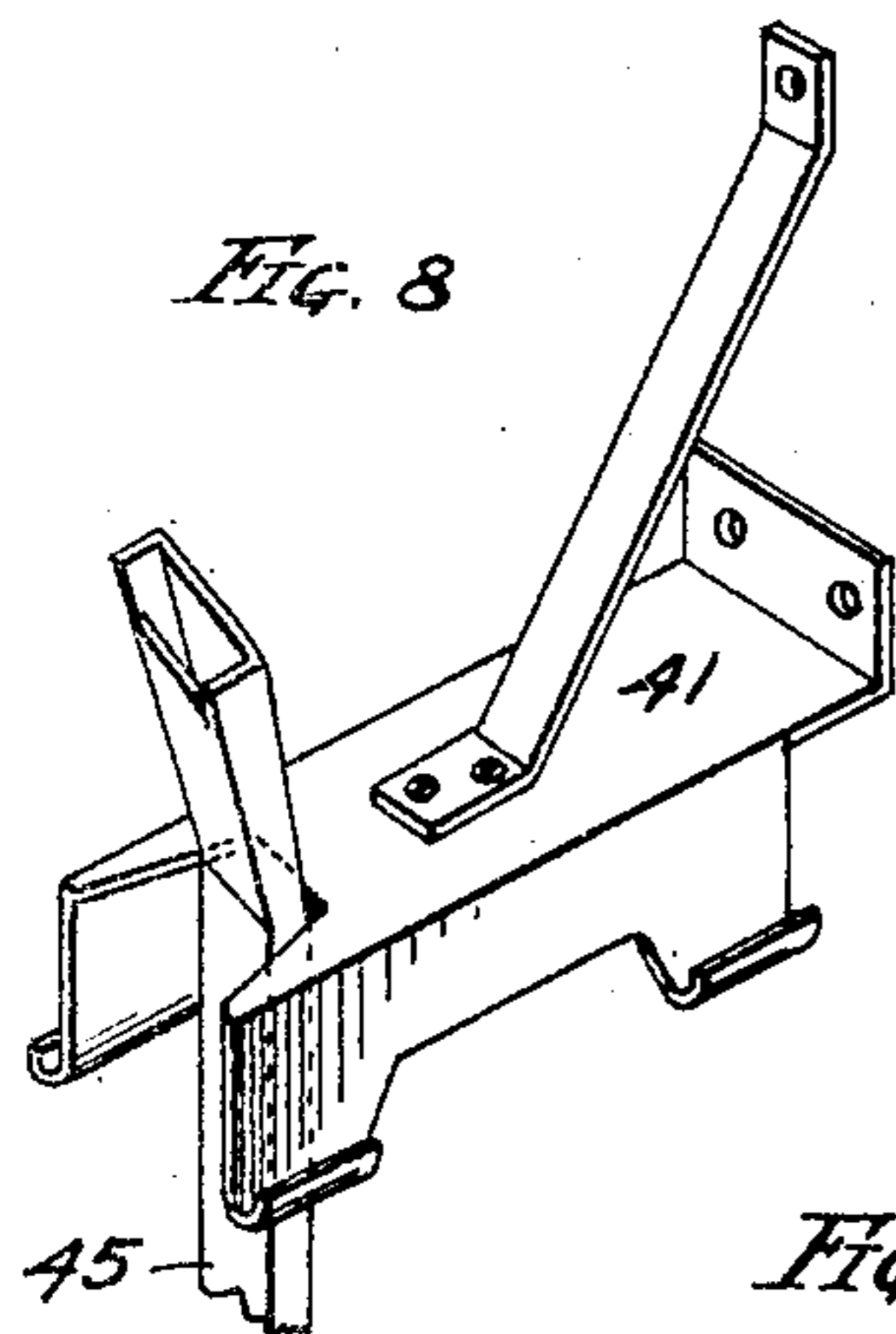
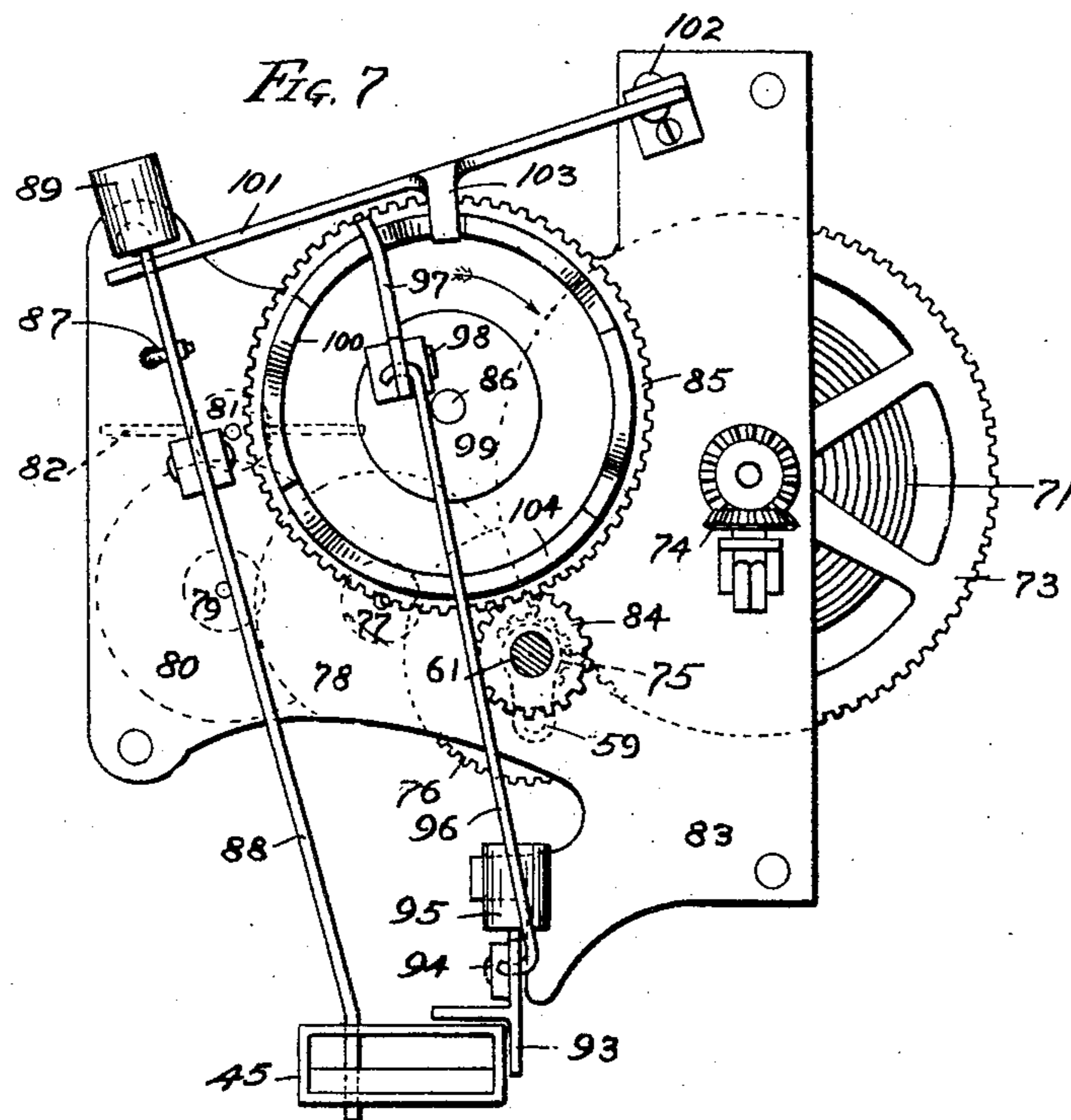
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3 SHEETS—SHEET 3.



WITNESSES:
F. B. Townsend
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UNITED STATES PATENT OFFICE.

CHARLES THOMAS FRANTZ, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE NATIONAL VENDING-MACHINE COMPANY, A CORPORATION OF MAINE.

VENDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 785,805, dated March 28, 1905.

Application filed September 22, 1902. Serial No. 124,340.

To all whom it may concern:

Be it known that I, CHARLES THOMAS FRANTZ, a citizen of the United States, residing at Chicago, in county of Cook and State of Illinois, have invented a new and useful Vending-Machine, whereof the following is a specification.

My invention relates to improvements in that class of vending-machines in which sufficient power to discharge the loaded machine is stored in a motor contained within the machine and the insertion of a coin releases said motor for a limited period to effect the discharge of one or more of the articles with which the machine is loaded; and the objects of my invention are to produce a simple mechanism whereby the coin may positively effect the release above referred to and at the same time be itself properly discharged into the coin-receptacle without obstructing the further operation of the machine, to provide for the discharge of articles from both of two opposite sides of the machine, to provide that the insertion of a succession of coins shall at regularly-fixed intervals effect a definite multiple discharge of the articles with which the machine is loaded, to provide for the direct mechanical extraction and delivery of such articles as cigars from the original package in which they are sealed and from which they are required by law to be sold, and to accomplish all such other and further superiorities of construction and operation as may be found to obtain in the device or devices hereinafter set forth or claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a front elevation of the exterior of the complete machine. Fig. 2 is a side elevation thereof, and more particularly of the side provided with the discharge for false coins or slugs. Fig. 3 is a fragmentary vertical sectional view on the line 3 3 of Fig. 2, but showing the motor in front elevation. Fig. 4 is a section and elevation at right angles to the view shown in Fig. 3. Fig. 5 is an enlarged fragmentary front view of the lowest part of the coin-chute, showing a coin held in operating position

therein and depressing the end of the trip-lever that releases the motor. Fig. 6 is a fragmentary view at right angles to that given in Fig. 5, but showing the coin-gate withdrawn to release the coin that is emerging from the chute and in turn releasing the depressed end of the trip-lever. Fig. 7 is an enlarged top plan view of the motor with the trip-lever, coin-gate mechanism, and operative end of the coin-chute. Fig. 8 is a perspective fragmentary view of the rack for supporting the supply-boxes of the machine and the operative end of the coin-chute. Fig. 9 is a perspective view of the reciprocating ejector, whereby the articles sold are extracted from the supply-boxes and delivered through the discharge-apertures of the machine. Fig. 10 is an underneath plan view of the same, with the reciprocating crank and the section of the coin-chute indicated in dotted lines.

Like reference-numerals indicate like parts in all the figures.

30 is the outside case of the machine, having the removable face-plate 31, secured by the lock 32 and provided with the coin-slot 33. Each side of the case is provided with a glass-covered window 34 to exhibit the articles to be vended and a hooded discharge-tray 35, arranged to cover the discharge-aperture 36 and receive the articles discharged for the vendee, and one side is provided with a discharge-cup 37 to receive false coins or slugs thrown out by the detector mechanism on the inside of the face-plate 31.

The articles to be vended 38 38 are arranged in series in supply-boxes 39 39. A pair of these boxes, when their lids have been removed, are supported in the machine by the hooked rack 41 and the guide-piece 42. The form of the said supply-boxes adapts them to the discharge of their contents in the manner hereinafter set forth.

Chutes carry the proper coins, in this instance five-cent "nickels," from the coin-slot 33 to the operating coin-chute 45, attached to the motor of the machine.

The special forms of article-supply boxes

and wrappers and mechanism for detecting spurious coins are to be made the subject of separate applications to be filed pending the issuance of Letters Patent on the present application.

The articles vended are extracted from the supply-boxes by the reciprocating ejector 57, which is supported and guided by the frame 58 and reciprocated by the crank 59, engaged in the slot 60 and rotated by the motor-shaft 61, the said slot 60 being located in the subbottom that is rigidly attached to the ejector 57, as more particularly shown in Fig. 10, and that slides in the guideways formed by the upwardly-recurved edges of the frame 58, as more particularly shown in Fig. 4. The said ejector 57 is shown in Fig. 3 at the limit of its movement toward the right. Each stroke of its right-and-left reciprocation ejects one of the articles vended, the articles so ejected being taken alternately from the right-hand and left-hand supply-boxes and discharged through the corresponding discharge-apertures. When the ejector is, for example, at the right-hand limit of its reciprocation, as shown in Fig. 3, the column of, for instance, cigars in the left-hand supply-box rests on the tongue 62 on the left side of the said ejector 57, the end of the supply-box being formed, as shown in Fig. 15, to admit said tongue, while the column of cigars in the right-hand supply-box has dropped to and rests upon the base-plate 63 of the said ejector in such manner that the cigar at the bottom of the said column is just below the level of the tongue 64, which corresponds on the right-hand side of the ejector to the tongue 62 on the left side. If the ejector should now be moved to the other or left-hand limit of its reciprocation, the tongue 62 would be removed from under the column of cigars in the left-hand supply-box, and the said column would drop to and rest upon the base-plate 63, while at the same time the tongue 64 would be passed between the lowest and the next to the lowest cigar in the right-hand supply-column, and the said lowest cigar therefore retained in place by the stop 65, and the base-plate 63 would drop through the aperture 66 and roll down the incline 67 and be discharged through the right-hand discharge-aperture 36 into the right-hand discharge-tray 35, and the remaining column of cigars in the right-hand supply-box would then be supported by the tongue 64, and at the same time the left-hand column of cigars would have dropped to a position corresponding to that in which the right-hand column is shown in Fig. 3, and the lowest cigar in the said left-hand column would be retained in its box end by the stop 68 and the base-plate 63, and upon the return movement of the ejector to the position shown in Fig. 3 the said lowest cigar would drop through the aperture 69 and roll down the incline 70 and out through the left-hand discharge-opening 36 into the left-hand discharge-tray 35,

thus completing the cycle of alternate discharge from the opposite sides of the machine. The movement of the ejector from one to the other limit of its reciprocation, with the consequent discharge of one cigar from one side of the machine, is accomplished by a half-revolution of the crank and motor-shaft 59 61, and a complete revolution of the said crank and motor-shaft accomplishes one complete reciprocation of the said ejector 57, and thereby discharges two cigars successively from opposite sides of the machine. It thus appears that by providing for periodic half and full revolutions of the motor-shaft 61 the machine may be caused to deliver two or more cigars at regular periodic intervals in the course of inserting a series of coins. In the machine shown in the drawings every fifth coin effects a complete instead of a half revolution of the motor-shaft 61, and thus causes two cigars to be delivered successively from the opposite sides of the machine, while but one cigar is delivered for each of the four intervening coins in the series. In this manner it becomes possible to sell six cigars for every twenty-five cents and at least one cigar for each five cents, thereby complying with a common requirement of purchasers of cigars or like articles that a reduction of price shall be made when a larger quantity is purchased. There is no element of chance in the mechanical operation of the machine, as the insertion of a definite number of coins invariably accomplishes a definite and stated result and every proper coin inserted causes the delivery of an article of the value required.

The motor actuating the shaft 61 completes my device. The said motor is preferably a clockwork mechanism of the form shown in the drawings. The power requisite to completely discharge all the articles in the loaded machine is stored in the clock-spring 71, connected at its inner end to the winding-shaft 72 and actuating the gear 73. A long winding-key is applied to the shaft of the small gear 74, that meshes with the small gear on the winding-shaft 72. A train of alternating small and large gears numbered, respectively and successively, 75, 76, 77, 78, 79, 80, and 81, transmit the rotation of the large gear 73 to the governor-fan 82. The shaft carrying the aforesaid gears 75 and 76 is continued upward through the top plate 83. The upper portion of the said shaft constitutes and is the aforesaid motor-shaft 61. The said shaft 61 also carries a third gear 84, meshing with the geared periphery of the controller 85, rotating on the stationary shaft 86. The rotation of the governor-fan 82 regulates the speed of operation of the train of gears, and the stopping and releasing of the said fan by the raising and lowering of the check-rod 87 stops and starts the motor. The said check-rod 87 is attached to the trip-lever 88 on the arm thereof that is normally held depressed by the

counterbalance 89. The other and longer arm of the said trip-lever 88 passes through and oscillates in the slot 90 in the stationary operating coin-chute 45 and is depressed to the bottom of said slot by the weight of the proper coin 91 dropped into said chute, and by such depressing of said long arm of the trip-lever 88 the check-rod 87 is raised, releasing the governor 82 and setting the motor in operation. The coin-chute 45 is provided with the gateway 92, through which the coin 91 is ejected into any suitable receptacle as soon as the gate 93 is withdrawn in the manner shown in Fig. 6. The said gate 93, pivoted at 94, is provided with the counterbalance 95, which constantly tends to withdraw said gate into the position shown, as aforesaid in Fig. 6; but such withdrawal is controlled by the rod 96, connecting said gate 93 with the trigger 97, which is pivoted at 98 to the stationary plate 99 and bears upon and is oscillated by the cam-rim 100 of the rotating controller 85. This cam-rim 100 likewise oscillates the lever 101, which is pivoted at 102, provided with an arm 103, resting upon said cam-rim 100, and at its extremity engages and when raised sustains the counterbalanced arm of the trip-lever 88 in such position as to allow the governor 82 to rotate. By properly spacing the arm 103 from the trigger 97 it may be and is provided that the gate 93 shall release the coin 91 a substantial space of time before the lever 101 allows the counterbalanced arm of the trip-lever 88 to drop back into its normal position and stop the motor, and in this manner provision is made for the positive stopping of the motor and against the possibility that the too sudden rise of the long arm of the trip-lever 88 might catch and hold the coin 91 before the latter had been entirely ejected through the gateway 92; but the arm 103 is not raised by any cam upon the rotating controller 85 until after the coin 91 has depressed the long arm of the trip-lever 88.

It is obvious that the angular length and the arrangement of the succession of cams constituting the cam-rim 100 of the controller 85 will control the extent of the operation of the motor for each proper coin inserted in the machine. In the machine shown in the drawings one complete revolution of the controller 85 accomplishes three complete revolutions of the gear 84 and its shaft 61, and hence accomplishes the discharge of six of the articles vended, one for each half-revolution of the said motor-shaft 61; but the cam-rim 100 is divided into only five operating-segments, four of an angular length of sixty degrees each and one double segment 104 of one hundred and twenty degrees angular length, each of said five segments containing one cam, but the double segment being adapted to sustain the arm 103, and thereby also the counterbalanced arm of the trip-lever 88, until the

motor-shaft 61 completes one entire revolution instead of the half-revolution determined by each of the other four aforesaid sixty-degree segments. By variation of these segments in the manner suggested by this example and of the ratio of the gear 84 to the gear on the periphery of the controller 85 provision may be made for variously regulating the number of articles delivered for each coin inserted in the machine, and the succession of said deliveries will be invariably predetermined and without any element of accident or chance. Various other mechanism of substantially equivalent character may be devised to accomplish the same novel results. These and all the other features of my invention are hereinbefore set forth as embodied in certain particular and preferable forms of construction; but I do not limit myself to such particular forms or to less than all the possible forms in which my invention as hereinafter claimed may be embodied.

I now claim—

1. In an automatic vending-machine, in combination, a motor provided with a stationary coin-chute, a trip-lever passing through a slot in said chute and operated by the coin within said chute, means for discharging said coin from said chute, and means operating intermittently to sustain said trip-lever in its release position for a lengthened period so as to effect definite multiple discharge of the vended articles at regular periodic intervals in the succession of coins deposited, substantially as specified.

2. In an automatic vending-machine, in combination, a motor provided with a stationary coin-chute, a trip-lever operated by the coin within said chute, means for discharging said coin from said chute, and means operating intermittently to retain said trip-lever in its release position for a lengthened period so as to effect definite multiple discharge of the vended articles at regular periodic intervals in the succession of coins deposited, substantially as specified.

3. In an automatic vending-machine, in combination, a motor provided with a stationary coin-chute, a trip-lever operated by the coin within said chute, a gateway and gate adapted to discharge said coin from said chute, and means operating intermittently to sustain said trip-lever in its release position for a lengthened period so as to effect definite multiple discharge of the vended articles at regular periodic intervals in the succession of coins deposited, substantially as specified.

4. In an automatic vending-machine, in combination, a motor provided with a stationary coin-chute, a trip-lever operated by the coin within said chute, means for discharging said coin from said chute, an accessory lever adapted to retain said trip-lever in its release position for a succession of different and definitely-limited periods so as to effect definite multiple

discharge of the vended articles at regular periodic intervals in the succession of coins deposited, and cams irregularly arranged and adapted to actuate said accessory lever and aforesaid means for discharging the coin, substantially as specified.

5. In an automatic vending-machine, in combination, a motor provided with a stationary coin-chute, a trip-lever passing through a slot in said chute and operated by the coin within said chute, a gateway and gate adapted to discharge said coin from said chute, an accessory lever adapted to retain said trip-lever in its release position for a succession of different and definitely-limited periods so as to effect definite multiple discharge of the vended articles at regular periodic intervals in the succession of coins deposited, and cams irregularly arranged and adapted to actuate said gate and said accessory lever, substantially as specified.

6. In an automatic vending-machine, in combination, a motor adapted to operate automatically upon the deposit of proper coins in the machine, means for discharging the articles vended, means for controlling the acceleration of said motor, a coin-actuated trip device, and means intermittently cooperating with, said trip device to effect a definite multiple discharge of the vended articles at regular periodic intervals in the succession of coins deposited, substantially as specified.

7. In an automatic vending-machine, in combination, a motor adapted to automatically discharge the articles vended upon the deposit of proper coins in the machine, and automatic cam-operated mechanism whereby definite multiple discharge, induced and determined by said cam action, is effected at regular periodic intervals in the succession of coins deposited, substantially as specified.

8. In an automatic vending-machine, in combination, a motor provided with a coin-actuated trip-lever, and means operating intermittently to sustain said trip-lever in its release position for a lengthened period so as to effect definite multiple discharge of the vended articles at regular periodic intervals in the succession of coins deposited, substantially as specified.

9. In an automatic vending-machine, in combination, a motor provided with a coin-actuated trip-lever, and irregularly-disposed cams whereby said trip-lever is sustained in its release position for a succession of different and definitely-limited periods, so as to effect definite multiple discharge of the vended articles at regular periodic intervals in the succession of coins deposited, substantially as specified.

10. In an automatic vending-machine, in combination, a motor provided with a coin-actuated trip-lever, an accessory lever adapted to sustain said trip-lever in its release position, and a system of cams whereby said ac-

cessory lever is actuated for a succession of different and definitely-limited periods, so as to effect definite multiple discharge of the vended articles at regular periodic intervals in the succession of coins deposited, substantially as specified.

11. In an automatic vending-machine, in combination, a motor provided with a coin-actuated trip-lever, an accessory lever adapted to sustain said trip-lever in its release position, and a rotary cam-wheel geared to the motor-shaft and adapted to actuate said accessory lever for a succession of different and definitely-limited periods, so as to effect definite multiple discharge of the vended articles at regular periodic intervals in the succession of coins deposited, substantially as specified.

12. In an automatic vending-machine, mechanism adapted to discharge the articles vended, and, cooperating therewith, a system of irregularly-disposed controlling-cams whereby definite multiple discharge of the said articles is effected at regular periodic intervals in the succession of coins deposited, substantially as specified.

13. In an automatic vending-machine, in combination, ejecting means for discharging the articles vended, a motor adapted to automatically actuate said ejecting means, a coin-actuated trip device adapted to be moved to release said motor, and means operating intermittently to sustain said trip device in its release position for a lengthened period so as to effect definite multiple discharge of the vended articles at regular periodic intervals in the succession of coins deposited, substantially as specified.

14. In an automatic vending-machine, in combination, motor-actuated ejecting means for discharging the vended articles, and coin-actuated mechanism adapted to release said ejecting means intermittently to multiply separate non-continuous movements thereof so as to effect definite multiple discharge at regular periodic intervals in the succession of coins deposited, substantially as specified.

15. In an automatic vending-machine, in combination, a motor provided with a coin-actuated trip device, means whereby said trip device is sustained in its release position for a succession of definitely-limited periods, and a cam whereby said trip device is intermittently sustained for a longer period so as to effect definite multiple discharge of the vended articles at regular periodic intervals in the succession of coins deposited, substantially as specified.

16. In an automatic vending-machine, in combination, motor-actuated ejecting means adapted to discharge the vended articles by reciprocatory strokes, and coin-actuated mechanism adapted automatically to release said ejecting means and intermittently to multiply the reciprocatory strokes thereof so as to ef-

fect definite multiple discharge at regular periodic intervals in the succession of coins deposited, substantially as specified.

17. In an automatic vending-machine, in combination, motor-actuated ejecting means adapted to discharge the vended articles by horizontal movements, and coin-actuated mechanism adapted automatically to release said ejecting means and intermittently to multiply the horizontal movement thereof so as to effect definite multiple discharge at regular periodic intervals in the succession of coins deposited, substantially as specified.

18. In an automatic vending-machine, in combination, motor-actuated ejecting means adapted to separately discharge the vended articles from a plurality of separate magazines, and coin-actuated mechanism adapted automatically to release said ejecting means and intermittently to multiply the said separate movements thereof so as to effect definite multiple discharge at regular periodic intervals in the succession of coins deposited, substantially as specified.

19. In an automatic vending-machine, in combination, motor-actuated ejecting means adapted to completely discharge each vended article before removing the next one from its magazine, and coin-actuated mechanism adapted automatically to release said ejecting means and intermittently to multiply the said complete movements thereof so as to effect definite multiple discharge at regular periodic intervals in the succession of coins deposited, substantially as specified.

20. In an automatic vending-machine, in combination, a delivery mechanism, a trip mechanism adapted to be released upon the deposit of a coin, and means operating intermittently to retain said trip mechanism in its release position during a given number of successive operations of the said delivery mechanism, so as to allow definite multiple discharge of the vended articles at regular periodic intervals in the succession of coins deposited, substantially as specified.

21. In an automatic vending-machine, in combination, a motor adapted to operate automatically upon the deposit of proper coins in the machine, means for discharging the articles vended, means for controlling the acceleration of said motor, a coin-actuated trip device, and means cooperating with said trip device and adapted to multiply successive movements of said discharging means so as to effect definite multiple discharge upon the deposit of a coin, substantially as specified.

22. In an automatic vending-machine, in combination, a motor provided with a stationary coin-chute, a trip-lever operated by the coin within said chute, means for discharging said coin from said chute, and means operating intermittently to retain said trip-lever in its release position for a lengthened period so as to effect definite multiple discharge of the

vended articles at intervals in the succession of coins deposited, substantially as specified.

23. In an automatic vending-machine, in combination, a motor provided with a coin-actuated trip-lever, and means operating intermittently to sustain said trip-lever in its release position for a lengthened period so as to effect definite multiple discharge of the vended articles at intervals in the succession of coins deposited, substantially as specified.

24. In an automatic vending-machine, in combination, ejecting means for discharging the articles vended, a motor adapted to automatically actuate said ejecting means, a coin-actuated trip device adapted to be moved to release said motor, and means operating intermittently to sustain said trip device in its release position for a lengthened period so as to effect definite multiple discharge of the vended articles at intervals in the succession of coins deposited, substantially as specified.

25. In an automatic vending-machine, in combination, motor-actuated ejecting means for discharging the vended articles, and coin-actuated mechanism adapted to release said ejecting means and intermittently to multiply separate non-continuous movements thereof so as to effect definite multiple discharge at intervals in the succession of coins deposited, substantially as specified.

26. In an automatic vending-machine, in combination, motor-actuated ejecting means adapted to discharge the vended articles by reciprocatory strokes, and coin-actuated mechanism adapted automatically to release said ejecting means and intermittently to multiply the reciprocatory strokes thereof so as to effect definite multiple discharge at intervals in the succession of coins deposited, substantially as specified.

27. In an automatic vending-machine, in combination, motor-actuated ejecting means adapted to discharge the vended articles by horizontal movements, and coin-actuated mechanism adapted automatically to release said ejecting means and intermittently to multiply the horizontal movement thereof so as to effect definite multiple discharge at intervals in the succession of coins deposited, substantially as specified.

28. In an automatic vending-machine, in combination, motor-actuated ejecting means adapted to completely discharge each vended article before removing the next one from its magazine, and coin-actuated mechanism adapted automatically to release said ejecting means and intermittently to multiply the said complete movements thereof so as to effect definite multiple discharge at intervals in the succession of coins deposited, substantially as specified.

29. In an automatic vending-machine, in combination, a delivery mechanism, a trip mechanism adapted to be released upon the deposit of a coin, and means operating intermit-

tently to retain said trip mechanism in its release position during a given number of successive operations of the said delivery mechanism, so as to allow definite multiple discharge of the vended articles at intervals in the succession of coins deposited, substantially as specified.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHARLES THOMAS FRANTZ.

Witnesses:

HENRY LOVE CLARKE,
CLARENCE W. DAY.