F. C. KAINER.

CIGAR VENDING MACHINE.

APPLICATION FILED MAR. 17, 1909.

927,656.

Patented July 13, 1909.

4 SHEETS—SHEET 1.

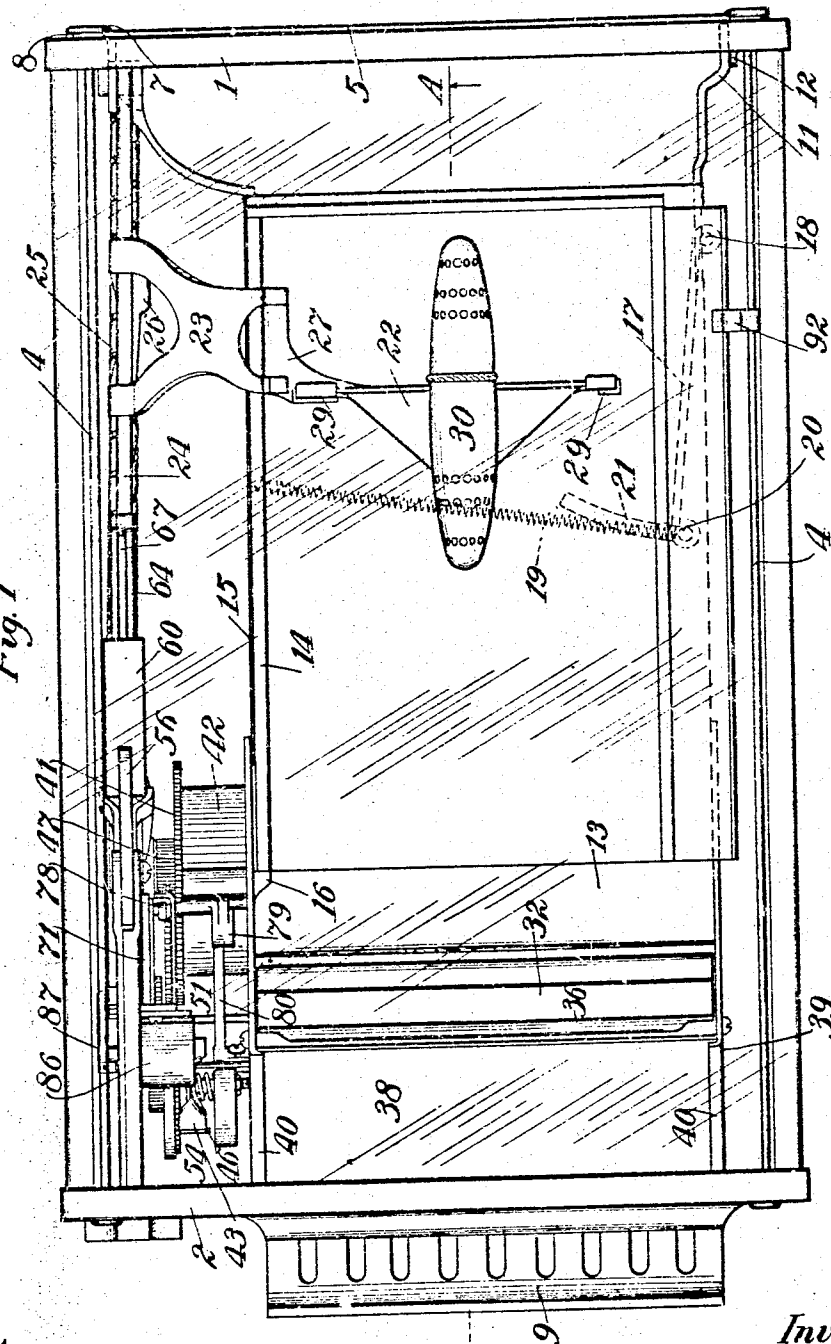

Fig. 1

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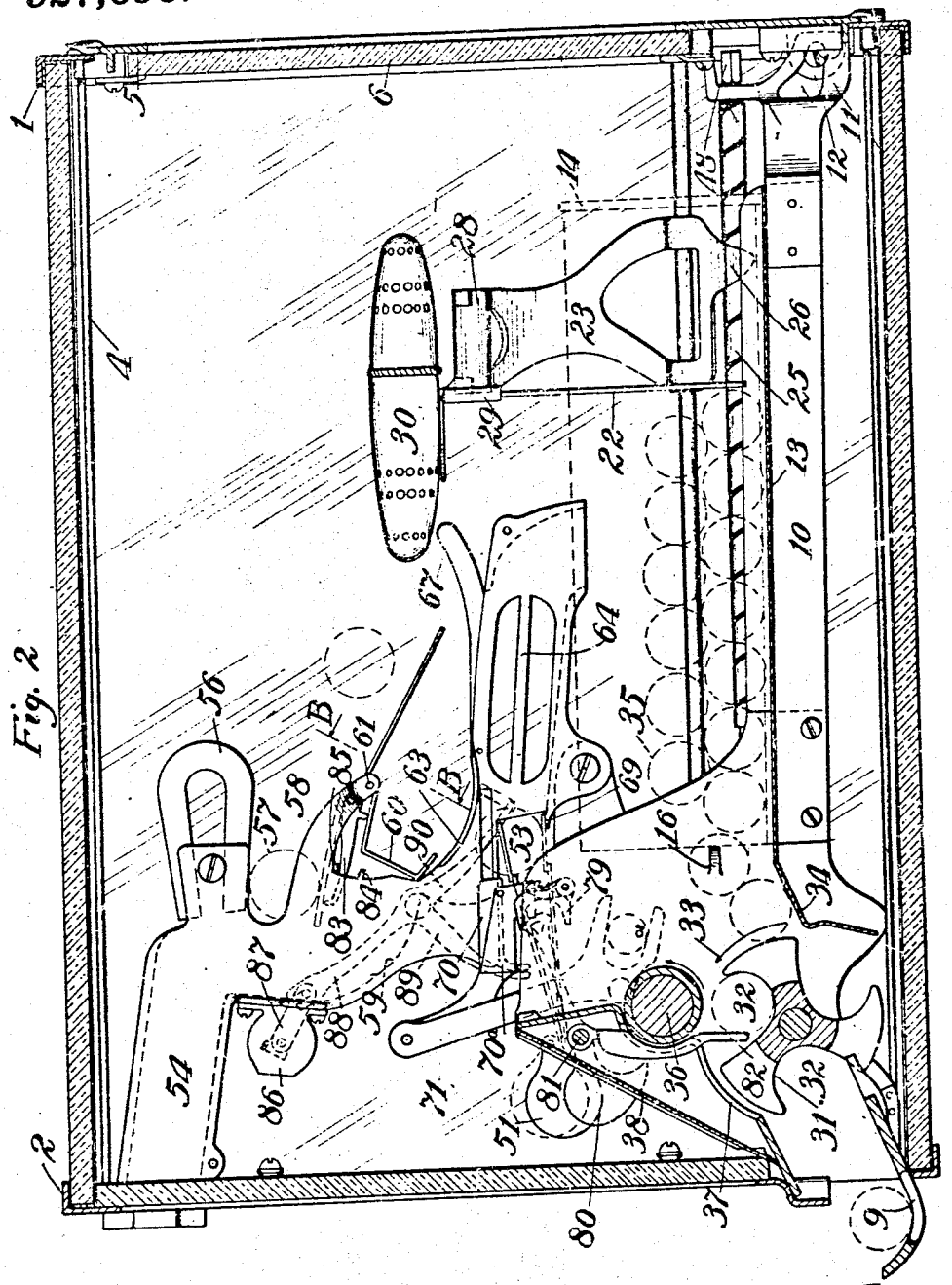

Fig. 2

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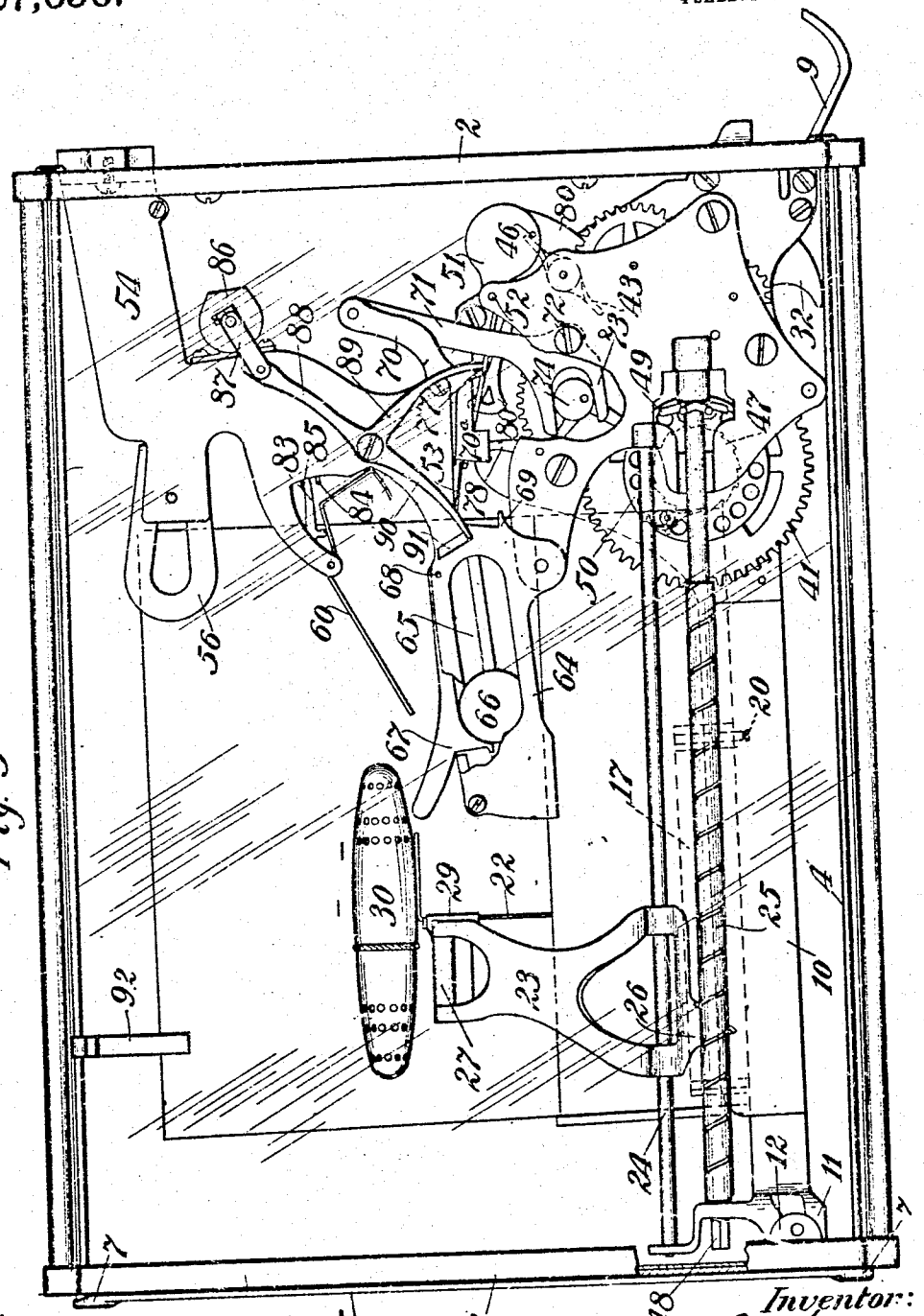

Fig. 3

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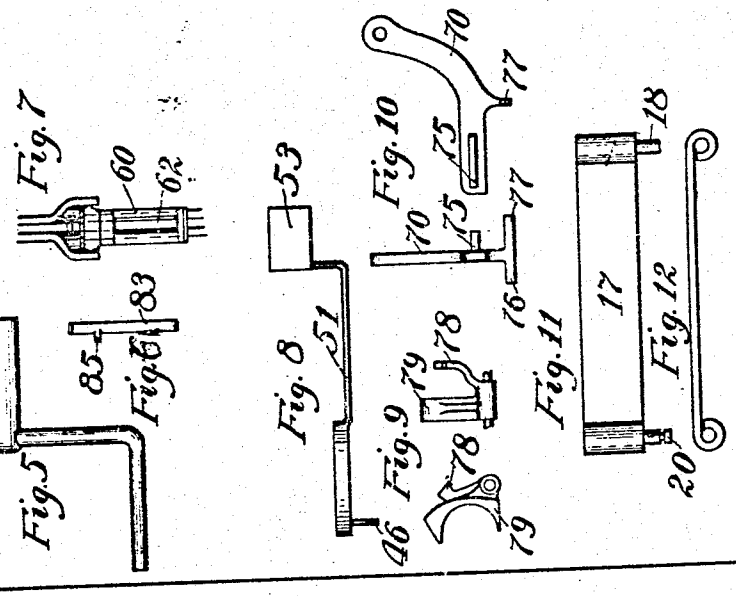

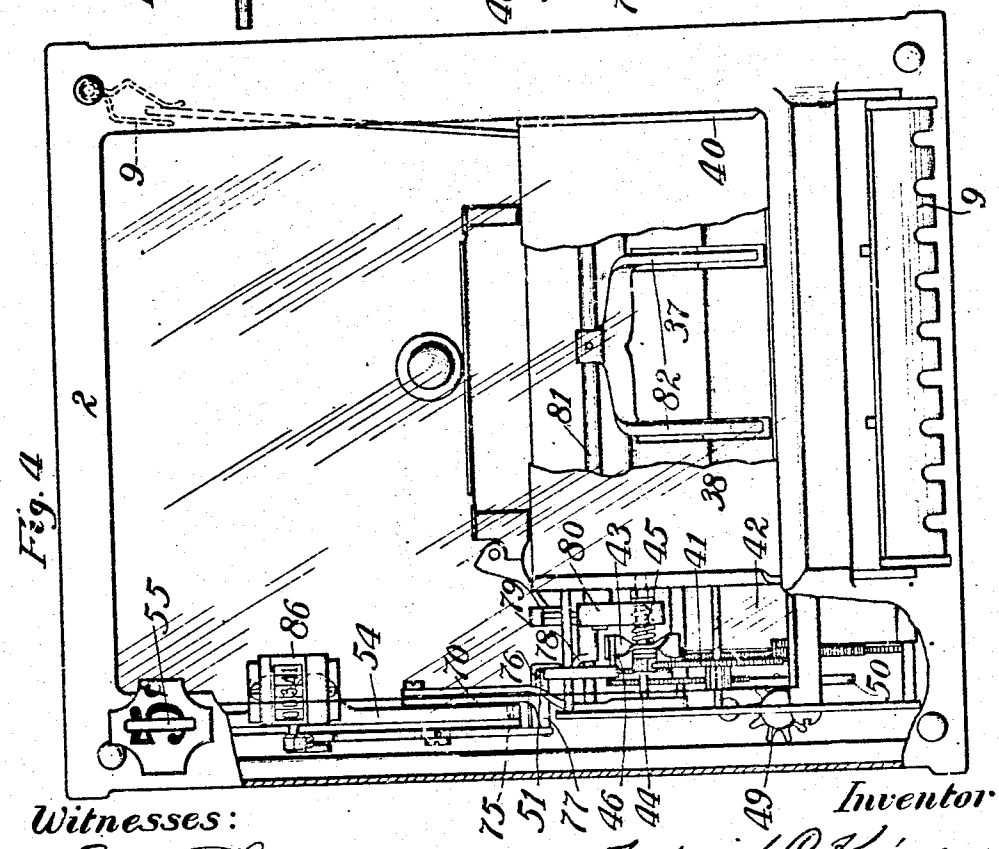

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UNITED STATES PATENT OFFICE.

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CIGAR-VENDING MACHINE.

No. 927,656. Specification of Letters Patent. Patented July 13, 1909.

Application filed March 17, 1909. Serial No. 483,900.

To all whom it may concern:

Be it known that I, FREDERICK C. KAINER, a citizen of the United States of America, and a resident of South Haven, Van Buren county, Michigan, have invented certain new and useful Improvements in Cigar-Vending Machines, of which the following is a specification.

The main objects of this invention are to provide an improved form of check controlled cigar vending machine adapted to positively deliver a cigar for each coin of proper denomination delivered thereto; to provide an improved form of feeder and feeder operating mechanism particularly adapted for discharging cigars from a cigar box; to provide improved means for starting and stopping the motor which operates the delivery mechanism; to provide improved means for yieldingly securing a cigar box in position for delivering cigars to the delivering mechanism and adapted to permit various sizes of cigar boxes to be substituted for each other without requiring special adjustment of the securing devices; and to provide improved means for securing the machine in a casing having top, bottom and side walls of glass.

A specific embodiment of this invention is illustrated in the accompanying drawings, in which:

Figure 1 is a top plan of a cigar vending machine constructed according to this invention. Fig. 2 is a vertical section of the same on the line A—A of Fig. 1. Fig. 3 is a side elevation of the same, some of the parts being partly broken away to illustrate the construction of parts which would otherwise be hidden. Fig. 4 is a front elevation of the same, also partly broken away. Fig. 5 is a detail of the winding key. Fig. 6 is a top plan of the coin intercepting pawl which prevents coins from being delivered in too rapid succession to the controlling element. Fig. 7 is a section on the line B—B of Fig. 2, illustrating the arrangement of the aperture in the selecting device, the chute being indicated partly broken away. Fig. 8 is a detail in top plan of the controlling element. Fig. 9 is a detail showing two views of the catch which secures the operating element in its operating position. Fig. 10 is a detail showing two views of the part which pushes the coin off from the controlling element. Fig. 11 is a side elevation of the clamping arm which holds the cigar box in position. Fig. 12 is a top plan of the same.

In the general construction, the device shown in the drawings comprises a magazine which is preferably a cigar box, being the original package from which it is desirable to vend cigars, feeding mechanism for discharging cigars from the cigar box, delivery mechanism for delivering the cigars singly and in succession to the delivery chute, a motor, and check controlled devices for controlling the operation of the motor. In order to clearly disclose this invention, a specific construction of each of the above mentioned groups of parts will be described in detail, and the operation will then be described as a whole.

The supporting frame comprises a casing, preferably consisting of four plates of glass abutting at their edges and secured together by metal end caps 1 and 2 having flanges inclosing the adjacent edges of the top, bottom and side plates, and having the greater part of their area in the form of glass panels. The caps 1 and 2 are securely fastened together by rods 4 which are located in the respective corners where the top and bottom plates of glass meet the sides. Access to the interior of the casing is provided by making a removable panel or door 5 in the rear wall, which panel carries the rear plate 6 of glass and has extensions 7 at each corner which overlap the nuts 8 on the rods 4. The front wall of the casing has an opening through which the delivery chute 9 extends. The mechanism within the casing is entirely supported by the end caps 1 and 2 and comprises a supporting frame 10, of which the chute 9 is a part. The chute 9 fits snugly within the opening in the front wall of the casing, and the frame 10 is also provided with ears 11 which are fastened by screws to ears 12 on the rear cap 1 of the casing. The upper surface of the frame 10 is covered by a sheet metal plate 13 which serves as a support for the magazine 14.

The magazine is a rectangular box which rests in horizontal position upon the plate 13 and is preferably an ordinary cigar box, being the one in which the cigars were originally packed and being rendered suitable for the purpose by removing the end thereof which is toward the front of the machine. The supporting frame is provided with a wall or up-

right 15 against which one of the longitudinal sides of the cigar box abuts, and there is a stop 16 near the front end of said wall which determines the position of the front of the box. A clamping arm 17 pivotally mounted on the frame at 18 holds the box securely in position, the free end of the arm 17 being normally urged toward the wall 15 by means of the spring 19 which is connected to a stud 20 extending through a slot 21 in the plate 13.

The feeding mechanism comprises a plate 22, somewhat in the form of the blade of a hoe, and suitable mechanism for advancing it so as to push the cigars along the magazine toward the front of the machine. The plate 22 is thin and is readily adapted to be inserted between the cigars and the rear wall of the box 14, and is carried by a carriage 23 slidably mounted on a rod 24 which is horizontally disposed and extends along one side of the box. A screw-threaded shaft 25 extends in parallel relation to the shaft 24, and the carriage 23 is provided with a shoe 26 shaped to mesh with the thread on the shaft 25. The weight of the carriage 23, together with the parts carried by it, is so disposed as to normally hold the shoe 26 into engagement with the shaft 25, but, as the carriage 23 is also free to rotate on the rod 24, the shoe 26 may yield so as to allow the shaft 25 to rotate without advancing the carriage in case the cigars should become accidentally jammed for any reason and offer unusual resistance to the advance of the feeder. The feeder plate 22 is carried by an arm 27 which is hinged to the carriage 23, being free to be swung upward on its hinge joint, but being prevented by the stop 28 (Fig. 2) from swinging downward beyond a substantially horizontal position. The plate 22 is bent at right angles at its upper end, and the arm 27 is provided with flanges 29 which engage opposite side edges of the plate 22 and support it. The upper forwardly extending part of the plate 22 supports a moistener 30 which serves to keep a certain amount of humidity in the air within the casing, so as to prevent the cigars from drying. The thread on the shaft 25 terminates at a suitable point to prevent the further advance of the carriage 23 after it is moved to the position for discharging the last cigar from the cigar box.

The delivery mechanism comprises a rotary member or drum 31 journaled on a horizontal axis extending transversely across the front of the magazine and provided with pockets 32 of suitable size and shape to deliver one cigar at a time. The drum 31 is driven in the direction of the arrow 33 of Fig. 2. The plate 13 is inclined downwardly at 34 at its forward end, so as to cause the cigars to roll into the pockets 32 when such pockets come into suitable position for receiving the cigars. The cigars are indicated by dotted circles 35 in Fig. 2. The bottom of the delivery chute 9 extends into suitable position for discharging cigars when they arrive at such position as to fall out of the pockets 32 of the delivery member. The separator roller 36 is journaled above the delivery member 31 on a parallel axis and is driven to rotate in the same direction as the member 31, so that the adjacent parts of their peripheries will move in opposite directions and the separator roller will push back the cigars which are not seated in the pockets 32 and thereby prevent clogging of the mechanism, in case the cigars should happen to be fed forward more rapidly than they are taken care of by the delivery roller. The plate 37 extends upward close to the front of the separator roller 36 and prevents the possibility of cigars being forced over the top of the roller 36 and falling into the delivery chute.

In order to disclose as much of the interior of the casing as possible, and in order to permit a person to see through one casing into another when two or more of such vending machines are stacked one upon the other or placed side by side, the greater part of the walls of the casing is made of glass. It is therefore desirable to have the name plate on the interior of the casing. The most convenient position for this name plate is that which is occupied by the plate 38. This plate is clamped between the side plates 39 of the frame and is held in position by flanges 40. As will be seen from Figs. 1 and 2, the plate 38 may be readily slipped out of position and another substituted therefor, in case it is desired to change the inscription on the machine.

The motor comprises suitable gearing 41 arranged for imparting the desired motion to the various parts of the feeding and delivery mechanism, and is driven by a spring 42. The speed of the motor is governed by means of the small fan 43 which is loosely mounted on the shaft 44 driven by one of the pinions of the gear train. The fan 43 is urged against a collar on the shaft 44 by means of the spring 45 (Fig. 4) which acts as a friction clutch normally preventing relative rotation of the shaft with respect to the fan, but adapted to yield to absorb the shock in case the fan is suddenly stopped. The starting and stopping of the motor is controlled by means of the detent 46 which is movable into and out of position for preventing the rotation of the fan 43.

A suitable ratchet device 47 (Fig. 3) is interposed between the motor spring and the gear train in the usual manner, so as to permit the spring to be wound without causing the reverse operation of all of the parts which are driven by the motor. In order to obviate the necessity of cutting a hole through the glass at the side of the casing to permit the insertion of a key for winding the motor,

the mechanism is arranged to permit the motor to be wound by means of the shaft 25 which is squared at 48 at its rear end to fit the key. The shaft 25 has at its front end a pinion 49 meshing with a perforated disk 50 on the main driving shaft of the motor. Thus the motor will drive the shaft 25 for advancing the feeder, whereas the rotation of the shaft 25 in the opposite direction will simultaneously wind the spring and return the feeder to its initial position.

The check controlled devices are arranged as follows: The detent 46 is carried by a controlling element in the form of a lever 51 pivotally mounted at 52 and counterweighted so as to normally assume the position shown in Fig. 3, with the detent 46 in position for preventing the rotation of the governing fan 43. The opposite end of the controlling element 51 is provided with a plate or pan 53 to which the coins or checks which have passed the coin selecting devices are delivered. The coin chute 54 communicates with a slot 55 in the front of the casing, and is provided with the usual magnet 56 for deflecting slugs of magnetic material. The shape of the passage through the coin chute is indicated by dotted lines in Fig. 2, from which it will be seen that a magnetic slug indicated by the dotted circle 57 would be deflected and pass out of the branch chute or slot 58 and thereby fail to operate the delivery mechanism. Coins or checks which are not deflected by the magnet fall past the mouth of the branch chute 58 and are guided by the curved front wall 59 of the chute toward the measuring device 60. This measuring device is in the form of a lever pivotally mounted at 61 and counterbalanced so as to normally hang in the position shown in Fig. 2. The coin chute is open toward the lever, and the lever is provided with a measuring aperture 62 (see Fig. 7) which allows checks or coins which are smaller than a certain predetermined diameter to pass through, but which obstructs the passage of coins or checks of such certain predetermined diameter. The lever 60 swings under the weight of a retarded coin or check, and drops it into the continuation of the coin chute which may be regarded as a hopper serving to support the coin while it is resting on the pan 53. This hopper part of the chute is designated 63 in Fig. 2. The pan descends under the weight of the coin, as shown by dotted lines in Fig. 2, so as to raise the stop 46 clear of the path of the governing fan 43, and thereby permits the motor to run.

In line with the position of the coin and forming an extension of the coin chute is a display rack 64 which is horizontally disposed and provided with a large opening 65 through which the coins or checks contained in the rack are visible. One of the checks is shown in position in the rack at 66 in Fig. 3, and the checks are prevented from falling out of the rack by means of a gravity pawl 67. This pawl is pivoted at 68 and is adapted to be lifted either by hand, for the purpose of removing the coins from the rack, or by the pressure of succeeding coins. The rack is preferably of such length that it will hold a plurality of coins at the same time and allow all to be visible.

The motor is so arranged as to continue to operate as long as the pan 53 is in its lower position as limited by the stop 69. A reciprocating member or pusher 70 travels back and forth across the pan 53 when the motor is in operation, and serves to push the coins off from said pan after they have started the operation of the motor. The pusher is operated by means of an oscillating lever 71 pivotally mounted at 72 and having a forked arm 73 engaging an eccentric 74 on one of the shafts of the motor. This arrangement will be understood from Figs. 2, 3, 4, and 10. The pusher 70 is provided with a shoulder or stud 75 which extends into the chute and engages the coin, and it is also provided with shoulders 76 and 77. The shoulder 76 operates the latch 78 by means of which the controlling element 51 is locked in position for permitting the motor to continue to run after the coin has been pushed off of the tray 53. The shoulder 77 engages the operating lever of the registering mechanism.

The latch 78 is in the form of a hook pivotally mounted and having a fork 79. The shoulder 76 on the pusher is so located as to engage the latch 78 and push it into position for preventing the raising of the pan 53 after the coin has been pushed off of it. The releasing of the hook 78 from engagement with the element 51 is accomplished by means of a pivoted lever 80 which is counterpoised so as to normally assume the position shown in Fig. 2 and normally urge the latch 78 into position for engaging the shoulder 76 by which it is pushed into engagement with the controlling element 51. The lever 80 is fixed on its shaft 81, and said shaft extends along above the delivery drum 31. The forked arm 82 is rigidly connected to the shaft 81, and its two branches or fingers extend into the path of a cigar which is being delivered by the drum 31. The periphery of the drum 31 is slotted, as will be understood from Fig. 2, to permit the arm 82 to extend into the pockets 32 without interfering with the parts of the drum between the pockets. Thus, when a cigar engages the forked arm 82, said arm is pushed out of the path of the cigar and causes the lever 80, through engagement with the forked arm 79, to release the catch 78 from engagement with the controlling element 51, which on account of its counterbalance tends to swing into position for stopping the motor, the arrangement of the parts which accomplish this function being such

that the machine will stop when the drum is in position for permitting the cigar which has caused the stopping of the motor to roll out along the delivery chute 9. The dog 70ª, which is pivotally mounted on the member 70, prevents the element 51 from stopping the motor before the member 70 arrives at the front end of its stroke.

When a plurality of coins are inserted into the coin slot one after another in close succession, with a view to delivering them more rapidly than they can be taken care of by the selecting devices and thereby causing the operation of the machine by checks which would otherwise fail to operate it, this result is prevented by means of a pivoted dog or pawl 83. This pawl is normally held, through its engagement with the lever 60, in the position shown in Fig. 2, where it is clear of the path of coins which are not deflected by the magnet. When, however, the lever 60 is swung downward through contact with a coin, the dog 83 falls into position for intercepting the succeeding coin and thus holds such succeeding coin until after the lever 60 has returned to its normal position. The movement of the dog 83 is limited by stops 84 and 85.

The register 86 is of ordinary form and is operated by an oscillating lever 87 which is in turn moved by an arm 88 of a lever which has two depending arms 89 and 90. The arm 90 is bent at right angles near its end and extends through the slot 91 in the coin chute so as to be swung upward for increasing the count of the register through engagement with the edge of each coin which is pushed into the display rack. The arm 89 of the bell crank extends into position for engaging the lug 77 on the pusher 70 and causes a return of the register lever 87 to its normal initial position through the return movement of the pusher after it has discharged a coin from the pan 53. Such return is insured by the dog 70ª which prevents the rising of the pan 53 until after the pusher arrives at the front end of its stroke.

The operation of the device shown is as follows:—When all of the cigars in the machine have been delivered, the door 5 at the back of the casing is removed, and the empty cigar box is withdrawn and discarded. The operator then winds the spring of the motor by applying a key, such as is shown in Fig. 5, to the squared end of the shaft 25 and turning said shaft in a clockwise direction. This rotation of the shaft 25 also causes the carriage 23 to travel back to the rear end of the shaft. A new box of cigars is now prepared for insertion into the machine by opening the lid and removing the proper end wall. The feeder 22 is then swung out of the way by being turned up on its hinge joint, and the box full of cigars is slid into position between the clamping arm 17 and the wall 15 until its front edge abuts against the shoulder 16. During the insertion of the box the lid is open and its edge is allowed to pass between the arms of a clip 92 which holds the lid in an open position. The feeder plate 22 is then swung down into position between the cigars and the rear wall of the box. The door of the casing is then replaced and the apparatus is ready for the vending of cigars. When a coin is inserted into the coin chute, if it be of iron or steel it will be deflected by the magnet, as indicated by the dotted lines 57 in Fig. 2. If it is not magnetic, it will fall along the chute until it engages the lever 60, and if it is sufficiently large to be supported by said lever, it will cause said lever to swing down until the coin is delivered to the hopper 63 and upon the pan 53. The weight of the coin then depresses the pan and thereby lifts the detent 46 clear of the path of the fan 43 and allows the motor to operate. The operation of the motor causes the rotation of the eccentric 74 which imparts an oscillating movement to the lever 71 and thereby causes the member 70 to travel back and forth. During the backward movement of the member 70 the shoulder 75 thereon engages the coin and pushes it off from the pan 53. During the backward movement of the member 70 the shoulder 76 engages the catch 78 and pushes it into engagement with the arm of the lever 51. The act of pushing the coin off from the pan 53 causes the coin to lift the arm 90 of the bell crank and increase the count of the register by unity, and during the return movement of the member 70 the shoulder 77 engages the arm 89 of the bell crank and returns the register lever 87 to its initial position. The operation of the motor causes the rotation of the shaft 25 so as to push the cigars forward, and it also causes the rotation of the drum 31 and separator roller 36. As long as no cigar enters a pocket in the drum so as to be delivered thereby, the motor continues to run and the feeder continues to push the cigars forward toward the drum. When a cigar enters one of the pockets of the drum, it is carried thereby into contact with the fingers 82, causing the lever 80 to swing the catch 78 to its released position and permit the controlling element 51 to return to its normal position with the detent 46 in position for stopping the motor. The dog 70ª insures that the member 70 reaches the front end of its stroke before the detent 46 can stop the motor. During this operation the cigar is delivered. The gearing is such that the drum 31 moves but a short angular distance for each complete revolution of the fan 43, and the drum therefore practically always stops with its pockets in exactly the same position.

Although but one specific embodiment of this invention is shown and described herein, it will be understood that numerous details

of the construction illustrated may be altered or omitted without departing from the spirit of this invention.

No claims are made herein to the check-controlled features but these are made the subject matter of a copending application, Serial Number 483,901, filed of even date herewith.

I claim:

1. In a device of the class described, the combination of an article magazine, a feeder movable along said magazine, a rod extending along the path of said feeder, a threaded shaft extending along the path of said feeder in parallel relation to said rod, a support for said feeder slidably mounted on said rod, a shoe carried by said support and adapted to engage said shaft for causing said support to shift through the rotation of said shaft, said support being adapted to turn on said rod to carry said shoe into and out of engagement with said shaft, and said shoe being normally urged by gravity into such engagement.

2. In a device of the class described, the combination of an article magazine, a feeder movable along said magazine, a rod extending along the path of said feeder, a threaded shaft extending along the path of said feeder in parallel relation to said rod, a support for said feeder slidably mounted on said rod, a shoe carried by said support and adapted to engage said shaft for causing said support to shift through the rotation of said shaft, said support being adapted to turn on said rod to carry said shoe into and out of engagement with said shaft, and said shoe being normally urged by gravity into such engagement, said feeder being hinged to said support and readily removable therefrom.

3. In a device of the class described, the combination of a horizontally disposed magazine, a threaded shaft extending along said magazine, a feeder movable along said magazine, a shoe connected with said feeder and adapted to engage said shaft for shifting said feeder through the rotation of said shaft, mechanism for delivering articles in succession from said magazine, a spring motor adapted to operate said delivery mechanism, gearing for winding said motor through the rotation of said threaded shaft, said shaft being adapted to be driven by the operation of said motor, and ratchet mechanism interposed between said delivery mechanism and motor spring and adapted to permit the winding of the spring without operating said delivery mechanism.

4. In a device of the class described, the combination of an article delivery mechanism, a spring motor for operating said mechanism, a rotary member driven by said motor, a detent movable into and out of engagement with said member, means extending into the path of articles delivered by said delivery mechanism and adapted through engagement with such articles to cause said detent to enter into engagement with said member, and a friction clutch interposed in the connection between said member and motor.

5. In a device of the class described, the combination of an article delivery mechanism, a spring motor for operating said mechanism, a rotary member driven by said motor, a detent movable into and out of engagement with said member, means extending into the path of articles delivered by said delivery mechanism and adapted through engagement with such articles to cause said detent to enter into engagement with said member, and a shock absorbing device interposed in the connection between said member and motor.

6. In a device of the class described, the combination of an article delivery mechanism, a spring motor for operating said mechanism, a shaft driven by said motor, a governing fan loosely mounted on said shaft, a detent movable into and out of engagement with said fan for stopping and starting the motor, means actuated through the operation of said delivery mechanism for causing said detent to be moved into engagement with said fan, and a friction clutch interposed between said fan and its said shaft.

7. In a device of the class described, the combination of an article delivery mechanism, a spring motor for operating said mechanism, a shaft driven by said motor, a governing fan loosely mounted on said shaft, a detent movable into and out of engagement with said fan for stopping and starting the motor, means actuated through the operation of said delivery mechanism for causing said detent to be moved into engagement with said fan, a shoulder on said shaft, and a spring normally urging said fan into frictional engagement with said shoulder, whereby said fan may yield with respect to the shaft so as to prevent injury to the parts through the impact of the fan upon said detent.

8. In a device of the class described, the combination of a frame adapted to support a box, a box mounted on said frame in a horizontally disposed position, being open at the top and at one end, a screw shaft extending along said frame at one side of the box, a feeder extending into the box and mounted to travel on said frame lengthwise of the box, and means connecting said feeder with said shaft and adapted to advance the feeder for discharging the contents of the box through said open end, said feeder being adapted to be moved upward clear of the contents of the box to permit the box to be moved endwise along said frame without disconnecting said feeder from said means.

9. In a device of the class described, the

combination of a frame adapted to support a box, a box mounted on said frame in a horizontally disposed position, being open at the top and at one end, a screw shaft extending along said frame at one side of the box, a guide extending along said frame in parallel relation to said shaft, a carriage movably mounted on said guide and having an arm overhanging said box, means adapted to connect said carriage with said shaft for advancing the carriage through the rotation of said shaft, a vertically disposed feeder plate, and clips for detachably supporting said feeder plate from said arm.

10. In a vending machine, the combination of a casing comprising top, bottom and side walls, a pair of end caps fitting opposite ends of said walls and having marginal flanges for securing said walls together, means connecting said caps, one of said caps having an opening therein, a vending machine frame having a delivery chute fitting the opening in said one cap, means connecting said frame with said other cap, whereby said frame may be supported by said caps without direct attachment to said bottom and side walls, and a door in said other cap adapted to permit access to the interior of said casing without disturbing the connection between said frame and caps.

Signed at Chicago this 15th day of March, 1909.

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