No. 616,441. Patented Dec. 20, 1898.

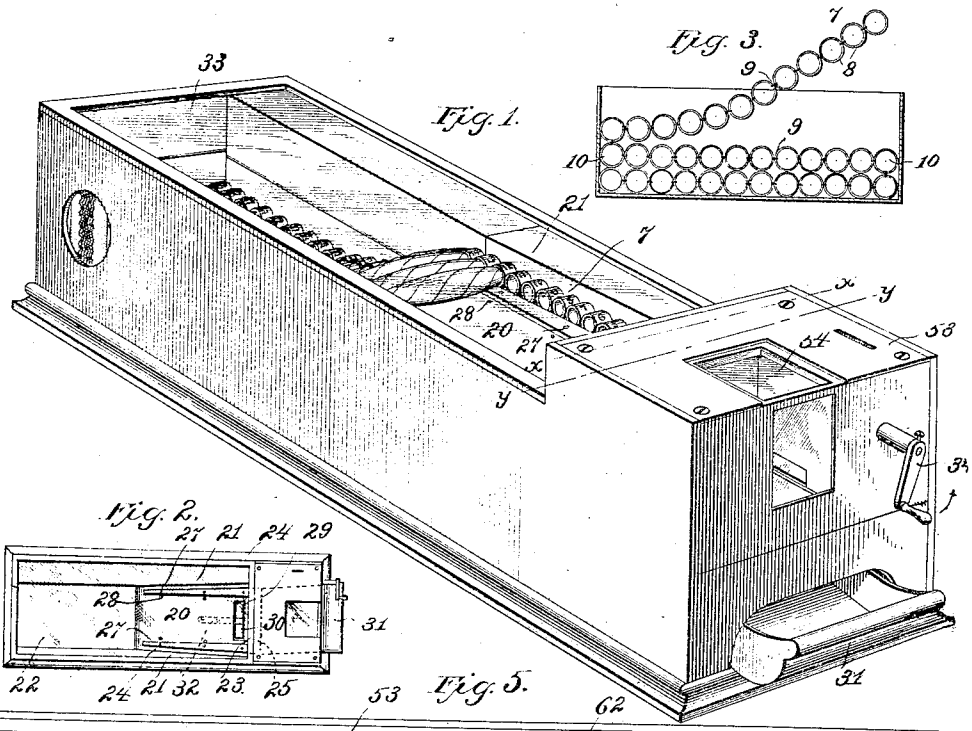
# W. L. DUNHAM.

## COIN CONTROLLED CIGAR EXHIBITING AND VENDING APPARATUS.

(Application filed Jan. 12, 1898.

(No Model.)

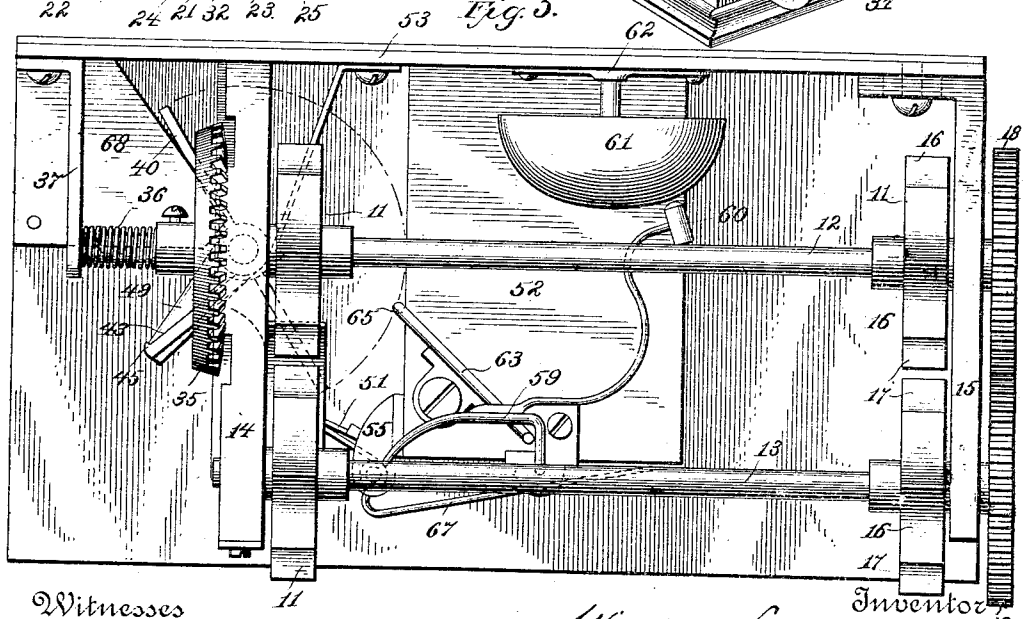
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Witnesses

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No. 616,441 Patented Dec. 20, 1898.

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## COIN CONTROLLED CIGAR EXHIBITING AND VENDING APPARATUS.

(Application filed Jan. 12, 1898.

(No Model.) 2 Sheets-Sheet 2.

Fig. 4.

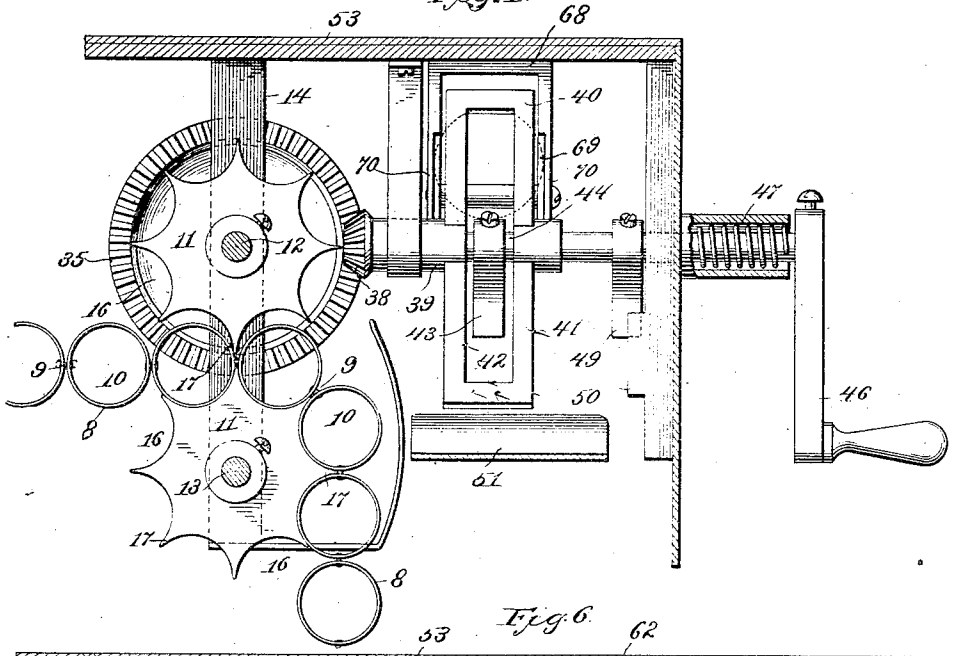



Fig. 6.

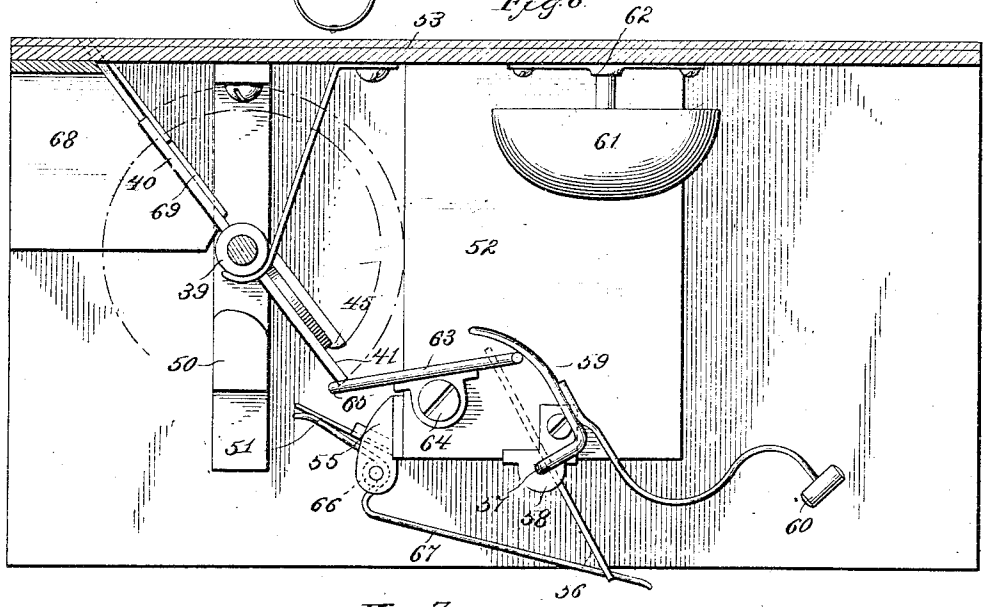
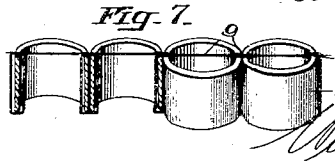



Fig. 7.




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# UNITED STATES PATENT OFFICE.

WILLIAM LOGAN DUNHAM, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE DUNHAM MACHINE COMPANY, OF ALEXANDRIA, VIRGINIA.

## COIN-CONTROLLED CIGAR EXHIBITING AND VENDING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 616,441, dated December 20, 1898.

Application filed January 12, 1898. Serial No. 666,442. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM LOGAN DUNHAM, a citizen of the United States of America, and a resident of Washington, District of Columbia, have invented certain new and useful Improvements in Coin-Controlled Cigar Exhibiting and Vending Apparatus, of which the following is a specification.

My invention relates to a device and apparatus for exhibiting and automatically delivering merchandise to a person upon the placing of a proper coin in a slot provided therefor and upon the subsequent actuation of an operating-handle located within convenient reach of the operating purchaser, and has for its prime object to provide a simple and inexpensive coin-controlled means for transmitting and conveying cigars direct from cigar-boxes displayed in a suitable ornamental show-case, as now exhibited, to vend from said boxes independently of each other to the discharge end of a delivery-chute into the hands of the purchaser in satisfactory manner.

To these ends my invention consists, first, of a harness of a simple and inexpensive character for the cigars that is flexible and easily adapted to be engaged and disengaged from the cigars and that is especially designed and adapted to fold into the cigar-box with the cigars as packed for the trade and by means of which the cigars can be withdrawn successively and directly therefrom and advanced and fed forward to the point of delivery, where they are successively liberated and vended, and, second, of a coin-controlled mechanism that comprises (*a*) a draft mechanism that is adapted to actuate, when engaged in working connection with said cigar-harness, upon the introduction of the proper coin, whereby the cigars may be fed or directed laterally, preferably from the top of the cigar-box to the vending or discharge chute, and (*b*) mechanism in operative relation to the power-transmitting means required to actuate said draft mechanism that is arranged to simultaneously deposit the coin into an inspection-chamber, where it is displayed to indicate the amount of purchase, while simultaneously discharging a preceding coin as well as sounding an alarm to give notice of said operation.

My invention further consists of combinations and subcombinations to be hereinafter described.

Referring to the drawings, Figure 1 represents in perspective a one-case compartment containing a box of cigars as arranged for vending said cigars according to my invention. Fig. 2 represents a top plan view of the same. Fig. 3 represents in cross-section the cigar-box and cigar-harness folded therein as is contemplated by my invention. Fig. 4 represents in end elevation the coin-controlled power-transmitting mechanism as arranged to move the cigar-harness when brought into working engagement therewith, while Fig. 5 represents a section taken at $x\ x$ through the coin-controlled mechanism case, as indicated in dotted lines, and Fig. 6 indicates a section taken at $y\ y$ of the same. Fig. 7 represents in detail the chain member.

Like numerals indicate like parts in the several figures.

Referring to the drawings, 7 indicates the harness or conveyer-belt intended for the cigar-withdrawal apparatus and comprises a pair of chain members or carriers that consist each of a series of pivotally-connected cups or retainers 8, that are preferably made of flexible material, and that are adapted to fit over the respective opposite ends of the cigars when horizontally disposed and arranged in parallelism thereto, and that are adapted to fold into the box with the cigars, as packed at the factory, without requiring additional space for their occupancy and the consequent necessity of employing a larger cigar-box for the same number of cigars heretofore packed in a given-sized box, and said chain will as readily unfold therefrom to serve as a connecting and conveying device for lifting in layers and conveying the cigars in successive parallelism therefrom to the point of delivery, thereby affording a means for exhibiting and removing the cigars from the top of the box in a satisfactory and inexpensive manner.

The chain cups or retainers are preferably cut or stamped to the proper shape and are made of uniform width and joined successively to each other by a cord or thread 9 and so tied that the cups are held in alinement to present the retaining orifices or bores 10 thereof in parallelism, while providing a flexible joint between each retainer that will allow of sufficient vertical play and separation each from the other to admit of folding one upon the other in layers, as shown in Fig. 3, and that will permit the teeth of the draft mechanism to pass between them in a manner to be hereinafter described. The chains thus constructed are preferably formed out of paper or other cheap material, that is flexible and that can be made cheap enough to allow of discarding after once using. It is also proposed to make them ornamental and to coat the interior walls with shellac or paraffin in order to protect the cups from losing their shape under the influence of moisture to be found in cigars when first packed.

The chains can readily be filled with cigars by sticking the ends of the latter into the bores of the retaining-cups to form a belt conveyer, and said chain belt thus provided can be cut to any suitable length to fold into a sufficient number of layers to fill a cigar-box as now packed.

The cups or retainers are numbered in arithmetical progression for the purpose of indicating in a serial order the number of cigars in said chain belt as well as indicating, when arranged for vending, the number of cigars vended at any time from a given box.

The draft mechanism required to coöperate with the chain-carrier in order to feed the cigars from the box to the point of delivery consists, preferably, of two pairs of vertically-disposed rotatable drums or sprocket-wheels 11, that are mounted, respectively, on horizontally-disposed shafts 12 and 13, which latter are journaled at 14 and 15 and in parallelism at such a distance from each other that the relative positions of the respective drum pairs to the others are such that in the absence of the chain members the wheel-peripheries have no connection with each other. Said drums are provided on their peripheries with coöperating semispherical grooves or concavities 16, that extend to form teeth 17, said grooves and teeth being of such a width and size as to be adapted to register with each other to fit or socket and bear against the cylindrical sides of the cup-retainers when drawn successively into working contact therewith.

The drum-shafts are provided at their ends to the right with gear-wheels 18 and 19, that mesh with each other to form a controlling means for positively maintaining the drum-wheels in a relative position to insure the registering of the grooves thereon.

By the above-described means it will be seen that the rotation of the drums will cause a regular forward progressive movement and an equalized draft upon the respective chain members, so as to bring them successively with the oppositely-positioned bores of each in perfect alinement and into a position where if the reduced ends of the cigars could be dislodged from the retaining-cups they could be discharged into a delivery-chute; but it is necessary in order to free the cigars from the chain members thus disposed to provide a means whereby the cigars can be liberated from the harness with uniform accuracy and positiveness and dislodged at the proper point, and to this end it is proposed to pass the chains over a horizontal plane or way 20, that is provided intermediate of the cigar-box and the draft mechanism and which is wide enough to allow of the lateral display and overrunning transit therethrough of the cigars. It is proposed to elevate this horizontal platform a little above the plane occupied by the cigar-box and to provide the same with diverging side pieces 21, that will extend from the entrance end 22 to the discharge end 23, and to provide in connection with said diverging side pieces guideways 24, arranged in parallelism therewith to insure the guidance and gradual separation of the chain members and the consequent displacement of the ends of the cigars from the bores of the retaining-cups after they have reached a predetermined point near the discharging-slot 25. The cigars thus freed are pushed gently one by one down the chute.

The guide-cleats are beveled inwardly to conform with the reduced ends of the cigars and may be made with downwardly-extending pins or dowels 27, that fit into corresponding holes 28, and which may be positioned at different distances from each other in order to accommodate cigars of different lengths.

Extending transversely across the horizontal way between the guideways 24 at a suitable distance from the discharge-opening of the chute is a slot 29, in which is disposed and loosely fitted a similar shaped bar or gate 30, that is normally projected above the level of the horizontal plane into the pathway of the traveling cigars to form a depressible gate to regulate the passage and discharge of the cigars at that point and permit them to pass singly into the discharge-chute 31. This gate is sustained from beneath by a spring 32 so positioned centrally in relation to said gate that it not only yields downwardly to allow for the passage of the cigar, but forms a balancing-point to allow for the unequal displacement of the respective ends of said gate to adjust itself to the conditions incident to the irregular lateral advancement or feed of the cigars at that point. Coöperating with this means for regulating the forward advancement and discharge of the cigars and extending over the entire horizontal plane is a glass-plate covering 33, that is hinged to the case, so as to bring the glass in proximity with the top level of the layers of the cigars as they advance across the way, which glass

cover on account of its proximity thereto tends to act as a leveling device as well as a housing for the cigars thus displayed.

The primary shaft 12 of the draft mechanism is arranged to receive its motion from the crank or handle shaft 34 through the bevel gear-wheel 35, which is mounted near one end of said primary shaft and that is held normally under the control of the spring tension device 36, which is coiled about the end of the shaft, the ends of which abut between said bevel gear-wheel and the arm 37. Said bevel-gear is adapted to be driven by the pinion 38, that works at right angles thereto and that is carried at the inner end of a sleeve or hollow shaft 39, which sleeve is mounted to rotate coincidently with the crank-shaft on the same longitudinal axis in one direction when brought into operative connection therewith by the interposition of a proper coin. The gear-wheels are so proportioned that a revolution of the crank-shaft will cause the feeding-drums to revolve far enough to cause the chain to dislodge and discharge a single cigar. The gears can be so proportioned relatively to each other that they can be rotated to cause the drums to turn sufficiently to vend any number of cigars at one operation. The sleeve thus mounted carries oppositely-extending radial flat arms or guide-wings 40 and 41, which are provided centrally with a vertically-extending slot or opening 42, within which a radially-disposed arm 43 extends from the crank-shaft at 44, and although swinging in the same concentric plane is free to pass unless obstructed by the interposition of a coin. This radial arm is provided with a forwardly-extending hook 45 at its free end. The object of this latter construction and arrangement of arms is to provide an automatic clutch or coupling mechanism that can be keyed or united together by the interposition of a proper coin between either one of the guide-wings and the radial arm, so that when the crank-shaft is revolved in the direction of the arrow shown in Fig. 1 the power therefrom is transmitted by reason of this working contact established by the employment of the coin through the rotating sleeve to the gear mechanism to cause the drums to turn until the respective arms have swung into a downward plane, where the coin is freed by gravity and falls into a place of deposit, and the drums have been turned a predetermined distance to vend a cigar, when the arms are disconnected from operative contact.

To cause the handle 46 of the crank-shaft to be returned to its original position, there is provided a coiled spring 47, which is adapted to the shaft adjacent to the crank-handle and is adapted to rotate it in a direction opposite to that indicated by the arrow in Fig. 1, thereby acting to normally hold the same in a position as shown in said figure. This spring is secured by one of its ends to the plate 48, while the other end is secured to the shaft in such a manner that by the rotation of the shaft in the direction indicated by the arrow the spring will be coiled up.

The range of movement of the handle is governed by the stop-arm 49, which strikes against the limiting-stop 50 to control the range of movement of said arm in either direction, and thereby regulate the position of the guide-wings in their respective normal relations to the lower extremity of the coin-delivery chute 51.

52 represents the dumping or inspection chamber that is secured to the top of the frame 53 in any suitable manner and which is shown in coin receiving and discharging positions, respectively, in Figs. 5 and 6. The top and front of said chamber are partly cut away to provide for glass-covered observation-apertures 54, as shown in Fig. 1. The object of such apertures is to show clearly to the public the contents of the box for the purpose of indicating the amount of sale and to prevent by this ready means of detection the use of dummy or counterfeit coin.

The box is provided with a coin-receiving spout 55 and a coin-dumping bottom plate 56. The latter consists of a pivoted plate, as shown in Fig. 6, which rests upon a rock-shaft 57, extending through the studs 58, depending on either side from the bottom of the frame of the box, which shaft is pivotally mounted therein and secured beneath the bottom of the plate in such a manner as to permit the dumping thereof when required by a slight movement of the tripping mechanism.

To prevent the simultaneous presence of two coins in the dumping-bar or inspection-chamber and to give notice of the reception and discharge of coin simultaneously therefrom, I provide the following simple mechanism: One end of the rock-shaft is extended to form an arm 59, that carries at one end a gong-hammer 60, extended at suitable length to reach in its forward movement the gong or bell 61, located at 62 on the frame and arranged to be struck by said hammer. Arranged in operative contact with the extended arm 59 is the arm of bail 63, that is bent to extend about the frame in three planes and that is pivotally connected to the frame at 64 on both sides of the box, so as to swing freely, and which normally rests in a position with its sides projecting upwardly in an inclined position, with its cross member 65 extended within the line of travel of the vertically-swinging guide-wings, (represented in dotted lines,) and which is adapted to be vertically reciprocated to operate the mechanisms, as follows: When the bail is struck by the downward swing of the guide-wing, it is caused to have a forcible downward movement until the wing has driven it out of range of its concentric plane of revolution and has carried the rock-shaft and hammer-arm to the limit of their movements to cause the tilting of the bottom plate. The latter parts are caused to recover their normal positions, as shown in

Fig. 5, by reason of the tensioned force of the coiled spring 66, that is wound about the rocker-shaft and which has a projecting arm 67, that presses beneath the bottom plate and that is extended in the direction of recovering its normal state, while the hammer-arm in its return is swung forcibly into contact with the gong to sound an alarm.

The coin-slotway 68 is of a width and thickness to accurately coincide with the dimensions of the proper coin, and said slotway is arranged at a suitable incline and is apertured or provided with open communications 69 on the front and rear faces of its lower extremity, thereby leaving two narrow depending channels 70, that furnish side bearings for the edges of the coin of the proper size, but that are so spaced as to allow of the dropping out of a smaller-sized coin than the one intended for use. These channels extend in a plane nearly coincident with the normal position of the upturned guide-wing, as shown in Fig. 6.

The operation: The coin, after being inserted in the slot by the operating purchaser, slips easily down the inclined slotway to a point where its lower edges come in resting contact with the hub of the radial arm and its side edges are allowed to bear only against the side channels. The operating-handle is then grasped by the operator and moved in the direction indicated by the arrow, thereby rotating the radial arm into a position where it bears against the front face of the coin to push said coin against the front face of the guide-wing 41, where it rides to form, in connection with said guide-wing, a clutch mechanism that unites in operative connection the sleeve-shaft with said crank-shaft and by a continued rotation transmits the power through the gear system to the rotatable feed-drums 11 to cause a predetermined movement of the chain and the vending of the cigars in a manner hereinbefore pointed out. The movement of these keyed levers is continued to a point where the wing strikes in its line of travel the trip mechanism and thereby actuating in operative sequence the dumping bottom plate and the alarm device, which has at the same moment described the arc of the circle indicated by dotted lines, whose limit is determined by the stop-arm coming in contact with the stop pin or stud, when the crank-lever is released by the operator and allowed to be returned to its normal position by reason of the tensioned force of the coiled spring and the coin is allowed to drop away to the place of temporary deposit in the inspection-chamber.

Having described my invention, what I desire to claim as new and useful is—

1. A machine or apparatus of the class described comprising the following instrumentalities; a coin-controlled draft mechanism, a foldable conveyer provided with means for engaging merchandise articles, and means for disassociating said articles from the conveyer, for the purpose set forth.

2. In a machine of the class described the combination with a coin-controlled draft mechanism, of a conveyer that is adapted to fold into a box, and that is provided with engaging means arranged in operative withdrawal relation to the cigars packed in said box, and means for automatically disassociating said cigars from the conveyer.

3. The combination with a coin-controlled draft mechanism, of a flexible conveyer that is adapted to fold into a box, said conveyer being provided with engaging means arranged in operative withdrawal relation to the cigars packed in said box, said engaging means being adapted to present a yieldable bearing-surface against the respective cigars, when held in operative relation thereto, and means for severing the cigars from their connection with the conveyer, for the purpose set forth.

4. The combination with a coin-controlled draft mechanism, of a flexible conveyer that is adapted to fold into a box, said conveyer being provided with engaging means arranged in operative withdrawal relation to the cigars packed in said box, said engaging means being adapted to present a yieldable bearing-surface against the respective cigars, when held in operative relation thereto; and means for severing, successively, the cigars from their connection with the conveyer, for the purpose set forth.

5. The combination with a coin-controlled or analogous machine of a mechanism arranged to engage and move a conveyer-harness that is adapted to fold into a box and that is arranged to positively engage and feed merchandise articles from said box to the point of delivery and means for disassociating the articles from their connection with said conveyer for the purpose set forth.

6. The combination with a coin-controlled draft mechanism of a flexible conveyer that is adapted to fold into a box and that is provided at spaced intervals with engaging means that is adapted to effectively hold cigars in juxtaposed parallelism, whereby their contiguous body portions abut against one another so as to present a continuous layer of cigars unfolding from a box; and means located in the pathway of the traveling cigars thus united, for separating successively the cigars from the advancing layer and discharging same to the point of delivery, as and for the purpose set forth.

7. The combination with a coin-controlled draft mechanism, of a flexible conveyer, that is adapted to fold into a box, and that is provided with engaging means arranged in operative withdrawal relation to the respective ends of cigars packed in said box; and means for disassociating said cigars from the conveyer at a point of delivery.

8. In combination with a coin-controlled mechanism, a flexible carrier consisting of

two members that are adapted to fold into opposite sides of a cigar-box, said members being provided with engaging means that are in operative withdrawal relation to the cigars packed in said box; and means for ejecting the cigars from the engaging means at the point of delivery.

9. The combination with a coin-controlled mechanism of a draft mechanism adapted to engage a pair of chains which hold in harness cigars for vending between the same and means adapted to separate them near the point of delivery, whereby the cigars are successively freed, substantially as herein described.

10. The combination in a vending apparatus of a mechanism adapted to engage and move a pair of chain members which hold in harness cigars for vending direct from a package and means for controlling in unison both the forward and separating movements of said chain members, substantially as described.

11. The combination in a cigar-vending apparatus of a draft mechanism adapted to engage and move a pair of chain members that consist each of a plurality of retainers for encircling the respective ends of cigars arranged in parallelism to form a harness conveying-belt, said retainers being flexibly joined together to admit of folding the cigars in layers into a box and means for disassociating said retainers from the respective ends of the cigars, substantially as described.

12. The combination in a cigar-vending machine of a draft mechanism adapted to engage and move a pair of chain members that consist each of a plurality of retainers for encircling the respective ends of cigars arranged in parallelism to form a harness conveying-belt therefor, said retainers being joined together to admit of folding the cigars in layers into a box and guideways intermediate of the cigar-box and the point of delivery, whereby the chains are gradually separated and the ends of the cigars freed successively from the retainers, substantially as described.

13. The combination in a cigar-vending machine of a draft mechanism adapted to engage and move a pair of chain members that consist each of a plurality of retainers for encircling the respective ends of cigars arranged in parallelism to form a harness conveying-belt therefor, said retainers being flexibly joined together to admit of folding the cigars in layers into a box; and a horizontal platform arranged intermediate of said box and the point of delivery, said platform being provided with diverging side pieces and guideways arranged in parallelism therewith, and in range with the draft mechanism, whereby the chains are gradually separated and the ends of the cigars are successively freed from the retainers, substantially as described.

14. The combination in a cigar-vending apparatus of a draft mechanism adapted to engage and move a pair of chain members that consist each of a plurality of retainers for encircling the respective ends of cigars arranged in parallelism to form a harness conveying-belt therefor, said retainers being flexibly joined together to admit of folding the cigars in layers into a box; and a horizontal platform arranged intermediate of said box and the point of delivery, said platform being provided with diverging side pieces and guideways arranged in parallelism therewith; and a gate extending transversely across said platform near the point of delivery to regulate the successive discharge of the cigars liberated, substantially as described.

15. The combination in a cigar-vending machine of a draft mechanism adapted to engage and move a pair of chain members, that consist each of a plurality of retainers for encircling the respective ends of cigars arranged in parallelism to form a harness conveying-belt therefor, said retainers being flexibly joined together; and a horizontal platform arranged intermediate of said box and the point of delivery, said platform being provided with diverging side pieces and guideways arranged in parallelism and beveled to accommodate the reduced ends of the cigars; a gate bar or plate loosely fitted in a slot extending transversely across the platform adjacent to the point of discharge said gate being yieldingly supported from beneath by a spring and adapted to be depressed by the pressure exerted by the moving cigars, to allow of the single discharge of a cigar, substantially as described.

16. The combination with a power-shaft adapted to be rotated and provided with a radially-extending arm, of a sleeve-shaft mounted to rotate on the same longitudinal axis, said sleeve-shaft being provided with a driving-pinion and with opposite radially-extending wings that have central openings to allow the radial arm to be swung therethrough and permit the revolution of both in the same concentric plane, thereby forming a clutch mechanism for the reception of an interposed coin; and means for moving a chain carrier while in contact, said means being driven by a gear that is held in operative relation with the driving-pinion mounted on the sleeve-shaft, the whole arranged and operating substantially as described.

17. In a coin-controlled machine the combination with a coin-slotway, having at its lower extremity apertured front and rear faces, of rotary guide and coin-receiving arms, having a common longitudinal axis and which are arranged to be brought in operative relation and swing through the apertured extremity of said slotway, and are adapted to receive and transfer a coin inserted in said slotway to a place of deposit.

18. The combination with a power-shaft adapted to be manually operated of a shaft arranged to be keyed thereto by the employment of a coin, said shaft having opposite radially-extending arms; and a coin catch or dumping box having a pivoted bottom plate;

and a trip mechanism adapted to tilt said bottom plate.

19. In a coin-controlled machine the combination with a coin-slotway, having at its lower extremity apertured front and rear faces, of rotary guide and coin-receiving arms, having a common longitudinal axis and which are arranged to be brought in operative relation and swing through the apertured extremity of said slotway, and are adapted to receive and transfer a coin inserted in said slotway to a place of deposit; and a means for automatically operating a gong mechanism, substantially as described.

20. The combination with a power-shaft adapted to be manually rotated, of a shaft arranged to be keyed thereto by the employment of a coin, said shaft having opposite radially-extending arms; and a coin catch or dumping box having a pivoted bottom plate, and a trip mechanism adapted to tilt said bottom plate, said tilting mechanism being arranged within the line of travel of the radially-extending arms and adapted to be operated thereby, substantially as described.

Signed by me, at Washington, District of Columbia, this 11th day of January, 1898.

WILLIAM LOGAN DUNHAM.

Witnesses:
FRANK D. BLACKISTONE,
T. L. CLEAR.