No. 716,058. Patented Dec. 16, 1902.

T. R. LAING & C. T. FRANTZ.

COIN CONTROLLED VENDING APPARATUS.

(Application filed Oct. 28, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

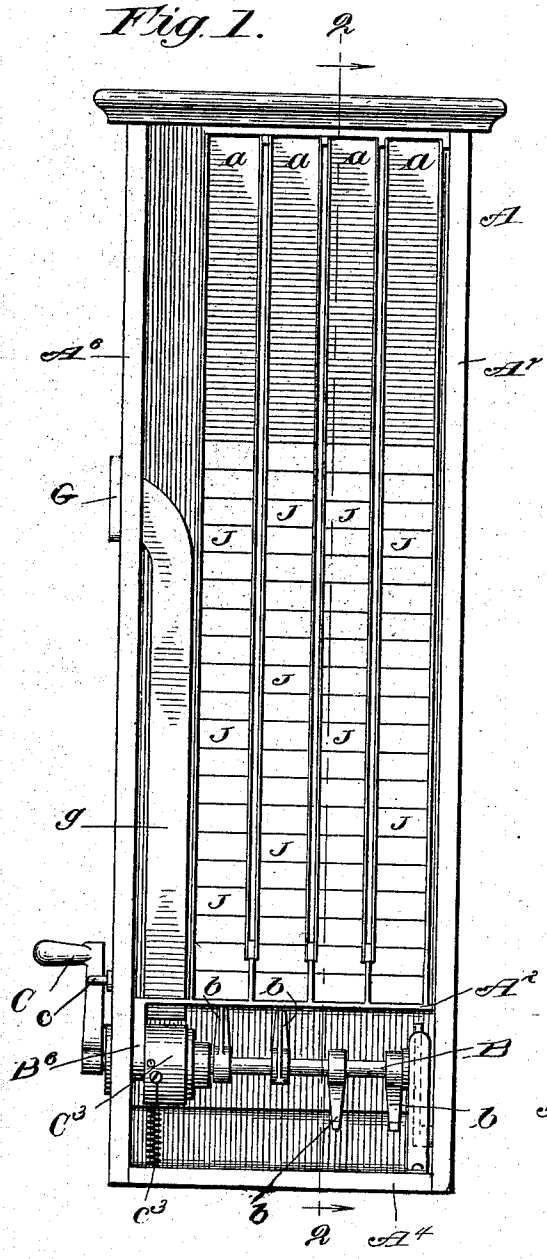

Fig. 2.

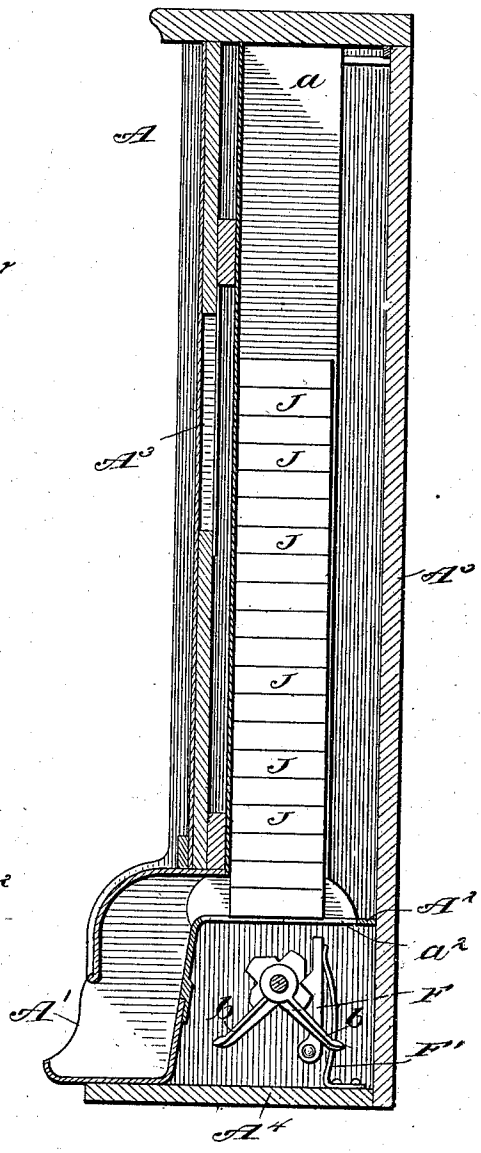

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Fig. 3.

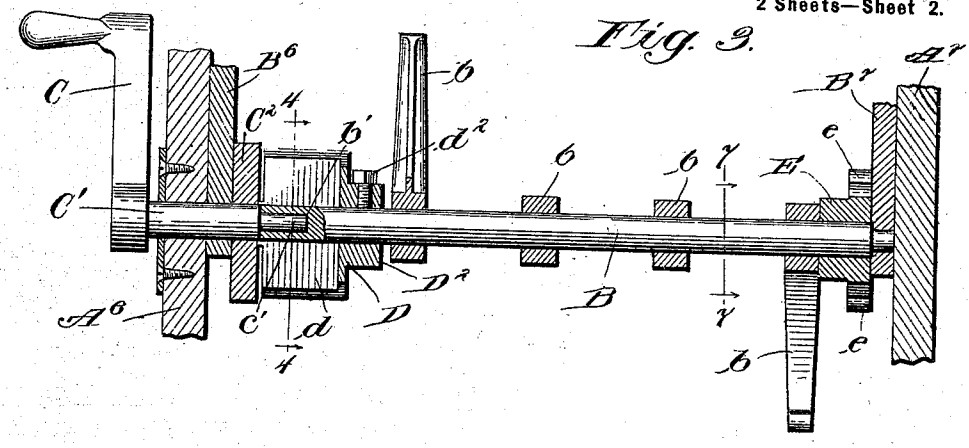


Fig. 4.

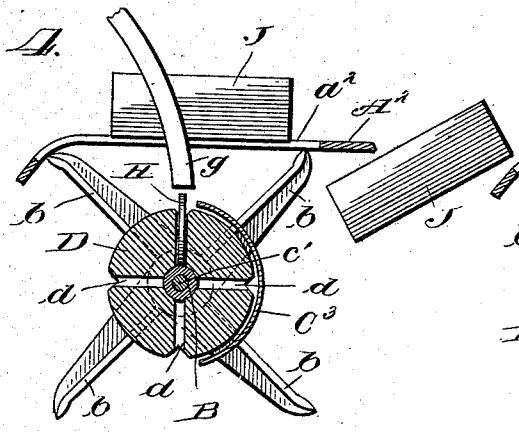


Fig. 5.

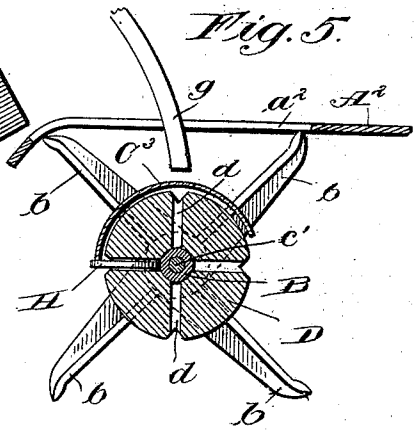


Fig. 6.

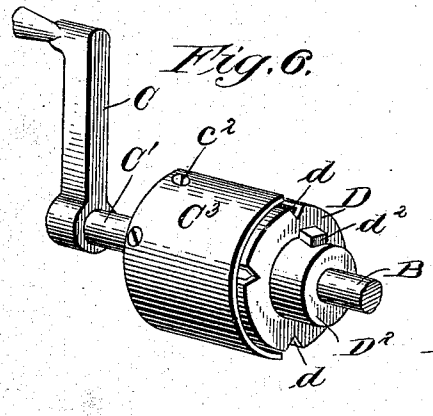


Fig. 7.

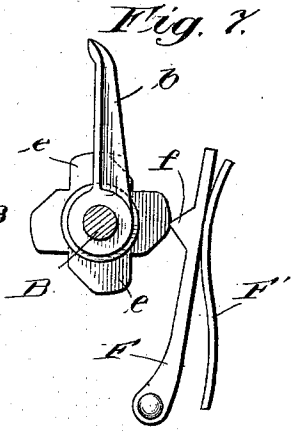
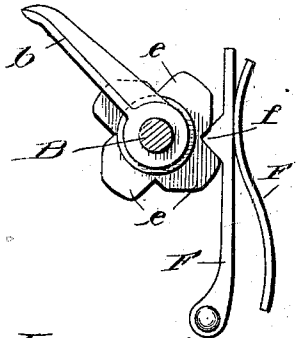


Fig. 8.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

THADDEUS R. LAING AND CHARLES T. FRANTZ, OF CHICAGO, ILLINOIS.

COIN-CONTROLLED VENDING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 716,058, dated December 16, 1902.

Application filed October 28, 1901. Serial No. 80,369. (No model.)

To all whom it may concern:

Be it known that we, THADDEUS R. LAING and CHARLES T. FRANTZ, citizens of the United States, residing at Chicago, county of Cook, State of Illinois, have invented a certain new and useful Improvement in Coin-Controlled Vending Apparatus; and we declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

Our invention relates in general to vending apparatus, and more particularly to that type of such apparatus the operation of which is controlled by a coin or other toll-piece.

In apparatus of the class referred to the articles or commodities are delivered to a position accessible to the customer upon the operation of the apparatus after a coin of the required denomination or other toll-piece of predetermined character has been deposited. It is usual in such apparatus to arrange the articles in several vertical rows in order to increase the storage capacity of the apparatus, the bottom article in one of the rows being delivered to the accessible position when the apparatus is operated. It is desirable that the articles should be delivered from the several rows in regular succession in order that one row will not be exhausted before the others, thereby insuring the delivery of an article to the customer until all the rows are depleted.

The object of our invention is to provide an improved apparatus of the character described in which the articles are arranged in a plurality of vertical rows and which when operated will deliver an article or package from the bottom of each row in succession to a position accessible to the customer.

A further object of our invention is to provide an apparatus of the type referred to which will be comparatively simple in construction, inexpensive in manufacture, and effective in operation.

The invention will be more fully described hereinafter with reference to the accompanying drawings, in which the same is illustrated as embodied in a convenient and practical form, and in which—

Figure 1 is a view in elevation from the rear of the apparatus, the back thereof being removed; Fig. 2, a vertical section taken on line 2 2, Fig. 1, looking in the direction of the arrows; Fig. 3, a view in elevation of the operating means removed from the casing, portions of the latter being shown to illustrate the connection of the mechanism therewith; Fig. 4, a transverse sectional view on line 4 4, Fig. 3; Fig. 5, a view similar to Fig. 4, showing the parts in an adjusted position; Fig. 6, a perspective view of the operating-crank and its connection with the rotatable shaft; Fig. 7, a detailed view taken on line 7 7, Fig. 3, and looking in the direction of the arrow; and Fig. 8, a view similar to Fig. 7, showing the parts in an adjusted position.

The same reference characters indicate the same parts in the several figures of the drawings.

Our invention is shown as consisting, essentially, of a casing within which the articles or commodities are arranged in vertical rows, the bottom of such rows resting upon a support provided with slots, through which fingers are adapted to pass, and thereby force the bottom article from beneath those above and deliver it to a compartment accessible to the customer. The fingers for engaging the bottom articles of the several rows are secured to a rotatable shaft journaled in the sides of the casing near the bottom thereof. The shaft is rotated a sufficient distance to cause one of the fingers to engage the bottom article of one row each time the apparatus is actuated, and as the fingers project radially from the shaft at different points on its circumference a complete revolution of the shaft will cause each one of the fingers to engage the bottom article of the row located above that particular finger.

Referring more particularly to the drawings, reference-letter A indicates the casing of the apparatus, which consists in a bottom portion A^4, side walls A^6 and A^7, rear wall A^5, and a front wall, which may be provided with an aperture A^3, covered with transparent material, through which may be seen the article or other commodity which the apparatus is adapted to deliver to the customer. Within the casing is a number of vertical guides *a*, of a shape to conform to the article which is

to be placed in the vending apparatus. These guides a are in the present instance four in number, although it is obvious that the number may be greater or less.

Reference-letter J indicates an article, which may comprise a box containing salted peanuts or any other commodity, a number of such boxes being piled upon each other and arranged within the guides a. The vertical rows of articles are supported upon a shelf A^2, which is suitably secured within the bottom of the case. The shelf A^2 is provided with slots a^2, located between the vertical guides and extending a distance greater in length than the article J, the longitudinal center of the bottom of one of which rests immediately above each slot a^2. Each slot a^2 is of a uniform width, less than the distance between the vertical guides. Consequently the width of the slots is less than the width of the packages supported upon the shelf above the same between the vertical guides.

A compartment A′ is located at the front of the apparatus near the bottom thereof and is provided with an opening, through which the customer may obtain one of the articles when the latter has been removed through the operation of the mechanism from the bottom of one of the vertical rows and delivered to such compartment A′.

A shaft B is rotatably supported within the casing intermediate of the supporting-plate A^2 and the bottom A^4. One end of the shaft B is journaled in a support B^7, secured to the side wall A^7 of the casing, while the other end of the shaft is provided with a recess, within which extends the reduced end c' of a stub-shaft C′. The stub-shaft C′ is journaled in the side wall A^6 of the casing, through which it passes, and is also supported by means of the bracket B^6, which depends from the plate A^2, as shown in Fig. 1. A crank or other means which may be operated by hand is keyed to the end of the stub-shaft C′, which extends outside of the casing A. A disk C^2 is fixed upon the end of the stub-shaft C′ within the casing, and a plate C^3, preferably circular in form, is secured at one side of the periphery of the disk C^2 by means of suitable fastening devices c^2, as shown in Fig. 6.

A hub D, having a series of radial compartments d, is secured to the end of the shaft B in any suitable manner—as, for instance, by a set-screw d^2, extending through a reduced portion D^2 and engaging the shaft B. The hub extends beneath the circular plate C^3, the inner surface of the latter conforming in curvature to the outer surface of the former and being located in proximity thereto.

Secured to the shaft B, adjacent to its engagement with its support B^7, is a second hub E, which has radial projecting portions e, each of which is provided with a beveled or inclined surface. Pivoted to the side wall A^7 of the casing is a lever F, provided with a tooth or angular projection f, the latter being adapted to engage the recesses formed between the adjacent projection e on the hub E. A spring F′, which is shown in Fig. 2 as secured at one end to the bottom A^4 of the casing, engages the lever F and forces the tooth f upon the latter into engagement with the projection e.

A series of fingers b are secured to the shaft B and project radially therefrom, the number of such fingers b corresponding to the number of vertical rows of articles J located within the casing A. These fingers b are spaced apart, so as to register with the slots a^2 in the supporting-plate A^2, each finger b being adapted to project through the corresponding slot a^2 when the shaft B rotates through the corresponding part of its cycle of movement.

A chute g extends from an opening G in the side wall A^6 of the casing to a point immediately above the hub D and serves as a guide for delivering coins or toll-pieces to the compartments d in the hub D. Each compartment d is of a depth less than the diameter of the coin. Consequently the latter projects above the periphery of the hub into the path of movement of the circular plate C^3 when the latter is rotated, as subsequently described. The crank C normally engages a stop c, projecting from the side wall A^6 of the casing A, the crank being held in such position by a spring c^3, which is connected at one end to the bottom A^4 of the casing and at the other end to the semicircular plate C^3, which, as before described, is secured to the periphery of the disk C^2, fixed upon the stub-shaft C′. The crank C being keyed to the stub-shaft is consequently retained against the stop c by the tension of the spring c^3.

The operation of our improved apparatus is as follows: A coin or other toll-piece is deposited in the mouth G and is guided by means of the chute g into one of the compartments d of the hub D, as clearly shown in Fig. 4. The crank C is then partially rotated from its position shown in Fig. 1, where it engages the stop c, and thereby expands the spring c^3. The rotation of the crank C rotates therewith the circular plate C^3, the latter being rigidly secured to the disk C^2, which in turn is rigidly secured to the stub-shaft C′. The end of the circular plate engages that portion of the coin which projects above the periphery of the hub D, and thereby causes the shaft B to be rotated with the crank C through the rigid connection of the shaft B with the hub D. The partial rotation of the shaft B causes one of the fingers b to pass through the corresponding slot a^2 and engage the end of one of the articles J and force the latter from beneath the superimposed articles and off of the front edge of the shelf A^2 into the open compartment A′, as clearly indicated in Fig. 5. The article thus removed from the bottom of its vertical row falls into the compartment A′, from which it

may be readily removed by the customer. When the shaft B is rotated by the crank C, one of the projections *e* on the hub E through its engagement with the tooth *f* swings the lever F into the position shown in Fig. 7, and thereby deflects the spring F′. The tooth *f* then engages the inclined face of the projection *e* and through the tension of the spring F′ forces the shaft D farther in its rotation until the tooth *f* enters the recess between the rear face of the projection *e* and the front face of the adjacent following projection *e*. When the pressure is removed from the crank C, it is returned to its normal position in engagement with stop *c* through the contraction of the spring c^3. The shaft B is, however, retained in the position to which it has been rotated by the engagement of the tooth *f* with the recess between two of the projections *e* on the hub E. The projections *e* correspond in number to the compartments *d* in the hub D, so that whenever the tooth *f* is in the position shown in Fig. 8 one of the compartments *d* will be in a position to receive a coin from the chute *g*. The fingers *b* are also the same in number as the compartments *d* and the projections *e*, and are so arranged around the shaft B that when the tooth *f* engages the recess between two of the projections *e* one of the fingers *b* will be in a position to engage the bottom article of the row supported above the slot a^2 through which that particular finger *b* is adapted to pass, as shown in Fig. 4.

It should be noticed that the inclined rear faces of the projections *e* serve to propel the shaft B through their engagement with the the tooth *f* on the spring-actuated lever F. Consequently it is only necessary to rotate the shaft B, by means of the crank C, through a sufficient portion of its cycle of movement to force the tooth *f* out of engagement with the recess between two of the projections *e* and to permit the top portion of the projection to pass under the tooth when the latter, impelled by the spring F′, completes the desired movement of the shaft through contact with the inclined rear surface of the projection *e*.

While we have shown and described an apparatus in which are arranged four vertical rows of articles, it is, of course, within the scope of our invention to provide a casing with more or less rows, it being merely necessary to make the compartments *d* in the hub D, the fingers *b*, and the projections *e* correspond in number to the number of rows of articles.

The term "toll-piece" used in the specification and claim is intended to designate a coin, check, or other suitable device, which may be used to control the operation of the mechanism.

While we have described more or less fully the various details of construction, we do not wish to be understood as limiting ourselves thereto, as we contemplate changes in form, the proportion of parts, and the substitution of equivalents, as circumstances may suggest or render expedient, without departing from the spirit of our invention.

Having now fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

In a vending apparatus, the combination with a casing adapted to contain a plurality of rows of articles, of a shelf secured within said casing upon which the rows of articles are supported, said shelf having a slot therethrough beneath each row of articles, a shaft journaled in said casing below said shelf, a plurality of staggered radial fingers carried by said shaft, said fingers being located in the same vertical planes as the respective slots through said shelf, means operatively connected to said shaft for imparting thereto an initial rotation, and automatic means for continuing the rotation of said shaft an angular distance equal to the angle between said fingers, whereby during the successive operations of the apparatus the radial fingers in turn pass through the corresponding slots in the shelf and successively remove the bottom articles in the several rows to a position accessible to the public.

In testimony whereof we sign this specification in the presence of two witnesses.

THADDEUS R. LAING.
CHARLES T. FRANTZ.

Witnesses:
GEO. L. WILKINSON,
CLARA C. CUNNINGHAM.