

June 16, 1959

C. F. GORE

2,890,781

DISPENSING MACHINE

Filed Oct. 30, 1957

5 Sheets-Sheet 1

Fig. 1

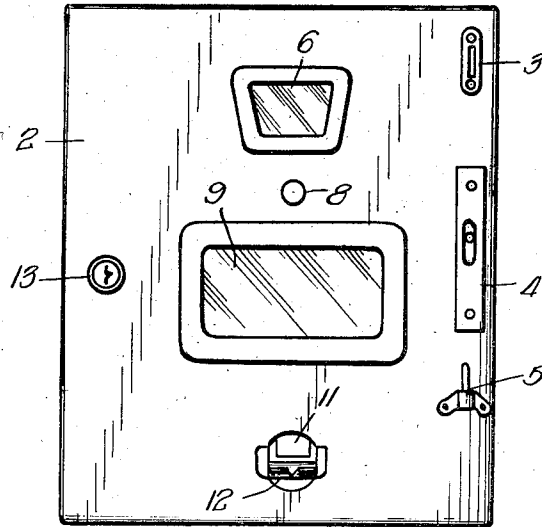
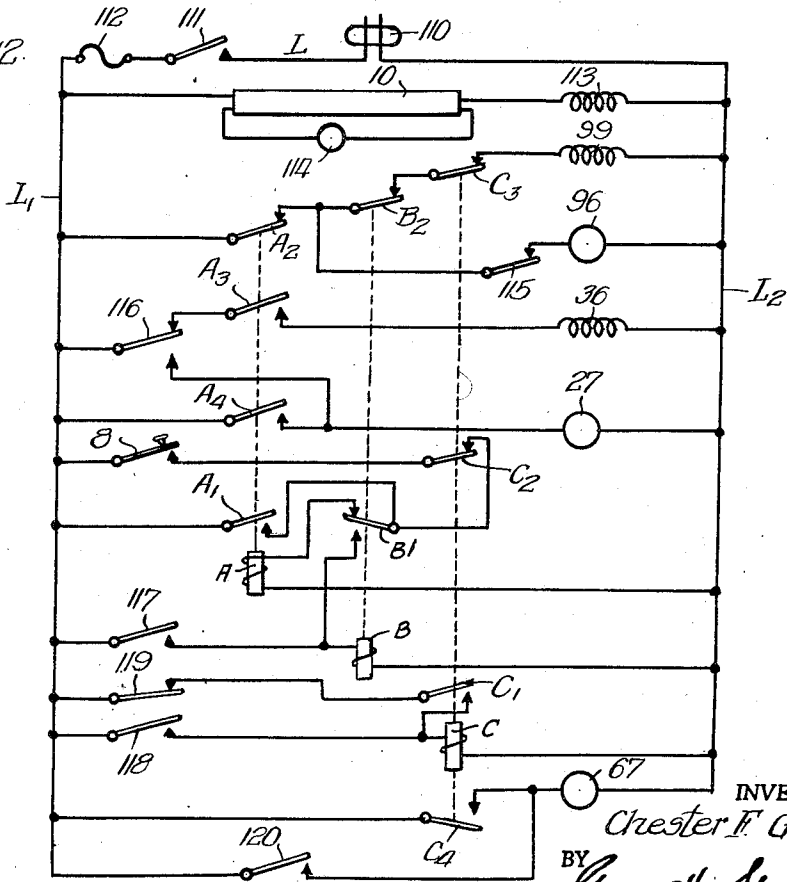


Fig. 12.



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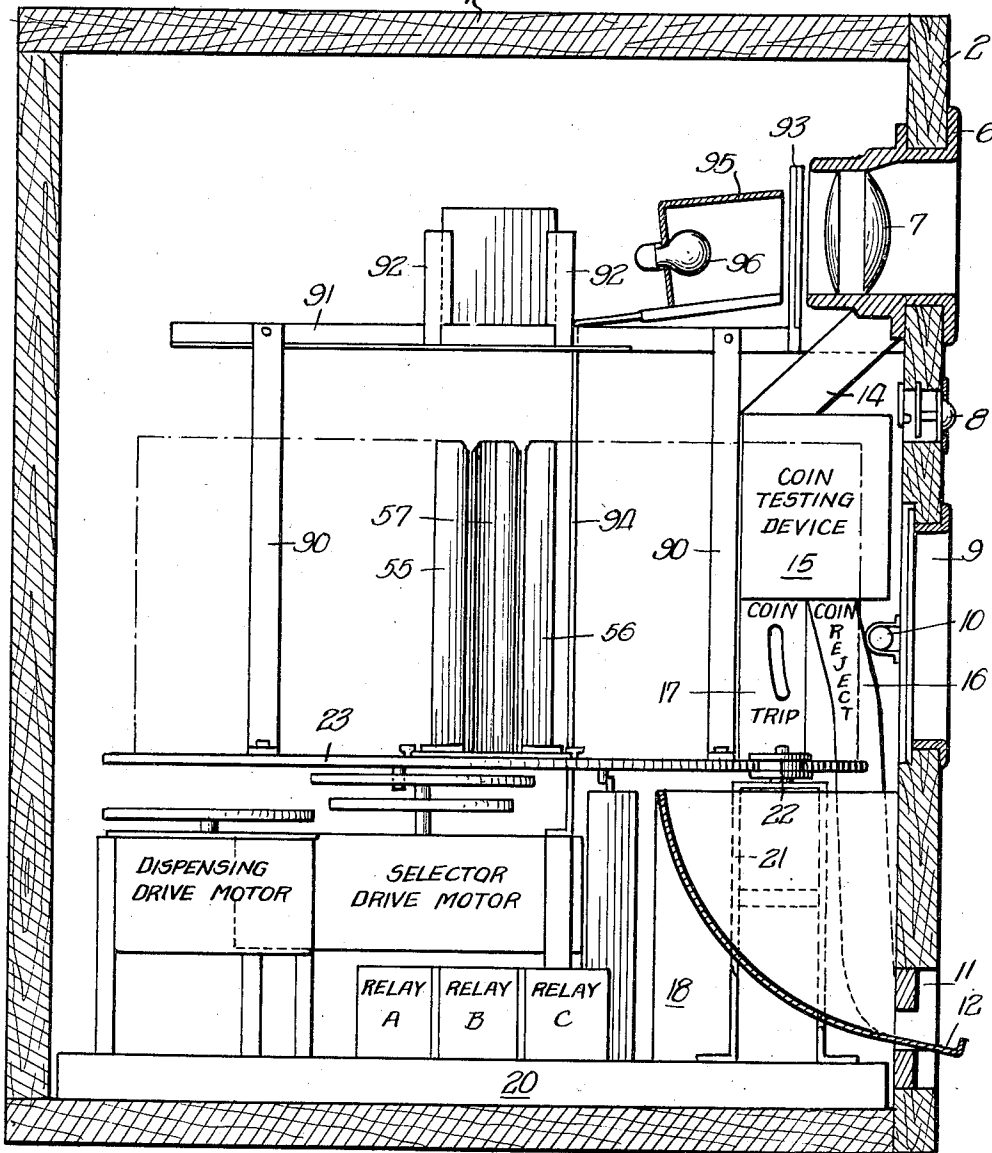
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Fig. 2



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DISPENSING MACHINE

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Fig. 3

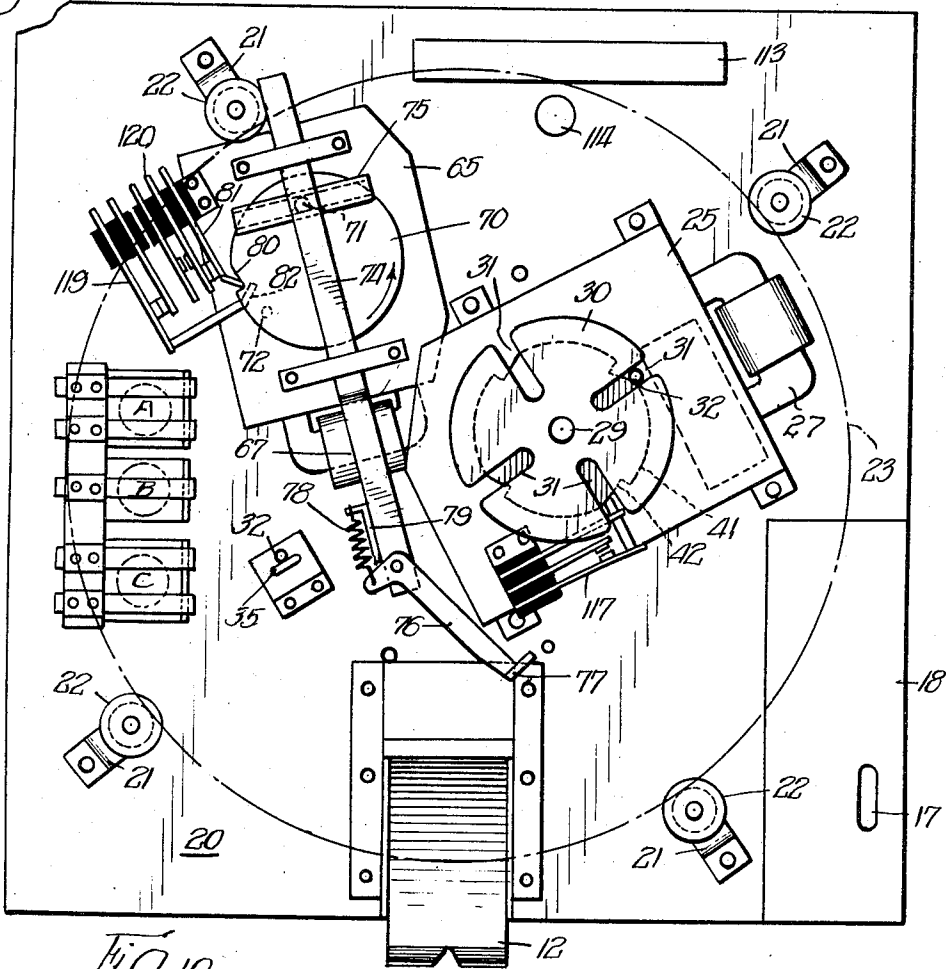


Fig. 10

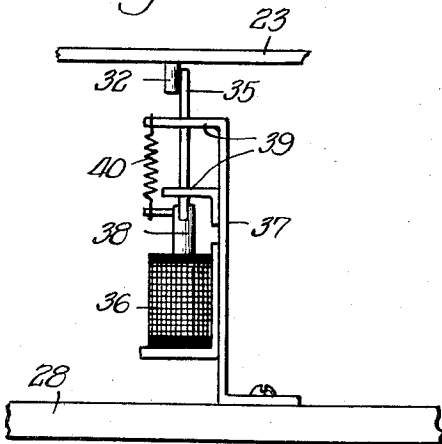
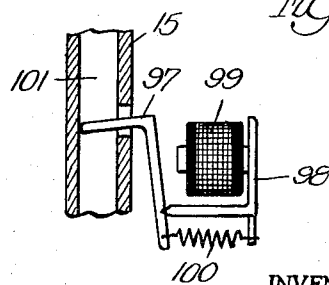


Fig. 11



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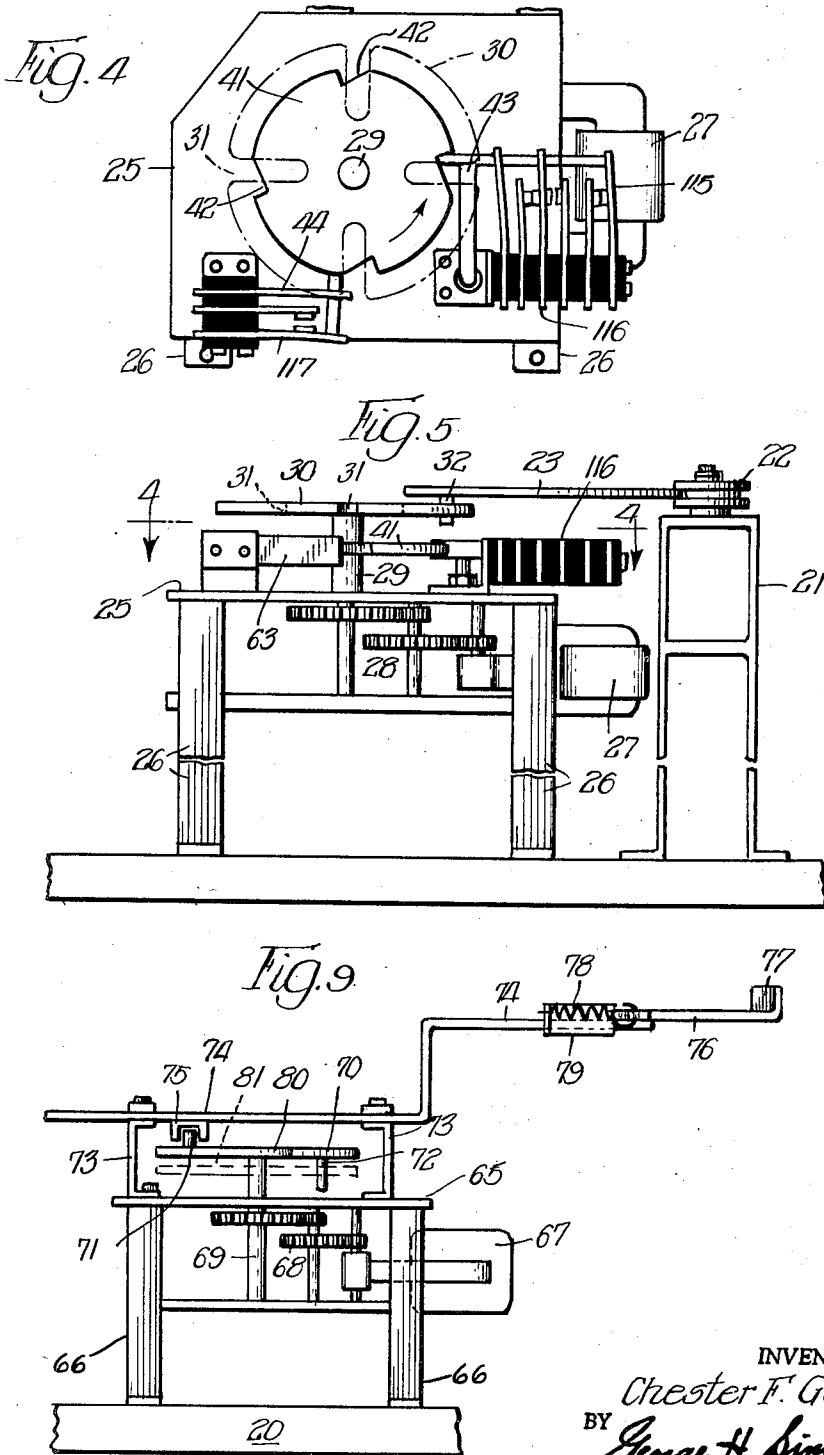
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DISPENSING MACHINE

Filed Oct. 30, 1957

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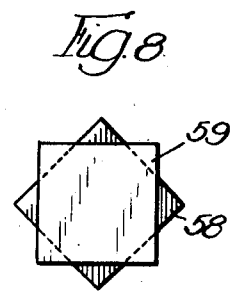
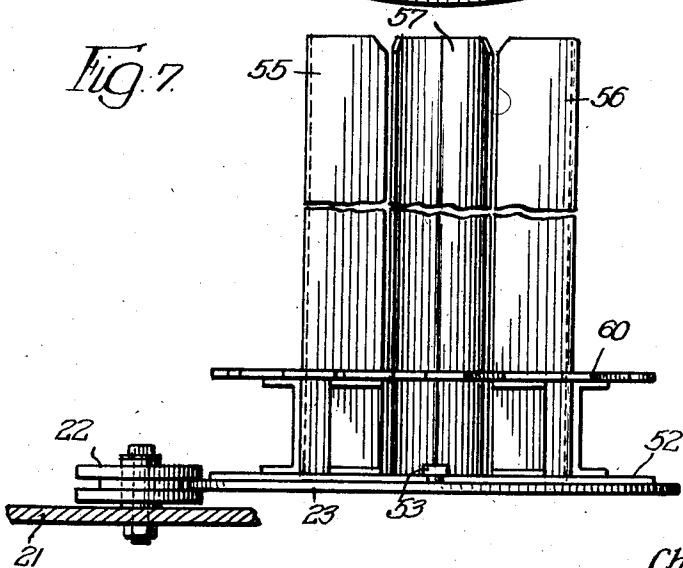
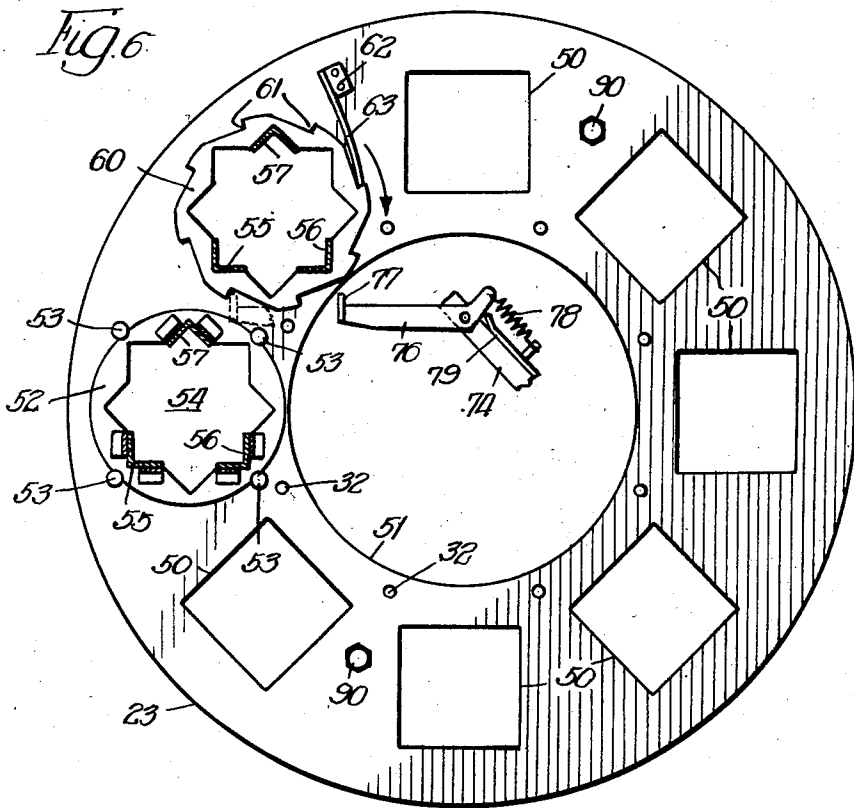
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DISPENSING MACHINE

Filed Oct. 30, 1957

5 Sheets-Sheet 5



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DISPENSING MACHINE

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Application October 30, 1957, Serial No. 693,483

11 Claims. (Cl. 194—10)

This invention relates to coin operated vending machines and has for its principal object the provision of a new and improved machine of this type.

It is a main object of the invention to provide a coin operated machine for vending square objects and objects packed in square containers.

Another object of the invention is to provide a machine for vending a selected one of a plurality of different articles contained in the machine in which the selection of the desired article is controlled by a push button operated by the purchaser and dispensing of the selected article is controlled by the insertion of a coin in the machine.

Another object of the invention is to provide a vending machine in which the articles to be dispensed are cross-packed and disposed in cages which are rotatable around their own axes and in which a plurality of cages are mounted upon a turntable which is rotatable to bring the cages into dispensing position one at a time and in sequence.

Another object of the invention is to provide a dispensing machine as specified in the preceding object, in which control means are provided to prevent initiation of a dispensing operation while the turntable is being rotated and to prevent rotation of the turntable during a dispensing cycle of the machine.

Another object of the invention is to provide a vending machine which can be manufactured at low cost and maintained economically.

Further objects of the invention, not specifically mentioned here, will be apparent from the detailed description and claims which follow, reference being had to the accompanying drawings in which a preferred embodiment of the invention is shown by way of example and in which:

Fig. 1 is a front elevational view of a dispensing machine embodying the teachings of the invention;

Fig. 2 is a side view of the cabinet with the adjacent wall removed, the door in cross section, and the apparatus skeletonized;

Fig. 3 is a plan view of the mechanism with the turntable shown in phantom;

Fig. 4 is a plan view of the selection drive mechanism taken along line 4—4 of Fig. 5;

Fig. 5 is a side elevational view of the selection drive mechanism;

Fig. 6 is a plan view of the turntable with two cages shown;

Fig. 7 is an elevational view of the cage drawn to an enlarged scale;

Fig. 8 is a plan view of the stack of objects to be dispensed;

Fig. 9 is an elevational view of the delivery drive mechanism;

Fig. 10 is an elevational view of the indexing stop mechanism;

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Fig. 11 is a fragmentary view partly in section and showing the coin chute block mechanism; and

Fig. 12 is a schematic circuit diagram.

This invention relates to a machine for vending selected ones of a plurality of square articles or articles which are packed in square containers. To this end the machine is equipped with a turntable upon which is mounted a plurality of cages in which the articles that are to be dispensed are disposed.

It is old in the prior art of which I am aware, to equip a vending machine with a turntable-like structure upon which a number of different articles are disposed.

In the present machine, a selected article is dispensed by rotating around its own axis the cage in which the articles are contained. It is old in the prior art of which I am aware, to effect a dispensing operation by rotating a stack of cross-packed articles thereby to register the bottom article in the stack with a dispensing opening through which the article falls.

In order to combine into one machine these two prior art principles, it is necessary to provide numerous safeguards to prevent faulty operation of the machine and consequent damage thereto. It is to this end that the present invention particularly relates.

For example, in a machine in which the turntable on which the articles are disposed is rotated, either by mechanical means or by electromagnetic means, and in which the cage containing the cross-packed articles is likewise rotated by mechanical or electromagnetic means, it is obvious that the initiation of a dispensing operation during the interval that the turntable is being rotated will result in damage to the machine and in all probability an article will not be dispensed. It is also apparent that should a cycle of rotation of the turntable be initiated during a dispensing cycle, similar damage will result.

The present invention solves this difficulty by providing a control system for a dispensing machine that is electromagnetically driven, which control system definitely prevents initiation of one cycle of movement of the mechanism during a previously started but not yet completed different cycle of operation.

The machine of the present invention is designed to be used in locations where a minimum of supervision is available and as a result the machine is made as fool-proof as possible, and the delicate mechanisms contained in it are fully protected against damage occasioned by faulty manipulation by an inexperienced person attempting to operate the machine.

The invention will be best understood by reference to the accompanying drawings in which the teachings of the invention are applied to a machine for dispensing photographic slide transparencies, this disclosure being made by way of example since the teachings of the invention are equally applicable to machines for dispensing other articles.

As will be seen in the drawings, particularly Figs. 1 and 2, the mechanism of the dispensing machine is enclosed in a suitable cabinet 1, on the front door 2 of which is a coin slot 3 through which coins of proper denomination may be entered into the machine. In the case of slide transparencies the coin mechanism of the machine is equipped to accept only quarters. Located beneath the coin slot 3 is a coin return mechanism by which mutilated coins are removed from the coin testing device and dropped into the coin return receptacle 5 located near the bottom of the front panel.

Located centrally of the panel 2 and near the top thereof is a window 6 opening onto a magnifying lens system 7 and through which specimens of the articles

in the machine are visible to prospective purchasers one at a time. Located immediately below the window 6 is a push button 8 that is operable to rotate the turntable and thereby bring another article into view through window 6. Directly beneath the push button 8 is a larger window 9 through which articles such as slides contained in the machine are visible, or, if desired, advertising data or instructions may be placed in this window. In the machine shown by way of example, a fluorescent light 10 (Fig. 2) backlights the window. Located below the window 9 is a discharge opening 11 through which the discharge chute 12 of the mechanism extends. A lock 13 secures the door to enclosed position on the cabinet 1, thereby to prohibit unauthorized tampering of the mechanism within the cabinet.

As will be seen in Fig. 2, a coin chute 14 extends from the coin slot 3 (Fig. 1) to a coin testing device 15, which device is of known construction readily available upon the open market. This device functions to reject mutilated coins, washers and the like, and to return them through chute 16 to the return coin receptacle 5 (Fig. 1) at the front of the machine. Good coins accepted by the testing device pass through a coin trip chute 17 into a coin box 18 (Figs. 2 and 3).

Fitted within the cabinet is a base 20 upon which the instrumentalities of the machine are mounted, this base being removable from the cabinet through the front thereof to facilitate servicing the machine as required. Supported upon the base 20 upon suitable brackets 21 which carry rollers 22 is a turntable 23 upon which the articles to be dispensed are carried. As will be seen in Fig. 3, four brackets 21 and rollers 22 are provided, and each of the rollers 22 contains a groove into which the edge of the turntable 23 is projected. Preferably the rollers 22 are mounted upon the races of ball bearings, the hubs of which are fixed upon the brackets 21 so as to permit easy rotation of the turntable even though it be heavily loaded with the articles that are to be dispensed.

In order to rotate the turntable, I have provided a drive mechanism consisting of a plate 25 (Figs. 3, 4 and 5) that is supported above the base 20 by suitable brackets 26. Mounted beneath the plate 25 is an electric motor 27 and a speed reduction gearing 28 that connects to the main shaft 29 of the device. This shaft projects above the plate 25 and carries at its upper end a Geneva disk 30, into the edges of which four slots 31 are indented, these slots being uniformly spaced around the periphery of the disk and hence located 90° apart.

The turntable 23 carries pins 32 (Figs. 5 and 6) which project beneath the turntable and in position to register with a slot 31 in the Geneva disk sequentially. Since the machine shown by way of example is equipped to contain eight (8) different articles, there are eight (8) pins 32 and these pins are located 45° apart.

Also mounted upon the base 20 is an index stop 35 (Figs. 3 and 10). This stop consists of a solenoid 36 that is mounted upon a suitable bracket 37 and has an armature 38 upon which the stop 35 is carried, this stop being slidable through slots in the arms 39 of the bracket 37. A spring 40 elevates the stop 35 into the path of the pins 32 when the solenoid 36 is de-energized.

As will be seen in Fig. 3, the stop 35 is preferably located so as to engage the pin 32 that is located 180° from the pin 32 that is registered in a slot 31 in the Geneva disk 30.

Fixed upon the main shaft 29 of the drive unit is a control disk 41 (Figs. 4 and 5) which is located beneath the Geneva disk 30. Control disk 41 contains four (4) generally V-shaped recesses 42 indented into its outer periphery and disposed 90° apart. The recesses 42 form cam valleys and the edge of the disk forms cam dwells disposed between the valleys.

Pivotaly mounted upon the plate 25 of the unit is an operating arm 43 through which a spring assembly

is operated, as will presently appear. Also mounted upon the plate 25 is a second spring assembly having an operating arm 44 that engages the valley 42 disposed 90° back of the valley in which arm 43 is engaged.

It will be apparent from the foregoing that an operation of motor 27 will rotate the disk 30 and thereby rotate the turntable, and, as presently will appear, each such operation of the motor 27 rotates disk 30 through an arc of 90°, thereby to rotate the turntable 23 through an arc of 45°.

As will be seen in Figs. 6 and 7, the turntable 23 contains eight (8) square openings 50 uniformly spaced around the turntable, which is in the form of an annulus and has a central opening 51. Mounted in registration with each opening 50 is a disk 52 which is rotatably secured upon the turntable by suitable means, such as T-head buttons 53, which are preferably four (4) in number. This arrangement permits rotation of the disk upon the turntable. Disks 52 each contain two square openings located 45° apart, so that the disk 52 contains an 8-pointed rectilinear opening 54 (Fig. 6).

Fixed upon each disk 52 and upstanding therefrom are cage members 55 and 56, each of which is of L-shaped cross section, the inner faces of which register with two (2) of the points on the rectilinear opening 54, which points are located 90° apart. Also fixed upon the disk 52 and upstanding therefrom is a third cage member 57 which is also of L-shaped section, and the inner faces of which register with the point of the rectilinear opening 54 that is located 135° clockwise from the member 55 and 135° counter-clockwise from the member 56, which point is diametrically opposite a point midway between members 55 and 56.

As will be seen in Fig. 8, when the machine is at rest, the bottom article 58 is disposed so that one of its corners registers in the cage member 57 and the two sides of the article opposite this corner bear against the edges of the members 55 and 56. The odd numbered articles in the stack are aligned with the bottom article 58. The second and all even numbered articles 59 in the stack are located 45° from the bottom article 58 of the stack. In the machine shown by way of example, the members 55, 56 and 57 are of sufficient length to accommodate 100 photographic slide transparencies.

Fixed upon the members 55, 56 and 57, and located a short distance above the disk 52 is a pawl disk 60 (Figs. 6 and 7) around the outer edge of which are eight (8) uniformly spaced generally V-shaped indentations 61 that form teeth. Fixed upon a suitable bracket 62 upstanding from the turntable 23 is a detent spring 63 that registers with one of the indentations 61 in the disk 60. The disk 60 has a rectilinear opening containing eight (8) points, which opening is identical with the opening 54 in the disk 52.

It will be understood that turntable 23 is equipped with eight (8) disks such as 52 and apparatus carried thereby, only two of which have been shown in Fig. 6 to avoid an unnecessary complication of the figure.

In order to permit rotation of the cages on the turntable, thereby to register the lower articles 58 contained therein with the openings 50 in the turntable, a delivery drive unit is provided. As will be seen in Figs. 3 and 9, this unit consists of a base 65 that is supported upon suitable brackets 66 at the desired height above the base 20. Mounted beneath this plate 65 is an electric motor 67 and a reduction gear 68 which connects to the main drive shaft 69 of the unit. This drive shaft extends through the plate 65 and thereabove, and carries at its upper end a disk 70. Fixed upon the disk 70 and upstanding therefrom is a pin 71, and depending below the disk 70 is a second pin 72. Slidably mounted in suitable brackets 73, upstanding from the plate 65, is a drive bar 74 on which a channel-shaped member 75 is fixed, with the channel opening downwardly and into which channel the pin 71 projects. Pivotaly mounted upon the end of

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the bar 74 is a pawl 76 the end of which contains an operating arm 77 that is adapted to be moved into engagement with the teeth 61 on the disk 60 (Fig. 6). A spring 78 tends to rotate pawl 76 clockwise about its pivot and a stop 79 limits this rotation.

Indented into the edge of disk 70 is a single V-shaped indentation 80 which forms a cam valley into which the operating arm 81 of a spring assembly projects when the disk 70 is in normal position in which it is shown in Fig. 3. The periphery of the disk forms the cam dwell. Mounted directly beneath this spring assembly is a second spring assembly which has an operating arm 82 that is disposed beneath the disk 70 and in position to be engaged by the pin 72. In Fig. 3 these two spring assemblies are shown separated for the sake of clarity.

From the foregoing, it will be apparent that operation of the motor 67 will drive the disk 70 counter-clockwise, as indicated by the arrow, thereby to cause the pin 71 to move the bar 74 forwardly, bringing the operating arm 77 thereon into engagement with the tooth 61 that is on the disk 60 of the article cage that is in dispensing position; then to rotate that cage through 45° to effect a dispensing operation, this rotation of the disk 70 continuing through a full 180° thereby to retract the pawl 76 from the path of the cages.

As will be seen in Figs. 2 and 6, upstanding from the turntable 23 are four (4) brackets 90 which support a hoop 91 on which are mounted pairs of channel-shaped supports 92 in which samples of the articles 93 are disposed. Whenever the turntable is at rest, one sample 93 will thus be registered with the window 6 and visible therethrough, magnified by the lens system 7. Supported upon a bracket 94 that is fixed upon the plate 25 of the selector drive unit is a lamp housing 95 in which is contained an electric light 96 by which the sample 93 that is registered with the window 6 is illuminated for better viewing by prospective purchasers.

Located in the coin testing device 15 is a stop 97 pivotally mounted upon the heel plate 98 of an electromagnet 99. A spring 100 moves the stop 97 so as to block the coin chute 101 in the mechanism when the magnet 99 is de-energized. Through this arrangement, if a coin is deposited through the coin slot 3 while the machine is in operation, it will be deflected into the return chute 16 and returned to the customer through receptacle 5.

As will be seen in Fig. 3, three (3) relays A, B, and C are mounted in convenient location upon the base 20. The particular kind of relays employed is not of the essence of the present invention as there are a number of commercially available relays which may be used. As shown, relays A and C have two stacks of springs operated simultaneously upon each operation of the relay and relay B has one such stack.

The operation of the machine will be best understood by reference to the electrical circuit shown in Fig. 12. A source of power, such as commercial electric current, is connected to the machine through a suitable plug 110. A switch 111 that is closed permanently, so long as the machine is in operation, connects one side L of this power line through a fuse 112 to the line L-1. A second line L-2 connects directly to the source of power. Permanently bridged across the line conductors L-1 and L-2 is a fluorescent light 10 in series with its ballast 113, which ballast is conveniently located at the rear of base 20, as shown in Fig. 3, together with a starter 114. The lamp 10 is thus lighted to maintain illumination on the window 9 so long as the machine is in operation. Also connected across the line conductors, when the machine is in operation and at normal, is the magnet 99 of the coin stop mechanism, the circuit of which extends from L-1 through normally closed contacts A-2, normally closed contacts B-2, normally closed contacts C-3, magnet 99, to line L-2. Thus magnet 99 is operated. Also lamp 96 is normally lighted over a circuit which may be traced from L-1 through normally closed contacts A-2,

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spring 115 and its break contact, through lamp 96 to L-2. Thus the sample article visible through window 6 is illuminated.

Assuming that the article thus displayed is not to the liking of a purchaser, push button 8 is operated momentarily by the purchaser, thereby to close a circuit from L-1 through push button spring 8 and its make contact, through spring C-2 and its break contact, through spring B-1 and its break contact, through the winding of relay A to L-2. Relay A operates over this circuit and at spring A-1 closes a holding circuit for itself which may be traced from L-1 through spring A-1 and its make contact, spring B-1 and its break contact, through the winding of relay A to L-2. This operation of relay A moves spring A-2 away from its break contact, thereby opening the previously traced circuits to the coin stop magnet 99 and the lamp 96. Opening the circuit of lamp 96 extinguishes that lamp so that movement of the sample article cannot be observed through window 6. Operation of relay A closes spring A-3 against its make contact, thereby closing a circuit which may be traced from L-1 through spring 116 and its break contact, spring A-3 and its make contact, through the winding of index solenoid 36 to L-2, energizing this solenoid which withdraws stop 35 from the path of pins 32 thereby to permit rotation of the turntable. Operation of relay A closes spring A-4 thereby closing a circuit from L-1 through spring A-4 and its make contact, through the winding of motor 27 to L-2, operating the motor 27. Operation of the motor 27 through speed reduction gearing 28 rotates shaft 29 and with it the Geneva disk 30 and control disk 41.

As will be seen in Fig. 4, rotation of control disk 41 in a counter-clockwise direction, as indicated by the arrow, through an arc of 10° or 15° will move the operating arm 43 out of the valley 42 in the disk and into engagement with the cam dwell formed by that edge, thereby rotating arm 43 clockwise about its pivot thereby to move spring 116 out of its engagement with its break contact and into engagement with its make contact, and to move spring 115 out of engagement with its break contact. This movement of spring 116 breaks the previously traced circuit for the index solenoid 36, permitting that solenoid to restore the stop 35 into the path of the pins 32, thereby to stop rotation of the turntable when the next pin 32 engages the stop. Movement of spring 116 into engagement with its make contact closes an alternate circuit for motor 27 to insure that this motor will operate until arm 43 falls into the succeeding valley 42 in the control disk 41. Movement of spring 115 out of engagement with its make contact is without effect at the moment since the circuit of lamp 96 is open at spring A-2. Thus the motor 27 rotates the Geneva disk 30 and control disk 31 through an arc of 90°, thereby, through the engagement of pins 32 with slots 31 in the Geneva disk, to rotate the turntable through an arc of 45°. Shortly before disk 41 has rotated through 90°, a valley 42 therein will register with the operating arm 44, thereby to permit that arm to drop off of the cam dwell into the valley and close spring 117 against its make contact. A circuit may now be traced from L-1 through spring 117 and its make contact, through the winding of relay B to L-2, operating relay B which moves spring B-1 out of engagement with its break contact, thereby to open the previously traced holding circuit for relay A, permitting that relay to restore, which is without particular effect at the moment since circuits controlled by relay A, other than its own holding circuit, are all bypassed at the moment.

If the push button 8 happens to be held in operated position when the relay B is operated, a holding circuit for relay B may be traced from L-1 through the push button springs, through spring C-2 and its break contact, spring B-1 and its make contact, through the winding of relay B to L-2. Ordinarily this holding circuit will not be established and relay B will remain operated

only so long as operating lever 44 is registered with the valley 42. Since relay B is held in operated position when the push button 8 is held operated, the circuit of relay A is held open and a new selecting cycle cannot be started until the push button is restored. This prevents continuous rotation of the turntable which would serve no useful purpose.

After disk 41 has rotated through a small additional arc, lever 43 drops into a valley 42 in the disk, thereby to move spring 116 out of engagement with its make contact, which opens the circuit of motor 27, bringing the motor to rest. Spring 115 is simultaneously re-engaged with its break contact, and the previously traced circuit for the coin stop magnet 99 and the lamp 96 are re-established.

When rotation of the turntable has brought a desired article into the dispensing position, a coin is inserted through the coin slot 3 into the mechanism, and if that coin is accepted by the testing device 15 it falls through the trip chute 17, operating a lever which momentarily closes spring 118 against its make contact. A circuit may then be traced from L-1 through spring 118 and its make contact, through the winding of relay C to L-2. Relay C operates over this circuit and at spring C, closes a holding circuit for itself, traceable from L-1 through spring 119 and its break contact, spring C-1 and its make contact, through the winding of relay C to L-2. At spring C-2, relay C opens the previously traced circuit over which relay A is energized, thereby preventing an energization of relay A so long as relay C is operated. At spring C-3, relay C opens the previously traced circuit for the coin stop magnet 99, restoring that magnet to prevent further entry of a coin into the trip chute 17. At spring C-4, relay C closes a circuit from L-1 through spring C-4 and its make contact, through the winding of motor 67 to L-2, starting the motor 67, which rotates the disk 70 counterclockwise, as shown by the arrow in Fig. 3. After disk 70 has thus been rotated through a small arc, the cam valley 80 moves out of engagement with the operating lever 81 which then engages the cam dwell on the edge of the disk, closing spring 120 against its make contact to establish an alternate circuit for the motor 67 which is independent of the spring C-4. Motor 67 continues to operate, thereby to rotate the cage that is in dispensing position to dispense the bottom article therefrom.

Shortly before disk 70 has been rotated through 180°—say after a rotation of 160°—pin 72 engages operating lever 82 thereby to momentarily open spring 119 from its break contact. The previously traced holding circuit for relay C is thus broken and relay C restores. When the rotation of disk 70 has completed 180°, operating lever 81 moves into valley 80 in the edge of the disk and spring 120 is moved out of engagement with its make contact, thereby to open the circuit of the motor 67, which comes to rest.

Restoration of relay C as above, at spring C-3 re-establishes the previously traced circuit through coin stop solenoid 99, thereby operating that solenoid to recondition the coin trip chute for acceptance of another coin.

From the foregoing it will be apparent that the machine of the present invention is entirely protected against damage resulting from improper operation by an inexperienced person. The only faulty operation that it is possible for a person to perform is that of holding the push button 8 in operated position during the turntable turning cycle, and no damage to the machine results. Initiation of a dispensing cycle during a turntable turning cycle is definitely prevented, as is initiation of a turntable turning cycle during a dispensing cycle. Insertion of a second coin into the machine during a dispensing cycle or during a turntable turning cycle results in return of the coin.

While I have chosen to illustrate my invention by showing and describing a preferred embodiment of it, I

have done so by way of example only, as there are many modifications and adaptations which can be made by one skilled in the art within the teachings of the invention.

Having thus complied with the statutes and shown and described a preferred embodiment of my invention, what I consider new and desire to have protected by Letters Patent is pointed out in the appended claims.

What I claim is:

1. In a coin controlled vending machine: a turntable; means for rotating said turntable; a plurality of cages mounted upon said turntable for rotation each around its own axis, in which cages articles to be dispensed are stacked in cross-pack relation to each other, said cages being moved into dispensing position in sequence by rotation of the turntable; means for rotating the cage that is in dispensing position about its axis thereby to dispense the lowermost article in the stack in that cage; means for preventing an operation of the cage rotating means during a cycle of operation of the turntable rotating means; and means for preventing an operation of the turntable rotating means during a cycle of operation of the cage rotating means.

2. A vending machine as specified in claim 1, in which there are eight (8) cages mounted upon the turntable and in which the means for rotating the turntable rotates it through an arc of 45° during each cycle of operation of the means, thereby to bring the cages into dispensing position sequentially.

3. A vending machine as specified in claim 2, in which the means for rotating said turntable includes a Geneva disk having slots spaced 90° apart and pins on the turntable engaged in the slots in said disk sequentially and spaced so that rotation of the disk through 90° rotates the turntable through an arc of 45°.

4. A vending machine as specified in claim 3, in which the means for rotating the turntable includes an electric motor the circuit of which is closed by the energization of a relay and in which a push button is operated by a purchaser to close a circuit for and to energize said relay and thereby initiate an operation of said motor.

5. A vending machine as specified in claim 1, in which the means for rotating the cage that is in dispensing position includes an electric motor the circuit of which is closed by the energization of a relay and in which there is a coin mechanism including an electric switch that is closed by a coin passing through the mechanism thereby to close a circuit for and to energize said relay and thereby initiate an operation of said motor.

6. In a machine for vending articles: a rotatable turntable having a plurality of uniformly spaced apart openings through which the articles may pass; a cage registered with each opening and rotatable around its axis which coincides with the center of the opening, said cages containing the articles that are to be dispensed; means for rotating said turntable to position said cages in a dispensing position in sequence; a toothed disk fixed upon each cage; a rod slidable towards and away from the cage that is in dispensing position; a pawl carried on said rod and moved thereby into engagement with a tooth on the disk on said cage and to rotate that cage during a movement of the rod towards the cage, thereby to dispense an article; an electric motor; means connecting said motor to said rod to cause operation of the motor to slide the rod; control means for said motor; and a coin operated means for operating said control means.

7. In a machine for vending articles; a turntable; a plurality of article holding cages mounted upon said turntable for rotation with respect thereto around their respective axes; a selecting motor for rotating said turntable to move said cages into dispensing position sequentially; a relay for controlling a circuit for said motor; a push button in a circuit for said relay operable to close said relay circuit and energize the relay and thereby close the motor circuit to operate the motor; a dispensing motor for rotating the cage that is in dispensing

position to initiate a dispensing operation; a second relay for controlling a circuit for said dispensing motor; a coin chute; a switch in the circuit of said second relay operated by a coin in said chute to close said second relay circuit and energize said second relay and thereby close the dispensing motor circuit to operate that motor; electromagnetic means for blocking said coin chute, a circuit for said means extending through normally closed contacts on said relays, which circuit is opened upon energization of either one of said relays thereby to restore the means and block the coin chute during the operation of each of said motors.

8. In a machine for vending articles; a turntable; means including an electric motor for rotating said turntable step by step; a circuit for said motor; a first relay having contacts in said motor circuit operable to close said circuit upon energization of the relay; a circuit for said relay; a push button having contacts in said relay circuit closed momentarily to energize the relay; a holding circuit for said relay closed by contacts thereon closed upon energization of the relay; a control disk in said turntable rotating means rotated with the turntable; a spring assembly having normally open contacts closed momentarily by said disk during rotation of the disk; a second relay; a circuit for said second relay closed by said disk operated spring assembly to energize said second relay; contacts in the energizing and holding circuits of said first relay opened by the energization of said second relay to permit the first relay to restore; and contacts on said second relay closed upon energization of said second relay to close a holding circuit therefor through said push button should the contacts thereof be maintained closed during a rotation of the turntable, thereby to prevent re-energization of said first relay and re-operation of said motor until said push button is released.

9. In a machine for vending articles; a plurality of article holding cages adapted to be moved into dispensing position in sequence; an electric motor; means operated by said motor for rotating the cage that is in dispensing position to dispense an article therefrom; a circuit for said motor; a relay; contacts on said relay closed upon an energization thereof and included in the circuit of said motor to close that circuit and start the motor; a circuit for said motor; a coin mechanism; contacts in said mechanism closed by a coin passing therethrough and included in said relay circuit to close the same and energize the relay; contacts on said relay closed by the energization thereof to establish a holding circuit for the relay; a control disk rotated by an operation of said motor; normally closed contacts included in said holding circuit and opened by said disk after the disk has rotated through a definite arc to permit the relay to restore; and normally open contacts closed by said disk prior to its rotation through said arc to establish a circuit for said motor that is independent of said relay contacts, said normally open

contacts being opened by said disk to stop the motor after the disk has rotated through an arc that is greater than said definite arc.

10. In a machine for dispensing articles; a turntable; a plurality of article holding cages mounted upon said turntable and adapted to be moved into a dispensing position in sequence by rotation of the turntable; a motor for rotating said turntable; a circuit for said motor; a relay; contacts on said relay closed by an energization thereof and included in the circuit of said motor to close the same and start the motor; a circuit for said relay closed by push button contacts to energize the relay; a second motor operable to effect a dispensing operation of the machine; a circuit for said second motor; a second relay; contacts on said second relay closed by an energization thereof and included in the circuit of said second motor to close the same and start that motor; a circuit for said second relay; contacts in the circuit for said second relay closed by the deposit of a coin in the machine to energize said second relay; and normally closed contacts on said second relay included in the circuit of said first relay and opened by energization of said second relay to prevent an energization of said first relay while said second relay is energized thereby to prevent rotation of the turntable during a dispensing operation of the machine.

11. In a machine for vending articles; a turntable; means for rotating said turntable, said means including uniformly spaced pins depending from the turntable; a motor for driving said means; a circuit for said motor; a relay; means for energizing said relay; contacts on said relay closed by an energization thereof and included in the circuit of the motor to close that circuit and operate the motor; an index solenoid; a stop operated by said solenoid and engaging a pin on said turntable when the solenoid is de-energized; a circuit for said solenoid; contacts on said relay closed by an energization of the relay and included in the circuit of said solenoid to energize the solenoid and thereby withdraw said stop from the pin engaging it; a control disk in said motor driven means rotated by an operation of the motor; and normally closed contacts opened by a rotation of said disk and included in the circuit of said solenoid to open said circuit thereby to move said stop into the path of said pins preparatory to stopping the turntable when a succeeding pin engages the stop.

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