Sept. 20, 1927. 1,643,068

U. G. GRANDBOIS

COIN CONTROLLED VENDING MACHINE

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Fig. 1.

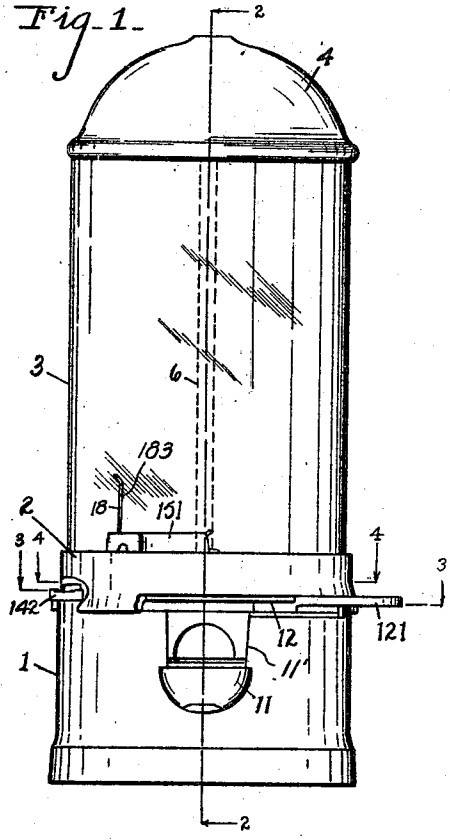


Fig. 2.

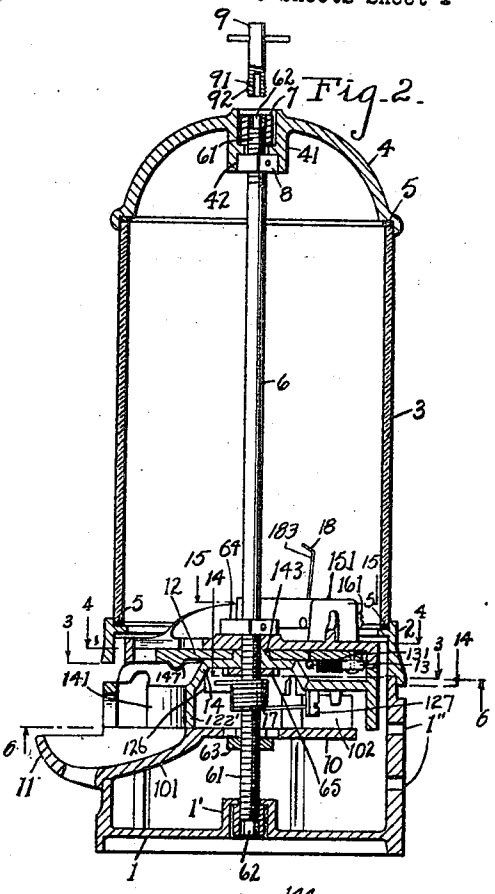


Fig. 3.

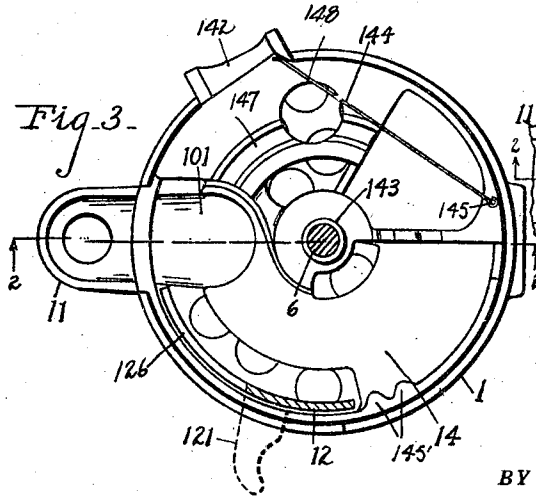
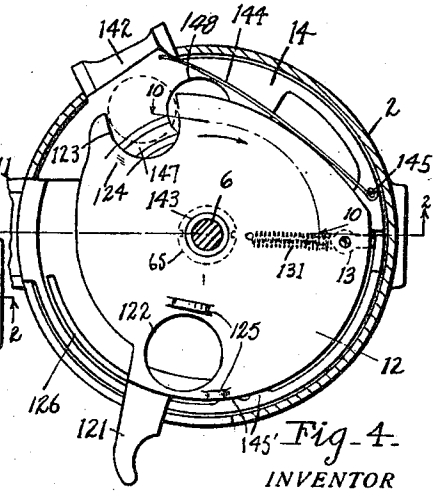


Fig. 4.



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Fig. 10.

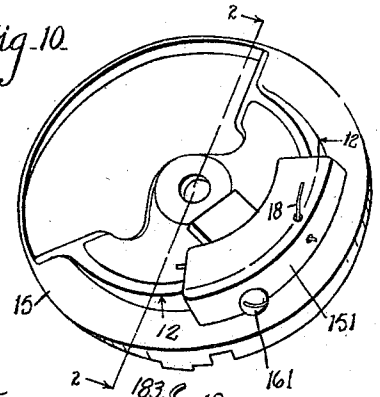
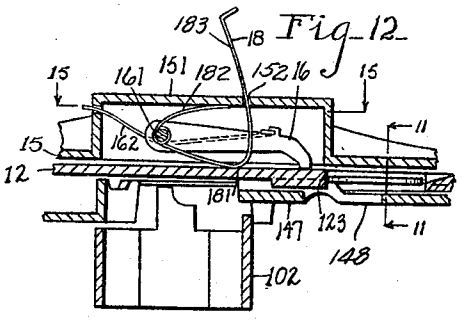


Fig. 12.



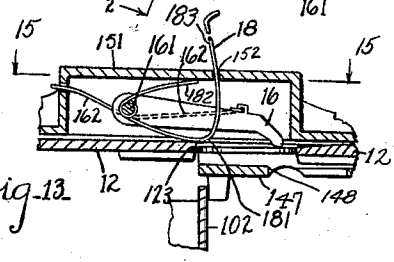


Fig. 13.

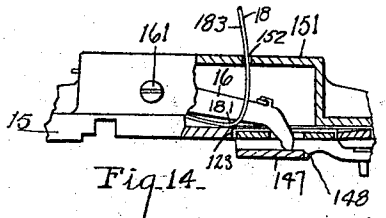


Fig. 14.

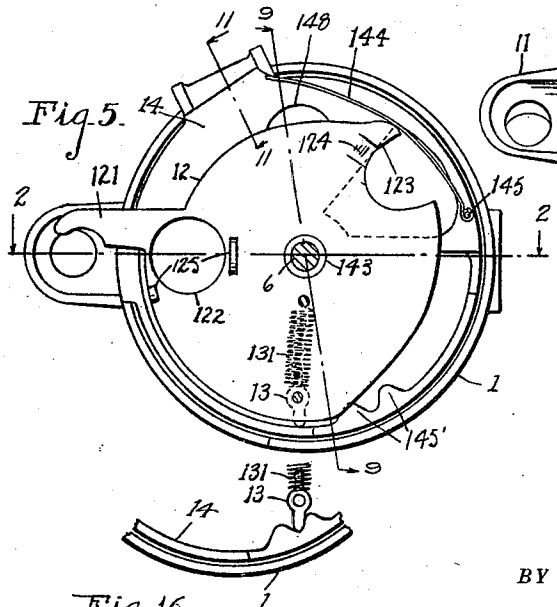


Fig. 5.

Fig. 16.

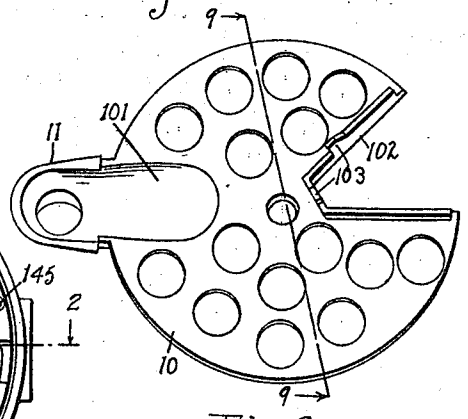


Fig. 8.

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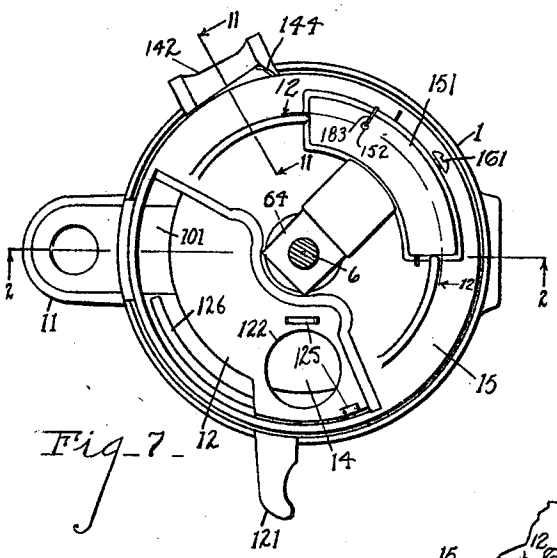


Fig. 7.

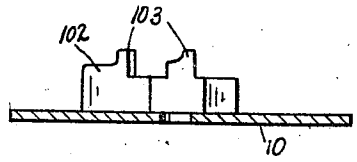


Fig. 9.

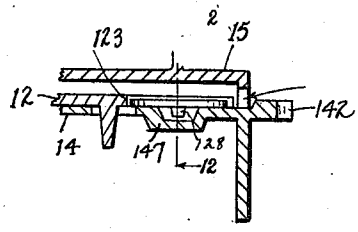


Fig. 11.

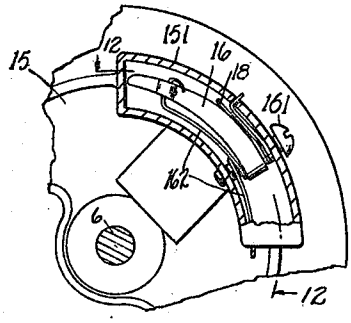


Fig. 15.

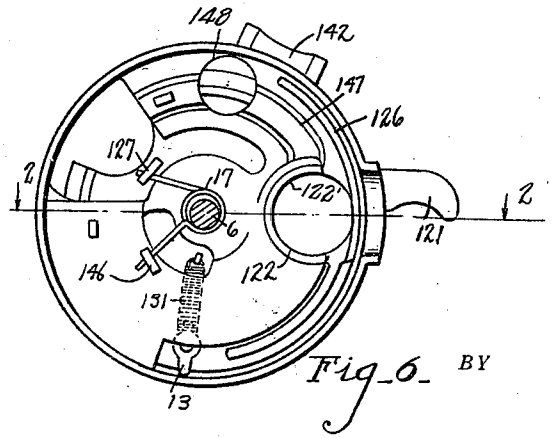


Fig. 6.

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UNITED STATES PATENT OFFICE.

URSE G. GRANDBOIS, OF KALAMAZOO, MICHIGAN.

COIN-CONTROLLED VENDING MACHINE.

Application filed November 11, 1926. Serial No. 147,755.

This invention relates to improvements in coin controlled vending machines. It is especially adapted to penny-in-the-slot ball gum machines.

The objects of the invention are:

First, to provide an improved compact, simple and strong case structure with cylindrical glass wall which can also be simply and effectively locked.

Second, to provide an improved coin controlled article delivery slide.

Third, to provide an improved coin control and coin release means for the article delivery slide.

Fourth, to provide coin detector means to prevent fraudulent operation of the machine.

Fifth, to provide improved control gate means in a coin controlled slide.

Objects relating to details and economies of construction and operation of my invention will definitely appear from the detailed description to follow.

The invention is defined and pointed out in the claims.

A structure which is a preferred embodiment of my invention is illustrated in the accompanying drawing, forming a part of this application, in which:

Fig. 1 is an elevational view of the machine from the left-hand side of Fig. 2.

Fig. 2 is a vertical sectional elevation taken on the plane corresponding to line 2—2 of Figs. 1, 3, 4, 5, 6, 7 and 10.

Fig. 3 is a detail sectional plan slightly enlarged on line 3—3 of Figs. 1 and 2, the coin and delivery slide also being sectioned on that line, the upper portion of the slide being removed and showing the body of the casing or housing for said slide.

Fig. 4 is a sectional plan view on line 4—4 of Fig. 2, with the coin and article delivery slide in place, the full stroke control dog means on the under side being indicated by dotted lines.

Fig. 5 is a sectional view similar to Fig. 4, with the delivery slide swung to the position to drop a coin and also to drop the merchandise, a ball of gum, into the delivery chute.

Fig. 6 is an inverted sectional plan on line 6—6 of Fig. 2 of the coin controlled merchandise slide and slide case, being an inverted plan of the assembly parts illustrated in Fig. 5 and in the same relative position.

Fig. 7 is a similar sectional plan view with the slide cover, which constitutes a part of the bottom of the merchandise receptacle, in place.

Fig. 8 is a perspective view of the top side of the delivery pan, showing the bottom of the merchandise delivery chute and the coin dropping passage.

Fig. 9 is an enlarged detail sectional view on line 9—9 of Figs. 5 and 8.

Fig. 10 is a similar top perspective view of the coin and merchandise slide casing cover.

Fig. 11 is an enlarged detail sectional view on line 11—11 of Figs. 5 and 7 showing the detail of the coin receiving chute at the insert slot.

Fig. 12 is an enlarged detail longitudinal sectional view on curved line 12—12 of Figs. 7, 10 and 15 through the coin dog housing, showing the dog and coin ejector spring in full lines and the coin in the position where it has just been inserted from the receiving chute in position to be delivered into the machine and permit the actuation of the feed slide by supporting the coin dog up within the housing out of engagement with said slide.

Fig. 13 is a sectional view similar to Fig. 12, showing the advance of the coin under the dog, holding it out of engagement with the slide, to permit the slide to pass on to deliver the merchandise, the coin being shown in full lines.

Fig. 14 is a view similar to Fig. 12 showing the dog action and what happens when a washer the size of a cent is dropped into the machine.

Fig. 15 is a horizontal detail enlarged sectional view on line 15—15 of Figs. 2, 12 and 13.

Fig. 16 is an enlarged detail sectional view showing the action of the control dog for the coin and article delivery slide to insure its full stroke.

In the drawing similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, 1 is the base which also constitutes the coin receptacle. 2 is the supporting ring for the glass merchandise cylindrical case resting upon the base. 3 is the cylindrical merchandise case. The merchandise is in the form of balls of gum. 4 is the dome for the case.

5 is the gasket interposed between these parts to permit of their being tightly clamped together. 6 is the central upright assembly connecting rod which holds the parts in assembled relation. It has a right hand screw thread 61 at each end. The rod 6 is reduced and extended at 62 at each end in a small pin.

The base 1 is provided with an upwardly extending hollow boss 1′ which is suitably perforated for the said assembly rod 6 and the dome 4 has a similar downwardly-extending boss 41 to receive the upper end of said assembly rod. Toward the upper end of the rod is a hexagonal nut 8 securely pinned to the rod 6 and fitting into a receptacle 42 in the under side of said boss 41 to retain the said rod against turning. An elongated tubular nut 7 is properly screw threaded at top and bottom to said rod 6 and clamps the base and dome against the merchandise cylinder 3. The outer end of each nut contains a left-hand thread.

A key 9 is provided with a central bore 91 to accommodate the pin 62 at the end of the rod. It is externally threaded with a left-hand thread 92 corresponding to the left-hand thread at the outer end of each said nut. The screw 92 of the key is slightly tapered and the same is screwed firmly into the nut. The key is then used for inserting the nut and when the nut seats, owing to the fact that the key has a left-hand thread it will be withdrawn, leaving the nut securely in place. This avoids any likelihood of its being tampered with and makes a very satisfactory lock for this kind of machine.

The machine is secured to a post or wall by suitable bolts through the perforations 1″ in the base.

Having thus described these parts in their general relation, they will now be described in detail.

10 is the bottom pan of the entire delivery structure and has formed therein the bottom part of the merchandise delivery chute 101 terminating in the delivery spout 11 for the delivery of the ball of gum, the merchandise. A notch is formed in the pan 10 for the downward passage of the coin into the coin receptacle in the base. Around this is disposed a wall 102 having upwardly projecting lugs 103 cooperating with the projections on the underside of the merchandise slide casing 14 to prevent the unauthorized extracting of coin by inverting and manipulating the machine.

A delivery opening is formed in the side of the case at 11′ for the spout 11.

12 is the coin controlled merchandise delivery slide which is provided with a projecting handle 121 for manipulation. It is perforated at 122 for the passage of a ball of gum, the merchandise, and delivery of the same to the delivery chute, a rib 122′ being formed around the aperture 122 on the under side of the slide, as indicated in Fig. 6. The slide 12 is notched at 123 for the reception of coin. A depression 124 is formed in the rear side of this notch 123 to permit the passage of the slide under the coin controlled dog when the dog is raised by the introduction of a coin. 125 are lugs on the upper surface of the slide to agitate the contents of the receptacle and insure the delivery of one of the balls of gum. 126 is a segmental gate made integral with the slide 12 and depending therefrom, and it controls the aperture to the spout for the delivery of the balls of gum. It is initially in the open position as seen in Figs. 3 and 4 and is disposed to close the passage as seen in Figs. 5 and 6, when a ball is being dropped into the chute, the detail of the closed position being more clearly shown in Fig. 6. 127 is the downwardly depending lug on the slide for engagement by the main spring 17 which is coiled about and disposed on the central connecting rod 6 with its opposed end reacting on lug 146 on the under side of the slide casing 14, hereafter to be described.

128 are segmental annular ribs on the under side of the slide 12 cooperating with groove 147 on casing 14 hereafter to be described.

The slide casing 14 is provided with a downwardly projecting curved wall 141 forming a part of the merchandise chute and this cooperates with the aperture 122 in the slide to insure the delivery of a single ball at a time into the chute. This slide is provided with a coin chute 142 for the introduction of the coin beneath the coin controlled dog. It is provided with a journal hub 143 for carrying the slide. A spring 144 is disposed to the outside or periphery of the path of the slide and is held in position by an eye at the end over the upwardly projecting pin 145 on the case 14. The detail in Figs. 4 and 5 show the relation of the parts as they clearly appear, the coin, a cent, being shown in dotted lines in Fig. 4.

The inwardly projecting toothed lugs 145′ are provided on the case and cooperate with the reversible pawl 13 pivoted on the under side of the slide 12 and held yieldingly in central position by the compressed coiled spring 131, secured to the under side of the said slide 12. The relation and cooperation of these parts clearly appearing in Figs. 5 and 16.

146 is the downwardly depending lug on the under side of slide casing 14 for engagement with the actuating spring 17 already identified. The casing 14 is grooved with an annular segment groove at 147 beneath the coin slide which cooperates with ribs 128 underneath the slide thereby insur-

ing the advancing of a coin without possibility of stopping and permitting free action of the coin controlled dog with the slide in position until a proper coin has been introduced.

15 is the slide case cover and is provided with a segmental dog housing 151 within which is pivoted the coin controlled dog 16 on screw pivot 161. This dog is held down to its work by the dog spring 162, one end of which engages over the top of the dog and the other end of which extends through a perforation on the end wall of the dog housing against which it reacts as clearly appears in Fig. 13. The dog normally drops into engagement with the slide within the coin notch in the slide. When a coin is introduced into the slot and slide as appears in Fig. 12, and as shown advanced under the dog in Fig. 13, the dog is raised so that it rides out through the notch 124 permitting the slide to advance and deliver a ball of gum into the merchandise chute.

The ejector spring 18, seen particularly in Figs. 12 and 13, comes into action when the coin has passed to position over the coin passage to the coin receptacle beneath, that position being indicated particularly in Fig. 5. The spring 18 has a downwardly bent elbow 181 which drops into the coin notch and displaces the coin when the slide is moved to that position. The spring 18 has a coil on the pivot 161 of the dog and its opposite end 182 reacts against the top of the dog house casing. The free end 183 of this ejector spring reciprocates through aperture 152 in the top of the dog housing and is guided thereby.

The pan-like bottom plate rests upon a screw nut 63 and is a support for the remaining internal parts. A nut 64 is pinned to the shaft 6 and forms the opposite member of the clamp. An intermediate nut 65 retains the slide casing members in position to serve as a journal for the slide and retain it in place.

Having now described the various parts of my structure, I will now indicate their operation when in use.

A coin is introduced at the chute or slot 142 as indicated by dotted lines in Fig. 4 and full lines in Figs. 11, 12 and 13. It enters the notch 123 in the coin controlled merchandise slide. Then this slide is actuated by the handle 121 and the proper coin or penny having been introduced, it passes under the end of the coin controlled dog 16, elevates the same, so that the notched part 124 of the slide passes underneath the dog and permits the merchandise slide to act and carry a ball of gum to the delivery chute. A ball of gum having dropped into the aperture 122, due to the agitation of the balls by the lugs when it reaches the delivery point it drops into the merchandise delivery chute, being retained therein by the gate 126. The control pawl 13 has then passed over the projecting teeth 145 when the slide has completed its stroke and the same may be returned. When the handle is released the slide is retracted by the spring 17 and the merchandise, the ball of gum, drops out through the delivery chute to spout 11. It is not possible to move the slide part way because of the control dog 13 and it is not possible to partially withdraw the same and actuate it because the control dog 13 automatically engages to prevent that. Provision is made to prevent operation by a slug or washer slightly smaller than a penny by perforation 148.

If too small a coin has been introduced, it is dropped down through the aperture 148 provided in the case 14 for that purpose. If a washer has been introduced, as illustrated in Fig. 14, the point of the dog drops through the center of the washer and the machine is prevented from actuation and can only be returned to the initial position without delivering the merchandise, when so returned.

The introduction of a proper coin while the washer is present in the path of the coin will then permit the operation because the point of the dog will be elevated from the center of the washer and both the washer and the coin will be delivered on the next stroke. This action will be understood by inspecting Figs. 12, 13 and 14. The action of the dog in its operation is clear. It has dropped through a washer, in Fig. 14, which prevents the operation of the merchandise slide, and when a coin is disposed on top of this washer, which is the position the coin will take if introduced after the washer, the dog will be supported and pass both the coin and the washer, and thus operate fully and clear the machine. The depth of the recess for the coin is such that it will accommodate both the thickness of the washer and the coin, such depth in no way interfering with the operation of the machine on a single coin. When the mechandise slide has been actuated to the limit of its stroke, the ejector spring 18 flips the coin down through the aperture into the coin passage to the coin receptacle. This prevents tampering with the machine by attaching a wire or a thread to a coin and introducing the same and withdrawing it on the return of the slide. It is still possible, of course, to operate the machine by the introduction of a disk of the size of the coin required, but as this machine is intended for a penny in the slot gum machine, it is hardly worth anyone's while to prepare the necessary disks, the only danger being from the use of washers which are an article which can be purchased in the market at trifling cost.

Having thus described my invention, what

I claim as new and desire to secure by Letters Patent, is:

1. In a coin controlled vending machine, the combination of a cylindrical base with a lateral opening to discharge the merchandise, a cross partition disposed within said base having a coin chute formed thereon, said cross partition being notched with upwardly extending walls about the notch forming the coin passage into the base, a merchandise receptacle, a pivoted coin controlled merchandise slide supported on the central rod and having a slot of greater depth than a coin to receive a coin, the central part of the rear of said slot being of lesser height than the coin, and having a merchandise aperture flanged on its under side, a casing for the said slide constituting, with said slide, the bottom wall of said merchandise receptacle and having formed therein a downwardly opening merchandise chute cooperating with the flanged merchandise aperture of the slide, a slide case cover with upwardly projecting housing, a coin controlled dog pivoted within said housing and disposed to cooperate with and engage the slide at the coin slot and to be controlled and lifted out of engagement by the introduction of a coin, a spring to hold said dog yieldingly in engaging position, and an ejector spring in the said housing embracing the dog pivot having a knuckle extending downwardly above the coin receiving chute, with its upper end vertical and adapted to reciprocate in an aperture in the housing, as described.

2. In a coin controlled vending machine, the combination of a cylindrical base with a lateral opening to discharge the merchandise, a cross partition disposed within said base having a coin chute formed thereon, a merchandise receptacle, a pivoted coin controlled merchandise slide supported on the central rod and having a slot of greater depth than a coin to receive a coin, the central part of the rear of said slot being of lesser height than the coin, and having a merchandise aperture flanged on its under side, a casing for the said slide constituting, with said slide, the bottom wall of said merchandise receptacle and having formed therein a downwardly opening merchandise chute cooperating with the flanged merchandise aperture of the slide, a slide case cover with upwardly projecting housing, a coin controlled dog pivoted within said housing and disposed to cooperate with and engage the slide at the coin slot and to be controlled and lifted out of engagement by the introduction of a coin, and an ejector spring in the said housing embracing the dog pivot having a knuckle extending downwardly above the coin receiving chute, with its upper end vertical and adapted to reciprocate in an aperture in the housing, as described.

3. In a coin controlled vending machine, the combination of a cylindrical base with a lateral opening to discharge the merchandise, a cross partition disposed within said base having a coin chute formed thereon, a merchandise receptacle, a pivoted coin controlled merchandise slide supported on the central rod and having a slot of greater depth than a coin to receive a coin, the central part of the rear of said slot being of lesser height than the coin, and having a merchandise aperture flanged on its under side, a casing for the said slide constituting, with said slide, the bottom wall of said merchandise receptacle and having formed therein a downwardly opening merchandise chute cooperating with the flanged merchandise aperture of the slide, a slide case cover with upwardly projecting housing, and a coin controlled dog pivoted within said housing and disposed to cooperate with and engage the slide at the coin slot and to be controlled and lifted out of engagement by the introduction of a coin, as described.

4. In a coin controlled vending machine, the combination of a cylindrical base with a lateral opening to discharge the merchandise, a merchandise receptacle, a pivoted coin controlled merchandise slide supported on the central rod and having a slot of greater depth than a coin to receive a coin, the central part of the rear of said slot being of lesser height than the coin, and having a merchandise aperture flanged on its underside, a casing for the said slide constituting, with said slide, the bottom wall of said merchandise receptacle and having formed therein a downwardly opening merchandise chute cooperating with the flanged merchandise aperture of the slide, a slide case cover with upwardly projecting housing, and a coin controlled dog pivoted within said housing and disposed to cooperate with and engage the slide at the coin slot and to be controlled and lifted out of engagement by the introduction of a coin, as described.

5. In a coin controlled vending machine, the combination of a suitable cylindrical case with a base, a bottom therefor with a merchandise delivery spout and a coin passage therethrough to the base, a coin controlled slide having a coin notch disposed in a suitable casing above the said bottom, having a projecting lever, and having a merchandise aperture therethrough, a tangential spring disposed to hold the coin in the notch and locking means for the slide operable by said coin.

6. In a coin controlled vending machine, the combination of a suitable cylindrical case with a base, a bottom therefor with a merchandise delivery spout and a coin passage therethrough to the base, a coin controlled slide disposed in a suitable casing above the said bottom, having a projecting lever,

and having a merchandise aperture therethrough, a downwardly extending flange around the aperture, a coin slot notched at its rear side to receive coins, a tangential spring on said case to hold a coin in the coin slot, a reversible control dog cooperating with tooth projections on the case for insuring full motion, a casing for the said slide with suitable aperture for the delivery of a coin downward, and having a journaled hub for said slide, an actuating spring reacting upon cooperating lugs on the said case and slide, a cover for the said casing with an upwardly projecting housing for the coin controlled dog, a coin controlled dog within the said housing, and a spring for holding the same normally downward.

7. In coin controlled vending machine, the combination of a suitable cylindrical case with a base, a bottom therefor with a merchandise delivery spout and a coin passage therethrough to the base, a coin controlled slide having a coin slot and disposed in a suitable casing above the said bottom, having a projecting lever, and having a merchandise aperture therethrough, a downwardly extending flange around the aperture, a tangential spring on said case to hold a coin in the coin slot, a reversible control dog cooperating with tooth projections on the case for insuring full motion, a casing for the said slide with suitable aperture for the delivery of a coin downward, and having a journaled hub for said slide, an actuating spring reacting upon cooperating lugs on the said case and slide, a cover for the said casing with an upwardly projecting housing for the coin controlled dog, a coin controlled dog within the said housing, and a spring for holding the same normally downward.

8. In a coin controlled vending machine, the combination of a suitable cylindrical case with a base, a bottom therefor with a merchandise delivery spout and a coin passage therethrough to the base, a coin controlled slide having a coin slot and disposed in a suitable casing above the said bottom, having a projecting lever, and having a merchandise aperture therethrough, a downwardly extending flange around the aperture, a tangential spring on said case to hold a coin in the coin slot, a reversible control dog cooperating with tooth projections on the case for insuring full motion, a casing for the said slide with suitable aperture for the delivery of a coin downward, and having a journaled hub for said slide, an actuating spring reacting upon cooperating lugs on the said case and slide, a cover for the said casing with an upwardly projecting housing for the coin controlled dog, a coin controlled dog within the said housing, and a spring for holding the same normally downward.

9. In a coin controlled vending machine, the combination of a suitable cylindrical case with a base, a bottom therefor with a merchandise delivery spout and a coin passage therethrough to the base, a coin controlled slide having a coin slot and disposed in a suitable casing above the said bottom, having a projecting lever, and having a merchandise aperture therethrough, a downwardly extending flange around the aperture, a reversible control dog cooperating with tooth projections on the case for insuring full motion, a casing for the said slide with suitable aperture for the delivery of a coin downward, and having a journaled hub for said slide, an actuating spring reacting upon cooperating lugs on the said case and slide, a cover for the said casing with an upwardly projecting housing for the coin controlled dog, a coin controlled dog within the said housing, and a spring for holding the same normally downward.

10. In a coin controlled vending machine, the combination of a suitable cylindrical case with a base, a bottom therefor with a merchandise delivery spout and a coin passage therethrough to the base, a coin controlled slide having a coin slot and disposed in a suitable casing above the said bottom, having a projecting lever, and having a merchandise aperture therethrough, a downwardly extending flange around the aperture, a tangential spring on said case to hold a coin in the coin slot, a casing for the said slide with suitable aperture for the delivery of a coin downward, and having a journaled hub for said slide, an actuating spring reacting upon cooperating lugs on the said case and slide, a cover for the said casing with an upwardly projecting housing for the coin controlled dog, a coin controlled dog within the said housing, and a spring for holding the same normally down.

In witness whereof I have hereunto set my hand.

URSE G. GRANDBOIS.