Dec. 16, 1947. A. DE MOTT 2,432,561

ARTICLE EJECTING DEVICE

Filed Nov. 15, 1945 3 Sheets-Sheet 1

Fig. 1

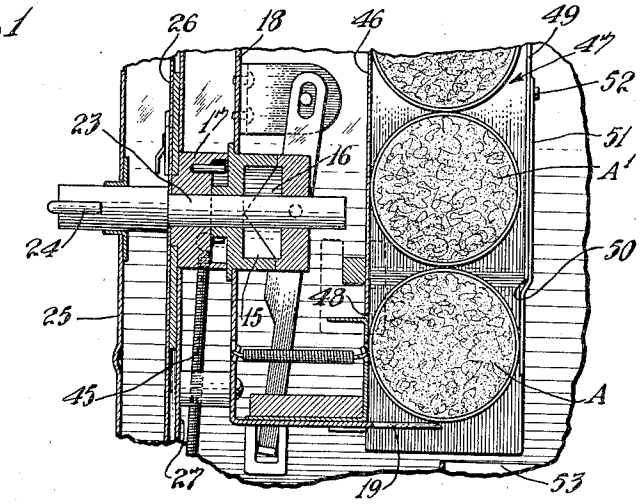


Fig. 2

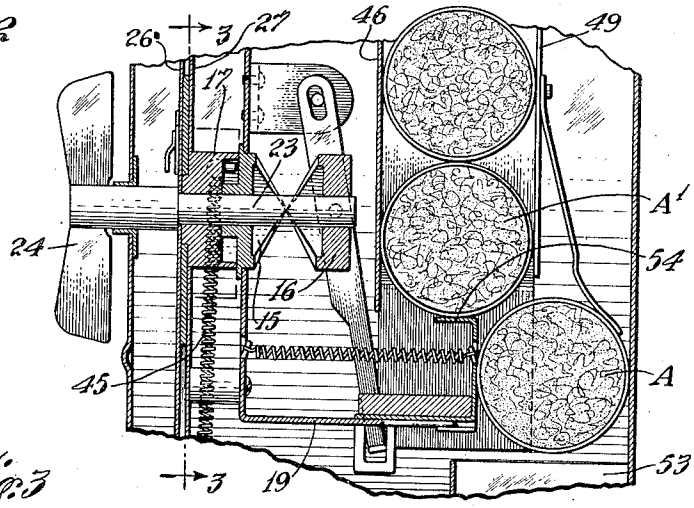


Fig. 3

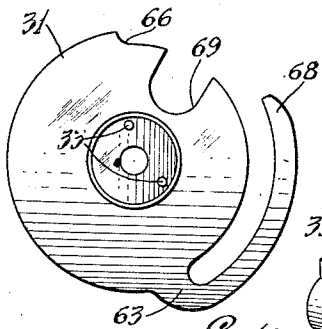


Fig. 4

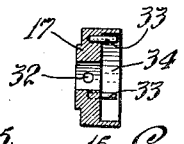


Fig. 5

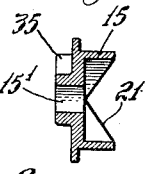


Fig. 6

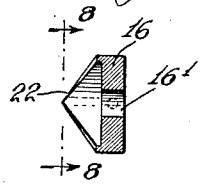


Fig. 7

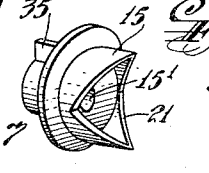
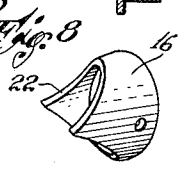


Fig. 8



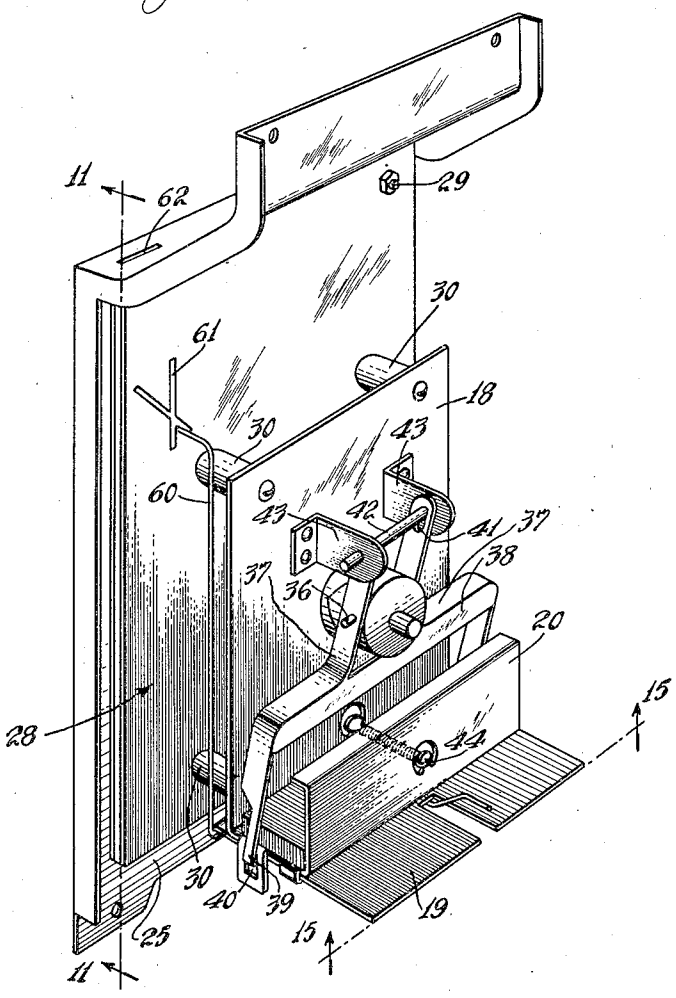
INVENTOR
ARMAND DE MOTT
BY Harry Sommers
ATTORNEY

Dec. 16, 1947. A. DE MOTT 2,432,561

ARTICLE EJECTING DEVICE

Filed Nov. 15, 1945 3 Sheets-Sheet 2

Fig. 9



INVENTOR
ARMAND DE MOTT
BY
ATTORNEY

Dec. 16, 1947. A. DE MOTT 2,432,561

ARTICLE EJECTING DEVICE

Filed Nov. 15, 1945 3 Sheets-Sheet 3

Fig. 10

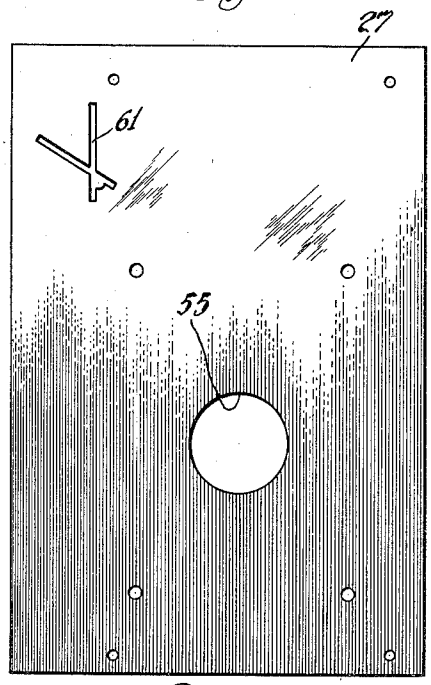


Fig. 11

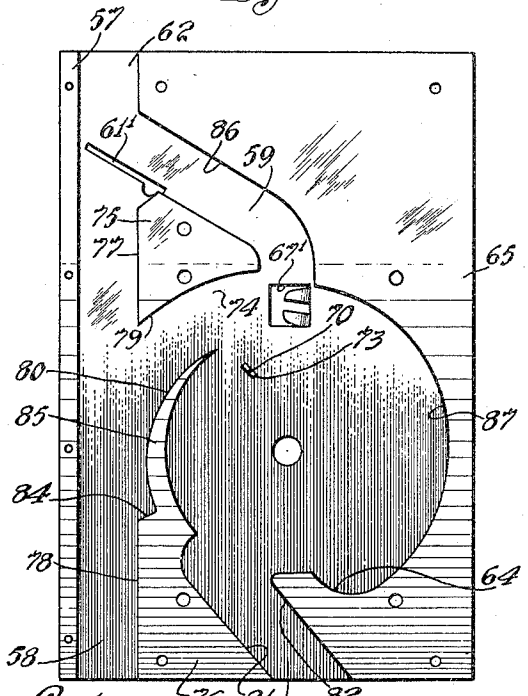


Fig. 12

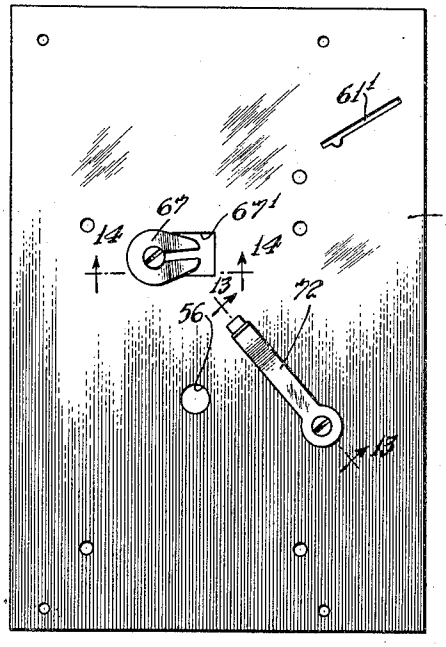


Fig. 13

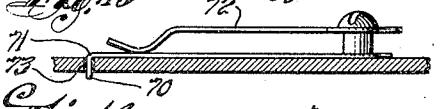


Fig. 14

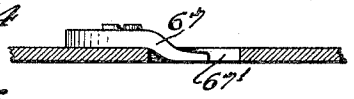
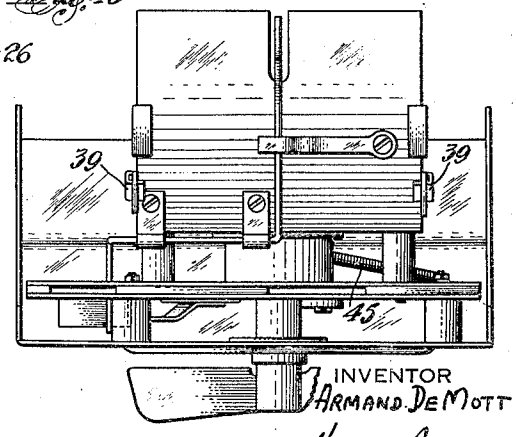


Fig. 15



INVENTOR
ARMAND DE MOTT

BY Harry Sommers

ATTORNEY

Patented Dec. 16, 1947

2,432,561

UNITED STATES PATENT OFFICE

2,432,561

ARTICLE EJECTING DEVICE

Armand De Mott, Fords, N. J., assignor to Amity Foundry and Machine Co., Inc., Perth Amboy, N. J., a corporation of New Jersey

Application November 15, 1945, Serial No. 628,734

4 Claims. (Cl. 312—47)

1

This invention relates to an article ejecting device adapted for use in merchandise vending machines. It is the object of this invention to provide an article ejecting device adapted to serially eject articles of merchandise from an article holding machine in a positive and efficient manner.

The foregoing and other advantageous objects, which will later appear, are accomplished by the novel and practical structure hereinafter described and illustrated in the accompanying drawings, in which:

Fig. 1 is a fragmentary vertical sectional view of an article ejecting device embodying my invention, showing the parts in their inoperative position,

Fig. 2 is a similar view, showing the position of the parts in their operative position for ejecting of an article from the article holding member,

Fig. 3 is a plan view of the coin disc which may be used in said device, taken on line 3—3 of Fig. 2,

Fig. 4 is a vertical sectional view of the hub member which is fixed to said disc,

Figs. 5 and 6 are vertical sectional views of cam members adapted to be actuated by the hub member of Fig. 4,

Fig. 7 is a perspective view of the cam member of Fig. 5, taken on line 7—7 of Fig. 5,

Fig. 8 is a perspective view of the cam member of Fig. 6, taken on line 8—8 of Fig. 6,

Fig. 9 is a perspective view of the article ejecting unit of my invention and associated parts,

Fig. 10 is an elevational view of one of the wall members of a coin receiving unit which may be used in connection with the article ejecting unit of my invention,

Fig. 11 is an elevational view taken on line 11—11 of Fig. 9,

Fig. 12 is an elevational view of the other wall member of said unit,

Fig. 13 is a fragmentary, sectional view taken on line 13—13 of Fig. 12,

Fig. 14 is a fragmentary sectional view taken on line 14—14 of Fig. 12, and

Fig. 15 is an underplan view taken on line 15—15 of Fig. 9.

The coin ejecting device of my invention as shown in Figs. 1, 2 and 9 of the drawings, comprises a pair of cam members 15 and 16, one of which, as the member 15, is adapted to be positioned intermediate a hub member 17 and plate 18. The lower end of plate 18 is angularly directed as at 19 to define a ledge portion on

2

which the slide member 20 may be reciprocated responsive to the interengagement of the cam surfaces 21 and 22 of the cam members (as hereinafter more particularly described) on the rotation of the shaft 23 fixed to the handle 24 (see Figs. 1 and 2). The handle 24 is rotatively positioned in the frame member 25 of the vending machine to which the ejecting unit of my invention is attached. The shaft 23 passes through an aperture in the rear wall member 26 of coin receiving unit 28 and through apertures 15' and 16' in the cam members. The rear wall member 26 and the front wall member 27 of the coin receiving unit 28 are fixed to the casing 25 by any suitable means 29; the plate 18 is secured to said coin receiving unit by any suitable means 30. The parts are assembled as shown in Figs. 1 and 2 with disc 31 (Fig. 3) rotatively positioned intermediate the walls 26 and 27 of the coin receiving unit 28, said disc having a medial aperture through which the shaft 23 of the handle 24 passes. The hub 17 is keyed to the disc and to the shaft 23 of the handle 24 as at 32 and rotates in unison therewith. Said hub is provided with a circumferentially recessed face 34 and with pins 33 projecting into said recessed face and adapted to selectively engage the fin 35 of cam member 15 upon rotation of the handle 24. The cam 16 is provided with laterally projecting posts 36 adapted to be freely received in apertures in the arms 37 of fork member 38 (see Fig. 9). Said fork member terminates at one end in inturned fingers 39 freely received within the apertured flanges 40 of the slide 20. The other ends of said fork or lever 38 are provided with elongated slots 41 adapted to freely receive the bearing 42 fixed to the lugs 43 or the like on the plate 18. The slide 20 is normally urged toward the plate 18 by spring means 44 or the like.

From the foregoing description, it will be apparent that upon the continued rotation of the handle 24, the cam members 15 and 16 will have camming engagement and will move apart, transmitting their motion to the slide 20 by means of the fork 38, urging the slide away from the plate 18, and that, upon release of the tension upon the handle 24, the parts will return to their normal position shown in Fig. 1. The hub 17 may be engaged by means such as spring 45 engaging said hub and the coin receiving unit 28, normally urging the parts to their inoperative position shown in Fig. 1.

As will be noted from Figs. 1 and 2, in the normal position of the parts, the slide 20 is disposed in the aperture 48 of one wall 46 of the

article holding member 47, in alignment with said wall 46 and providing a substantial continuation thereof. The other wall 49 of said article holding member is likewise provided with an aperture or end 50 in alignment with said slide 20 or slightly above the plane thereof, said aperture 50 being normally partly closed by the free end of the spring finger 51, the other end of said spring finger being fixed as at 52 to the article receiving member. The ledge 19 projects into the open lower end of the article receiving member 47 and normally serves as a bottom thereof on which the lowermost article A rests (see Fig. 1). By this arrangement, the articles A which are to be dispensed from the vending machine by the ejecting mechanism of my invention, normally rest in the article holding member 47 with the lowermost article A disposed on the ledge portion 19 of the plate 18 and between the slide 20 and the free end of the spring finger 51. When the ejecting device is actuated as shown in Fig. 2, the lowermost article A is displaced or ejected laterally from the article holding member 47 and off the ledge 19 (against the tension of the spring finger 51) and drops into the discharge chute 53 whence it passes to the discharge opening of the vending machine. Slide 20 is provided with a flanged upper edge 54 upon which the next lowermost article in the receiving member 47 rests while the lowermost article is being ejected, as shown in Fig. 2, and upon the return of the ejecting parts to their normal position shown in Fig. 1, said next lowermost article A' will drop to the position indicated for the lowermost article in Fig. 1.

The mechanism shown in Figs. 1, 2, 4–9 may be used in any apparatus for displacing or ejecting articles, regardless of the particular type of coin receiving unit employed. When used in a coin vending machine, the mechanism for receiving the coin and thereby permitting the apparatus to be actuated will, of course, be associated with the shaft 23 and handle 24 so as to permit the rotation thereof only upon the insertion of a coin. In the art of coin vending machines, numerous expedients have been proposed for the reception of coins in the apparatus in such manner as to release the apparatus upon the insertion of a coin. I have described in greater detail in an application for improvements in "Coin control device" executed simultaneously herewith, filed November 15, 1945, Serial No. 628,735, a coin receiving unit adapted to be associated with the article ejecting device illustrated in Figs. 1 and 2 hereof and more particularly described above. Said coin receiving unit has been found particularly novel and effective but it will be understood that the description thereof in the instant application shall in no sense be construed to limit the invention herein claimed to use with a coin receiving unit of that type.

The coin receiving unit shown in Figs. 10–14 comprises a rear wall 26 and a front wall 27 provided with apertures 56 and 55 for the free reception of the shaft 23 and hub 17. A bar 57 is fixed intermediate said wall members to define one edge of a vertical chute 58 which is a chute for return of coins when the device is inoperative either because of its empty condition or because of the fact that a slug has been inserted in the coin receiving unit 28. The rod member 60 as shown in Fig. 9 is provided with means adapted to move within the X-shaped aperture 61 of plate 27 and aperture 61' of plate 26 to

control movement of coins inserted into the coin slot 62 of the coin receiving unit 28. The rod 60 is provided with means which normally direct the coins into an angular chute 59 as described more particularly in my said application for coin control device. The parts are so arranged in their inoperative position that the lobe 63 of the disc 31 normally abuts the shoulder 64 of the spacer plate 65 responsive to the tension of the spring 45 on the hub 17. When a coin is inserted in the device with the disc 31 disposed in the position of rest just described, the circumferential recess 66 of said disc 31 will be disposed in alignment with the lower end of the angular coin chute 59 so that the coin inserted therein will first contact said recessed portion 66. If the object inserted through the coin receiving slot 62 is not a genuine coin but is a magnetic slug, it will be held at that point by the magnet 67 which is fixed to the wall 26 of the coin receiving unit and extends through the aperture 67' in said wall 26 (see Figs. 14, 12 and 11). Upon the rotation of the handle 24, the disc 31 will be rotated; the slug being held by the magnet while the disc 31 is rotating, will be engaged by the arcuate arm 68 of the disc, which will displace the slug from the magnet and will drop the same into the circular chute 74 which empties into the vertical chute 58, whereby the slug will be dropped downwardly and out of the coin receiving unit without permitting the operation of the mechanism. On insertion of a genuine coin into the slot 62, said coin will travel down onto the circumferential recess 66 of the disc 31 and into the coin receiving recess 69 thereof; on rotation of the disc the coin displaces the free end 70 of the plate 71 which is fixed to the wall 26 and is normally urged toward the disc and into the aperture 73 of plate 26 by spring means 72 (see Fig. 13) to thereby permit the continued rotation of the disc. If an attempt is made to rotate the disc 31 in a counterclockwise (operating) direction (viewing the disc as shown in Fig. 3) without a coin being positioned within the recess 69, the free end 70 of plate 71 will enter the recess 69 and preclude further counterclockwise rotation of the disc. When a coin is positioned in the recess 69 continued counterclockwise rotation of the disc will present the coin as a practically unitary part of the disc to continue to cam the free end 70 of the plate 71 away from the disc on the counterclockwise rotation of the latter. The free end 70 of the plate 71 is rounded or tapered at one side, namely, the side directed toward the fin 35 and remote from the aperture 67'. Thus, the free end 70 of plate 71 is automatically cammed out of recess 69 when empty on only clockwise rotation of disc 31. On continued rotation of the handle 24 the pin 33 of the hub 17 engages the fin 35 of the cam member 15 and thereby actuates the article ejecting device as shown in Fig. 2. It will be noted from the drawings that the position of the free end 70 of the plate 71 projecting through the aperture 73 of the wall 26 is at a point laterally offset from that at which the coin receiving recess 66 is normally disposed. A second spacer plate 75 is fixed to wall 26 adjacent aperture 61' (see Fig. 11) and intermediate the plate 65 and bar 57. A third spacer plate 76 is fixed to wall member 26. Plates 75 and 76 have vertical edge portions 77 and 78 aligned with and spaced from the bar 57 to define therewith the vertical chute 58 and have arcuate portions 79 and 80 which define the arcuate chute 74. Plates 65

and 76 have angularly directed edge portions 81, 82 which define the coin discharge chute 83 into which the coin receiving recess 69 of the disc 31 empties when the disc has been rotated to the point where the arm 68 of the disc (which slides on arcuate edge 87 of plate 65 and on arcuate edge 89 of the fin 85 of plate 76) abuts the stop ledge 84 of plate 76; the disc can be rotated no further. Coin chute 83 empties into the coin box of the vending machine.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. An article ejecting device comprising a shaft, a cam member positioned on said shaft and secured against shifting motion thereon and for rotation in unison therewith, a second cam member positioned on said shaft, said cam members being provided with interengaging cam faces whereby, on rotation of the shaft, the second cam member will be shifted away from the first mentioned cam member, a slide member, a ledge member on which said slide member is positioned, said slide member ejecting articles when shifted on said ledge member, and means connecting the second cam member to said slide member to shift the latter in unison with the shifting of said second cam member on rotation of said shaft.

2. An article ejecting device comprising a cam member, means to rotate the cam member, a second cam member, said cam members being provided with interengaging cam faces whereby, on rotation of the first mentioned cam member, the cam faces will interengage and the second cam member will thereby be shifted away from the first mentioned cam member, a slide member adapted to eject articles when shifted, and means connecting the second cam member to said slide member to shift the latter in unison with the shifting of said second cam member.

3. An article ejecting device comprising a cam member, a second cam member, said cam members being provided with interengaging cam faces whereby, on rotation of the first mentioned cam member the cam faces will interengage and the second cam member will thereby be shifted away from the first mentioned cam member, a slide member adapted to eject articles when shifted, and a lever member connected to said device at one end, said slide member at the other end, and to said second cam member intermediate said ends to shift said slide member in unison with said second cam member.

4. An article ejecting device comprising a shaft, a hub member keyed to said shaft, a cam member positioned on said shaft, means to hold said cam member on said shaft against shifting movement thereon, means on said hub engaging and driving the cam member on rotation of the shaft, a second cam member on said shaft, said cam members having interengaging cam faces, a ledge member, a slide member positioned thereon and adapted, when shifted, to eject articles from said device, a fork member connected at one end to said device and at the other end to said slide member, and to said second cam member at a point intermediate said ends, to shift said slide member in unison with said second cam member.

ARMAND DE MOTT.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,923,396	Richardson	Aug. 22, 1933
2,005,097	Malkin	June 18, 1935