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COIN CONTROLLED CLUTCH

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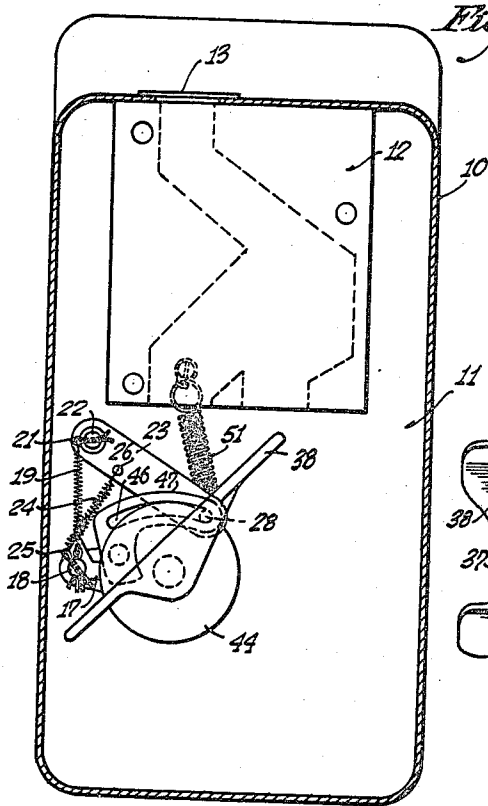
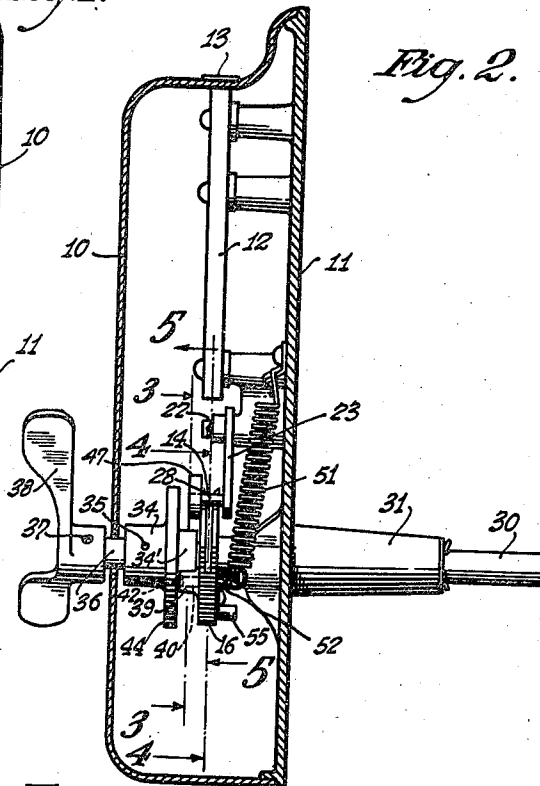
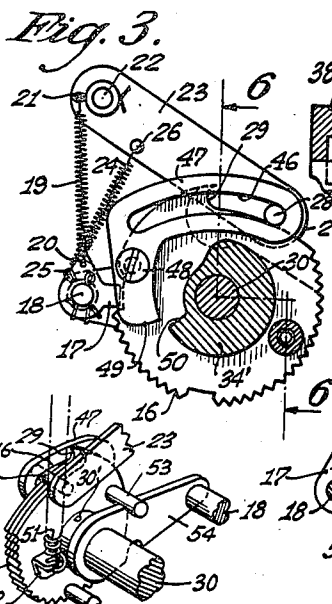
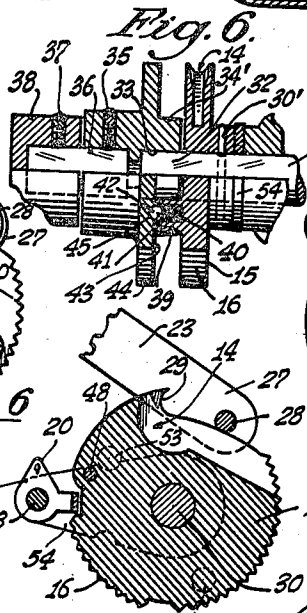
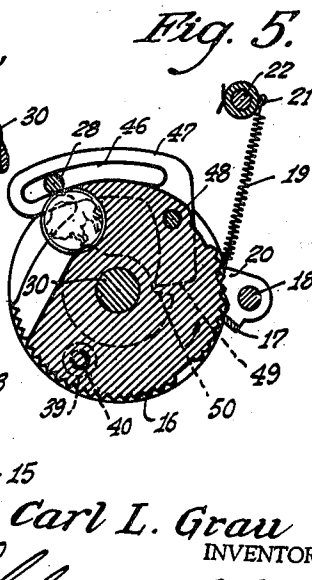
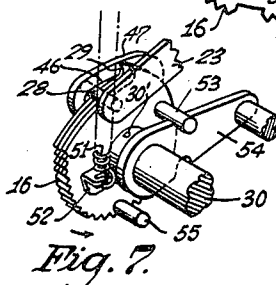


Fig. 4. 55 BY *Clarence E. Threedy*
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UNITED STATES PATENT OFFICE

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COIN CONTROLLED CLUTCH

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3 Claims. (Cl. 194—92)

This invention relates to certain novel improvements in clutch devices especially adapted for use in connection with coin-operated vending machines or the like and has for its principal object the provision of an improved construction of this character which will be highly efficient in use and economical in manufacture.

One of the principal objects of this invention is to provide a clutch of the slip-joint type wherein upon applying undue pressure or pressure greater than that required to render operative the machine by the deposit of a proper coin or token, the clutch will be automatically released, thereby preventing rupturing of the clutch or the parts which it operates, and when a proper coin or token is deposited so as to effect operation of the clutch a means will be placed into operation to assure proper operation of the clutch for the purpose of operating the vending mechanism or other mechanism with which the clutch is associated.

Other objects will appear hereinafter.

The invention consists in the novel combination and arrangement of parts to be hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawing showing the preferred form of construction, and in which:

Fig. 1 is an interior view of a coin box showing my improved invention associated therewith;

Fig. 2 is a longitudinal vertical sectional detail view of the same;

Fig. 3 is a fragmentary sectional detail view of the same taken substantially on line 3—3 of Fig. 2;

Fig. 4 is a fragmentary sectional detail view of the same taken substantially on line 4—4 of Fig. 2;

Fig. 5 is a fragmentary sectional detail view of the same taken substantially on line 5—5 of Fig. 2;

Fig. 6 is a sectional detail view of the same taken substantially on line 6—6 of Fig. 3;

Fig. 7 is a fragmentary perspective view of the same looking at the side thereof opposite to that shown in Fig. 3.

In the drawing I have illustrated my preferred form of construction. In this connection a coin box is indicated at 10. This box 10 generally includes a wall 11 which either constitutes a part of the machine to which the coin box is attached or constitutes a separate plate which in turn is attached to the machine. Within this coin box 10 is a coin detector 12 of any improved construction. This coin detector 12 constitutes no

part of the present invention and has been illustrated merely for a better understanding of the present invention. Formed in the coin box 10 is a coin slot 13 through which the coins are deposited into the coin detector. From the coin detector the coins are deposited into a receiving pocket 14. This receiving pocket 14 is formed as a part of an operating disc 15 having formed in its periphery, partially therearound, ratchet teeth 16 adapted to engage a pawl 17 pivotally supported by a stud 18 carried by the wall 11. This pawl 17 and the ratchet teeth 16 cooperate to serve the purpose of what is known as a "full stroke" device, that is, compelling the complete rotation of the disc 15 before it is capable of being returned. This pawl 17 is under the control of the spring 19, one end of which is connected to the pawl as at 20, and the opposite end to a pin 21 carried by a stud 22 secured to the wall 11. On this stud 22 is pivotally secured a latch lever 23 normally urged in one direction by a spring 24 connected at one end to a pin 25 carried by the stud 18 and connected to the latch lever 23 at 26.

This latch lever 23 at its free end 27 carries a latch pin 28 adapted to engage a notch 29 formed in the disc 15. The arrangement is such that if a coin is not deposited in the pocket 14, rotation of the disc 15 a predetermined distance will bring the latch pin 28 into engagement with the latch notch 29 and consequently prevent further rotation of the disc 15.

This disc 15 is secured to the operating shaft 30 by a pin 30' which shaft 30 is in turn connected in a well known manner to the mechanism to be operated, the manner of such connection constituting no part of the present invention. This shaft 30 extends through a bearing 31 and has the inner end portion 32 thereof disposed in a socket 33 formed in a hub 34. The hub 34 is secured by means of a set screw 35 to a stub shaft 36 in turn secured through the medium of a stud screw 37 to the handle 38 as best shown in Fig. 6. By this arrangement there is provided a hand operated shaft 36 in axial alignment with the operating shaft 30 each of which shafts are free to rotate independent of each other.

Formed on one side of the disc 15 and extending laterally therefrom is a boss 39 provided with a socket 40 in which is mounted a spring 41. This spring 41 normally bears a ball 42 against the inner peripheral wall 43 of an annular flange 44 formed on the hub 34. In this flange 43 is formed a recess 45 into which the ball 42 is adapted to be seated. The arrangement is such

that a releasable connection is maintained between the hub 34 and the disc 15 so as to permit rotating movement of the shafts 36 and 30 for a predetermined distance. This initial rotative movement of the disc 15 is essential so as to bring the notch 29 into engagement with the latch pin 28 or bring a deposited coin into engagement with the latch pin 28 to raise the latter out of alignment with the notch 29. But should the operator at the completion of rotation of the shaft 30 apply additional force upon the handle 38, such additional force will cause the ball 42 to disengage from the recess 45, and the handle 38 will turn without imparting rotation to the shaft 30.

A clutch means is provided for operatively connecting the hand operated shaft 36 to the operating shaft 30 upon the deposit of a proper coin in the coin receiving pocket 14. To this end the coupling pin 28 projects into a slot 46 formed in a coupling lever 47. This coupling lever 47 is pivoted as at 48 to the disc 15 and has an end portion 49 adapted to engage an abutment 50 formed in the portion 34' of the hub 34. The arrangement is such that when the latch pin 28 is elevated by the coin from engagement with the latch notch 29, such elevation of the pin will in turn pivot the coupling lever 47 to dispose the end 49 thereof in the path of the abutment 50, and thereby a positive connection will result between the handle 38 and the shaft 30 whereby upon continued operation of the handle 38 the shaft 30 will be positively rotated, and as long at this end 49 is in engagement with the abutment 50 the ball 42 cannot be disengaged from the recess 45.

While it is old in the art to provide slip clutches, such as function to prevent excess pressure from being applied to the operative parts of a machine when a coin has not been deposited in the machine, such slip clutches are not effective for operating purposes because of the lack of some means of providing a positive connection between the operating shaft and the handle when a proper coin is in the coin pocket. Without such a means, when the handle is turned should it require a greater pressure on the handle to effect operation of the shaft 30, there is a likelihood of the clutch being rendered inoperative to the extent that the clutch will slip and thereby not result in the operation of the operating shaft of the machine. By the employment of the coupling lever 47 such cannot take place in the use of my slip clutch.

The disc 15 is normally urged into initial or coin receiving position as shown in Fig. 1, by a spring 51 having one end anchored to the wall 11 (Fig. 2) and its free end attached to a clip 52 carried by and rotatable with the disc 15 (Fig. 7). A stop pin 53 extends laterally from the disc 15 toward the wall 11 and is adapted to engage a fixed plate 54 which is carried at its ends on the shaft 30 and the stud 18 and spans the space between them to provide an abutment for the stop pin 53. By this arrangement the spring 51 will urge the disc into initial position with the stop pin 53 bearing against the top edge of the plate 54. A second stop pin 55 is likewise carried by the disc 15 similar to the pin 53 but spaced circumferentially therefrom such as to permit a rotative movement of the disc 15 (clockwise Fig. 4) and then to limit such rotative movement by engagement of the pin 55 with the lower edge of the plate 54.

Breakage due to constant abuse, which hand-

operated lever controls are exposed to, is greatly minimized by this invention and yet there is always a positive driving connection maintained as and when the control lever is properly operated to receive a coin.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

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

1. In a device of the class described, an operating shaft, a member fixed to said shaft and having a coin pocket and a latch notch formed therein, a latch member adapted to engage said notch when no coin is in said pocket but adapted to be engaged by a coin and pivoted to a position from engagement with said notch, a second shaft supported in axial alignment with said operating shaft and having a handle thereon, a hub member carried by said second shaft for rotation therewith and having an abutment formed thereon, a coupling finger carried by the first member and normally disposed out of engagement with said abutment and adapted to engage the abutment of said hub member, spring detent means for providing an operating releasable connection between the hub member and said first named member when the latter is initially rotated to bring said coin pocket opposite said latch member and to permit camming action of the latter by a coin as aforesaid and adapted to release said hub member for rotative movement independent of said first named member when said latch member engages said notch to prevent further rotation of said first named member, and means operatively connecting said latch member and said coupling finger, whereby when a coin is in said pocket said latch finger will be moved into engagement with said abutment when the member having the coin pocket is rotated.

2. In a device of the class described including a frame, a hand operated drive shaft and a driven shaft supported in axial alignment in said frame, a coin carrier fixed to said driven shaft and having a coin pocket and latch notch formed therein, a latch lever pivotally arranged on said frame and normally disposed to engage said notch upon rotation of said carrier a predetermined distance and adapted to be engaged by a coin disposed in said pocket for pivotal movement out of notch engaging position to permit continued rotative movement of said carrier, a hub member carried by said drive shaft for rotative movement therewith and having an abutment formed thereon, a spring urged detent means providing a releasable connection between said coin carrier and said hub member and adapted to be released when excessive pressure is applied to said hand operated drive shaft and no coin is deposited in said coin pocket, a coupling lever pivotally mounted on said coin carrier and adapted, during rotation of said carrier a predetermined distance as aforesaid, to be pivoted into engagement with said abutment, means operatively connecting said latch lever with said coupling lever whereby when a coin is deposited in said coin pocket and the drive shaft rotated said predeter-

mined distance said coupling lever will pivot into engagement with said abutment.

3. In a device of the class described, a coin box, an operating shaft having a portion entering said box, a latch wheel having a coin pocket and a notched peripheral portion adjacent thereto and being fixed to said shaft, a drive shaft and a handle for rotating the same by hand, a hub bearing member mounted on said drive shaft and freely engaging an end portion of said operating shaft, a latch member pivotally supported on a wall of said coin box and having a pin member normally bearing against the periphery of said latch wheel to engage said notched portion when no coin is in the pocket but adapted to be elevated to a position out of engagement with said latch wheel and the notched portion thereof by a coin in said pocket when said drive shaft is rotated by hand, spring means providing releasable connection between said latch wheel

and said hub bearing member and adapted to transmit an initial rotative movement to said latch wheel from said hub bearing member on said drive shaft and adapted to permit continued movement of said hub bearing member and said drive shaft independently of said latch wheel when said latch member engages said notched portion to limit rotative movement of said latch wheel, the combination of a clutch means for coupling said latch wheel with said hub bearing member, said means comprising a coupling finger having an arcuated slot formed therein through which said pin projects, means pivotally connecting the coupling finger to said latch wheel, a coupling abutment member formed on said hub bearing member, said coupling finger being adapted to be pivoted by said pin, when the latter is elevated by a coin in said pocket to engage the coupling abutment on said hub.

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