United States Patent [19]

Voegeli

[11] **3,760,923**

[45] **Sept. 25, 1973**

[54] **READILY ADJUSTABLE COIN-OPERATED MECHANISM**

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[52] **U.S. Cl.** ..... **194/1 G**
[51] **Int. Cl.** **G07f 5/08**
[58] **Field of Search** ..... 194/71, 79, 88, 2, 194/DIG. 2, 54, 59, 92, 93, 1 G

[56] **References Cited**

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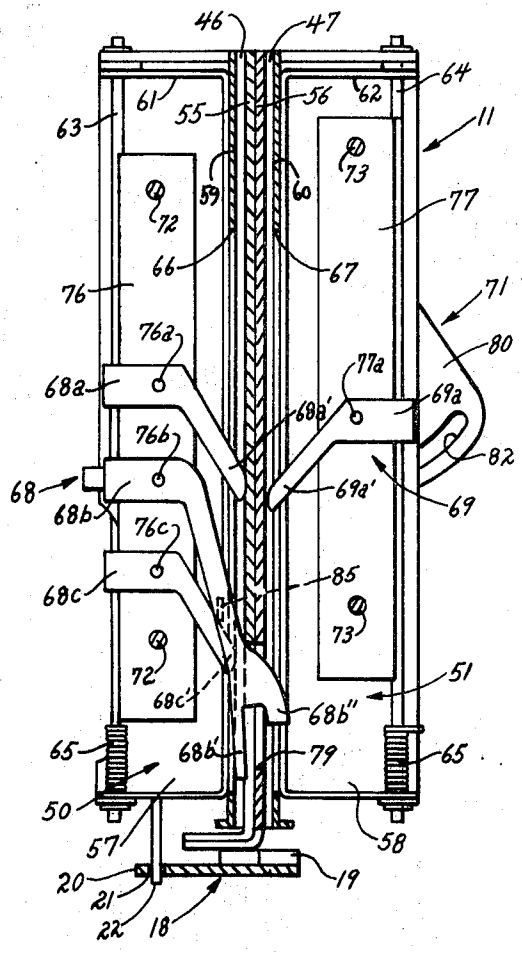
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Primary Examiner—Stanley H. Tollberg
Attorney—Harry B. O'Donnell, III

[57] **ABSTRACT**

This invention provides a coin-operated mechanism that is particularly adapted for controlling the operation of the latch of a machine for vending newspapers and the like and is readily adjustable for operation at various coin combinations totaling different prices. Basically, the mechanism of the present invention comprises: frame means; at least one generally vertical coin chute provided adjacent the frame means; pawl carrying means mounted on the frame means for generally vertical movement with respect to the frame means and coin chute; and drive means for readily causing generally vertical movement of the pawl carrying means between first and second positions as related to the frame means and coin chute.

8 Claims, 5 Drawing Figures



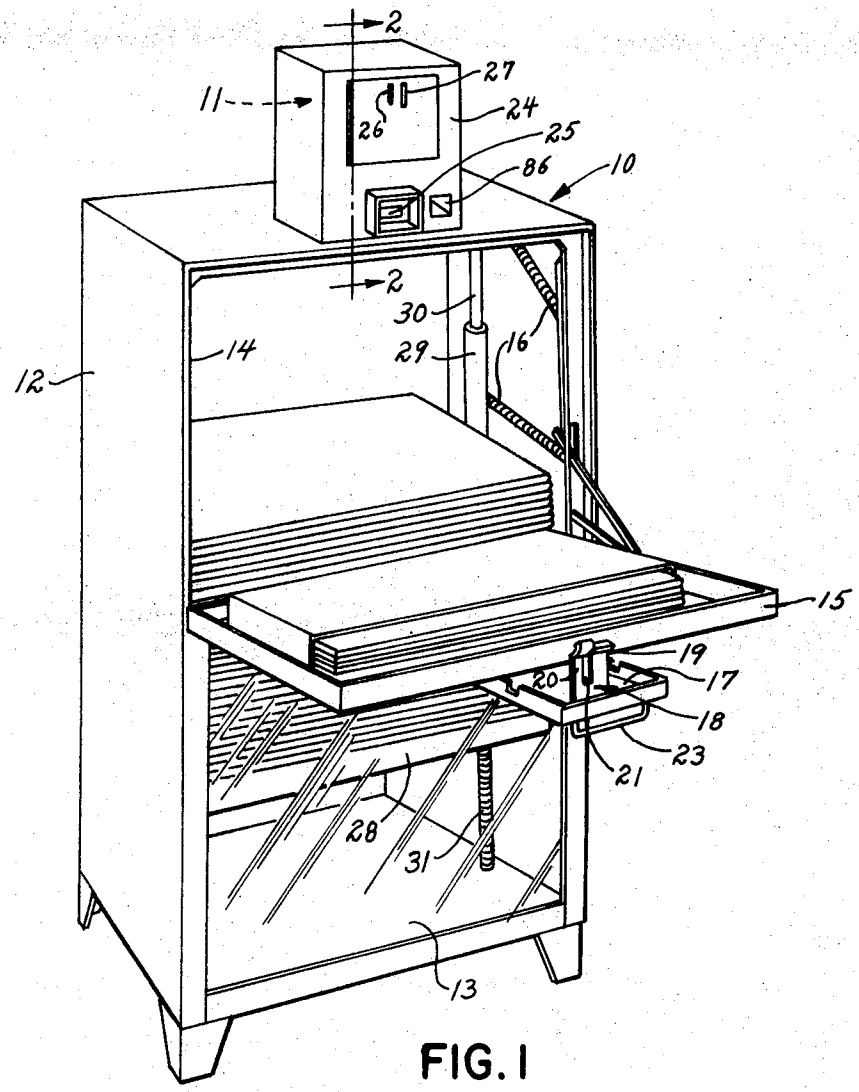


FIG. 1

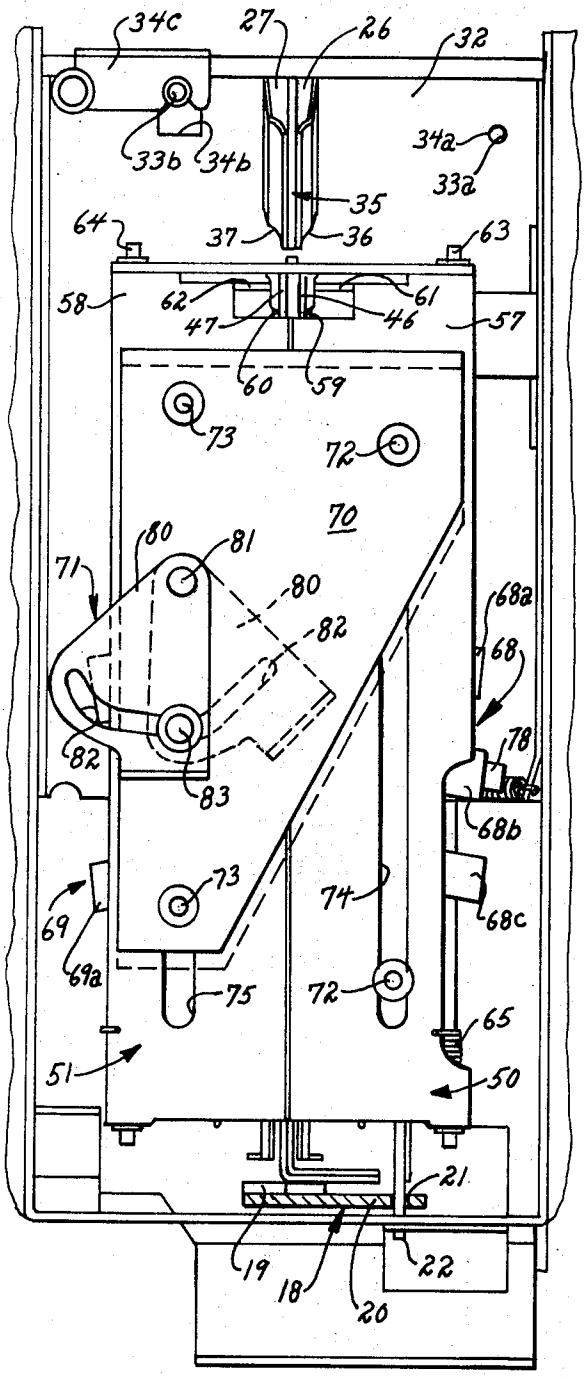

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68a
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FIG. 3

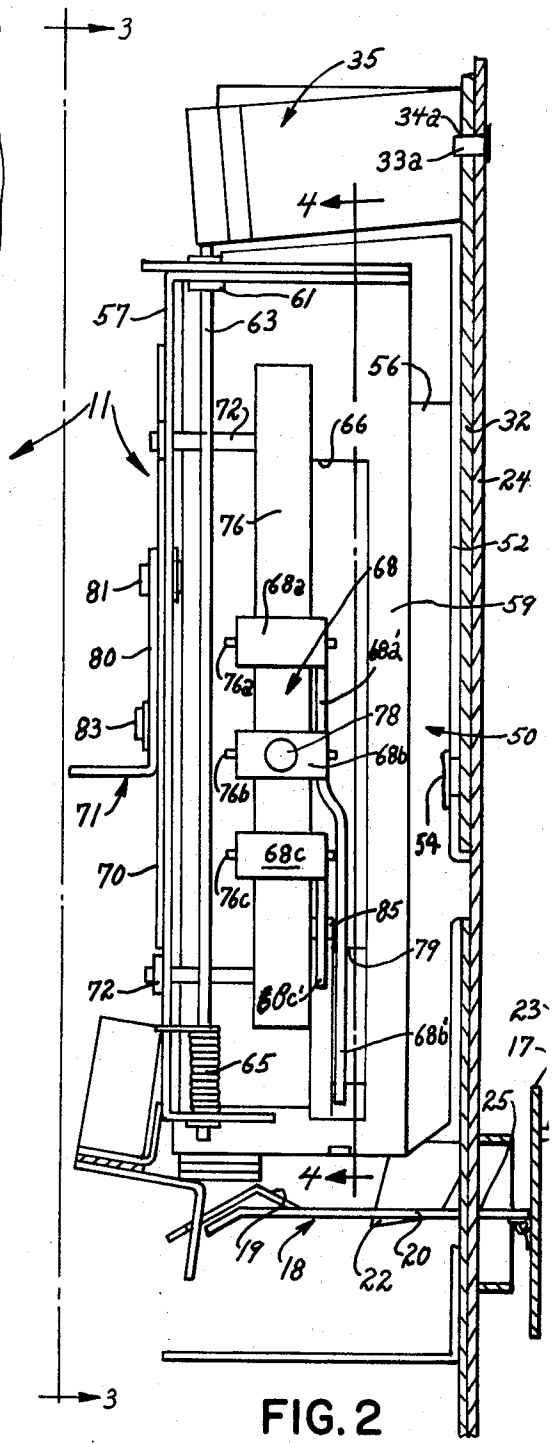

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33a
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11
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24
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52
81
68a
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68a'
76a
78
83
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68b
76b
71
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68c
70
76c
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68c'
68b'
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FIG. 2

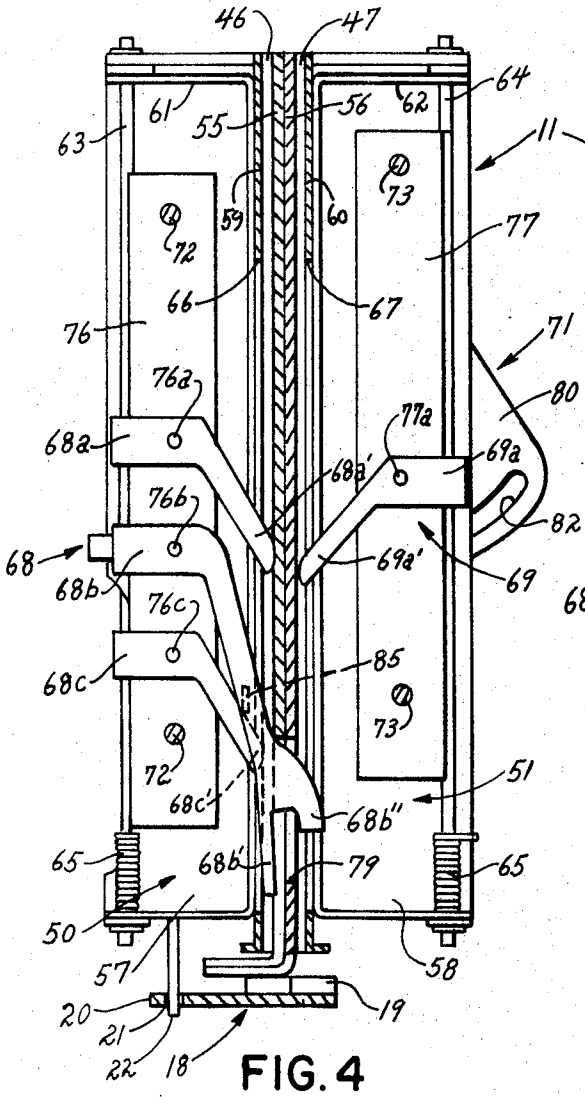

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68a'
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69a'
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FIG. 4

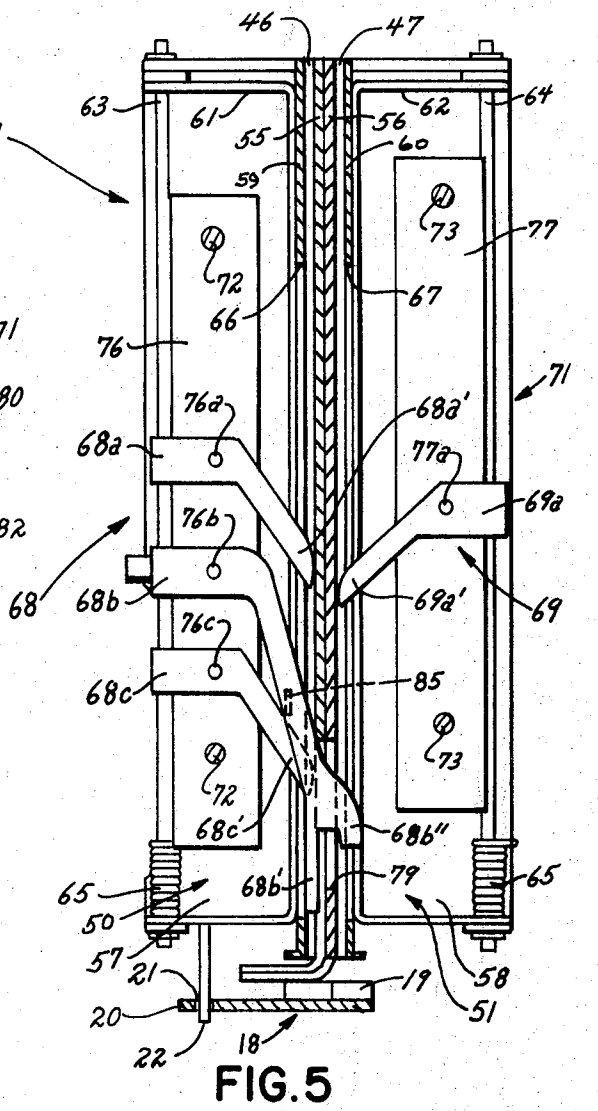

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77a
69a
76b
68
68b
69a'
69
76c
68c
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73
72
68c'
68b''
65
68b'
79
65
50
57
21
19
58
51
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22
18

FIG. 5

mechanism 11 of the present invention is housed within the coin box 24 and functions to retain the latch 18 in its normal spring biased locked position (FIG. 2) to hold the access door 15 in its closed position (FIG. 2) until the proper coin or combination of coins is deposited in the slots 26 and/or 27. Operation of the mechanism 11 to release or unlock the latch 18 and permit movement of the access door 15 to its open position (FIG. 1) wil be described in detail hereinafter.

As best illustrated in FIG. 1, newspapers are supported generally horizontally within the cabinet 12 on a spring-loaded, elevator-type shelf 28 which is effective to maintain the papers at the height of the cabinet access opening 14. The shelf 28 includes a pair of upwardly extending tubular members 29 (only one of which is shown) which are loosely mounted around a pair of vertical guide rods 30 that extend generally vertically between the top and bottom of the cabinet 12. The upper ends of the tubular members 29 closely surround the guide rods 30. A coil spring 31 surrounds each guide rod 30 and has its lower end engaged with the bottom of the cabinet 12 and its upper end telescopically received within and abutting against the interior of one of the tubular members 29 to thus bias the shelf 28 upwardly toward the cabinet access opening 14 and away from the bottom of the cabinet 12.

With this arrangement, as the top paper or papers are removed from a stack on the shelf 28, the shelf 28 will be raised by the upward force created by the suppressed springs 31 to thereby maintain the papers at the height of the access opening 14.

Referring now to FIGS. 2–5, the improved coin-operated mechanism 11 of the present invention includes a front base plate 32 which is removably connected to a pair of pins 33*a* and 33*b* which extend rearwardly from the interior of the upper portion of the front wall of the coin collecting box 24. As best shown in FIG. 3, one of the upper ends of the base plate 32 is provided with an aperture 34*a* that is engaged over one of the pins 33*a*, while the opposite upper end of the base plate 32 is provided with a notch 34*b* which receives the other pin 33*b*, and a clip 34*c* is pivotally mounted on the base plate 32 adjacent the notch 34*b* to releasably engage pin 33*b* within the notch 34*b*.

A coin-guide piece 35 is connected to the upper central portion of the base plate 32 and defines a pair of coin guide slots 36 and 37 which are respectively aligned with the coin receiving slots 26 and 27 in the coin box 24. The coin guide slots 36 and 37 receive the deposited coins and respectively direct them downwardly into a pair of aligned generally vertical coin chutes 46 and 47 of the mechanism 11, with one of the chutes 46 being particularly adapted to receive U. S. dime coins and the other of the chutes 47 being particularly adapted to receive both U. S. nickel and quarter coins.

The coin mechanism 11 includes frame means formed by a pair of generally vertically arranged bracket members 50 and 51 each having a front flange 52 connected via means, such as pin 54, which extend rearwardly from the base plate 32. The bracket members 50 and 51 further include juxtaposed central, web portions 55 and 56, respectively, and rear flanges 57 and 58. The two coin chutes 46 and 47 are respectively formed between the web portions 55 and 56 and of the brackets 50 and 51 and channel members 59 and 60, which, in turn, are respectively fastened to links 61 and 62.

The links 61 and 62 are respectively connected by vertical hinges 63 and 64 to the rear bracket flanges 57 and 58. Springs 65 are provided at the lower ends of the hinges 63 and 64 to normally bias the channels 59 and 60 into respective engagement with the web portions 55 and 56 of the brackets 50 and 51 and keep the coin chutes 46 and 47 closed. The channels 59 and 60 are respectively provided with elongated slots 66 and 67 through which appropriate pawl fingers from pawl assemblies 68 and 69 may extend into the coin chutes 47 and 48 to prevent the proper coin or combinatin of coins once deposited in the chutes 46 and 47 from again retracting upwardly in the chutes 46 and 47.

A proper coin or combination of coins resting on the latch 18 beneath the coin chutes 46 and 47 and stopped by appropriate pawls of the pawl assemblies 68 and 69 against upward movement in the coin chutes 46 and 47 will act against the raised cam surface 19 of the latch 18 and cause the latch 18 to pivot (counterclockwise as viewed in FIG 2) from its normal upwardly spring-biased locked position when the access door 15 is pulled outwardly and downwardly by one grasping the handle 23. Consequently, as the latch 18 is cammed downwardly by the coins, the latch slot 21 will no longer remain in position to receive the stop abutment 22, which is fixed to the lower rear surface of the front wall coin box 24, and the locking section 20 of the latch 18 will then clear the stop abutment 22 and permit the access door 15 to be pivoted freely to its open position (FIG. 1). When this occurs, the coins in the chutes 46 and 47 will drop to the bottom of the coin box 24.

In particular accordance with the present invention, the pawl assemblies 68 and 69 are provided with pawl carrying means comprising a bracket 70 mounted on the frame means 50, 51 for generally vertical movement with respect thereto by drive means 71 between first and second positions as related to the frame means 50, 51 and the coin chutes 46 and 47. As illustrated, the movable pawl carrying means bracket 70 is respectively mounted generally vertically to the rear surfaces of the rear flanges 57 and 58 of the stationary frame means brackets 50 and 51 by pins 72 and 73. These pins 72 and 73 have their rear ends, which respectively pass through elongate vertical slots 74 and 75 respectively provided in the frame means rear flanges 57 and 58, fastened to the movable bracket 70 and have their front ends respectively fastened to generally vertically arranged means 76 and 77 for supporting at least one pawl for pivotal movement about a generally horizontal axis.

As best shown in FIGS. 4 and 5, a first one of the pawl assemblies 68 has its movable pawl supporting means 76 mounted adjacent a first one of the coin chutes 46, which is particularly adapted to receive U. S. dime coins, whereas the second one of the pawl assemblies 69 has its movable pawl supporting means 77 mounted adjacent the second one of the coin chutes 47, which is particularly adapted to receive both U. S. nickel and quarter coins.

The first pawl supporting means 76 of the movable pawl carrying means 70, 72, 73, 76 and 77 respectively supports three pawls 68*a*, 68*b* and 68*c* for pivotal movement about three vertically spaced, generally horizontal axles 76*a*, 76*b* and 76*c*. These three pawls 68*a*, 68*b* and 68*c* are constructed and arranged such that

READILY ADJUSTABLE COIN-OPERATED MECHANISM

BACKGROUND OF THE INVENTION

This invention relates to a coin-operated mechanism and, more particularly, to such a mechanism that is particularly adapted for controlling the operation of the latch of a machine for vending newspapers and the like and is readily adjustable for operating at various coin combinations totaling different prices.

Readily adjustable mechanisms of this general type are presently available and are particularly useful when one desires to employ a single machine to vend both daily and Sunday newspapers. One particularly successful form of these prior-art mechanisms is described and claimed in my co-pending U. S. Pat. application Ser. No. 42,750 , filed June 2, 1970. While this prior-art form of mechanism has met with considerable success, it requires a rather complex and expensive construction including a pawl means mounted on means that are fixed with respect to a frame and a coin chute mounted on it. And, in order to adjust the operation of the mechanism for various coin combinations, such prior-art forms have required deflector means movable with respect to the frame and chute to move the pawls, which have been mounted on stationary pawl carrying means, into and out of the coin chute.

The present invention provides an improved mechanism utilizing novel structure which is greatly simplified in construction and operation and is yet equal or superior in performance to the aforedescribed more complex and expensive prior-art mechanism.

SUMMARY OF THE INVENTION

This invention provides a coin-operated mechanism that is particularly adapted for controlling the operation of the latch of a machine for vending newspapers and the like and is readily adjustable for operation at various coin combinations totaling different prices. Basically, the mechanism of the present invention comprises: frame means; at least one generally vertical coin chute provided adjacent the frame means; pawl carrying means mounted on the frame means for generally vertical movement with respect to the frame means and coin chute; and drive means for readily causing generally vertical movement of the pawl carrying means between first and second positions as related to the frame means and coin chute.

Preferably, the pawl carrying means includes a bracket which is mounted on the frame means for generally vertical movement relative thereto and the drive means comprises cam means pivotally mounted on the frame means and engageable with cam follower means carried by the bracket, which also carries means for supporting at least one pawl for pivotal movement about a generally horizontal axis with respect to the coin chute.

It is further preferred that two coin chutes be provided on the frame means and that deflector means be fixed on the frame means adjacent one of the two coin chutes to engage a pawl carried by the movable pawl carrying means and to displace the pawl from that one coin chute when the pawl carrying means is located in one of its two positions, but to release the pawl and allow its entry into that one chute when the pawl carrying means is located in the other of its two positions.

It is still further preferred that one of the two coin chutes be particularly adapted to receive U. S. dime coins while the second coin chute be particularly adapted to receive U. S. nickel and quarter coins and that the two positions of the movable pawl carrying means be spaced apart from one another by at least 0.25 inches.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention is illustrated in the accompanying drawings, wherein:

FIG. 1 is a somewhat schematic elevational perspective view of a vending machine incorporating a presently preferred form of the coin-operated mechanism of the present invention;

FIG. 2 is a greatly enlarged framgentary sectional view taken generally along line 2—2 of FIG. 1 but illustrating the vending machine door and its latch in their closed and locked positions;

FIG.3 is a fragmentary view taken along line 3—3 of FIG. 2;

FIG. 4 is a fragmentary sectional view taken along line 4—4 of FIG. 2 and illustrating the coin-operated mechanism having its movable pawl carrying means located by its drive means in one position with respect to its stationary frame and coin chutes (the up or "Sunday" position shown in solid lines in FIG. 3); and

FIG. 5 is a view similar to FIG. 4 but illustrating the coin-operated mechanism having its movable pawl carrying means located by its drive means in another position with respect to its stationary frame and coin chutes (the down or "daily" position shown in shadow lines in FIG. 3).

DETAILED DESCRIPTION

Referring now to the drawings and more particularly to FIGS. 1 and 2 thereof, there is illustrated a newspaper vending machine **10** incorporating a presently preferred form of improved coin-operated mechanism **11** that is provided in accordance with the present invention.

The vending machine **10** includes a generally vertical arranged cabinet **12.** The cabinet **12** has its lower front portion closed by a transparent panel **13.** However, one may gain access to the interior of the cabinet **12** through an opening **14** that is provided in its upper front portion and is normally closed by a door **15.**

The access door **15** has its lower end hinged to the front of the cabinet **12** for pivotal movement berween its generally horizontal open position (FIG. 1) and its generally vertical closed position (FIG. 2). The door **15** is normally biased to its closed position (FIG. 2) by springs **16** or the like (FIG. 1) which are connected between it and the interior of the cabinet **12.**

The upper end of the access door **15** centrally mounts a plate **17** on the upper inside of which a pivotal latch **18** is mounted. The latch **18** includes cam section **19** and a locking section **20,** which has a slot **21** that receives a stop member **22** when the latch **18** is in its closed and locked position (FIG. 2). A handle **23** is connected to the outside of the door plate **17.**

A coin collecting box **24** is mounted atop the cabinet **12** and includes a slot **25** which receives the latch **18.** A pair of coin deposit slots **26** and **27** are provided in the coin box **24,** with one of the slots **26** accepting only U. S. dime coins and the other of the slots **27** accepting both U. S. nickel and quarter coins. The coin-operated

each has a lower portion, including at least one finger 68a', 68b' and 68c', respectively, which is normally biased by gravity or by an auxiliary weight, such as the weight 78, to enter into the adjacent first coin chute 46 through the slot 66 in the channel 59. As further shown in FIGS. 4 and 5, the lower portion of the vertically intermediately pivoted one of these three pawls 68b is also provided with an additional finger 68b'' wh1ch is normally biased by gravity and the auxiliary weight 78 to enter the second coin chute 47 through an elongate aperture 79 that pierces the lower parts of both of the juxtaposed web portions 55 and 56 of the frame means 50 and 51. This two-fingered pawl 68b is hereinafter referred to as the "crossover pawl."

The second pawl supporting means 77 of the movable pawl carrying means 70, 72, 73, 76 and 77 supports only a single pawl 69a that is mounted for pivotal movement about a generally horizonal axle 77a. This single pawl has a lower portion that is provided with a single finger 69a, which is normally biased by gravity to enter into the adjacent second coin chute 47 through the slot 67 in the channel 60 at a point vertically spaced above the second finger 68b'' of the crossover pawl 68b.

As further illustrated, the drive means 71 for readily causing generally vertical movement of the pawl carrying means 70, 72, 76 and 77 between a first position (such as the down or "daily" shown in FIG. 5) and a second position (such as the up or the "Sunday" position shown in FIG. 4) as related to the stationary frame means 50, 51 and coin chutes 46 and 47, comprises cam means. And, these cam means 71 preferably include a generally vertically arranged cam member 80 which is mounted on the frame means 51 for pivotal movement about a generally horizontal axle that is defined by a pin 81 that passes through an aperture in the movable bracket 70 and also through the generally vertically arranged slot 75 in the frame means 51 and is connected thereto for generally vertical sliding movement with respect to the frame means 50, 51. The cam member 81 further includes a generally U-shaped cam slot 82 which receives a cam follower 83 that is fixed to the movable pawl carrying means bracket 70.

As best shown in FIGS. 3–5, the novel coin-operated mechanism 11 of the present invention can be quickly converted from operation by a coin or coins corresponding to the price of a daily newspaper to operation by another coin or combination of coins corresponding to the price of a Sunday newspaper through manual operation of the drive means 71 by merely pivoting its cam member 80 about its axle 81 (clockwise as shown in FIG. 3 from the position shown in the shadow lines to the position shown in the solid lines). Such movement of the cam member 80 will cause the cam member slot 82 to move the cam follower 83 and the movable bracket 70 generally vertically between their positions shown in shadow lines and their positions shown in solid lines in FIG. 3. This, in turn, simultaneously causes generally vertical movement by an identical distance of the pawl supporting means 76 and 77 and the pawls 68a, 68b, 68c and 69a carried thereby between their down or "daily" position shown in FIG. 5 and their up or "Sunday" position illustrated in FIG. 4.

Preferably, the cam member 80, cam slot 82 and cam follower 83 are constructed such that operation of the drive means 71 between its two positions (respectively shown in shadow lines and in solid lines in FIG. 3) will cause the two positions of the movable pawl carrying means 70, 72, 73, 76 and 77. (respectively shown in FIGS. 5 and 4) to be vertically spaced apart by a distance of at least 0.125 inches, the nominal diametric difference between a U. S. nickel coin and a U. S. quarter coin.

In further accordance with the present invention, and as best shown in FIGS. 2, 4 and 5, deflector means, such as a generally horizontally arranged rearwardly projecting tab 85, is fixed adjacent the first or "dime" coin chute 46 to engage the finger 68c' of the vertically lower pivoted one 68c of the three pawls 68a, 68b and 68c carried by the pawl supporting means 76 of the movable pawl carrying means 70, 72, 73, 76 and 77 and to displace the pawl 68c from that coin chute 46 when the movable pawl carrying means 70, 72, 73, 76 and 77 is located in one of its two positions (the up or "Sunday" position as shown in FIG. 4) but to release the pawl 68c and allow its entry into that coin chute 46 when the pawl carrying means 70, 72, 73, 76 and 77 is located in the other of its two positions (the down or "daily" position as shown in FIG. 5).

The illustrated form of the novel coin-operated mechanism 11 of the present invention is particularly suited for use with a vending machine, such as the machine 10, to vend either daily newspapers having a 15 cent U. S. selling price or Sunday newspapers havinga 35 cent U. S. selling price.

To vend daily newspapers having a 15 cent U. S. selling price, the mechanism 10 is conditioned as shown in FIGS. 5 and in shadow lines in FIG. 3, with the movable pawl carrying means 70, 72, 73, 76 and 77 being located in their down or "daily" positions. In this condition, the pawls 68a, 68b, 68c and 69a of the two pawl assemblies 68 and 69 will be located in their down or "daily" positions as best shown in FIG. 5. And, it will then be possible to unlock the latch 18 by depositing any one of the three following combinations of U. S. coins into the coin chutes 46 and 47 via slots 26 and 27; (a) One dime and one nickel; (b) three nickels; or (c) two dimes and pulling on the door handle 23 (FIGS. 1 and 2). With the first or (a) combination of these "daily" coin combinations (one dime plus one nickel), the dime will be trapped in the first or "dime" coin chute 46 between the latch cam section 19 and the first finger 68b' of the crossover pawl 68b, while the nickel will be trapped in the second or "nickel-quarter" coin chute 47 between the latch cam section 19 and the second finger 68b'' of the crossover pawl 68b.

With the second or (b) combination of these "daily" coin combinations (three nickels), the second finger 68b'' of the crossover pawl 68b will be pivoted (clockwise as shown in FIG. 5) about its axle 76b and displaced from the second or "nickel-quarter" coin chute 47 by the second nickel and the three nickels will then be trapped in the second or "nickel-quarter" coin chute 47 between the latch cam section 19 and the single finger 68a' of the single pawl 69a that is carried by the second pawl supporting means 77.

And, with the third or (c) combination of these "daily" coin combinations (two dimes), the two dimes will be trapped in the first or "dime" coin chute 46 between the latch cam section 19 and the finger 68c' of the vertically lowermost pivoted one 68c of the three pawls 68a, 68b and 68c carried by the first pawl supporting means 76.

To vend Sunday papers having a 35 cent U. S. selling price, the mechanism **10** is conditioned as shown in FIG. 4 and in solid lines in FIG. 3 through pivotal movement of the cam member **80** of the drive means **71**, as previously described above, to locate the movable pawl carrying means **70, 72, 73, 76** and **77** in their up or "Sunday" positions. In this condition, the pawls **68***a*, **68***b*, **68***c* and **69***a* of the two pawl assemblies **68** and **69** wll be located in their up or "Sunday" positions as best shown in FIG. **4**. And, it will then be possible to unlock the latch **18** by depositing any one of the following three coin combinations of U. S. coins into the coin chutes **46** and **47** via the slots **26** and **27**; (d) one dime and one quarter; (e) one quarter and two nickels; or (f) four dimes and pulling on the door handle **23** (FIGS. **1** and **2**).

With the first or (d) combination of these "Sunday" coin combinations (one dime plus one quarter), the dime will be trapped in the first or "dime" coin chute **46** between the latch cam section **19** and first finger **68***b'* of the crossover pawl **68***b*, while the quarter will be trapped in the second or (nickel-quarter) coin chute **47** between the latch cam section **19** and the second finger **68***b''* of the crossover pawl **68***b*.

With the second or (e) combination of these "Sunday" coin combinations (one quarter and two nickels), the quarter and the two nickels will be trapped in the second or "nickel-quarter" coin chute **47** between the latch cam section **19** and the single finger **69***a'* of the single pawl **69***a* that is carried by the second pawl spporting means **77**.

And, with the third or (f) combination of these "Sunday" coin combinations (four dimes), the finger **68***c'* of the vertically lowermost pivoted one **68***c* of the three pawls **68***a*, **68***b* and **68***c* carried by the first pawl supporting means **76** will be displaced from the first or "dime" coin chute **46** by the fixed deflector means tab **85**, and the four dimes will be trapped in the first or "dime" coin chute **46** between the latch cam section **19** and the finger **68***a'* of the uppermost pivoted one **68***a* of the three cams **68***a*, **68***b* and **68***c* that are carried by the first pawl supporting means **76**.

In utilizing each of the aforedescribed six coin combinations with the novel mechanism **11** of the present invention, it should, of course, be understood the coins will be dropped by gravity into the bottom of the coin collecting box **24** following pulling on the door handle **23** (FIGS. **1** and **2**) to cause pivotal movement of the latch **18** to its unlocked position and further movement of the door **15** to its open position (FIG. **1**) removing the latch **18** from the latch receiving slot **25** of the coin collecting box **24**.

It should be further understood that, while not illustrated in detail in the present drawings, the mechanism **11** of the present invention is preferably provided with improper and/or bent coin release means generally similar to those described in detail in my aforementioned co-pending U. S. Pat. application, which can be manually operated by an unshown lever to clear the mechanism **11** and return such coins to the machine operator via a coin return chute **86** (FIG. **1**).

It should be apparent that while there has been described what is presently considered to be a preferred form of the present invention in accordance with the Patent Statutes, changes may be made in the disclosed apparatus without departing from the true spirit in scope of this invention. It is, therefore, intended that the appended claims shall cover such modifications and applications that may not depart from the true spirit and scope of the present invention.

What is claimed is:

1. A coin-operated mechanism comprising:

a. frame means;

b. at least one generally vertical coin chute provided adjacent said frame means;

c. pawl carrying means mounted on said frame for generally vertical movement with respect to said frame means and coin chute; and

d. drive means comprising cam means for readily causing generally vertical movement of said pawl carrying means between first and second positions as related to said frame means and coin chute.

2. The invention of claim **1**, wherein said first and second positions are spaced apart by at least 0.125 inches.

3. The invention of claim **1**, wherein said mechanism is particularly adapted for use with newspaper vending machines to vend daily papers when said pawl carrying means is located in one of said positions and to vend Sunday papers when said pawl carrying means is located in the other of said positions.

4. The invention of claim **1**, further including deflector means fixed on said frame means adjacent said coin chute to engage a pawl carried by said pawl carrying means and displace said pawl from said chute when said pawl carrying means is located in one of said positions, but to release said pawl and allow its entry into said chute when said pawl carrying means is located in the other of said positions.

5. The invention of claim **4**, wherein at least two generally vertical coin chutes are provided on said frame means.

6. The invention of claim **5**, wherein a first of said coin chutes is particularly adapted to receive U. S. dime coins and a second of said chutes is particularly adapted to receive U. S. nickel and quarter coins.

7. The invention of claim **1**, wherein:

a. said pawl carrying means comprises a bracket that is mounted on said frame means for generally vertical movement relative thereto by said drive means and

b. said bracket has connected to it means for supporting at least one pawl for pivotal movement about a generally horizontal axis.

8. The invention of claim **7**, wherein said drive means comprises cam means pivotally mounted on said frame means and engageable with cam follower means carried by said bracket.

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