

[54] COIN APPARATUS

[75] Inventors: Harry C. Haeusser, St. Louis County; Barry L. Smith, Florissant, both of Mo.

[73] Assignee: UMC Industries, Inc., St. Louis, Mo.

[22] Filed: July 1, 1970

[21] Appl. No.: 51,570

[52] U.S. Cl. 194/1 G, 194/9 R, 194/DIG. 2

[51] Int. Cl. G07f 15/08

[58] Field of Search 194/1, 2, 3, 1 G, 1 L, 1 M, 194/1 Q, DIG. 21, DIG. 22, DIG. 23, 9 T, 19, 45, 9, 10

Primary Examiner—Robert B. Reeves
Assistant Examiner—Thomas E. Kocovsky
Attorney, Agent, or Firm—Koenig, Senninger, Powers & Leavitt

[57] ABSTRACT

Conversion of a coin mechanism which, per se, is limited to handling nickels, dimes and quarters, and limited to controlling vending at 5-cent prices (i.e., 10, 15, 20 cents etc.), so that it may handle pennies and control vending at 1-cent prices (i.e., 11, 12, 13, 14, 16, 17 cents etc.). The conversion involves the provision of means for actuating the credit register of the coin mechanism through its basic 5-cent interval in response to deposit of a number of pennies corresponding to a predetermined 1-cent price minus the five-cent price next below (e.g., two pennies in the case of a price of 12 cents, three pennies in the case of a price of 13 cents), so that, by setting the coin mechanism at the 5-cent price next above (e.g., 15 cents in the case of a price of 12 or 13 cents), items may be vended at the predetermined penny price due to the registration of 5 cents by the credit register in response to the deposit of an amount equal to the 5-cent price next below (e.g., 10 cents) plus said number of pennies.

[56] References Cited

UNITED STATES PATENTS

1,322,450	11/1919	Jaeger.....	194/DIG. 2
1,327,678	1/1920	Larsen.....	194/45 X
2,254,460	9/1941	Toce et al.....	194/45
2,638,198	5/1953	Wellstein.....	194/DIG. 2
3,028,940	4/1962	Holstein et al.....	194/19
3,165,185	1/1965	Moore.....	194/9 T
537,369	4/1895	Tomblin.....	194/DIG. 2
1,562,178	11/1925	McCormick.....	194/DIG. 3
735,505	8/1903	Haskins.....	194/DIG. 22
2,329,926	9/1943	Michaels.....	194/DIG. 22
2,591,402	4/1952	Campbell.....	194/DIG. 22

FOREIGN PATENTS OR APPLICATIONS

967,939	8/1964	Great Britain.....	194/DIG. 2
---------	--------	--------------------	------------

4 Claims, 8 Drawing Figures

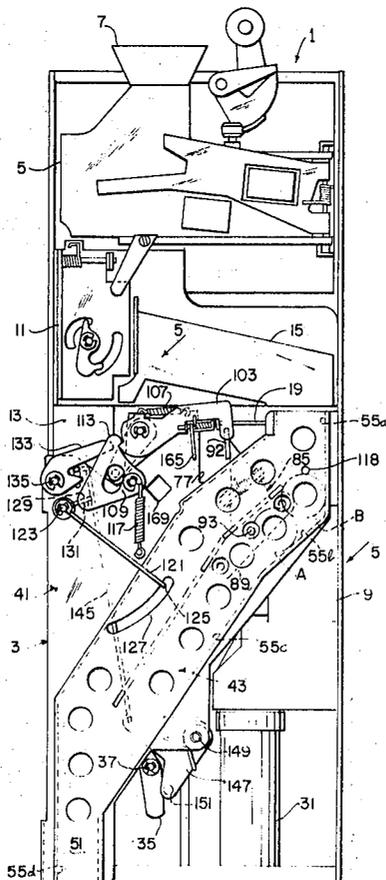
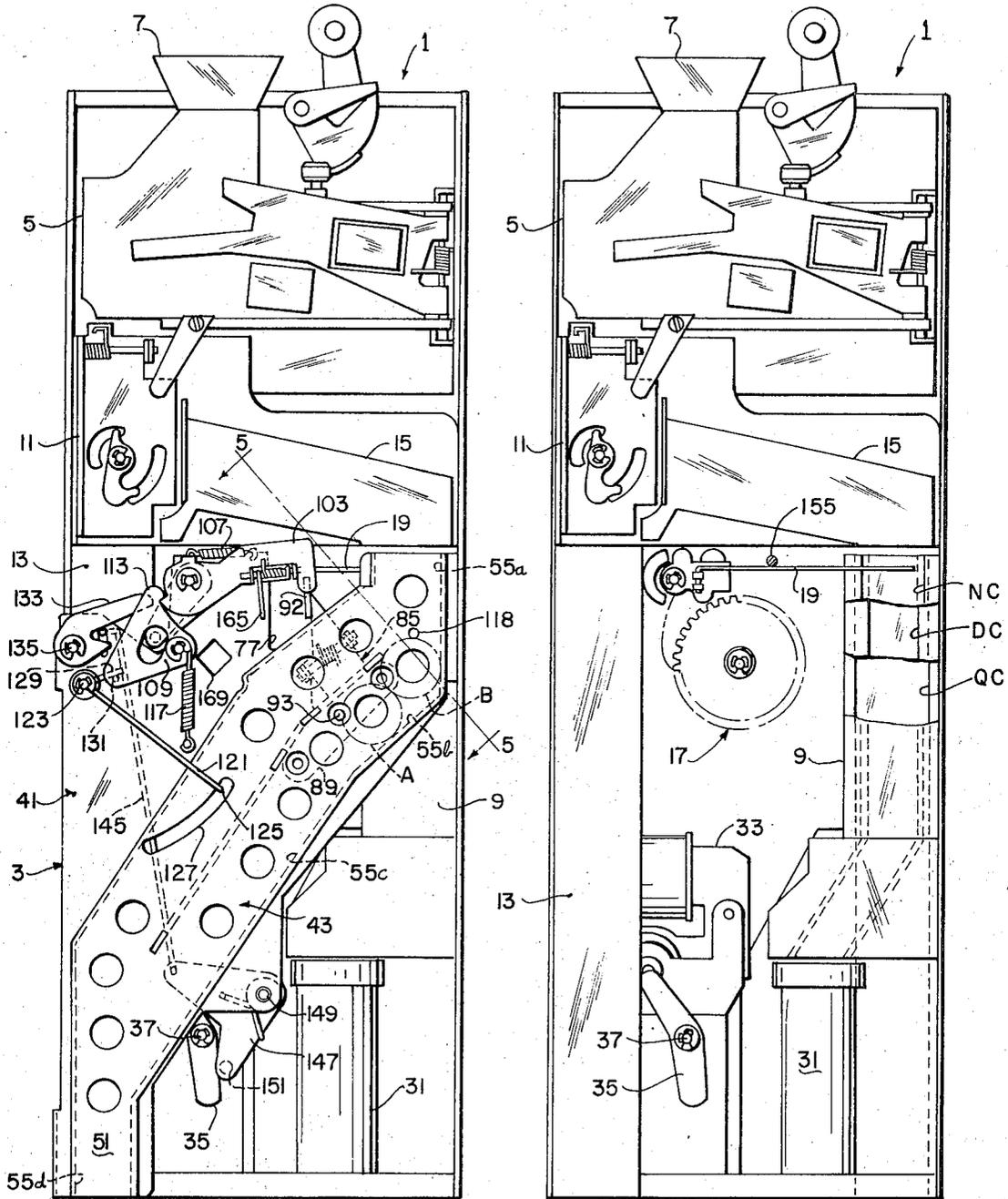


FIG. 1

FIG. 2



Harry C. Haessler,
Barby L. Smith,
Inventors.
Koenig, Senniger, Paulsen and Leavitt,
Attorneys.

FIG. 4

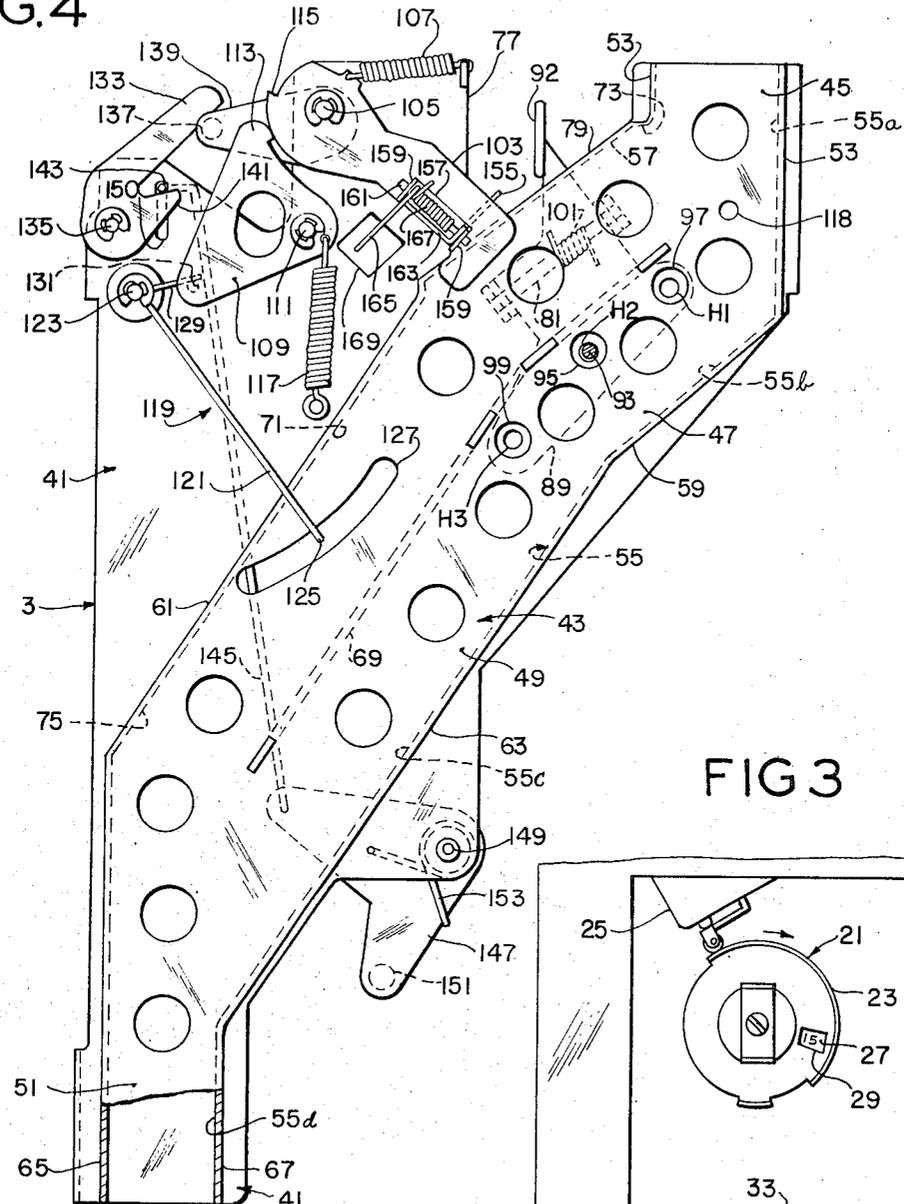


FIG. 3

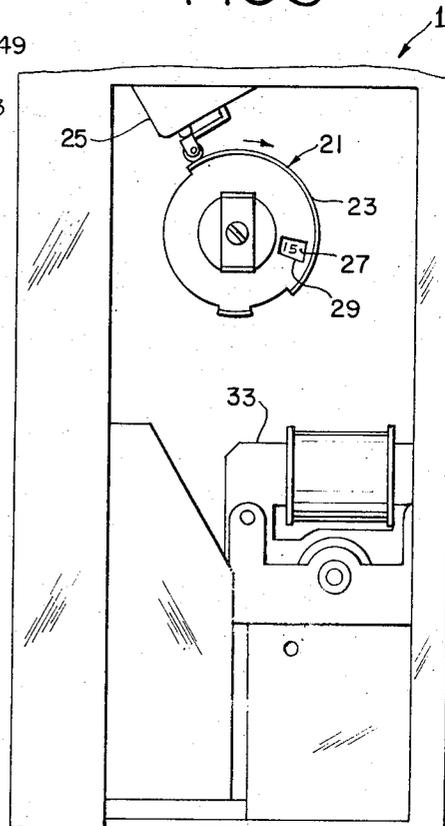


FIG. 5

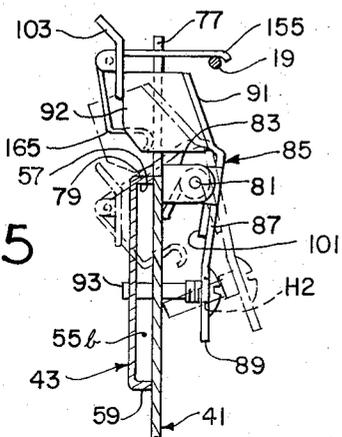


FIG. 7

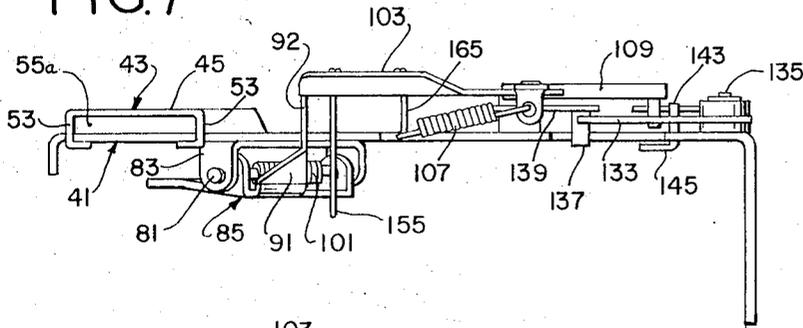


FIG. 8

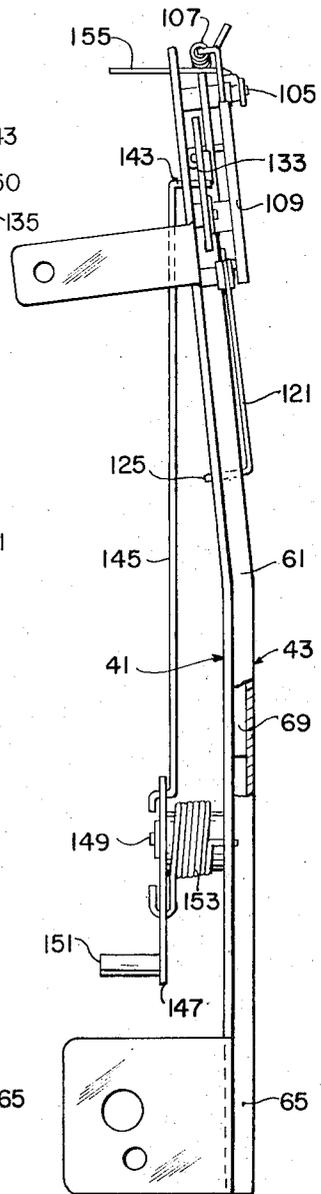
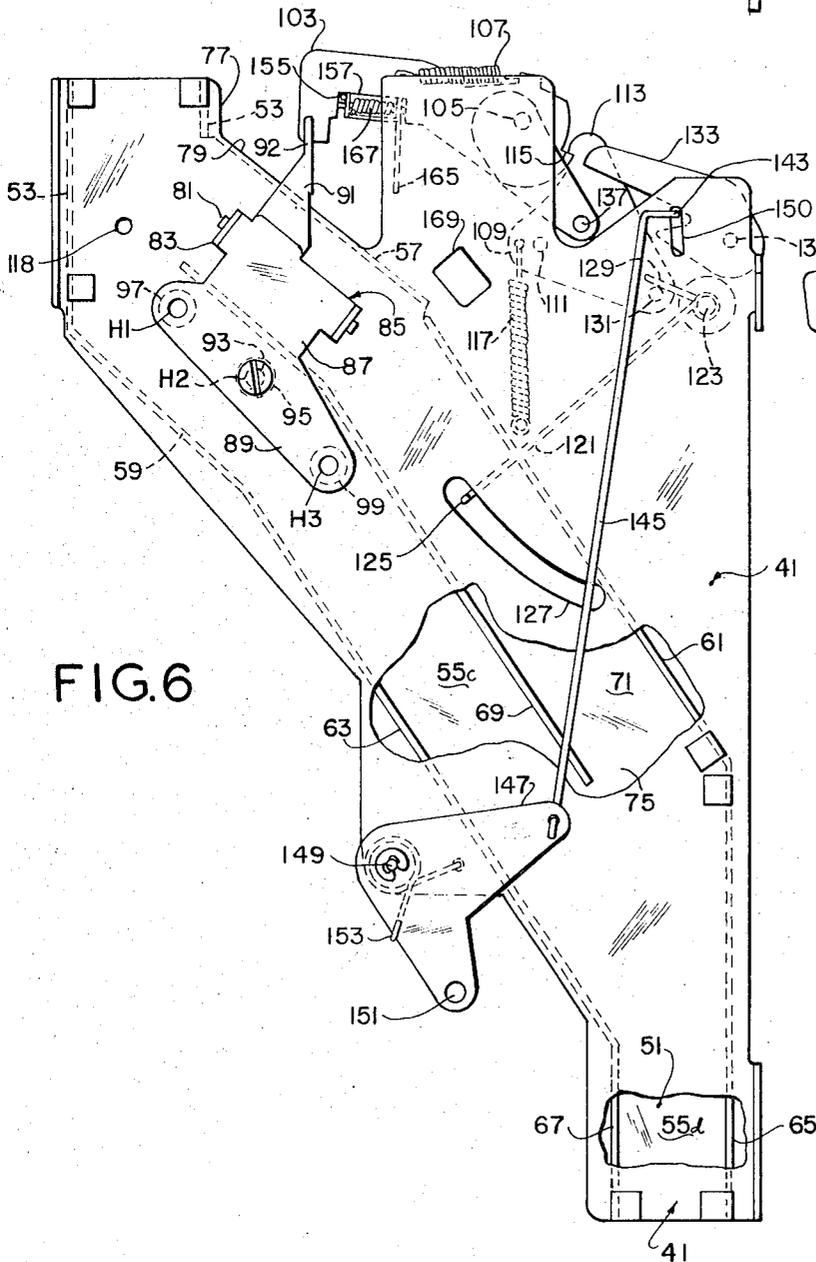


FIG. 6



COIN APPARATUS

BACKGROUND OF THE INVENTION

This invention relates to coin apparatus for controlling the operation of a vending machine, and more particularly to conversion of present coin mechanism limited per se to handling nickels, dimes and quarters and limited to controlling vending at 5-cent prices, i.e., prices which are whole multiples of 5 cents (e.g., 10, 15, 20 cents etc.), to adapt it to handle pennies as well as nickels, dimes and quarters and to control vending at 1-cent prices (e.g., 11, 12, 13, 14, 16 cents etc.) between the 5-cent price intervals.

The coin units now in use in most vending machines, such as cigarette, candy, hot beverage and cold drink machines, and the coin units being manufactured for such machines are all limited per se to handling nickels, dimes and quarters and limited to controlling vending at a 5-cent price, by which is meant a price which is a whole multiple of 5 cents. They will reject rather than accept pennies, and cannot be set to handle vending at a 1-cent price (e.g., 12, 13, 16 cents etc.) between the 5-cent price intervals. If it is desired to increase the price, it is necessary to increase it a minimum of 5 cents. The present and foreseeable economic situation is such that an increase in the price of many items being vended may be necessary; for example, at present, most coffee vending machines vend a cup of coffee for 10 cents, but it appears that it will be necessary to increase this. Many operators of such machines may be reluctant to jump from the 10 cent price to 15 cents for a cup of coffee, but, with the present coin mechanisms, have no other choice.

SUMMARY OF THE INVENTION

Accordingly, among the several objects of this invention may be noted the provision for a coin mechanism such as above described of means adapting it to handle pennies, and to control vending at penny prices; the provision of means such as described which may be easily applied to coin mechanisms already in vending machines in the field, as well as to coin mechanisms as original equipment; and the provision of such means which is of relatively simple construction, and economical to manufacture and install.

Coin mechanisms such as above noted generally have a credit register operable through a basic increment in response to deposit of a nickel. The basis of this invention is the provision of means for operating the credit register through this 5-cent basic increment in response to deposit of a penny or pennies in amount less than 5 cents. Other objects and features will be in part apparent and in part pointed out hereinafter.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front elevation showing a coin mechanism (of the nickel, dime and quarter type) equipped with a conversion unit of this invention adapting it to handle pennies and control vending at penny prices;

FIG. 2 is a generalized view of the coin mechanism with the conversion unit removed;

FIG. 3 is a rear elevation of the lower part of the coin mechanism;

FIG. 4 is an enlarged front elevation of the conversion unit per se, with parts broken away and shown in section, and showing parts in a moved position in relation to FIG. 1;

FIG. 5 is an enlarged section on line 5—5 of FIG. 1; FIG. 6 is a rear elevation of the conversion unit on the same scale as FIG. 4, with parts broken away and shown in section, parts being shown in their FIG. 1 position;

FIG. 7 is a plan of FIG. 6; and

FIG. 8 is a right edge elevation of FIG. 7.

Corresponding reference characters indicate corresponding parts throughout the several views of the drawings.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring first to FIGS. 1—3 of the drawings, there is generally indicated at 1 coin control and changer mechanism which is basically adapted to handle U.S. nickels, dimes and quarters, but not pennies, which is adapted to control operation of a vending machine to vend at variable prices which are whole multiples of 5 cents (e.g., 10, 15 cents, etc.), and which is adapted to make change in nickels and dimes. This mechanism 1 is of a type presently used in many vending machines to control the vending of a commodity at the price of 10 cents, particularly in a hot beverage vending machine to control the vending of a cup of coffee at 10 cents. Due to the present and foreseeable economic situation, it appears that it may be necessary for the vending machine operator to increase the price at which the commodity, e.g., a cup of coffee, is vended. The coin mechanism 1 per se, however, is adapted only to permit an increase in price from 10 to 15 cents (or 20 cents etc.), and it appears that many vending machine operators may not wish to increase the price that much. This invention involves the provision of a conversion unit or penny price means generally designated 3 modifying the mechanism 1 to enable it to handle the vending of a commodity (e.g., a cup of coffee) at any one of the four penny prices (11, 12, 13, 14 cents) between 10 and 15 cents on deposit in the vending machine of 10 cents (two nickels or a dime) plus the requisite number of pennies. To accomplish this, the unit 1 is set to vend at the price of 15 cents and, as will appear, the last of the said number of pennies deposited effects the same operation of the unit 1 as if a nickel had been deposited, thus in effect simulating the deposit of 15 cents. Even with the conversion unit 3 present, the unit 1 remains effective to vend on deposit of 15 cents (as three nickels, or a nickel and a dime), or on deposit of two dimes or a quarter, with accompanying issue of change, if the customer has no pennies.

The conversion unit or penny price means 3 as herein disclosed has been developed for use on the well-known SIMPLEX V coin mechanism presently being manufactured and sold by National Rejectors, Inc., of Hot Springs, Arkansas, and unit 1 is accordingly herein illustrated as a SIMPLEX V unit. Basically, this unit comprises a coin selector and slug rejector unit 5 adapted to separate slugs and pennies from nickels, dimes and quarters deposited in the vending machine and dropping into the coin inlet 7 of the unit 1, and to deliver nickels, dimes and quarters to a nickel chute NC, a dime chute DC and a quarter chute QC, respectively, in a nickel, dime and quarter chute assembly 9, and to deliver slugs and pennies to a slug and penny separator 11 provided on the unit 1. Separator 11 separates slugs from pennies and delivers slugs to a return chute 13 and pennies to a penny chute 15 which deliv-

ers them to the entrance of conversion unit 3. Reference may be made to U.S. Pat. No. 2,827,996 for details of the unit 5 and separator 11.

Unit 1 includes a credit register or credit accumulator mechanism indicated generally at 17 for accumulating or totaling the amount of nickels, dimes and quarters deposited in the machine. This mechanism is actuated by nickel, dime and quarter trip wires extending into the nickel, dime and quarter chutes in the chute assembly 9. The nickel trip wire is indicated at 19 in FIG. 2; the dime and quarter trip wires are directly behind it and hence do not appear. The credit register mechanism 17 includes a rotatable assembly 21 (see FIG. 3) which is indexed one 5-cent step forward (clockwise as viewed in FIG. 3) by each nickel deposited, two such steps by each dime deposited and five such steps by each quarter deposited. This assembly includes a vend control credit cam 23 for actuating a vend switch 25, the cam being adjustable by pulling it out and rotating it relative to an underlying credit disk 27. The latter bears price indicia viewed through a window 29 in the cam 23. As shown, the cam is set to establish the price at which the commodity is to be vended as 15 cents, and this appears in the window 29. What this means is that cam 23 must rotate through three 5-cent steps from its zero credit position of FIG. 3 to actuate the vend switch 25.

The unit 1 also has nickel and dime change tubes, the nickel tube being indicated at 31, the dime tube being directly behind it and hence not appearing in FIGS. 1 and 2. It further includes an electric motor 33 which is energized by actuation of switch 25 on a vend to operate mechanism for resetting the credit register assembly to zero. This reset mechanism or reset means includes a lever 35 pivoted at 37 for swinging movement counterclockwise from its rest position of FIGS. 1 and 2 and clockwise back to its reset position on each operation of motor 33. This lever is utilized to reset the conversion unit 3, as will appear.

Now referring to FIGS. 1 and 4-8, the conversion unit 3 is shown to comprise a penny chute assembly made up of a back plate 41 and a front plate 43. The front plate is relatively narrow, and is inclined downward from the right-hand upper corner of the back plate 41 toward the left as viewed in FIGS. 1 and 4. It has a vertically extending short upper end section 45 leading to a first inclined section 47. The latter leads to a second and more steeply inclined section 49 which terminates in a vertically extending lower end section 51. Section 45 has flanges 53 at opposite sides thereof which space it from the back plate to form the upper vertical entrance end portion 55a of a penny chute generally designated 55. Section 47 has upper and lower (or left and right side) flanges 57 and 59 spacing it from the back plate 41. The lower (or right side) flange 59 forms an inclined bottom for a second section 55b of the penny chute. Section 49 has upper and lower (or left and right side) flanges 61 and 63 spacing it from the back plate 41. Flange 63 forms an inclined bottom for a third section 55c of the penny chute. Section 55b is inclined downward toward the left from the lower end of the vertical entrance section 55a, and section 55c is inclined downward toward the left from the lower end of section 55b and more steeply angled than 55b. Plate section 51 has left and right side flanges 65 and 67 which space it from the back plate 41, forming a lower vertical exit end section 55d of the penny chute. A par-

tion 69 extends centrally of sections 47 and 49 of front plate 43 between this plate and the back plate 41 defining an upper or left-hand side for sections 55b and 55c of the penny chute 55 and, in conjunction with flanges 57 and 61 on plate 41, defining a second penny chute 71 open at its upper end at 73 to the upper vertical entrance end 55a of chute 55, and open at its lower end at 75 back into the first penny chute 55.

The conversion unit 3 is mounted on the unit 1 with the upper vertical entrance end 55a of the first penny chute 55 directly below the exit end of the penny chute 15 of separator 11 so that pennies exiting from chute 15 drop into the said entrance section 55a of chute 55. The back plate 41 has a notch 77 at its upper end, this notch having an inclined bottom edge 79 in line with the flange 57 of the front plate 43. A pivot pin 81 is mounted in a bracket 83 on the back of the back plate 41 just below the notch 77 with this pin extending parallel to and adjacent the said inclined bottom edge 79 of the notch.

A lever 85 constituting a gate is pivoted intermediate its ends on the pin 81. This lever or gate has a leg 87 extending down from the pin having an elongate foot 89 at its lower end parallel to and in back of section 55b of the chute 55 and an arm 91 extending up from the pin having a finger 92 at its upper end extending forward through the notch 77. The foot of the lever has a series of three tapped holes H1, H2 and H3 therein spaced at intervals corresponding generally to the diameter of a penny. A penny arrest pin 93 is threaded in one of these holes extending forward from the foot 89. As shown, the pin 93 is threaded in hole H2, and is adapted to be removed therefrom and threaded in either of holes H1 or H3. The lever or gate 85 is adapted to occupy a penny-arrest position as shown in solid lines in FIG. 5 wherein pin 93 (in the H2 position) extends across section 55b of chute 55 through registering holes each designated 95 in plates 41 and 43. Holes 97 and 99 are provided in plates 41 and 43 to accommodate the pin when placed in the H1 or H3 position.

A torsion spring 101 surrounding the pin 81 biases the lever or gate 85 to rock counterclockwise as viewed in FIG. 5 away from its penny-arrest position to a retracted position such as shown in dotted lines in FIG. 5 wherein pin 93 is wholly withdrawn from section 55b of chute 55 for passage of pennies therethrough. Gate 85 is adapted to be held in its stated penny-arrest position by engagement of finger 92 at the upper end of the gate with a latch 103 pivoted at 105 on the front of plate 41. This latch is biased by a spring 107 to swing down (clockwise as viewed in FIG. 1) to a retracted position as shown in FIG. 4 clear of finger 92, and is adapted to be latched in a raised latching position (FIGS. 1 and 6) wherein finger 92 engages the latch by means of a detent 109 pivoted at 111 on the front of plate 41 having a hook 113 engageable with a shoulder 115 on the latch 103. The detent 109 is biased by a spring 117 to swing in clockwise direction as viewed in FIG. 1 toward engagement with the latch 103.

The arrangement is such that with the pin 93 in hole H2 and the gate 85 in its closed position of FIG. 5 with pin 93 extending across section 55b of chute 55 through holes 95, pin 93 is located to arrest a first penny and then a second penny in chute section 55b, the first penny engaging the pin 93 and the second penny engaging the first penny edgewise. A third penny falling in chute entrance 55a is diverted down through

chute 71 by the second penny. With pin 93 in hole H1 and gate 85 closed so that pin 93 extends across chute section 55b through holes 97, pin 93 is located to arrest only one penny, and a second penny falling in 55a is diverted down through chute 71. With pin 93 in hole H3 and gate 85 closed so that pin 93 extends across chute section 55c at its upper end, pin 93 is located to arrest three pennies and a fourth penny falling in 55a is diverted down through chute 71. Pin 93 is also adapted to be removed completely from gate 85 and threaded in a hole 118 in the upper end section 45 of plate 43 completely to block the upper entrance end of the first penny chute section 55b against entry of any penny and to divert a penny falling in 55a into the second penny chute 71.

At 119 is generally indicated means operable by a penny passing down through the chute 71 for releasing the detent 109 to allow the latch 103 to be swung down to its retracted position (FIG. 4) by the associated spring 107. As shown, this means 119 comprises a trip wire 121 extending down from a pivot 123 in front of plate 41 adjacent its upper left corner, this trip wire having a finger 125 at its lower end extending back through registering arcuate slots each designated 127 in plates 41 and 43, these slots extending generally lengthwise of chute 71 on an arc centered in pivot 123. Wire 121 is formed to provide an arm 129 extending generally radially from the pivot 123 above a pin 131 extending back from the detent 109. The arrangement is such that, with the latch 103 up (FIGS. 1 and 6) and the detent 109 in operative position with its hook 113 engaged over the shoulder 115 on the latch 103, the pin 131 on the detent 109 holds the trip wire arm 129 up in its FIGS. 1 and 6 position to hold the trip wire 121 in its FIGS. 1 and 6 position wherein trip wire finger 125 is adjacent the upper end of arcuate slots 127 in position for being struck by a penny passing down the chute 71. This penny acts to swing the trip wire 121 and its arm 129 in clockwise direction as viewed in FIG. 1 to rock the detent 109 counterclockwise for disengagement of its hook 113 from shoulder 115, whereupon latch 103 is swung down to its released position (FIG. 4) by spring 107.

Means is provided operable by lever 35 to reset the latch 103 back to its raised position of FIG. 1 wherein it becomes locked by the detent 109. This reset means comprises a lever 133 pivoted at 135 on the front of plate 41 adjacent its upper left corner engageable with a pin 137 on an operating arm 139 of the latch 103, this arm 139 extending toward the left from pivot 105 as viewed in FIG. 4. Lever 133 has an arm 141 engageable by a forwardly extending finger 143 at the upper end of a wire link 145. This link extends up in back of the back plate 41 from one end of a bell crank 147 pivoted at 149 on the back of plate 41. Finger 143 extends forward through a vertical slot 150 in plate 41. The bell crank 147 has a pin 151 at its other end engageable by lever 35 as appears in FIG. 1. A return spring 153 biases the bell crank in the direction for lifting of the link 145 normally to hold lever 133 in a raised retracted position. When lever 35 cycles in the course of a reset of unit 1, the bell crank 147 is rocked in the direction to pull the link 145 and lever 133 down and then the lever 133, link 145 and bell crank 147 are returned to their retracted position by the return spring 153.

The latch 103 is utilized as a member for actuating the nickel trip wire 19 of unit 1 and for this purpose

carries a finger 155 extending back from the latch through notch 77 over wire 19 for pushing wire 19 downward when the latch 103 swings downward, thereby to register five cents in credit on the credit register 17 (the same as a nickel passing down through the nickel chute NC). The latch 103 has a relatively wide notch 157 at its bottom with ears 159 at the sides of the notch carrying a pivot pin 161. Finger 155 is part of a wire-formed lever having an intermediate portion 163 pivoted on pin 161 and a stop arm 165. A torsion spring 167 on pin 161 biases the finger and arm to rock in counterclockwise direction as viewed in FIG. 5 to a position, when latch 103 is raised, wherein finger 155 extends generally horizontally back through the notch 77 in plate 41 and arm 165 extends downwardly with its lower end engaging the front face of plate 41. The finger and arm swing down with latch 103 when the latter swings down and, on such downward movement, the lower end of arm 165 enters an opening 169 in plate 41 to free finger 155 to swing up from its generally horizontal trip-wire engaging position to a retracted position clear of the trip wire 19.

Operation is as follows:

As shown herein, the vend control cam 23 is set at 15 cents and the penny-arrest pin 93 of the penny price means 3 is set in hole H2, which sets up conditions for vending at a price of 13 cents. Prior to a vend cycle, latch 103 is raised and gate 85 is thereby held latched in its closed position of FIG. 5 wherein the penny-arrest pin 93 extends across section 55b of penny chute 55. Pin 93 is thereby disposed to arrest the first two pennies which enter chute 55 at 55a, and drop down into section 55b of chute 55.

Assuming the purchaser deposits a dime or two nickels and then three pennies to make a purchase at the price of 13 cents, the dime (or two nickels) steps the cam 23 forward (clockwise as viewed in FIG. 3) two 5-cent increments or steps. The first penny is delivered to chute entrance 55a, drops into chute section 55b and rolls down to the point where it engages and is arrested by pin 93, as indicated at A in FIG. 1. The second penny is also delivered to chute entrance 55a, drops into 55b and rolls down until it engages and is arrested by the first penny, as indicated at B in FIG. 1. The third penny is delivered to chute entrance 55a, falls therein, strikes penny B and is thereby diverted over through the entrance 73 of chute 71 into the latter chute. The third penny thereupon rolls down chute 71 and, in so travelling, engages the finger 125 at the lower end of trip wire 121, swings this wire clockwise as viewed in FIG. 1, passes underneath the finger 125 and thence down and out through chute exit 55d to a money box (not shown). Arm 129, via engagement with pin 131, thereupon rocks detent 109 counterclockwise to withdraw the detent hook 113 from the shoulder 115 of latch 103. The latch 103 thereupon swings downward under the bias of spring 107 clear of the finger 92 on upper arm 91 of gate 85. The latter then swings open (to its dotted line position of FIG. 5) under the bias of spring 101, withdrawing pin 93 from chute section 55b. The first two pennies A and B are thereby released to travel on down chute 55 and exit via 55d to the money box.

Finger 155 carried by the latch 103 moves downward therewith when the latter swings downward, and, being restrained against swinging upward about its pivot on pin 161 by engagement of stop arm 165 with the front

face of plate 41, pushes down the nickel trip wire 19 to step the cam 23 forward an additional (third) 5-cent increment, thereby bringing the cam 23 to the point where vend switch 25 is actuated for a vend (in the same manner as if 15 cents had been deposited). When the lower end of stop arm 165 reaches the opening 169 in plate 41, finger 155 is released to swing up from its generally horizontal trip-wire engaging position shown in solid lines in FIG. 5 to its angled retracted position clear of the trip wire 19 shown in dotted lines in FIG. 5. This permits the trip wire 19 to return to its retracted position for engagement by any subsequently deposited nickel.

In response to the vend which is set up by actuation of the vend switch 25, motor 33 is energized to actuate reset lever 35 of unit 1 to reset the credit register to zero and lever 35 acts via bell crank 147, link 145 and lever 133 to reset the latch 103 in its raised gate-closing position of FIGS. 1 and 6 (also shown in solid lines in FIG. 5) and this closes the gate 85. The latch 103 is held in its raised gate-closing position by hook 113 of detent 109 snapping over shoulder 115 of the latch. Pin 131 on the detent swings trip wire arm 129 up and returns trip wire 121 to its FIG. 1 raised retracted position. Thus, the parts of the penny price means 3 are reset for the next cycle by means comprising parts 147, 145 and 143 operable by the reset means of the unit 1

By placing the penny-arrest pin 93 in hole H1 of gate 85, so that pin 93 is disposed to arrest only the first penny deposited in chute section 55b, the apparatus is set for vending at the price of 12 cents. The second penny deposited is diverted over into chute 71 and, in travelling therethrough, acts to bring the nickel trip wire 19 down to step the cam 23 forward through a 5-cent increment (one 5 cents step) in the same manner as above described. By placing the penny-arrest pin 93 in hole H3 of gate 85, so that pin 93 is disposed to arrest three pennies in chute section 55b, the apparatus is set for vending at the price of 14 cents. The fourth penny deposited is diverted over into chute 71 and, in travelling therethrough acts to bring the nickel trip wire 19 down to step the cam 23 forward one 5 cents step in the same manner as above described. By placing the pin 93 in hole 118, no pennies are arrested, and the apparatus is thereby set for vending at the price of 11 cents. The first penny deposited is diverted by pin 93 into chute 71, and, in travelling therethrough, acts to bring the nickel trip wire 19 down to step the cam 23 forward one 5 cents step in the same manner as above described.

For vending at 1-cent prices between 15 and 20 cents, the cam 23 is set at 20 cents, and pin 93 is placed according to the one-cent price between 15 and 20 cents which is desired. For vending at 1-cent prices between 20 and 25 cents, the cam 23 is set at 25 cents, etc.

Thus, the coin mechanism 1, while per se capable of handling only nickels, dimes and quarters and controlling vending only at 5-cent prices, is adapted to handle pennies and to control vending at 1-cent prices between the 5-cent price intervals. At the same time, the coin mechanism 1 remains effective to vend at 15 cents if the customer does not have the requisite number of pennies to buy at the established 1-cent price. Thus, a customer may deposit three nickels or a dime and a nickel, and obtain a vend, no change being issued. He

may deposit two dimes and obtain a vend plus a nickel change, or a quarter and obtain a vend plus a dime change. Change may also be obtained on a transaction involving deposit of pennies. Thus, assuming the apparatus is set up for the price of 13 cents as above described, a purchaser may deposit three pennies (resulting in cam 23 registering 5 cents) and then a quarter (resulting in cam 23 registering a total of 30 cents) with resultant refund by unit 1 of a dime and a nickel in change.

From the above, it will appear that, in general, the credit register or accumulator 17 of coin mechanism 1 is operable through a basic increment (one 5-cent step) in response to deposit of a coin (a nickel) of a value V (5 cents) and that the conversion unit or penny price means 3 provides means for operating the credit register through the basic increment in response to deposit of coin (one, two, three or four pennies) in an amount less than V. The apparatus is adapted to control the vendor in which it is used to vend at a price P1 which is a whole multiple of the said value V (e.g., 15 cents, which is three times 5 cents), and conversion unit 3 adapts it to control the vendor to vend at a price P2 which is equal to price P1 minus a fraction of the basic increment (e.g., P2 is 13 cents, which is 15 cents minus two-fifths of 5 cents). Price P2 may also be defined as equal to price P1 minus 5 cents plus N pennies where N is less than 5 (e.g., P2 is 13 cents which equals 15 cents minus 5 plus three pennies), and, in this context, it will be noted that N-1 pennies are arrested in chute 55.

It is to be noted that if any pennies over and above N should be deposited, they will simply pass through the conversion unit 3 to the money box, reducing the possibility of jamming due to over-insertion of pennies.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As various changes could be made in the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. Coin apparatus comprising first and second coin chutes, means for arresting a number of coins in the first chute and diverting the next coin to the second chute, and means responsive to passage of said next coin through the second chute for operating a credit register, the means for arresting coins in the first chute comprising a gate carrying a stop, said gate being movable between a closed position wherein the stop extends across the first chute and an open position wherein the stop is withdrawn from the first chute, said gate being adapted to carry the stop in various positions for arresting different numbers of coins, a latch for latching the gate in closed position, said means responsive to passage of the said next coin through the second chute acting to release the latch and thereby open the gate, and wherein the latch is adapted to operate the credit register.

2. Coin apparatus as set forth in claim 1 having means for resetting the latch in latching position holding the gate closed.

3. Coin apparatus for controlling the operation of a vending machine, said coin apparatus having a credit

accumulator operable through a basic 5-cent increment corresponding to deposit of a nickel, means for operating the credit accumulator through one such increment in response to deposit of a nickel, means for operating the credit accumulator through two of said 5-cent increments in response to deposit of a dime, and means for operating the credit accumulator through five of said 5-cent increments in response to deposit of a quarter, said coin apparatus being adapted to control the vending machine to vend at a price P1 which is a whole multiple of 5 cents, and having reset means for resetting said credit accumulator to zero on a vend, the improvement comprising the provision of penny price means modifying said apparatus to control the vending machine to vend at a price P2 which is equal to P1 minus 5 cents plus N pennies, N being less than 5, comprising means for arresting N-1 pennies deposited in said machine, the Nth penny deposited in said machine being diverted from said arresting means for passage through the penny price means, means responsive to passage of said Nth penny through said penny price means for actuating the said means for operating the credit accumulator through a 5-cent increment, and means operable by said reset means of said apparatus for resetting said penny price means.

4. Coin apparatus for controlling the operation of a vending machine, said coin apparatus having a credit register operable through a basic 5-cent increment corresponding to deposit of a nickel, means for operating the credit register through one such increment in response to deposit of a nickel, means for operating the credit register through two of said 5-cent increments in response to deposit of a dime, and means for operating the credit register through five of said 5-cent incre-

ments in response to deposit of a quarter, said coin apparatus being adapted to control the vending machine to vend at a price P1 which is a whole multiple of 5 cents, means adapting said apparatus to control the vending machine to vend at a price P2 which is equal to P1 minus 5 cents plus N pennies, N being less than 5, comprising a first penny chute, means for delivering pennies deposited in the vending machine to said first penny chute, a second penny chute, means for arresting N-1 pennies in said first penny chute, the Nth penny being diverted into the second penny chute, and means responsive to passage of the Nth penny through the second penny chute for actuating the said means for operating the credit register through a 5-cent increment, means for releasing the pennies arrested in the first chute for delivery to a money box in response to passage of the Nth penny through the second penny chute, said means for arresting pennies in the first penny chute comprising a gate carrying a stop, said gate being movable between a closed position wherein the stop extends across the first penny chute and an open position wherein the stop is withdrawn from the first penny chute, said gate being adapted for carrying the stop in a first position for arresting one penny, a second position for arresting two pennies and a third position for arresting three pennies, the first penny chute being adapted to be blocked against entry of any penny, the means for operating the credit register through a basic 5-cent increment including a trip wire, and having a latch for latching the gate in closed position, said latch being releasable for opening of the gate, and engaging said trip wire in moving to its released position.

* * * * *

35

40

45

50

55

60

65