

M. H. HARRIS.

VENDING MACHINE.

APPLICATION FILED APR. 26, 1917. RENEWED FEB. 21, 1920.

1,336,743.

Patented Apr. 13, 1920.

5 SHEETS—SHEET 2.

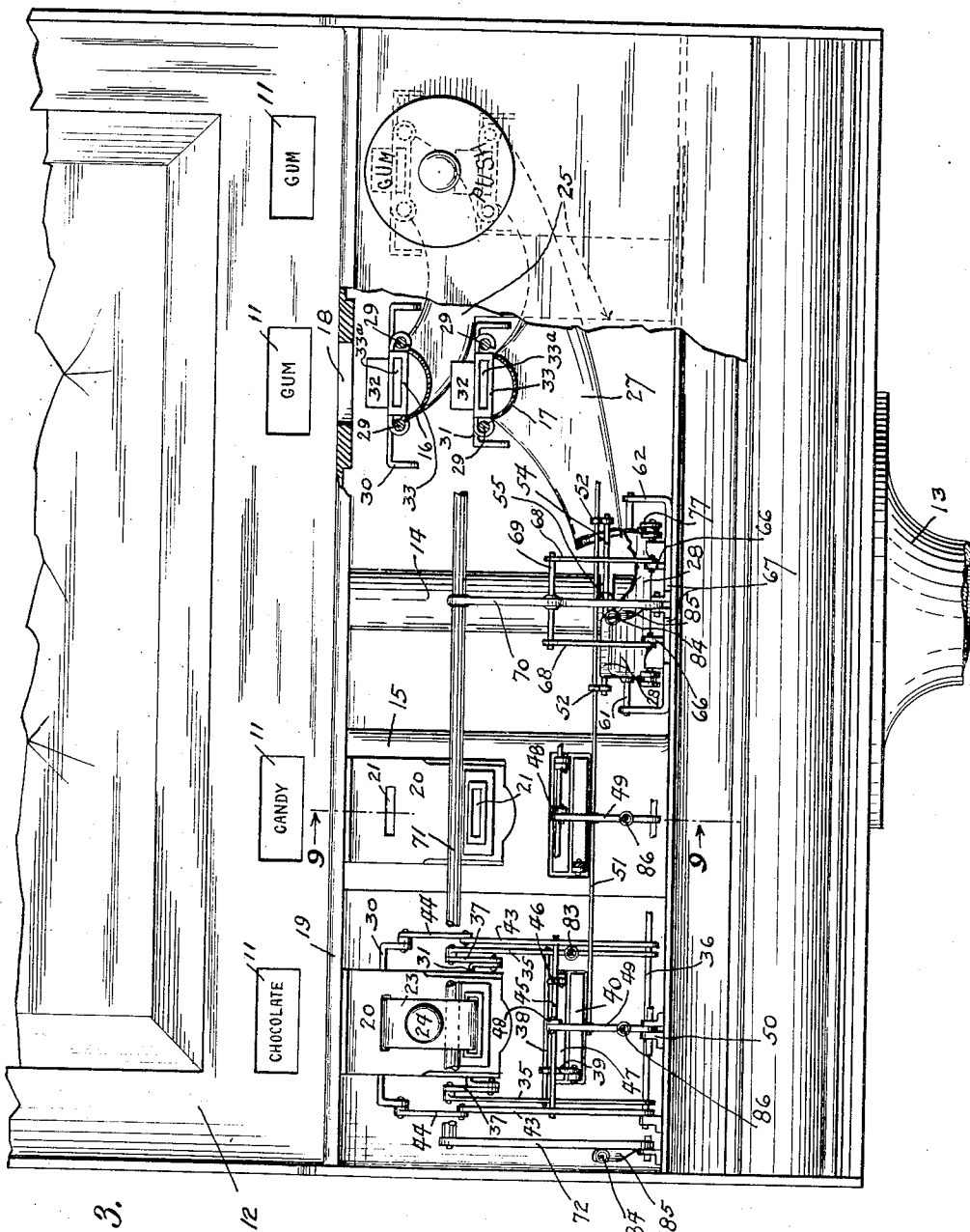


Fig. 3.

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Pennie, Davis, Marwin & Edwards

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5 SHEETS—SHEET 3.

Fig. 4.

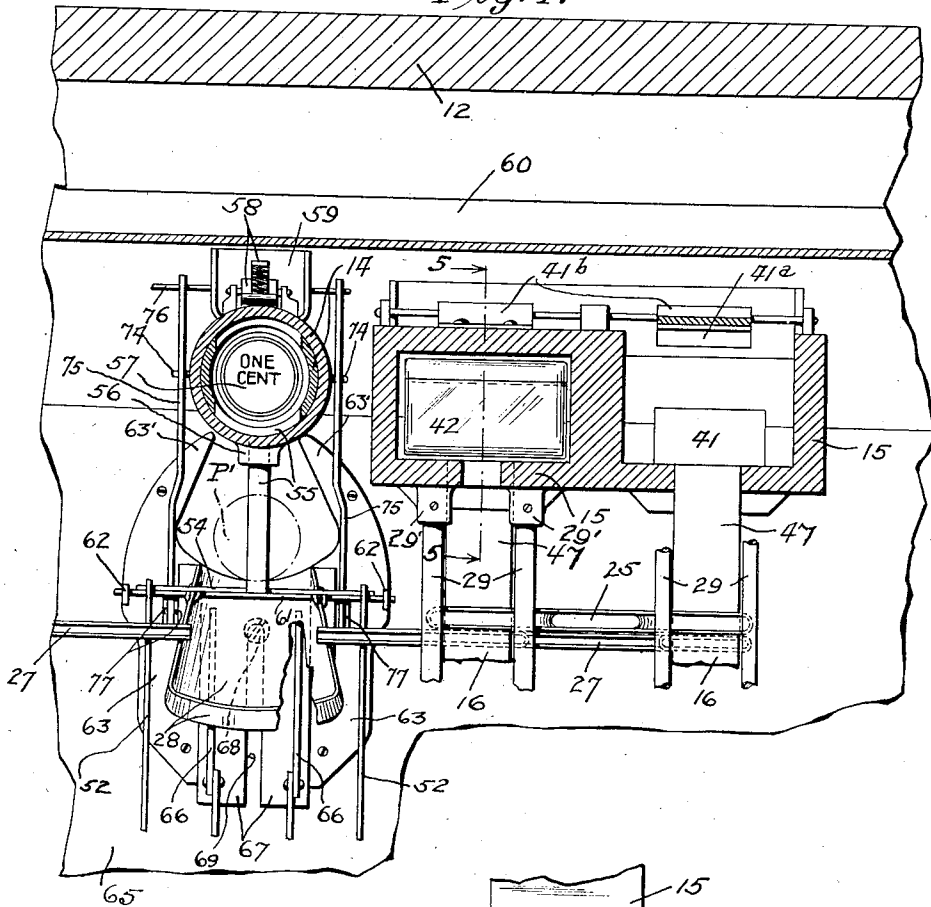
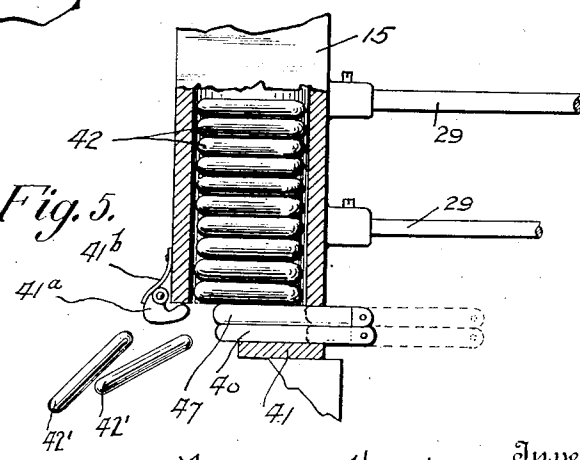


Fig. 5.



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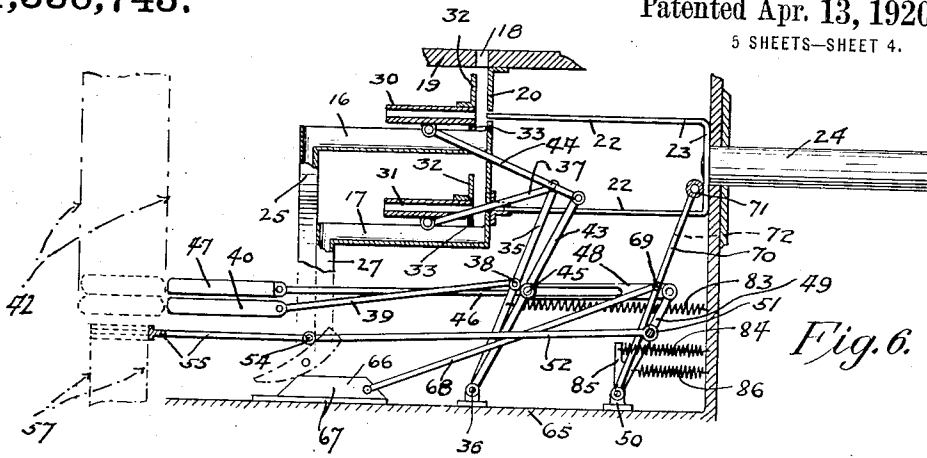


Fig. 6.

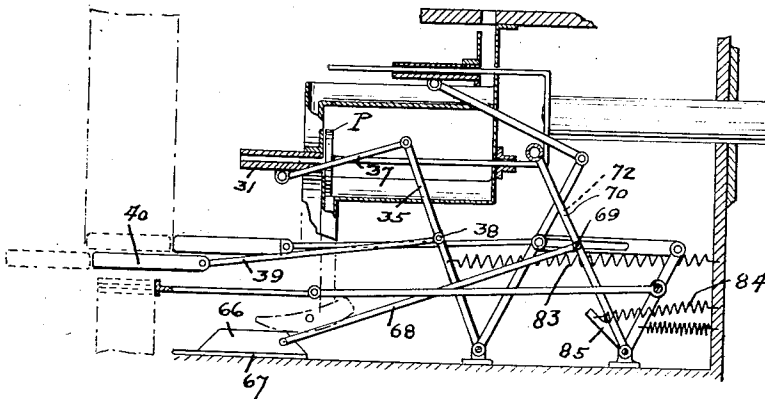


Fig. 7.

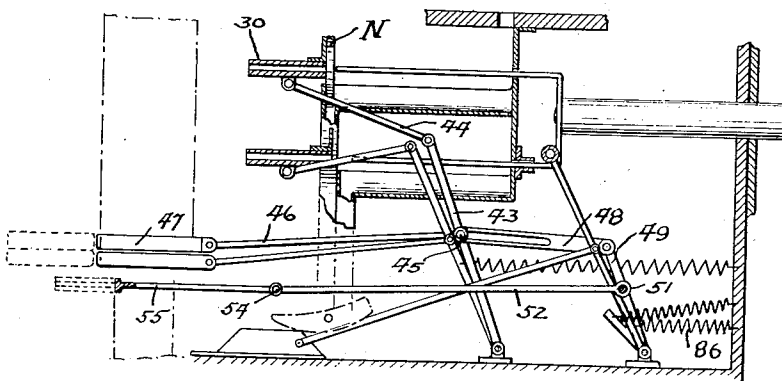


Fig. 8.

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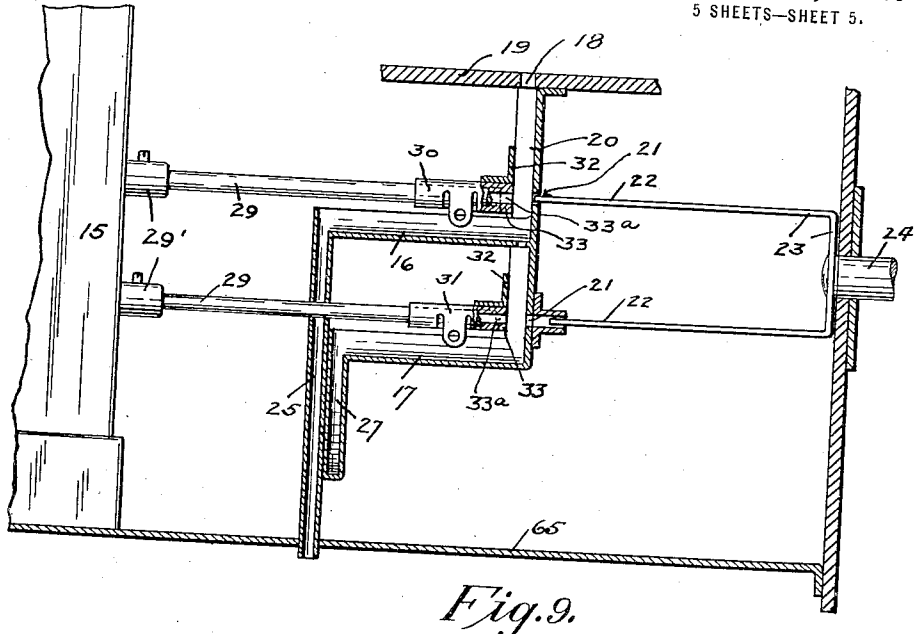


Fig. 9.

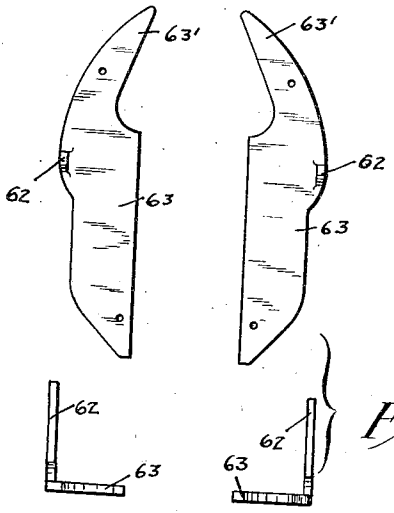


Fig. 10.

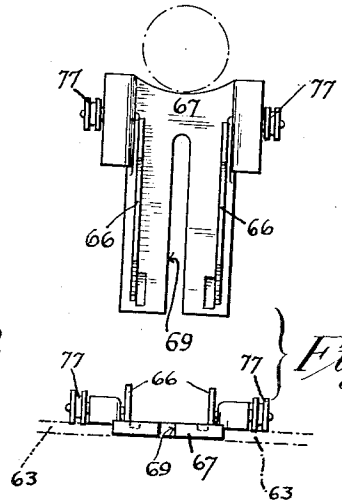


Fig. 11.

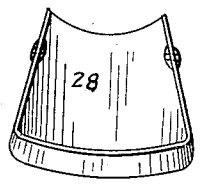


Fig. 12.

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UNITED STATES PATENT OFFICE.

MOSES H. HARRIS, OF NEW YORK, N. Y.

VENDING-MACHINE.

1,336,743.

Specification of Letters Patent.

Patented Apr. 13, 1920.

Application filed April 26, 1917, Serial No. 164,695. Renewed February 21, 1920. Serial No. 360,337.

To all whom it may concern:

Be it known that I, MOSES H. HARRIS, a citizen of the United States, residing at New York city, in the county of New York, State of New York, have invented certain new and useful Improvements in Vending-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to vending machines, and more particularly to that class of machines having coin-controlled article-delivery apparatus in which a plurality of article-vending and change-delivery devices are employed and wherein provision is made for the insertion into the machine of coins of various values so that the apparatus may be operated to deliver merchandise, or merchandise and change, in accordance with the value of the coin inserted. In this class of machines, mechanisms have been proposed heretofore whereby, when a certain coin is deposited, a single article of merchandise is delivered, and when a coin of a higher denomination is deposited, a similar article is delivered together with an amount of change representing the difference in value of the two coins. It has also been proposed heretofore to provide means whereby, when a coin of the lower denomination is deposited, a single article is delivered, and when a coin of the higher denomination is deposited, a plurality of the articles are delivered representing the value of the latter coin.

The object of the present invention is to provide an apparatus whereby, when a coin of the lower denomination is deposited, a certain number of articles, say one article, is delivered, and when a coin of the higher denomination is deposited, a greater number of articles is delivered together with the proper change. In this way, a patron may employ a coin of either denomination, but when he employs a coin of the higher denomination he is compelled to make a multiple purchase as a sort of penalty for not having in his possession a coin of the lower denomination. The particular application in which the invention is of special utility is to familiar gum and candy tablet penny-in-the-slot machines, designed for use in railway stations and other public places where a possible patron is often immured

with no coins as small as a penny and without opportunity to change a larger coin into pennies. In such a situation, the average patron would be very willing to be penalized to the extent of being required to make a multiple purchase to secure a gum or candy tablet, and by reason of such penalties, the income derived from the machines would be very largely increased. Furthermore, so far as the patron is concerned, each of the pennies retained by the machine out of his nickel would be accorded its regular purchasing value. It will be understood, however, that the invention is not to be limited to mechanisms adapted solely for penny and nickel transactions, nor to machines constructed merely for coins of two different denominations.

In carrying out the invention, a vending machine is provided in which coins of different denominations may be inserted at will and the machine is provided with apparatus automatically set by the denomination of the coin inserted and then operable to deliver a certain amount of merchandise and nothing else when a coin of a lower denomination is inserted, and to deliver a greater amount of the same merchandise and also the proper amount of change, such change including one or more coins of the lower denomination, when a coin of a higher denomination is inserted in the machine. Preferably, the apparatus comprises article and change ejection devices, controlling means therefor, a coin guide or guides for receiving a penny or a nickel inserted in the machine by a patron and for depositing that coin in predetermined relation to the controlling means to set the controlling means for a penny or nickel transaction, and a single plunger for actuating the controlling means to operate the ejection devices in accordance with the denomination of the coin deposited, so that when the coin is a penny, one article is delivered and when the coin is a nickel, two articles and three pennies are delivered.

The invention also involves the provision of a penny reservoir or the like for maintaining a collection of pennies in predetermined arrangement, means for adding a deposited penny to the collection after that penny has controlled the article delivery mechanism, and means for extracting pennies from the collection to make change at every nickel transaction. Preferably, the

collection of pennies is arranged in line, the pennies extracted therefrom are extracted intermediate the ends of the line, the pennies added thereto are added at one end of the line by shifting the line bodily, and a penny compartment inaccessible to the public is so positioned that when the line exceeds a certain length, the surplus pennies are transferred from the line to the compartment. By this arrangement, each penny, after being released from the vending mechanism, must enter and traverse a certain path before being freed from the change-making collection; if not taken from an intermediate point in the line for making change, the penny remains in the line until it reaches the end thereof and is transferred to the compartment inaccessible to the public.

The invention further involves the provision of a plurality of stacks of articles of merchandise, together with an independently actuatable vending mechanism for each stack and a single penny reservoir common to the several vending mechanisms, in combination with means whereby the collection of pennies to be used in making change is continually replenished by pennies deposited to cause operation of the vending mechanisms. The invention will be more clearly understood from the following description when taken in connection with the accompanying drawings illustrating a preferred embodiment of the invention.

In these drawings, Figure 1 is a central vertical section of the machine, Fig. 2 is an enlarged view showing certain of the parts of Fig. 1; Fig. 3 is a front elevation of the machine, with a portion of the front plate broken away and with different parts of the various vending mechanisms removed; Fig. 4 is a section on line 4—4 of Fig. 1, showing the penny reservoir and a pair of article reservoirs to one side of the penny reservoir; Fig. 5 is a section on line 5—5 of Fig. 4, showing a plurality of article ejectors at the ends of their working strokes to eject two articles on a nickel transaction; Fig. 6 is a generally diagrammatic view illustrating a vending mechanism and certain parts of the change-making mechanism in idle condition; Fig. 7 shows the parts of Fig. 6 at the end of a working stroke of the actuating plunger, when the controlling means of the vending mechanism is operatively engaged with a penny; Fig. 8 shows the parts of Fig. 6 at the end of the working stroke of the plunger when the controlling means is operatively engaged with a nickel; Fig. 9 is a section on line 9—9 of Fig. 3; Fig. 10 is a compound view illustrating two details of the machine in plan and in end elevation; Fig. 11 is a similar view showing another detail; and Fig. 12 is a plan view showing another detail.

In the machine shown a casing 12 is mounted on a pedestal 13, and houses a penny reservoir 14, and a plurality of article reservoirs 15, two of which reservoirs 15 are shown in Fig. 4. It will be understood that four reservoirs 15 are provided, one in rear of each of the windows 11.

As shown most clearly in Figs. 1 and 3, the vending mechanism for the stack of articles in each reservoir 15 includes a pair of upper and lower guiding troughs 16 and 17. Each trough is semi-circular in cross section, the upper trough 16 being shaped to conform to a nickel standing on edge and arranged transverse to the trough, and the lower trough 17 being shaped to conform similarly to the periphery of a penny. Adjacent to the outer end of each trough 16, a slot 18 is formed in a cover-plate 19 extending the entire width of the machine and overlying the various vending mechanisms. A coin inserted in the slot 18 above any vending mechanism, drops into a sorting chute 20 forming a part of that mechanism. This chute is so shaped that the coin, if a nickel, comes to rest opposite the outer end of the upper trough 16, and if a penny, comes to rest opposite the outer end of the lower trough 17. The front wall of the chute 20 is provided with a plurality of apertures 21, one opposite each of the troughs, to permit a pair of slide-fingers 22 to work back and forth over the troughs upon actuation of a plunger 24; these fingers 22 being integral parts of a U-shaped member 23 riveted to the inner end of the plunger forming part of each vending mechanism.

In each vending mechanism, the inner end of the upper trough 16 terminates adjacent to a nickel-release chute 25 which leads to a nickel receiving compartment 26 inaccessible to the public. The inner end of the lower trough 17 terminates adjacent to a penny-release chute 27 which leads to a penny-tray 28. A single nickel-release chute 25 is common to the two nickel troughs 16 of the two vending mechanisms to one side of the penny reservoir 14, and a single penny-release chute 27 is common to the two penny troughs 17 of these two vending mechanisms, as shown in Fig. 3. The nickel receiving compartment 26 is shown clearly in Fig. 1, as is also the penny-tray 28.

Overlying each trough in each vending mechanism are two fixed guide rods 29 secured at their inner ends in bosses 29' formed on the article reservoirs 15. The guide rods 29 overlying the trough 16 have mounted thereon a slide-plate 30 and the guide rods overlying the trough 17 have mounted thereon a similar slide-plate 31. Each slide-plate carries an upstanding leaf 32 and a down turned lip 33, so that when the two slide-plates 30 and 31 are arranged

as shown in Fig. 6, the leaf and the lip on each slide-plate support a nickel or penny upright against the front wall of the chute 20. Each lip 33 of a slide-plate 30 or 31 is apertured as indicated at 33^a in Fig. 3, in line with one of the apertures 21 in the front wall of the chute 20.

Upon the commencement of a working stroke of the plunger 24 of any vending mechanism to move the plunger from the position shown in Fig. 6 to that of Fig. 7 or 8 following the deposit of a coin in the sorting chute 20, the upper or lower slide finger 22 of the U-shaped member 23 engages with the coin, according as the coin is a nickel in the upper trough 16 or a penny in the lower trough 17. During this working stroke of the plunger, the engaged coin and the slide-plate 30 or 31 in back of it are moved along the trough toward the inner end thereof. The upper slide finger 22 is slightly longer than the lower slide finger, the two fingers being so designed that when a penny is interposed between the lower slide-finger 22 and the slide-plate 31, the penny is carried only as far as the penny release chute 27 at the end of the working stroke of the plunger, but when a nickel is interposed between the upper slide finger 22 and the slide-plate 30, the nickel is carried as far as the nickel release chute 25 at the end of the plunger's working stroke.

In each vending mechanism, a pair of levers 35 are pivoted at their lower ends on a stay-rod 36 extending across the machine, and are pivoted at their upper swinging ends to links 37 which are pivoted to the slide-plate 31. Levers 35 are joined by a tie-rod 38, on which is loosely mounted one end of a link 39 the other end of which is pivoted to an article ejection slide 40. When the slide-plate 31 is carried to the position shown in Fig. 7 as the result of an actuation of plunger 24, the ejection slide 40 is operated to eject a tablet from a stack 42 in a reservoir 15.

In each vending mechanism, a pair of levers 43, pivoted at their lower ends on the stay rod 36, are pivoted at their upper swinging ends to links 44 which are pivoted to the slide-plate 30. Levers 43 are joined by a tie-rod 45 on which is loosely mounted one end of a link 46, the other end of which is pivoted to an article ejection slide 47. When the slide-plate 30 is carried to the position shown in Fig. 8, by an actuation of the plunger 24 following the deposit of a nickel in the sorting chute 20, the levers 43 are swung in by the links 44. Then, as clearly shown in Fig. 3, the tie-rod 45 joining the levers 43 will engage the levers 35 and cause them to swing in with the levers 43. This also actuates the article ejection slide 40, operatively connected to the pair of levers 35. As shown clearly in Fig. 5,

the lower ejection slide 40 is guided on a shelf 41 which acts to support the lower end of the stack of articles 42 when the two article ejection slides 40 and 47 are retracted as shown in broken lines.

In order to insure that only one article 42' will be ejected from the stack 42 when merely the ejection slide 40 is operated incidental to a penny transaction, a pivoted gate 41^a is provided opposite the ejection slide 47 in each vending mechanism, the gate being yieldingly held in the position shown in Fig. 5 by a leaf spring 41^b.

In each vending machine, a slotted link 48 is by means of its slot hung loosely at one end on the tie-rod 45 joining the pair of levers 43, the other end of this link being pivoted to the swinging end of a lever 49 pivoted to a fixed part of the machine at 50. The various levers 49 for the various vending mechanisms are joined by a tie-rod 51 extending across the machine. According to this arrangement, upon the displacement of any nickel slide-plate 30 following the actuation of the plunger 24 of any of the vending mechanisms, all the levers 49 and the tie-rod 51 will swing in as shown in Fig. 8.

The mechanism for ejecting three pennies in change from the penny reservoir 14, whenever this tie-rod 51 is swung to the position indicated in Fig. 8, comprises a pair of links 52 pivoted at their outer ends on the tie-rod 51 and secured at their inner ends to a tie rod 54 pivotally connected to the outer end of a change-ejection slide 55 guided in a boss 56 formed on the penny reservoir 14. As shown clearly in Fig. 8, when the levers 49 and the tie-rod 51 are swung in to accompany an actuation of the two article ejection slides 40 and 47, the change-ejection slide 55 is actuated to eject three pennies from the stack of pennies 57. The pin-and-slot connections between the link 48 of each vending mechanism and the tie-rod 45 joining the levers 49 of all the mechanisms, insures that when a vending mechanism is operated on a nickel transaction, only the pair of levers 43 of that mechanism are swung in, and therefore only the article ejection slides 40 and 47 of that mechanism are operated.

It will be seen from Figs. 1 and 2 that the change making pennies are ejected from the stack 57 intermediate the ends of the stack by forcing the pennies to the left of Fig. 2 against the spring held pivoted gate 58. The ejected pennies are received on a guiding chute 59, from which they drop by gravity onto a delivery slide constituted by a sheet metal wall 60 shaped in section as shown in Fig. 1. This wall 60 extends across the entire machine as shown clearly in Fig. 3, and provides a common delivery slide for receiving the change-making pen-

nies and also the articles ejected from any of the stacks 42 in the reservoirs 15.

When a penny dropped into a penny-release chute 27 is discharged into the penny tray 28, the tray is then in the position shown in broken lines in Fig. 2, and so holds the penny against further descent toward the floor plate 65 and the penny reservoir 14.

The tray 28 is pivotally mounted on a rod 61 secured at its opposite ends in ears 62 upstanding from a pair of symmetrical, fixed guides 63 secured to a floor plate 65. The tray is tilted up by means of a pair of parallel upstanding ribs 66. These ribs are carried by a penny-injection slide 67, working between the guide plates 63 and held down upon floor plate 65 by a screw 68 the shank of which lies in a slot 69 cut through the slide 67.

The means for operating the slide 67 comprise a pair of links 68 attached at their inner ends to the outer ends of the two ribs 66 on the slide; the outer ends of these links 68 being pivoted to opposite ends of a cross bar 69 shown most clearly in Fig. 3 and secured at its middle to a lever 70 pivoted at its lower end to a fixed part of the machine. A tie rod 71 is secured at its middle to the upper end of the lever 70, and at its opposite ends to the upper ends of a pair of levers at opposite sides of the machine similar to the lever 72 shown at the left in Fig. 3. The tie-rod 71 is disposed between the upper and lower slide-fingers 22, that is, in position to be engaged by the U-shaped member 23 of any vending mechanism upon actuating the plunger 24 secured to that U-shaped member. By this arrangement, the actuation of any plunger 24 will cause the levers 70 and 72 to swing in toward the positions shown in Fig. 7 or 8, but without causing an accompanying movement of any of the other plungers.

The parts are so designed that the tray 28 is tilted up by the ribs 66 on the slide 67 on each inward movement of the slide, in time to insure that if the vending mechanism is then operating to carry out a penny transaction, the tray will be tilted up before the penny is discharged from the lower end of the penny release chute 27. These ribs 66 are long enough to insure that the tray 28 is held tilted up until the penny received by the tray can be discharged from the tray to the floor plate 65 without danger of the penny becoming caught between any of the moving parts and jamming the same. When the tray reassumes its normal position following retraction of the slide 67, the penny is discharged to lie between the forward claw-like extensions 63' of the fixed guides 63 as indicated at P' in Fig. 4.

The mechanism by which the penny thus deposited on the floor plate 65, between the inner end of the penny injection slide 67 and

the lower end of the penny reservoir 14, is inserted in the reservoir, is shown most clearly in Figs. 1 2 and 4. The penny reservoir 14 is pivoted at its lower end at the rear to some fixed part of the machine as indicated at 73. At its opposite sides near its bottom, the reservoir is provided with a pair of studs 74 loosely engaged by a pair of levers 75 pivoted at their inner ends on a fixed rod 76. The outer ends of the levers 75 rest on rollers 77 carried at opposite sides of the penny-injection slide 67. A leaf spring 78 engaging the upper portion of the reservoir 14, holds the levers 75 yieldingly on the rollers 77 to maintain the penny reservoir as shown in Fig. 1 when the injection slide 67 is in retracted position, then the stack of pennies is vertically arranged and the lowermost penny is held with its bottom on a level with the upper surface of floor plate 65. The reservoir 14 has a floor member 14^a shaped as indicated in Fig. 2, and provided with a down turned forward edge 14^{a'}. The outer ends of the levers 75 are so shaped that the penny reservoir is tilted back about its point of pivotal support to abut against the stop shown, when the penny injection slide 67 is operated to engage a penny between the extensions 63' of the fixed guides 63. When the reservoir 14 is thus tilted back, the lowermost penny in the stack in the reservoir is inclined a sufficient amount to permit the penny on the floor plate 65 engaged by the injection slide to be thrust onto the floor member 14^a and act as a wedge to lift the entire stack of pennies and become added to the stack at the bottom.

The upper end of the reservoir 14 is open as shown clearly in Fig. 1, and the reservoir carries a guide chute 80 overlying a penny compartment 81 inaccessible to the public. When the number of pennies in the stack 57 exceeds a predetermined maximum, the surplus pennies are discharged from the top of the stack when the reservoir is next tilted back. The discharged pennies are guided by the chute 80 and the portion 82 of the wall member 60 into the compartment 81.

The following spring means are provided, in addition to the leaf spring 78 and the springs associated with the gates 41^a and 58, for returning the parts to normal condition following the working stroke of any plunger 24 in connection with a penny or nickel transaction. A retractile spring 83 forms part of each vending mechanism, and is secured to one of the levers 35 and the front wall of the machine as shown in Figs. 3 and 6. This spring returns the levers 35, and also the slide-plate 31 and the article ejection slide 40, to the positions shown in Fig. 6, following a displacement of these parts to the positions shown in Fig. 7 or 8.

In order to return the levers 70 and 72, and the cross rod 71 joining these levers, to

the positions shown in Fig. 6, following a penny or nickel transaction, a plurality of retractile springs 84 are provided, each connected at its inner end to a foot 85 integral with each of the levers 70 and 72 and connected at its outer end to the front plate of the machine. This return movement of the cross rod 71 returns the plunger 24 to the position shown in Fig. 6; and at the same time the links 68 are pulled toward the front of the machine to return the penny injection slide 67 to retracted position. This return of the slide 67 moves the rollers 77 sufficiently along the levers 75 to permit the leaf spring 78 to return the penny reservoir 14 to vertical position, and also re-disposes the ribs 66 to permit the tray 28 to tip forward to discharge the penny held by it if the present transaction is a penny one. If the parts are now being returned to normal positions in connection with a nickel transaction, the spring 84 also serves to return the levers 43 and the slide plate 30 since the tie-rod 45 between the levers 43 is arranged to be engaged by the levers 35 near the beginning of their return movement.

In order to provide for the return to normal position of the three-penny ejection slide 55, following a displacement of that slide incident to a nickel transaction, a retractile spring 86 forms a part of each vending mechanism, the spring being connected at one end to the lever 49 of the mechanism and connected at its other end to the front wall of the machine. By means of these springs all the levers 49 are returned to the position shown in Fig. 6. This causes the lever 49 of the vending mechanism being operated to return the links 48 and the carrier 30 to the positions of Fig. 6, and causes the other levers 49 to bring the inner ends of their slots again into abutment with the tie-rods 45 joining the levers 43 in the idle vending mechanisms. The accompanying return movement of the tie-rod 51 joining the levers 49 pulls the links 52 toward the front of the machine to return the three-penny ejection slide 55 to normal position as shown in Fig. 6.

The operation of the machine should be obvious from the foregoing, but may be summarized briefly as follows:

The patron deposits a coin, either a penny or a nickel, in a selected slot 18, and then presses the plunger 24 in line with that slot.

If the coin be a penny, it descends to the bottom of the sorting chute 20, so that as the plunger 24 is pushed in, the lower slide finger 22 clamps the penny against the outer end of the slide-plate 31, and forces the penny, and the slide plate 31 back of it, along the lower trough 17. The penny drops free into the penny release chute 27 at the end of the working stroke of the plunger in time to be discharged into the tray 28

when tilted up as shown in Fig. 2. At the end of this working stroke of the plunger 24 the parts of the vending mechanism operated by the plunger are redispersed as shown in Fig. 7; one of the two article ejection slides, the slide 40, having been actuated to eject a single article 42', and the penny-injection slide 67 have been actuated to tilt the penny reservoir 14 and transfer a penny, if there be one, from the floor plate 65, to insert the penny below the lower end of the stack 57 of pennies in the reservoir.

Upon releasing the plunger, the parts are returned from the positions shown in Fig. 7 to those of Fig. 6, by means of the springs 83 and 84.

If the coin which the patron deposits in the selected slot 18 be a nickel, it is stopped in the sorting chute 20 located below that slot opposite the upper trough 16, so that as the plunger 24 in line with the slot selected is pushed in, the upper slide finger 22 clamps the nickel against the outer end of the slide plate 30, and forces the nickel, with the slide 30 in back of it, along the upper trough 16. The nickel drops free into the nickel-release chute 25 at the end of the working stroke of the plunger, and thence is discharged into the compartment 26 inaccessible to the public. Near the commencement of the movement of the slide-plate 30, the tie-rod 45 joining the pair of levers 43 engages the levers 35, and thereafter the levers 35 swing in with the levers 43. By this means, at each nickel transaction there take place all the operations accompanying the working stroke of the plunger 24 in connection with a penny transaction, that is, the parts operatively connected to the levers 35 bring about actuations of the article ejection slide 40 and the penny injection slide 67. At the same time, as the levers 43 are swinging in they actuate the article ejection slide 47. The parts are so timed that on a nickel transaction the two article ejection slides 40 and 47 in effect operate as one unit to eject two articles 42' as indicated clearly in Fig. 5. Also, the levers 43 as they are swung in pull the link 48 to which they are connected; and this results in a rocking of the levers 70 and 72 to operate the three-penny ejection slide 55, through the cross-rod 51 joining the various levers 49 and through the links 52 joining the cross-rod 51 and the cross rod 54 loosely engaged by the rear end of the slide 55.

Upon releasing the plunger, the parts are returned from the positions shown in Fig. 8 to those shown in Fig. 6 by means of the springs 83, 84 and 86.

I claim:

1. In a vending machine, the combination of article and coin reservoirs, two article ejectors and a coin ejector, and hand op-

- erated mechanism for actuating the ejectors including a plurality of coin-actuated devices, one operatively connected to one of the article ejectors and the other operatively
 5 connected to both article ejectors and the coin ejector the various ejectors being formed and arranged whereby, on operation of one of said devices, each of the two article ejectors ejects an article and the coin
 10 ejector ejects a coin, and, on operation of the other of said devices, one of said article ejectors ejects an article and the other two ejectors are inoperative; substantially as described.
- 15 2. In a vending machine, the combination of a coin reservoir, a coin ejector movable to eject a coin from the coin reservoir, an article reservoir, two article ejectors one movable to eject an article from the article reservoir and both movable to eject two articles
 20 from the article reservoir, a plurality of coin pockets, means manually operable to engage and move a coin in either pocket, means movable by a coin in either pocket when said coin is moved by said manually
 25 operable means, means movable by a coin in one of the pockets when said coin is moved by said manually operable means, and means operatively connected to the coin moved means and the ejectors, the means
 30 last-mentioned being formed and arranged whereby, on operation of said coin-engaging means when a coin is in one pocket, one of the article ejectors is actuated and the other two ejectors are inoperative, and, on
 35 operation of said coin engaging means when a coin is in the other pocket, all three ejectors are actuated.
3. In a vending machine, the combination
 40 of a first coin receiver, a second coin receiver for a coin of a higher denomination than that of the first receiver, a coin reservoir for coins of the lower denomination, an article reservoir and coin-controlled
 45 mechanism operable to eject an article from the article reservoir and insert a coin of lower denomination into the coin reservoir when a coin is in the first receiver, and to eject two articles from the article reservoir
 50 and a coin from the coin reservoir when a coin is in the second receiver, said mechanism including two article ejectors and a coin ejector, the various ejectors being formed and arranged whereby, on operation
 55 of said mechanism when a coin is in said second receiver, each of the two article ejectors ejects an article and the coin ejector ejects a coin, and, on operation of said mechanism when a coin is in said first receiver, one of the article ejectors ejects an
 60 article and the other two ejectors are inoperative; substantially as described.
4. In a vending machine, the combination
 65 of a coin reservoir, a coin injector therefor, a coin ejector therefor, a plurality of article ejectors, and hand-operated coin-controlled means for actuating the injector and ejectors, said means including supports for coins of different denominations operatively connected to the injector and ejectors whereby
 70 when one coin is in coaction with one of the supports one of the article ejectors and the coin injector are actuated, and when a coin of a higher denomination is in coaction with another support the other article ejector, the
 75 coin injector and the coin ejector are actuated; substantially as described.
5. In a vending machine, the combination with a coin-controlled article-delivery mechanism responsive to coins of different denominations, of a coin reservoir, a coin inserter therefor, a coin extractor therefor, and means controlled by said mechanism for operating the inserter and extractor when the mechanism is subject to the control of a
 80 coin of a higher denomination and for operating merely the inserter when the mechanism is subject to the control of a coin of a lower denomination; substantially as described.
6. In a vending machine, the combination of a first support for a coin, a second support for the coin, a third support for the coin, a coin reservoir, means for transferring the coin from the third support to insert
 85 the coin into the reservoir, means for extracting another coin from the reservoir, and hand actuated means operable back and forth to transfer a coin from the first support to the second support while actuating
 90 the coin inserting means and the coin extracting means and then to transfer a coin from the second support to the third support; substantially as described.
7. In a vending machine, the combination
 95 of an article container, a coin container, coin-controlled means responsive to coins of either of two denominations, means for feeding a coin of either denomination thereto, and a hand-actuated device for operating
 100 the coin-controlled means to extract an article from the article container, or a plurality of articles from the article container and a plurality of coins from the coin container, depending on the denomination of the coin
 105 fed to the coin-controlled means; substantially as described.
8. In a vending machine, the combination of a coin container, a plurality of article containers, a separate vending mechanism
 110 for the articles of each container each subject to control by a coin of either of two denominations, means for feeding coins to each vending mechanism, means for subsequently feeding coins of the lower denomination
 115 to the coin container, and means for extracting a coin from the coin container operated by any vending mechanism when a coin of the higher denomination is fed to that mechanism; substantially as described. 130

9. In a vending machine, the combination of an article delivery mechanism controlled by a coin of either of two denominations for ejecting a greater or less number of articles in accordance with the value of the coin, means for maintaining a plurality of coins of the lower denomination in a predetermined line, means for ejecting coins from one part of the line on each actuation of the article delivery mechanism when controlled by a coin of the higher denomination, and means operating with the article delivery mechanism for adding coins of the lower denomination to another part of the line after such coins have controlled the article delivery mechanism; substantially as described.

10. In a vending machine, the combination of an article delivery mechanism controlled by a coin or either of two denominations for ejecting a greater or less number of articles in accordance with the value of the coin, means for maintaining a line of coins of the lower denomination, means for engaging a coin of the lower denomination after that coin has controlled the article delivery mechanism and for adding the coin to one end of the line while shifting the line along its length, and means for extracting a coin from between the ends of the line at each actuation of the article delivery mechanism under control of a coin of the higher denomination, substantially as described.

11. In a vending machine, the combination of an article delivery mechanism controlled by a coin of either of two denominations for ejecting a greater or less number of articles in accordance with the value of the coin, means for maintaining a line of coins of the lower denomination, means for engaging a coin of the lower denomination after that coin has controlled the article delivery mechanism and for adding the coin to one end of the line while shifting the line along its length, means for transferring a coin from the opposite end of the line when the line exceeds a predetermined length, and means for extracting a coin from between the ends of the line at each actuation of the article delivery mechanism under control of a coin of the higher denomination; substantially as described.

12. In a vending machine, the combination of article ejecting mechanism controlled by a coin of either of two denominations actuatable to eject a greater or less number of articles in accordance with the value of the coin, a receptacle to contain a substantially vertically arranged stack of coins of the lower denomination, means for adding to the bottom of the stack a coin of the lower denomination after deposit of the latter coin in the machine, and means operatively connected to the last mentioned means and to the article ejecting mechanism adapted to add the last-mentioned coin to

the bottom of the stack and to eject a coin from the container intermediate the top and bottom of the stack when the article ejecting mechanism is actuated while controlled by a coin of the higher denomination; substantially as described.

13. In a vending machine, the combination of an article displacing mechanism controlled by a coin of either of two denominations for ejecting a greater or less number of articles in accordance with the value of the coin, an open topped receptacle adapted to contain a substantially vertically arranged stack of coins of the lower denomination and means operatively connected to the article displacing mechanism adapted to displace the container to add a coin of the lower denomination to the lower end of the stack while raising the stack in the container; substantially as described.

14. In a vending machine, the combination of a reservoir for a stack of articles, mechanism controlled by a coin of either of two denominations actuatable to displace from the stack a greater or less number of articles in accordance with the value of the coin, means for supporting in stacked relation a plurality of coins of the lower denomination, a support, means for delivering a coin of the lower denomination to the support when the article ejecting mechanism is actuated under control of that coin, and means operatively connected to the article ejecting mechanism for transferring the coin from the support to the stack supporting means and adding the coin to the stack; substantially as described.

15. In a vending machine, the combination of a reservoir for a stack of articles, mechanism controlled by a coin of either of two denominations actuatable to displace from the stack a greater or less number of articles in accordance with the denomination of the coin, means for maintaining in stacked relation a plurality of coins of the lower denomination, a fixed support, means for delivering a coin of the lower denomination to the fixed support when the article ejecting mechanism is actuated under control of that coin, and means operating with the article ejecting mechanism for displacing the stack of coins and removing the coin from the fixed support to position the same at the lower end of the stack; substantially as described.

16. In a vending machine, the combination of a reservoir for a stack of articles, mechanism controlled by a coin of either of two denominations actuatable to displace from the stack a greater or less number of articles in accordance with the denomination of the coin, means for supporting in stacked relation a plurality of coins of the lower denomination, a fixed support, means for delivering a coin of the lower denomination

to the fixed support when the article ejecting mechanism is actuated under control of that coin, and means operating with the article ejecting mechanism for tilting the stack supporting means relative to the fixed support and for ejecting the coin from the fixed support and transferring the same to the stack supporting means when tilted, to add the coin to the bottom of the stack; substantially as described.

17. In a vending machine, the combination of vending mechanism controlled by a coin of either of two denominations to vend a greater or less number of articles in accordance with the value of the coin, a stack of coins of the lower denomination, pusher-means adapted to add a coin of the lower denomination to the stack at each actuation of the article vending mechanism, means adapted to deliver such a coin into the field of operation of the pusher-means at each actuation of the vending mechanism, means adapted to extract a coin from the stack at each actuation of the article vending machine under control of a coin of the higher denomination, a compartment inaccessible to the public, and means for automatically transferring a coin from the stack to said compartment whenever the number of coins in the stack exceeds a predetermined maximum; substantially as described.

18. In a vending machine, the combination of vending mechanism controlled by a coin of either of two denominations to vend a greater or less number of articles in accordance with the value of the coin, a change-making collection of coins, means adapted to dispose a coin of the lower denomination adjacent to the collection at each actuation of the vending mechanism under control of a coin of the lower denomination, means adapted to add to said collection a coin so disposed at each actuation of the vending mechanism, and means adapted to eject a plurality of coins from the collection at each actuation of the vending mechanism under control of a coin of the higher denomination; substantially as described.

19. In a vending machine, the combination of vending mechanism controlled by a coin of either of two denominations to vend a greater or less number of articles in accordance with the value of the coin, said mechanism comprising an article ejector operating at each actuation of the vending mechanism and a second article ejector operating at each actuation of the vending mechanism under control of a coin of the higher denomination, a change reservoir, a change ejector operatively connected to the second article ejector, a support for receiving a coin of the lower denomination during actuation of the vending mechanism under control of that coin, and a device operatively connected to the first-mentioned

article ejector for moving a coin from said support and inserting such coin into the reservoir; substantially as described.

20. In a vending machine, the combination of a plurality of vending devices operable to vend one or two articles, a manually operable device for actuating one or both of the vending devices, coin guiding means for delivering a penny or a nickel into operative relation to said devices to set them for vending one or two articles according as the coin delivered is a penny or a nickel, and penny delivery means operatively connected to one only of said vending devices whereby when said devices are operated to deliver one article the change delivery means is inoperative and when said devices are operated to deliver two articles the change delivery means delivers three pennies; substantially as described.

21. In a vending machine, the combination of a reservoir for a plurality of groups of articles, a vending mechanism for each group controlled by a coin of either of two denominations so that each vending mechanism is separately actuatable to displace from its group a greater or less number of articles in accordance with the denomination of the coin, a change reservoir, change ejecting mechanism operating with each vending mechanism when that vending mechanism is actuated under control of a coin of the higher denomination, means for releasing a controlling coin of the lower denomination from a vending mechanism at a certain point in the operation thereof, and means for depositing each such coin in the change reservoir at a subsequent operation of a vending mechanism; substantially as described.

22. In a vending machine, the combination of a reservoir for a plurality of groups of articles, a vending mechanism for each group controlled by a coin of either of two denominations so that each vending mechanism is separately actuatable to displace from its group a greater or less number of articles in accordance with the denomination of the coin, a change-making collection of coins of the lower denomination, a guide arranged to receive a coin of the lower denomination at the end of the working stroke of a vending mechanism controlled by that coin and to deliver the coin near the collection, change-delivery mechanism operating with each vending mechanism when that vending mechanism is operated under control of a coin of the higher denomination, and means for adding to the collection said coin delivered near the same at the next operation of any of the vending mechanisms irrespective of the denomination of the coin controlling such operation; substantially as described.

23. In a vending machine, the combina-

tion of a reservoir for a plurality of groups
of articles, a vending mechanism for each
group controlled by a coin of either of two
denominations so that each vending mecha-
5 nism is separately actuatable to displace from
its group a greater or less number of arti-
cles in accordance with the denomination of
the coin, a change reservoir, means for re-
10 leasing a controlling coin of the lower de-
nomination from a vending mechanism at

the conclusion of the working stroke there-
of, a support, means for discharging each
released coin onto the support, and means
operating with each actuation of a vend-
ing mechanism for transferring a coin from 15
the support and adding the same to the
coins in the change reservoir; substantially
as described.

In testimony whereof I affix my signature.
MOSES H. HARRIS.