June 1, 1943. D. NEIDIG 2,320,378

VENDING MACHINE

Filed April 26, 1941 4 Sheets-Sheet 1

Fig. 1.

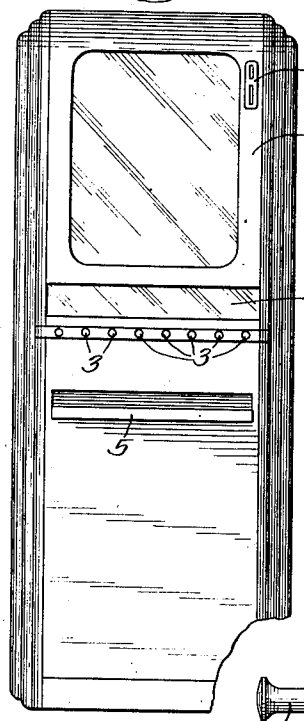
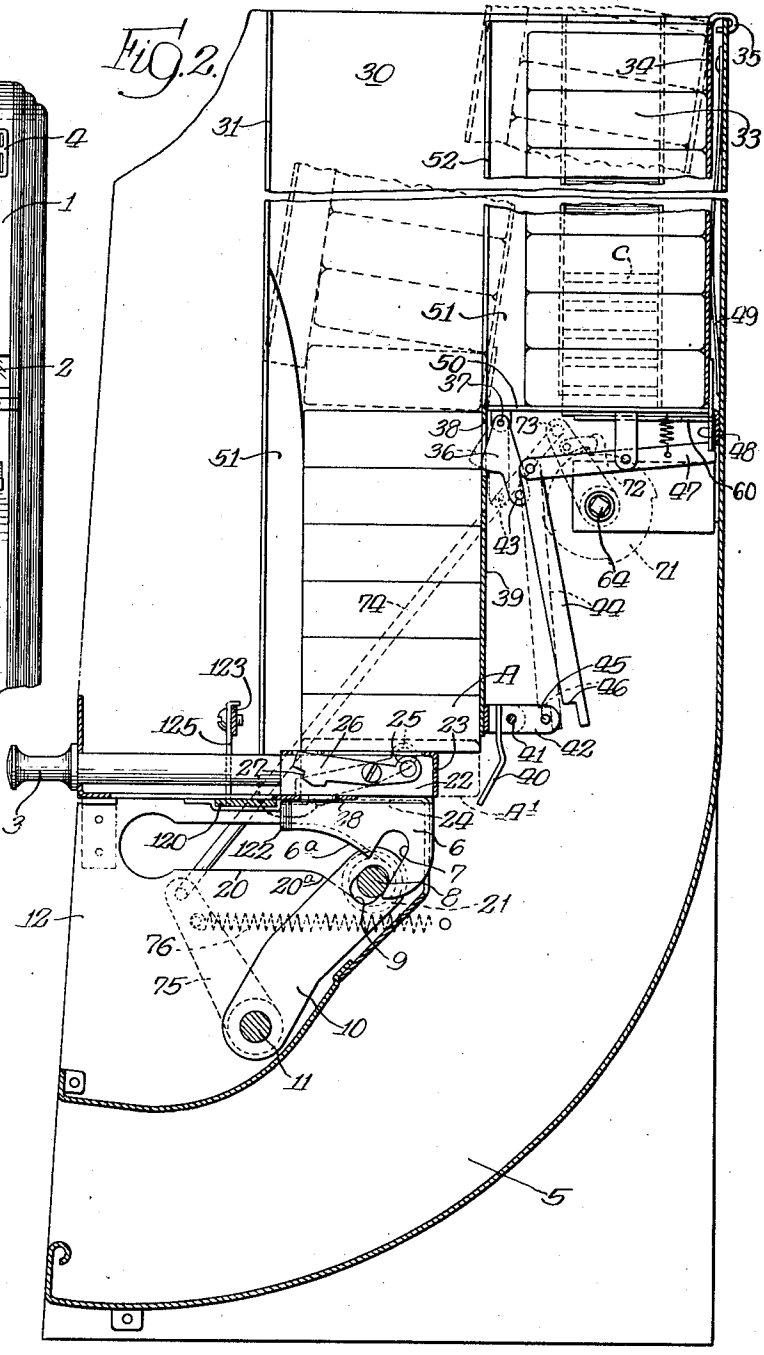


Fig. 2.



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Burton & Burton Atty's.

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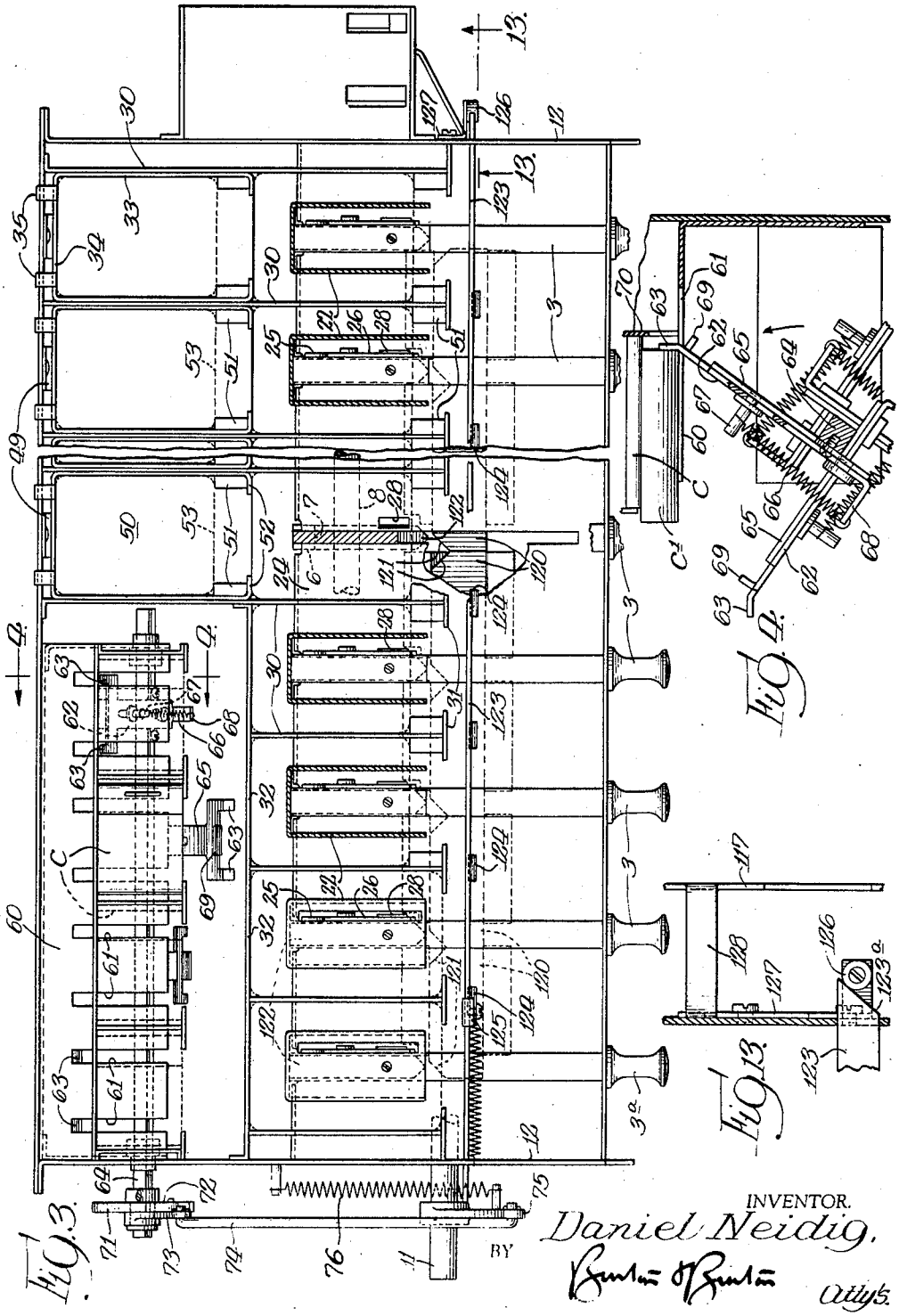


Fig. 3.

Fig. 4.

Fig. 13.

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Fig. 11. Fig. 12.

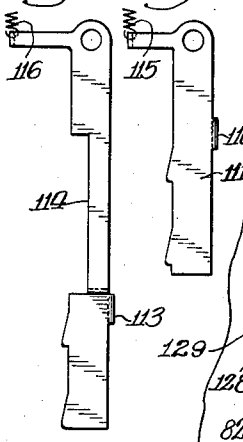
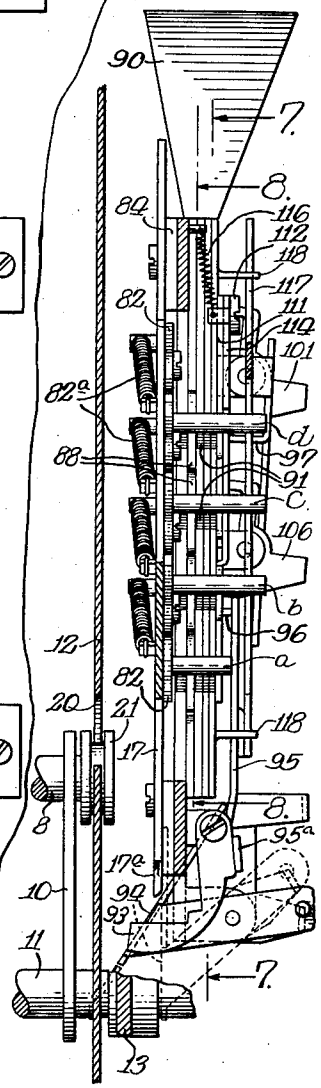


Fig. 5.

Fig. 6.



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VENDING MACHINE

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Fig. 7.

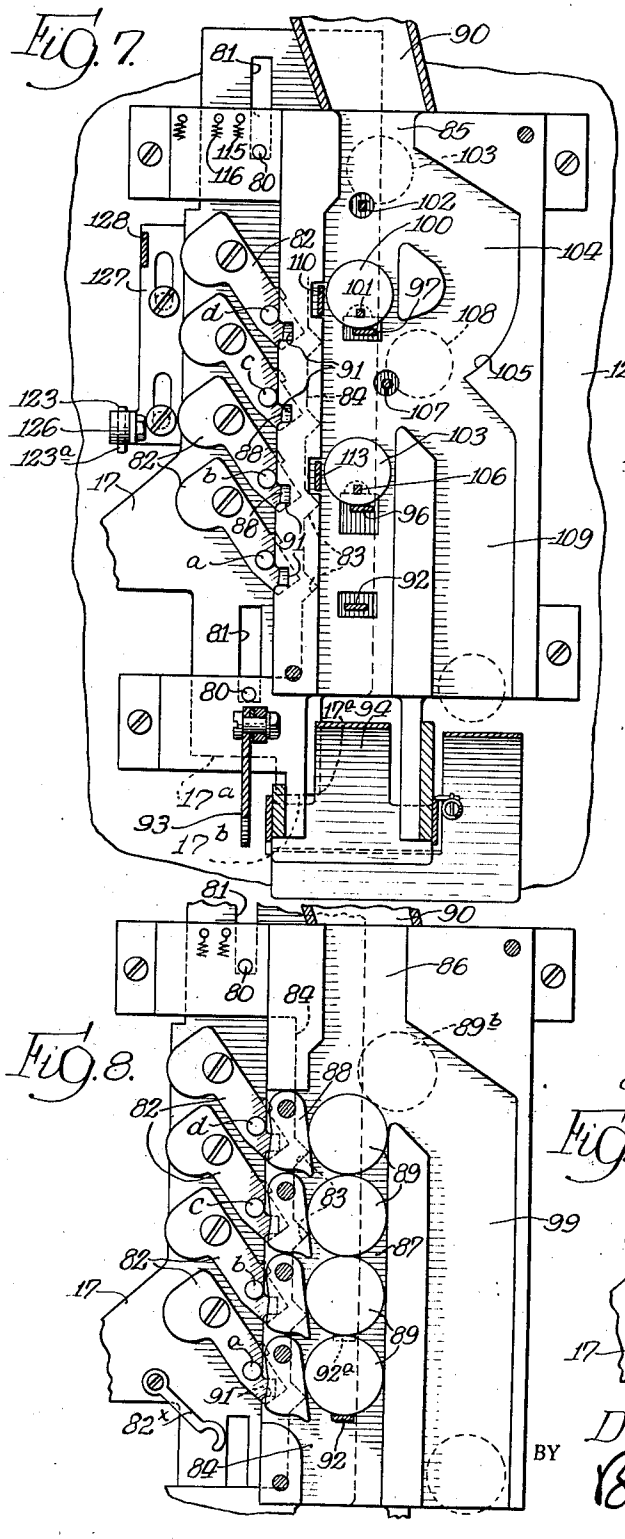


Fig. 8.

Fig. 9.

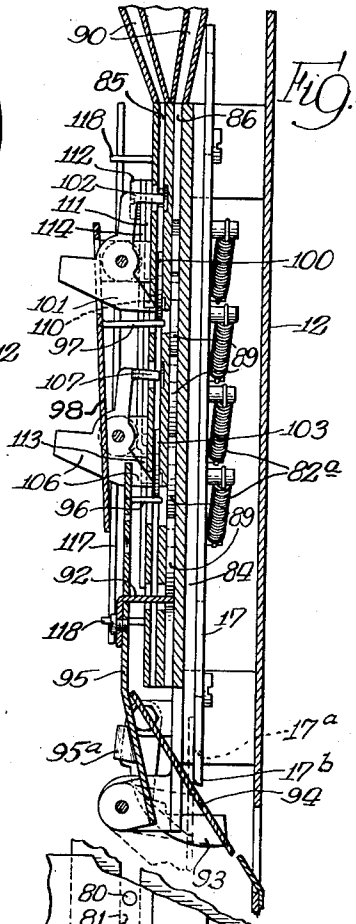
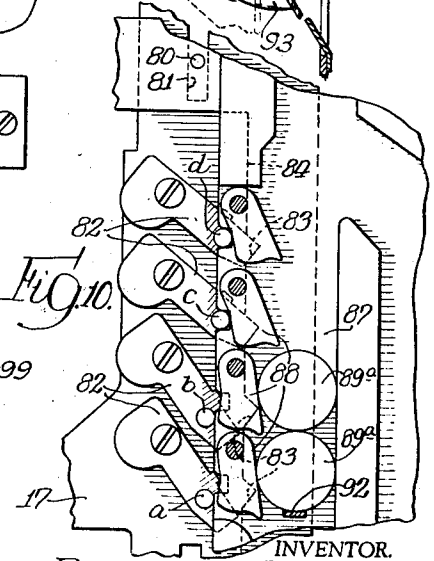


Fig. 10.



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Patented June 1, 1943 2,320,378

UNITED STATES PATENT OFFICE

2,320,378

VENDING MACHINE

Daniel Neidig, Chicago, Ill., assignor to James H. Martin, Chicago, Ill.

Application April 26, 1941, Serial No. 390,491

8 Claims. (Cl. 194—93)

This invention relates to vending machines, and includes certain features of machines designed and adapted for vending cigarettes in packages.

One object of the invention is to provide a strong and simple construction which shall be economical to manufacture and dependable in operation.

Another object is to provide a simple and reliable dispensing mechanism for book matches to be delivered in connection with the vending of cigarettes.

A further object is to provide an improved coin handling mechanism arranged to prevent unusually thin coins from becoming wedged or jammed with other coins in the passages of the device.

It is also an object of the invention to provide an improved operating mechanism for delivery of the cigarettes, designed especially to prevent fraudulent operation.

Still another object of the invention is the provision of improved means for automatically bringing into service a reserve stock of cigarettes to supplement the initial supply.

Other objects and advantages of the invention will appear as the description proceeds.

In the drawings:

Figure 1 is a front elevation showing the external appearance of a machine of the type embodying this invention.

Figure 2 is a vertical sectional view of a portion of the machine including a partially exhausted stack of cigarettes, a reserve stack, a delivery chute and a portion of the delivery mechanism.

Figure 3 is a top plan view of the mechanism, omitting the case, a portion being broken out to condense the view, and certain details being shown in section.

Figure 4 is a detail section taken as indicated at line 4—4 on Figure 3, and on a larger scale.

Figure 5 is a detail elevation showing the coin controlled mechanism as viewed from one end of the machine with the outer casing removed.

Figure 6 is a vertical edge view of the coin controlled mechanism being taken as a section at line 6—6 on Figure 5.

Figure 7 is a detail section taken as indicated at line 7—7 on Figure 6 and showing the dime-receiving passages.

Figure 8 is a detail section taken as indicated at line 8—8 on Figure 6 and showing the nickel-receiving passages.

Figure 9 is a section taken as indicated at line 9—9 on Figure 5.

Figure 10 is a detail view similar to Figure 8 but showing the positions assumed by the parts upon insertion of an insufficient number of coins for releasing the mechanism for operation.

Figures 11 and 12 are detail views of the compensator bars adapting the coin control device to the use of dimes.

Figure 13 is a detail section taken is indicated at line 13—13 on Figure 3.

In a machine of the type shown in Fig. 1 the cigarettes are carried in vertically arranged stacks in the upper portion of the casing 1, with a part of each stack visible through a window 2 which extends across the front of the machine, preferably adjacent a row of plungers or reciprocable members 3, each of which is operable for delivery of a package of cigarettes from a selected stack. Ordinarily, each stack is composed of a different brand, and in some instances the brands are not all sold at the same price.

In general, it may be understood that upon insertion of the proper coins in the receiving slot, or slots, at 4, a selected plunger 3 may be pulled forward and then pushed back to its initial position for dislodging the package of cigarettes at the bottom of the corresponding stack and discharging it into a delivery chute 5 which extends across the machine below the plungers 3, as seen in Figure 1. Each of the plungers 3 is provided at its inner end with a hook-shaped portion 6 having the longer side of its notch or mouth 7 normally engaged behind a control bar 8 which extends across the machine. Adjacent its ends the bar 8 is fitted in elongated openings 9 in a pair of rocker arms 10 fixed to a rock shaft 11 which is journaled in the upright supports 12 by which the mechanism is carried. The shaft 11 also carries a rigid arm 13 as seen in Fig. 5 having a roller 14 engaged in a slot 15 of a link plate 16 which thus connects the shaft 11 with a vertically movable slide bar 17. The slide bar 17 is normally locked against vertical movement, but is releasable by the insertion of the proper number of coins, as will be presently explained.

If the slide bar 17 has been released so that the shaft 11 can be rocked by pulling forward on one of the plungers 3, a toothed segment 18, which is integral with the arm 13 will sweep past a spring detent 19 which serves to prevent reverse movement of the plunger 3 and rock shaft 11 until the forward stroke has been completed; likewise, the detent 19 prevents forward movement of the plunger 3 after its reverse stroke has been commenced, this being a familiar expedient in the art.

Heretofore, when the control bar 8 and the arms 10 and the shafts 11 were constructed with

the bar 8 swinging in an arc about the axis of the journaled portions of the shaft, there was a possibility of pulling one of the plungers 3 part way forward, then disengaging it from the control bar and working the bar forward so as to leave all the plungers 3 free of control. This would permit the plungers to be reciprocated indefinitely for delivering cigarettes from any of the stacks without insertion of additional coins beyond the number required to release the first plunger. This practice was rendered possible partly because of the comparatively slow rate of rise of the crank portion of the control bar in becoming fully engaged in the notch or opening 7 of the hook 6. The fact that the control bar was made integral with its crank arms and rock shaft rendered it somewhat flexible so that it could be sprung in forcing the machine in this manner.

The possibility of thus cheating the machine is obviated in the present construction by providing cam slots 20 in the vertical side walls or supports 12 of the mechanism, and fitting the ends of the bar 8 with flanged rollers 21 which ride in these slots 20. The inital portion 20a of each cam slot is more steeply inclined than an arc struck about the axis of the rock shaft 11 with a radius extending to the initial position of the control rod 8; hence, when the rod 8 is drawn forward by the hook-shaped portion 6 of the plunger 3 it rises quickly along initial portions 20a of the cam slots 20 into interlocking engagement with the slot 7 of the part 6 so as to prevent reverse movement of the plunger 3 without corresponding reverse movement of the bar 8, and thus prevents actuation of any of the other plungers 3 after the operation has been initiated by a selected plunger.

Each of the plungers 3 carries a hollow rectangular ejector 22 on which the lowest package of cigarettes, such as the package A of the stack shown in Figure 2, normally rests, and when the plunger is drawn forward this package drops past the inner end wall 23 of the ejector and is temporarily supported on a fixed shelf 24, as indicated in dotted outline at A^1 in Figure 2. Then upon inward movement of the plunger 3 the end wall 23 pushes the cigarette package rearwardly until it drops into the delivery chute 5. When all the packages in the stack have been discharged so that no package rests on the ejector 22, the tail portion 25 of a pivoted locking lever 26 carried by the ejector is permitted to rise to the position shown in dotted lines in Figure 2, thus allowing its abutment 27 to drop into engagement with the edge of a slot 28 in the shelf plate 24 so as to lock the connected plunger 3 against forward movement and thus inform the purchaser that the stock of this brand of cigarettes is exhausted.

The main stock of cigarettes in each brand is carried in a stack which stands directly above the corresponding ejector 22, and which is confined between side walls 30; each compartment includes flanges 31 at the forward edges of the side walls 30, and some compartments include back walls 32. For each of the more popular brands a reserve stack is carried in a compartment 33 disposed between the rearwardly extended side walls 30 which confine the main supply; and this reserve compartment 33 is supported at the upper end of its back wall 34 by hinges 35, as shown in Figures 2 and 3, so that the lower end of the compartment 33 may be swung forwardly into the forward compartment when the main stack of cigarettes therein is lowered to a certain point. This shifting of the reserve compartment is automatically accomplished by providing a control cam 36 pivoted at 37 with its forward edge in a slot 38 in the wall 39 which forms the back of the main compartment for a short distance upwardly from its lower end. Thus the edge of the cam 36 bears against the packages of cigarettes in the main stack. At the lower end of the wall 39 a flap 40 is carried by a pivot 41 so that it depends in the path followed by each package of cigarettes ejected from the stack; accordingly, the arm 42, extending rigidly from the flap 40, is rocked upwardly each time a package is delivered from this stack. A pin 43 on the cam 36 normally holds a link 44 out of the path of a crank pin 45 on the lever arm 42, but when the level of packages in the main stack falls below the cam 36 it swings forwardly through a slot 38 and thus allows the link 44 to swing forward so that its shoulder 46 is directly over the crank pin 45. Upon the next delivery of a package by the ejector 22 the swinging of the flap 40 will rock the arm 42 upwardly, thus lifting the link 44 and rocking the lever 47 to which it is attached so as to lower the rear end of the lever which acts as a catch to retain the lug 48 carried by the rear wall 34 of the reserve compartment 33. A spring 49 then swings the lower end of the reserve compartment forwardly to the position indicated in dotted outline in Figure 2 so that the cigarettes in this compartment will feed downwardly onto the ejector 22, as needed. Since the cam 36 is located at some distance above the lower end of the main compartment, the reserve stock is thus made available while there are still several packages left in the main stack and there is no interruption to the supply until the reserve stock is exhausted. A fixed floor plate 50 supports the cigarettes in the reserve compartment while it remains in its rearward position, but the lower end of the compartment itself is open for feeding the packages freely into the main compartment when the reserve supply is swung into alignment therewith.

To accommodate both the so-called "standard" size and the "king" size of cigarettes each compartment is deep enough from front to back to fit the king size, which is the larger, but when standard size cigarettes are stocked the forward corners of the compartments are fitted with filler strips 51 which may be secured in any convenient manner, and which bear against the forward flanges 31 of the main compartment or the flanges 52 of the reserve compartments, so as to hold the forward edges of the standard size packages at the positions indicated in dotted lines at 53 in Figure 3. This does not alter the operation of the mechanism either in the delivery of packages or in the shifting of the reserve stock into active position.

The machine herein illustrated includes means for delivering a package of matches with each package of cigarettes. Preferably, these are of the form known as "book matches" and space for them is provided behind the compartments for cigarettes which do not require reserve stocks. The match books C rest upon a shelf 60 having a pair of forwardly open slots 61 extending under each stack of matches. For each pair of slots 61 there is provided an ejector plate 62 having a pair of fingers 63 which project upwardly through the slots 61 to engage the rear edge of the bottom card C^1 of match books in the stack. The ejector

plates 62 are carried by a shaft 64 which is conveniently made of square cross-section, as shown in Figure 4, so that four ejector plates may be secured to it in planes at 90-degree intervals, and each at a different point in the length of the shaft. A quarter turn of the shaft 64 is sufficient to swing one of the plates 62 through an angle which sweeps its fingers 63 through the length of the slots 61, and a little farther, for ejecting a book of matches from the bottom of the stack. As the matches leave the supporting shelf 60 they fall into the same trough or chute 5 through which the cigarette packages are delivered.

In order that the fingers 63 may project through the slots 61 by a substantially uniform amount through their full range of travel therein, each of the plates 62 is slidably carried on an arm 65 attached to the shaft 64, and each plate is provided with a spring 66 tensioned between a post 67 on the arm 65 and a lug 68 on the plate 62, and acting to urge the plate 62 outwardly—that is, away from the axis of the shaft 64. The plate 62 includes a flange 69 bent transversely of the plate to form a shoulder between the fingers 63, and this flange rides against the under surface of the portion of the shelf between the slots 61 as the arm 65 and its plate 62 are swept forwardly by rotation of the shaft 64. The slots 61 extend rearwardly of the vertical back wall 70 of the match book compartments to provide clearance for the fingers 63 as the rotation of the shaft 64 swings them upwardly and forwardly into positions adjacent the rear edge of the card of book matches, ready to carry it forward upon further rotation of the shaft 64.

The shaft 64 is rotated 90 degrees at a time by means of a ratchet wheel 71, a tooth of which is engaged by a dog 72 on an arm 73 connected by a link 74 with an arm 75 on the rock shaft 11, so that each oscillation of the shaft 11 causes a corresponding oscillation of the arm 73 and delivers a book of matches for each package of cigarettes delivered by the machine. Incidentally the arm 75 serves as a convenient connection for a return spring 76, which assists in restoring the shaft 11, and the cigarette ejectors 22 to normal position. The two-part ejector arm, consisting of the portion 65 and the plate 62, being yieldingly extensible through the operation of spring 66, insures that the fingers 63 will be fully projected through the slots 61 throughout their operative travel therein, thus providing a positive and reliable engagement with the match book for completing its separation from the supply. As a matter of convenience the arrangement shown provides for four stacks of matches on the elongated shelf 60, the four ejector plates 62 being disposed at corresponding positions in the length of the shaft 64 so as to operate on the respective stacks of matches alternately as the shaft is rotated by 90-degree steps.

The operation of the plungers 3 by which the cigarettes are dispensed is controlled by means which normally locks the shaft 11 against rotation, and thus prevents forward movement of the control bar 8 and holds the plungers 3 at their inthrust positions. The control means includes the slide bar 17 connected by the link 16 to the arm 13 on the shaft 11, as seen in Figure 5. The slide bar 17 is guided for vertical movement by means of guide pins 80 engaging slots 81, and the bar carries locking dogs 82 each pivoted to its face in position to engage V-shaped notches 83 (see Figures 7 and 10) in a fixed plate 84 of the coin control assembly. The assembly may be built up in laminated fashion so as to provide passages for dimes and nickels, the passage for the dimes being shown with an inlet portion at 85 in Figure 7, and the passage for nickels having an inlet portion 86 which appears in Figure 8. The coin receiving slots to which these passages lead are open at one edge, but in the case of the nickel slot 87 the opening is substantially closed by pivoted tumblers 88, each positioned to bear against one of the nickels indicated at 89 in the positions in which they stand when inserted in the machine by way of the coin slot at 4, and one of the coin tubes 90 leading therefrom to the inlet passages 85 and 86. The dogs 82 are provided with springs 82^a and with detector pins, denoted as *a*, *b*, *c* and *d*, respectively, and when the slide bar 17 stands in its normal position at the upper limit of its movement these pins will rest against the edges of the plates which form the coin slots, as seen in Figure 7. However, upon an attempt to operate one of the plungers 3 to an extent causing a slight initial movement of the control bar 8, and a slight rocking of the shaft 11, with a corresponding downward movement of the slide bar 17, the dogs 82 will be shifted to bring their pins *a*, *b*, *c* and *d* into registration with clearance notches 91, and as the pins are drawn into the notches by the springs 82^a the ends of the dogs will engage the angular notches 83 in locking relation.

If the correct number of coins 89 has been inserted in the slot (as shown in Figure 8) each of these coins will swing one of the tumblers 88 into a position in which it masks the clearance notch 91 and forms a track over which the corresponding detector pin will ride so as to hold its locking dog 82 out of the notch 83 and permit a full stroke of the slide bar 17 and of the parts with which it is connected. But if less than the full quota of coins has been inserted in the slot, as shown, for example, in Figure 10, in which only two coins 89^a are present in the slot, the tumblers 88 opposite these coins will mask the corresponding notches 91, but the remaining tumblers 88 will not be shifted into masking position. Consequently, the initial downward movement of the slide bar 17 will bring the detector pins *c* and *d* into the notches 91, and will cause the ends of the corresponding dogs 82 to engage in the locking notches 83, thus arresting the plate 17 and preventing actuation of the merchandise-delivering mechanism. In the nickel slot a platform lug 92 extends across the slot at a position to arrest the first coin in proper relation to its tumbler 88, and additional coins are supported upon each other, edge to edge, as seen in Figure 8. To adapt the machine to vend fifteen-cent merchandise instead of twenty-cent merchandise the platform 92 may be removed and replaced at the position indicated in dotted lines at 92^a, a supplemental screw hole 92^b being provided for this purpose, as seen in Figure 5; and in connection with this adjustment the bottom dog 82 of the series may be latched out of operative position by means of a hook $82^\times$.

With either arrangement, when the full quota of coins has been deposited in the slot, so that the slide plate 17 can be moved downward, a shoulder 17^a on the plate near its lower end strikes a curved lever 93, rocking said lever against a lug 95^a on a vertically extending pivoted plate 95, which carries the platform 92 for the nickels and also a platform 96 for dimes; a second dime

platform 97 projects from a pivoted plate 98 which overlaps the plate 95 (as seen in Figure 9). Thus the rocking of lever 93 swings the plates 95 and 98 far enough to withdraw the platforms 92, 96 and 97, releasing any coins in either of the coin slots. Simultaneously, the end portion 17b of the downwardly moving plate 17 swings to vertical position a normally inclined deflector plate 94, as shown in dotted lines in Figures 6 and 9, thus clearing the way for the released coins to fall into a suitable receptacle, not shown.

If an extra nickel, in addition to the quota required to operate the mechanism, is inserted, as indicated in dotted outline at 89b, it will strike the edge of the uppermost nickel already standing in the coin slot, and will be deflected into a return slot 99 which leads back to any suitable point for return to the purchaser, as, for example, into the merchandise delivery chute 5. This expedient has been found unsatisfactory, however, for disposing of extra dimes if inserted by mistake in the machine, because some dimes may be worn so thin that instead of engaging edge to edge, one of them may slip past the other, causing both dimes to wedge in the slot, and thus clogging the machine and preventing its proper operation.

The difficulty is overcome by the construction shown in Figures 7 and 9. The first dime to enter through the passage 85 is arrested by the platform lug 97, in the position indicated at 100, and the face of the dime encounters the inclined nose of a pivoted dog 101 so as to rock the lug 102 of said dog into a position above said first dime 100. The next dime, indicated at 103, will then strike said lug 102 and will be deflected into the by-pass 104, traversing the curved portion 105 thereof, and landing on the lower platform 96. The face of this dime 103, engaging the inclined nose of dog 106, will rock the lug 107 of said dog into a position in the slot above the dime 103, so that a third dime, if it should be inserted in the slot, will be deflected by encounter with the lug 107, as indicated at 108, and will fall through the return slot 109 to any suitable point of discharge, such as the merchandise delivery chute 5.

With the machine arranged to handle a twenty-cent purchase, one dime may be employed with two nickels to make up the amount, or two dimes may be used. The first dime, as shown at 100 in Figure 7, engages the lug 110 of a compensator bar 111, which is thus swung about the pivot 112 so as to mask the two upper notches 91, so that upon downward movement of the slide bar 17 the two upper dogs 82 will not engage in the notches 83. With the dime 100 in this position, two nickels, inserted through the passage 86, will operate through the tumblers 88 to mask the two lower notches 91 and thus permit the two lower dogs 82 to ride over them without being arrested. Or if, instead of two nickels, a second dime is deposited, it will arrive on the platform 96, as shown at 103 in Figure 7, and in this position it will engage the lug 113 of a second compensator bar 114, also pivoted at 112 but formed to mask the two lower notches 91 so as to allow the two lower dogs 82 to pass them and thus release the slide bar 17 and its connected mechanism for a full delivery stroke. The bars 111 and 114 are normally held by light springs 115 and 116 respectively, in positions in which their outer edges will be engaged by the detector pins *a* and *c*, but if dimes have been inserted to stand on platforms 97 and 96, these dimes will engage the lugs 110 and 113 so as to positively prevent depression of the compensator bars by the pins *a* and *c*, and the bars will thus mask the notches 91, and permit the slide bar 17 to make its full stroke.

In a machine of this character it is often desirable to carry cigarettes selling at different prices. For example, some of the plungers 3 will be arranged to deliver cigarettes at twenty cents a package, while others may be arranged to release cigarettes selling at fifteen cents a package. This is made possible by the provision of a so-called "low-purchase attachment" which includes a slidably mounted bar 117 carried in guides 118, and having portions 119 and 120 of its edge positioned normally out of registration with certain notches 91 in the open edges of the coin slots but shiftable downwardly from the position shown in Figure 5 for bringing these portions 119 and 120 into position to mask the notches 91 which are positioned to receive the detector pins *b* and *d*. With the bar 117 thus shifted the first nickel deposited through the passage 86 will release the dog 82, which carries detector pin *a*, and a second nickel will serve to support a third nickel to release the dog which carries the pin *c*. Since the pin *d* is held in released position by the portion 120 of the bar 117 the slide bar 17 may be actuated and will permit operation of the delivery mechanism. Or with the low-purchase bar 117 thus shifted to its lower position a dime deposited through the passage 85 will lodge upon the platform 97 and, through the agency of the compensator bar 111, will hold the detector pins *c* and *d* out of the notches 91 while a single nickel inserted through the passage 86 will lodge on the platform 92 where it will act to hold detector pin *a* out of the notch 91. And the portion 119 of the bar 117, by masking the notch which would receive the detector pin *b*, completes the arrangement for release of the slide bar 17 and the delivery mechanism connected to it.

For operating the low-purchase attachment I take advantage of the fact that the mechanism includes a series of safety plates 120 which extend across the machine under the stems of the operating plungers 3, as seen in Figure 3. Each of these plates has its two inner corners mitered, as seen at 121, and each of the ejectors 22 carries a pointed interlocker bar 122 which lies in the plane of the plates 120 so that when the plunger 3 is pulled out the point of the bar 122 engages the oblique corner 121 of one of the plates 120 and cams the plate transversely, thus allowing the bar 122 to enter between the ends of two adjacent plates 120. The width of the bars 122 is such that when one of them is interposed in the series of plates 120 the plates cannot be shifted transversely of the machine; consequently, none of the other plungers 3 can be pulled forward until the first handle is returned to its initial position.

This transverse sliding movement of the plates 120 is utilized for shifting the low-purchase attachment by providing a bar 123 mounted for reciprocation and extending transversely above the stems of the plungers 3. Each of the plates 120 is formed with an opening 124 so that a detachable lug 125 may be clamped to the bar 123 in position to engage in any one of the openings 124 for interconnecting the bar with a selected one of the safety plates 120. As shown, the lug 125 is thus engaged with the last plate 120 at the

left-hand end of the series in Figure 3, so that the left-hand compartment is thus adapted to dispense fifteen-cent packages of cigarettes. The lateral movement of the plate 120, communicated to the lug 125 and to the bar 123, causes the oblique end surface 123a of the bar 123 to act as a cam (see Figure 13) against a roller 126 carried by a plate 127 slidably mounted for vertical movement, and rigidly connected to the low-purchase bar 117 by an integral arm 128 (see Figure 5). Thus the initial movement of the plunger 3a at the left-hand side of the machine shifts the low-purchase bar 117 into operative position so that the slide bar 17 will be released by coins to the amount of fifteen cents, corresponding to the purchase price of the cigarettes to be ejected by the plunger 3a. If the lug 125 is set to engage in the opening 124 of the second plate 120 from the left-hand end the actuation of either the first plunger or the second plunger will shift the bar 123 and adjust the low-purchase bar 117 to operative position. Similarly, the lug 125 may be set to engage any selected opening 124 and will thus adapt all the compartments to the left of the lug to deliver cigarettes at the lower price. After each actuation the bar 123 is returned to normal position by a spring 123b, and the low-purchase bar 117 is returned by a spring 129.

While there is shown and described herein certain specific structure embodying the invention, it will be manifest to those skilled in the art that various modifications and re-arrangements of the parts may be made without departing from the spirit and scope of the invention, and that the same is not limited to the particular form herein shown and described, except in so far as indicated by the appended claims.

I claim as my invention:

1. In a vending machine, a coin chute open at one side and limited in width substantially to the thickness of a coin, a reciprocable member with a locking dog on said member and a fixed abutment with which the dog is normally engageable to check reciprocation of said member, the dog having a detector arm extending across the open side of the chute, and a tumbler movably mounted in the chute adjacent said detector arm, the presence of a proper coin in the chute operating to hold the tumbler in position to engage the detector arm and thus guide its dog clear of the abutment to permit reciprocation of the said member.

2. In a vending machine, a coin chute open at one side and limited in width substantially to the thickness of a coin, a stop to arrest a coin therein, the walls of the chute having notches positioned to register with the coin thus arrested, a reciprocable member with a locking dog on said member and a fixed abutment with which the dog is normally engageable to check reciprocation of said member, the dog having a detector arm extending across the open side of the chute and engageable in said notches simultaneously with the engagement of the dog with said abutment, and a tumbler movably mounted in the chute adjacent said detector arm, a coin arrested by the stop operating to hold the tumbler in a position to mask the notches and carry the detector arm past them, thus guiding its dog clear of the abutment to permit reciprocation of the said member.

3. In a vending machine, a vertically disposed coin chute limited in width substantially to the thickness of a coin and open at one edge, a tumbler pivotally disposed in the chute at said open edge thereof, a reciprocable member with a locking dog on said member and a fixed abutment with which the dog is normally engageable to check reciprocation of said member, a portion of said dog being engageable with the tumbler and the presence of a proper coin in the chute operating to swing the tumbler outwardly in position to guide the dog clear of the abutment to permit a full stroke of the reciprocable member.

4. In a vending machine, a coin slot including a main passage and a branch passage, a stop positioned to support a coin in the main passage, a dog pivoted adjacent said main passage with its nose normally projecting therein adjacent the stop, the arrival of a coin on the stop operating to swing the dog on its pivot and project a lug on the dog into the passage at a point above the coin at which point said lug serves to deflect the next coin into the branch passage.

5. In a vending machine, a coin slot including a main passage and a by-pass, a stop positioned to support a coin in the main passage, a dog pivoted adjacent said main passage with its nose normally projecting therein adjacent the stop, the arrival of a coin on the stop operating to swing the dog on its pivot and project a lug on the dog into the passage at a point above the coin at which point said lug serves to deflect the next coin into the by-pass, a second stop in the main passage below the first to receive a coin arriving by way of the by-pass, a dog pivoted with its nose normally projecting into the passage adjacent the second stop, and a branch passage leading from the by-pass, the arrival of said coin on the second stop operating to swing the dog on its pivot and project a lug on said dog into the main passage at a point above said second coin so as to deflect a third coin from the by-pass into the branch passage.

6. In a vending machine, a coin slot including a main passage and a by-pass leading therefrom, a stop in the main passage positioned to support a coin therein, a movable deflector projectible across the main passage at a point above the coin on the stop with means for so projecting the deflector in response to the arrival of a coin on the stop for deflecting the next coin into the by-pass, a second stop in the main passage below the first to receive a coin arriving by way of the by-pass, a second deflector projectible across the main passage above the coin on the second stop, means for so projecting said deflector in response to the arrival of said second coin, and a branch passage leading from the by-pass and into which a third coin is deflected by said second deflector.

7. In a vending machine, a coin chute open at one side and limited in width substantially to the thickness of a coin and of a length to accommodate a plurality of coins aligned edge to edge therein, a reciprocable member with a plurality of locking dogs on said member, a series of fixed abutments spaced apart to engage said dogs respectively to check reciprocation of said member, each dog having a detector arm extending across the open side of the chute, tumblers movably mounted in the chute, each adjacent one of said detector arms and dimensioned so that the presence of a proper coin in the chute will operate to hold a tumbler in position to engage the corresponding detector arm and guide its dog clear of the abutment, a

second coin chute to receive a coin whose value is a multiple of that of a coin fitting the first mentioned chute, the second chute including a main passage and a branch passage, a stop positioned to support a coin in the main passage, a dog pivoted adjacent said main passage with its nose normally projecting therein adjacent the stop, the arrival of a coin on the stop operating to swing the dog on its pivot and project a lug on the dog into the passage at a point above the coin, at which point said lug serves to deflect the next coin into the branch passage, a compensator bar having a lug projecting into said main passage adjacent said stop in position to engage a coin therein, the presence of a coin on the stop serving to hold said bar in position to engage a plurality of the detector arms and to hold out of locking position a number of locking dogs corresponding to the value of said coin as compared with a coin fitting the first mentioned chute.

8. In a vending machine, a coin chute open at one side and limited in width substantially to the thickness of a coin and of a length to accommodate a plurality of coins aligned edge to edge therein, a reciprocable member with a plurality of locking dogs on said member, a series of fixed abutments spaced apart to engage said dogs respectively to check reciprocation of said member, each dog having a detector arm extending across the open side of the chute, tumblers movably mounted in the chute, each adjacent one of said detector arms and dimensioned so that the presence of a proper coin in the chute will operate to hold a tumbler in position to engage the corresponding detector arm and guide its dog clear of the abutment, a second coin chute including a main passage and a by-pass, a stop positioned to support a coin in the main passage, a dog pivoted adjacent said main passage with its nose normally projecting therein adjacent the stop, the arrival of a coin on the stop operating to swing the dog on its pivot and project a lug on the dog into the passage at a point above the coin, at which point said lug serves to deflect the next coin into the by-pass, a second stop in the main passage below the first to receive a coin arriving by way of the by-pass, a dog pivoted with its nose normally projecting into the passage adjacent the second stop, and a branch passage leading from the by-pass, the arrival of said coin on the second stop operating to swing the dog on its pivot and project a lug on said dog into the main passage at a point above said second coin so as to deflect a third coin from the by-pass into the branch passage, and a pair of compensator bars each having a lug, said lugs projecting into said main passage adjacent said stops respectively, each in position to engage a coin on the stop, such engagement serving to hold the bar in position to engage a plurality of the detector arms and thus hold out of locking position a number of locking dogs corresponding to the value of said coin as compared with a coin fitting the first mentioned chute.

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