Dec. 12, 1933. A. H. DU GRENIER 1,938,815

DISPENSING MACHINE

Filed Feb. 24, 1932 2 Sheets-Sheet 1

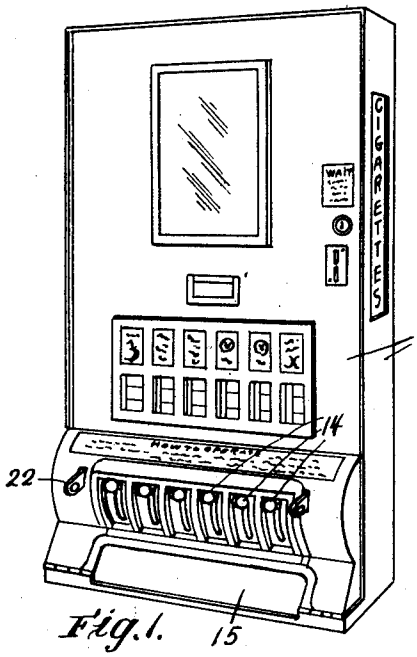


Fig. 1.

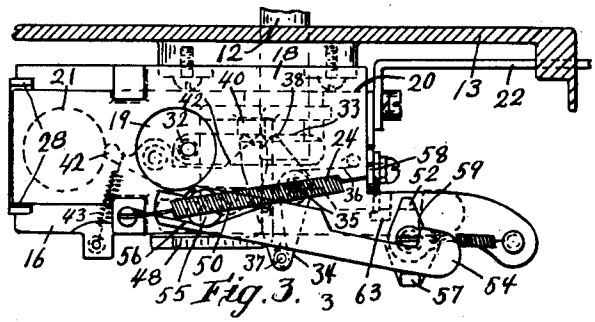


Fig. 3.

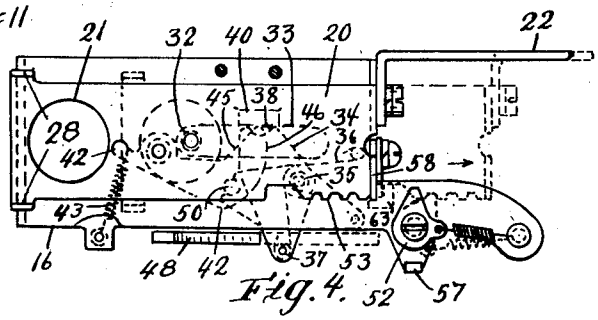


Fig. 4.

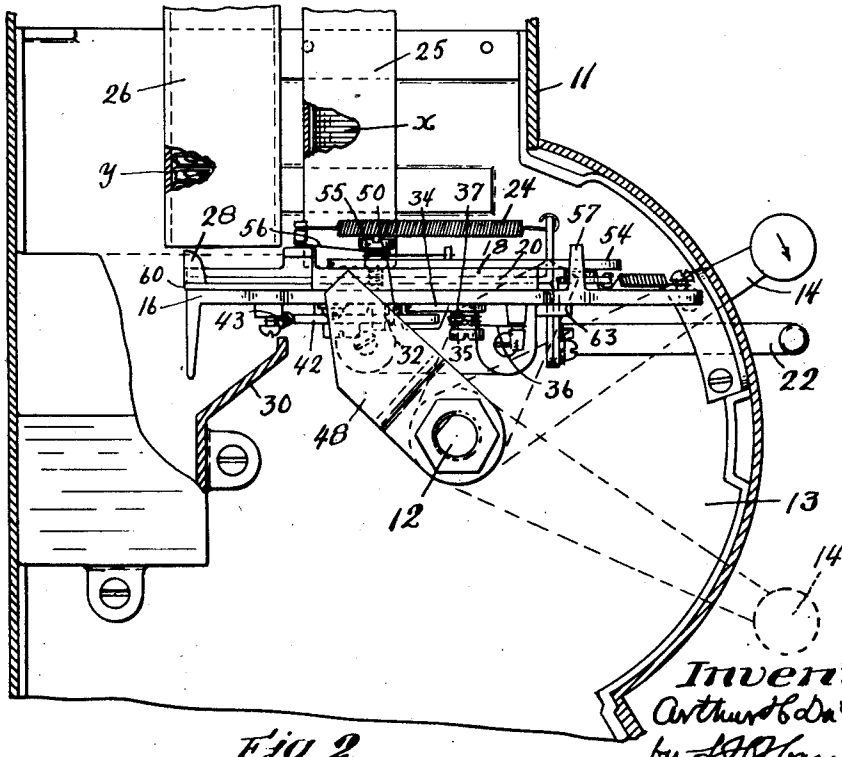


Fig. 2.

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DISPENSING MACHINE

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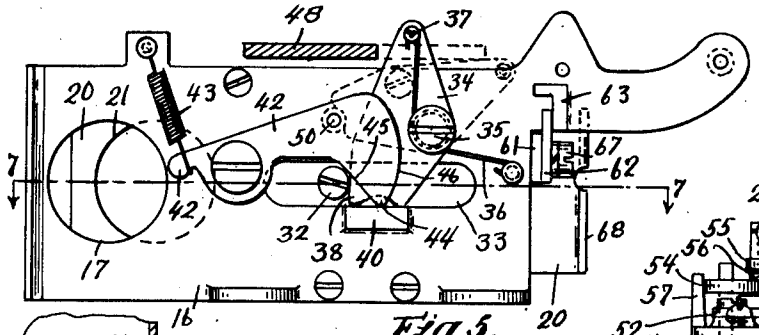


Fig. 5.

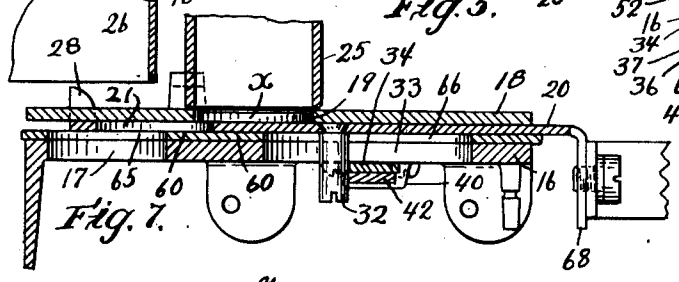


Fig. 7.

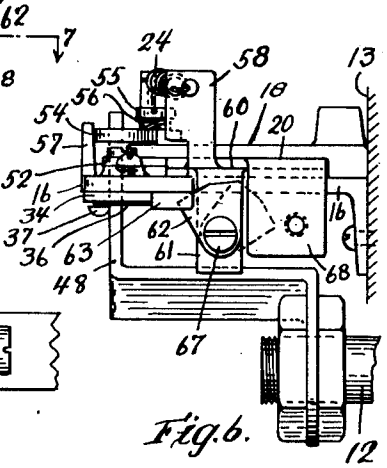


Fig. 6.

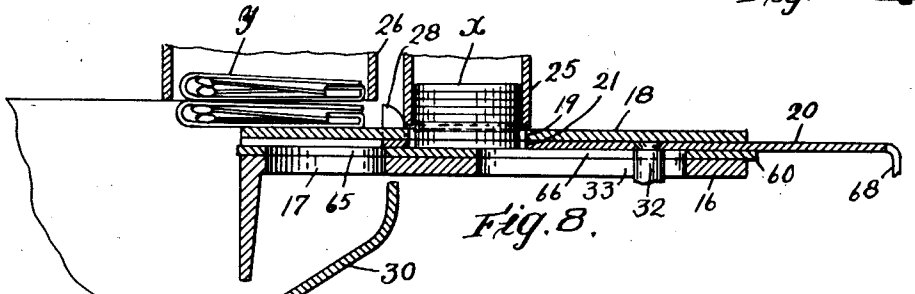


Fig. 8.

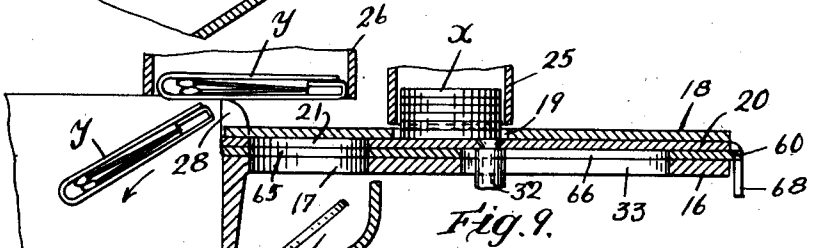


Fig. 9.

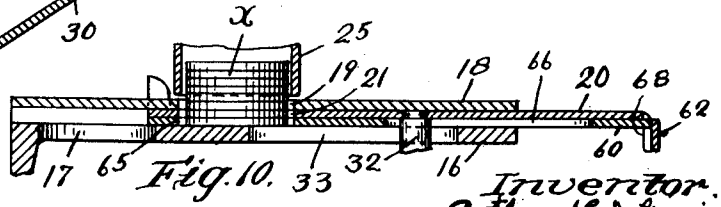


Fig. 10.

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Patented Dec. 12, 1933 1,938,815

UNITED STATES PATENT OFFICE

1,938,815

DISPENSING MACHINE

Arthur H. Du Grenier, Haverhill, Mass.; Francis C. Du Grenier, Haverhill, Mass., administrator of said Arthur H. Du Grenier, deceased, assignor of one-half to Francis C. Du Grenier and one-half to Blanche E. Bouchard, Haverhill, Mass.

Application February 24, 1932. Serial No. 594,851

13 Claims. (Cl. 312—67)

This invention relates to change making devices which are designed for use in connection with vending machines, or to devices which enable certain articles to be delivered to the customer in addition to the article which the machine is primarily designed to dispense.

For example, cigarettes, which are normally sold at a 15¢ per package, are also sold for a few cents more or less than 15¢. It would obviously lead to much complication and expense to provide a coin controlled mechanism which would operate to release the dispensing mechanism on the insertion of coins totalling the exact amount of sales at a price a few cents more or less than 15¢. Moreover, it is frequently desirable to vary the price of an article in the same store from time to time. Also any change in revenue laws of the Nation, or of a State is likely to necessitate a change of a few cents, less than 5¢. at which such articles are to be sold.

It is also desirable to furnish a card of matches with each package of cigarettes sold.

The most practical way to meet these conditions is believed to be to provide vending machines, which are adapted to release the dispensing mechanism upon the insertion of certain standard coins, for example, a nickel and a dime, or two dimes, with means which enable the operator to have delivered to him an amount which, if deducted from the value of the coins inserted, will equal the amount at which the article is to be sold.

The primary object of my invention is to provide a coin, or article dispensing attachment for a vending machine, which, on release of the dispensing mechanism of the vending machine, will cause, or permit the delivery of certain additional coins or articles, or both, to the purchaser.

Other objects of my invention are to provide an attachment which may be readily applied to existing machines of a certain type at relatively small expense, so that any predetermined number of coins may be returned to the purchaser, and, in addition, a card or box of matches, or other article suitable for automatic dispensing.

Also to provide an attachment which is adapted for readjustment to vary the number of coins which are delivered as change, and which is so arranged that such delivery only can be made after complete operation of the dispensing mechanism of the vending machine, so that no purchaser can have delivered to him any more coins, or other articles than those which he is entitled to receive.

I accomplish these objects by providing in connection with a main dispensing mechanism, a supplemental dispensing device, which, on each operation thereof, will deliver one or more coins, or other articles from the bottom of one or more stacks thereof, the movement of said supplemental dispensing device being controlled by locking means which normally prevents operation thereof, but which is set in a position to permit such operation by the complete operation of the main dispensing mechanism in connection with which it is used, so that the purchaser, after having inserted the coin, or coins necessary to release the main dispensing mechanism and after having operated the latter to secure the articles which he wishes to purchase, may then operate the supplemental dispensing device and secure the change to which he is entitled, or any other article, which the device is arranged to deliver.

Also by providing a form of latching mechanism in connection with the locking mechanism of the supplemental dispensing device, which will enable the latter to be operated at any time after a complete operation of the main dispensing mechanism has been performed, and which will be released by a single operation of the dispensing device, so that when a single dispensing operation has been performed, it will again be locked against further operation until subsequently released by another operation of the main dispensing mechanism.

Also by providing an arrangement whereby the main dispensing mechanism may act to lock the supplemental dispensing device against all operation until the dispensing operation of the former has been completed.

Also by providing a form of dispensing device which may be readily adjusted to dispense either a single coin, or a plurality of coins.

For a more complete disclosure of the invention reference is now made to the following specification, in connection with the accompanying drawings in which:

Fig. 1 is a perspective view of a dispensing machine provided with an embodiment of my invention.

Fig. 2 is a left hand end elevation, partly broken away, of the machine which is contained within the outer casing.

Fig. 3 is a top plan view of the supplemental dispensing device controlling means.

Fig. 4 is a similar view with certain parts removed to show the construction.

Fig. 5 is a bottom plan view of said controlling means.

Fig. 6 is a view of the front end thereof.

Figs. 7 to 10 are detail sectional views, at line 7—7 of Fig. 5, showing the parts in different positions.

In the drawings a dispensing machine is indicated which is known as of the column type, in which a plurality of stacks of similar articles, or packages to be vended, are arranged side by side, from each of which a single package may be dispensed by operating a corresponding hand lever.

As this machine, per se, constitutes no part of the invention claimed herein, only those parts are herein referred to which directly cooperate therewith.

The entire machine is enclosed in an outer casing 11, the front of which is removable to permit access thereto. The machine comprises a main operating shaft 12, which is mounted in the sides 13 of the machine, and a series of operating levers 14 are mounted on said shaft, the handles of which extend through the front of the casing. The shaft 12 is normally locked against operation by certain coin-released mechanism, not shown, and when released by the insertion of the coin, or coins, which the machine is designed to receive, any one of the levers 14 may be depressed from the initial, or normal position shown in full lines in Figs. 1 and 2, and, when depressed, will cause forward rotation of shaft 12 until the lever has been depressed to the limit of its movement indicated by the dotted line position of Fig. 2, then, when the lever is released, it will be swung back to its initial position and the shaft 12 will be rotated in the reverse direction, and likewise returned to normal position. This action will result in the delivery of a package to the bottom opening 15 from the stack corresponding to the lever which was operated. In all machines of this type a suitable pawl and ratchet mechanism compels movement of the levers to their extreme positions before they can be returned to normal position.

As already indicated, the primary purpose of the present invention is to provide means whereby a certain amount of change may be returned to the purchaser, after he has inserted the coins necessary to release the main operating shaft 12, so that a package may be secured from one of the columns of the machine at a less price than the amount of the coins originally inserted.

To this end a flat bracket 16 is secured to the left hand end 13 of the machine and is arranged with its top side horizontal, and a guide plate 18 is secured on the top side of said bracket, said plate having its middle portion recessed to provide a guideway for a dispensing slide 20, to which a handle 22 is attached, which extends through an opening in the front of the casing 11, so that the operator may pull the slide outward. A coil spring 24 is attached to said slide and to the plate 18 and normally acts to hold the slide in its normal, or retracted position of Fig. 2.

In the present instance, the slide is designed to dispense, on each reciprocation thereof, a coin or a plurality of coins and also a card of matches. To this end, an aperture 19 is formed in plate 18 of a diameter slightly greater than the diameter of the coins to be dispensed, and a coin tube 25, having an internal diameter approximately the same as that of aperture 19, is mounted vertically on said plate in register with said aperture, said tube in practice extending to the top of the outer casing and being filled with a stack of coins X, as indicated. A square tube 26 is also mounted on plate 18 directly in the rear of tube 25, the internal dimensions thereof being made to correspond to the ordinary card of safety matches generally used by smokers, and said tube is likewise filled with a stack of match cards Y.

The slide 20 is of the same thickness as the coins which are to be dispensed and an aperture 21 is formed therein, also of the same diameter as that of aperture 19.

A pair of fingers 28 are formed on the rear, or inner end of slide 20, and are so arranged that they engage the bottom side of the bottom card in the tube 26 when the slide 20 is in the normal position of Figs. 2, 7 and 9. The bracket 16 has an aperture 17 therein with which the aperture 21 of the slide registers when the slide is in normal position. A hopper 30 is provided on the end wall 13 of the machine directly beneath the aperture 17 and the rear end of the slide 20 and is connected to an opening in said wall, so that an article delivered thereto will slide down to the front opening 15, where it may be secured by the purchaser.

As thus arranged, when the slide 20 is drawn forwardly to its limit, the aperture 21 therein will come into register with the aperture 19 and the bottom coin in the stack will pass into the aperture 21, so that, when the slide is retracted, the coin will be carried back from beneath the stack and will fall through the aperture 17 into the hopper 30, as shown in Fig. 9, and be delivered. Also when the slide 20 is drawn forward to its limit, the fingers 28 will be withdrawn from beneath the stack of match cards, as shown in Fig. 8, so that, when the slide is retracted, said fingers, the black sides of which are vertical, will engage the edge of the bottom card in the stack and push it from beneath the stack, so that it will be delivered to the hopper 30, as shown in Fig. 9.

It will be apparent, that, with the construction as thus far described, the contents of the tubes 25, 26 could be discharged into the opening 15, by merely reciprocating the slide 20 repeatedly. It is, however, desired that it shall be possible to reciprocate the slide only once after each operative movement of one of the handles 14. To this end a post 32 is rigidly mounted in the slide 20 and projects from the under side thereof down through the bracket 16, and the latter is provided with a slot 33 in which said post may be moved when the slide is drawn forward. A locking dog 34 is mounted on the under side of bracket 16 by means of a pivot 35, and spring 36 is engaged with a pin 37 in one end of said dog and normally holds a finger 38 at the opposite end of said dog in engagement with the face of an abutment lug 40, formed on the under side of bracket 16, as shown in full lines in Fig. 5, in which position the dog extends across the path of movement of the post 32, so that a slight forward movement of the slide 20 will carry said post into engagement with said dog, which will prevent further forward movement of the slide, the dog thus normally acting to lock the slide against operative movement. A latch 42 is pivoted on the under side of bracket 16, so that it

is held directly beneath the dog 34, and a coil spring 43 is engaged with one end of said latch and normally holds the end of a tapered finger 44, at the opposite end of said latch, against the face of abutment 40, as shown in full lines in Fig. 5. In this position the finger 44 extends across the path of the post 32 and presents on inclined cam face 45 in position to be engaged by the post when the slide 20 is moved outward and a similar face 46, which is in position for engagement by the post as the slide moves inward. As thus arranged the post may push the latch aside as the slide 20 moves either outward or inward, but will engage the side of the finger 38 on the dog 34 before it engages the face 45.

An arm 48 is fixed on the end of the shaft 12 which projects through the side wall of the machine, and projects perpendicularly therefrom, the normal or initial position thereof being shown in Fig. 2 and the arrangement being such that, when the shaft 12 is rotated forwardly at the time the dispensing operation is performed, the arm 48 will be swung forward parallel with and close to the edge of the bracket 16. In the normal, or locking position of the dog 34, the end thereof in which pin 37 is mounted projects beyond the edge of bracket 16 into the path of the arm 48, so that, when said arm is swung forward during the initial portion of the main dispensing operation, it will engage said end of said dog and swing it to the dotted line position of Fig. 5, in which position the opposite end of the dog will be carried to one side of the path of the post 32, so that the dog will thus be moved to an inoperative position, in which forward movement of the slide 20 will be permitted. The latch 42 is provided with a pin 50, which projects in position to be engaged by the finger 38 of the dog, so that, as the latter is swung out of locking position by the arm 48, the finger 38 will engage the pin 50 and swing the latch aside, but as soon as the finger 38 is swung past the pin 50, so that they become disengaged, the latch immediately returns to its normal position. Consequently, when the arm 48 is swung back out of engagement with the dog on its return movement, so that it will no longer act to prevent return of the dog to normal position, as the dog starts to return, its finger 38 will become engaged with the pin 50 of the latch, preventing further return movement of the dog, which will thus be held in its inoperative position by the latch. While the dog is held in this position, the slide 20 may be pulled forward and when released, will be drawn back so that it will perform its dispensing operation as already described. As the slide is moved forward, however, its post 32 engages the face 45 of the latch and pushes the latter aside until it releases the dog 34, which will then be free to return to normal position, but, by this time the post 32 will have been moved past the position in which it would be intercepted by the dog, so that the forward movement of the slide will be continued, and, on the return movement, the post 32 will merely push the latch and the dog aside, as it is moved past them, so that the slide will return to its initial position, and, as the dog will return to its operative position as soon as the post passes it, the slide will then be locked against operative movement until the main dispensing mechanism is again operated, as before described. To prevent retraction of the slide after it has been drawn forward sufficiently to trip the latch and release the locking dog, and before it has been drawn forward to the outer limit of its movement, a spring actuated pawl 52 is mounted on the bracket 16 in position to engage ratchet teeth 53 on the slide 20, and prevent retraction thereof, until, when the outer limit is reached, the pawl becomes disengaged from the teeth and permits the return movement. Similar arrangements are commonly employed in dispensing devices.

With the above described construction it would be possible, by first releasing the main dispensing mechanism, to depress a lever 14 until the arm 48 moves the dog 34 to its inoperative position, and then, by holding the lever 14 in this position, to operate the slide 20 indefinitely, so that all the coins stored in the tube 25 could be removed.

To prevent such an occurrence, an auxiliary locking device for the slide 20 is provided, which comprises a hook 54, which is mounted on the top side of plate 18 to swing about a pivot 55, and is normally held by a spring 56 in engagement with a stop lug 57 on the plate 18. In the normal position of said hook, shown in Fig. 3, one edge thereof extends divergently, from a point adjacent the pivot 55 outward, with relation to the edge of the plate 18, in which position said edge of the hook is directly in the path of the arm 48, when advanced on depression of a handle, the arrangement being such that, when the arm 48 is moved from its initial position, it immediately engages the edge of the hook 54 and causes it to swing into a position in which its edge is flush with the edge of plate 18, as shown by the dotted line position of Fig. 3, in which position its hook end will be in the path of movement of a lug 58 on the slide 20, so that, if the slide should be drawn outward, its lug 58 would immediately become engaged with the hook 54 and the slide would be locked against further outward movement.

The arrangement is such that the hook 59 is moved into locking position before the arm 48 engages the dog 34 and moves it from locking position, and, as the arm 48 holds the hook in its locking position during the entire time in which the arm is advanced and retracted, it will be apparent that the operation of the slide 20 will not be possible during any of the time in which the main dispensing mechanism is in any of its substantially advanced positions.

The number of coins to be dispensed by each operation of the slide may be varied by varying the thickness of the slide 20, that is, if two coins are to be dispensed, the thickness of the slide will be approximately twice the thickness of the coins and if three coins are to be dispensed, it will be made three times the thickness thereof. It is, however, desirable to provide a simple means of adjustment to vary the number of coins returned without changing the parts. For example, in some instances it is desired to return one cent in change on certain days and two cents in change on other days from the same machine. To meet this requirement, a supplemental slide 60 is provided directly beneath the slide 20, which is, or may be of the same thickness as the slide 20 and is otherwise constructed the same in all respects, except as hereinafter noted, as the slide 20.

The slide 60 is provided with a lug 61 on its front end, and a simple button 62 is mounted

thereon, which, when a single coin only is to be dispensed, is engaged with a lug 63 on the bracket 16, so as to hold the slide 60 in the retracted position of Fig. 9, in which position its coin aperture 65 will be in register with the aperture 21 of the slide 20, when the latter is in retracted position. The slide 60 is provided with a slot 66 in which the post 32 may move when slide 20 is drawn forward. When locked in this position, the slide 60 will have no function.

If, however, it is desired to readjust the machine to dispense two coins, the pivot screw 67 of button 62 will be loosened and the button will be turned out of engagement with the lug 63 and into a position in which it lies against the front side of a lug 68 on the front end of slide 20, to which the handle 22 of the latter is attached, as indicated by the dotted line position of said button in Fig. 6. As thus arranged, the slides 20 and 60 will be locked together and will function exactly the same as if the thickness of slide 20 were doubled. Other variations to secure similar results and dispense other amounts of change may be made in a manner which will be obvious.

With the above described supplemental dispensing device, existing vending machines may, at relatively small expense, be provided with means whereby they may vend merchandise at various amounts less than the amount at which it was originally intended to be vended.

Also by employing said supplemental dispensing device in connection with the manufacture of dispensing machines of standard types, it will only be necessary to provide the latter with coin controlled mechanism to receive, for example, a dime, a dime and a nickel, or two dimes to enable sales to be made for various amounts up to four cents less than these amounts.

I claim:

1. In combination with a dispensing mechanism having an operating device, a supplemental dispensing device having a locking device normally acting to prevent operative movement thereof, means actuated by said operating device on operative movement thereof to move said locking device to an inoperative position, and means for holding said locking device in said inoperative position until said supplemental dispensing device has been operated.

2. In combination with a dispensing mechanism having an operating device, a supplemental dispensing device having a locking device normally acting to prevent operative movement thereof, means actuated by said operating device on operative movement thereof to move said locking device to an inoperative position, means for holding said locking device in said inoperative position, to permit operative movement of said supplemental dispensing device, and means for returning said locking device to its operative position by the action of a single dispensing operation of supplemental dispensing device.

3. In combination with a dispensing mechanism having an operating device, a supplemental dispensing device having a locking device normally acting to prevent operative movement thereof, means actuated by said operating device on operative movement thereof to move said locking device to an inoperative position, a latching device arranged to hold said locking device in said inoperative position, to permit operative movement of said supplemental dispensing device and means arranged for actuation by said supplemental dispensing device when moved operatively, to move said latching device to release said locking device and return it to its operative position.

4. In combination with a dispensing mechanism having an operating device arranged when operated to perform a dispensing operation, a supplemental dispensing device having a locking device normally acting to prevent operative movement thereof, means arranged for actuation by said operating device on operative movement thereof to move said locking device to an inoperative position, a latching device automatically operable to hold said locking device in said inoperative position when moved thereto, to permit an operative movement of said supplemental dispensing device, and means arranged for actuation by the operative movement of the latter to move said latching device and release said locking device and return it to its operative position by the time the operative movement of said supplemental dispensing device is finished.

5. In a dispensing machine a main, and a supplemental dispensing device, each independently movable from, and back to an initial position to perform a dispensing operation, a locking device normally operative to intercept said supplemental dispensing device, when moved from said position, means arranged to be actuated by said main dispensing device when moved from its initial position to move said locking device to an inoperative position, a latching device automatically operative to hold said locking device in said inoperative position when moved thereto, and means arranged to be actuated by said supplemental dispensing device when moved from its initial position beyond a position at which it may be intercepted by said locking device to move said latching device to permit said locking device to return to its operative position.

6. In a dispensing machine a main, and a supplemental dispensing device, each independently movable from, and back to an initial position to perform a dispensing operation, a main locking device normally influenced to prevent operative movement of said supplemental dispensing device from its initial position and an auxiliary locking device normally influenced to permit said movement, means arranged to be actuated by said main dispensing device as it is moved from its initial position to move said main locking device to an inoperative position and to move said auxiliary locking device to lock said supplemental dispensing device against operative movement until said main dispensing device has completed its operation, and returned to its initial position, a latching device automatically operative to hold said main locking device in its inoperative position when moved thereto, and means arranged for actuation by operative movement of said supplemental dispensing device to move said latching device to permit said main locking device to return to operative position by the time the operative movement thereof is finished.

7. In a dispensing machine, a main and a supplemental dispensing device, each movable from, and back to an initial position to perform a dispensing operation, a main locking device normally disposed to prevent operative movement of said supplemental dispensing device when moved to a predetermined point from said

position and an auxiliary locking device normally held in position to permit operative movement thereof, engaging means arranged for actuation by operative movement of said main dispensing device, as it is advanced from its initial position, to move said auxiliary locking device into position to lock said supplemental dispensing device against operative movement and thereafter to move said main locking device to an inoperative position, and to hold said auxiliary locking device in said locking position until the operation of said main dispensing device is finished, a latch automatically operative to hold said main locking device in its inoperative position when moved thereto, and means arranged for actuation by the operative movement of said supplemental dispensing device to move said latching device to permit said main locking device to return to operative position by the time the operative movement of said supplemental device has been finished.

8. In a dispensing machine, a main dispensing device operable to perform a dispensing operation, a supplemental dispensing device comprising a reciprocally movable slide arranged to deliver an article on completion of each reciprocation thereof, a locking device normally disposed to prevent operative movement of said slide, means arranged for actuation by an operative movement of said main dispensing device to set said locking device in an inoperative position, and means arranged to be actuated by a single reciprocation of said slide to return said locking device to its operative position.

9. In a dispensing machine, a main dispensing device operable to perform a dispensing operation, a supplemental dispensing device comprising a reciprocally movable slide arranged to deliver an article on completion of each reciprocation thereof, a locking device normally disposed to prevent operative movement of said slide, means arranged for actuation by an operative movement of said main dispensing device to set said locking device in an inoperative position, and to lock said slide against operative movement while said main dispensing operation is being performed and means arranged to be actuated by a single reciprocation of said slide to return said locking device to its operative position.

10. In a dispensing device comprising a reciprocally movable main dispensing slide arranged to deliver an article on completion of each reciprocation thereof, a similarly constructed auxiliary dispensing slide having means for holding it in a position in which it will be in register with said main slide when the latter is in its delivering position, and means for connecting said slides to cause them to be moved in unison, whereby the number of articles to be dispensed on each reciprocation thereof may be increased.

11. In a dispensing device comprising a reciprocally movable main dispensing slide having an opening therein for receiving an article when moved forwardly from an initial position and for delivering the article when returned to said position, a similarly constructed auxiliary slide disposed directly beneath said main slide, means for locking said auxiliary slide in said initial position and means for connecting said slides to permit them to be moved in unison and to deliver an increased number of said articles on each reciprocation thereof.

12. In a dispensing machine, a shaft and means for causing an oscillatory movement of said shaft to perform a dispensing operation, a reciprocally movable supplemental dispensing device arranged on each reciprocation thereof to perform a dispensing operation, a locking device normally disposed to prevent operative movement of said device, an arm on said shaft arranged to move said locking device to an inoperative position during the operative movement of said shaft, means automatically operative to hold said locking device in its inoperative position when moved to said position and means for automatically returning said locking device to its operative position arranged for actuation by a single operative movement of said supplemental dispensing device.

13. In a dispensing machine, a shaft and means for causing an oscillatory movement of said shaft to perform a dispensing operation, a reciprocally movable supplemental dispensing device arranged on each reciprocation thereof to perform a dispensing operation, a main locking device normally influenced to be held in a position to prevent operative movement of said device and an auxiliary locking device normally influenced to be held in a position to permit said movement, an arm on said shaft arranged during the initial portion of the operative movement thereof to move said auxiliary locking device into a postion to prevent operative movement of said dispensing device and then to move said main locking device to a inoperative position and thereafter to hold said auxiliary locking device in said operative position during the subsequent operative movement thereof, a latching device for automatically holding said main locking device in its inoperative position when moved thereto, and means for moving said latching device to release said main locking device on operative movement of said dispensing device.

ARTHUR H. Du GRENIER.