

Aug. 8, 1933.

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1,921,610

DISPENSING MACHINE

Filed Sept. 26, 1931

2 Sheets-Sheet 1

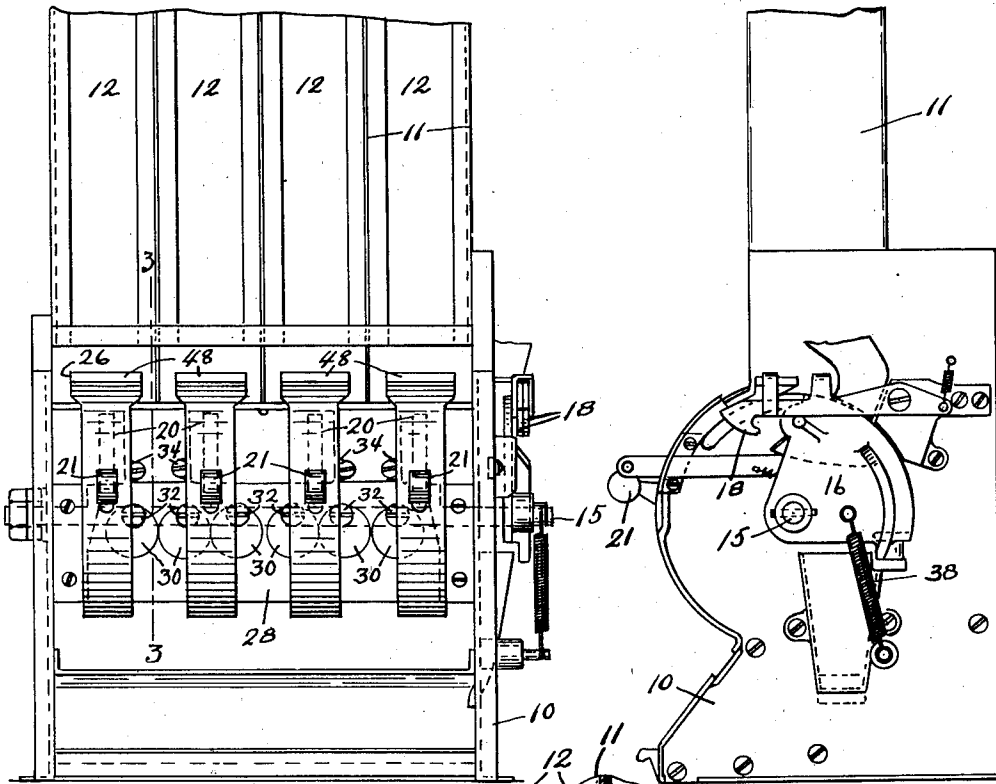


Fig. 1.

Fig. 2.

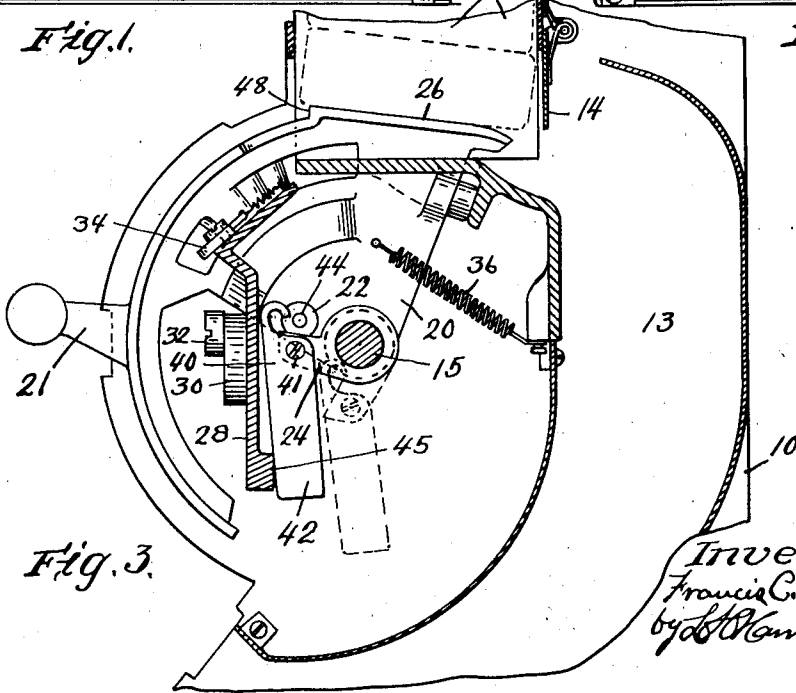


Fig. 3.

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2 Sheets-Sheet 2

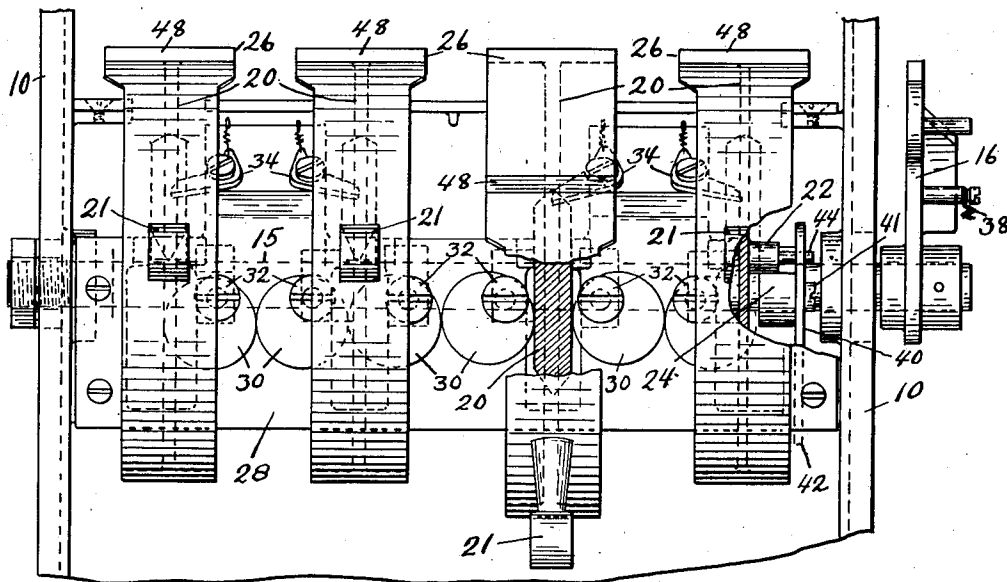


Fig. 4.

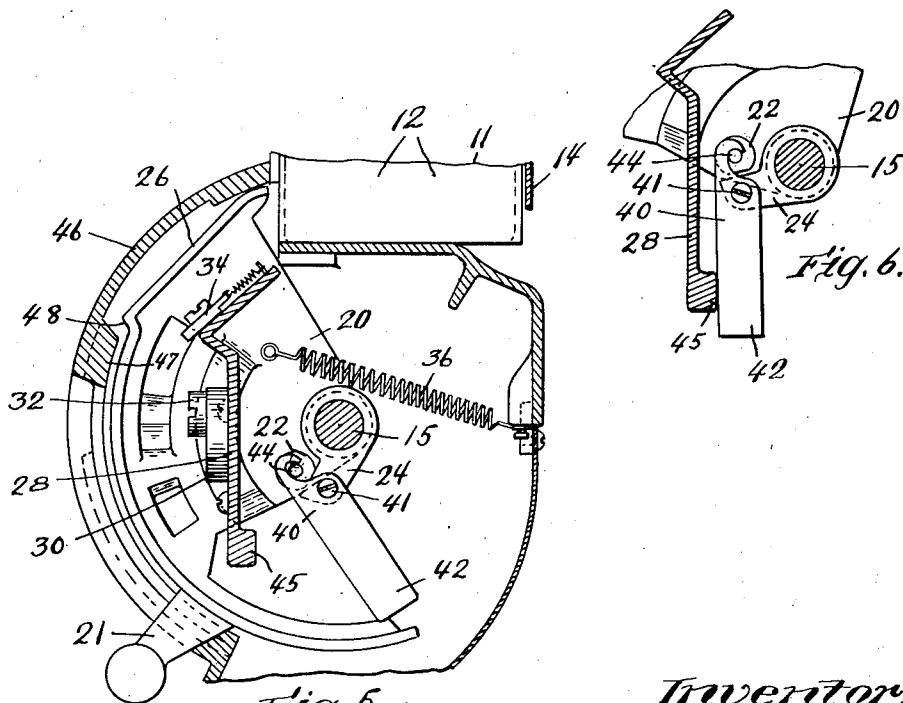


Fig. 5.

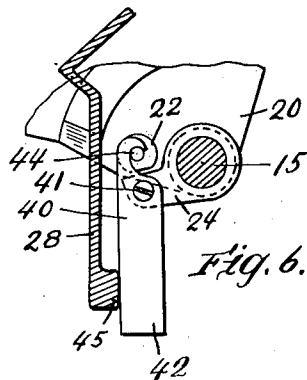


Fig. 6.

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UNITED STATES PATENT OFFICE

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DISPENSING MACHINE

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Application September 26, 1931
Serial No. 565,325

5 Claims. (Cl. 194—2)

This invention relates to that type of coin released dispensing machines in which the articles to be dispensed are placed in vertically disposed compartments, from any one of which a single article may be dispensed by actuating a corresponding operating device when released.

When the articles to be dispensed are all of the same price, it is desirable that a single coin released mechanism be arranged to control all of the operating devices, so that a single coin testing means may be employed to test all coins which are placed in the machine. With such an arrangement a single locking mechanism is preferably employed which normally acts to prevent operation of all the operating devices, so that, upon the insertion of the requisite coin or coins, the machine will be unlocked, permitting operative actuation of any one of the operating devices. Under such conditions additional means must be provided to prevent operative movement of two, or more of the operating devices, either successively or simultaneously, so that the delivery of more than one article for the corresponding coin or coins will be prevented.

The primary object of my invention is to provide, in a dispensing mechanism having a shaft which is normally locked against oscillation by a single coin-controlled mechanism and which, when unlocked, permits operative movement by any one of a series of operating arms from and to an initial position, means whereby the return movement of the arm which has been operated, will positively act to return the shaft to its initial locked position, so that repeated operations of the arms, without inserting additional coins will be prevented.

I accomplish these objects by means of the mechanism hereinafter described and illustrated in the accompanying drawings in which:—

Fig. 1 is a front elevation of a portion of a dispensing machine embodying my invention.

Fig. 2 is an end elevation thereof.

Fig. 3 is a sectional view at line 3—3 of Fig. 1.

Fig. 4 is a front elevation similar to Fig. 1 and showing the parts in a different position.

Fig. 5 is a view similar to Fig. 3 and showing the parts in different positions.

Fig. 6 is a detail view showing another position of certain parts shown in Fig. 5.

It will be understood that the mechanism shown is to be enclosed within an outer casing and that only those parts are shown which embody the invention claimed and are directly associated therewith.

As shown in the drawings, the frame 10 has a series of upright partitions 11 mounted thereon and arranged to form a series of vertical package-receiving compartments 12, four being shown, although the particular number which may be employed is unimportant, each compartment opening at its rear side and lower end to delivery passage 13, the entrance to which is closed by a spring pressed door 14.

A main shaft 15 is mounted horizontally in the sides of the frame, one end portion of said shaft protruding beyond the frame and having a sector shaped locking disk 16 mounted thereon, said disk being arranged for engagement by one or more coin-released locking dogs 18, which are normally held in position to prevent operative rotation of the disk and shaft and which are adapted to be moved from locking position by suitable coin controlled mechanism, not shown, to permit such rotation.

A series of combined operating and ejecting devices are provided, which are arranged side by side in a row, and one of which is provided for each package holding compartment. As said devices are identical in construction, a description of one will suffice. Each of said devices comprises a flat, sector shaped arm 20, which is pivotally mounted on the shaft 15 and has an operating handle 21 extending from the peripheral edge thereof, said arm having flat parallel sides disposed perpendicularly to shaft 15. A rigid lug or boss 22 projects from one side of the arm 20, in position to engage the upper side of a corresponding arm 24, fixed on the shaft 15, so that when the arm is depressed from its initial position the shaft 15 will be moved rotatably thereby to a limited extent. Each arm 20 is provided with a flat ejecting finger 26 on its periphery, which, in the normal position of the arm acts to support the packages stacked in the corresponding compartment and which, on depression of the handle 21, thereof, is withdrawn from beneath the stack of packages, so that the lowermost package in the stack will rest on the bottom of the compartment, and on the return movement, the finger 26 will engage the lowermost package and push it back into the passage 13, which will in turn conduct it to a position in which it may be secured by the purchaser.

It will be apparent that, with the mechanism thus far described, it would be possible to depress all of the handles 21 simultaneously and thus eject a package from each compartment, for the price of a single package. To prevent

operation of the machine in this manner, a partition 28 is fixed in front of the shaft 15 and is provided with vertical slots thru which the arms 20 extend, and a series of locking devices are provided, which consist of a series of circular metal disks, or cams 30, each of which is suspended on said partition 28 by a pivot 32 adjacent its periphery. The pivots 32 are arranged at the same level, so that said disks are supported in a horizontal row, and are so spaced that the diametrically opposite faces formed on the peripheries of each disk are normally held by gravity action on the disks either in actual contact with, or in close proximity to the faces of the adjacent disks, so that when any one of said disks is swung on its pivot in either direction, all of the disks, at the side thereof towards which the disk is swung, will be swung in the same direction. A pair of said disks 30 is provided for each intermediate operating arm 20, and a single disk is provided for the two end arms, each pair of disks being so arranged that their adjacent peripheral faces normally meet at the middle of the path of the corresponding arm 20, and each end disk also being arranged to extend at least to the middle of its corresponding path, the arrangement being such that, when any one of the arms 20 is swung downward from its initial position, its lower edge, which is preferably made wedge shape, as shown, will become engaged almost immediately with the peripheral face or faces of the disk or disks which extend into the path of movement thereof. On further depression of any one of the intermediate arms 20 the disks which extend into its path will be swung in opposite directions from the path and on further depression of either of the end arms the engaged disk will be swung to the right of the left hand arm and to the left of the right hand arm.

Consequently, when an intermediate arm is depressed sufficiently to swing its corresponding disks from its path, all of the disks at the right of the arm will be swung to the right, and those at the left of the arm will be swung to the left thereof, as indicated in Fig. 4. Also, if the arm at the extreme right is depressed, all of the disks will be swung to the left and if the arm at the extreme left is depressed, all the disks will be swung to the right. For the purposes of the invention, it is not essential that all of the disks be actually swung as above stated, but it is sufficient if all of the disks are held in contact, so that there cannot be substantial swinging movement in the opposite direction to that indicated in any instance.

It will, therefore, be apparent that if any one of the arms 20 is depressed, thereby causing the disks to be swung in one direction, or the other as above described either one or two of the disks will be positively held in the path of movement of all of the other arms, so that, so long as any one of the arms is depressed, all of the other arms will be positively locked against operative movement.

Also if it should be attempted to depress any two of the arms 20 simultaneously, each arm acting thru the disks will prevent depression of the other arm, in like manner, as the fact that all of the disks are practically held in contact each with the next adjacent makes it impossible to swing the disks between such arms in opposite directions to any substantial extent.

A pawl 34 is provided in connection with each arm 20, which prevents return movement of the

arm until after it has been depressed to the full limit of its downward movement, so that it will be impossible to operate the machine except in the intended manner, the pawl acting to prevent return movement before the ejecting finger 26 is withdrawn from beneath the stack of packages.

A spring 36 is connected to each arm 20 for the purpose of returning the same to their normal positions when released and a spring 38 is connected to the locking disk 16 for the purpose of returning the disk 16 and shaft 15 to normal position, after they have been advanced to delivery position by any one of the arms 20.

In case the spring 38 should fail to return shaft 15 and disk 16 to their normal positions, or should for any reason be prevented from so doing, after they have been moved to delivery position, it would be possible to raise and lower the delivering arms 20, one after another, successively so long as the locking disk 16 was held in delivery position, and, in this manner, all of the packages in the machine might be discharged therefrom by merely inserting one coin. For example the action of the returning spring 38 might be overcome by cramping some of the arms 20 on the shaft 15, so that the spring would not be strong enough to turn back the shaft.

To avoid this possibility, each operating arm 20 and its cooperating mechanism, is provided with means whereby the return movement of the arm will act positively to rotate the shaft 15 back to its initial position. Such means comprises a series of dogs or hooks 40, each mounted on a pivot 41, fixed in each arm 24 of the shaft 15, each hook having a shank 42 below its pivot of sufficient weight to hold the hook in an upright position. The corresponding arms 20 are each provided with a pin 44, which projects from the end of the boss 22 in position to be engaged by the hook 40 under certain conditions to be described.

The normal, or initial position of these parts is shown in full lines in Fig. 3, and in this position the shank 42 of the hook engages a flange 45 on the rear side of the partition 28 and holds the hook 40 in front of, and out of engagement with the pin 44.

If the one of the operating arms 20 is depressed from the normal position of Fig. 3 to the extreme position to which its operative movement is limited, as shown in Fig. 5, the hooks 40 of all the other operating arms will have no operative action, as each arm 24 will merely lower its hook from the full line position of Fig. 3, to the dotted line position of Fig. 3, and then return it, the hook being at all times held out of position to engage the corresponding pin 44. When, however, any one of the arms 20 is depressed, the operation as to this arm will be as follows:—Depression of the arm causes its pin 44 to be swung towards the hook 40 on the corresponding arm 24, so that, by the time the limit of downward movement has been reached, the pin 44 will be held in position to be engaged by the hook, as shown in Fig. 5, so that, when the arm 20 starts on its return movement, the pin 44 will engage the hook and positively swing the arm 24 upward, so that the shaft 15 will be positively turned back towards its initial position, and this condition will continue until the position of Fig. 6 is reached, at which point the package will have been ejected and the locking disk 16 will have been moved back to a position in which it would be engaged by the

coin-controlled locking dog 18, if it should be again advanced. When this point is reached the shank 42 of the hook will engage the fixed flange 45, so that, during the remainder of the return movement the hook 40 will be swung away from the pin 44 and become disengaged therefrom, and the parts will be returned to the full line position of Fig. 3. Consequently, the return movement of any one of the operating arms 20 will act positively to return the shaft 15 and locking disk 16 to their initial positions regardless of the action of the spring 38.

A guard plate 46 is secured to the frame in front of the operating arms 20 and is provided with vertical slots through which the handles 21 extend, and said plate is provided with a rib 47 on its inner side which is arranged in proximity to the peripheral ends of the arms 20. With this construction, and without the provision of further means, it might be possible to insert a thin strip of metal or wire between the plate 46 and the peripheral edge of an arm 20, while held depressed, in a manner to push the bottom package of the corresponding stack into the delivery passage, so that in this way all the packages in the stack could be removed after inserting the coins necessary to permit depression of the arm.

To prevent ejection of the packages in this manner a shoulder 48 is formed in the peripheral portion of each arm 20, which is so arranged that it is moved into proximity to the rib 47 when the arm is moved to its extreme position as shown in Fig. 5, so that if a thin flexible instrument were inserted between the plate 46 and the peripheral surface of the arm segment, it would be intercepted by the shoulder 48.

I claim:

1. In a coin-controlled dispensing machine having a shaft, a series of operating arms each arranged for operative movement from and to an initial position, said arms each having means for engaging the shaft to move the same rotatably in one direction on movement of the arm from said position, locking mechanism normally acting to prevent rotation of said shaft in said direction and coin releasable to permit operative movement of said arms, and means arranged for positive engagement of each arm with said shaft to rotate the shaft in the reverse direction on return movement of the arm to its initial position.

2. In a dispensing machine having a shaft, a series of operating arms pivotally mounted side by side on said shaft and arranged for operative movement from and to an initial position, each arm having means for engaging said shaft to move the same rotatably in one direction upon operative movement of the arm from said position, locking mechanism normally acting to prevent rotation of said shaft in said direction and releasable to permit operative movement of said arms and means on said shaft arranged for

positive engagement with each arm when moved operatively to rotate the shaft in the reverse direction on the return of the arm to its initial position.

3. In a dispensing machine having a shaft, a series of operating arms pivotally mounted side by side on said shaft and arranged for operative movement from and to an initial position, each arm having means for engaging said shaft to move the same rotatably in one direction upon operative movement of the arm from said position, locking mechanism normally acting to prevent rotation of said shaft in said direction and releasable to permit operative movement of said arms, and a series of dogs mounted on said shaft, each arranged for automatic engagement with a corresponding arm when the arm is moved operatively, to positively rotate the shaft in the reverse direction by the return movement of the arm to its initial position.

4. In a dispensing machine having a shaft, a series of operating arms pivotally mounted side by side on said shaft and arranged for operative movement from and to an initial position, each arm having means for engaging said shaft to move the same rotatably in one direction upon operative movement of the arm from said position, locking mechanism normally acting to prevent rotation of said shaft in said direction and releasable to permit operative movement of said arms, and a series of dogs mounted in said shaft and corresponding to said series of arms, each dog being normally disengaged from its corresponding arm, to permit operative movement of one arm while the other arms are held in their initial positions, and being arranged for engagement therewith when the arm is moved operatively and is being returned to initial position, to rotate the shaft in the reverse direction by the return movement of the arm.

5. In a dispensing machine having a shaft, a series of operating arms pivotally mounted side by side on said shaft and arranged for operative movement from and to an initial position, each arm having means for engaging said shaft to move the same rotatably in one direction upon operative movement of the arm from said position, locking mechanism normally acting to prevent rotation of said shaft in said direction and releasable to permit operative movement of said arms, a series of dogs pivotally mounted on said shaft eccentrically thereof and corresponding respectively to said arms, means on each arm arranged for engagement by the corresponding dog when the arm is moved operatively to its extreme position, to rotate the shaft reversely during an initial portion of the return movement of the arm, and means for disengaging the dog from the arm during the latter portion of its return movement and for holding it in disengaged position while the arm is in its initial position.

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