

April 13, 1926.

1,580,113

J. T. BONNEY

CHECK CONTROLLED LIQUID DISPENSING MACHINE

Filed July 12, 1922

5 Sheets-Sheet 1

Fig. 1.

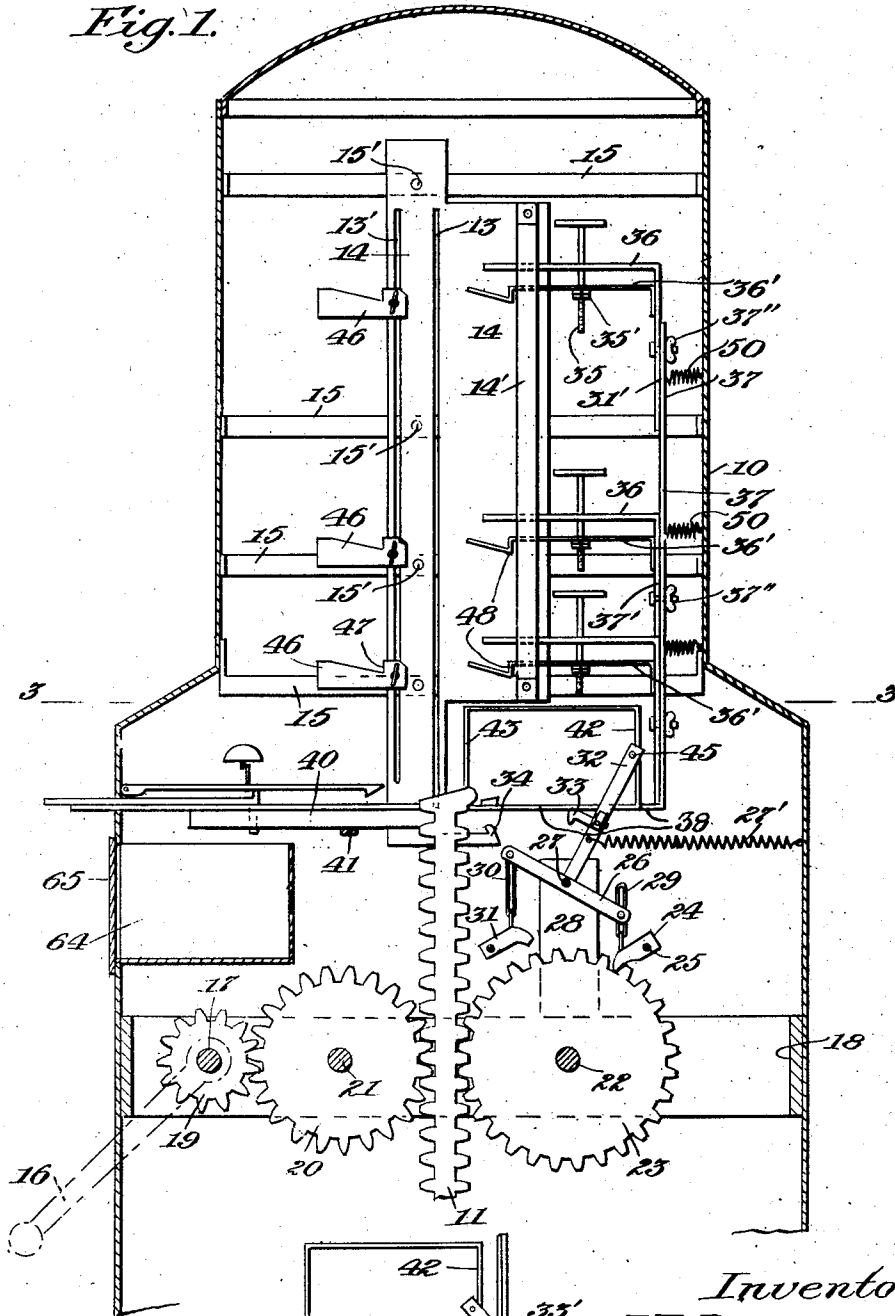
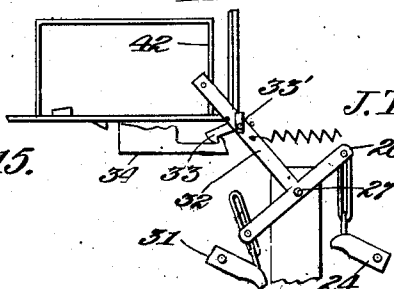


Fig. 15.



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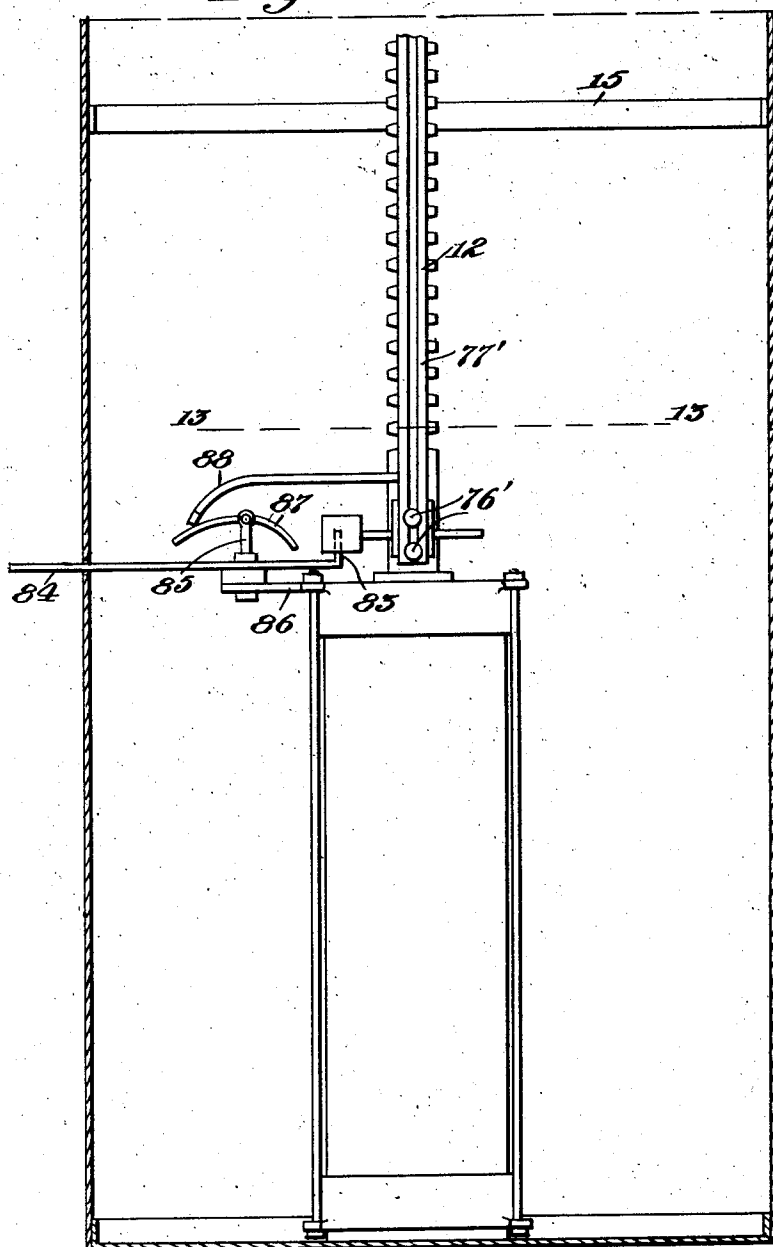
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5 Sheets-Sheet 2

Fig. 1^a



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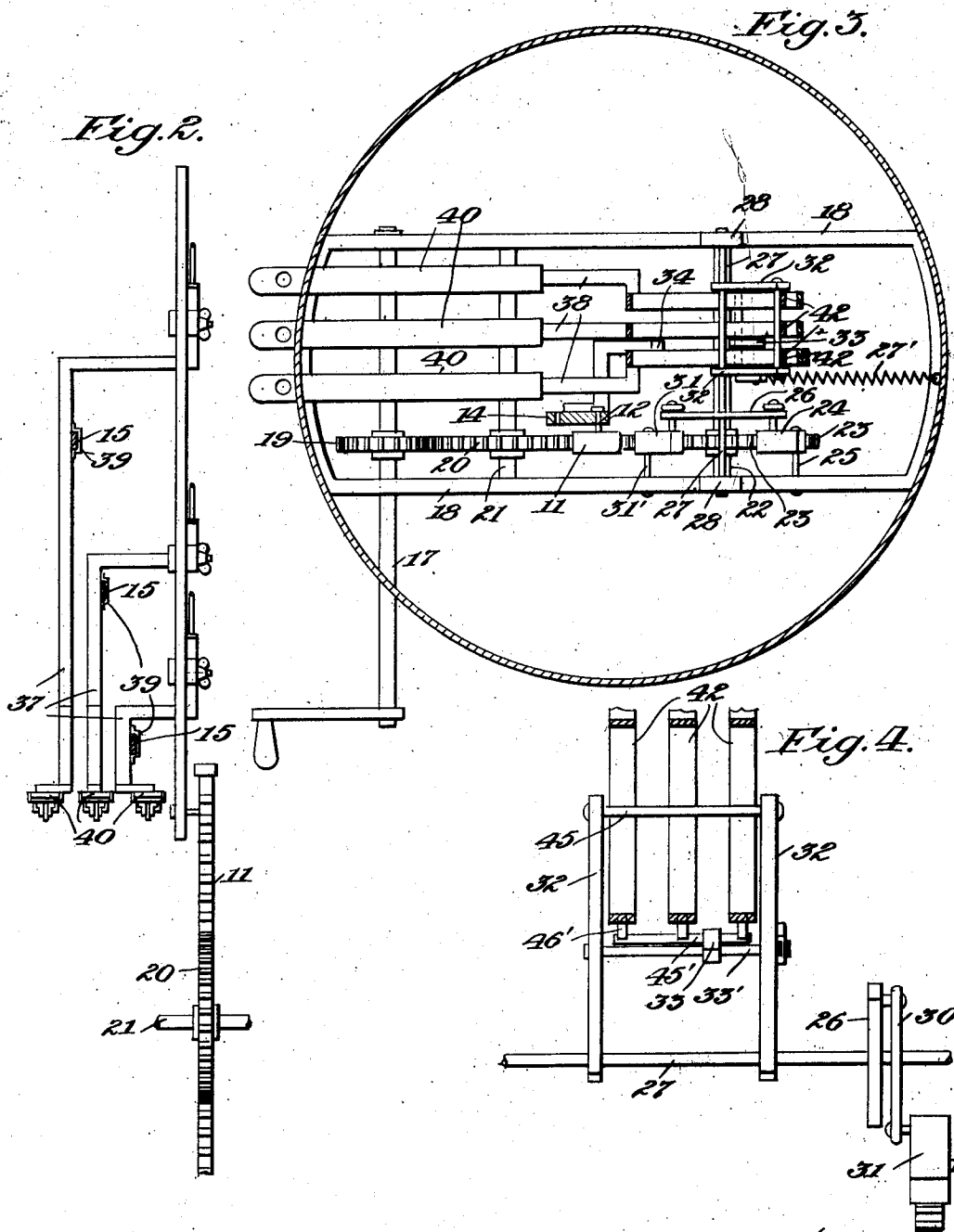
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CHECK CONTROLLED LIQUID DISPENSING MACHINE

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5 Sheets-Sheet 3



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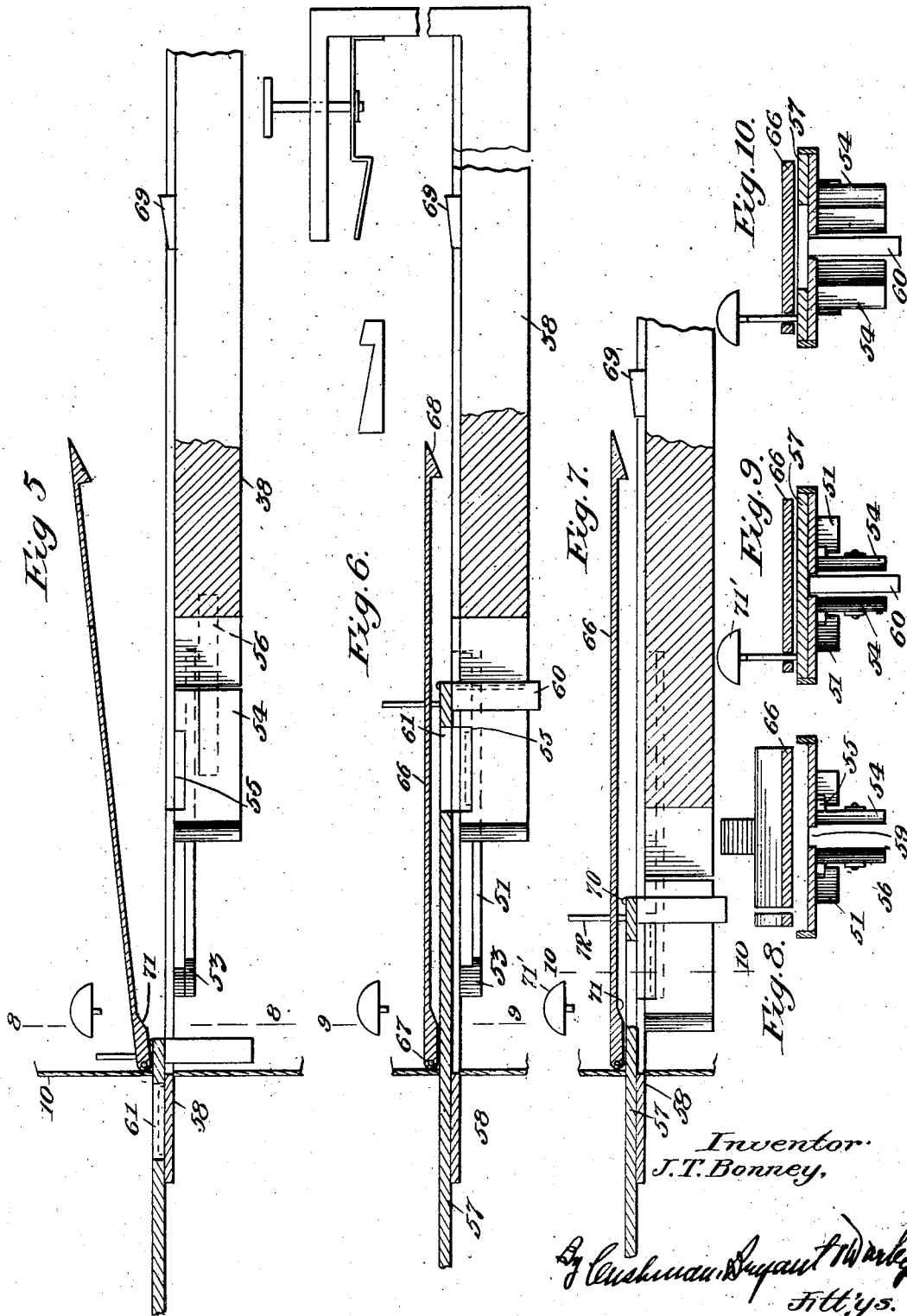
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1,580,113

CHECK CONTROLLED LIQUID DISPENSING MACHINE

Filed July 12, 1922

5 Sheets-Sheet 4



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1,580,113

CHECK CONTROLLED LIQUID DISPENSING MACHINE

Filed July 12, 1922

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Fig. 14.

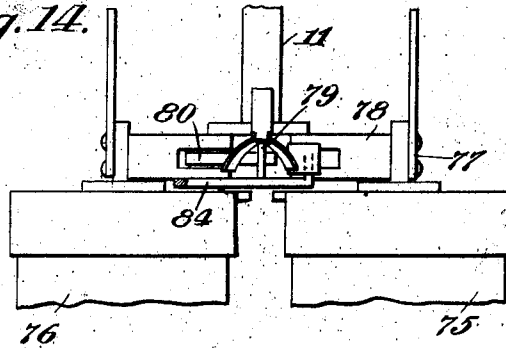


Fig. 13.

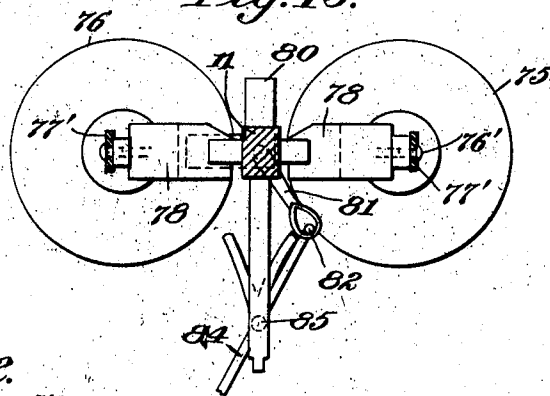


Fig. 12.

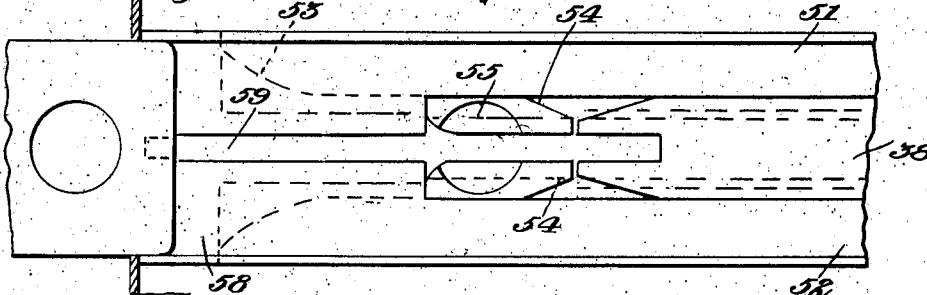
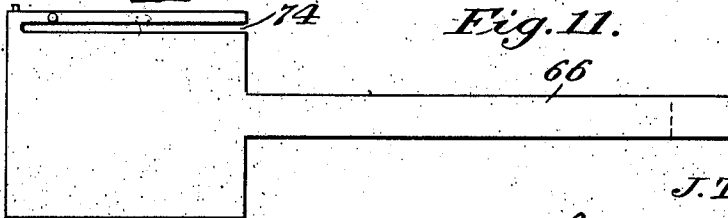


Fig. 11.



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Attys.

UNITED STATES PATENT OFFICE.

JESSE T. BONNEY, OF FRANKLIN, VIRGINIA.

CHECK-CONTROLLED LIQUID-DISPENSING MACHINE.

Application filed July 12, 1922. Serial No. 574,361.

To all whom it may concern:

Be it known that I, JESSE T. BONNEY, a citizen of the United States, residing at Franklin, in the county of Southampton and State of Virginia, have invented new and useful Improvements in Check-Controlled Liquid-Dispensing Machines, of which the following is a specification.

This invention relates to a vending machine, and more particularly to apparatus including coin controlled mechanism adapted to be associated with liquid dispensing means.

An object of the invention is to provide a simple and efficient mechanism which may be readily applied to the standard liquid pumping apparatus ordinarily employed in dispensing liquids, such as gasoline and oils for use in motor vehicles.

A further object of the invention is to provide an apparatus which may readily be adjusted in order to vary the amount of liquid dispensed in accordance with the variation in the price of the liquid without modifying the coin controlled mechanism.

An additional feature of the invention resides in the provision of means whereby the automatic control may be thrown out of operation so that the machine may be used without the coin controlled mechanism when an attendant is in charge of the machine.

Additional objects of the invention reside in the provision of means for insuring smooth and positive operation of the machine and general stability of structure, and in means whereby the machine may be used for dispensing different kinds of liquid, as the operator may desire.

The above mentioned objects of the invention and other objects of a more minute character, which are more intimately associated with the details of construction of the apparatus disclosed in the accompanying drawings which illustrate the invention, will become more obvious as the description proceeds.

The apparatus comprises, generally, the usual vertically movable rack-bar having means whereby it may be connected with either one of a plurality of liquid pumps. The rack-bar is normally locked against movement in one direction, and above the bar are located a plurality of vertically spaced stops normally positioned out of the path of travel of the rack-bar. The stops

are individually movable to positions above the rack-bar and in its path of travel by suitable coin controlled mechanism, which, upon the insertion of a suitable coin, also releases the rack-bar locking means. Preferably, the rack-bar locking means is not rendered inoperative until a selected stop is set in the path of movement of the rack-bar; and, at the same time, a second locking means is thrown into operation in order to prevent reverse of the rack-bar until the stop is engaged by the bar. The operator is then free to move the rack-bar to pump from a suitable storage tank, and when the rack-bar has moved a sufficient distance to engage the stop, which has been set, the stop is then released, and the reverse movement locking means is thrown out of operation, which permits the rack to be returned to normal position.

The above are the general characteristics of this apparatus, and in order that a clear understanding of the same may be had there is disclosed in the accompanying drawings one form of a device in which the invention may be embodied.

In these drawings:—

Fig. 1 is a vertical section of the upper portion of the machine, a majority of the operating parts being shown in side elevation,

Fig. 1^a is a side elevational view of the lower portion of the mechanism, the casing being shown in section,

Fig. 2 is a partial front elevation,

Fig. 3 is a horizontal section on the line 3—3 of Fig. 1,

Fig. 4 is a vertical section showing a portion of the locking mechanism,

Figs. 5, 6 and 7 are side elevations of the coin controlled mechanism,

Fig. 8 is a section of the coin controlled mechanism taken on the line 8—8 of Fig. 5,

Fig. 9 is a cross section of the coin controlled mechanism taken on the line 9—9 of Fig. 6,

Fig. 10 is a cross section taken on the line 10—10 of Fig. 7,

Fig. 11 is a detail view of the coin controlled mechanism,

Fig. 12 is a top plan view of a portion of the coin controlled mechanism,

Fig. 13 is a top plan of the mechanism shown in Fig. 14, taken on substantially the line 13—13 of Fig. 1^a.

Fig. 14 is a front elevation of the means for connecting the rack-bar to one of a plurality of pumps, and

Fig. 15 is a detail view showing the locking mechanism in released position.

Referring to the drawings for a more detailed description, 10 indicates, generally, a casing which may be provided with a suitable door (not shown) permitting access to be had to the interior mechanism of the machine. The apparatus comprises the usual rack-bar 11 having a longitudinal rib 12 (Fig. 3) fitting in a longitudinal slot 13 in a guide plate 14 supported in the upper end of the casing by means of vertically spaced cross bars 15 to which the guide bar is secured as by means of bolts 15'. The rack-bar may be operated by a hand crank 16 positioned upon a shaft 17 extending through the wall of the casing and having bearings in a frame 18 (Fig. 3) within the casing. The shaft 17 (Figs. 1 and 3) has thereon, within the casing, a pinion 19 meshing with a rack-gear 20 fixed upon a shaft 21 having bearings in the frame 18. Upon the opposite side of the rack-bar is a shaft 22 provided with suitable bearings in the frame 18 and having fixedly secured thereon a gear 23 meshing with the rack. The rack-bar and its gearing, above described, are normally locked against movement by means of a pawl 24 pivoted upon a pin 25 (Fig. 3) secured in the frame 18. A rock-shaft 27 extends between and has bearings in vertical frame bracket arms 28 and carries a cross-bar 26 which is connected, at one end, to pawl 24 through link 29, (Fig. 1) and at its opposite end, by means of link 30, to a reverse locking pawl 31 upon pin 31'. It will be observed that links 29 and 30 are elongated so that upon upward movement of either of the ends of arm 26 the respective dogs 24 and 31 will not be lifted until the ends of the links are reached. The locking mechanism comprising the dogs 24 and 31 is normally maintained in the position shown in Fig. 1 by means of spring 27', in which position the dog 24 engages the gear 23 and prevents upward movement of the rack-bar. When the mechanism is moved to the extreme left position shown in Fig. 15 the dog 31 is in engagement with the gear 23 to prevent counter-clockwise movement of the latter. The mechanism is maintained in this position by means of a latch 33 fixedly mounted upon a rock-shaft 33' extending between two upwardly extending arms 32 which are fixedly secured to the rock-shaft 27. The latch 33 is adapted to engage a catch 34 upon the lower end of the guide plate 14 and constitutes part of the locking means which is operated by means of a coin controlled mechanism later to be described. At times, however, it may be desirable to operate the machine without the

coin controlled mechanism in the manner of an ordinary pump provided with an attendant. For this purpose, access may be had to the mechanism through a suitable door (not shown) provided in the casing, and it is simply necessary to insert through the links 29 some suitable means such as a pin, which will maintain the dog 24 lifted so that gear 23 will not be engaged with dog 24, enabling rack-bar 11 to travel in either direction or any distance at will of attendant. Dog 31 remains in position shown in Fig. 1, being held by spring 27'.

When the automatic mechanism is being employed by the purchaser, in the absence of an attendant, it is desirable that, before the rack-bar is released for movement, suitable stop mechanism be set in order automatically to throw the locking means into operation when a predetermined amount of liquid has been pumped from the tank and the rack-bar has been moved a sufficient distance upwardly. For this purpose there are provided a plurality of vertically spaced stops 35 extending through the top horizontally extending portions 36 of vertical stop-arms 37, (Figs. 1 and 2), and adjustably mounted in horizontal spring fingers 36' paralleling the tops of the stop arms. By reference to Fig. 2 it will be observed that the vertical portions 37 of these stop-arms are in substantial parallelism and are arranged side by side, whereas, the upper horizontal portions 36 are arranged in substantially the same vertical plane and superposed in spaced relation. These arms, at their lower ends, are bent forwardly in the direction of the rack-bar to form laterally spaced bottom horizontal portions 38 arranged in parallelism in the same horizontal plane. The vertical portions of the arms 37 are slidably supported upon cross bars 15 which pass through suitable clips 39 (Fig. 2) upon the arms so that the stops 35 and the arms may be moved forwardly by suitable coin controlled mechanism into the path of movement of the rack-bar. In order to prevent lateral shifting movement of the arms, the top horizontal portions thereof and spring fingers 36' pass between the guide plate 14 and a vertical strap 14' extending across the face of the guide plate. A separate coin controlled mechanism is associated with each arm, and in the illustrated embodiment of the invention three arms and a corresponding number of coin controlled mechanisms are shown. The coin controlled mechanisms, indicated generally by the reference character 40, are supported upon transversely extending frame strips 41 extending across the frame 18 and will later be described in detail, but for the present it is sufficient to remark that the coin mechanism is of such a character as to move the respective stop-arms associated

with them forwardly or to the left, as shown in Fig. 1. Upon the bottom horizontally extending portions 38 of each of the stop arms 37 is positioned a U-shaped operating bar having vertical depending legs 42, 43 spaced apart; the legs 42 upon any one of the arms 37 being adapted to engage rod 45 extending horizontally across the stop arms between the legs 42 and 43. The rod 45 is connected to arms 32 fixedly secured to and spaced apart along rock-shaft 27, (see Fig. 4). Forward movement of any one of the stop-arms 37 will also position a stop 35 above the rack-bar 11 and the stops are held in this position by catches 46 arranged in vertically spaced relation upon the guide bar 14 and having shoulders 47 which engage shoulders 48 upon the spring fingers 36'. It will be understood that as one of the vertical stop-arms is moved to the left, as shown in Fig. 1, to engage its spring-finger 36' with a catch 46 its leg 42 engages the cross pin 45 upon the arms 32 on rock-shaft 27 and rocks the latter mentioned shaft in a counter-clockwise direction. Continuation of the movement of the stop-arm results in movement of its spring-finger 48 past one of the catches 46, by which the arm is held against return movement, and after the finger passes the catch the end of cross-arm 26 on shaft 27 having reached the end of link 29, the locking pawl 24 is lifted to release the rack-bar. At the same time, the rack-bar is locked against reverse movement by pawl 31. It should be noted that the dog 24 is not raised until one of the stops 35 is positioned above the rack-bar and locked in this position by its catch 46 which prevents movement of the rack until the stop mechanism is set.

The rack-bar may then be moved vertically, and when it engages the stop 35, which has been moved into its path of travel, the spring finger 48 is lifted out of engagement with its catch 46 and the stop-arm is moved to its normal position by means of a suitable operating spring 50 connected to the arm and anchored at its other end to any suitable fixed portion of the casing. By reference to Fig. 4 it will be noted that the pin 33' upon which the latch 33 is mounted extends between the arms 32, by which it is supported, and the latch carries a bar 45' adapted to be engaged by lugs 46' upon the under faces of the bottom horizontal portions 38 of stop arms 37. Upon the return movement of the stop arm the lug will again engage the bar 45' and rock pin 33' to lift the latch 33, permitting the spring 27' to return the stop. Return movement of the stop-arm, therefore, at the same time results in the lifting of the dog 31 and latch 33 to permit reverse movement of the rack-bar, the lug 46' upon the bottom horizontal portion of the stop-arm engaging the bar

45' upon the latch 33 and raising the latter. As the pawl 31 is lifted the locking dog 24 is permitted to fall into engagement with the gear, and during the downward movement of the rack-bar and the counter-clockwise movement of the gear 23, it trips idly over the teeth of the gear.

It will be observed that the arms 37 are each formed with upper sections 37' joined by nuts and bolts 37'' so that the upper horizontal portions 36 may be vertically adjusted together with the spring-fingers 36' and stops 35. At the same time the catches 46 upon the guide-bar may be adjusted in order to maintain the alignment of the catches and spring fingers 48; for this purpose the catches 46 are slidable along guide bar 14, to which they are secured as by bolts passing through a longitudinal slot 13' therein. This vertical adjustment of the stops permits of variation in the distance of travel of the rack-bar before it engages a stop 35 without modifying in any way the construction of the coin controlled mechanism. Hence, as the cost of the fluid being dispensed varies the stop may be adjusted to vary proportionally the amount of fluid dispensed by the coin inserted in the respective coin mechanisms. In addition to the adjustment of the horizontal portions 36 of the stop-arms, the individual stops 35 may be adjusted on the spring-fingers to make allowance for minor variations in the cost of the fluid; for this purpose it will be noted that the stop pins 35 are threaded and may be locked in set position by means of lock-nuts 35'. These pins extend upwardly through the horizontal portion 36 of arms 37 and have play therein to permit of movement of the spring-fingers, the latter serving to support the stops 35.

The coin controlled mechanism.—There is associated with each stop arm a coin controlled mechanism and it is desirable that the mechanisms be constructed for use with coins of different sizes and denominations, it being understood that there are as many coin mechanisms used as there are stop arms. Referring more particularly to Figs. 5 to 12, inclusive, it will be observed that there is associated with the bottom horizontally extending portion 38 of each stop-arm 37 a coin mechanism, which is supported by means of a frame strip 41 extending beneath the mechanisms. The horizontal portions of the stops extend between a pair of spaced parallel guide strips 51, 52 (Fig. 12) having flaring forward ends 53. The forward end of each stop-arm portion 38 has hingedly secured thereto a pair of separable fingers 54 normally positioned between the guide strips 51 and 52 and having in their upper surfaces complementary cut-away portions forming a substantially circular coin socket 55 registering with the slot between the

guide strips. The fingers are held together by springs 56 secured to the stop extensions 38 and to the fingers; the springs tending to separate the fingers to permit the coin to drop between them. When the stop extensions 38 are in the position shown in Figs. 5 and 6 the fingers are held together and the socket 55 formed upon them is in position to receive a coin. Slidably mounted upon the guide strips is a slide bar 57 which normally rests upon an extension plate 58 extending forwardly from the guide strips and having therein a relatively narrow longitudinally extending slot 59 through which projects a depending pin 60 upon the forward end of the slide bar 57. The slot 59 should be slightly narrower than the coin recess 61 so that the extension plate will support the coin. However, the slot should preferably be but slightly narrower than the coin recess for the reason that it is intended to permit coins which are too small to drop downwardly below the coin operating mechanism. If desired, a return tube and cup may be positioned upon the machine whereby coins or slugs not of sufficient size may be returned to the user of the machine, but such mechanism is not shown since it is well known in the art and can readily be applied to the machine. Rearwardly of the pin 60 the slide bar has a coin recess 61 therein, which, before the operation of the coin mechanism, is positioned upon the exterior of the casing 10, as shown in Fig. 5; each recess 61 should be of substantially the same size as the coin by which the mechanism is intended to be operated. A coin deposited in this opening rests upon the extension plate 58 and when the slide bar is projected into the casing from the position shown in Fig. 5 to that shown in Fig. 6 if the coin carried thereby is of sufficient size as not to fall through slot 59 in extension plate 58, it is supported upon the extension plate until it reaches the coin socket 55 in the fingers 54. When the opening 60 in the slide bar registers with the socket 55 in the fingers the coin drops into the socket and constitutes a connecting means between the slide bar and the extension 38 to which the fingers are secured. Upon withdrawal of the plate 57 from its position shown in Fig. 6 to the position shown in Fig. 7 the pin 60 engages the coin and carries the same forwardly, together with the stop portion 38 and its stop. When the fingers reach the flaring ends of the guides they are separated by the springs 56 and the coin drops into a suitable coin box 64 (Fig. 1), into which access may be had through a door 65 in the casing. In order to prevent return movement of the stop until the coin has dropped into the box, a catch 66, shown more clearly in Fig. 11, is pivotally mounted at 67 above the slide bar 57 upon the extension plate 58 and has

a shoulder 68 at its forward end which engages a lug 69 upon the upper surface of the horizontal portions 38 of the stop arms 37. The catch 66 is normally in the position shown in Fig. 5, but upon withdrawal of the slide bar 57 a rib 70 upon the upper surface of the slide bar engages a beveled shoulder 71 upon the under surface of the catch and raises the same. It will be noted that the relative positions of the rib 70 and shoulder 71 are such that the catch is not raised until the stop is carried forwardly a sufficient distance to permit the fingers 54 to separate and drop the coin into the coin box 64. A suitable indicating means, such as a bell 71', may be positioned above the catch 66 to be engaged by an upwardly extending pin 72 upon the slide bar 57 as the catch is raised in order to indicate that the coin has been deposited in the box and the stop released. The pin 72, as the slide bar is withdrawn to the position shown in Fig. 7, is carried through an open ended slot 74 in the rear end of the catch 66.

The rack bar operated by the mechanism above described is preferably arranged in such a position with relation to the pump mechanism that it may be connected to one of a plurality of pumps so that various kinds of liquid may be dispensed. Referring to Figs. 1^a, 13 and 14, the illustrated mechanism comprises a pair of pump cylinders 75, 76 arranged side by side and having therein pistons (not shown) operated through piston rods 77 projecting through the upper ends of the cylinders. The piston rods have studs 76' working in slotted guide posts 77' which are each supported from a transversely extending bar 15 and are provided with laterally extending forked connecting arms 78 which project in opposite directions toward the rack-bar. The lower end of the rack-bar 11 (Fig. 14) has extending downwardly therefrom a pin 79 upon which is pivotally mounted a substantially L-shaped connecting plate 80 having extending therefrom an arm 81 by means of which the plate may be turned to engage its extensions with either of the forks 78. As shown in Fig. 13, one of the extensions of the plate is engaged with the forked connecting arms upon the upper end of the cylinder 76. The outer end of the arm 81 of the plate 80 has an opening 82 therein, which, as the rack bar descends, is adapted to fit over the upwardly extending end portion 83 of an operating lever 84 fulcrumed upon a vertically extending stud 85 carried by a bracket 86 which is secured to the cylinders. The operating lever 84 is normally positioned in either of two extreme positions, one of which is shown in Fig. 13, the position being dependent upon whether the rack-bar is to be connected to the piston in the cylinder 75 or to the pis-

ton in the cylinder 76. It will be understood that before the rack-bar is raised the bar is connected to one of these pistons by means of operating lever 84 which projects through the casing, as shown in Fig. 1^a. In order to prevent accidental displacement of the lever until the rack bar descends, a spring catch 87 is mounted upon the stud 85, but is normally maintained in the raised position shown in Fig. 1^a by means of a forwardly extending hook shaped arm 88 upon the rack bar which engages the rear end of the catch and maintains its forked end out of the path of the lever 84. As the rack bar is raised after it has been connected with one of the pistons in the cylinders, the forward portion 87 of the catch gravitates downwardly and one of its fingers is positioned to one side of the lever 84, thus preventing movement of the lever until the rack bar descends and its lifting arm 88 raises the catch 87.

From the foregoing description it is thought that the operation of this mechanism will be entirely clear; it should be understood, however, that such modifications may be made in the illustrated and described mechanism as come within the scope of the invention, which is more definitely defined in the following claims.

I claim:

1. An apparatus of the class described comprising a plurality of vertically spaced horizontally movable stops, a carrier for each of said stops extending downwardly, said carriers being horizontally movable with the stops, a coin controlled mechanism in association with each carrier adapted to move the carrier and stop through the agency of a coin, said coin controlled mechanisms being independently and manually actuable and being arranged closely adjacent one another, means on said carriers adapted to be engaged through the movement of a coin by said coin controlled mechanisms for movement of the carriers and stops, a vertically movable rack bar into the path of which said stops are moved when operated by the coin controlled mechanism, means for locking the rack bar against movement in one direction, and means for actuating said locking means through said stops.

2. An apparatus of the class described comprising a plurality of vertically spaced horizontally movable stops, a carrier for each of said stops extending downwardly, said carriers being horizontally movable with the stops, a coin controlled mechanism in association with each carrier adapted to move the carrier and stop through the agency of a coin, said coin controlled mechanisms being arranged closely adjacent one another and in substantially the same horizontal plane, means on said carriers ar-

ranged in substantially the same horizontal plane and adapted to be engaged through the movement of a coin by said coin controlled mechanisms for movement of the carriers and stops, a vertically movable rack bar into the path of which said stops are moved when operated by the coin controlled mechanism, means for locking the rack bar against movement in one direction, and means for actuating said locking means through said stops.

3. An apparatus of the class described comprising a plurality of vertically spaced horizontally movable stops, a carrier for each of said stops extending downwardly, said carriers being horizontally movable with the stops, a coin controlled mechanism in association with each carrier adapted to move the carrier and stop through the agency of a coin, said coin controlled mechanism being arranged closely adjacent one another, means on said carriers adapted to be engaged through the movement of a coin by said coin controlled mechanisms for movement of the carriers and stops, means for independently adjusting said stops vertically, a vertically movable rack bar into the path of which said stops are moved when operated by the coin controlled mechanism, means for locking the rack bar against movement in one direction, and means for actuating said locking means through said stops.

4. An apparatus of the class described comprising a vertically movable rack-bar, a plurality of vertically spaced movable stops normally positioned out of the path of movement of said rack-bar, a coin controlled mechanism in association with each stop adapted to move the stop into the path of said rack-bar, through the agency of a coin, means for locking the rack-bar against movement in one direction, any one of said coin controlled mechanisms being adapted to release said locking means when setting a stop, independent means for holding said stops in the path of said rack-bar after being set, said stops and holding means being vertically adjustable and means for returning said stops to normal position after engagement of the rack-bar therewith.

5. An apparatus of the class described comprising a slidable stop, a pair of jaws connected to said stop, said jaws, when closed, being adapted to receive and retain a coin, means for depositing a coin in said jaws, a slidable member adapted to engage the coin when deposited in said jaws and thereby operating to connect said slidable member and stop for movement of the latter by the slidable member, and means normally maintaining said jaws closed but permitting them to open to release the coin when the stop has been moved a predetermined distance.

6. An apparatus of the class described comprising a slidable stop, a pair of movable jaws connected to said stop, said jaws when closed being adapted to receive and to retain a coin, a slide bar adapted to deposit a coin in said jaws, means on said bar adapted to engage the coin when deposited in said jaw and thereby operating to connect said bar and stop for movement of the latter by the slide bar, and means normally maintaining said jaws closed but permitting them to open to release the coin when the stop has been moved a predetermined distance.
7. An apparatus of the class described comprising a slidable stop, a pair of movable jaws pivotally connected to said stop, said jaws when closed being adapted to receive and to retain a coin, a slide bar adapted to deposit a coin in said jaws, means on said bar adapted to engage the coin when deposited in said jaw and thereby operating to connect said bar and stop for movement of the latter by the slide bar, and means normally maintaining said jaws closed but permitting them to open to release the coin when the stop has been moved a predetermined distance, said means comprising a pair of guide strips between which said jaws are positioned.
- In testimony whereof I have hereunto set my hand.

JESSE T. BONNEY.