Oct. 14, 1958 H. KOPPELMAN 2,855,926

COIN ACTUATED OXYGEN DISPENSING MACHINE

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FIG. 1

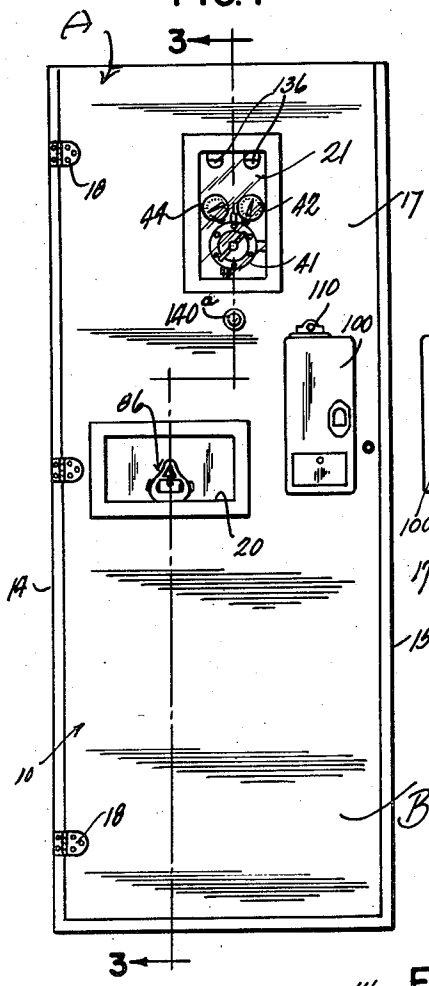



FIG. 2

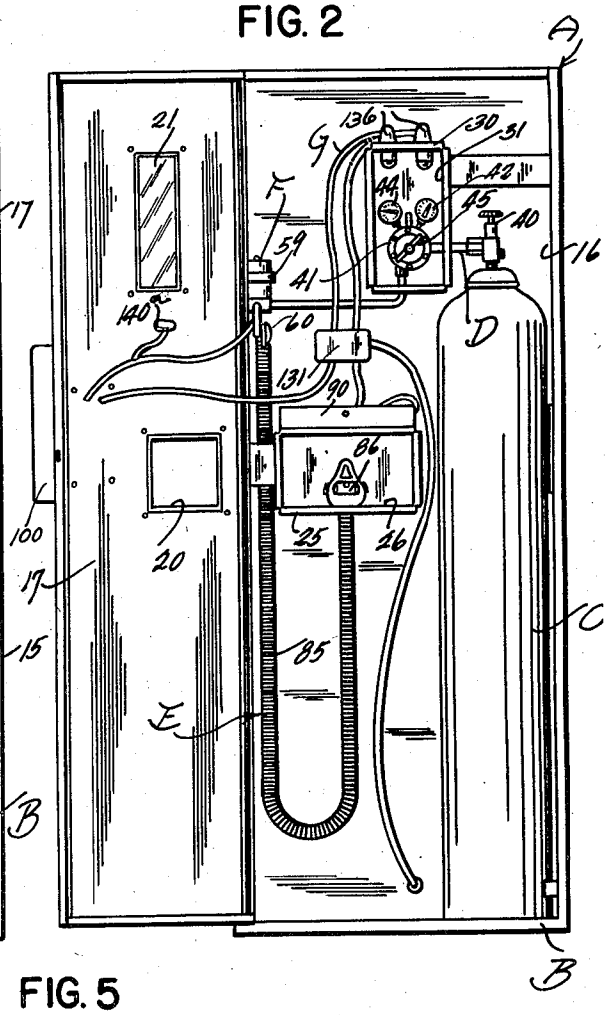
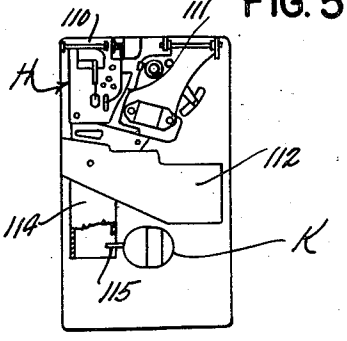



FIG. 5




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FIG. 4

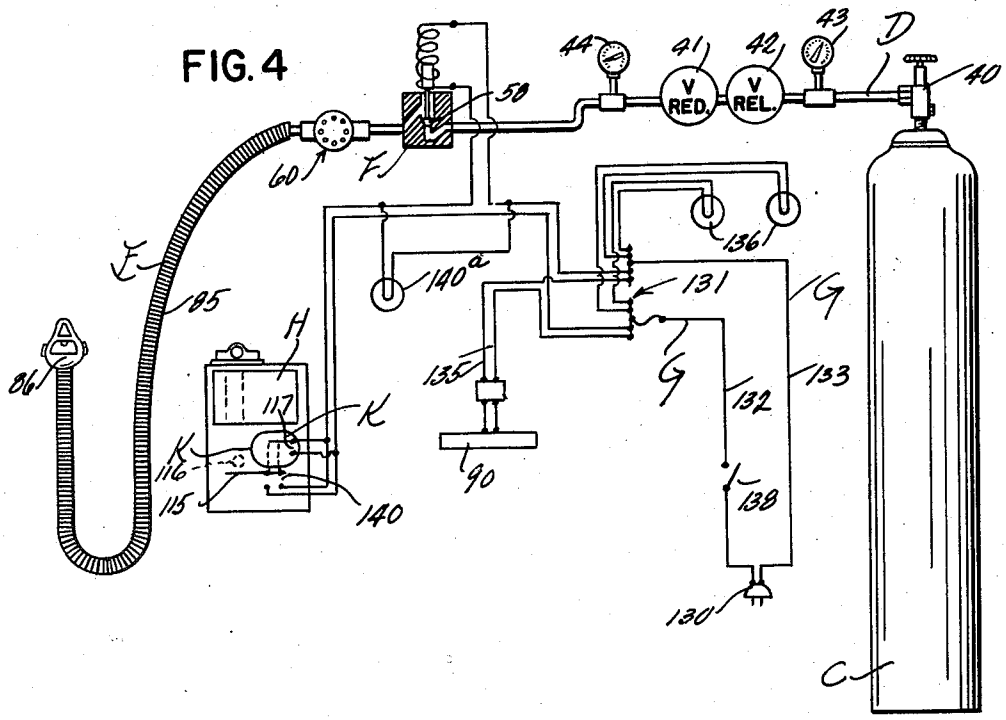



FIG. 6

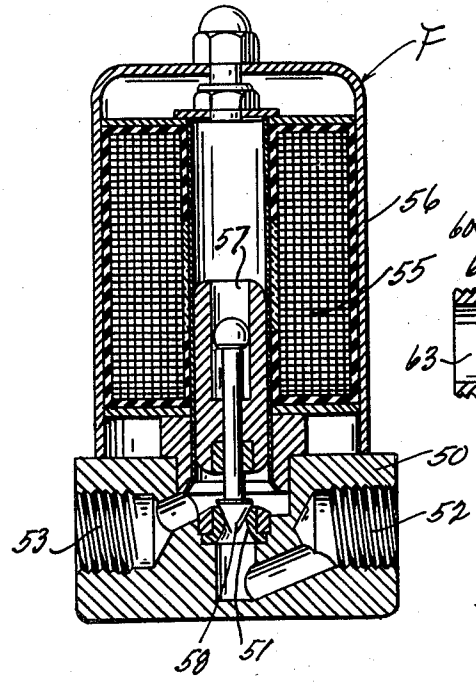
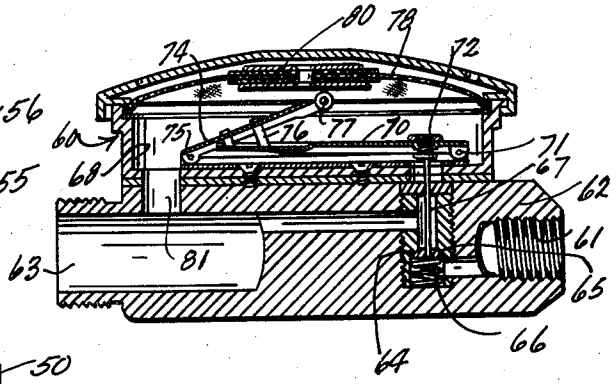



FIG. 7




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FIG. 3

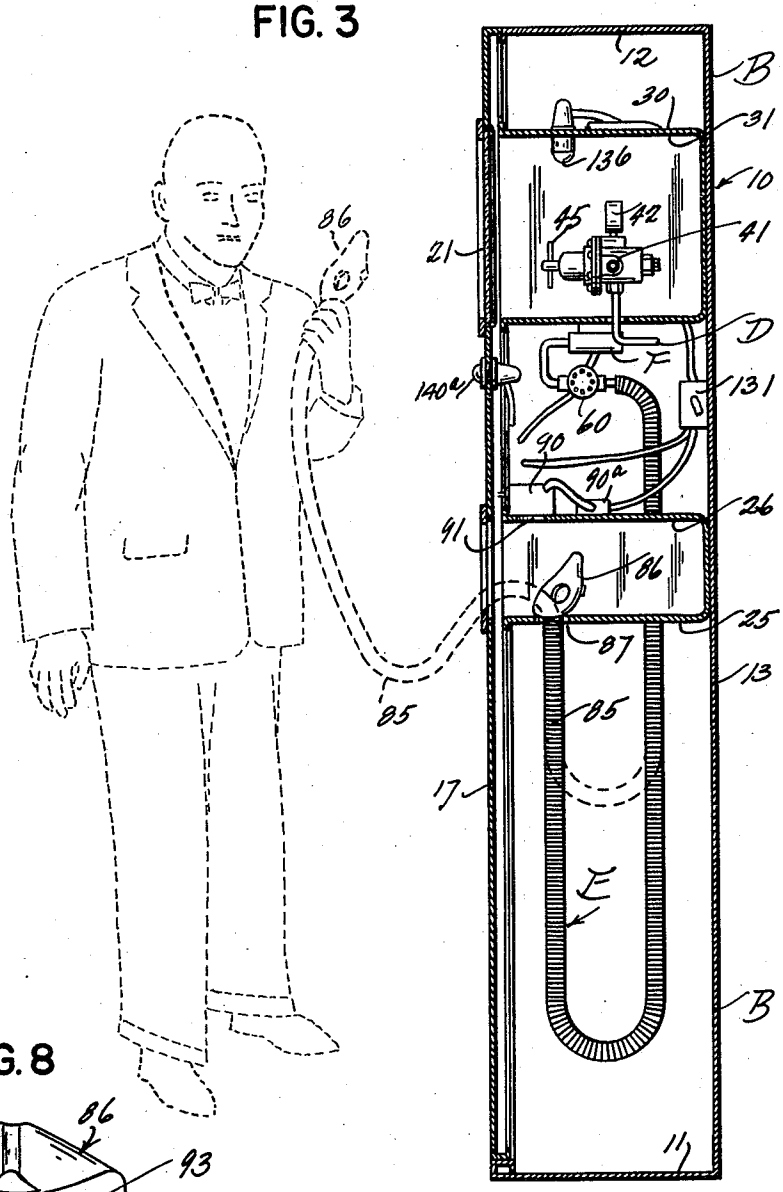
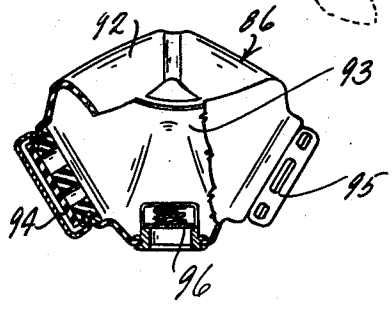



FIG. 8




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United States Patent Office 2,855,926 Patented Oct. 14, 1958



2,855,926

# COIN ACTUATED OXYGEN DISPENSING MACHINE

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Application November 15, 1955, Serial No. 546,841

5 Claims. (Cl. 128—203)

This invention relates to improvements in coin controlled machines for the dispensing of a gas such as oxygen.

The primary object of this invention is the provision of a machine for the dispensing of oxygen to those who have a need of replenishing the supply of oxygen in the blood stream. It has an arrangement of elements operated by a coin operated control, under unusual conditions of safety, both in so far as regulation of mask pressure is concerned and quantity of oxygen fed to the user.

The use of oxygen in connection with relief and treatment of those suffering from respiratory afflictions is well known. The advantages of oxygen in the treatment of those having a high alcoholic content in their blood stream is also well known. It is also known that oxygen has a general tonic effect. It is therefore a purpose of this invention to provide a coin actuated oxygen dispensing machine which is compact, neat in appearance and sanitary, and which is capable of safely dispensing a required amount of oxygen to an individual.

Other objects and advantages of this invention will be apparent during the course of the following detailed description.

In the accompanying drawings, forming a part of this specification, and wherein similar reference characters designate corresponding parts throughout the several views:

Figure 1 is a front elevation of the machine.

Figure 2 is a front elevation of the machine with the closure opened and disclosing details associated within a cabinet chamber and upon the closure of the cabinet.

Figure 3 is a vertical cross sectional view taken substantially on the line 3—3 of Figure 1, showing in dotted lines an individual about to use the machine and receive oxygen therefrom.

Figure 4 is a diagrammatic view showing the electric wiring system and the various associated details of the invention.

Figure 5 is a front view of the coin control mechanism of the machine and an electrically actuated timing mechanism.

Figure 6 is a vertical cross sectional view taken through one form of solenoid valve which may be used for controlling the supply of oxygen to the feed line of the system.

Figure 7 is a vertical cross sectional view taken through a demand regulator which, under the control of breathing action of the user, shuts off the flow of oxygen to the mask except during inhaling action of the user.

Figure 8 is a plan view, partly in section, showing one form of mask which enables a proper inhaling and exhaling breathing action in order that the user may keep the mask upon his face during the complete cycle flow of oxygen, as controlled by an electric timer.

In the drawings, wherein for the purpose of illustration is shown a preferred embodiment of the invention,



the letter A may generally designate the oxygen dispensing machine. It consists of a cabinet B having a high pressure oxygen tank C removably disposed therein, with a line connection D between the same and the user's mask and hose construction E. In line D there is disposed an electrically actuated magnetic or solenoid valve F and various other valves, gauges, etc. to be subsequently described. An electric circuit G is provided for the valve F, wherein is located a clockwork controlled electric timing mechanism K which is actuated by a coin controlled mechanism H.

The cabinet B may have various shapes. It includes a main body portion 10 having bottom and top walls 11 and 12 respectively, a rear wall 13, and side walls 14 and 15. The chamber 16 receives the various details of the invention. It preferably includes a closure 17 hinged at 18 to a side wall 14. This closure 17 has a hand inserting opening 20 through which the operator may insert a hand for grasping a face mask. It also includes a transparent window 21 through which the operator may watch the various gauges and indicators, particularly the supply indicator designating the number of liters of oxygen which will be fed to the user after coin operation.

The chamber 16 is providing with a small mask supporting receptacle 25 having a compartment 26 facing the door opening 20 when the closure 17 is shut, as shown in Figure 3. A second receptacle 30 is mounted in the chamber 16 having a chamber or compartment 31 wherein the various indicating instruments may be placed. This chamber 31 directly faces the window 20 when the door is closed as will be noted from Figure 1. Thus, the user can readily ascertain registrations upon the indicating instruments.

The high pressure gas container C contains oxygen under pressure substantially in the neighborhood of 2,000 pounds per square inch. It rests upon the bottom wall 10 in about the position shown in Figure 2, at one side of the chamber 16. The container C has a shut off valve 40 at the top thereof for controlling flow of oxygen into the line D. The latter enters the chamber 31 of the receptacle 30 and therein is provided with a pressure regulating valve 41, controlled by a handle 45 for regulating the flow of pressure into the line D between the tank C and the mask. The line D supports the combination gauge and valve mechanism which also includes a relief valve 42; a gauge 43 between the valves 41 and 42 and the tank C, and a gauge 44 in the line D between the electromagnetic control valve F and the valves 41 and 42. The gauge 43 registers the pressure of the oxygen in the tank C. The regulating valve 42 and control handle 45 face the opening in the chamber 31 and can be seen through the window 21 when the closure is shut. Adjustment of the valve 42 regulates the amount of pressure entering the line D at the mask side of the pressure reducing valve 41. The gauge 44 is controlled by the pressure in the line D and is marked to indicate liters of oxygen which will be supplied to the user when the machine is operated. All of the instruments 41, 42, 43 and 44 are visible through the window 21.

The electromagnet valve F includes a base 50 having a valve seat 51 with an entrance way 52 at one side of the seat for receiving oxygen from the tank C and an opening 53 at the opposite side for transmitting oxygen to the mask. The electromagnet F includes a coil 55 mounted in a suitable casing 56 resting upon the base 50. A core 57 supports a valve 58 for controlling flow of oxygen past the valve seat 51.

The electromagnetic valve F may be mounted upon the side wall 14 of the cabinet structure within the

chamber 16, by strap 59 or other appropriate means, as shown in Figure 2.

A demand regulator 60 is connected in the line D at the mask side of the solenoid valve F for feeding oxygen into the mask only when the user inhales. It consists of an automatic shut off valve arrangement and is shown in detail in Figure 7 of the drawing. The line D is connected in the screw threaded opening 61 of the demand regulator base 62. The base 62 has an outlet opening 63. In the base 62 between the inlet and outlet passages there is provided a valve seat 64. A spring actuated valve 65 is normally held closed by spring 66 upon the seat 64. The valve 65 is provided with a stem 67 which extends upwardly into a diaphragm chamber 68 of the regulator 60. A lever 70 is pivoted at 71 upon the frame of the regulator and located in the chamber 68; the same having a cap 72 in position to engage the stem 67. A second lever 74 is pivoted at 75 upon the basic structure of the regulator, the latter having an extension 76 which slides in a groove of the lever 70. This lever 74 at its outer end is provided with a roller 77. A sensitive flexible diaphragm 78 is peripherally held in the top of chamber 68. It has a central plate 80 against which the roller 77 may ride. A bypass 81 communicates the diaphragm chamber 68 with the outlet passage 63, whereby when a user inhales, suction will pull the diaphragm 78 downward, depressing the lever 74 and also the lever 70 and thus causing the valve 65 to open for passage of oxygen to the user side of the demand regulator.

The mask and tube construction E preferably includes a bellows type of flexible hose or tubing 85, connected in the line D beyond the demand regulator 60. The demand regulator 60 is mounted upon the side wall 14 in the position shown in Figure 2. The flexible tube or hose 85 hangs downwardly in chamber 16. At its end the hose 85 supports a nose or face mask 86. It is located in the chamber 26 of the receptacle 25. The hose 85 slidably extends through an opening 87 in the bottom of this receptacle 25 as shown in Figure 3 in order that the user may reach through the door opening 20 and into the chamber 26, grasp the mask, and lift it through the opening 20. The hose 85 is thus extended, similar to the dotted line illustration in Figure 3, in order that the user may place the mask 86 over his face. It will be noted that upon release of the mask the hose 85 will feed back into the chamber 16 by gravity. The mask 86 is supported in an exact position in chamber 26 in order that it may be sterilized by an ultra violet ray type lamp 90, the rays of which pass through an opening 91 and strike directly upon the chamber side of the mask 86, as will be noted from Figure 3 of the drawings.

The mask 86 is of a type which enables the user to inhale and exhale without taking the mask from the face. To that end it includes a flexible mask casing 92 having the oxygen receiving chamber 93 therein within which the user's nose is placed. The mask chamber 93 communicates with the passageway of the hose 85. In Figure 8 it is shown that flap valves 94 and 95 are provided at opposite sides of the chamber 93 which open when the user exhales to permit passing of spent breath from the mask. It may happen that something will go wrong with the demand regulating valve structure. To that end the mask 86 includes an air inlet valve 96 normally spring actuated to a closed position. The spring may be of such compression that some air may be admitted to the chamber 93 upon inhaling by the user, for mixing with the oxygen. Also if desired, this valve 96 may be used to admit air from a humidifier for mixture with the oxygen.

A unitary coin control and timer mechanism designated by the reference characters H and K may be mounted in a casing structure 100 upon the closure 17, in the position shown in Figure 1. By referring to Figure 5 the coin control mechanism H may include an entrance chute 110 and magnetic coin testing and feeling means 111. It may also include a rejection chute 112 and an acceptance chute 114.

The construction of the electric timer K may vary. Preferably it is clockwork controlled and of a magnetic type. It includes a lever or movable member 115 which is normally in the path of a coin 116 dropping through the acceptance chute 114. Upon contact of the coin against the lever or movable member 115, the latter will close switches 117 and 140, setting the clockwork mechanism in operation and also directing current to the solenoid valve F for the feed of oxygen to the mask 86. The clockwork mechanism (not shown) after a predetermined period opens the switches 117 and 140. The solenoid valve F then closes.

Referring to the circuit G, an electric plug 130 is provided for connection to a source of current. A terminal box 131, shown in Figure 2, may include the various contacts and fuse mechanism in the lead lines 132 and 133. The germicidal ultra violet ray lamp 90 is connected to lines 132 and 133, at 135 in order that the lamp 90 will constantly supply sterilizing rays to the mask. Also lamps 136 are connected in the current lines. They are illuminated at all times except when the plug 130 is disconnected or the entire electric system is rendered inoperative by opening a master control switch 138. Lamps 136 are located upon the receptacle 30 and illuminate the chamber 31, in order that the user may readily read the gauges and registering instruments.

A signal notification lamp 140[a] is placed upon the closure 17. It is visible exteriorly of the cabinet and placed in the circuit across the lines leading directly to the solenoid mechanism F. It is only illuminated at the time the circuit is directed through the solenoid F for opening its valve structure. It informs the user when the machine has gone into operation for supplying oxygen. When the timer K opens this circuit the lamp 140 will go out and thus signal to the user that the machine has been rendered inoperative and oxygen is no longer flowing to the mask 86.

The operation of the machine will be apparent from the foregoing. It is only necessary for an individual desiring a supply of oxygen to drop the proper coin in the opening to the entrance chute 110. Actuation of the arm 115 by dropping of the coin into the box or casing 100 will not only close the circuit switches for directing current to the solenoid F but such action will set the clockwork timing mechanism in operation. Preferably the timer is an electric clockwork mechanism and at the end of a predetermined time the same will open switches 117 and 140.

After inserting a coin the user inserts his hand in the opening 20, takes the mask, lifts it and applies it to his face and commences to inhale and exhale. All of the rest of the operations are automatic.

Various changes in the shape, size and arrangement of parts may be made to the form of the invention herein shown and described without departing from the spirit of the invention or scope of the claims.

I claim:

1. In a coin controlled oxygen dispensing machine the combination of a cabinet including a chamber therein and having a closure therefor provided with a hand inserting opening therein, a signal lamp upon said closure, a coin controlled electric timer actuating mechanism mounted upon said closure including an entrance chute on the outer side of said closure for entrance of a coin, a high pressure oxygen tank in said chamber, a face mask, a flexible length of tubing connecting the mask with said line for feed of oxygen from the tank to said mask, an electrically actuated solenoid valve in the chamber, an electric circuit, and a switch mechanism controlled by the coin control and timer mechanism for closing the circuit through said solenoid valve for a predetermined time, said circuit including a connection with

the signal lamp upon the closure for illumination of said lamp so long as the solenoid valve is opened.

2. A dispensing machine as described in claim 1 in which a germicide ultra violet ray lamp is provided in position in the cabinet for transmittal of its rays directly upon said mask, and means in the chamber for supporting the mask in the latter position for removal through the opening of said closure.

3. In a coin controlled oxygen dispensing machine the combination of a cabinet including a chamber therein and having a closure therefor provided with a hand inserting opening therein, a coin controlled electric timer actuating mechanism mounted upon said closure including an entrance chute on the outer side of said closure for entrance of a coin, a high pressure oxygen tank in said chamber, a face mask, a flexible length of tubing connecting the mask with said line for feeding of oxygen from the tank to said mask, an electrically actuated solenoid valve in the chamber, an electric circuit, and a switch mechanism controlled by the coin control and timer mechanism for closing the circuit through said solenoid valve for a predetermined time.

4. In a coin controlled oxygen dispensing machine the combination of a cabinet including a chamber therein and having a closure therefor, a coin controlled electric timer actuating mechanism mounted upon said closure including an entrance chute on the outer side of said closure for entrance of a coin, a high pressure oxygen tank in said chamber, a face mask, a flexible length of tubing connecting the mask with said line for feed of oxygen from the tank to said mask, an electrically actuated solenoid valve in the chamber, an electric circuit, and a switch mechanism controlled by the coin control and timer mechanism for closing the circuit through said solenoid valve for a predetermined time.



5. A dispensing machine as set forth in claim 4 in which a signal lamp is provided upon said closure and said electric circuit includes a connection with the signal lamp upon the closure for illumination of said lamp as long as the solenoid valve is opened.

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