

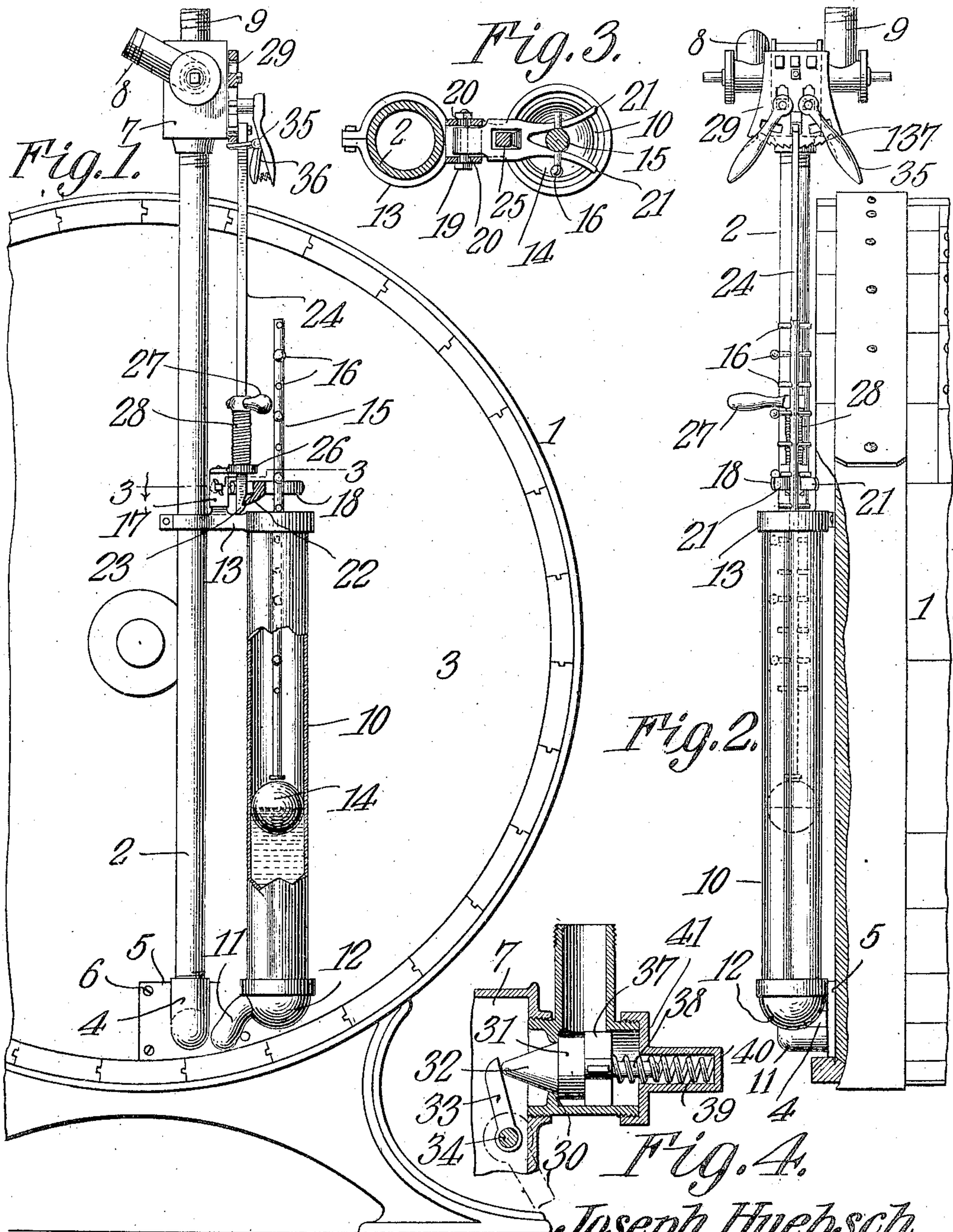
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J. HUEBSCH.

AUTOMATIC SHUT OFF VALVE MECHANISM.

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WITNESSES:

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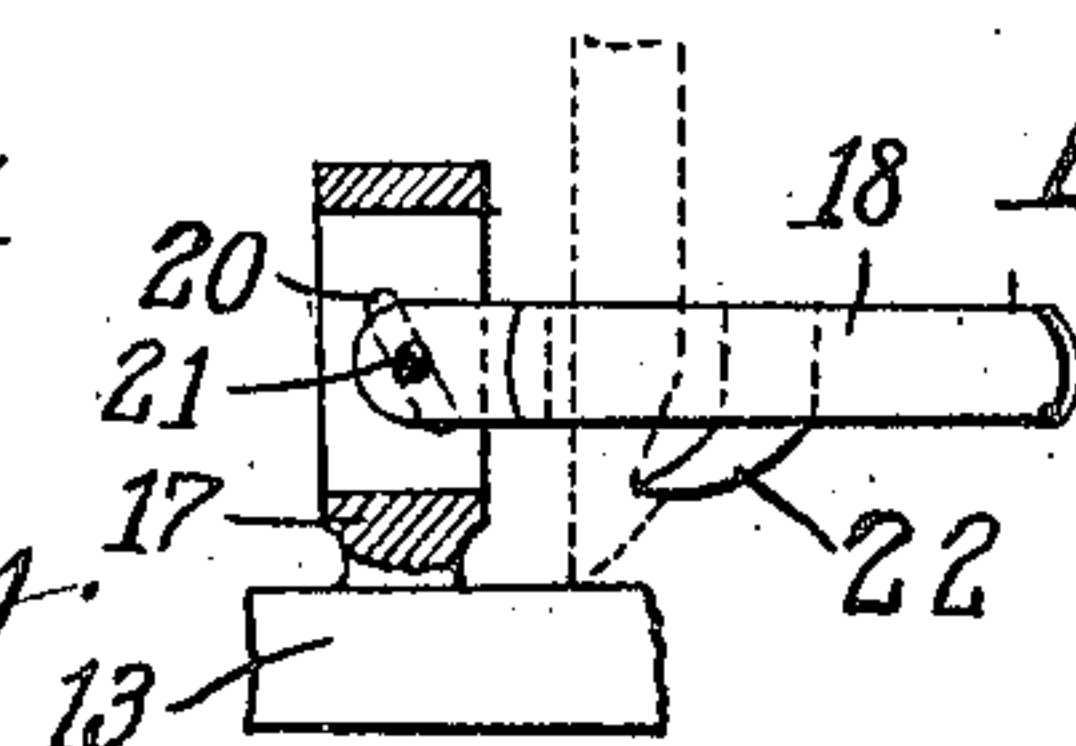


Fig. 5.

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AUTOMATIC SHUT-OFF-VALVE MECHANISM.

No. 875,176.

Specification of Letters Patent.

Patented Dec. 31, 1907.

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To all whom it may concern:

Be it known that I, JOSEPH HUEBSCH, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and useful Automatic Shut-Off-Valve Mechanism, of which the following is a specification.

This invention relates to automatically actuated shut off valves intended primarily for controlling the supplies of hot and cold water to washing machines, but it is to be understood that it is not necessarily limited to this use.

The invention has for one of its objects to improve and simplify the construction and operation of apparatus of this character, so as to be comparatively easy and inexpensive to manufacture, convenient to manipulate, and thoroughly reliable and efficient in service.

A further object of the invention is the provision of a valve mechanism operated by a float sensitive to the change in level of the liquid in the receptacle to which liquid is supplied.

Another object of the invention is the employment of a trigger released spring actuated member for closing the valve, or valves, when the float has reached a predetermined point.

A still further object is to provide a novel form of valve mechanism whereby the hot and cold water supplies can be simultaneously cut off. And another object is to arrange the float containing chamber, trigger device, and valve mechanism upon the supply pipe so that the latter forms a common support for the parts of the apparatus.

With these objects in view, and others, as will appear as the nature of the invention is better understood, the invention comprises the various novel features of construction and arrangement of parts, which will be described hereinafter, and set forth with particularity in the claims appended hereto.

In the accompanying drawing, which illustrates one of the embodiments of the invention, Figure 1 is a partial end view of a washing machine having the automatic cut-off valve mechanism applied thereto. Fig. 2 is a side view of the mechanism. Fig. 3 is a transverse section on line 3—3 of Fig. 1, and Fig. 4 represents an axial section of one of the liquid controlling valves. Fig. 5 is a detail view of the adjustable mounting for the trigger.

Corresponding parts in the several figures are indicated throughout by similar characters of reference.

Referring to the drawing, 1 designates a receptacle to which water is to be supplied, the same representing in the present instance a washing machine of the power driven type, such as is employed in laundries. The tub of the washing machine is supplied with water through a supply pipe 2 which leads to the lower portion of the tub, it extending through the lower portion of one of the heads 3 in the present instance, and is supported by means of an elbow 4 carried by a plate 5, the latter being secured against the head by screws 6, or other suitable fastenings. The upper end of the supply pipe 2 projects somewhat above the receptacle 1 and has secured thereto a central casing 7 to which are connected the valve casings having nipples 8 and 9 adapted to be connected to suitable sources of hot and cold water supply, and containing the valves for controlling the supply of both hot and cold water.

The valves employed for controlling the supply of hot and cold water may be of any preferred construction, although it is preferable to employ those of a type having a normal tendency to close, and valves of this construction are shown in the present instance, the two valves being substantially duplicates and threaded into the opposite sides of the central casing 7 into which they discharge. Each valve casing, in the present instance, has an annular seat 30 arranged toward its discharge end, and fitted to operate longitudinally of the valve casing is a valve embodying a head 31 adapted to cooperate with the valve seat 30 of the casing to control the discharge of water therefrom into the casing 7, a conical extension 32 being attached to the valve head and projecting beyond the valve seat and arranged to cooperate with a trip 33 mounted on a shaft 34 fitted to turn in the casing 7 and having a portion extending to the exterior of said casing and provided with a handle 35, the latter being provided with a spring operated latch or retaining device 36 that will permit opening and prevent closing of the valve. At the rear of the valve head is arranged a guiding portion 37 fitted to operate longitudinally of the casing, and in the rear of this guide portion is a stem 38 surrounded by a helical compression spring 39 engaging the valve at its forward end and resting in

an axial recess 40 formed in a cap 41 secured to and closing the rear of the valve casing. This spring normally operates to seat the valve, and the handle 35 is operated in one direction to turn the trip 33 so as to disengage the valve from its seat against the action of its actuating spring. The action of the latter is sufficient to return the valve to its seat, but this is prevented during the filling of the tank by the retaining device 36 which coöperates with the notched portion 137 of a locking plate 29, the latter being guided to operate vertically relatively to the casing 7.

At one side of the pipe 2 is a float chamber 10 which may be a tube or cylinder of glass or any other suitable material, and it communicates at its lower end with the lower portion of the tub by means of a pipe 11, the latter leading from a head 12 formed on the bottom of the float chamber 10. The upper end of the float chamber 10 is supported by means of a bracket 13 clamped to the supply pipe 2, and mounted therein is a float 14 having a stem 15 projecting upwardly out of the open end of the chamber and provided with a plurality of spaced stops 16 for engaging the trigger. The bracket 13 is provided with a bifurcated post 17 between the bifurcations of which is fulcrumed a trigger, designated generally by 18. The fulcrum of the trigger is a bolt 19 that extends through inclined slots 20 in the post 17 whereby the trigger can be adjusted. The trigger is provided with bifurcations 21 which engage around the float stem 15 and are adapted to extend between any two adjacent stops 16 on the said stem. In the normal position of the stem, the stops 16 extend transversely to the bifurcations 21 so that any movement of the float is imparted to the trigger. To adjust the float so as to operate at different levels, the stem is turned through 90°, so that the stops 16 will pass freely between the bifurcations 21 as the stem 15 is raised or lowered. After the desired point is reached, the stem is turned back to its original position, so that the stops will engage the bifurcations. One stop engages the trigger on top so that the trigger serves to support the float when the latter is not buoyed by liquid in the cylinder 10. The stop next below the trigger is the one that imparts motion thereto when the float reaches a predetermined point in its upward movement. Adjacent stops 16 are sufficiently spaced apart to permit the float stem to have a limited amount of lost motion with respect to the trigger.

The trigger 18 is provided with a tooth 22 which is offset laterally of the trigger and is adapted to engage, when in set position the notch 23 of the valve actuating rod 24. The lower end of this actuating rod passes through an opening 25 in the trigger, and its movement is guided by a guide 26 on the

post 17. The rod 24 has attached thereto a handle 27 for setting the said rod or latching it to the trigger. This handle serves as an abutment for one end of a helical compression spring 28 arranged around the rod 24, and bears against the guide 26 at the end opposite from the handle. By depressing the handle 27, the spring is compressed, the tooth of the trigger interlocking with the notch 23 of the rod, and the weight of the float and its parts suspended on the trigger is sufficient to overcome or balance the action of the spring 28, tending to raise the releasing rod 24, retaining the trigger and the notch in coöperative relation. However, as soon as the float reaches a given point in its ascent by reason of the rising tendency of the water in the tub, the pin 16 next below the forked portions 18 will engage beneath and lift the trigger, moving the offset tube or projection 22 in a direction laterally of the rod 24 and thereby disengaging it from the notch 23 and permitting the rod 24 to be shot upwardly by the spring 28, the desired degree of sensitiveness of the trigger being obtained by adjusting its pivot 19 longitudinally of the inclined slots 20. As the rod 24 is attached to the valve locking plate 29, its upward movement will cause a lifting thereof, disengaging the notched portion thereof from the retaining devices 36 of both valves, and permitting them to be closed by the action of their respective springs, thereby cutting off the supply of water to the tub. The valve locking plate is preferably provided with a plurality of notches for the valve retaining devices in order that the valves for the hot and cold water may be opened to the proper extent to supply water to the tub at the desired temperature, and, of course, the device will operate whether one or both valves are opened and irrespective of the degree to which they may be opened.

What is claimed is:—

1. In a fluid regulating apparatus of the character described, the combination with a receptacle, of a pair of valves communicating therewith and connected to sources of liquid supply, a locking member mounted in movable relation to the valves and having sets of graduated notches therein, devices operatively connected to the valves and coöperating with the respective sets of notches for permitting opening and preventing closing of the valves, and means controlled by the volume of liquid in the receptacle for operating the locking member to simultaneously release the valves.

2. In a fluid regulating apparatus of the character described, the combination with a receptacle, of a pair of valves communicating therewith and connected to sources of liquid supply, a locking member mounted in movable relation to the valves and having sets of

graduated notches therein, latches operatively connected to the valves and cooperating with the respective sets of notches of the locking member for permitting independent setting of the valves in open position and preventing closing thereof, and means controlled by the volume of liquid in the receptacle for operating the locking member to release the valves.

3. The combination with a suitable fluid receptacle, and a source of fluid supply connected thereto, of a valve for controlling the fluid supply and having an operating portion thereon, a plate having a series of graduated notches thereon adapted to cooperate with the operating portion of the valve to retain the latter in open position, a member normally operating to disengage the notched plate from the operating portion of the valve, and a device controlled by a volume of fluid in the receptacle for retaining the operating member in inoperative position.

4. The combination with a fluid receptacle and a source of fluid supply connected therewith, of a valve for controlling the fluid supply and having a handle thereon provided with a retaining device, a plate movable relatively to the valve and provided with a series of graduated notches arranged to cooperate with the retaining device on the valve handle, a member operatively connected to said plate and normally acting to disengage it from said retaining device, a trigger cooperating with said member to hold it in inoperative position, and a device for tripping the trigger.

5. The combination with a fluid receptacle, and means for conducting fluid thereto from independent sources, of a valve for controlling the fluid from each source of supply, each having an operating portion, a locking plate having notches thereon adapted to cooperate with the operating portions of said valve, means normally operating to disengage the notched plate from the operating portions of the valves, and a device controlled by the volume of fluid in the receptacle for retaining the plate in engagement with the operating portions of the valves.

6. The combination with a fluid receptacle, and means for conducting fluid thereto, of a

valve for controlling the fluid supply, a device provided with graduated notches adapted to cooperate with the movable part of the valve for locking the valve in open position, a member normally operating to release the locking device, a trigger cooperating with said member to detain the latter, a float movable according to the variations in the volume of fluid in the receptacle and having a stem thereon, and a series of longitudinally spaced stops on the stem adapted to cooperate with the trigger to hold it in operative position and also to disengage it from said member.

7. The combination with a fluid receptacle, and means for conducting fluid thereto, of a valve for controlling the fluid supply, a device for locking the valve in open position, a reciprocatory actuating rod normally operating to release the locking device and having a notch in one of its longitudinal edges, a pivoted trigger having an offset projection thereon arranged to cooperate with the notch in said rod for retaining the latter in inoperative position, and a device operated by variations in the volume of fluid in the receptacle for controlling the operation of said trigger.

8. The combination with a fluid receptacle, and means for conducting fluid thereto, of a valve for controlling the fluid supply, a device for locking the valve in open position, a reciprocatory member normally operating to release the locking device and having a notch therein, a supporting post arranged in fixed relation to the receptacle and having slots therein extending obliquely to the direction of movement of the said member, a trigger having a projection thereon arranged to cooperate with the notch in said member for retaining the latter in inoperative position, a pivot pin for the trigger having its ends guided by the slots in said post, and automatic means for tripping the trigger.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JOSEPH HUEBSCH.

Witnesses:

THOMAS W. LACY,
CHAS. HOLZBAUER.