July 20, 1926. 1,593,124

H. S. HEINEMAN

UNIVERSALLY VISIBLE SIGNAL

Filed May 24, 1922 2 Sheets-Sheet 2

Fig. 5.

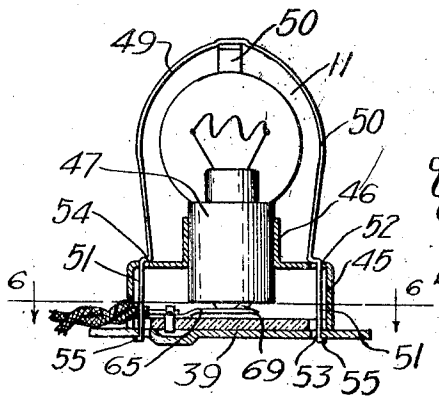


Fig. 6.

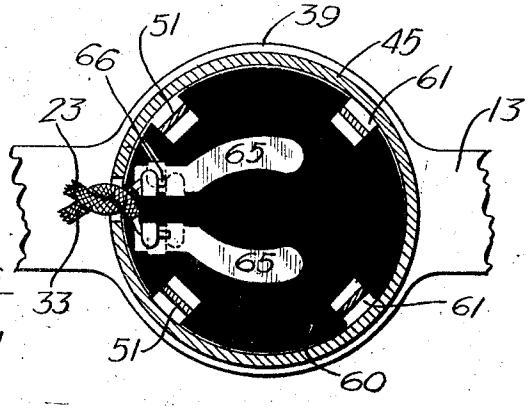


Fig. 7.

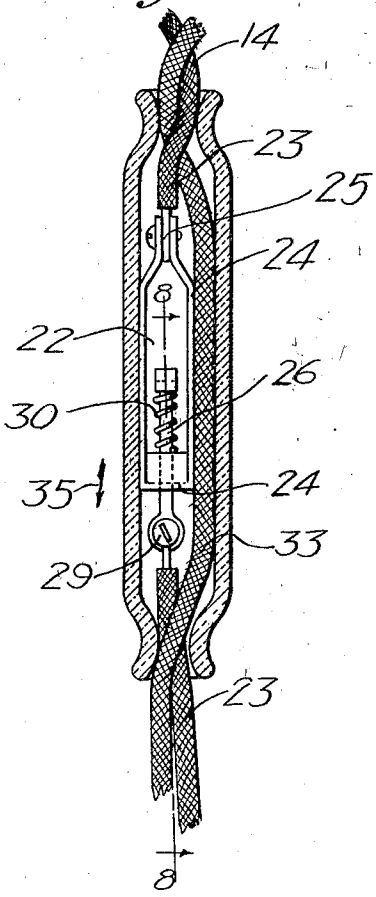
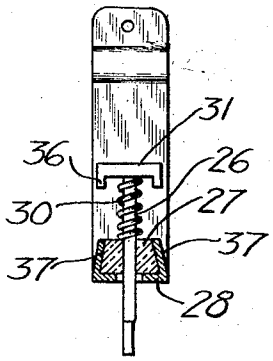


Fig. 8.



INVENTOR:
HERBERT S. HEINEMAN,
BY
Graham & Davis
ATTORNEYS.

Patented July 20, 1926. 1,593,125

UNITED STATES PATENT OFFICE.

JOHN G. JACKLEY, OF SACRAMENTO, CALIFORNIA.

DOUBLE-ACTING VALVE ESPECIALLY ADAPTED FOR LAWN-SPRINKLING SYSTEMS.

Application filed July 13, 1925. Serial No. 43,139.

This invention relates to a valve automatically operated by fluid pressure, and particularly to a type especially useful in connection with underground lawn sprinkling systems. Such systems comprise generally a pipe line leading from a water main and a sufficient number of sprinkler heads connected at intervals to the pipe line to sprinkle the entire lawn area.

In lawns of any considerable size, the water pressure usually available is insufficient to enable all the sprinklers to be operated at one time with any efficiency. It is therefore customary in the less expensive systems, to insert manually operated shut-off valves at intervals in the pipe line, so that only a certain number of the sprinklers will operate at one time. This can be avoided by increasing the size of water main used, but this usually entails considerable expense.

The principal object of my invention therefore is to provide valve structures which will operate by water pressure in such a manner that one battery of sprinklers will be operated for a certain length of time, then this battery will be shut and the next battery brought into operation and so on throughout the entire system. This action is accomplished automatically and without any manual attention being necessary. This enables the number of sprinkler heads operated at any one time to be kept within the capacity of ordinary mains and water pressure, so that the sprinklers will operate efficiently. At the same time the number of sprinklers used in the entire lawn is not limited nor is it necessary to use separate pipe lines for different batteries of sprinklers.

A further object of the invention is to product a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Fig. 1 is a sectional elevation of the valve with the parts in their normal or closed positions.

Fig. 2 is a similar view with one valve member raised by water pressure, permitting the flow of water to the pipe leading to an adjacent battery of sprinkler heads.

Fig. 3 is a like view, showing the lower valve raised to permit the water to flow through the lower valve opening to the next automatic valve, and with the first sprinkler unit pipe line closed.

Referring now more particularly to the characters of reference on the drawings, the numeral 1 denotes the body of the valve, similar to an ordinary globe valve and adapted at its opposite ends to be connected to intake and discharge pipes 2 and 3 respectively. The body has a transverse wall 4 between such ends, provided with a valve seat opening 5.

Screwed into the body above the wall 4 and located centrally of the seat 5 is a barrel 6 having a side outlet 7 intermediate its ends to which is connected a pipe 8 leading to a battery of sprinkler heads (not shown).

Engaging the barrel is a piston 9 of metal, leather or the like, preferably of sufficient length to extend across outlet 7 when the piston is in its lowermost position. This piston is mounted on a tubular member 10, the upper end of which is guided by and slides through a cap 11 on the barrel. The upper end of this member is preferably threaded and either a cap or a sprinkler head may be placed thereon, as may be desired.

A valve head 12, to seat in the orifice 5, is mounted on the lower end of a tubular stem 13 which has a running sliding fit in the member 10. The stem 13 has a cross pin 14 a certain distance from the head 12, on which the lower end of the member 10 rests when the piston 9 is in its normal position, or below the outlet 7, as shown in Fig. 1.

A compression spring 15 between the piston and the cap 11 normally forces the member 10 down, and consequently holds the valve 12 firmly seated.

A normally slack tension spring 16 is disposed about the stem 13 between the head 12 and the adjacent end of the member 10. The head 12 is not only faced on its under side to engage the seat 5, but on its upper side as well, to engage a seat 17 formed at the lower end of the barrel 6. The seats 5 and 17 are of course a certain distance from each other and the seat 17 is above the intake pipe 2 of the body.

Under normal inactive conditions, the

the clevis 24 connecting between the two sections of the conductor 23, and thus allowing current to flow through the circuit provided by the cord 14, consequently illuminating the lamp 11.

A preferred form of construction of my signal is shown in Fig. 3, in which the clamp 13 is comprised of a base plate 39 having two forks 40 extending therefrom, these forks 40 being substantially parallel in extension so that an elongated enclosure 41 is formed therebetween through which the ulna and radius bones of the forearm near the wrist pass when the signal is applied to the arm as shown in Fig. 1. The particular shape of the clamp 13 makes it impossible to misplace the signal upon the arm with the lamp 11 in a position other than in a plane extending substantially through the driver's extended or open hand, which position of the hand is naturally assumed when a traffic signal is being given. This maintenance of the lamp 11 upon the top of the driver's arm constitutes one of the particular features of my invention, as with the light in this position it is possible for it to be seen from the front, rear and also from the sides, which would not be possible with the light located upon the back of the arm.

The lamp 11 is maintained upon the base plate 39 of the clamp 13 by a socket member 45 which consists, as shown in Fig. 5, of an inverted cup stamping having outwardly formed jaws 46 in which the plug 47 of the lamp 11 is received and maintained. A guard member 49 is comprised of a pair of crossed flat bands 50 bent into the shape shown, the ends 51 of the guard bands 50 being adapted to pass through holes 52 in the socket member 45 and holes 53 in the base 39 so as to provide a means for holding the socket member 45 securely upon the clamp 13. Offsets 54 formed in each of the bands 50 engage the top of the socket member 45 and prevent its being removed from the base 39 of the clamp when outwardly bent toes 55, formed upon the extreme lower ends of the bands, engage the under side of the base plate 39 as shown in Fig. 5. The guard and the socket may easily be removed for the purpose of renewing the lamp 11 or making connections by pressing the ends 51 of the bands 50 inwardly so that the toes 55 will pass through the holes 53.

A fiber disc 60, having notches 61 formed therein through which the ends 51 of the bands 50 may pass, is maintained within the socket member 45 and supports thereupon a pair of contact plates 65 to which the ends 66 of the conductors 23 and 33 comprising the cord 14 are attached, these contact members being adapted to bear against contact lugs 69 which are provided upon the underside of the plug 47 of the lamp 11 so that connection of the lamp into the electric circuit may be made simply by inserting the plug 47 in the socket.

The essential features of my invention consist in the supporting of a signal lamp upon the forearm in such a position that the light may be observed from the front, rear, and sides; to energize this lamp from the electric system of the automobile; and to provide a means whereby the energization of the light will occur only when the arm is extended so as to place a tension upon the connecting cord.

A further feature in the construction of my device resides in the attachment of the cord centrally to one of the forks 40 of the clamp 13, as shown at 70 in Fig. 3, thus preventing the displacement of the lamp due to the eccentric pull of the cord upon the clamp when the arm is extended, which would occur were the cord attached directly to the point 71 at which it makes contact with the spring plates 65.

I claim as my invention:

1. In a signal for use on automobiles, the combination of: a clamp adapted to be applied upon the forearm, the forks of said clamp being substantially parallel so as to prevent the turning of said clamp upon said arm; an electric lamp mounted upon said clamp in a plane parallel to said forks; and a pair of electric conductors connected between a battery mounted in said automobile and said lamp, providing a circuit whereby said lamp may be illuminated.

2. In a signal for use on automobiles, the combination of: a clamp adapted to be applied upon the forearm, the forks of said clamp being substantially parallel so as to prevent the turning of said clamp upon said arm; an electric lamp mounted upon said clamp in a plane parallel to said forks; a pair of electric conductors connected between a battery mounted in said automobile and said lamp, providing a circuit whereby said lamp may be illuminated, one of said cords being shorter than the other; a tension actuated switch inserted in said shorter cord for closing said circuit when a tension is placed upon said cords; and means for attaching said cords to said clamp at an intermediate point so that the pull of said cords upon said clamp will not exert a rotative force upon said clamp.

In testimony whereof, I have hereunto set my hand at Los Angeles, California this 17th day of May, 1922.

HERBERT S. HEINEMAN.

removed from said openings, valve means normally closing communication between the openings, independent valve means normally closing communication between the intake opening and the outlet, means whereby when a fluid at a certain pressure is admitted to the body through the intake opening the last named valve will then be opened, said pressure holding the first named valve closed, spring means then acting to open the said first named valve against the fluid pressure, and means whereby after the last named valve has been opened the pressure holding the other valve closed will be gradually counteracted to enable the spring means to then open said other valve.

3. A structure as in claim 1, in which said first named valve when opened will then automatically close communication between the intake opening and the outlet independent of the other valve.

4. A valve structure including a body having opposed intake and discharge openings, an outlet leading from the body in a plane removed from said openings, a valve normally closing communication between the intake opening and the outlet, and opened upon the presence of a fluid passed into the body through the intake opening and having a certain pressure, a second valve between the openings and normally held closed by the first named valve and subsequently held closed for a predetermined period by the liquid pressure in the body after the first named valve has been opened, said second valve when opened being adapted to close communication between the intake opening and the outlet independent of the other valve, means functioning only after the first named valve has been opened to admit fluid to the discharge opening of the body past the second valve whereby to counteract the pressure of the fluid holding said valve closed, and spring means of lesser force than the liquid pressure acting on the valve to then open the same.

5. A valve structure comprising a body having opposed intake and discharge openings, an orificed wall between said openings, a barrel mounted on the body in longitudinal alinement with the axis of said orifice and with which the intake opening of the body may communicate, said barrel having an outlet intermediate its ends, a valve member slidable in the barrel and normally disposed between the outlet opening and body intake, a valve for engaging said wall orifice and adapted when raised from the same to form a closure for the adjacent end of the barrel, means whereby when the barrel valve is in the above named normal position the orifice valve will be held seated in the orifice, means acting on the barrel valve to hold the same in such position, said means being overcome by a fluid admitted to the body through the intake and attaining a certain pressure, a tension spring then acting on the orifice valve to open the same but having a force less than that of the fluid pressure, and means whereby when said barrel valve is opened a restricted flow of the liquid past the orifice valve will be had to set up a fluid pressure in the body beyond said valve to counteract the pressure acting on the opposite side of the valve and enabling the tension spring to function.

6. A structure as in claim 5, in which said last named means comprises a tubular member on which the barrel valve is mounted, a tubular stem for the orifice valve slidable in said member, said stem having a lateral opening normally closed by said tubular member and exposed to the fluid only when the barrel valve has been moved to a position to open communication between the body intake and the barrel outlet.

7. A valve structure comprising a body having opposed intake and discharge openings, an orificed wall between said openings, a barrel mounted on the body in longitudinal alinement with the axis of said orifice and with which the intake opening of the body may communicate, said barrel having an outlet intermediate its ends, a valve member slidable in the barrel, spring means overcome by liquid in the body at a certain pressure for normally holding said valve in an outlet-closing position, a common valve for alternately closing the wall orifice and the adjacent end of the barrel, means whereby the barrel valve when closed will hold the other valve seated in the orifice, the fluid pressure maintaining said orifice valve closed even after the barrel valve is opened, means whereby after said barrel valve has been open for a certain time the pressure holding the orifice valve closed will be counteracted, and means then causing said orifice valve to move from the orifice to form a closure for the barrel.

8. A valve structure including a body having opposed intake and discharge openings, an outlet leading from the body in a plane removed from said openings, valve means normally closing communication between the openings, independent valve means normally closing communication between the intake opening and the outlet, means controlled by a fluid admitted to the body through the intake opening and having a certain pressure for causing the last named valve to be first opened and subsequently the first named valve to be likewise opened, and means whereby the first named valve when thus opened will then form a closure between the intake opening and the outlet independent of the other valve.

9. A valve structure including a body having opposed intake and discharge openings, an outlet leading from the body in a

plane removed from said openings, valve means normally closing communication between the openings, independent valve means normally closing communication between the intake opening and the outlet, and adapted to be opened by a fluid passed into the body through the intake opening, pressure resisting means acting on the last-named valve means whereby the fluid must attain a predetermined pressure before said last named valve means will be opened, and means whereby the first named valve means will automatically open after said last named valve means has been open for a certain period.

In testimony whereof I affix my signature.

JOHN G. JACKLEY.