Dec. 6, 1955 W. D. EGLY ET AL 2,726,119

AUTOMATIC STOP VALVE FOR TRAVELING LAWN SPRINKLER

Filed Jan. 14, 1950

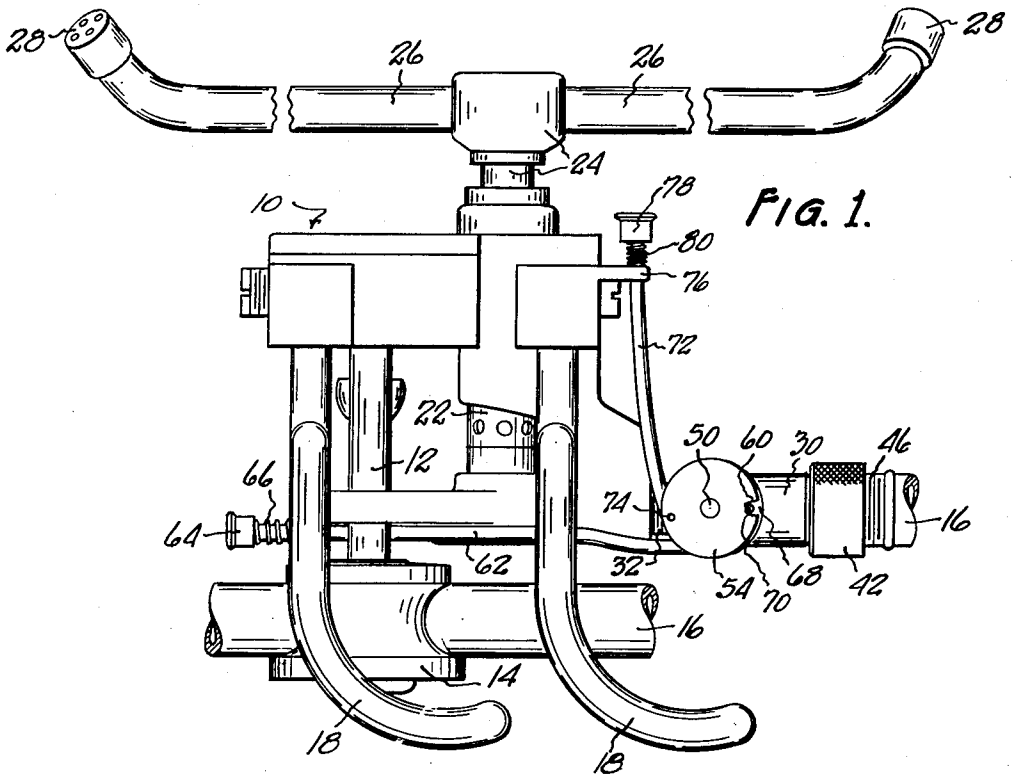


FIG. 1.

FIG. 3.

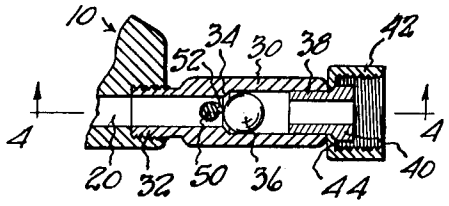


FIG. 2.

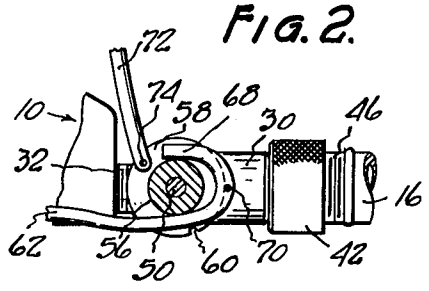
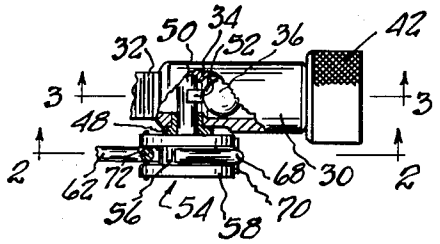


FIG. 4.



WILLIAM D. EGLY
COLUMBUS W. HARRIS
INVENTOR.

BY Attick & Knoblock

ATTORNEYS.

United States Patent Office 2,726,119
Patented Dec. 6, 1955

2,726,119

AUTOMATIC STOP VALVE FOR TRAVELING LAWN SPRINKLER

William D. Egly, South Bend, and Columbus W. Harris, Elkhart, Ind.; said Harris assignor to said Egly

Application January 14, 1950, Serial No. 138,681

9 Claims. (Cl. 299—50)

This invention relates to control valves for liquid pressure devices, and more particularly to a valve by means of which the flow of water through the device may be stopped at a selected point in the path of travel of a traveling lawn sprinkler. The control mechanism is particularly intended for use with a lawn sprinkler of the character illustrated in our co-pending application, Ser. No. 53,492, filed October 8, 1948. It may also be used with the propulsion means for garden hose illustrated in our application, Ser. No. 138,682 filed January 14, 1950, now Patent No. 2,660,471.

The primary object of the invention is to provide a novel, simple, easily adjusted mechanism which serves to hold a valve in selected position and which accommodates the tripping of that valve to reverse setting.

A further object of the device is to provide a rotatable valve controller having an open and a closed position, with a spring pressed latch member normally holding the same in open position, and a spring pressed set member adapted to urge the valve toward closed position upon tripping of said latch member.

Other objects will be apparent from the following specification.

Fig. 1 is a side view of a sprinkler employing our improved valve mechanism.

Fig. 2 is a longitudinal sectional view taken on line 2—2 of Fig. 4.

Fig. 3 is a longitudinal sectional view taken on line 3—3 of Fig. 4.

Fig. 4 is a longitudinal sectional view taken on line 4—4 of Fig. 3.

Referring to the drawing which illustrates the preferred embodiment of the invention, the numeral **10** designates the body or frame of the sprinkler, which houses a drive mechanism of the character described in our co-pending application, Ser. No. 53,492. This motor serves to drive a pair of shafts, including the shaft **12** for the purpose of rotating gripping members or rollers **14** between which the flexible garden hose **16** is gripped. The frame **10** is mounted upon supporting legs **18** which are swivelled thereto and support the parts in the position best illustrated in Fig. 1, permitting the device to be drawn along by the pulling action exerted by the rollers **14** against the flexible garden hose **16**.

The casing or frame **10** has a water passage therethrough, including the inlet **20**, best seen in Fig. 3, the upright conduit portion **22**, the rotatable upwardly projecting discharge conduit and head **24**, the conduit arms **26** projecting laterally from the rotatable head, and the apertured sprinkler heads **28** carried by the ends of the arms **26**. The device is preferably of the character entailing the use of arms **26** which are bent so that the force of the water passing therethrough for discharge at the apertured heads **28** causes rotation of said arms and of the head and upright conduit portion **24**, which serves to drive the mechanism contained within the frame **10** and provides a driving connection with the roller shafts **12**.

This invention is particularly concerned with the control of a sprinkler of this character which serves to hold the parts of the device in condition for operation, when once so set, until a point is reached at which it is desired to stop the operation. The garden hose **16** will be understood to be of the standard type which is connected at a tap or faucet, usually projecting from the side of a building, and it extends to the sprinkler to supply water, the same being discharged into the inlet **20** of the water passage within the sprinkler. Stated differently, this invention is concerned primarily with the means by which the device will automatically stop the supply of water to the sprinkler, thereby stopping both the water distributing operation of the sprinkler and the movement of the sprinkler.

The device includes a valve casing **30** of substantially tubular character having a reduced screw-threaded portion **32** secured in a socket in the casing **10** for communication of the bore of the tubular member **30** with the inlet end of the water passage in the housing. The tubular member **30** has a bore of smaller diameter at one end portion than at the opposite end portion, thereby providing an interior shoulder or valve seat **34** preferably of conical form. A ball valve member **36** fits with clearance in the large diameter portion of the bore of the tubular part **30** and is adapted to bear against the seat **34** to close the tubular valve member in response to the pressure of fluid acting against said valve member. A tubular fitting **38** is screw-threaded in the large diameter end of the tubular member **30**, defining a stop for limiting movement of the ball valve **36** away from the valve seat **34**. The tubular fitting **38** is preferably provided with an enlarged head or end portion **40** which serves as a retainer for a cup-shaped internally screw-threaded coupling or fitting member **42** having at one end an inturned flange **44** which is received and retained between the end of the tubular member **30** and the enlarged end **40** of the tubular fitting **38**, the fit between these parts being such as to accommodate rotation of the member **42** for the purpose of threaded connection thereof with the threaded end of a male coupling member **46** carried upon the end of the hose **16**.

The tubular member **30** has a transverse bore extending through at least one wall thereof adjacent to the valve seat **34** within which is mounted a bushing **48** serving to journal a pin or shaft **50**. The shaft **50** has a lateral projection or abutment **52** mounted thereon in a position adapted to engage the ball valve **36** when in the rotative position illustrated in Figs. 3 and 4, for the purpose of holding that ball valve spaced from the valve seat **34**. The parts are so constructed that when the shaft **50** is rotated through an angle of from 60° to 90°, the projection **52** will be positioned clear of the ball valve **36** so that said valve is free to move to the closed or sealing position bearing against the seat **34** in response to the pressure of water acting thereagainst supplied by the conduit **16**.

At its outer end the shaft **50** mounts a spool member or disk **54** which is provided with a circumferential groove **56** serving to define a pair of spaced flange portions **58**. Each of the flange portions **58** is preferably provided with a notch **60**, said notches being axially aligned.

An elongated rod **62** has a sliding guide fit or mounting upon the frame **10** and extends forwardly from the valve unit to terminate in a head or abutment portion **64** which projects forwardly from the parts of the sprinkler adjacent thereto, and particularly forwardly with respect to rollers **14** and the foot or support members **18**. The rod **62** is normally spring-urged forwardly for which purpose a coil spring **66** may be provided, bearing at one end against the abutment **64**, and at its opposite end against the frame **10**. The rear end of the rod **62** is substantially hook-shaped, as best illustrated in Fig. 2, being upwardly return bent at **68**

to fit around the hub of the spool **54**, that is, to fit within the groove **56**. The length of the return bent hook portion is preferably such that when the spring **66** has been fully compressed, the hub portion of the spool will still be engaged by the hook substantially as illustrated in Fig. 2. At substantially the center of the return bend or hook portion, is mounted a cross-pin **70**. This pin is adapted to seat in the notches **60** formed in the flanges **58** of the spool when said notches are in a rotative position registering with said pin, as illustrated in Fig. 1. The arrangement of the parts, especially the hook engagement of the part **68** around the hub of spool **54** and the guiding means for slidably positioning the rod **62** with reference to the frame **10**, coupled with the action of the coil spring **66** to urge the parts **62—68** to the position illustrated in Fig. 1, acts normally to restrain the spool **54** against rotation. The notches **60** are so located with respect to the lateral projection **62** upon the shaft **50** that said projection will be positioned as illustrated in Fig. 3, serving to hold the valve **36** clear of the valve seat **34** when the pin **70** seats within the notches **66**.

An elongated rod **72**, here illustrated as substantially upright, is positioned tangentially with reference to the spool **54**, being received at its lower end in the groove **56** of the spool **54** and being pivoted at **74** to the spool flange **58**. The frame **10** includes an apertured guide **76** through which the rod **72** extends. At its upper end rod **72** mounts an abutment or head **78**, and a coil spring **80** preferably encircles the rod **72**, bearing at one end against the guide **76**, and at its opposite end against the head **78** so as normally to urge the rod **72** upwardly and to rotate the spool **54** and the shaft **50** to the position illustrated in Fig. 2 in which the projection **52** is clear of the ball valve **36** so that said valve is permitted to seat in response to water pressure to close the valve.

The device provides simple and accurate, trouble-free, sturdy means assuring the desired operation of the sprinkler. For the purpose of setting the device to cause the operation of the sprinkler to commence, all that is required is depression of the rod **72** to the position illustrated in Fig. 1 against the action of the spring **80** to such an extent as to cause the spool **54** to rotate for registration of its notches **60** with the pin **70**. When such registration occurs, the spring **66** is free to act to shift the rod **62** from the position illustrated in Fig. 2 to the position illustrated in Fig. 1, causing the pin **70** to enter the notch **60**. This operation, as previously explained, serves to position the internal abutment **52** upon the shaft **50** in a position to engage the ball valve as seen in Fig. 3, and to prevent that valve from closing in response to pressure of water passing the same. The supply of water past the valve to and through the sprinkler causes the distribution of water to the sprinkler heads **28**, and, due to the rotation thereof, the drive mechanism within the frame **10** is actuated, causing the rotation of the shafts **12** and the gripping of rollers **14**. The gripping rollers embrace the hose **16** and travel therealong, serving to propel the sprinkler which moves upon the runners or supports **18**. The movement is in such a direction that the abutment **64** is positioned foremost.

When the device has once been set, a fixed abutment will be positioned at that point along the length of the hose **16** at which the operation of the device is to be stopped. This abutment may constitute a brick, a peg or any other device found suitable, and so positioned as to be engaged by the abutment **64**. As the sprinkler approaches this stop member (not shown), that is, the brick or peg, and the abutment engages that stop, the continued movement of the sprinkler causes the rod **62** to be shifted rearwardly against the action of the spring **66**. This shifting continues until the pin **70** is released from the notches **60**. Upon this release, the spool **54** is free to rotate to the position illustrated in Fig. 2 under the influence of the spring **80** which pulls upwardly upon the rod **72** and causes the spool to be moved from the position shown in Fig. 1 to that shown in Fig. 2.

In the event it is desired to employ the valve construction in propulsion means for garden hose of the character illustrated in our co-pending application, Ser. No. 138,682, filed January 14, 1950, the parts will be so arranged that the rod **62** will extend from the valve in the direction opposite the direction in which the hose is pulled. The head **64** of that rod will be positioned clear of the frame of the mechanism adjacent to the hose being propelled thereby, so that it may be tripped by an abutment or a stop which is carried by the hose, such as a clamp or the like embracing the hose at a selected point thereof.

While the preferred embodiment of the invention is illustrated and described herein, it will be understood that changes in the construction may be made within the scope of the appended claims without departing from the spirit of the invention.

We claim:

1. In a traveling lawn sprinkler of the type having means for propelling the same in one direction and powered by the flow of water which is distributed thereby, comprising a valve having a housing and a shiftable valve element, a valve controller rotatable in said housing and having an open and a closed position, respectively, a spring-pressed endwise shiftable latch member releasably engageable with and projecting forwardly from said valve controller in the direction of travel of the sprinkler to hold the controller in open position, and an actuator pivotally connected to said valve controller eccentrically thereof and spring pressed to normally urge said controller to closed position upon release of said latch member.

2. In a water powered member having a frame and a control valve, a valve controlling member journaled in said frame and having two operative rotative positions, spring pressed means shiftably carried by said frame and pivotally connected to said valve control member for normally rotating said valve control member to a valve-closing rotative position, and a latch carried by said frame and spring pressed toward latching engagement with said valve control member when said control member is in valve-opening rotative position, said latch being shiftable longitudinally of said frame and including a part projecting forwardly of said frame.

3. In a water powered member having a frame and a control valve, a rotatable valve controller journaled in said frame and having an open and a closed rotative position, said controller including a notched part positioned exteriorly of said frame, a latch shiftably carried by said frame and spring pressed into engagement with said notched part, said latch being adapted to seat in said notch to lock said controller in valve opening position, and manually actuated means connected to said controller and spring urged for normally rotating said controller to valve closing position.

4. In a water powered member a frame and a control valve thereon, a rotatable valve controller journaled in said frame and including a notched part positioned exteriorly of said frame, a latch shiftably carried by said frame and spring pressed into engagement with said notched part, said latch being adapted to seat in said notch to lock said controller in valve opening position, and means for rotating said controller to a valve closing position, said latch constituting a hook member for engaging about said controller and having means adapted to engage said notched part and having an elongated forwardly projecting stem guided by said frame for endwise movement.

5. In a water powered member a frame and a control valve thereon, a rotatable control unit journaled in said frame on a transverse axis and including an exteriorly positioned circumferentially grooved disc having a peripheral notch, a hook seated in said groove and hav-

ing an elongated forwardly projecting shank slidably carried by said frame, a projection carried by said hook and adapted to seat in said notch, a spring pressing said hook and projection into engagement with said disc, and spring pressed means normally urging said control unit to a valve-closing position, said control unit being positioned in valve-opening position when said projection is seated in said notch.

6. In a liquid pressure device a frame and a control valve thereon, a rotatable control unit journaled in said frame on a transverse axis and including an exteriorly positioned spool having a notch, an elongated member terminating forwardly of said frame and slidable endwise on said frame, the rear end of said member being return bent in hooked engagement about said spool and including a projection adapted to seat in said notch, a spring urging said elongated member forwardly to press said projection against said spool, said unit holding said valve in open position when said projection seats in said notch, and means for normally urging said unit to valve-closing position.

7. In a liquid pressure device a frame and a control valve thereon, a rotatable control unit journaled in said frame on a transverse axis and including an exteriorly positioned spool having a notch, an elongated member terminating forwardly of said frame and slidable endwise on said frame, the rear end of said member being return bent in hooked engagement about said spool and including a projection adapted to seat in said notch, a spring urging said elongated member forwardly to press said projection against said spool, said unit holding said valve in open position when said projection seats in said notch, an endwise shiftable member carried by said frame and projecting substantially tangentially of and pivoted to said spool, and a spring urging said last named member to a unit-rotating position in which said notch is rotatively displaced from said projection.

8. In a liquid pressure device frame a housing and a

control valve housing thereon having a valve element urged against a valve seat by water under pressure entering said housing, a member journaled in said housing adjacent to said valve seat and mounting a projection operative in one position to space said valve element from said valve seat, spring means normally rotatively positioning said member in a second position with its projection clear of said valve element, and a latch freely slidably mounted on said frame and spring urged into engagement with said member, said latch in its spring projected position interlocking with said member when said projection holds said valve element open said spring means being manually actuable to rotate said member to a position accommodating interlocking of said latch and member.

9. In a liquid pressure device having a frame and a control valve therein, a valve trip member journaled in said frame and having a valve-opening position and a valve-closing position, said positions being rotatively displaced, a latch member slidably carried by said frame and spring pressed into engagement with said trip member, said trip member and latch member normally interlocking when said trip member is in valve-opening position, said latch member including an abutment portion projecting forwardly of said frame, and a spring pressed shiftable member pivotally connected eccentrically to said trip member and guided by said frame to normally urge said trip member to valve closing position.

References Cited in the file of this patent

UNITED STATES PATENTS

966,672	Ellison	Aug. 9, 1910
1,776,738	Mitchell	Sept. 23, 1930
1,897,600	Bastian	Feb. 14, 1933
1,905,014	Teller	Apr. 25, 1933
1,955,448	Baker	Apr. 17, 1934