Aug. 30, 1955 W. D. EGLY ET AL 2,716,573

TRAVELING LAWN SPRINKLER

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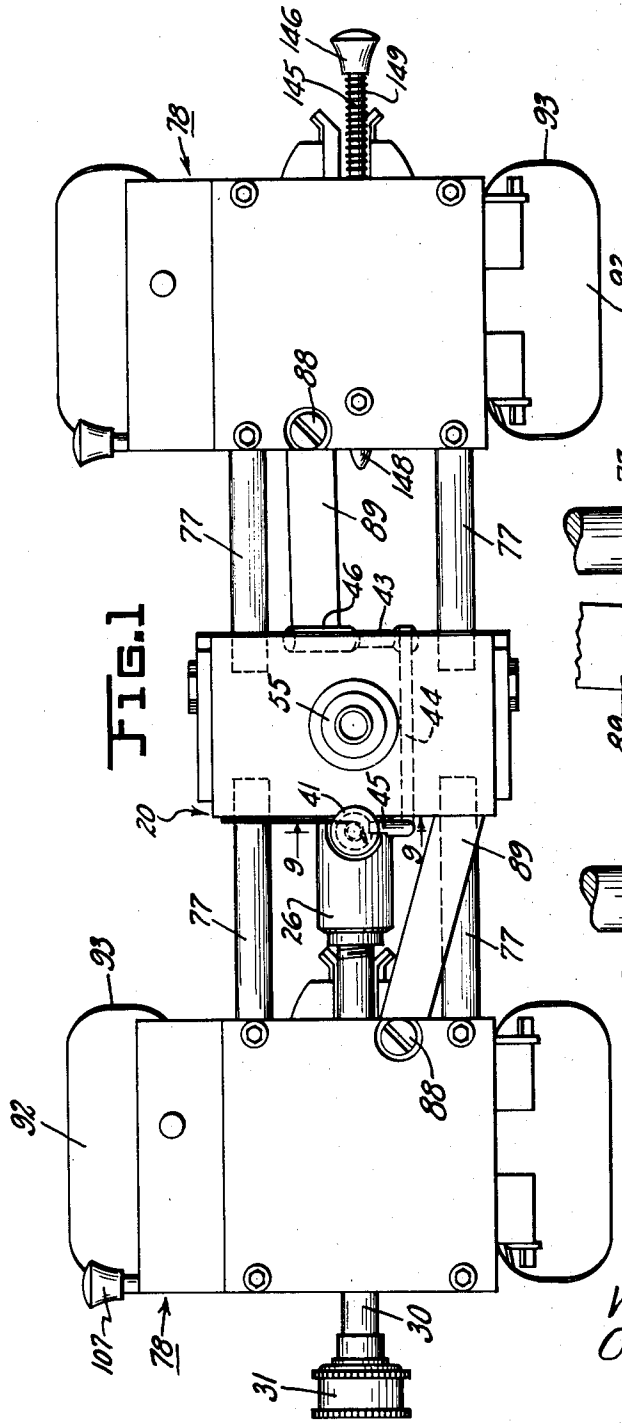


Fig. 1

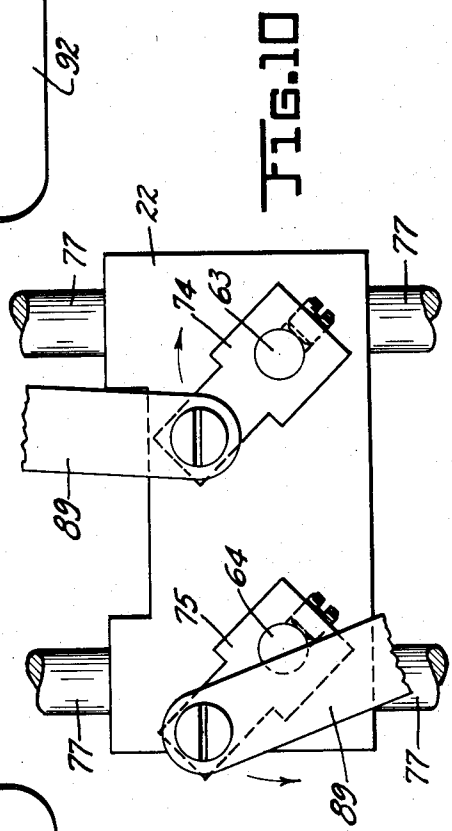


Fig. 10

WILLIAM D. EGLY AND
COLUMBUS W. HARRIS
INVENTORS

BY Oltsch & Knoblock

ATTORNEYS

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TRAVELING LAWN SPRINKLER

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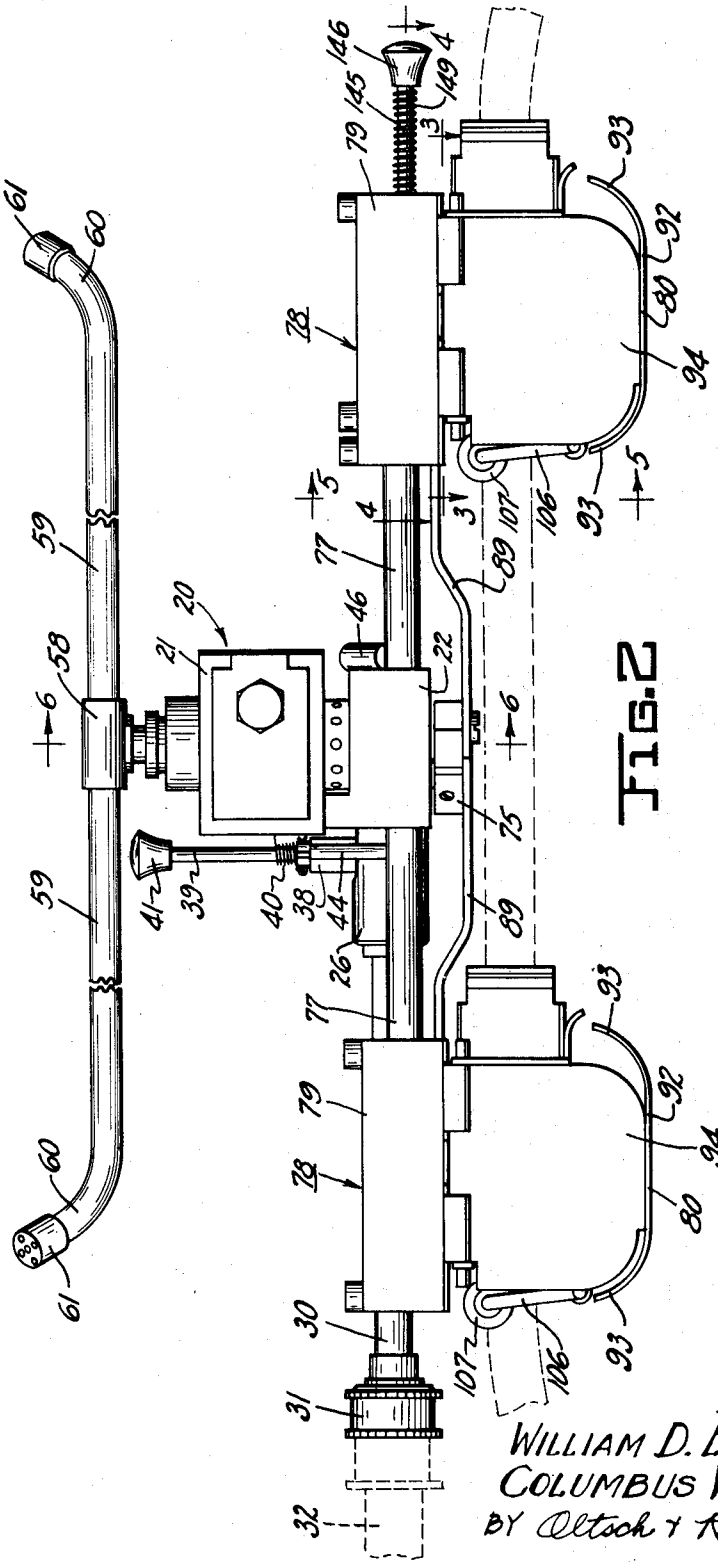


FIG. 2

INVENTORS.
WILLIAM D. EGLY AND
COLUMBUS W. HARRIS
BY Oltsch & Knoblock
ATTORNEYS.

Aug. 30, 1955 W. D. EGLY ET AL 2,716,573

TRAVELING LAWN SPRINKLER

Filed May 31, 1951 6 Sheets-Sheet 3

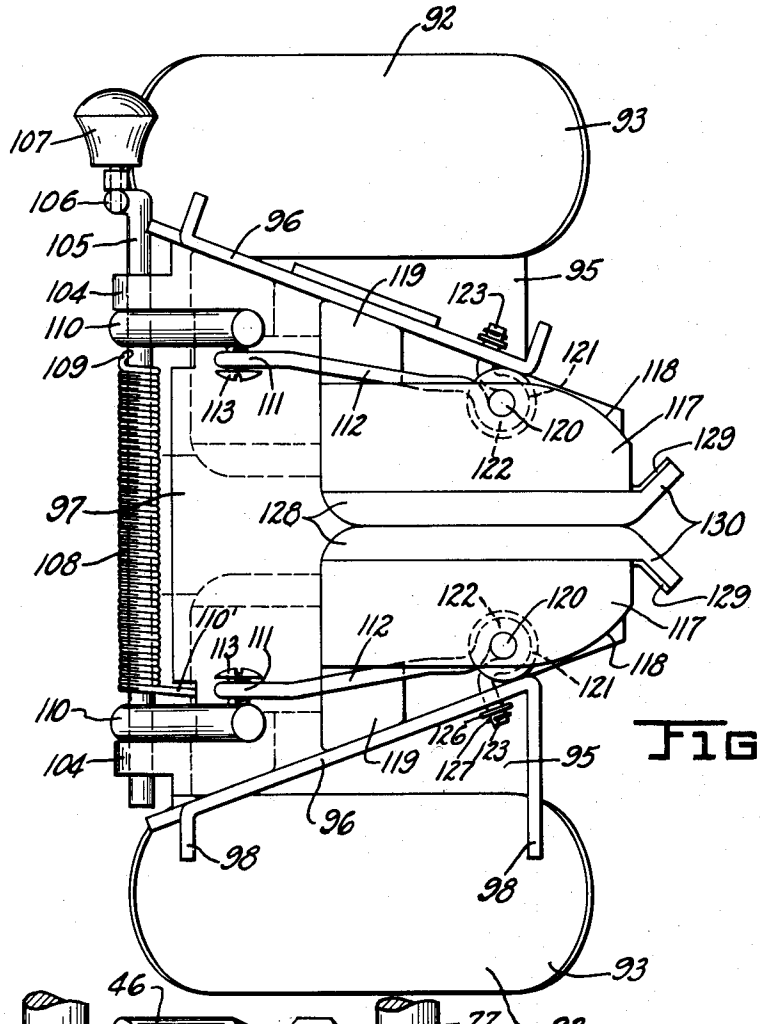


FIG. 3

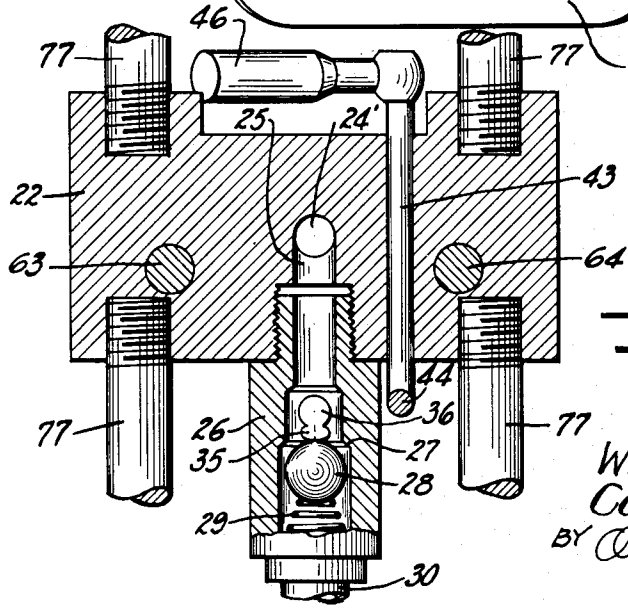


FIG. 8

INVENTORS
WILLIAM D. EGLY AND
COLUMBUS W. HARRIS
BY Oltsch & Knoblock.
ATTORNEYS

Aug. 30, 1955 W. D. EGLY ET AL 2,716,573

TRAVELING LAWN SPRINKLER

Filed May 31, 1951 6 Sheets-Sheet 4

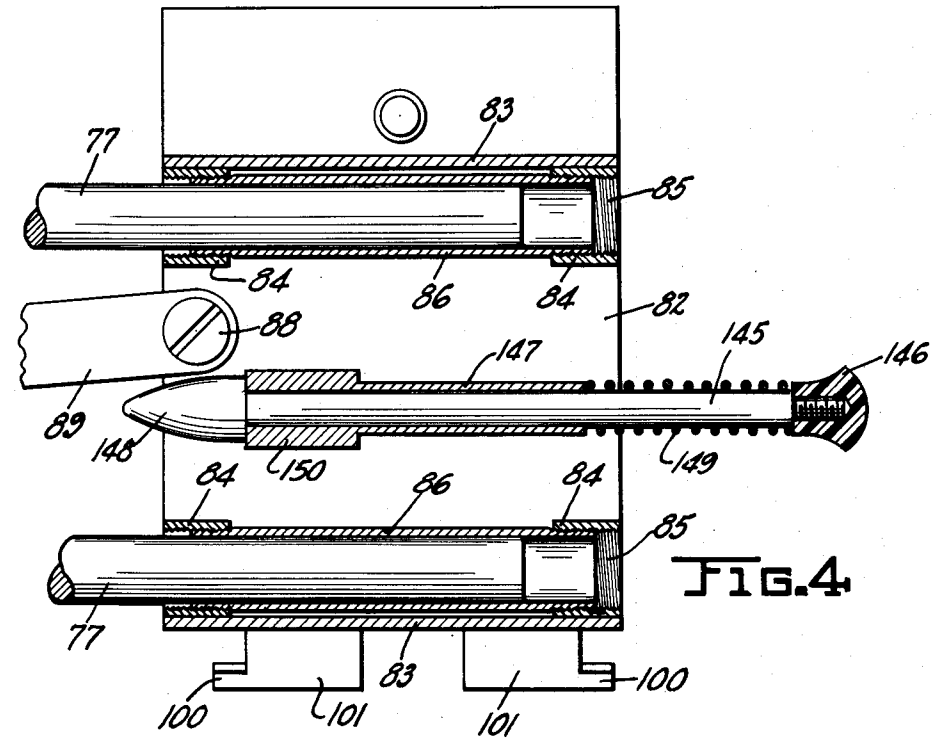


FIG. 4

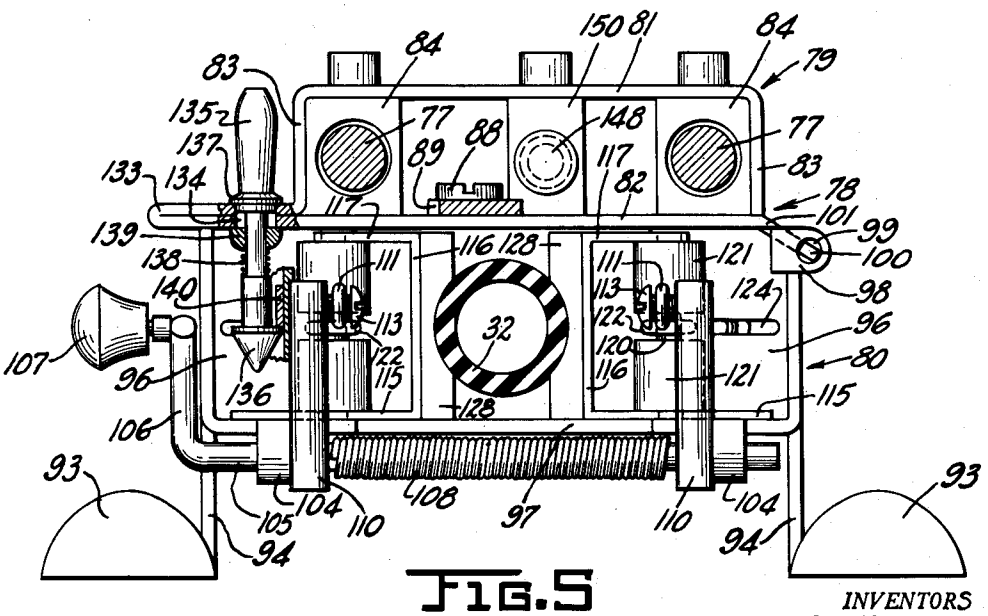


FIG. 5

INVENTORS
WILLIAM D. EGLY AND
COLUMBUS W. HARRIS
BY Oltsch & Knoblock
ATTORNEYS

Aug. 30, 1955 W. D. EGLY ET AL 2,716,573

TRAVELING LAWN SPRINKLER

Filed May 31, 1951 6 Sheets-Sheet 5

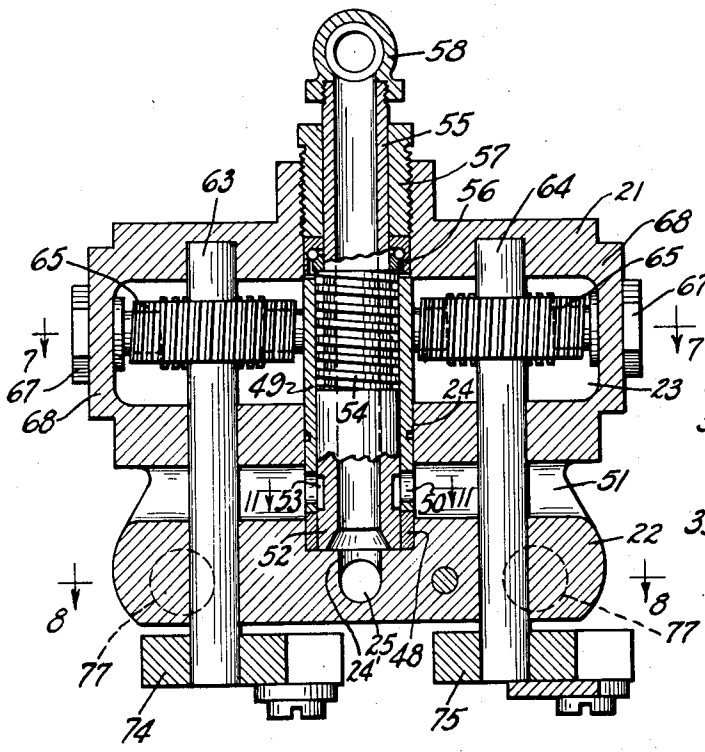


FIG. 6

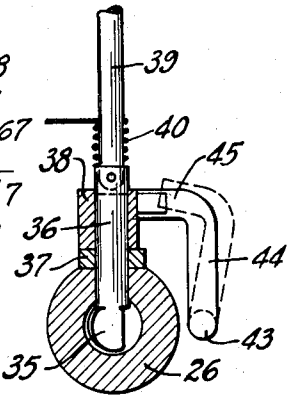


FIG. 9

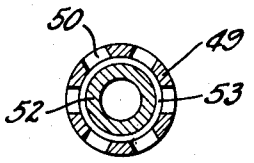


FIG. 11

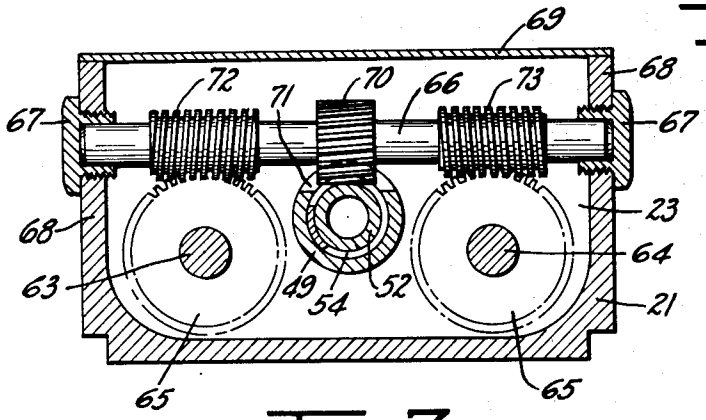


FIG. 7

INVENTORS
WILLIAM D. EGLY AND
COLUMBUS W. HARRIS.
BY Oltsch & Knoblock
ATTORNEYS

Aug. 30, 1955 W. D. EGLY ET AL 2,716,573

TRAVELING LAWN SPRINKLER

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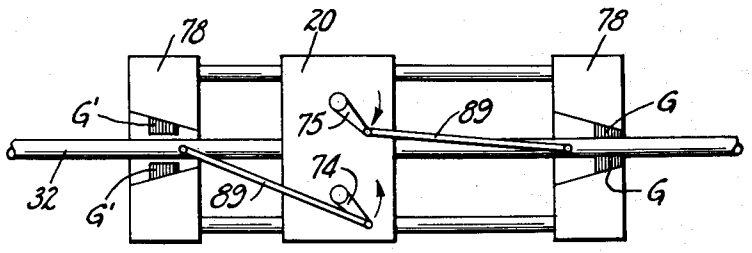


FIG. 12

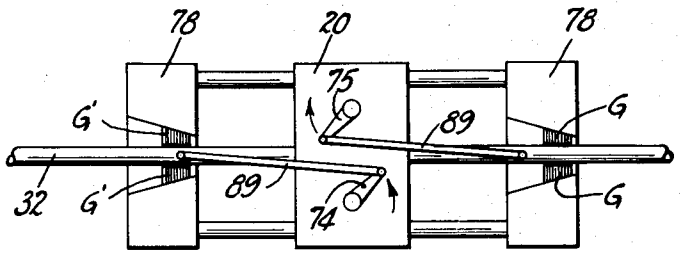


FIG. 13

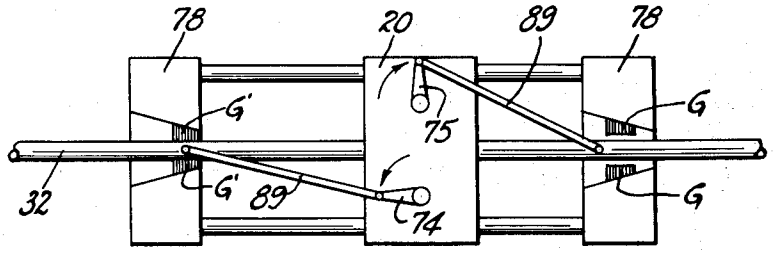


FIG. 14

WILLIAM D. EGLY AND
COLUMBUS W. HARRIS.
INVENTOR.

BY Oltsch & Knoblock

ATTORNEYS

United States Patent Office 2,716,573 Patented Aug. 30, 1955

2,716,573

TRAVELING LAWN SPRINKLER

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

Application May 31, 1951, Serial No. 229,174

14 Claims. (Cl. 299—50)

This invention relates to improvements in traveling lawn sprinklers, and more particularly to a sprinkler of the type adapted to advance itself by engagement with and pulling action upon an elongated guide member which may be a hose which connects the sprinkler to a source of water under pressure.

The primary object of this invention is to provide a device of this character having a large area of frictional contact between advancing or pulling means forming a part thereof and the guide along which the device is to travel, thereby avoiding slippage of the device upon the guide member which, if a hose, is usually formed of rubber, synthetic rubber or synthetic resin material, subject, when wet, to slippage of articles contacting the same.

A further object is to provide a device of this character, wherein a water reactance member cooperates with a pair of ground-engaging members to shift the same toward and from said reactance member in a predetermined relation, and wherein said ground-engaging members are adapted to selectively grip a guide so that the same alternately engage the guide and slide therealong to cause the sprinkler to be advanced along the guide.

A further object is to provide a device of this character having a novel hose-gripping means adaptable to reciprocate relative to a support and acting to grip a guide when shifted in one position, and to move freely relative to said guide when shifted in the opposite direction.

A further object is to provide a device of this character having a water reactance member mounted on a horizontal support slidably engaging a pair of ground-engaging members, each of which is adapted to engage and grip a guide, wherein said reactance member selectively shifts and reciprocates said ground-engaging members on said support, said ground-engaging members gripping said guide in one direction of movement of each and alternatively relative to the other, whereby said members alternately operate to take a new and advance gripping position upon the guide incident to operation of the water reactance member.

A further object is to provide a device of this character having a novel hose-gripping device, including a pair of opposed jaws adapted for gripping engagement with the hose and shiftable in a tapered guide serving to wedge said jaws into gripping engagement with the hose when at one end of the guide, and to free said jaws from said hose when said jaws are positioned at the opposite end of the guide.

A further object is to provide a device of this character having a pair of ground-engaging members and a structure supported thereby and including a water reactance member, wherein each ground-engaging member comprises pivotally connected upper and lower parts, said upper part mounting said structure, pivotal movement of said upper parts exposing the lower section of said ground-engaging members for ready accessibility to the mechanism thereof.

A further object is to provide a device of this character having a novel jaw structure automatically accommodating itself to and gripping a guide of any cross-sectional size within a large range of sizes.

In the drawings:

Fig. 1 is a top plan view of the device with the sprinkler head or cross arm thereof removed.

Fig. 2 is a side view of the device illustrating in dotted lines a hose or guide member connected thereto.

Fig. 3 is an enlarged view of one of the gripping units as viewed on line 3—3 of Fig. 2.

Fig. 4 is an enlarged horizontal sectional view taken on line 4—4 of Fig. 2.

Fig. 5 is an enlarged transverse sectional view taken on line 5—5 of Fig. 2.

Fig. 6 is an enlarged vertical sectional view taken on line 6—6 of Fig. 2.

Fig. 7 is a horizontal sectional view taken on line 7—7 of Fig. 6.

Fig. 8 is a horizontal sectional view taken on line 8—8 of Fig. 6.

Fig. 9 is a sectional view taken on line 9—9 of Fig. 1.

Fig. 10 is an enlarged bottom plan view of the water reactance portion of the device.

Fig. 11 is a detail sectional view taken on line 11—11 of Fig. 6.

Figs. 12, 13 and 14 constitute schematic drawings illustrating the manner in which the device operates to advance itself along the guide.

Referring to the drawings which illustrate the preferred embodiment of the invention, the numeral 20 designates a water reactance member or unit of any suitable type adapted to produce rotation of parts as a result of the flow of water therethrough. In the form illustrated, the unit has a housing including an upper housing portion 21 and a lower housing portion 22, which housing parts are connected together and may be formed integrally. The upper housing part 21 has a chamber 23 formed therein which is intersected by a vertical bore portion 24 open at the top of the housing part 21 and extending into the housing part 24' thereof with a horizontal inlet passage 25 which is screw-threaded, as illustrated in Fig. 8, to receive a valve fitting 26.

The valve fitting 26 is preferably of the type having a valve seat 27 formed therein and normally closed by a valve element, such as a ball valve member 28, spring-urged to closed position by a spring 29. A pipe or conduit 30 has a screw-threaded connection with the outer end of the fitting 26 and mounts a coupling 31 at its outer end adapted for connection with a mating coupling part mounted upon the end of a garden hose 32. The position of the valve is adapted to be controlled by a cam 35 carried by a rotatable shaft 36 journaled in the fitting 26 and preferably extending vertically, as best illustrated in Fig. 9. The shaft 36 passes through the fitting 26 and a portion 37 projecting from the housing part 22. An externally notched collar 38 is secured to the upper portion of the shaft 36, and the upper end of the shaft 36 has connected therewith a rod 39. A coil spring 40 encircles the rod 39, having one end anchored to said rod and the other end bearing against the adjacent portion of the housing in a manner to normally urge the shaft 36 to a rotative position with the cam 35 thereof positioned to permit the valve member 28 to move to closed position bearing against the seat 27. The rod 39 will preferably mount a knob 41 to facilitate rotation of the rod and the shaft 36 against the action of the spring 40.

The housing part 22 is preferably provided with a substantially horizontal bore laterally offset from the chamber passages 24 and 25 and adapted to receive and

journal a shaft 43. The shaft 43 has an arm 44 bent substantially perpendicular therefrom at the end thereof adjacent to the fitting 26. A finger 45 is bent from the end of the arm 44 substantially perpendicular to the arm and to the shaft portion 43. Said finger is adapted to engage in the notch in the outer surface of the collar 38 to hold said collar, the shaft 36 and the cam 35 in open valve position against the action of the spring 40. The shaft 43 has a finger portion 46 bent substantially perpendicular therefrom at the opposite end thereof.

The vertical bore 24, at the point above the shoulder defined between the main part of said bore and the reduced lower part 24' thereof, supports a sleeve or collar 48 of short length. Upon the upper end of this collar 48 bears a sleeve 49 having a plurality of apertures 50 extending therethrough adjacent its lower end and open to atmosphere at the space 51 between the upper housing part 21 and the lower housing part 22. The sleeve 49 extends upwardly through and substantially across the chamber 23. A tube or conduit 52 bears at its lower end upon the housing shoulder and communicates with the reduced bore portion 24. The conduit 52 has a snug rotatable fit in the sleeve 49 and is circumferentially notched at 53 for communication with the passages 50. The arrangement is such that any leakage of fluid around the lower end of the conduit 52 and between that conduit and the sleeves 48 and 49 will be vented to atmosphere through the notch 53 and the apertures 50 at the open space 51 between the upper and lower housing parts. The tube 52 has screw-threads 54 formed in its outer periphery at the portion thereof which passes through the chamber 23. The upper end portion of the tube is of reduced diameter at 55 defining a shoulder which is engaged by one part of the thrust bearing 56. The opposite part of the thrust bearing preferably bears against the upper end of the sleeve 49. A threaded gland member 57 is screw-threaded in the casing 21 and bears upon the thrust bearing 56 to hold the parts assembled. A T-fitting 58 is mounted upon the upper projecting portion of the tube 55 and serves to mount the sprinkler arms 59, which preferably are bent at their ends at 60 and which mount apertured nozzle or sprinkler heads 61. The sprinkler construction is of such character that as water is forced therethrough under pressure for discharge laterally through the sprinkler heads 61 on the bent ends 60 of the conduits 59, said sprinkler is caused to rotate and to rotate with it the shaft 52, 55 and the screw-threads 54 formed therein.

The housing has a pair of vertical bores extending therethrough in equispaced relation to and at opposite sides of the tube 52 in which are journaled shafts 63 and 64. The upper ends of the shafts are preferably received in interior sockets in the top wall of the chamber, and the shafts extend through the chamber 23, span the space 51 between the chamber parts 21, 22, extend through the housing part 22 and terminate in spaced relation below the bottom of the housing. Each of these shafts mounts a worm gear 65 thereon positioned in the chamber 23. A horizontal shaft 66 is journaled in and spans the chamber 23, said shaft preferably being journaled in socket members or fittings 67 screw-threaded in apertures in opposite end walls 68 of the housing part 21. Access to this shaft and the other parts contained in the chamber 23 may be afforded by removal of a wall or plate 69 detachably secured to the walls 68 of the housing part 21. The shaft 66 mounts a worm gear 70 at its center which meshes with the gear teeth 54 cut in the periphery of the tube 52. In order to accommodate this threaded engagement the sleeve 49 is cut away at 71, as illustrated in Fig. 7. Worm gear members 72 and 73 having opposite leads are formed on the shaft 66, the worm 72 meshing with the gear 68 on the shaft 63, and the worm 73 meshing with the gear 65 on the shaft 64. It will be apparent, therefore, that as the device operates and the discharge of water from the sprinkler produces rotation of the sprinkler arms 59 and

the conduit 52, that rotation is translated and transmitted to the shafts 63 and 64 through the gear teeth 54, the gear 70, the shaft 66, the worm gears 72 and 73, the pinion 65, to the shafts 63 and 64. Crank arms 74 and 75 are carried by the lower projecting ends of the shafts 63 and 64, respectively.

The lower housing portion 22 of the water reactance member has fixedly secured thereto four shafts 77 extending parallel to one another, two thereof projecting from each side of said housing, and the shafts at opposite sides of the housing preferably being axially aligned, as best seen in Fig. 1. The two pairs of longitudinally aligned shafts are preferably equally spaced from the center of the housing. The opposite ends of the shafts 77 are supported by ground-engaging members 78. The ground-engaging members 78 consist of an upper unit 79 and a lower unit 80, as best illustrated in Fig. 5, said parts being pivotally connected, as will be more clearly explained hereinafter. The upper part 79 of each ground-engaging member has a top wall 81, a bottom wall 82 and side walls 83, and is open at its opposite ends.

Blocks 84 are fixedly secured to the upper unit 79 at opposite sides thereof, there preferably being four such blocks, two positioned adjacent each of the side walls 83 and spaced apart. The blocks 84 have internally screw-threaded bores 85 with which the opposite ends of guide tubes 86 have screw-threaded connection, said guide tubes 86 each having a smooth interior bore adapted for snug sliding fit upon one of the shafts or bars 77. One part of each ground-engaging member, preferably the wall 82, has pivotally connected thereto by means of a bolt 88, one end of a bar 89. The opposite end of each bar is connected to the free end of one of the two crank arms 74, 75. It will be apparent, therefore, that as the shafts 63 and 64 are rotated during the operation of the water reactance member, the cranks 74 and 75 will be caused to rotate in opposite directions as designated by the arrows in Fig. 10, and relative movement of the water reactance member 20 with respect to the two ground-engaging units 78 will result.

The cranks 74 and 75 are preferably arranged, as best illustrated in Fig. 10, so that the longitudinal forces exerted upon the bars 89 by the two cranks 74 and 75 will alternate. This is accomplished by positioning the cranks so that when one thereof enters that phase of its movement wherein the major component of its movement is parallel to the shafts 77, the other crank arm will be entering into that phase of its movement wherein its maximum component of movement is transverse of the shaft 77.

The lower unit 80 of each ground-engaging member has a frame which is preferably formed from sheet metal. The opposite end portions of this frame constitute elongated shoe or slider parts 92 whose opposite end portions 93 are curved upwardly, as best seen in Fig. 2. From the inner longitudinal edges of the shoes 92 project upright plate portions 94. Portions 95 project inwardly from the upright plate portions 94 and are preferably substantially triangular in shape, as best illustrated in Fig. 3. A pair of guide walls 96 are preferably formed integrally with and depend from the portions 95, said guide portions 96 being positioned in planes extending at an angle to each other and in converging relation with respect to the upright walls 94. A bottom plate 97 connects the lower edges of the converging guide plates 96.

Ears 98 project outwardly from the under frame at one side thereof, said ears being provided with apertures 99. In these apertures engage projections 100 extending laterally from parts 101 carried by the upper unit 79. This arrangement of parts permits the upper unit 79, with the rods 77 and the water reactance member 20, to pivot about the members 100 as pintles with respect to the frame of the lower structure 90 while the shoes or slide portions 92 of the two undercarriage or ground-engaging members remain in contact with the ground.

The lower plate portion **97** is preferably provided with a pair of projections **104** extending from the edge thereof adjacent to the divergent end portions of the guide plates **96**. The projections **104** are apertured to journal a pin **105** having a crank arm **106** at one end to which a knob **107** is rotatably connected. A coil spring **108** encircles a portion of the rotatable shaft **105**, having one end thereof anchored or secured at **109** to the pin, and its opposite end portion **110'** engaging the plate **97**. The shaft **105** has a pair of arms **110** secured thereto and normally projecting forwardly and upwardly therefrom. At their free ends the arms **110** have pivotally connected thereto the eye portions **111** of rods **112**, as by means of a headed member **113** passing through the eyelet **111** and anchored in the free end of the shaft **110**.

A pair of gripper members are connected to the rods **112**. These gripper members preferably include frames formed of sheet metal and substantially of U-shape in cross-section. Each frame includes a bottom wall portion **115** slidably bearing upon the undercarriage frame panel **97**, an upright wall **116** and a top wall **117**. These walls are preferably elongated, as best seen in Fig. 3, and extend longitudinally, that is, they lie in planes substantially parallel to the shafts **27**. The front end portions of the bottom wall **115** and the top wall **117** are preferably of reduced width and may be curved, as shown at **118** in Fig. 3. The bottom wall **115** of each gripping member has an ear **119** projecting laterally therefrom and are adapted to bear against the adjacent guide member **96**. Intermediate the length of the gripper units and adjacent the outer edge of the upper and lower walls **115** and **117** thereof, and forwardly spaced from the ears **119**, are mounted pins **120** positioned vertically and carried at their ends by said horizontal walls **115** and **117**. One or more rollers **121** are journaled on each pin **120**, the diameter of the rollers being sufficient so that said rollers project beyond the outer edges of the upper and lower gripper walls **117** and **115** for engagement with the guide walls **96**. As here shown in Fig. 5, two rollers are mounted upon each shaft **120** and are spaced apart. The forward end of the rod **112** is looped at **122** forming an eyelet which is passed around the intermediate portion of the pin. The front terminal portion **123** of the rod **112** is bent outwardly and each guide plate **96** has a slot **124** extending longitudinally thereof and adapted to receive slidably the projecting rod portion **123**. Any suitable retainer, such as a washer **126** and a cotterpin or the like **127**, may be employed to hold the parts in assembled relation, that is, to hold the parts with the rollers **121** and the ears **119** bearing against the inner surfaces of the guide walls **96**. The parts are so arranged that the spring **108** normally rocks the shaft **105** and the arms **110** in a direction to push upon the rods **112** and the gripper frame to urge the gripper frame toward the right-hand end of the guide passage defined by the converging walls **96** as viewed in Fig. 3, so that said grippers are urged inwardly toward each other.

The grippers mount pad members **128** at the inner faces of the vertical plates **116** thereof. These pads extend full length of the elongated plates **116**. The plates **116** preferably project forwardly beyond the plates **117** of the grippers at **129**, as best seen in Fig. 3, said portions **129** being bent outwardly in forwardly diverging relation. The front end portions **130** of the pad members are secured to the gripper portions **129** and similarly are arranged in forwardly outwardly diverging relation. The parts are so proportioned that the springs **97** will normally urge the gripper members to the position illustrated in Fig. 3 in which the major portions of the pads **128** are pressed into face engagement. The pads **128** have longitudinally extending grooves **131** in their confronting faces, which grooves are of arcuate cross-section such as to have a large extent of frictional engagement with a hose **32** with respect to both the circumference of the hose, as illustrated in Fig. 5, and

with respect to the length of the hose as determined by the longitudinal dimension of the gripper members.

Any suitable latch may be employed for the purpose of releasably locking the upper unit **79** and the lower unit **80** of the ground-engaging members. One such means is illustrated in Fig. 5 and, as here shown, constitutes a lateral extension **133** of the frame of the upper unit **79** projecting from the side of that unit opposite the pivot **99, 100**. In the construction shown, this projection **133** is apertured at **134** to receive the shank of an elongated member having a handle **135** at its upper end and an enlarged latch head **136** at its lower end. The member also has an enlargement **137** intermediate its ends which bears against the flange **133**, the unit being pressed to effect a firm seating engagement between the parts **137** and the parts **133** by a coil spring **138** encircling the lower portion of the shank, bearing at its upper end against an abutment **139** on the flange **133** and at its lower end against a shoulder on the shank above the member **136**. A part of the frame of the lower unit **80**, such as the wall **96**, may have an abutment member **140** formed thereon under which the shouldered head is adapted to bear. It will be apparent that, if the handle **135** is manipulated to rock the elongated member, the head **136** will disengage the abutment **140** and release the upper and lower parts **79, 80** for swinging about their pivot axes **99, 100**, the spring, however, normally retains the parts in locking engagement.

The forwardly positioned ground-engaging member carries a forwardly projecting plunger **145** carrying a head **146** at its outer end. This plunger is slidably mounted in a sleeve **147** positioned substantially parallel to the shafts **77**. The rear end portion of the plunger **145** is enlarged and tapered or conical, as shown at **148**, and a coil spring **149** which encircles the shank **145** bears against the front end of the guide **147** and the inner end of the knob or head **146** to normally urge the plunger **145** in projecting position as seen in Fig. 4. Any suitable means, such as plates **150**, anchored to the frame members **81** and **82** of the upper unit **79**, as best seen in Fig. 5, serve to support and position the guide sleeve **147**. The parts are so positioned that the plunger **145** and its headed end **148** will move clear of the connecting rod **89** during the operation of the parts. The arrangement also is such that during normal movement of the parts, the headed end **148** of the plunger will be clear of the water reactance member and, particularly, of the part **46** carried thereby. However, when the plunger is slid toward the left, as shown in Fig. 4, as in the event of the engagement of the head **146** with an abutment, the plunger head **148** will engage the arm **46** and swing the same upwardly to effect disengagement of the part **45** with the notch of the collar **38**, whereby the coil spring **40** may act to rotate the shaft **36** to a position in which the cam **35** permits the valve member **28** to seat at **27**, whereby the supply of water to the sprinkler is closed and the operation of the device is automatically stopped.

In the operation of the device a garden hose is attached to the coupling **31** and to a faucet or hydrant, and the garden hose is passed through or between the pads **128** of the front and rear gripping members carried by the ground-engaging units **78**. Of course, it will be understood that any other guide members may be employed, but we prefer to use the garden hose **32** itself as the guide means. Thereupon the knob **41** is manipulated or rotated to open valve position in which it is held by the engagement of the member **45** with the notch of the collar **38** on the valve stem. The hose or guide will be arranged along the path which it is desired to have the sprinkler travel, and an abutment member will be positioned at the point at which it is desired to have the sprinkler stop. Thereupon, the faucet may be opened to supply water to the device and the operation is commenced.

As the water is supplied to the device, the water reactance developed in the sprinkler arms **59**, **60**, **61** causes those arms to be rotated and, in turn, to rotate the tube **52** with which they are connected. The rotation of this tube and of the threaded portion **54** thereof drives the cross-shaft **66** and, in turn, the two upright shafts **63**, **64** and their respective crank arms **74**, **75**. The rotation of the crank arms **74**, **75** causes bodily movement of the connecting bars **89** to slide the ground-engaging unit **78** on the guide arms **77** toward and from the central water reactance unit **20**.

The device is caused to advance in the manner illustrated schematically in Figs. 12 to 14. In Fig. 12 it will be observed that the connecting bar **89** is being drawn rearwardly by the crank arm **74**, so that a rearward pull is being exerted by the water reactance member **20** upon the bar **89** connected with the leading or right-hand ground-engaging unit **78**. This movement is such that it causes the gripping members G to move to the forward reduced width part of the guide unit between the guide walls **96** to grip the hose **32**. Consequently, the pull exerted by the crank arm of the water reactance unit **20** serves to pull the water reactance member **20** forwardly. At the same time the connecting bar **89** acting upon the rear ground-engaging unit **78** is substantially completing its forward stroke and is pulling forwardly upon the said trailing unit. Observe that the two crank arms **74**, **75** are rotating in opposite directions with the crank **75** entering that phase of its stroke wherein the maximum component of its movement is longitudinal, while the crank arm **74** is entering that phase of its stroke where the maximum component of its movement is transverse or laterally.

The next phase of the movement, with the crank arms **74** and **75** approximately 90 degrees displaced from the position illustrated in Fig. 12, is shown in Fig. 13. In this arrangement the arm **75** is entering upon that portion of its stroke where the major movement of its stroke is lateral or transverse, while the crank arm **74** is entering upon that phase of its movement where the major component is longitudinal. Observe that the parts **78** and **20** have been drawn into comparative closed coupled arrangement with the leading unit **78** at the position which it occupied in Fig. 12, but with the water reactance unit and the trailing ground-engaging unit **78** advanced from their positions in Fig. 12. During the movement from the Fig. 12 position to the position in Fig. 13, it will be apparent that the forward pull upon the trailing unit **78** has been such as to cause the grippers G' thereof to be retracted to a position in which they merely slide upon the hose **32**. In the Fig. 13 position, transition occurs and there is a tendency to push rearwardly upon the trailing unit **78'** which causes the grippers G' thereof to ride upon the tapering walls **96** and enter into frictional engagement with the hose. At the same time the crosswise movement or lateral outward movement of the crank tends to relax or reduce the wedging or gripping action upon the grippers G of the front ground-engaging unit. This relationship of the parts with the grippers G' engaging the hose and the grippers G slidable on the hose, is illustrated in Fig. 14 wherein the cranks are shown disposed at an angle of approximately 135 degrees from the Fig. 13 position. In this position it will be observed that a point of maximum spacing between the ground-engaging member **78** and the water reactance member **20** has been reached, the water reactance member having been pushed forwardly. At the same time the rod connected with the crank arm **75** is in the part of its stroke where the major component of movement is longitudinal and forward, and the forward push exerted upon the leading ground-engaging member **78** has caused the space between that ground-engaging member **78** and the reactance member to be on the increase, so that the leading member **78** and the reactance member have both assumed positions well in advance of the position occupied by the parts in Fig. 13.

It will be apparent, therefore, that the device advances by alternate gripping of the grippers with the hose. The grippers of the front unit are caused to grip the hose at a time when the mechanical parts are being drawn together. The grippers of the rear unit grip and engage the hose at a time when the parts are being separated or urged to widely spaced positions. The result, therefore, is a progressive advance of the entire unit along the hose, the unit alternately pulling from a front gripping position and pushing from a rear gripping position, so that effective advance along the hose is provided.

One of the outstanding advantages of the device is that fact that each of the gripping units has a large area of gripping engagement with the hose. This area is large, both circumferentially and longitudinally. This large area, coupled with the automatic wedging action resulting from the converging relation of the guide plates **96** and the normal tendency of the spring **97** to urge the grippers toward the constricted end of the guide, insures as tight a grip of the grippers upon the hose as is necessary to advance the machine. The gripper pads **128** will preferably be formed of resilient or compressible material, such as rubber, so that the face of the pads will conform to the shape of the hose and thus maintain the gripping surface contact at the maximum possible.

The formation of the ground-engaging members with the upper unit **79** pivoted to the lower unit **80** facilitates the threading of the hose **32** through the device. It will be apparent, therefore, that after the upper unit has been swung to a position clear of the lower unit, the hose can be laid into the lower unit. The insertion of the hose between the gripping jaws can be effected very simply by rocking the shaft **105** by its handle **107**, which action slides the gripper units rearwardly, that is, to the left as seen in Fig. 3, to separate them and facilitate the introduction of the hose between the gripping faces **128**. Subsequent release of the hose will permit the spring **97** to move the jaws forwardly into a position in positive engagement with the hose.

The three point connection of each of the gripping jaws with the angular guide walls **96** is advantageous in the successful operation of the device. The three points of engagement consists of the points **119**, **121** and **123—126**. The ears **119** and the rollers **121** are spaced apart longitudinally and, when engaging the flange **96**, hold the rollers with their inner surfaces or pads **128** longitudinal of the sprinkler. The point of connection **123—126** between each gripper and the guide wall **96** prevents the grippers from swinging out of proper orientation in the guide shoes, and also prevents them from binding engagement with the wall, which might prevent or retard their normal free forward and rearward movement. The construction, therefore, provides the necessary freedom of the grippers to move on the jaws between a gripping position engagement with the hose and a sliding engagement with the hose as required for the proper operation of the device.

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

We claim:

1. A sprinkler comprising a water reactance unit, a pair of ground-engaging members, connecting means actuated by said water reactance unit and connected to said ground-engaging members to move said unit and members relative to each other, each ground-engaging member including a pair of gripping jaws adapted to grip therebetween an elongated guide member and urged toward each other to gripping position upon application of forces tending to move the ground-engaging member in one direction along said guide member and urged away from each other to released position upon application of

forces tending to move the grounding-engaging member in the other direction along said guide member.

2. A sprinkler comprising a pair of ground-engaging units, a water reactance unit, connectors actuated by said water reactance unit for moving said units toward and from each other, and juxtaposed confronting clamp members carried by each ground-engaging unit for clamping therebetween an elongated guide member, said clamp members being shiftable toward and away from each other for alternately gripping said guide member.

3. A sprinkler comprising a water reactance unit, a front support, a rear support, said supports being shiftable relative to each other and to said reactance unit, means actuated by said reactance unit for shifting said supports substantially alternately, two pairs of clamp members carried by said supports, the members of said pairs being shiftable toward each other to grip an elongated guide member alternately, the clamp pair of said front support converging to grip said guide member when said supports and units are shifting toward each other and the clamp pair of said rear support converging to grip said guide member when said supports and units are shifting away from each other.

4. A sprinkler comprising a pair of spaced ground-engaging supports, a hose-engaging clamp carried by each support, a hose, a water reactance unit connected to said hose and carried by and positioned between said supports, motion transmitting means actuated by said unit for shifting said supports toward and from said unit and each other, each clamp including a pair of jaws and a tapered guide adapted to urge said jaws toward each other upon movement thereof to the narrow part of said guide.

5. A sprinkler comprising a pair of spaced supports, a guide-engaging clamp carried by each support, a water reactance unit carried by and positioned between said supports, means actuated by said unit for shifting said supports toward and from each other, each clamp including a pair of jaws and a tapered guide adapted to urge said jaws toward each other upon movement thereof to the narrow part of said guide, and spring means urging said jaws toward the narrow part of said guide.

6. A sprinkler comprising a pair of spaced supports, a guide-engaging clamp carried by each support, a water reactance unit carried by and positioned between said supports, means actuated by said unit for shifting said supports toward and from each other, each clamp including a pair of jaws and a tapered guide, means urging said jaws toward the narrow part of said guide, each jaw including a pair of longitudinally spaced guide-abutting parts.

7. A sprinkler comprising a pair of spaced supports, a guide-engaging clamp carried by each support, a water reactance unit carried by and positioned between said supports, means actuated by said unit for shifting said supports toward and from each other, each clamp including a pair of jaws and a tapered guide, means urging said jaws toward the narrow part of said guide, each jaw carrying a pair of longitudinally spaced guide-abutting parts, at least one of said last named parts being rotatable and journaled on said jaw.

8. A sprinkler comprising a pair of spaced supports, a guide-engaging clamp carried by each support, a water reactance unit carried by and positioned between said supports, means actuated by said unit for shifting said supports toward and from each other, each clamp including a pair of jaws and a tapered guide, means urging said jaws toward the narrow part of said guide, each jaw including a pair of longitudinally spaced guide-abutting parts, and connecting means carried by each jaw between said last named parts and shiftably engaging said guide.

9. A sprinkler comprising a pair of spaced supports, a clamp carried by each support adapted to engage a first guide, a water reactance unit carried by and positioned between said supports, means actuated by said unit for shifting said supports toward and from each other, each clamp including a pair of jaws and a tapered second guide, means urging said jaws toward the narrow part of said tapered second guide, each jaw having an elongated inner surface with a longitudinal groove adapted to engage and partially embrace said guide.

10. A sprinkler comprising a pair of spaced supports, a guide-engaging clamp carried by each support, a water reactance unit carried by and positioned between said supports, means actuated by said unit for shifting said supports toward and from each other, each clamp including a pair of jaws and a tapered guide, means urging said jaws toward the narrow part of said guide, each support including an upper portion and a lower portion, means pivotally connecting said upper and lower portions on a longitudinal axis, said clamp being carried by said lower portion, said actuating means being connected to said upper portion.

11. A sprinkler comprising a pair of spaced supports, a guide-engaging clamp carried by each support, a water reactance unit carried by and positioned between said supports, means actuated by said unit for shifting said supports toward and from each other, each clamp including a pair of jaws and a tapered guide, means urging said jaws toward the narrow part of said guide, each support including an upper portion and a lower portion, means pivotally connecting said upper and lower portions on a longitudinal axis, said clamp being carried by said lower portion, said actuating means being connected to said upper portion, rigid guide members carried by and projecting longitudinally from said reactance unit, and guide-receiving sockets carried by the upper portions of said supports.

12. A sprinkler comprising a pair of spaced supports, a guide-engaging clamp carried by each support, a water reactance unit carried by and positioned between said supports, means actuated by said unit for shifting said supports toward and from each other, each clamp including a pair of jaws and a tapered guide, means urging said jaws toward the narrow part of said guide, each support including a pair of laterally spaced runners and an intermediate elevated portion, said clamp being carried by said elevated portion.

13. A sprinkler comprising a pair of spaced supports, a guide-engaging clamp carried by each support, a water reactance unit carried by and positioned between said supports, means actuated by said unit for shifting said supports toward and from each other, each clamp including a pair of jaws and a tapered guide, means urging said jaws toward the narrow part of said guide, said water reactance unit including a control valve normally urged toward closed position, a releasable latch for holding said valve open, and a latch tripping member shiftably carried by and normally projecting forwardly from said front support.

14. A sprinkler comprising a pair of spaced supports, a guide-engaging clamp carried by each support, a water reactance unit carried by and positioned between said supports, means actuated by said unit for shifting said supports toward and from each other, each clamp including a pair of jaws and a tapered guide, spring means urging said jaws toward the narrow part of said guide, and manually actuable means for shifting said jaws toward the wide part of said guide.

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