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MECHANICAL CONTROL FOR WATER DISTRIBUTOR

Filed March 1, 1946

2 SHEETS—SHEET 1

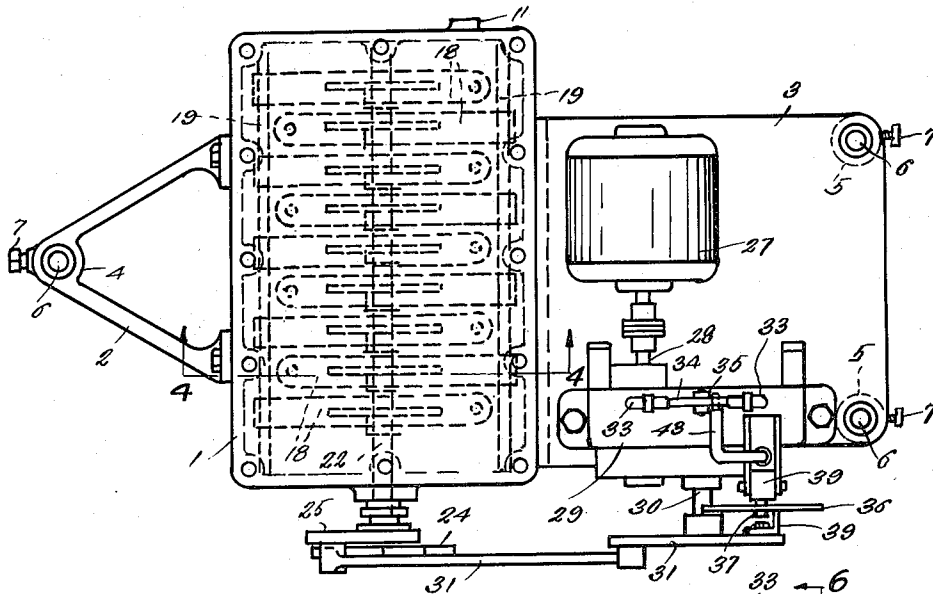


Fig. 1

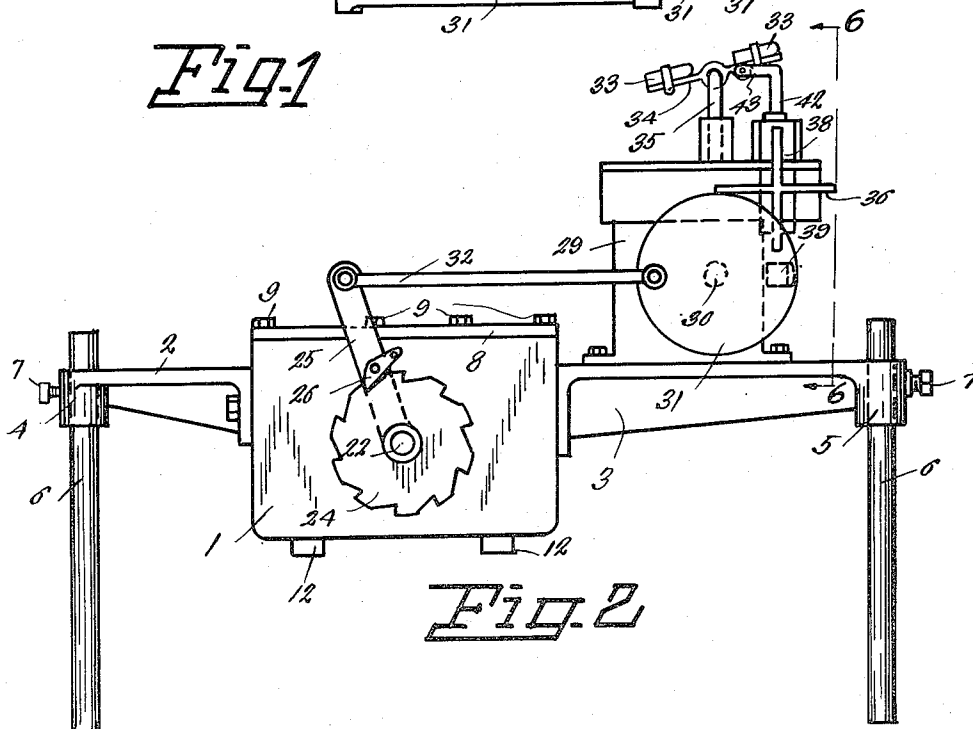


Fig. 2

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2 SHEETS—SHEET 2

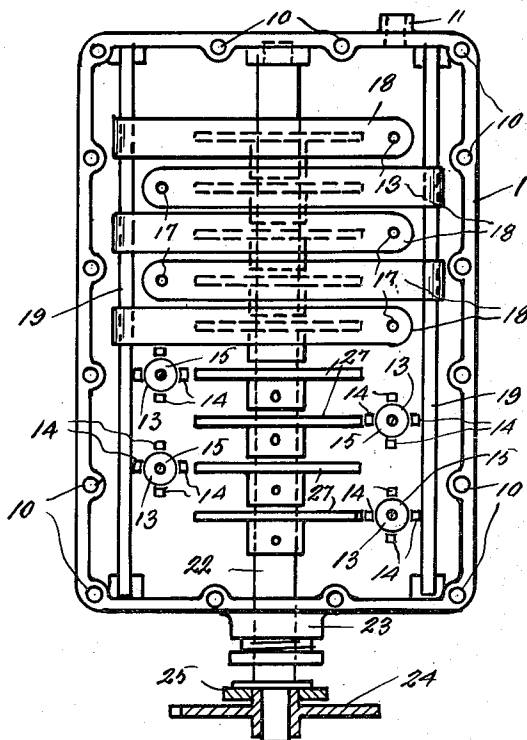


Fig. 3

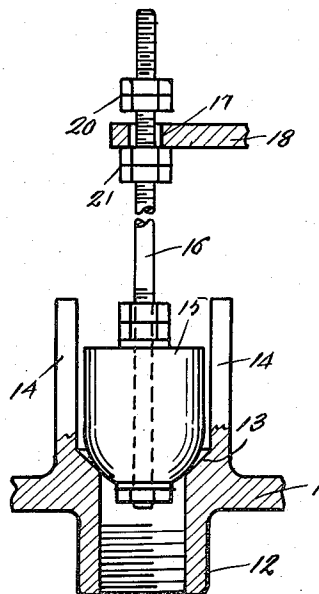


Fig. 5

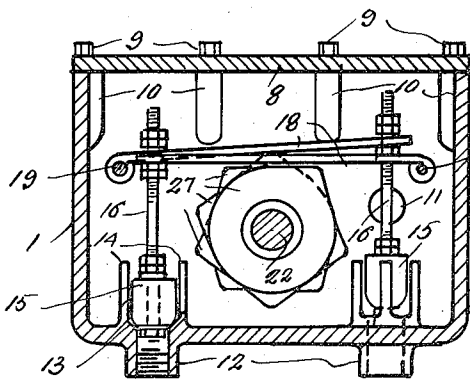


Fig. 4

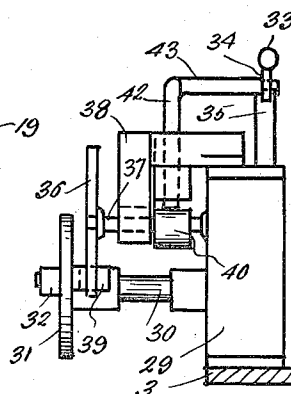


Fig. 6

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MECHANICAL CONTROL FOR WATER DISTRIBUTOR

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Application March 1, 1946, Serial No. 651,251

1 Claim. (Cl. 137—144)

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This invention relates to a water distributor and while it is particularly adapted for use in connection with a sprinkler system for lawns or irrigation of gardens it is to be understood that it may be used in connection with any system wherein it is desirable to effect distribution of water or other liquid from a main supply to a number of pipes.

One object of the invention is to provide a distributing system wherein a number of pipes lead from a casing wherein are located valves which are normally closed and are successively opened so that water will successively flow from the casing through the various pipes.

Another object of the invention is to provide a distributing system wherein the valves in the casing are arranged in rows near opposite sides of the casing and moved to opened position by levers which extend across cams carried by a shaft and so arranged that as the shaft is rotated the valves will be individually moved to the opened position in predetermined order.

Another object of the invention is to provide a water distributor wherein the shaft is intermittently rotated to open the valve by mechanism driven by an electric motor which has a switch moved to opened and closed positions for controlling the time water will be discharged from the casing through the various distributor pipes.

Another object of the invention is to provide a water distributor which is simple in construction and very efficient in operation.

The invention is illustrated in the accompanying drawings wherein:

Fig. 1 is a top plan view of the distributor.

Fig. 2 is a side elevation of the distributor.

Fig. 3 is a view looking down upon the water casing with the cover removed.

Fig. 4 is a sectional view taken along line 4—4 of Figure 1.

Fig. 5 is a sectional view upon an enlarged scale taken through one of the valves in the casing.

Fig. 6 is a fragmentary view of the distributor taken along the line 6—6 of Figure 2.

This improved water distributor includes a casing 1 having a bracket 2 secured to one side and a platform 3 secured to its other side. Sleeves 4 and 5 are carried by the bracket and the platform and through these sleeves pass posts or legs which may be of suitable length so that by shifting the bracket and the platform along the legs and tightening the set screws 7 the distributor may be secured at a desired

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height above the ground or a floor from which the legs extend. A lid or cover 8 is provided for the casing and this cover is removably secured by screws 9 passed through openings in the cover and into sockets 10 spaced from each other along walls of the casing. At one end of the casing is an inlet 11 so that a supply pipe may be connected with the casing and water delivered to the casing. A tight joint is formed between the cover and walls of the casing so that water will be confined in the casing when the distributor is not in use and prevented from leaking out of the casing during use of the distributor.

The bottom of the casing is formed with outlet necks 12 which are internally threaded to receive distributing pipes and at inner or upper ends of the necks are cup-shaped valve seats 13 about which are disposed vertically extending guides 14 so that valves 15 will be guided onto the seats when closed. The outlets 12 and the valves are arranged in rows near opposite sides of the water container or casing 1 and the stems 16 of the valves extend upwardly therefrom with their threaded upper portions passing through openings 17 in arms or levers 18 which extend transversely of the casing and are pivotally mounted by rods 19, nuts 20 and 21 being provided upon the valve stems above and under the arms or levers so that as the levers swing vertically the valves will be shifted to opened and closed positions. The arms or levers extend from opposite sides of the casing and are alternately arranged, as shown in Figure 3, with the levers extending from one rod 19 fitting between the levers extending from the other rod. A shaft 22 extends longitudinally of the casing midway the width thereof and this shaft is disposed under the levers and rotatably mounted with one end portion passing through a packed bearing 23. At its outer end the shaft carries a ratchet wheel 24 and upon this protruding end of the shaft is loosely mounted a lever 25 carrying a pawl 26 for engaging teeth of the ratchet wheel and intermittently imparting rotation in step by step movements to the ratchet wheel and the shaft as the lever is rocked back and forth upon the shaft. Discs 27 which are shaped to form cams are secured upon the shaft within the casing and each is located under an arm 18, the cams being so arranged that during turning of the shaft the cams will successively move into engagement with the arms over them and thus cause the valves to be successively moved upwardly to an

opened position. As each valve is opened the one previously in the open position will close and therefore water will be successively delivered through the pipes leading from the outlets 12 and different portions of a lawn or garden may be watered. The fact that one valve remains open until another is opened causes water to flow through each distributing pipe for an appreciable length of time and a lawn or garden will be well watered during use of the apparatus.

In order to actuate the lever 25 there has been provided an electric motor 27 which is mounted upon the platform 3. The shaft of the motor is connected with a shaft 28 projecting from a gear box 29 which is also mounted upon the platform and from the outer side of the gear box projects a shaft 30 carrying a disk 31. A pitman rod 32 connects the upper end of the lever 25 with the disk close to the periphery of the disk, and from an inspection of Figure 2 it will be seen that during rotation of the disk the lever 25 will be rocked about the shaft 22 and the pawl 26 moved out of engagement with a tooth of the ratchet wheel 24 into engagement with an adjoining tooth and the lever then moved towards its original position to rotate the shaft 22 a partial rotation. Turning of the shaft 22 will thus be in step by step movements and the valves will be successively opened and closed. The motor is intermittently operated and its circuit includes mercury switches 33 mounted upon opposite end portions of a rocker bar 34 which is pivoted midway its length upon a post 35. The motor circuit controlled by the mercury switches and associated elements is disclosed in my copending application Serial No. 656,800, filed March 25, 1946, now Patent No. 2,538,315. A cross-shaped turning member 36 is carried by a shaft 37 rotatably mounted through a bearing bracket 38 and the disk 31 carries an abutment 39 which engages an arm of the turning member so that the shaft 37 will be turned intermittently during rotation of the shaft 30 and the disk 31. The turning member 36 has four arms and therefore the shaft 37 will receive a one-fourth revolution for each complete rotation of the shaft 30. A cam block 40 is carried by the shaft 37 and upon this cam block rests the lower end of a bar or rod 42 which is disposed vertically and slidably mounted through the casing bracket 32. The upper portion of the rod 42 is bent to form an arm 43 which is pivoted to the rocker bar 34 and during rotation of the shaft 37 and the cam 40 the rod will be shifted vertically and the rocker bar tilted to open and close the switches. Opening of the circuit by the motor will thus be controlled in timed relation to turning of the shaft 30 and operation of the motor will be stopped after each movement of the lever 25 to open a valve 15 and close a valve previously open. Any suitable time controlled mechanism may be employed for closing the circuit when the motor is to be started and the time interval during which water flows through the distributor pipes thus controlled.

Having thus described the invention, what is claimed is:

In a water distributor, a casing open at its top and having a bottom and side walls and end walls, a removable cover for said casing, necks extending downwardly from the bottom and having upper ends communicating with the casing and surrounded by valve seats carrying upwardly projecting fingers spaced from each other circumferentially of the seats, said necks being arranged in rows adjacent the side walls, the necks of each row being spaced from each other longitudinally of the casing, valves guided vertically onto and off of said seats by the fingers and having upwardly extending stems threaded from their upper ends, rods mounted longitudinally in said casing above spaces between the valve seats and side walls of the casing and spaced downwardly from upper ends of the valve stems, strips in said casing extending transversely therein and pivoted at their outer ends upon said rods, the strips carried by each rod being disposed between and extending in an opposite direction to the strips carried by the other rod, the strips being of less length than the width of space between the rods and having their free ends formed with openings through which upper portions of the valve stems freely pass, nuts threaded upon said valve stems and disposed above and below said strips and constituting adjustable abutments engageable by the strip to raise and lower the valves when the strips are tilted vertically about the rods an actuating shaft extending longitudinally in said casing midway the width of space between said valve stems and rotatably supported by the end walls with one end portion projecting outwardly from the casing and adapted to have rotary motion imparted to it, and discs secured upon said shaft under said strips and having angularly disposed edge faces engageable with under surfaces of the companion strips and serving to individually swing the strips vertically and open and close the valves in predetermined order.

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