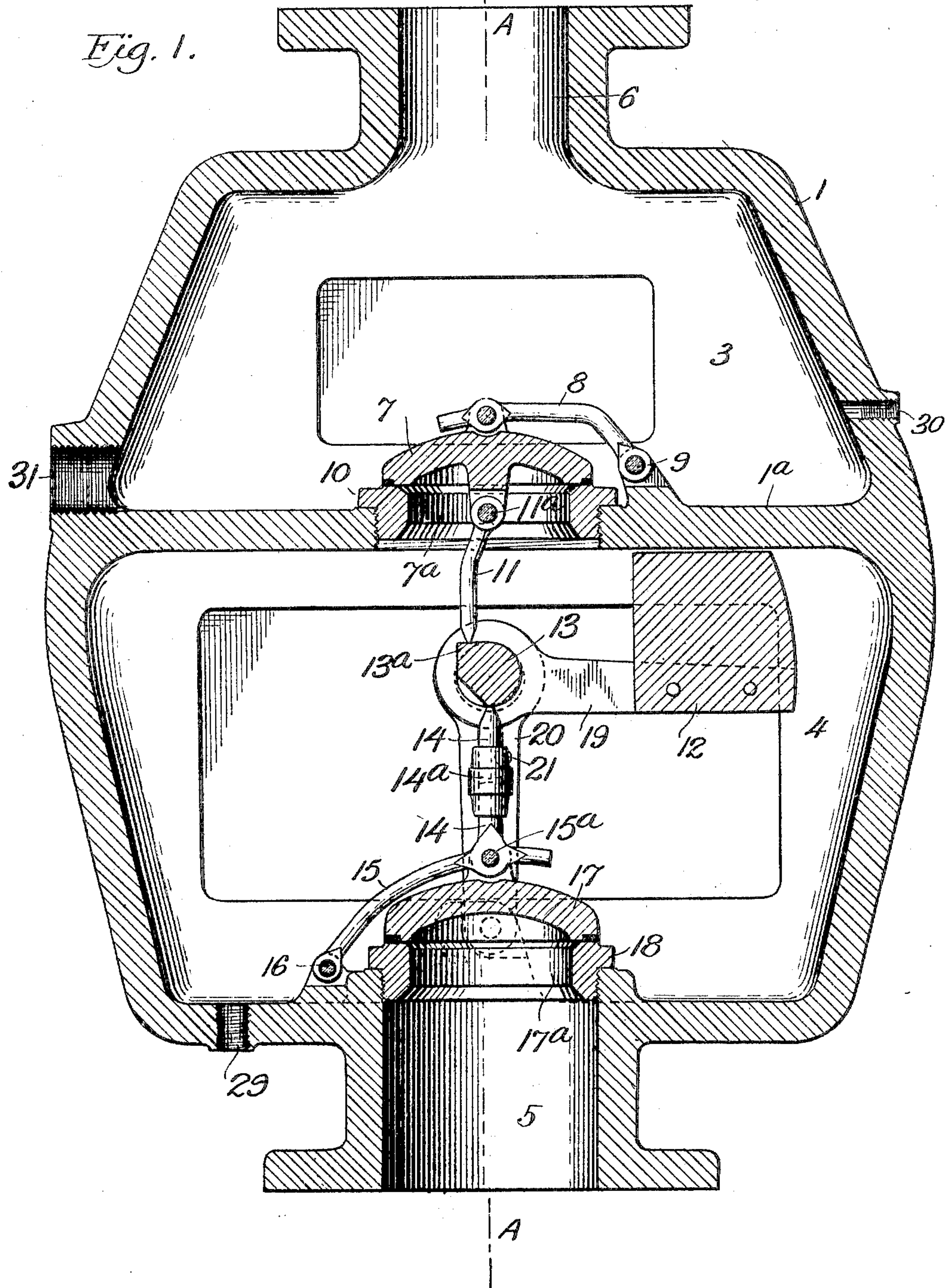


J. McALEAR.  
 DRY PIPE VALVE.  
 APPLICATION FILED JULY 15, 1903.

3 SHEETS—SHEET 1.



Witnesses  
*John O. Kemper*  
*Sidney Mann*

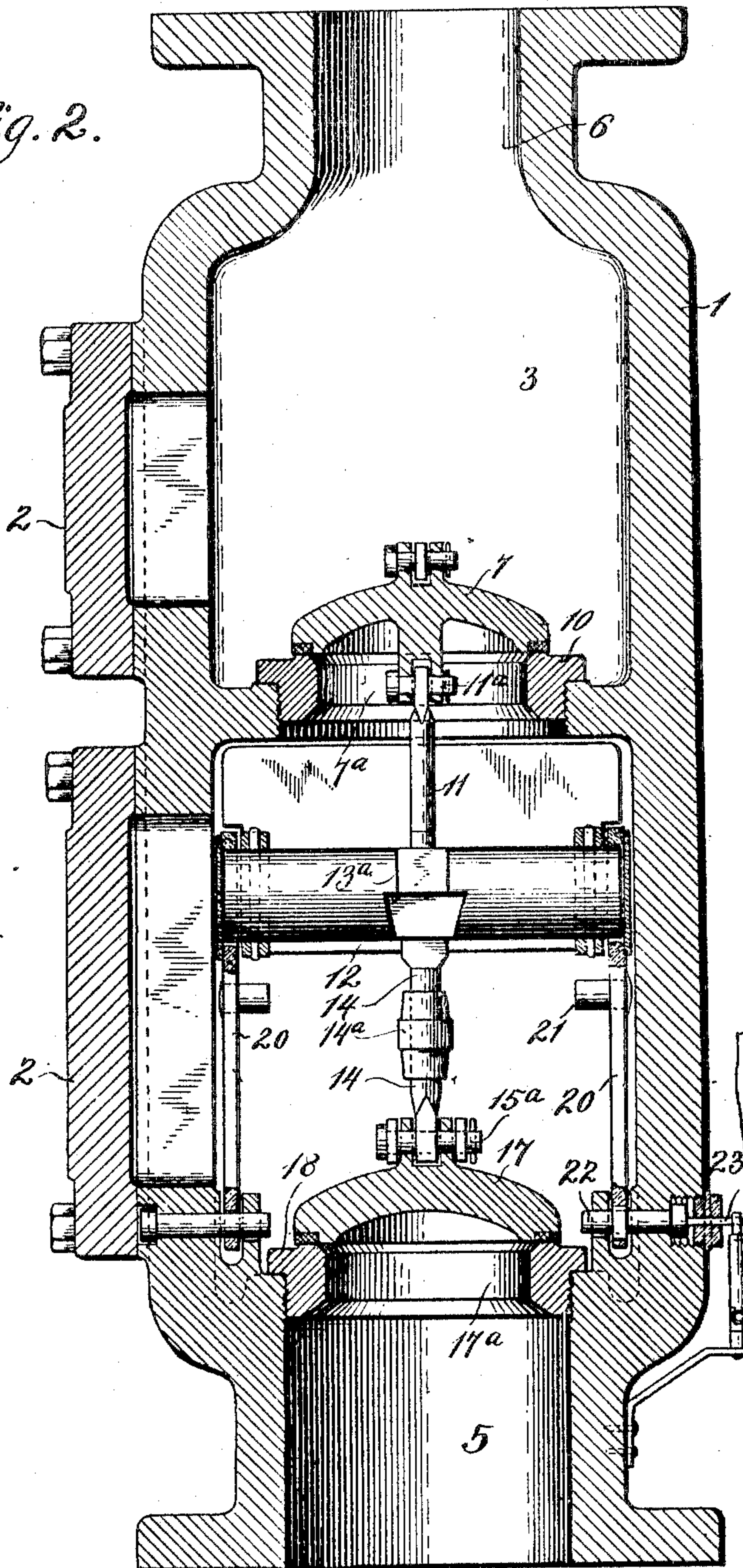
*James McAlear* Inventor  
 By his Attorney *Teo W. Mills Jr.*



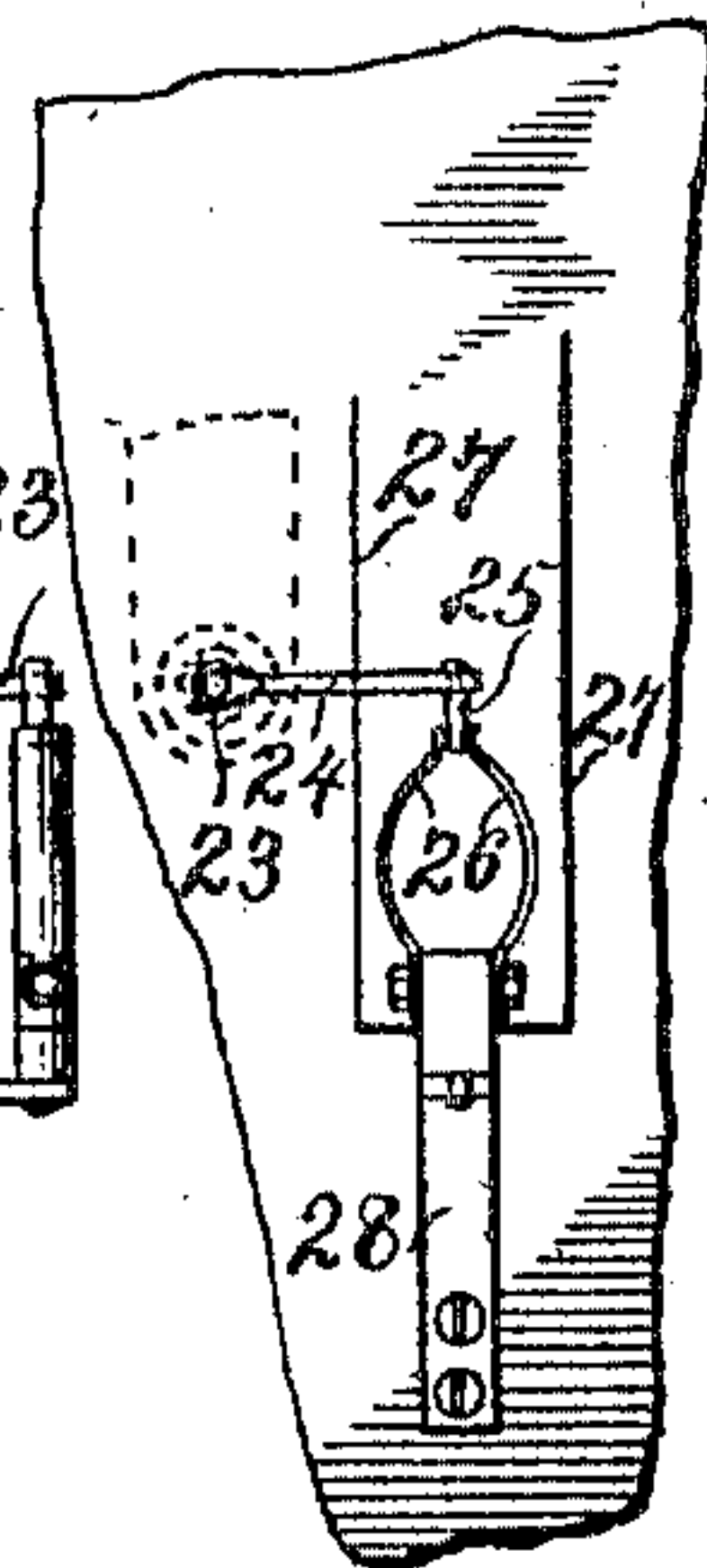
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3 SHEETS—SHEET 2.

*Fig. 2.*



*Fig. 4.*



Witnesses  
*John O. Gempfer*  
*Sidney Mann.*

*James McAlear* Inventor  
 By his Attorney *Geo. W. Hill*



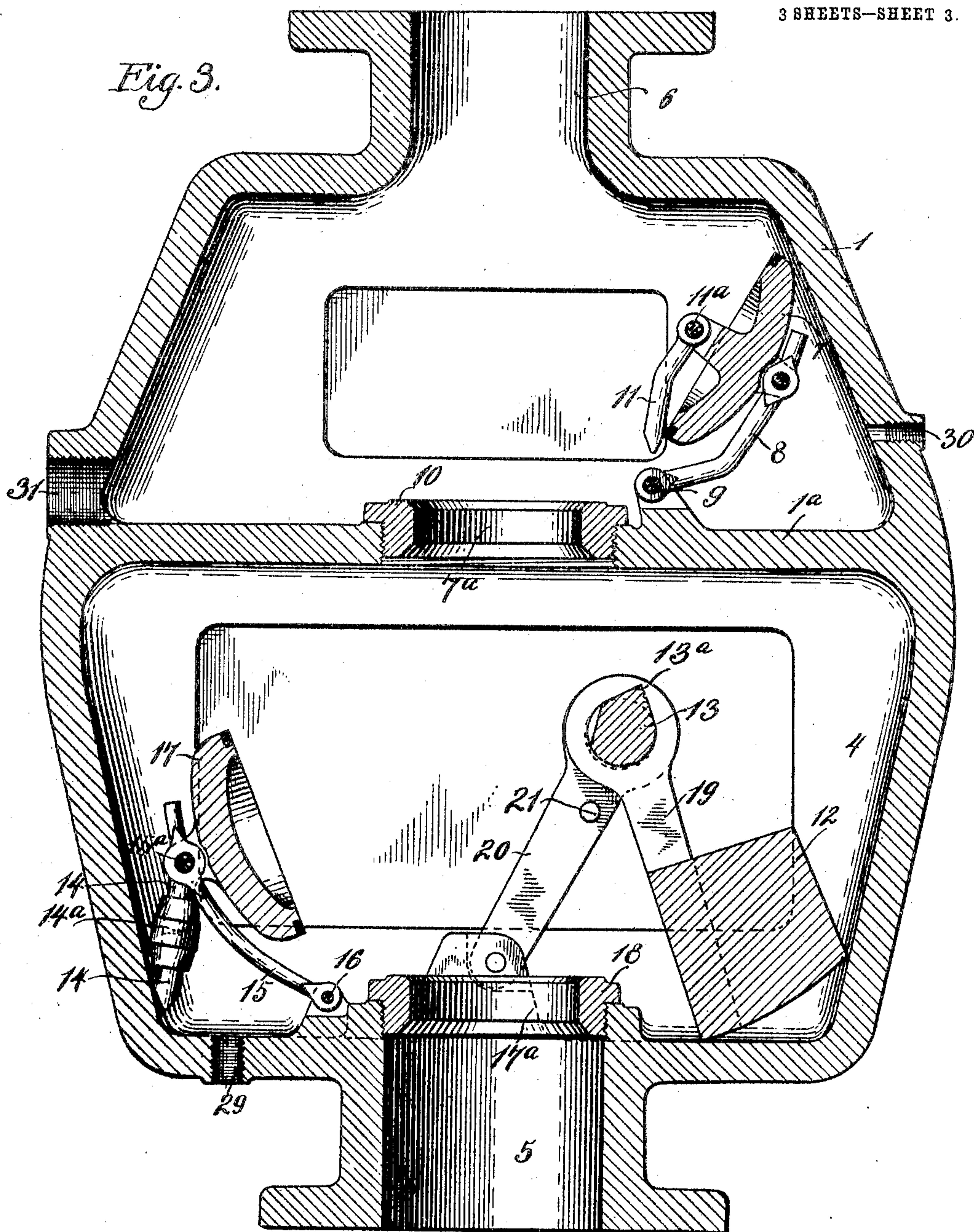
No. 797,594.

PATENTED AUG. 22, 1905.

J. McALEAR.  
DRY PIPE VALVE.

APPLICATION FILED JULY 15, 1903.

3 SHEETS—SHEET 3.



Witnesses  
*John O. Gump*  
*Sidney Mann*

*James McAlear*  
Inventor

By his Attorneys  
*Geo. W. Millett*



# UNITED STATES PATENT OFFICE.

JAMES McALEAR, OF ST. PAUL, MINNESOTA.

## DRY-PIPE VALVE.

No. 797,594.

Specification of Letters Patent.

Patented Aug. 22, 1905.

Application filed July 15, 1903. Serial No. 165,572.

*To all whom it may concern:*

Be it known that I, JAMES McALEAR, a citizen of the United States, residing in St. Paul, Minnesota, have invented a Dry-Pipe Valve, of which the following is a specification.

The invention relates to improvements in dry-pipe valves for automatic sprinkler systems—that is to say, a valve mechanism which will prevent the entry of water into the distributing-pipes until the sprinkler-heads are burned off, cut off, or otherwise opened.

The object sought to be attained is to prevent (perhaps for a long period of time) the entry of water into the distributing-pipes and to insure the immediate entry of the water into the distributing-pipes as soon as the sprinkler-head is opened; and another object of my invention is to cause an alarm to be sounded the moment the sprinkler-head is opened at some predetermined place.

The invention consists in the construction and combination of parts set forth in the annexed specification and shown in the drawings referred to herein.

In the drawings, Figure 1 is a rear view of the valve with the back casing removed. Fig. 2 is a sectional view taken through the line A A of Fig. 1. Fig. 3 is the same view as Fig. 1, showing the valve open, so as to permit the water to enter the distributing-pipes; and Fig. 4 is a view showing the details of the means for sounding an alarm when the valve is opened.

Referring to the drawings, 1 is the casing of the valve.

2 2 are sections of the casing or caps which can be removed, so as to permit the adjusting of the valves.

3 and 4 are the upper and lower chambers of the valve separated by the partition 1<sup>a</sup> and valve 7, secured to arm 8, which is loosely mounted on pivot 9 and arranged to be capable of closing and opening the port 7<sup>a</sup> in the partition 1<sup>a</sup>, which separates the chambers.

5 is the inlet-port or the water-supply end of the valve—that is, the end where the main water-supply pipe is attached.

6 is the outlet or riser to the distributing-pipes of the system.

10 is a valve-seat for the swing check-valve 7.

11 is a strut pivoted on pin 11<sup>a</sup> in a downwardly-projecting arm of valve 7, which strut when the system is closed, with the sprinkler-heads sealed, rests on the flat side 13<sup>a</sup> of shaft 13, on which arms 19, carrying at one end weight 12, are secured.

17 is a valve for covering the port 17<sup>a</sup> at the bottom of the dry-pipe valve, which port is the inlet for the main water-supply from the inlet-pipe 5. Valve 17 is pivoted on an arm 15, which is loosely mounted on pivot 16 in casing 1 of the dry-pipe valve.

14 is an expansion-strut of two pieces carrying turnbuckle 14<sup>a</sup> and mounted on arm 15 and arranged to close the main water-valve 17 down tight onto its seat 18, thereby closing the inlet-port connecting with the water-supply 5 and preventing any water from entering the valve.

20 20 are swinging arms or levers supporting shaft 13, mounted on bearing 22 in the casing 1 of the valve. At the back side of the valve and integrally connected with bearing 22 is an arm 23, which protrudes through the casing 1 of the valve and carries arm 24, mounted horizontally on said arm 23 and carrying at one end pin 25.

26 represents two steel bows connected with the wires 27, which are at some suitable place connected to a battery and bell, so as to ring an alarm when the circuit is closed by the bows 26 touching each other upon the withdrawal of the pin 25.

28 is an arm supporting the bows 26.

29 is an outlet for the purpose of drawing water out of the lower chamber of the valve.

31 is an opening for the purpose of drawing water out of the upper chamber of the valve, and 30 is an opening for pressure-gage.

The operation of my valve in practical use is as follows: The caps 2 2 of the valve are taken off and the valve is set as shown in Fig. 1 and the caps then replaced. The sprinkler-heads are closed and air under a pressure is maintained through the distributing-pipe and the upper chamber sufficient to counterbalance the pressure exerted on the under side of said valve 7 by the weight 12. Thus the valve 7 is kept closed. As soon as the sprinkler-head is opened the air in the upper chamber escapes and the pressure is relieved on the valve 7. The weight 12, mounted on shaft 13, rocks said shaft, and the strut 11, which rests on the flat surface 13<sup>a</sup> of the said shaft, is pressed upward, thereby raising the valve 7 from its seat 10. At the time the shaft 13 rocks and raises the valve 7 from its seat 10 it also throws strut 14 14 out of its vertical position, thereby releasing the pressure on valve 17, and the pressure of water in the main pressure-supply pipe 5, pressing upward against the valve, throws it



upward, and the weight 12, falling downward, strikes the pin 21 in the arms 20 and carries down with it the arms 20 and shaft 13, thereby leaving an unobstructed and straight water-way from the water-supply pipe 5 through the lower and upper chambers of the valve and into the riser or entrance to the distributing-pipes of the system, so that the full force of the water is permitted uninterrupted to pass through the valve into the distributing-pipes of the system and out into that part of the building where the sprinkler-head has been opened. When the weight 12 drops and carries with it the arm or lever 20, it revolves the bearing 22, and with it arm 23, which carries arm 24, horizontally mounted thereon, and thereby draws pin 25 out of connection with the bows 26, allowing the said bows to come together and complete the circuit through the battery, the wires 27, and the electric alarm and sound the alarm.

Many modifications and changes could be made in my system as described above without departing from the spirit of my invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A valve for a sprinkler system, comprising a casing having ports communicating respectively with the water-supply and the sprinkler system, said ports being substantially in line with each other, valves arranged to close said ports, the one for the sprinkler-system port being normally closed by the pressure in the distributing-pipes, and a mechanism interposed between said valves and arranged to lock said inlet-port valve in its closed position until the air-pressure is relieved upon the other valve, and said valves and mechanism assuming, when the ports are open, a position out of line with said ports to form an unobstructed passage between them, substantially as described.

2. A valve for a sprinkler system, comprising a casing having an inlet-port communicating with the water-supply, a wall arranged near the middle of said casing dividing its interior into two chambers or compartments and having a port communicating with them, said ports being substantially in line with each other, valves hinged at the sides of said ports and arranged to close the same, the one for said wall-port being normally held in its closed position by the pressure in the distributing-pipes, and a mechanism interposed between said valves and arranged to lock said inlet-port valve in its closed position until the pressure is relieved on the other valve and said mechanism being movable to one side of said casing to allow an unobstructed passage of the water between said valves.

3. A valve for a sprinkler system, comprising a casing having ports communicating respectively with the water-supply and with the distributing-pipes, valves arranged to close

said ports, the valve in the port leading to said pipes being normally held in its closed position by the pressure in the distributing-pipes, a shaft pivotally supported between said valves, means carried by said valves and arranged to temporarily engage said shaft and lock said inlet-port in its closed position until the pressure is relieved on said distributing-pipe valve, and be disengaged from said shaft when the pressure on said distributing-pipe valve is relieved, substantially as described.

4. A valve for a sprinkler system, comprising a casing having ports communicating respectively with the water-supply and with the distributing-pipes, valves arranged to close said ports respectively, the valve for said distributing-pipe port being normally closed by the pressure in said pipes, a shaft supported between said valves, means carried by said valves to engage said shaft and lock said inlet-port valve in its closed position until the other valve is relieved of pressure, and means for withdrawing said shaft from its normal position between said valves upon the opening of said distributing-pipe valve, for the purpose specified.

5. A valve for a dry-pipe sprinkler system, comprising a casing having ports communicating respectively with the water-supply and with the sprinkler distributing-pipes, valves for closing said ports, the one leading to the distributing-pipes being normally held closed by the pressure of the air therein, an oscillating shaft having flattened surfaces arranged between said valves, a weight carried by said shaft and normally tending to swing it out of line with said ports, to allow an unobstructed passage between them, and means mounted on said valves and arranged to bear upon the opposite surfaces of said shaft, substantially as described.

6. A valve for a dry-pipe sprinkler system, comprising a casing having ports, one communicating with the water-supply and the other with the distributing-pipes, a valve arranged to close the port leading to said distributing-pipes and normally held in its closed position by the pressure of the air in said distributing-pipes, a second valve arranged to close said inlet-port, a rock-shaft, pivoted arms whereon said shaft is supported means tending to swing said shaft to one side of said ports, and struts pivoted on said valves and arranged to engage said shaft, substantially as described.

7. A valve for a sprinkler system, comprising a casing having an inlet-port communicating with the water-supply, a second port leading to the distributing-pipes, valves arranged to close the same, the valve for the port leading to said distributing-pipes being normally closed by the pressure in said pipes, a shaft pivotally supported between said valves, and struts pivoted on said valves and arranged to engage the opposite surfaces of said shaft to



lock said inlet-port valve in its closed position until the pressure is relieved upon the other valve.

8. A valve for a sprinkler system, comprising a casing having ports communicating respectively with the water-supply and the sprinkler system, valves arranged to close said ports, the one for the sprinkler-system port being normally closed by the pressure in the distributing-pipes, a rock-shaft, pivoted arms whereon said shaft is supported, means carried by said valves and arranged to engage the opposite surfaces of said shaft and lock said inlet-port in its closed position, and an alarm mechanism connected with one of said arms.

9. A valve for a sprinkler system comprising a casing having ports for connection respectively with the sprinkler system and with the water-intake pipe, there being a substantially straight waterway between said ports, valves for said ports, the one for the port leading to the sprinkler system being arranged to be normally closed by the pressure therein, a mechanism between said valves for normally locking the water-intake-port valve, but releasing it when the pressure is relieved on the other valve, and said mechanism allowing the unobstructed flow of water between said ports when said valves are open.

10. A valve for a dry-pipe sprinkler system comprising a casing having ports for connection respectively with the water-supply and the sprinkler system, there being a substantially straight waterway between said ports, valves arranged to close said ports the one for the sprinkler-system port being arranged to be normally closed by the air-pressure in the distributing-pipes, and a mechanism between said valves and wholly within said casing and arranged to lock said inlet-port valve in its closed position until the air-pressure is relieved upon the other valve, and said mechanism offering substantially no obstruction to the passage of water through said ports when said valves are open.

11. A valve for a sprinkler system comprising a casing having ports for connection respectively with the water-supply and the sprinkler system, valves arranged to close said ports the one for the sprinkler-system port being normally closed by the pressure in the distributing-pipes, and a mechanism between said valves and arranged to lock said inlet-

pipe valve in its closed position until the other valve is released, and said mechanism offering substantially no obstruction to the passage of water through said valves, substantially as described.

12. A valve for a sprinkler system comprising a casing having ports for connection respectively with the sprinkler system and the water-intake pipe, there being a substantially straight waterway between said ports, valves for said ports, the one for the port leading to the sprinkler system being arranged to be normally closed by the pressure therein, and a lever mechanism between and temporarily engaging said valves for normally locking the water-intake valve but releasing it when the pressure is relieved on the other valve and said mechanism offering no obstruction to the passage of water between said ports when said valves are open, substantially as described.

13. A valve for a sprinkler system comprising a casing having ports for connection respectively with the water-supply and with the distributing-pipes, valves for said ports, the valve in the port leading to the distributing-pipes being normally held in its closed position by the pressure in said pipes, and mechanism arranged to bear temporarily upon the under side of said distributing-pipe valve and the upper side of said inlet-port valve and hold the latter in its closed position until pressure is released upon the former and said mechanism offering no obstruction to the passage of water through said valves, substantially as described.

14. A valve for a sprinkler system comprising a casing having ports for connection respectively with the water-supply and the distributing-pipes, valves arranged to close said ports, a shaft horizontally arranged with respect to the plane of said valves, and pivoted means interposed between said shaft and valves and arranged to temporarily engage said shaft and lock said inlet-port valve in its closed position until the pressure is relieved in the distributing-pipes.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES McALEAR.

Witnesses:

FREDERICK GEO. LESLIE,  
LARASTIN L. S. TITUS.