

No. 725,541.

PATENTED APR. 14, 1903.

L. D. CHANDLER.
AUTOMATIC DRY PIPE VALVE.

APPLICATION FILED OCT. 22, 1902.

NO MODEL.

FIG. 2.

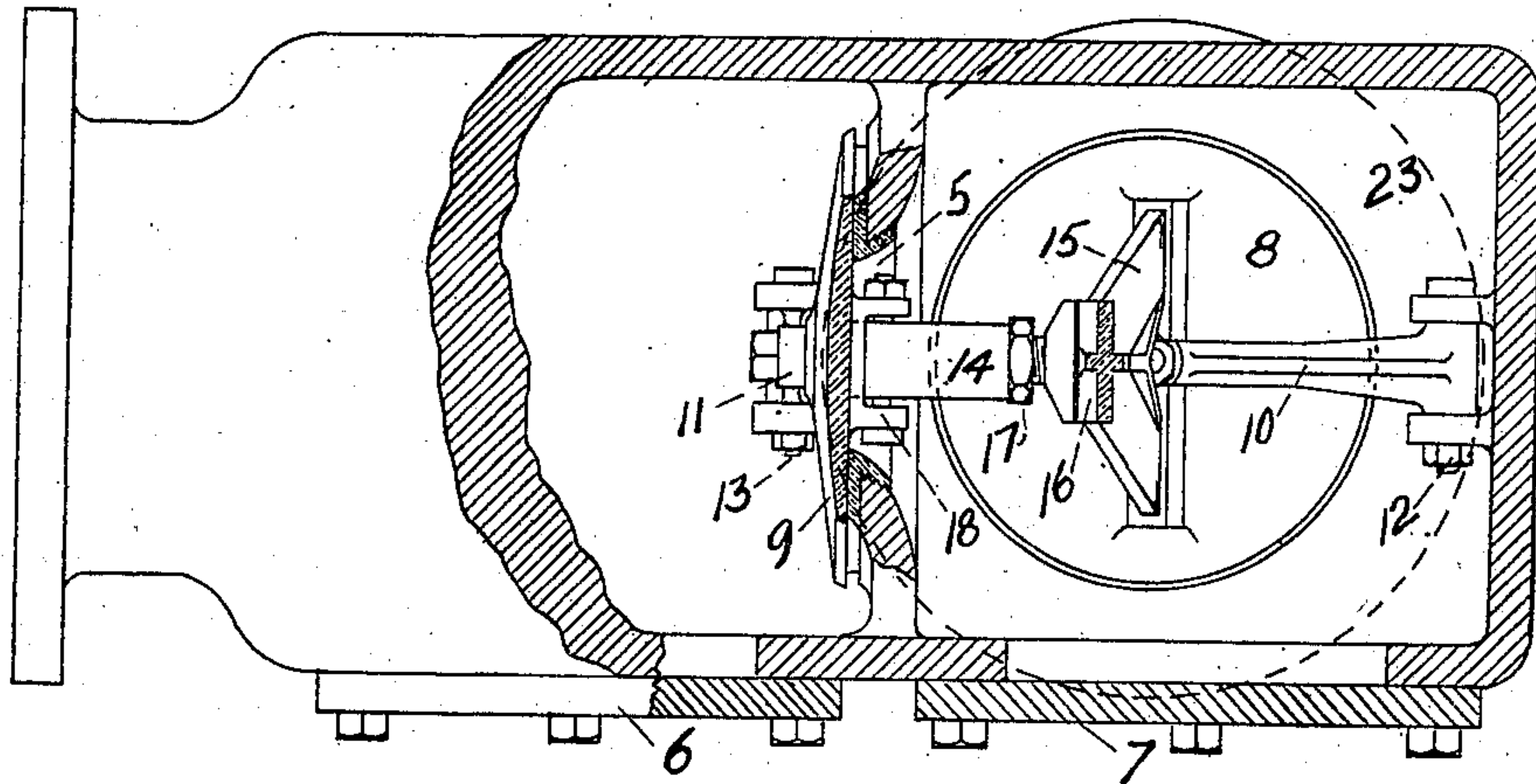
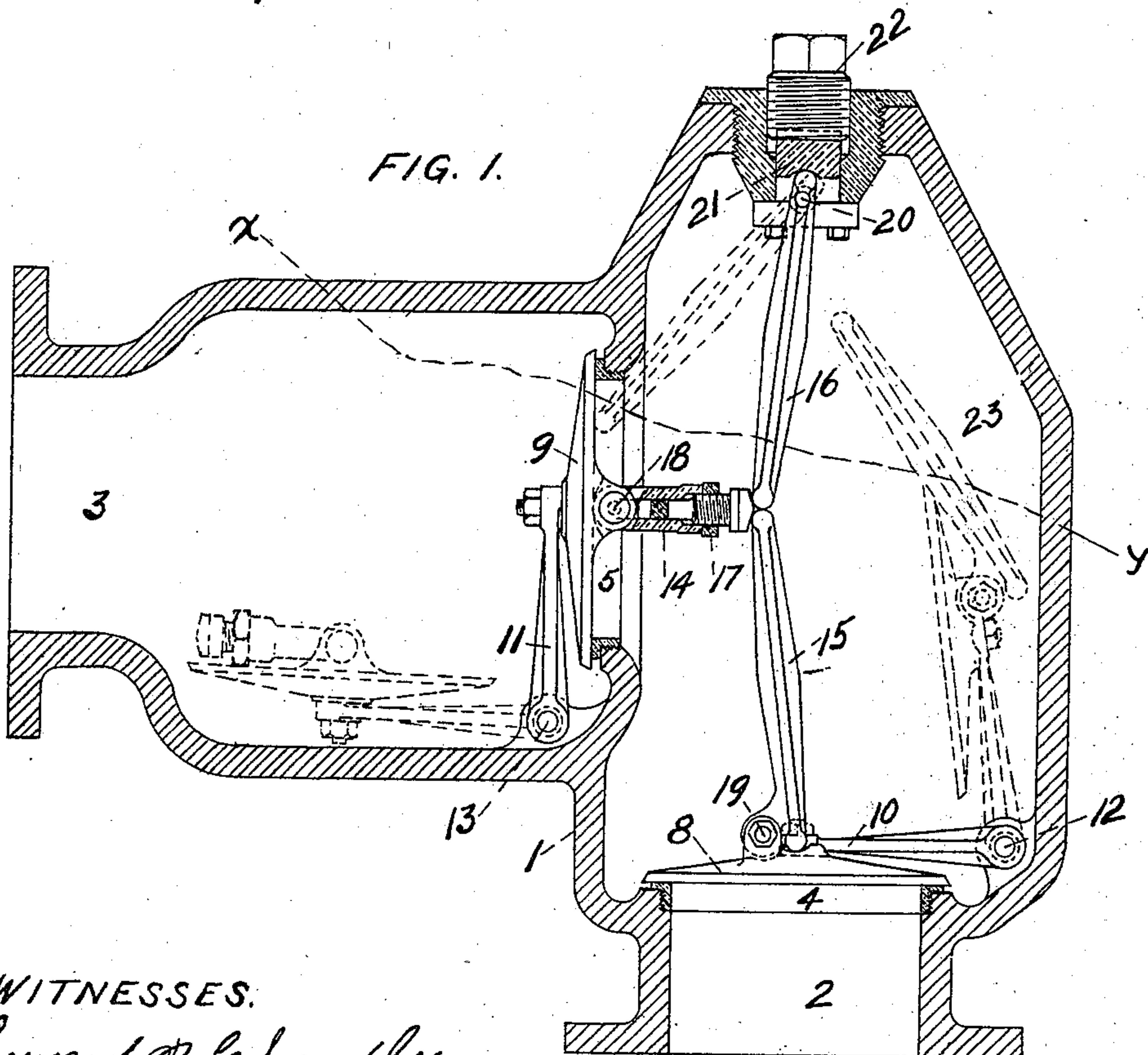


FIG. 1.



WITNESSES:
Leonard B. Chandler
Willard D. Chandler.

INVENTOR.
Leonard D. Chandler.

UNITED STATES PATENT OFFICE.

LEONARD DEXTER CHANDLER, OF SOMERVILLE, MASSACHUSETTS.

AUTOMATIC DRY-PIPE VALVE.

SPECIFICATION forming part of Letters Patent No. 725,541, dated April 14, 1903.

Application filed October 22, 1902. Serial No. 128,311. (No model.)

To all whom it may concern:

Be it known that I, LEONARD DEXTER CHANDLER, residing at Somerville, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Automatic Dry-Pipe Valves as Used in Connection with Automatic Sprinkler Systems for Extinguishing Fires, of which the following is a specification.

My invention relates to that class of valves used in automatic sprinkler systems for extinguishing fires, by means of which a small air-pressure, extending throughout the system of sprinkler-piping in the building, retains or holds in check the water-supply for said system, the water-pressure being considerably in excess of the air-pressure.

The object of my invention is to overcome the complexity of parts found in present valves and to produce a simple reliable valve, as shown in the accompanying drawings hereinafter described.

Figure 1 is a vertical section through casing, showing the retaining mechanism. Fig. 2 is a plan view, the top of casing being broken away along broken line *xy*, showing interior of valve.

In Fig. 1, 1 is an angle-shaped casing having water and air outlets 2 and 3, which are provided with flanges for connection to the water-supply and air system respectively. The casing contains the valve-seats 4 and 5, placed in planes normal to each other.

6 and 7 are cover-plates for accessibility to interior of valve. The water and air outlets are closed by the valves 8 and 9, forming a chamber 23, which is intended to be at atmospheric pressure and which is drained by a drip-pipe. (Not shown in the drawings.)

The valves 8 and 9 are connected to the swinging arms 10 and 11, hinged to the casing at points 12 and 13, respectively. The strut 14 (shown partly in section) is adjustable, a cross-head of square section and flaring end sliding in square guides and is adjusted by the adjusting-nut 17. This strut is loosely hinged to the face of valve 9 at point 18 and receives a thrust from a cylindrical bearing on face of said valve. The strut 15 is broadened at its base to prevent lateral buckling, rests upon a cylindrical bearing on back of valve 8, and is loosely hinged to said valve at

point 19, its free end being in contact with the free ends of struts 14 and 16, respectively. Strut 16 is of same length as strut 15, although this is not necessary. It is loosely hinged to casing at point 20 and exerts a force against the block 21.

21 is a rectangular block or follower receiving a thrust from strut 16 and sliding in rectangular guides in the casing.

22 is an adjusting-screw for adjusting the position of block 21. The struts 14, 15, and 16 are so loosely hinged that the joints serve in no way to take up or transmit a force, but simply to guide the struts to the positions shown in dotted lines when the valve is opened.

The action of the valve is as follows: The air-pressure is transmitted along the strut 14 to the free ends of the struts 15 and 16, respectively, and thence along their lengths, that pressure along strut 15 serving to hold the water-valve 8 closed and that pressure along strut 16 is taken up or resisted by the block 21. When for any reason, such as the opening of an automatic sprinkler, the air-pressure is reduced, the equilibrium of the retaining mechanism is gradually destroyed and the several parts of the valve take the positions shown in dotted lines. The action of the retaining mechanism involves the principle of the toggle-joint—that is, a small force along the strut 14 transmits a much greater force along the struts 15 and 16, respectively, the magnitude of this force varying with the angle between said struts, becoming greater as they come nearer in alinement, and since the angle between these struts may be varied by means of the adjusting-screw 22 this force may be regulated so as to adapt the valve to any combination of air and water pressures.

The combination and the relative positions of the struts and closing-valves allow the air-pressure to directly overcome the water-pressure and does away with all tripping mechanisms, multiplying-levers, weights, or springs for opening the valve.

Having thus described my invention, what I claim is—

1. In an automatic dry-pipe valve the combination of an angular casing containing air and water outlets, normally placed to each other; valves for closing said outlets, said

valves being hinged to casing by swinging arms; three struts comprising the retaining mechanism, two of said struts being loosely hinged to said valves; the third strut being
5 loosely hinged to the casing; a follower or block sliding in guides to receive the thrust from said third strut, the position of said follower being adjusted by an adjusting-screw, all substantially as shown and described.
10 2. In an automatic dry-pipe valve the combination of an angular casing containing air and water outlets normally placed to each other; valves for closing said outlets, said valves being hinged to casing by swinging
15 arms, the combination of three struts arranged relatively to said valves as shown,

said struts being in no way connected together and not serving as arms or connecting-links, the said combination of struts depending for their effective action solely upon
20 the principle of the toggle-joint; a follower and adjusting-screw together with an adjustable strut serving for adjusting the angle between said struts to suit any combination of air and water pressures, all substantially
25 as shown and described.

In testimony whereof I hereunto set my hand in the presence of two witnesses.

LEONARD DEXTER CHANDLER.

Witnesses:

WILLARD D. CHANDLER,
LEONARD B. CHANDLER.