

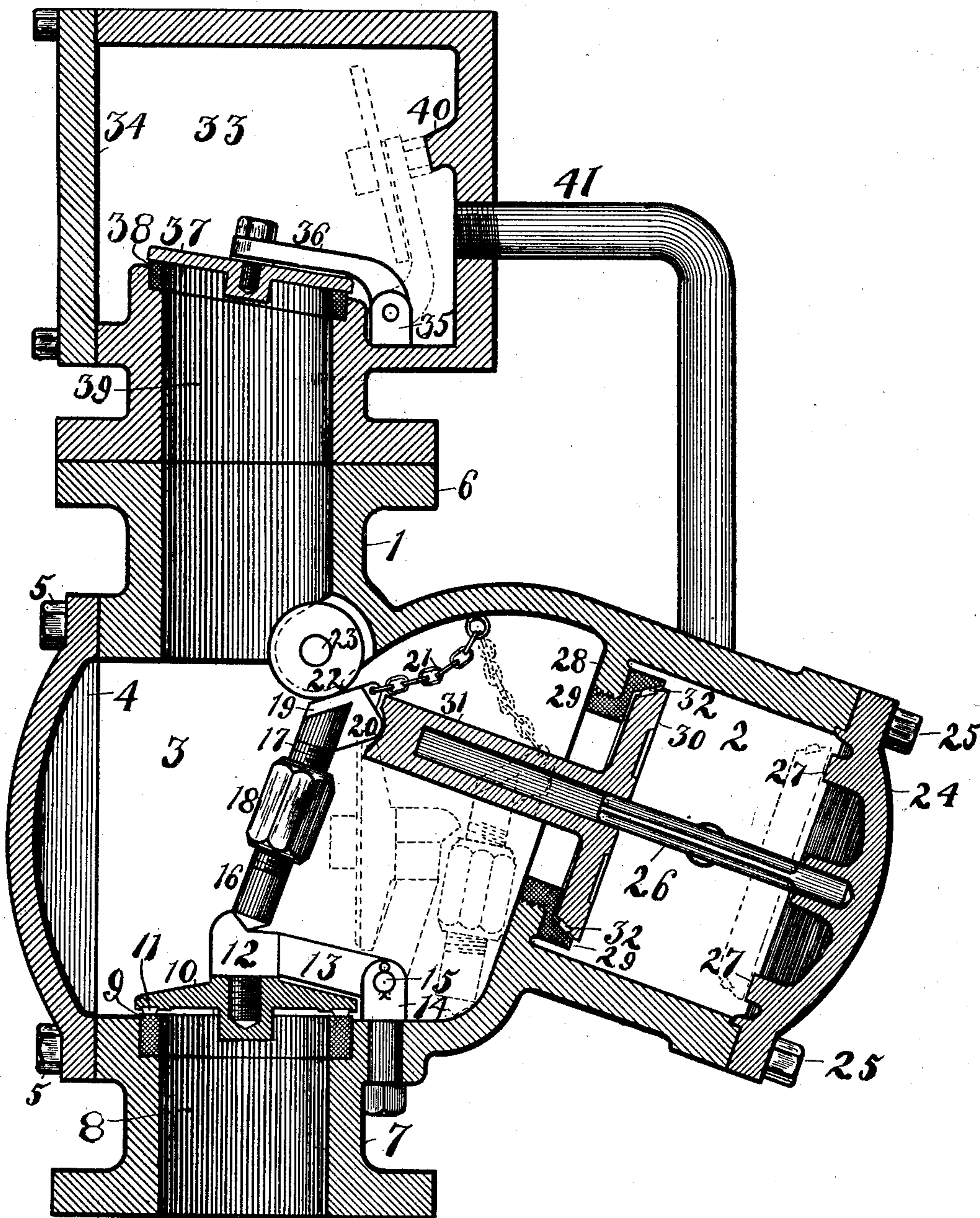
No. 756,572.

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P. B. BOSWORTH.
INDUCTION VALVE.

APPLICATION FILED FEB. 11, 1903.

NO MODEL.



Witnesses:
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UNITED STATES PATENT OFFICE.

PERCY B. BOSWORTH, OF AKRON, OHIO.

INDUCTION-VALVE.

SPECIFICATION forming part of Letters Patent No. 756,572, dated April 5, 1904.

Application filed February 11, 1903. Serial No. 142,832. (No model.)

To all whom it may concern:

Be it known that I, PERCY B. BOSWORTH, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented a certain new and useful Improvement in Induction-Valves, of which the following is a complete specification.

My invention has a general relation to improvements in valves adapted to be used in automatic sprinkling systems for the protection of the interiors of buildings and their contents from fire, and has especial relation to that class in which the system of pipes that extends through the building is provided at intervals with sprinkling-jets closed by fastenings that are fusible at a determined degree of heat above that ordinarily prevailing, is normally filled with air under pressure, and is connected with a pipe containing water under pressure held from entering the pipe system by valves arranged to be held closed by the air-pressure and to automatically open upon a decrease of the air-pressure due to the opening of one or more of the sprinkling-jets.

The objects of my invention are to provide a valve less liable to interruption from extraneous causes than those heretofore used for the purposes stated and one in which the valve will be opened by the pressure of water held in check by the valve upon any decrease of pressure in the pipe system.

It is further an object in this case to provide as simple a valve as is possible in which the number of parts will be reduced to a minimum, and yet to provide one whose action will be positive upon any decrease of pressure due to the opening of a sprinkler-head or otherwise.

To the accomplishment of the aforesaid objects my invention consists in the peculiar and novel construction, arrangement, and combination of parts hereinafter described and then specifically claimed, reference being had to the accompanying drawing, forming a part hereof.

In the accompanying drawing, which represents a vertical central section, of my improved valve, 1 is the body of the valve, which may be in one casting and having extending to one side and at a substantial angle

with the main contour of the casting 1 an offset chamber 2. This casting 1 consists of a main chamber 3, closed on one side by a cap 4, secured to the body 1 by cap-bolts 5. At the upper and lower ends of this casting are pipe-like extensions 6 7, terminating in flanged ends for the reception of bolts which connect the upper end 6 with the pipe system and the lower end 7 with the inlet water-supply. At the entrance of the pipe-like extension 7 into the chamber 3 the sides of the tube 8, formed in the extension 7, are lined with a bushing 9, preferably of brass, and retained in position by any preferred or suitable means. Upon this brass bushing is arranged to fit a valve 10, having in its outer edges an annular packing-ring 11, which is adapted to meet the bushing 9. Upon this valve 10 is a head 12, having an offset arm 13, which is pivoted in an eyebolt 14, fastened in the side walls of the chamber 3. Through the eyebolt 14 and the offset arm 13 is a pin 15 to act as a pivot for the arm 13 and the valve 10. The upper face of the head 12 is formed with an obtuse angle, and the center of the angle is substantially coincident with the axillary line of the valve 10.

Adapted to rest in the angle on top of the head 12 is a lengthwise-extensible lock consisting of two studs 16 17, which are screw-threaded in opposite directions and are united by a tubular nut 18, internally screw-threaded to receive the threads of the studs 16 17, so that the length of the lock may be adjusted within certain limits, as desired.

Extended from and integral with the stud 17 is a blade 19, having a truncated top and on one side a rounded nose 20. Attached to this blade 19 is a chain 21, attached to the inside wall of the chamber 3 at a desired point. The truncated face of the blade 19 is suitably shaped to bear against a roller 22, pivoted on an extension of the side walls of the chamber by a pin 23 and so placed that when the sharpened lower end of the stud 16 is placed on top of the head 12 of the valve the inclined or truncated face of the blade 19 will rest against the roller 22 in such a position that the force or pressure of the lock upon the valve 10 will increase as the inclined face of the blade 19 is pushed with greater force against the roller 22.

The outer end of the offset chamber 2 is closed by a cap 24, held in place by cap-bolts 25, and in the center of this cap 24 and projecting into the interior of the chamber 2 is a guide-post 26, which is fluted at its upper end for a purpose to be stated. Its lower end is fastened tightly in the cap 24. Also projecting from the cap 24 toward the interior of the chamber 2 are a series of integral pins 27 for a purpose to be stated.

At the point where the interior of the chamber 2 and the chamber 3 meet there exists an integral annular ring 28, provided with a bushing 29. This bushing 29 extends into the chamber 22 and has a conical inner working edge.

Placed in the chamber 2 and slidable on the fluted guide-post 26 is a valve 30, having projecting from one side a hollow stem 31, the end of which is concave and of such a length as to encounter and press against the nose 20 of the blade 19 and compel its engagement with the roller 22. The movement of the valve 30 is directed by the fact that it slides on the fluted guide 26. The flutes on the side of the guide-post enable the air contained in the hollow of the stem 31 to escape, which would be impossible were the guide perfectly cylindrical. The side edges of the valve 30 are conical and of the same inclination as the inside of the bushing 29 and are provided with an annular ring 32 to cause its snug and air-tight engagement with the bushing 29.

On top of the upper extension 6 of the main chamber 2 is an air-tight valve-case 33, closed on one side by a removable plate 34 and having on its lower floor a pivot 35 for a swinging arm 36, on the end of which is a valve 37, which is adapted to seat on a bushing 38 in the end of the tube-like portion 39, which connects the chamber 3 with the valve-chamber 33. On the side of the box 33 is a stop 40 to arrest the motion of the valve on its pivot. A pipe 41 connects the interior of the chamber 33 and the chamber 2. This pipe 41 is shown simply as an ordinary pipe bent at right angles; but this pipe is intended to represent diagrammatically a dry-pipe system placed throughout a building containing any number of stop-cocks and sprinkler-heads that may be needed to properly constitute a thoroughly-equipped and perfect dry-pipe system, such as is now in common use.

It has not been deemed necessary to show sprinkler-heads on this pipe 41, as it is believed that people familiar with this business will readily understand that this pipe 41 constitutes, as far as this application is concerned, the equivalent of this pipe system.

The operation of this valve is as follows: This valve is presumed to be placed in the basement of the building which it is desired to protect against fire, and the location of this valve is presumed to be below the frost-line, with a view to exclude water from the pipe system

until it is needed to extinguish a fire, and hence the basement of a building is generally the place chosen for its location. The lower extension 7 is to be connected with a source of water-supply under pressure, as a street-main or any similar source of constant supply of water having sufficient pressure to cause it to flow to any part of the building. The cap 4 being removed, the valve 10 is swung down on the bushing 9 and retained there by any preferred means temporarily. The conical point of the stud 16 of the lock is placed on top of the head 12, and the inclined face of the blade 19 is brought firmly against the roller 22, and the stem 31 of the valve 30 is drawn forward until it encounters the nose 20 of the blade 19. The air-valve 37 having been previously closed, air is pumped into the pipe system, here illustrated as the pipe 41, until its pressure has reached that degree necessary to hold the valve 30 in the chamber 2 against the bushing 29 without leaking. This pressure of the stem 31 against the nose 20 causes the inclined edge of the blade 19 to ride along the roller 22 until sufficient pressure has been brought to bear on the valve 10 to cause it to form a water-tight joint with the bushing 9. The adjustment to secure this tight joint is readily obtained by means of the tubular nut 18, by which the lock may be lengthened or shortened, as desired. Of course the pressure in the pipe system keeps the valve 37 tight and excludes the compressed air from the chamber 3. In case of the opening of a sprinkler-head either from fire or other causes the pressure in the pipe system immediately decreases, allowing the valve 30 to slide backward on the guide-post 26 until it assumes the position shown in dotted lines. The removal of the support of the stem 31 from the lock allows it to fall from its place while suspended by chain 31 until it drops to the position shown in dotted lines out of the way of the opening-valve 10, which immediately follows, due to the pressure of the water, and it assumes the position indicated in dotted lines. The water rushing in from the extension 7 passes up against the valve 37, which is opened thereby, thus permitting water to enter the pipe system 41.

What I claim, and desire to secure by Letters Patent, is—

1. The combination in a device for use in connection with a dry-pipe system, provided with an inlet water-port, means to close said water-port, an extensible lock to press against said means, a roller mounted in the casing of said valve to encounter the opposite end of said lock, a chain connected with said lock capable of sustaining said lock when free from contact with said roller, a pressure-actuated plunger to retain said lock normally in position, substantially as shown and described.

2. The combination in an induction device for use in connection with a dry-pipe system,

having an inlet-port therein, means to close said inlet-port, a lock to bear against said means, a roller to bear against the opposite end of said lock, a plunger provided with a stem adapted to bear against said lock and re-
tain it in position to be actuated by the pressure of air in the pipe system, and a guide to steady the motion of said plunger, substantially as shown and described.

3. The combination in a device of the class designated, of an inlet-port for the entrance of water, a valve to close said inlet-port, a lock adapted to press on the head of said valve and having at its other end an inclined portion, an
antifriction device suitably arranged to receive

the inclined portion of said lock, an air-controlled plunger provided with a stem arranged to be actuated by the pressure of air in the pipe system and capable of movement to cause it to jam the stem thereof against said lock to cause said lock to press against and rest on said valve, substantially as shown and described.

In testimony that I claim the above I hereunto set my hand in the presence of two subscribing witnesses.

PERCY B. BOSWORTH.

In presence of—

C. E. HUMPHREY,
MAUDE ZWISLER.