

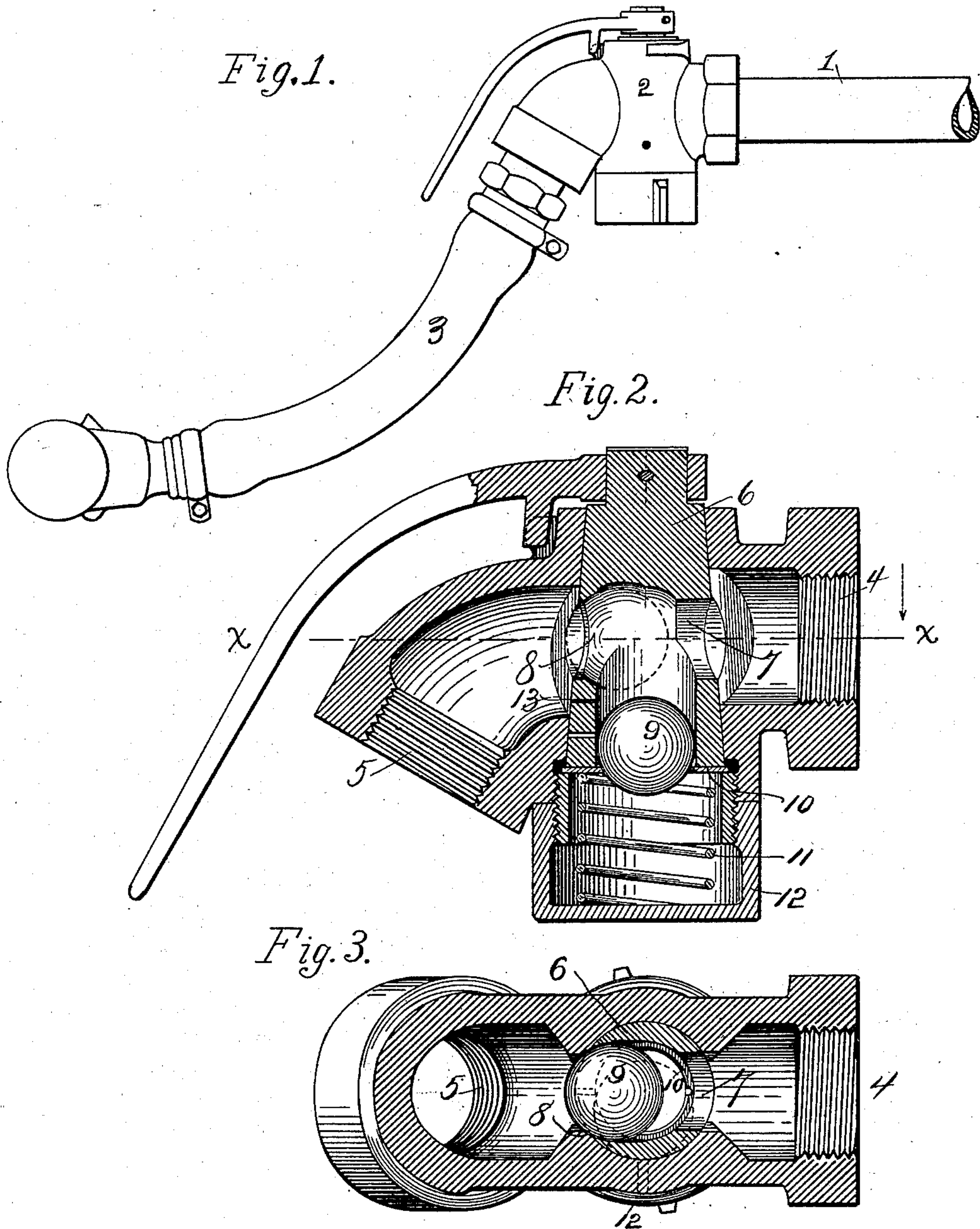
No. 749,809.

PATENTED JAN. 19, 1904.

C. TRUMAN.  
AIR BRAKE SAFETY DEVICE.  
APPLICATION FILED JULY 7, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES

David C. Walter  
S. A. Worland

INVENTOR:

Charles Truman,  
By his Atty.  
Mason Hall

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2 SHEETS—SHEET 2.

Fig. 4.

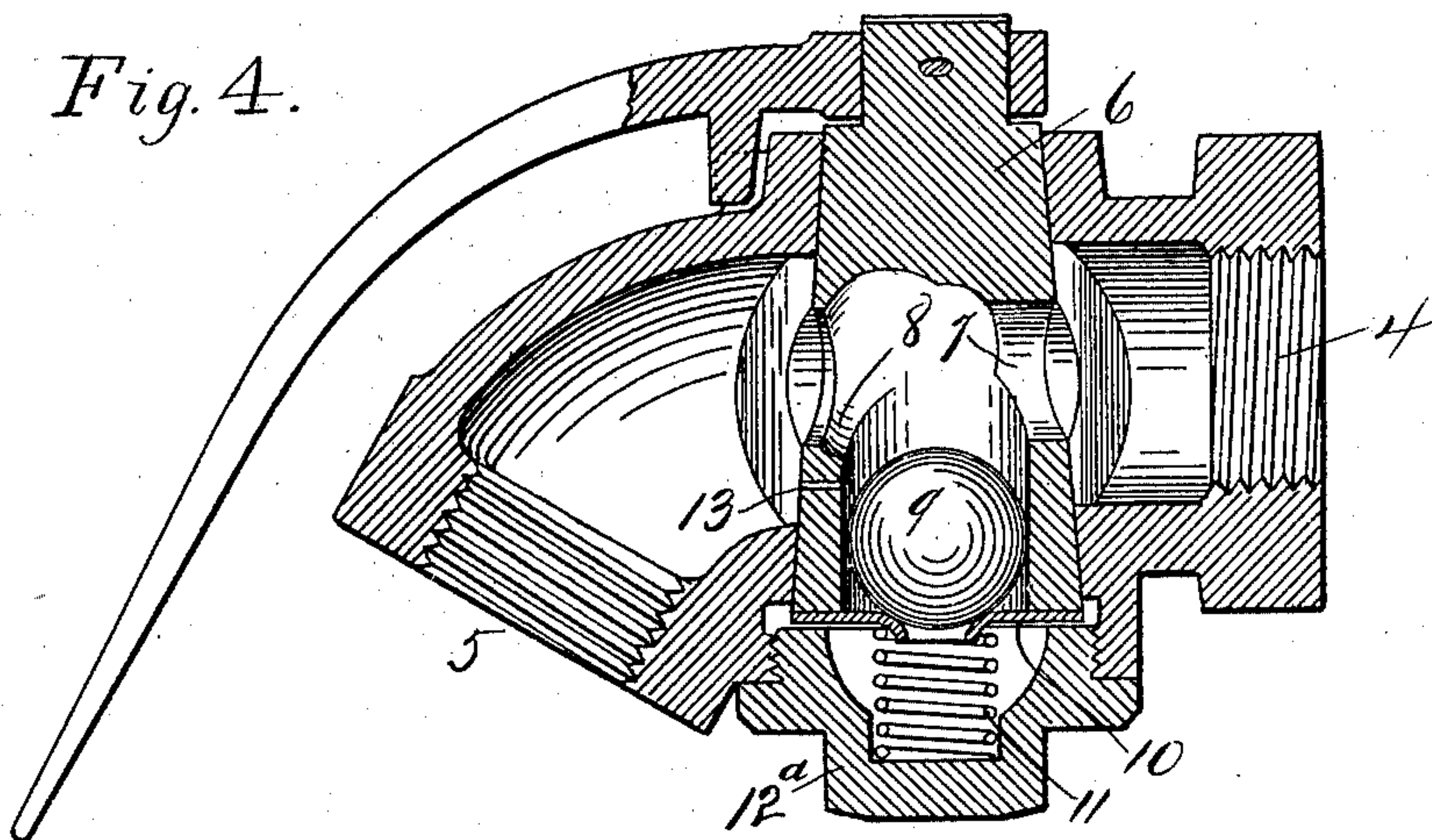
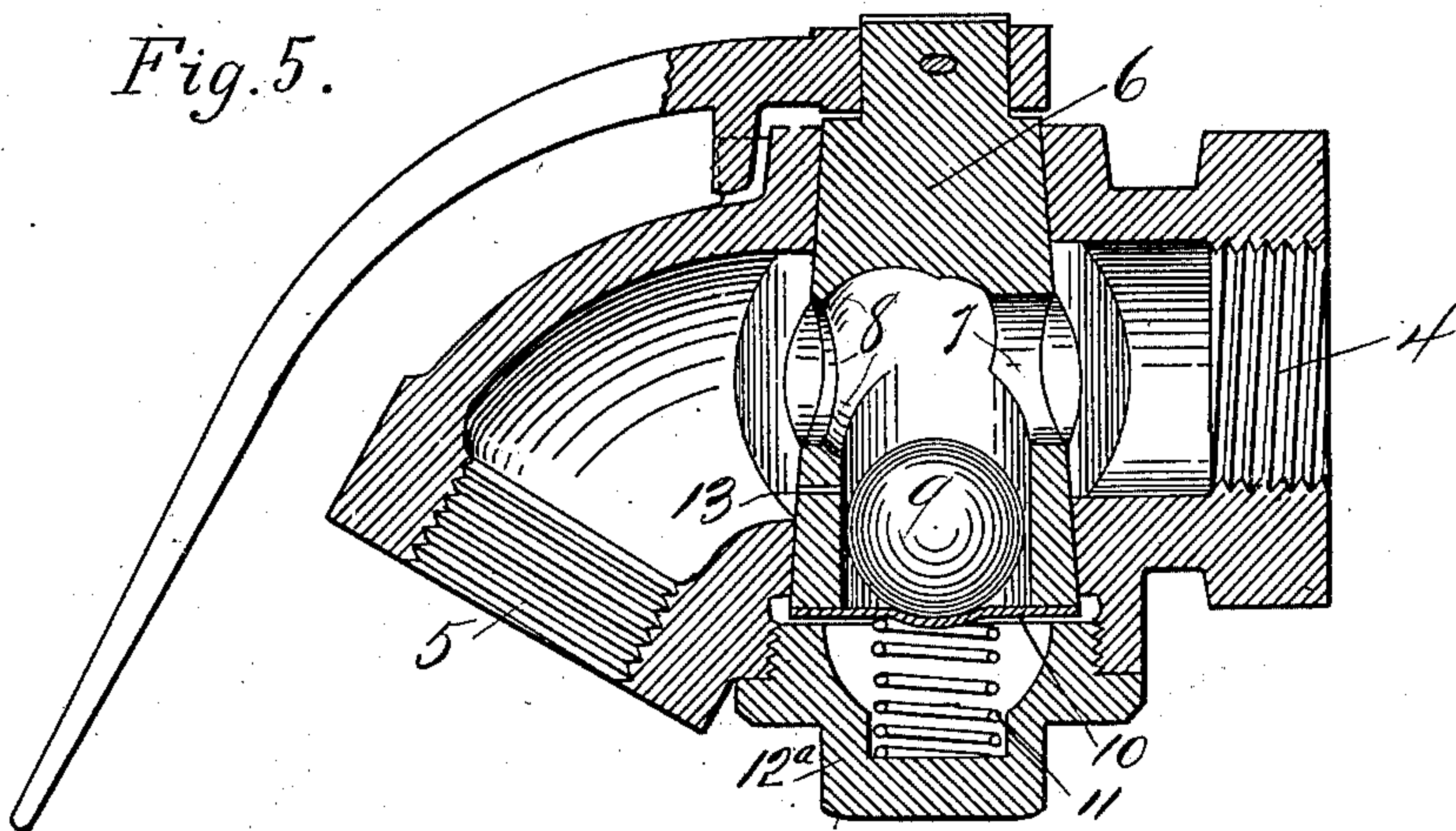


Fig. 5.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

CHARLES TRUMAN, OF TOLEDO, OHIO, ASSIGNOR OF ONE-HALF TO  
WILLIAM G. SMITH, OF TOLEDO, OHIO.

## AIR-BRAKE SAFETY DEVICE.

SPECIFICATION forming part of Letters Patent No. 749,809, dated January 19, 1904.

Application filed July 7, 1902. Serial No. 114,582. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES TRUMAN, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have  
5 invented certain new and useful Improvements in Air-Brake Safety Devices; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable  
10 others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

In that class of air-brakes in which the brakes  
15 of a railway-train are set automatically by the escape of compressed air from an air-reservoir the bursting of the flexible hose used between the cars to connect the air-pipes or a break at  
20 any point in the line of air-pipes causes the sudden application of the brakes with maximum force to the car-wheels, thus arresting the movement of the train with a violent shock. Accidents not infrequently result in this way,  
25 especially in freight-trains, where usually only the forward cars in the train are provided with air-brakes, the cars without air-brakes being placed together at the rear of the train. It is obvious that if the forward cars be suddenly  
30 stopped or checked the rear cars not being under control will with immense weight and momentum rush upon the forward part of the train, thereby endangering the persons and  
35 lives of people upon the train and causing great damage to the cars and their contents by throwing them violently over and against one another.

My invention relates to means for overcoming the difficulty here pointed out; and the object of my invention more particularly is to  
40 furnish a cheap, simple, durable, and efficient automatic device by which when a break occurs anywhere in the line of air-pipe or its connections the escape of the compressed air will invariably be so retarded that the stop of  
45 the separated parts of the train, and especially that part forward of the break in the line, will be gradual, giving the engineer time to control his brakes and, if necessary, to get out of

the way of the detached rear portion of the train.

An important feature of my invention is that I am enabled to utilize the usual angle-cock and its casing without cutting or otherwise interfering with the line of air connections, and to thus reduce to a minimum the  
55 cost and inconvenience of furnishing my device to cars already supplied with air-brakes.

I attain these objects by means of the devices and arrangement of parts hereinafter described, and shown and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a line of air-pipe, showing the usual section of flexible hose, with the clamp by means of which the hose-section is connected with a like section between cars, together with the "angle-cock" to which the hose-section is secured; Fig. 2, a  
65 central longitudinal vertical sectional elevation of an angle-cock containing my invention; Fig. 3, a sectional top plan view of the same, taken on line *xx*, Fig. 2; Fig. 4, a central longitudinal vertical sectional elevation of a modified form of my device, and Fig. 5 a like view of another modification of my device.

Like numerals of reference indicate like  
75 parts throughout the drawings.

In the angle-cocks commonly in use a fixed taper bushing receives the taper plug or valve, the upper projecting end of which is designed to receive a wrench, the lower end of the valve  
80 receiving the thrust of a coiled spring, which holds the valve closely seated in its seat or bushing. In the various modifications of my device illustrated in the accompanying drawings I have shown the usual angle-cock with  
85 the bushing just referred to removed and with a substituted larger taper valve, which fills the aperture in the casing designed for the removed bushing.

In the drawings, 1 is an air-pipe, upon the  
90 end of which is an angle-cock 2, adapted and arranged to receive and to be firmly connected with one end of a hose-section 3. This hose-section at its opposite end is adapted to be secured to and connected with a like hose-section  
95 in the usual way. The casing for the an-



gle-cock is threaded at one end, as at 4, for the reception of the threaded end of line air-pipe 1, and at its other end the case is threaded, as at 5, for connection with the hose-section 3.

5 The taper plug or valve 6 has therethrough a transverse bore or port 7, which by a quarter axial turn of the plug or valve may be thrown into or out of communication with the pipe and hose. This plug is made hollow by  
 10 an axial bore leading from its lower larger end toward the upper smaller end and intersecting the transverse port. That end of the port 7 which when the valve is turned in open coupled position is nearest the opening 5 is cup-shaped, as at 8, and conforms to and fits and  
 15 forms a seat for the ball-valve 9. This ball is disposed in the cavity of the hollow plug 6 and rests normally on the washer 10 at the bottom of the plug 6. 11 is a coiled spring  
 20 interposed between the bottom cap 12 and the washer 10 and serves by its thrust against the washer to hold the plug closely seated, so that when the valve is closed leaks will be avoided. In Fig. 2 for the usual cap I have  
 25 substituted a larger cap 12, having a larger cavity, while in Figs. 4 and 5 the caps 12<sup>a</sup> are the same caps heretofore in use. In the device illustrated in Figs. 2, 3, and 4 the washer 10 has a central circular opening, the margin  
 30 of which forms a bearing for the ball and an aperture for the escape of compressed air contained in the cavity of the valve-chamber beneath the washer. In Fig. 5 the washer 10<sup>a</sup> is imperforate, having merely a central depression forming an enlarged bearing-surface  
 35 for the ball. Through the wall of the hollow plug and directly beneath and in line with the transverse bore 7 is a small aperture 13, the mouth of which is opened and closed by the  
 40 turning of the plug.

The operation of my device is as follows: Assuming that the parts are assembled as indicated, that the line of air-pipe of the several cars of the train are connected in the  
 45 usual manner with the angle-cock provided with my invention at each end of each of the cars, and that the brakes are held "off" by the compressed air in the pipes and reservoirs in the ordinary way, now if by any accident the train be broken in two or if from any  
 50 cause the "line" be broken the sudden and rapid escape of the compressed air will cause the brakes to be instantly set with full force and with possibly disastrous results were it  
 55 not that the sudden expansion of the compressed air in the valve-chamber lifts the valve instantly, so that it is forced by the escaping air against the valve-seat 8, thus stopping the

further escape of air through this channel. It is found by actual test with each of the forms  
 60 shown in my drawings that a line under the usual working pressure will show by the pressure-gage that my valve permits a drop of less than one pound in pressure when the line is suddenly thrown wide open. After the  
 65 ball-valve is seated the compressed air now escapes slowly through the contracted vent 13, bringing the separated parts of the train to a gradual stop and giving the engineer time to manage that part of the train which  
 70 remains under his control, according to the requirements of the emergency. Under the ordinary workings of the air-brakes the expansion of the air beneath the ball-valve is not quick enough to seat the valve, and hence  
 75 does not interfere with the brakes when working under normal conditions. Even the "emergency" application of the brakes by the engineer will not seat the ball-valve, as its size and weight are such that the line must be  
 80 thrown wide open to secure the action of the valve.

Since the angle-cock at each end of the car is provided with my device, it is clear that the valve nearest the break in the line will be  
 85 thrown into operation, thus preventing the undue escape of air in either direction.

While I have shown my invention as a part of an angle-cock for economical reasons, it should be understood that I do not limit my  
 90 invention to this form of construction, for obviously the same mechanical result may be attained by disposing my valve, valve-chamber, and valve-seats at places in the line other than in the angle-cock.  
 95

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

In an air-brake safety device, an air-conduit, an angle-cock connected therewith, a hollow plug in the cock having a passage there-  
 100 through adapted to be thrown into and out of coincidence with the conduit, a ball-valve in the hollow of the plug, a seat for the ball and means for permitting the retarded passage of  
 105 air around said valve when in closed position, the arrangement being such that the ball-valve is automatically seated and the conduit closed by the escape of air from said conduit.

In testimony whereof I have affixed my  
 110 signature in presence of two witnesses.

CHARLES TRUMAN.

Witnesses:

CHAS. E. CHITTENDEN,  
 STELLA DORLAND.