

No. 775,670.

PATENTED NOV. 22, 1904.

C. E. COZZENS.
AIR BRAKE SAFETY DEVICE.
APPLICATION FILED AUG. 17, 1904.

NO MODEL.

Fig. 2.

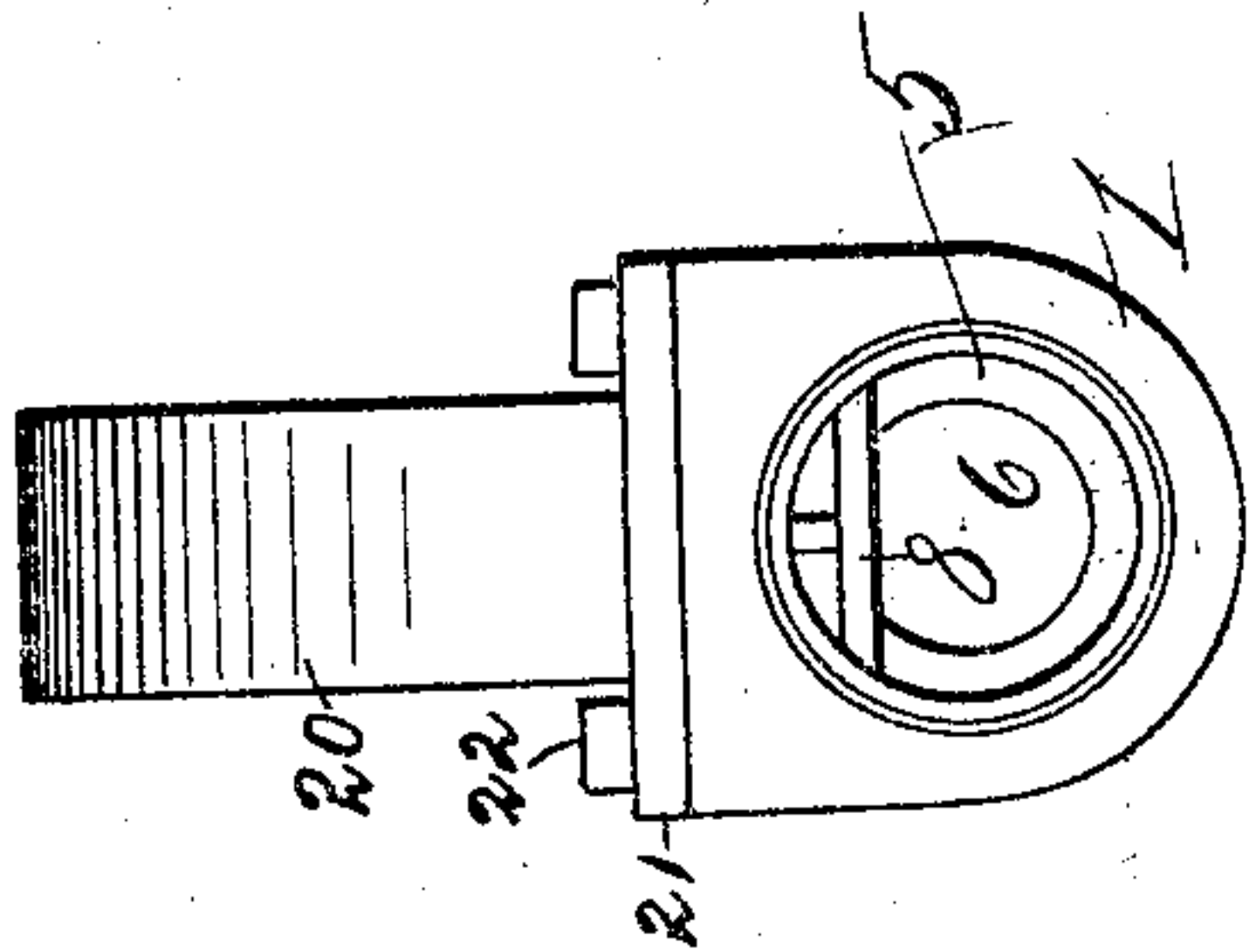
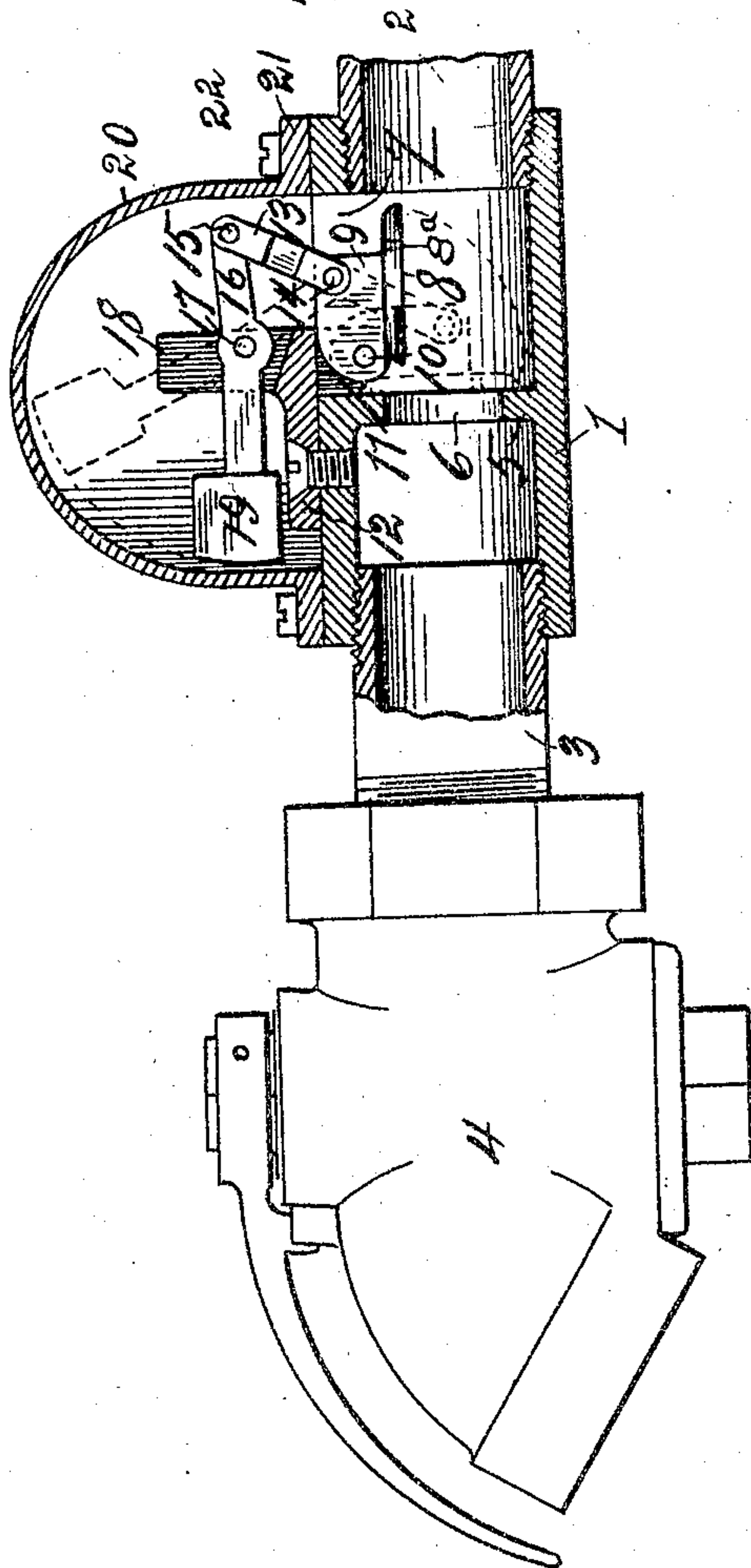


Fig. 1.



WITNESSES:

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UNITED STATES PATENT OFFICE.

CHARLES E. COZZENS, OF TOLEDO, OHIO, ASSIGNOR OF ONE-HALF TO
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AIR-BRAKE SAFETY DEVICE.

SPECIFICATION forming part of Letters Patent No. 775,670, dated November 22, 1904.

Application filed August 17, 1904. Serial No. 221,012. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. COZZENS, 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 others skilled in the art to which it ap-
10 pertains 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
15 brakes of the railway-train are set automatically by the escape of compressed air from an air-reservoir the bursting of the flexible hose employed to connect the air-pipes between the cars or the breaking at any point of the
20 line of air-pipes causes the sudden application of the brakes with maximum force to the car-wheels, thus stopping the train with a violent shock. Serious accidents frequently result from this cause, especially in freight-trains,
25 where usually only the forward cars are provided with air-brakes, the cars without air-brakes being placed together at the rear of the train. When the train is broken in two, the air-brakes on the forward part of the train
30 will, by the rapid escape of air from the train-line, be suddenly and violently set, bringing the forward part of the train to a quick stop. Now the rear cars not being under control will, with enormous weight and momentum.
35 rush upon the forward part of the train, with the result of wreck of property, injury of persons, and sometimes loss of life.

My invention relates to and its object is to provide a cheap, simple, durable, and efficient automatic valve by which when a break
40 occurs anywhere in the line of air-pipes or its connections escape of the compressed air will invariably be so retarded that the stop of the separated part of the train, and especially that
45 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 oncoming detached rear portion of the train.

Various methods and devices have been pro- 50
posed for accomplishing the object above mentioned—such, for instance, as the placing of check-valves in the angle-cocks to which the air-hose sections are connected at the ends of the car. Valves of various kinds have 55
been inserted in the line at other points, some controlled by springs, others by gravity, some of the valves being in the form of plungers or pistons. These devices have proved unsatisfactory for the reason that they have 60
been easily affected by dust, dirt, and grit, which prevent the valves from working properly in time of emergency. These valves have also proved unsatisfactory for the reason that the water of condensation resulting from the 65
compression and expansion of air in the air-pipes collects in the “safety-valves,” and in cold weather the water freezes, putting the valve out of service. In those valves of this class in which springs are employed the well- 70
known uncertainty of the life and performance of springs has prevented their adoption by railroads.

A further object of my invention is to provide an automatic safety-valve which shall 75
be free from the objections above indicated and which may be applied to air-brake pipes already in use.

My invention also relates to certain details of construction hereinafter described, and pointed 80
out in the claims.

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— 85

Figure 1 is a side elevation of my device, partly in central vertical longitudinal section; and Fig. 2, an end view seen from the right in Fig. 1.

Like numerals of reference indicate like 90
parts in both views.

In the drawings, 1 is a pipe section or casing U-shaped in cross-section and internally threaded at each end. Section 1 is connected at one end with train-pipe 2 and at its other 95
end by means of a union 3 with angle-cock 4. Across the interior of the pipe section or casing 1 is a partition 5, having therethrough an

opening 6. In the top flat portion of the tube-section 1 is an aperture 7.

8 is a flat check-valve of such diameter and form as to cover the hole 6 in the partition 5.

5 Upon the back of the valve is a lug 9, which is pivoted, as at 10, between two lugs 11, which project downwardly through the opening 6 from a plate 12 formed upon or secured to the top of the flattened portion of
10 the tube-section 1.

13 is a toggle-bar forked at both ends, one end being pivotally connected, as at 14, with the lug 9, the other end being pivotally connected, as at 15, with lever 16. This lever is
15 fulcrumed, as at 17, upon a pin passing through two lugs 18, projecting upwardly from the plate 12. At its end opposite the pivot 15 the lever is provided with a weight 19, which is of such weight and is so disposed
20 that it slightly overbalances the valve suspended from the opposite end of the lever. The lever and the opening 7 are covered by means of a semicircular hood 20, having a flange 21. The cover is secured in place by
25 means of screw-bolts 22, passing through the flange 21 and into the flat top of the pipe-section 1. By removing the hood 20 and the plate 12 all of the parts are exposed and made accessible for inspection, adjustment, and re-
30 pairs.

The operation of my device is as follows: Assuming that the parts are assembled as described and shown, that the air-pipes of the
35 several cars in the train are connected up in the usual manner, and that the brakes are held "off" by air-pressure, now if one of the hose-sections between the cars be broken or pulled in two the air will escape rapidly at the break, causing the brakes to be set suddenly with
40 maximum force were it not for the valve 8, which is instantly closed by the expansion and rapid flow of air, thus preventing the escape of the air. Through the valve 8 is a small aperture 8^a, through which the air is
45 now permitted to escape slowly, the retarded flow of the air bringing the separated portions of the train to a slow stop and permitting the engineer with the front portion of the train to control his brakes as the exigencies of the case may require.
50

Having described my invention, what I

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

1. In a device of the described class, a pipe-section adapted for connection in an air-pipe 55 line, a partition in said pipe-section having a hole therethrough, a normally open check-valve pivoted above and adapted to close said hole, a lever fulcrumed above said pipe-section, pivotal connections between one end of 60 said lever and said valve, and a weight on the opposite end of the lever.

2. In a device of the described character, a pipe-section having a transverse valve-seat therein and an opening through its top, a 65 valve pivotally supported above said valve-seat, a lever fulcrumed above said pipe-section, a weight at one end of the lever, and a toggle-bar pivotally connected with the opposite end of the lever and with the valve. 70

3. In a device of the described character, a pipe-section U-shaped in transverse section and having an opening through its top, a transverse valve-seat in the pipe-section, a valve, a plate having lugs which project down- 75 wardly through said opening, pivotal connections between said lugs and said valve, a lever fulcrumed above the top of the pipe-section, a weight at one end of the lever, at the opposite end of the lever a toggle-bar pivotally 80 connected with the valve, a chambered cover for said pipe-section, and means for detachably securing said cover in place.

4. In a device of the described character, a pipe-section adapted for connection in an air- 85 pipe line and having an opening through its top, a transverse partition in said pipe-section having a hole therethrough, a check-valve pivoted adjacent to and adapted to close said hole, a lever connected with said valve and 90 extending through said opening in the top of the pipe-section, a weight upon said lever adapted to hold the valve normally raised in open position, and a detachable chambered cover for said weighted lever. 95

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES E. COZZENS.

Witnesses:

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M. L. MARKS.