

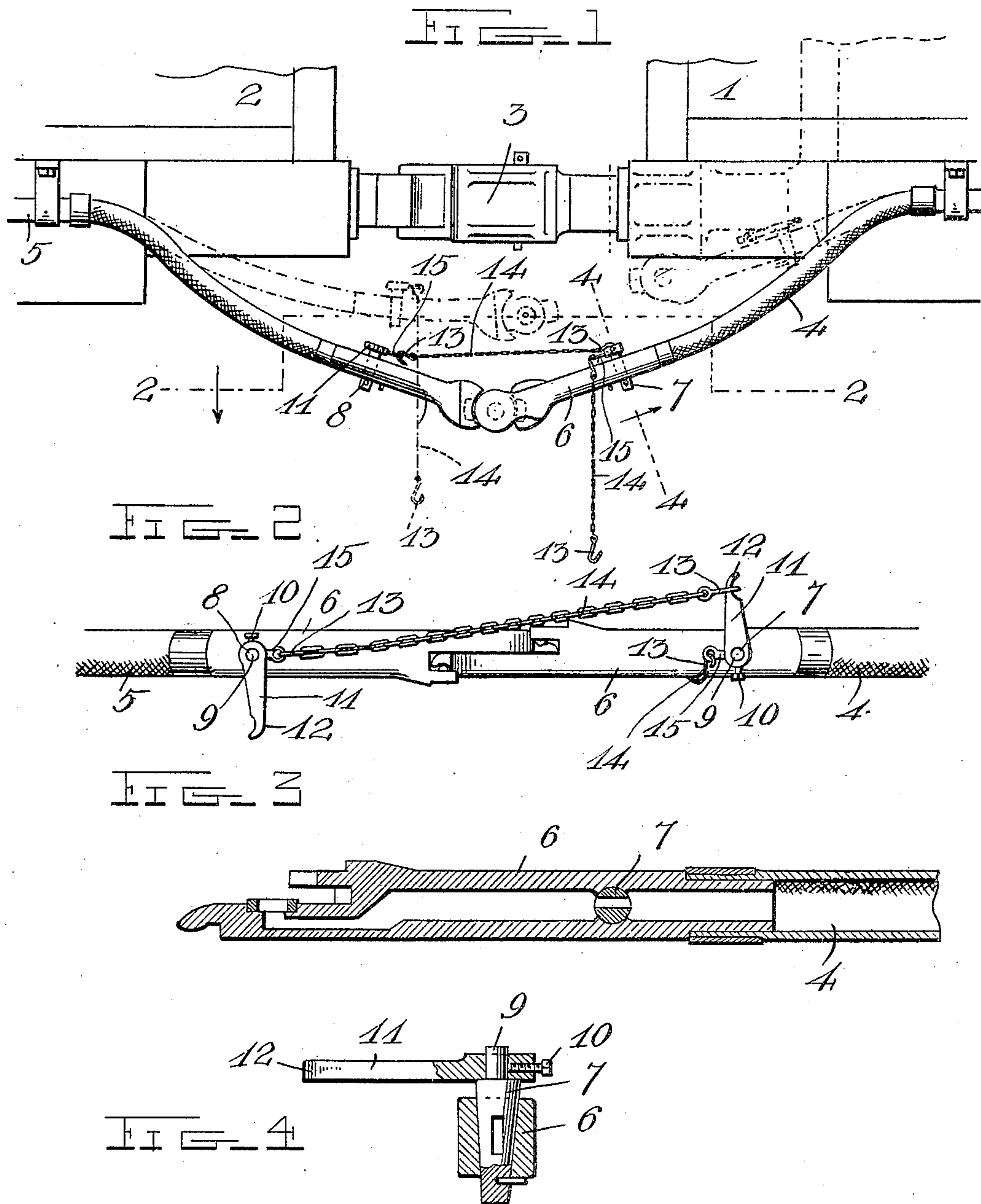
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AIR BRAKE.

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Witnesses

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AIR-BRAKE.

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To all whom it may concern:

Be it known that I, ED A. GRAVES, a citizen of the United States, residing at Randolph, in the county of Cattaraugus and State of New York, have invented certain new and useful Improvements in Air-Brakes; 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 appertains to make and use the same.

My invention relates to improvements in railway air-brakes, and more particularly to the train-pipe stop-cocks therefor.

The object of the invention is to provide simple and efficient means for automatically operating the train-pipe stop-cocks whenever a train breaks in two sections, so that the air-brakes upon the rear section will be applied and the engineer upon the front section will have complete control of the same by reason of the closing of the train-pipe at the rear end of his section.

Another object of the invention is to provide a device of this character in which the closing of the train-pipe cock or valve upon the rear of the forward section of the broken train may be closed to a predetermined extent, so that the air in the train-pipe will be permitted to escape slowly, and thereby gradually apply the brakes on said section, and thus notify the engineer that there has been a break in his train.

Another object of the invention is to eliminate the danger which trainmen must encounter in reaching down between and under the cars of a train to operate the usual train-pipe cocks or valves.

A further object of the invention is to improve and simplify the construction and operation of devices of this character, and thereby render the same more efficient and less expensive.

With the above and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of devices hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a detail side elevation of two cars or sections of a train with my improvements applied thereto, the parts being shown coupled together in full lines and separated or broken apart in dotted lines. Fig. 2 is a detail horizontal sectional view taken on the plane in-

indicated by the line 2 2 in Fig. 1. Fig. 3 is a detail view of one of the train pipes or hose, and Fig. 4 is a detail sectional view taken on the plane indicated by the line 4 4 in Fig. 1.

Referring to the drawings by numeral, 1 and 2 denote two cars or sections of a train which are coupled in the usual or any suitable manner, as at 3, and which have the usual train pipes or hose 4 5. The latter are coupled by the usual detachable coupling 6, the parts of which when engaged with each other in the angular position shown in full lines in Fig. 1 are coupled and when pulled out straight, as indicated in dotted lines in said figure, are uncoupled, so that they readily separate. The hose 4 5 hang normally in an angular position with respect to each other, as shown, so that the members of the coupling 6 only become uncoupled when separated manually or when the two cars or sections 1 2 of the train break apart. In each of the hose or pipes 4 5 at convenient points adjacent to the coupling member 6 are located cocks or valves 7 8, which take the place of the usual angle or stop cocks located in the train-pipes beneath the cars. These cocks or valves 7 8 may be of any desired form and construction; but I preferably employ the well-known form of rotary plug-valve, as shown in Fig. 4 of the drawings. Each of said valves has at its upper end a cylindrical stem 9, upon which is adjustably secured, by means of a set-screw or the like 10, a hand-lever 11. The latter has a hook-shaped outer end 12 to receive a hook or the like 13 upon one end of a chain 14. The latter has its opposite end secured to an eye or the like 15, which is mounted upon one of the pipes or hose, as shown at 16. If desired, I may provide two of the chains or flexible connections 14, as shown.

The operation of the invention is as follows: Supposing the train to be moving in the direction indicated by the arrow in Fig. 1, so that 1 is the pulling car or section and 2 the car or section being pulled, the chain 14 has one of its ends connected or engaged with the eye 15 upon the hose 8 and the hook 13 upon its opposite end engaged with the hooked end 12 of the lever 11 of the valve or cock 7. When so engaged, the lever 11 projects transversely or at right angles to the longitudinal axis of the hose 4, so that the valve 7 is in its opened position, as is also the

valve 8. Should the two cars or sections 1 2 of the train separate, the two hose or pipes 4 5 will be drawn out straight, so that the coupling members 6 become disengaged; but
 5 before this occurs the chain 14 will swing the lever 11 of the valve or cock 7 around a quarter of a turn or rotation, so that the valve 7 will close the train pipe or hose 4. The closing of this valve enables the engineer to have
 10 complete control of the forward section of the train; but the air-brakes upon the rear section will be applied because of the escape of the air through the open valve 8 in the hose or pipe 5. By adjusting the lever 11 on
 15 the stem 9 of the valve 7 by means of the set-screw 10 it will be seen that the closing of said valve may be varied, as desired. By setting said lever so that the valve will not be entirely closed when the chain 14 breaks
 20 the air will escape slowly through the pipe or hose 4 and the brakes on the forward section 1 of the train will be gradually applied, so that the engineer will be notified of the break in his train. When the train moves in
 25 the opposite direction, it will be understood that the chain 14 has one of its ends engaged with the eye 15 on the hose 4 and its opposite end engaged with the lever 11 of the valve 8 in the hose 5, so that when the cars 1 and 2
 30 separate the valve 8 will be closed, while the valve 7 will remain open.

By providing the valves 7 8 in the hose 4 5 they will be within convenient reach of the trainmen, who may operate them manually
 35 without endangering life or limb. It will also be understood that by providing for the adjustment of the valves 7 8 the forward section of a parted train may be caused to stop at any desired distance from the point at
 40 which the break occurs.

From the foregoing description, taken in connection with the accompanying drawings, the construction, operation, and advantages of the invention will be readily understood
 45 without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of
 50 the invention as defined by the appended claims.

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

1. The combination with train pipes or hose having coacting couplings upon their adjacent ends, of stop-cocks or valves arranged in said pipes, operating elements upon said valves, and a connection between one of said
 55 pipes and the operating element of the valve in the other, substantially as described. 60

2. The combination with train pipes or hose having coacting couplings upon their adjacent ends, of stop-cocks or valves arranged in said pipes, operating elements for said valves, means for adjustably connecting said elements to said valve to regulate the operation of the latter, and a connection between one of said pipes and the operating element of the valve in the other of said pipes,
 65 substantially as described. 70

3. The combination with train pipes or hose having coacting couplings upon their adjacent ends, of stop-cocks or valves arranged in said pipes, and an adjustable connection between one of said pipes and the valve in the other of said pipes. 75

4. The combination with train pipes or hose having coacting couplings upon their adjacent ends, of stop-cocks or valves arranged in said pipes, operating-levers adjustably mounted upon the stems of said valves, and a flexible connection between one of said pipes and the lever of the valve in the other
 80 of said pipes, substantially as shown and described. 85

5. The combination with train pipes or hose having coacting couplings upon their adjacent ends, of stop-cocks or valves arranged in said pipes adjacent to said couplings, levers upon the cylindrical stems of said valves, set-screws for adjustably securing said levers to said stems, and a chain connecting one of said pipes to the lever of the valve in the other of said pipes, substantially as shown and described. 90 95

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

ED A. GRAVES.

Witnesses:

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