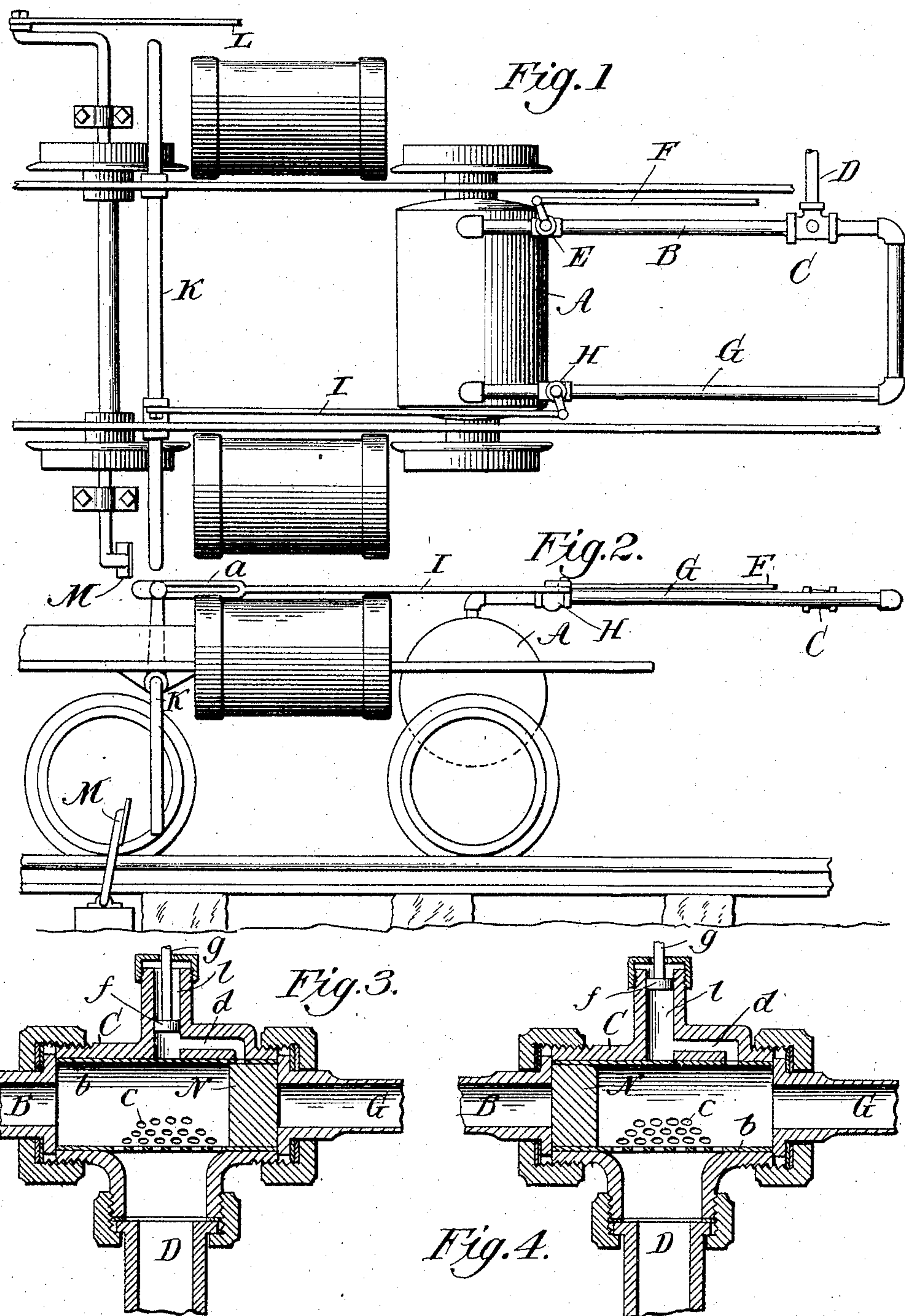


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W. H. BROOKS.
AUTOMATIC SETTER FOR AIR BRAKES.
APPLICATION FILED NOV. 7, 1904.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC SETTER FOR AIR-BRAKES.

SPECIFICATION forming part of Letters Patent No. 790,102, dated May 16, 1905.

Application filed November 7, 1904. Serial No. 231,655.

To all whom it may concern:

Be it known that I, WILLIAM H. BROOKS, a citizen of the United States, residing at Westpoint, in the county of Orange and State of New York, have invented an Automatic Setter for Air-Brakes, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact specification.

My invention has reference to means for automatically setting the air-brakes on a railway-train or on a motor-car or other vehicle in connection with which they may be applied in order to automatically arrest the movement of the train or vehicle, and this without interfering with the ordinary application of the air-brakes by hand.

The principal object of my invention is to provide or produce a simple, cheap, reliable, and efficient means for automatically setting the air-brakes on any train or vehicle, so as to prevent the train or vehicle from running past any predetermined point.

Subordinate objects are provisions for ease and certainty of action of the appliance, to render it easily applied, not liable to get out of order, always ready for either automatic or non-automatic action, and to supply simple and efficient means for making a signal as soon as the automatic action has been called into play.

To accomplish the foregoing objects and to secure other and further advantages in the matters of construction, operation, application, and use, my improvements involve certain novel and useful arrangements or combinations of parts and peculiarities of construction as well as principles of operation, all of which will be herein first fully described and then pointed out in the claims.

In the accompanying drawings, forming part of this specification, I have shown one manner of applying my improved automatic brake-setter as on a locomotive, the general plan of mounting and arranging the apparatus being intended to be varied in accordance with the particular arrangement of the motor or vehicle in connection with which it is made to operate.

In the drawings, Figure 1 represents a plan view of the forward part of a locomotive of

ordinary construction, indicating one position for the compressed-air reservoir, the location of the valve by which the engineer ordinarily and manually sets the air-brakes, and the connection with the compressed-air reservoir of the automatic setting device. Fig. 2 is a side view corresponding with Fig. 1. Fig. 3 is an axial section and elevation of a three-way T fitted and arranged for operation in accordance with my invention, showing the main air-governing piston therein as being located at that end of the T where it will permit the brakes to be set by hand without any interference by the operation of the automatic appliances. Fig. 4 is a view similar to Fig. 3, but showing the contained piston located at the other end of the T, as when the compressed air has been automatically admitted.

In all the figures like letters of reference wherever they occur indicate corresponding parts.

A is any form of compressed-air reservoir such as is employed in connection with any modern air-brake system. The most common way of setting the air-brakes on a train or vehicle is by use of compressed air; but under some arrangements air is exhausted from the system rather than injected into it under pressure, and it should be understood that my improved automatic setter for air-brakes may be employed equally well with one system as with another, the reservoir A standing for the element with which the air-pumps co-operate.

B represents a tube or conduit leading from reservoir A back to the air-brake mechanism, continuing through my improved form of T (indicated at C) and thence on through a tube or conduit D under any preferred arrangement. Within the tube B and between the reservoir and the T C is the ordinary valve E, by which the engineer establishes connection between reservoir A and the air-brake mechanism, this valve being manually opened or closed by means of a rod F or other suitable connection leading up to a position within convenient reach of the hand of the engineer. By use of this valve E the engineer can set the brakes or release them at any time, and the valve usually embodies provision

for bleeding the air-brake system for releasing the brakes after the connection between them and the reservoir has been cut off. At some convenient location I arrange another
 5 air-conduit, (represented at G,) the same connecting the air-reservoir also with the T C, but leading into the latter at the end opposite that which receives the pipe B, as indicated in Fig. 1. In the pipe G is a valve H, and
 10 this valve is so located as not to be within convenient reach of the engineer or motor-man and is not intended to be moved by him except as occasion may require that he replace it in its normal closed position after it
 15 has been automatically opened. The valve H is to be opened by a rod I, which is connected with a suitable projecting piece K, which latter extends down to a convenient distance from the track or road-bed on either
 20 or both sides of the locomotive or motor, where its lower end is to be struck and moved at predetermined points, thus automatically establishing connection between the air-reservoir and the air-brakes.

25 It frequently occurs that locomotives or motors run past a danger-signal or enter a block on the road which it is not intended it shall enter. These occurrences are due sometimes to the inattention of the engineer and sometimes
 30 to his disability, and the provision of automatic means by which the train or vehicle will be arrested will operate to insure safety and prevent loss or damage. The advantages of such an arrangement are sufficiently ob-
 35 vious and need not be here enlarged upon.

L represents a rod or other connection with a semaphore or other danger-signal, of whatever character it may be. This rod operates to elevate or swing an obstruction M into the
 40 path of the down-hanger K whenever the signal is set at "danger," indicating that the oncoming train or vehicle should not pass the point of the signal. If the engineer sees the signal in time, of course he applies the air-
 45 brakes; but in the event that he does not see the signal or in the event that for any reason he should attempt to run past it or the motor be permitted to proceed beyond it then when the piece K strikes the obstruction M the rod
 50 I is moved and the valve H automatically opened. Thus the air-brakes are automatically set and the train or vehicle brought to a standstill within the usual distance. The arrangement being as above indicated, after the
 55 air-brakes have been automatically set they will remain set until the engineer purposely leaves his cab and readjusts the valve H to its normal closed position. The rod I is provided with a slotted piece *a*, by use of which the
 60 connection with the part K is made. This is to permit the motor to move backward on the tracks and to prevent disturbing the valve H in case the piece K should strike an obstruction during this backward movement. When

the signal is at "clear," indicating that there
 65 is nothing on the track ahead and within the next block, then the obstruction M is turned down and out of the way through the medium of the connection L, so that the piece K rides
 70 over and clear of the obstruction.

The T employed has peculiar capacities, although it is of simple and easy construction and not liable to get out of order. It is provided with an interior piston, (represented at N, Figs. 3 and 4.) Whenever air is admitted
 75 by the hand of the engineer, it enters through pipe B, forcing the piston N to its bearing at the opposite end of the T, thus preventing egress of air through that portion and leaving
 80 the passage D open to the air-brake mechanism. Whenever the air is admitted through pipe G, the piston N is forced over to its bearing on the opposite end of the T, again leaving the passage D open to the brake mechanism. The piston N should travel easily and
 85 smoothly within the T. For this purpose I make the interior of the T smooth, as by use of an interior section or sleeve *b*, and this latter is perforated over the opening D, as at *c*. The purpose of these small perforations is to
 90 prevent any possibility of interfering with the free movement of the piston N, as might occur if it traveled over the larger opening D. The perforations at *c* are of sufficient aggregate area to afford free passage for all the air
 95 that may enter through tubes B or G. The perforations *c* might be provided through the material of which the T is made, and thus obviate the use of a separate sleeve therein; but I regard the other construction as sim-
 100 plest to make. The perforations *c* may be in the form of slits instead of circular, as in the drawings.

At *d* in the T is a small channel communicating with the interior, the interior opening being arranged to be closed by the piston N when the latter is seated, as in Fig. 3, and opened when the piston is at the opposite end. This channel *d* communicates with a cylinder
 110 *l*, conveniently formed on or connected with the T, and in this cylinder I locate any convenient form of piston *f*, with a piston-rod *g* connected therewith and projecting to the exterior. This arrangement may be conveniently employed for the purpose of operating
 115 any signal, as to ring a bell, or show a light, or open communication with a whistle, &c., to apprise the engineer of the fact that the automatic setter has been opened, and in order for him to regain manual control of the brakes
 120 it will be necessary for him to set the valve H back to its normal closed position.

Being constructed and arranged substantially in accordance with the foregoing explanations, the improved device will be found
 125 to be certain and reliable in operation and to admirably answer all the purposes and objects of the invention hereinbefore alluded to.

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

1. The combination of two air-conduits leading from the air-reservoir and communicating with the conduit leading to the air-brake mechanism, a valve in one of said conduits arranged to be manually opened, and a valve in the other arranged to be automatically opened, substantially as and for the purposes set forth.

2. In an automatic air-brake setter, the combination with the tube leading to the air-brake mechanism, of a T, the latter receiving at one end a tube for air under manual control and at the other end a tube for air which is automatically admitted, substantially as and for the purposes set forth.

3. In an automatic air-brake setter, the combination with the three tubes, of the T or piece for uniting them, the same being provided with an interior piston, substantially as and for the purposes set forth.

4. In an automatic air-brake setter, the combination with the three tubes, of a T or union for the three, the same being provided with an interior piston and supplied with a channel leading from near one end to a connected cylinder, for the purpose of signaling when

the air is automatically admitted to the air-brake mechanism, substantially as and for the purposes set forth.

5. In an automatic air-brake setter, the T or union supplied with an interior piston, the outlet from said union being protected by small perforations to prevent interference with the movements of the piston, substantially as and for the purposes set forth.

6. The herein-described automatic setter for air-brakes, the same comprising two tubes leading to the pipe connected with the air-brake mechanism, one of said tubes being supplied with a manually-operative valve and the other with an automatically-operative valve, a down-hanger for striking an obstruction, an obstruction located in the path of the down-hanger and means for connecting the obstruction with the ordinary signal, the parts being arranged for operation, substantially in the manner and for the purposes explained.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM H. BROOKS.

Witnesses:

C. SEDGWICK,
WORTH OSGOOD.