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SAFETY APPLIANCE FOR AIR BRAKES.

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1,006,239. **Patented Oct. 17, 1911.**

Fig. 1.

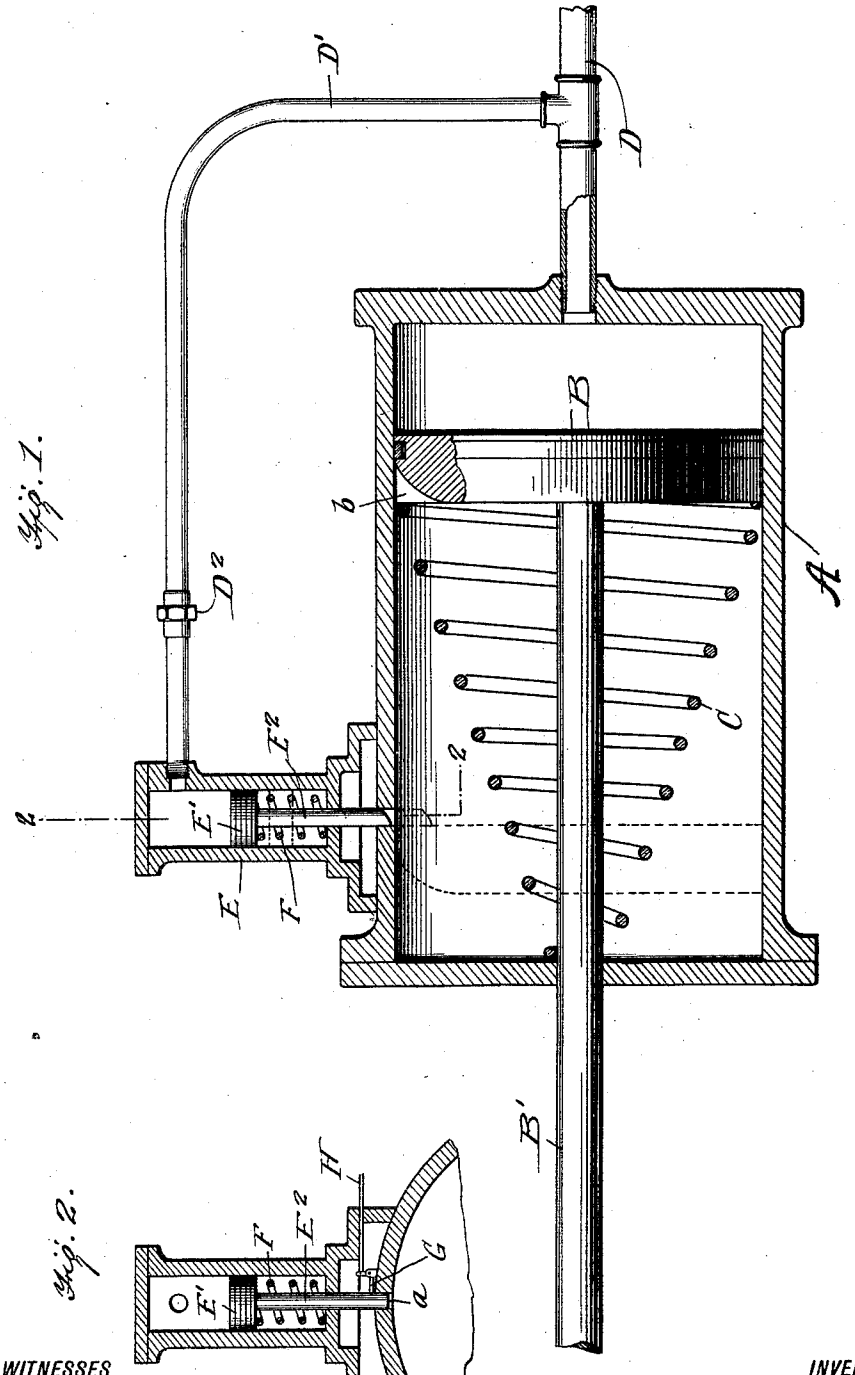

Fig. 2.

B'

WITNESSES

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ANDREW B. LEFTWICH AND CLAYTON N. MARKLE, OF PUEBLO, COLORADO, ASSIGNORS OF ONE-FOURTH TO IKE STAMM AND ONE-FOURTH TO HARRY F. CHANDLER, BOTH OF PUEBLO, COLORADO.

SAFETY APPLIANCE FOR AIR-BRAKES.

1,006,239. Specification of Letters Patent. **Patented Oct. 17, 1911.**

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To all whom it may concern:

Be it known that we, ANDREW B. LEFTWICH and CLAYTON N. MARKLE, citizens of the United States, and residents of Pueblo, in the county of Pueblo, State of Colorado, have invented a new and useful Improvement in Safety Appliances for Air-Brakes, of which the following is a specification.

Our invention relates to improvements in automatic air brakes now in use, and has for its object to produce a brake of this class which is simple in construction and which can be controlled in its operation by pneumatic means, a more specific purpose being to provide mechanism whereby a brake is held unapplied by pneumatic and mechanical means, and is applied by spring pressure when pressure in the service or train pipe is sufficiently reduced.

With these and other objects in view, our invention consists in certain novel features of construction, arrangement and combination of parts as will be hereinafter fully described and pointed out in the claims, reference being had to the accompanying drawing, in which:

Figure 1 is a central vertical section of a brake cylinder showing my improvements as in use; and Fig. 2 shows a vertical section of the brake locking means.

In carrying out our invention we use an air cylinder A having therein a piston head B, the piston rod B′ and the cone-shaped coiled spring C, the piston rod B′ passing through one end of cylinder and having operable connections with the braking mechanism, such as the beams, rods, shoes, &c. At the opposite end of cylinder the train pipe D is fitted into the cylinder head. A branch pipe D′ joins the train pipe a short distance from the point of its connection with the cylinder A and extends above and over the cylinder A and enters the supplemental cylinder E, which we shall call the brake locking cylinder, a short distance from its top, as shown in Fig. 1. Within the pipe D′ between its connections with the train pipe D and the cylinder E we interpose a reducing valve D^2. Within the cylinder E is a piston head E′ having a stem E^2 which projects downwardly through the bottom of said cylinder which is set upon the cylinder A adjacent to the brake end of said cylinder. Said cylinder A has an opening *a* through it in alinement with the opening in the bottom of cylinder E to permit the stem E^2 to pass through into the brake cylinder A when air pressure above the piston head E′ forces said head down and overcomes the upward pressure of spring F which holds said piston stem or rod E^2 withdrawn from the brake cylinder A. The base of the cylinder E is enlarged and has housed within it a bell crank lever G which acts as a bolt to enter and lock the stem E^2 when in its down position. This bell crank lever or bolt is manipulated by a rod H extending to the outside of the base of cylinder E, where it can easily be operated by the proper person.

The brake in this device is a continuous brake to be operated direct from engines by the engineer's brake valve, being a straight air device whereby the brakes are released by forcing air directly into the cylinder against the piston head. To set the brakes (position shown in Fig. 1) air is exhausted from the train pipe D, whereupon the spring C causes the piston head to travel from the position indicated by dotted lines, Fig. 1, to the position indicated in full lines, Fig. 1.

To release the brakes it is necessary to pump air into the cylinder A from the train pipe D; this being done, the piston head is forced back against pressure of spring C and at the same time pressure from the train pipe passes through the branch pipe D′ into the cylinder E and forces piston head E′ and stem E^2 downward against pressure of spring F, the lower end of stem E′ being driven into the path of the piston head B which has the beveled recess *b*, the beveled lower end *e* of stem E^2 engaging and riding over said beveled recess *b* and dropping behind the piston head B, as indicated in dotted lines, Fig. 1, said stem constituting a lock and holding the brake in full release by pressure in the train and branch pipe. The piston head can now only be released to become effective by withdrawing the bell crank locking bolt G through the rod H from the outside.

By the use of our improvements the train can be prevented from running away in case of loss of air or from any cause, such as stopping air pump or train breaking into

two or more parts and air escaping; also, cars may be set out any place, it preventing brakes releasing except by having engine pump them off, overcoming possibility of cars running out.

The spring F requires five (5) pounds more pressure to force head E′ and stem or rod E^2 down to hold piston head B in full release, and, as stated, it can only be freed by manipulating rod H to operate the bolt or bell crank G.

We claim:

1. In a brake mechanism in combination, an air cylinder, a piston working therein, a spring operating to move said piston within said cylinder to apply the brake, means for admitting air to one end of said cylinder to oppose the force of said spring, a locking bolt located at the opposite end of the cylinder and adapted to be projected into the path of the piston, and means for holding the bolt in such piston.

2. In a brake mechanism in combination, an air cylinder, a piston working therein, a spring operating to move said piston within said cylinder to apply the brake, means for admitting air to one end of said cylinder to oppose the force of said spring and a locking bolt located at the opposite end of the cylinder and adapted to be projected into the path of the piston and lock the piston in full brake release position.

3. In a brake mechanism, in combination, an air cylinder, a piston working therein, a spring operating to move said piston within said cylinder to apply the brakes, means for admitting air to said cylinder to oppose the force of said spring, and means operated from the train pipe to lock the piston in full brake release position.

4. In a brake mechanism, in combination, an air cylinder, a piston working therein, a spring operating to move said piston within said cylinder to apply the brakes, means for admitting air to one end of said cylinder to oppose the force of said spring, a locking bolt located at the opposite end of the cylinder and adapted to be projected into the path of the piston, and means connected with the train pipe to project said bolt and lock the piston in full release position.

5. In a brake mechanism, in combination, an air cylinder, a piston working therein, a spring tending to move said piston within the cylinder to apply the brakes, means for admitting air pressure to one end of the cylinder to oppose the force of said spring, a locking bolt at the opposite end of the cylinder, means for normally holding said locking bolt out of action, and means connected with the train pipe for forcing said bolt into action and locking the piston in full release position.

6. In a brake mechanism, in combination, an air cylinder, a piston working therein, a spring tending to move said piston within the cylinder and apply the brakes, a train pipe connecting with said cylinder and admitting air to said cylinder to oppose the force of said spring, a supplemental cylinder located adjacent to the opposite end of said cylinder, a piston within said supplemental cylinder, and a stem projecting from said piston and adapted to be forced into the main cylinder and lock the piston therein in full release position, and a branch pipe leading from the train pipe to the supplemental cylinder above the piston head.

7. In a brake mechanism, in combination, a main air cylinder, a piston working therein, a spring operating to move said piston within said cylinder to apply the brakes, a train pipe connecting with one end of said cylinder to admit air to the cylinder to oppose the force of said spring, an auxiliary cylinder connected to the main cylinder adjacent to its opposite end, a piston within said auxiliary cylinder, a stem projecting from said auxiliary piston and adapted to enter the main cylinder, a spring within the auxiliary cylinder for holding the stem out of the main cylinder, and a branch pipe forming a connection between the train pipe and the auxiliary cylinder whereby pressure from the train pipe may be used to force the stem of the auxiliary piston into the main cylinder to lock the piston therein in full release position.

8. In a brake mechanism in combination, a main air cylinder, a piston working therein, a spring operating to move said piston within said cylinder to apply the brakes, a train pipe connecting with one end of said cylinder to admit air to the cylinder to oppose the force of said spring, an auxiliary cylinder connected to the main cylinder adjacent to its opposite end, a piston within the auxiliary cylinder, a stem projecting from said auxiliary piston and adapted to enter the main cylinder, a spring within the auxiliary cylinder for holding the stem out of the main cylinder a branch pipe or by-pass forming a connection between the train pipe and the auxiliary cylinder, and pressure reducing means interposed in said branch pipe intermediate the train pipe and the auxiliary cylinder.

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