No. 869,323. PATENTED OCT. 29, 1907.

R. P. NOLAN.

AUTOMATIC WARNING SIGNAL FOR AIR BRAKE SYSTEMS.

APPLICATION FILED NOV. 7, 1906.

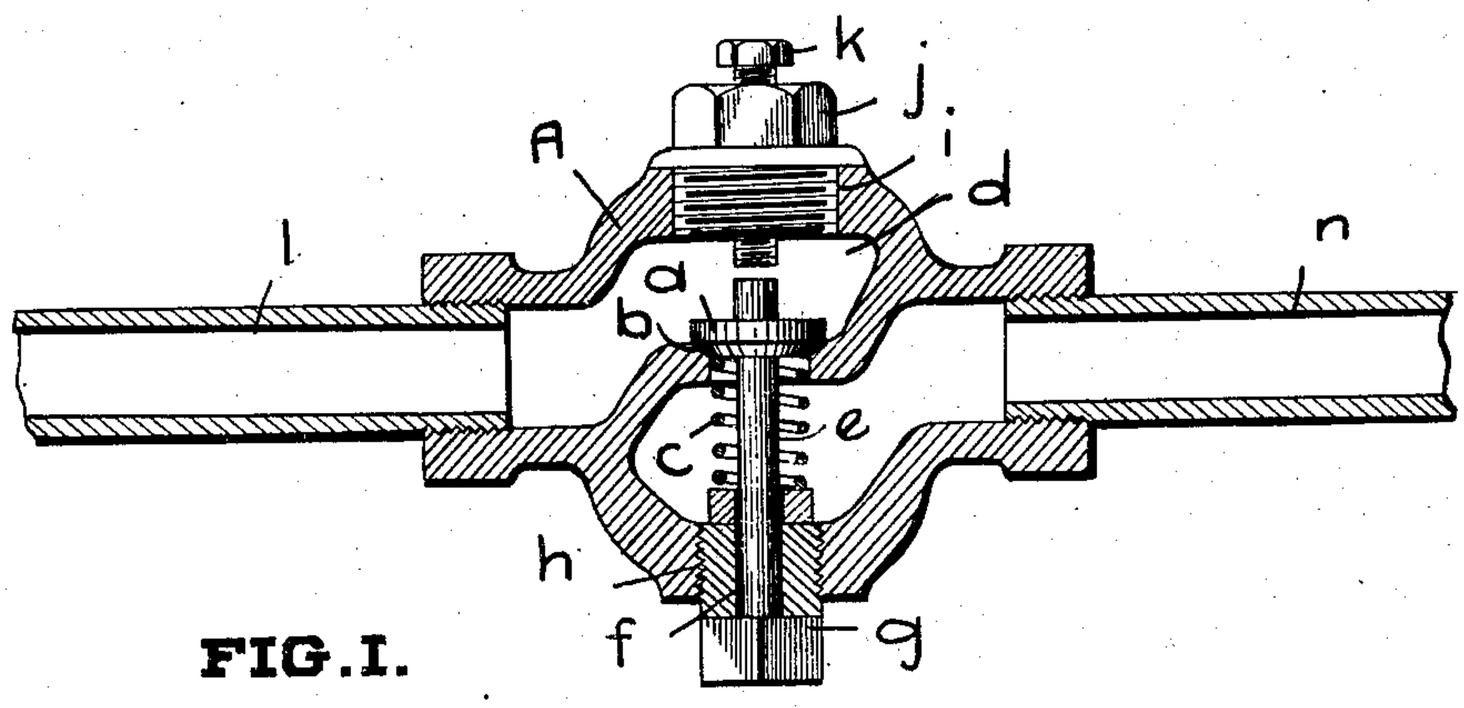

FIG. I.

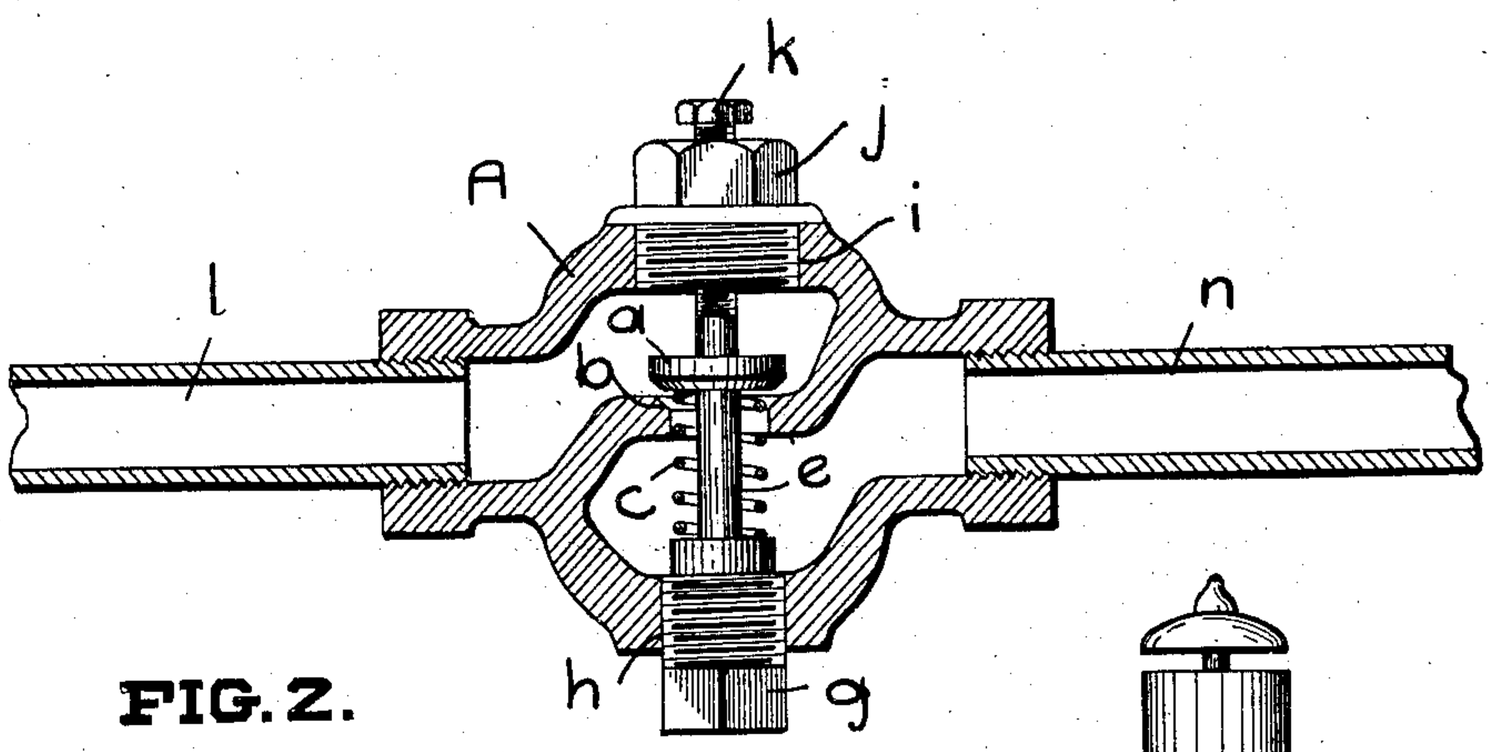

FIG. 2.

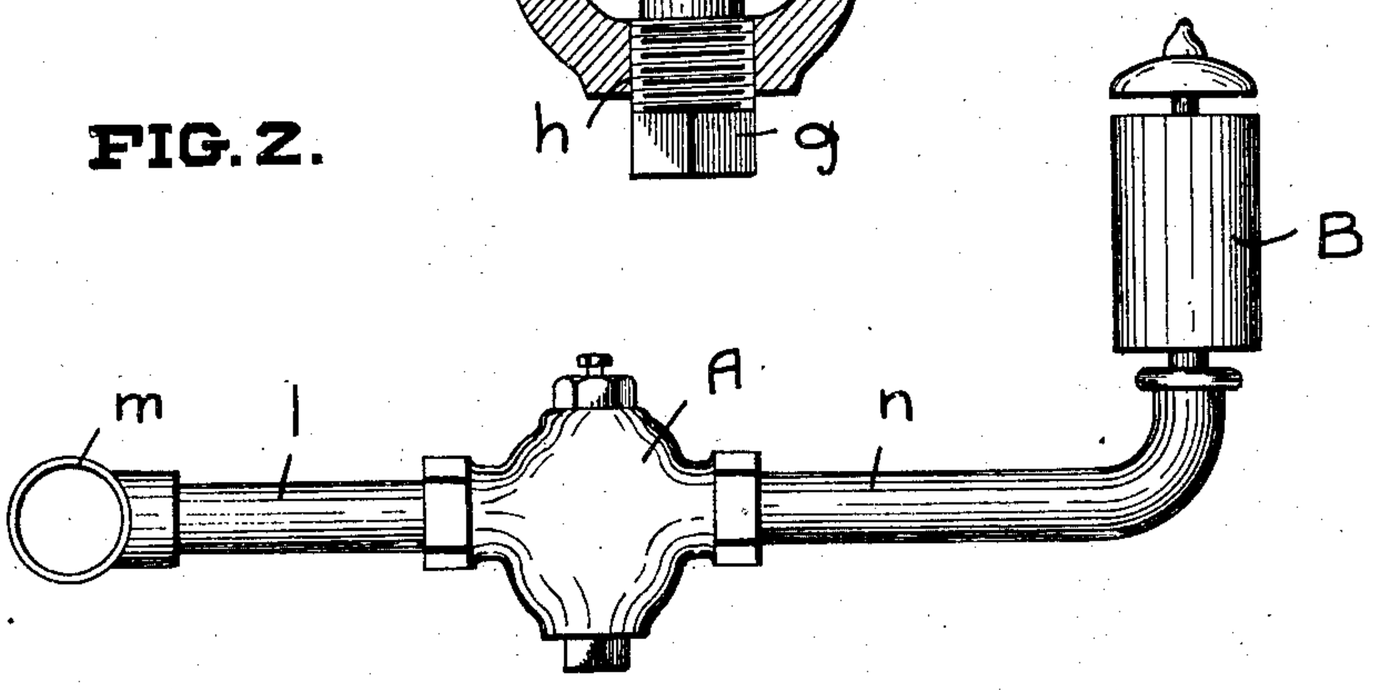

FIG. 3.

WITNESSES.

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RICHARD PETER NOLAN, OF HAVELOCK, ONTARIO, CANADA.

AUTOMATIC WARNING-SIGNAL FOR AIR-BRAKE SYSTEMS.

No. 869,323. Specification of Letters Patent. Patented Oct. 29, 1907.

Application filed November 7, 1906. Serial No. 342,431.

To all whom it may concern:

Be it known that I, RICHARD PETER NOLAN, of Havelock, in the county of Peterborough, Province of Ontario, Canada, have invented certain new and useful Improvements in Automatic Warning-Signals for Air-Brake Systems, of which the following is a specification.

My invention relates to improvements in signal devices for air brake systems and the objects of my invention are to provide a simple and effective device which will give an alarm whenever the pressure in each car equipped with the air brake system falls below a given point whereby any accidents due to the failure of the said pressure in critical moments may be avoided; and it consists essentially of a valve connected to the air brake system adapted to automatically open when the pressure drops below a given point and a noise producing signal operated by the air escaping through said valve, the details of the device being more fully set forth and described in the accompanying specifications and drawings.

Figure 1 is a sectional view through the valve when closed. Fig. 2 is a sectional view when open. Fig. 3 is an elevation showing the complete device with the signal attached thereto.

In the drawings like letters of reference indicate corresponding parts in each figure.

Of late many accidents have occurred owing to the failure of the air brakes to operate in the various cars when simultaneously applied by the engineer. This has been due in some cases to the air gradually escaping and lowering the pressure to such an extent that the brakes will not operate. Of course as is well known if the pressure is suddenly lowered the air brakes will be automatically applied but very frequently a gradual lowering could take place without any effect being produced on the brakes. A further cause of accident is the angle cock placed at each end of each car which frequently by jarring becomes closed and so cuts off that car from the rest of the system. The air in this car may then be gradually reduced in pressure without any effect being noticed in the other cars. Sometimes a gage is attached to each car but it is evident that this is an unreliable method of indicating the condition of so vital a matter as the air brake system and might easily be overlooked by the train crew. In my invention whenever the pressure falls below a given amount a loud warning signal is at once produced which will attract the attention of the train crew to the leakage.

Referring to the drawings A is the valve the details of which may be varied the essential features being the movable valve disk *a* which is normally pressed away from its seat *b* by the compression spring *c*. The housing *d* may be of any suitable or desirable form. As shown the valve disk is cylindrical provided with a conical lower face and has a stem *e* secured thereto, the opposite end of which extends into a slot *f* provided in a nut *g* screwed in an aperture *h* in the lower side of the valve housing. Access is gained to the top of the valve disk through the housing by means of a hole *i* normally closed by a cap nut *j* screwed therein. The upward movement of the valve is regulated and limited by means of a set-screw *k* extending through the cap nut and adapted to abut the top of the stem *e* when the valve is in its uppermost position the stem *e* being extended beyond the upper side of the valve disk for this purpose. One side of the valve housing is connected by a suitable pipe *l* to one of the conducting pipes *m* of the air brake system and the opposite side is connected by a similar pipe *n* to a suitable signaling device B which as shown is an air whistle, This however, may be any form of signaling device which can be operated by the passage of air therethrough.

In carrying out my invention one of the valves will be attached to the air brake pipes in each car. Under normal conditions the pressure of the air in the air brake pipe exerted on the top of the valve disk *a* will hold the same tightly against its seat *b* and prevent any passage of air through the valve. As soon however, as the pressure falls below a predetermined amount the compression spring *e* will lift the valve off its seat and permit the air to escape through the valve to the signaling device B operating the same to produce a loud warning signal. The strength of the spring *c* is such that it will operate the valve when the pressure is lowered a predetermined extent and yet have sufficient pressure to operate the brakes satisfactorily. Adjustment is provided for the tension in this spring by means of the nut *g* whereby if the spring weakens in strength the weakness may be made up for by a greater compression.

It will be observed that no matter how gradually the pressure lowers yet the valve will be lifted off its seat immediately on the pressure passing below the given point and I have found by testing that this valve will be opened and closed by a difference in pressure not exceeding one half pound per square inch. The pressure at which it would generally be desirable to have the valve operate would be fifty pounds per square inch but this obviously might be changed to suit different circumstances.

It will be readily understood that while I have described with great particularity of detail one specific

embodiment of my invention certain changes might be made therein within the scope of the appended claim without departing from the spirit of my invention.

What I claim as my invention is:—

In an automatic warning signal for air brake systems, the combination with the globe valve housing and substantially horizontal valve seat therein of a valve operating on the seat, a stem secured to the valve and extending on both sides thereof, a nut screwed through the lower end of the housing having a recess therein into which the stem fits, a compression spring abutting the top of said nut and the underside of the valve, and a cap nut screwed through the top of the valve housing, a set screw extending through the same and adapted to limit the upward movement of the valve by engaging the stem thereof.

Signed at Havelock, in the Province of Ontario, this 29th day of October, 1906.

RICHARD PETER NOLAN.

Witnesses:

THOS. BENNETT,

STEPHEN BERNARD O'HARA.