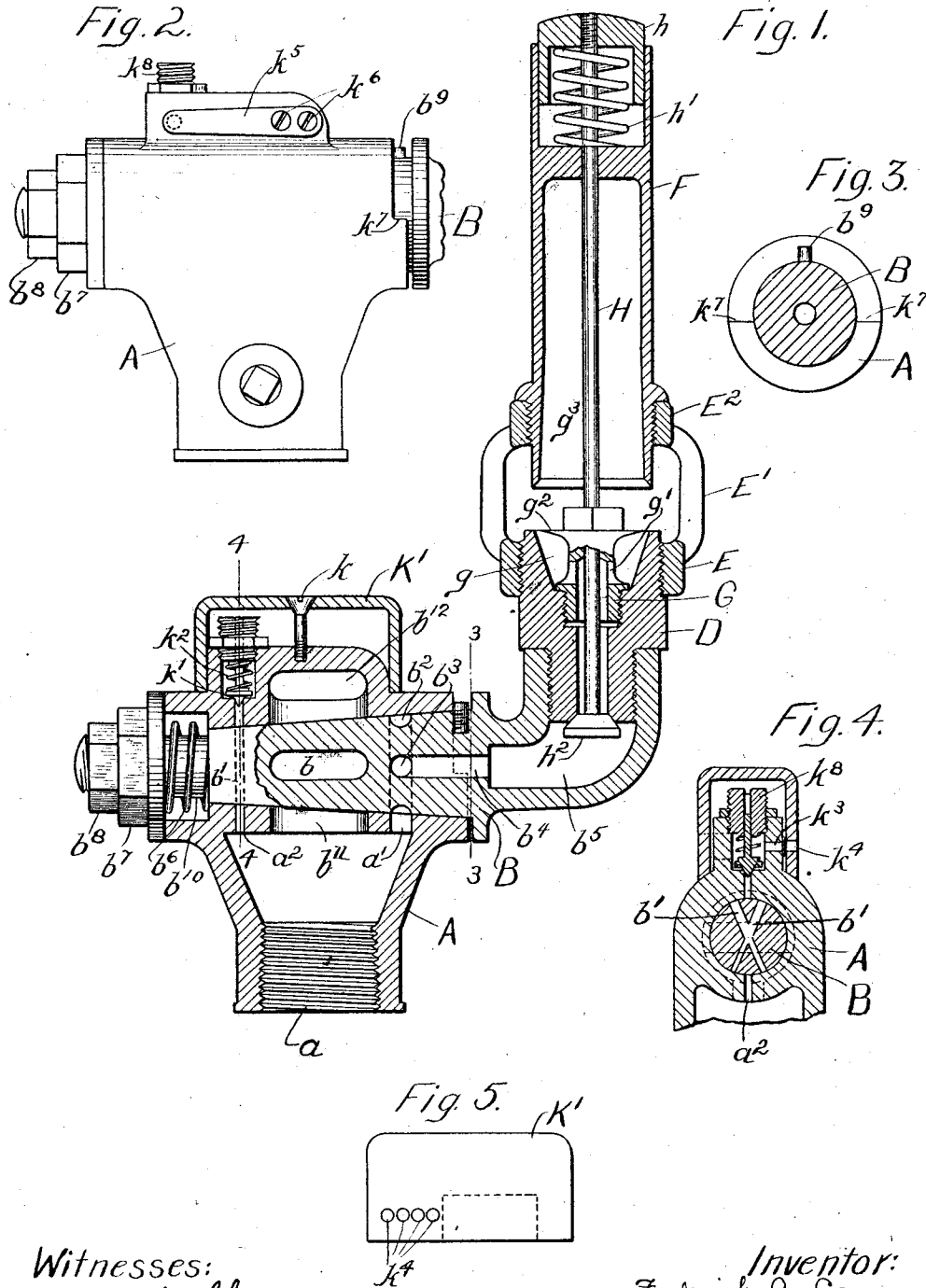


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SIGNAL FOR TRAINS.
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UNITED STATES PATENT OFFICE.

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SIGNAL FOR TRAINS.

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Specification of Letters Patent.

Patented July 1, 1913.

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To all whom it may concern:

Be it known that I, FREDERICK A. CASEY, of Billerica, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Signals for Trains, of which the following is a specification.

My invention is mainly for use on trains equipped with brakes operated by pressure in the train pipe and my object is to provide an audible signal for indicating whether or not there is more than a certain pressure in the train pipe, and also to give indication for other purposes, and my invention is an audible signal arranged to indicate an excess of pressure in the train pipe.

A feature consists in the means for indicating the presence in the train pipe of sufficient pressure to operate the brake.

Another feature consists in a whistle which is operated by the pressure in the train pipe, and which preferably operates without regard to the position occupied by the device controlling the exhaust.

Other feature are hereinafter described.

In the drawings Figure 1 is a sectional elevation of a signal embodying my invention; Fig. 2 is an elevation of the main casing with the handle of the plug broken away; Fig. 3 is a section on line 3—3 of Fig. 1; Fig. 4 is a section on line 4—4 of Fig. 1; and Fig. 5 is a detail hereinafter described.

Casing A has inlet a for connection with the source of pressure and port a^1 leads to the groove b^2 around the plug B. Port a^2 connects the inlet with the valve k^1 to be hereinafter described. Plug B is tapered as shown to enter the casing A and has a circular groove b^2 and passages b^3 and b^4 which together with the groove provide a conduit from the inlet and through port a^1 to chamber b^5 . Ports b^1 are for registry with the port a^2 . The plug B has an extension b^{10} around which is a spiral spring b^6 and at the end of which are nuts b^7 , b^8 , the spring bearing against the casing and together with the nuts holding the plug in position in the casing, but with a yielding hold so that the plug may be rotated or left in any desired position. Pin b^9 acts as a stop for a plug B when it is in engagement with either shoulder k^7 of the casing. Attached to plug B

is whistle support D which carries the whistle member G which has ports g^1 leading to chamber g above which extends lip g^2 , around which and up into chamber g^3 the air passes in making its whistling sound. Attached to the whistle support D is member E which through arms E^1 is connected with member E^2 , which provides a support for member F in which moves the valve rod H. Valve rod H has a cap h which is one abutment of the spring h^1 . Valve h^2 is attached to the other end of rod H and closes the conduit to the whistle. Conduit a^2 is controlled by valve k^1 acting under the influence of spring k^2 and screw k^3 and when the valve is open the pressure may pass through conduit a^2 to port k^3 and operates reed k^5 attached by screws k^6 to the casing. Supplemental casing K^1 is attached to the main casing by screw k for protection to reed k^5 and has perforations k^4 to act with the reed k^5 . The members F and D and their connections are the handle with which to turn the plug B.

In using my signal to indicate an excess of pressure in the train pipe the plug will have one of the ports b^1 in registry with conduit a^2 and friction will hold the plug in place, and it may be left in this position indefinitely, the only function of the port b^1 of plug B in this case being to complete a conduit from the inlet to valve k^1 which will be so adjusted that if more than a certain pressure is present in the train pipe the valve will open and the air will pass through ports k^3 and k^4 acting upon reed k^5 and giving an audible signal while such excess of pressure lasts.

I may also use the signal to determine whether or not there is sufficient pressure in the train pipe to operate the brakes and in this case when this information is desired the plug will be turned by its handle to bring port b^1 into registry with conduit a^2 and the valve k^1 adjusted for this purpose. If sufficient pressure is present in the train pipe the reed k^5 will give the signal and the plug may be then turned so that port b^1 will no longer register with conduit a^2 as in this use of my signal it is only desired to get information and not to have the signal keep sounding while a certain condition lasts.

Conduit b^{11} b^{12} leads through the casing

A from the inlet to the atmosphere, and is controlled by plug B. The latter has a port *b* which in Fig. 1, is at right angles with conduit *b*¹¹ *b*¹², but when the plug is turned 90 degrees from the position of Fig. 1 port *b* connects the portion *b*¹¹ of the conduit with the portion *b*¹², thereby making an exhaust to the atmosphere because portion *b*¹² leads to the atmosphere.

10 By turning the plug until stop *b*⁹ engages either shoulder *k*⁷ of the casing an exhaust from the inlet through port *b* to the atmosphere will be had and it will be seen that there will always be a conduit *a*¹, *b*², *b*³, *b*⁴, *b*⁵ 15 leading to the whistle controlled only by the valve and this is an important feature as it is very desirable to have the whistle in condition for operation no matter what position the plug may occupy, it being only 20 necessary to depress cap *h* in order to operate the whistle.

One advantage of my signal is that the operator can be sure that the brake will operate without being compelled to use the exhaust before it is needed. It will also be 25 clear that the whistle of my signal cock will not operate by mere turning of the handle

and plug, but requires a movement of valve *h*² separate from that turning.

I do not claim by itself the feature of having the whistle operative in any position in this application as I intend to make that the subject of a separate application.

What I claim is:

1. In a signal of the character described 35 the combination of a casing having an exhaust port; a plug mounted in the casing to control the exhaust port; an audible signal controlled by the plug and operative at a predetermined pressure; and a whistle carried by the plug and operative in any position of the plug. 40

2. In a signal of the character described the combination of a casing having an exhaust port; means movably mounted in the 45 casing to control the exhaust port; a signal controlled by said movable means and operative at a predetermined pressure; and a whistle carried by said movable means and operative in any position thereof.

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