

Jan. 8, 1924.

F. M. EVELEIGH

1,479,797

CONSTRUCTION OF AUTOMATIC PRESSURE ALARM

Filed July 11, 1922

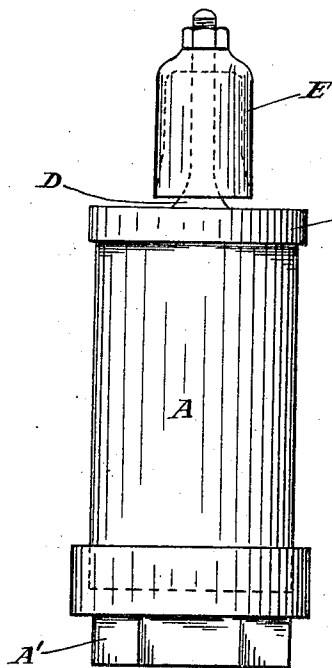


FIG. 1

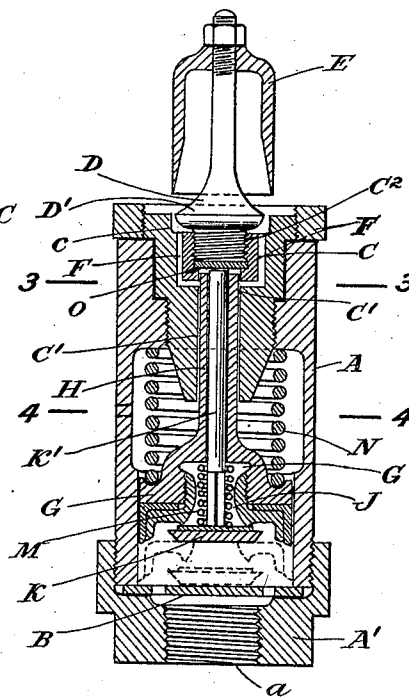


FIG. 2

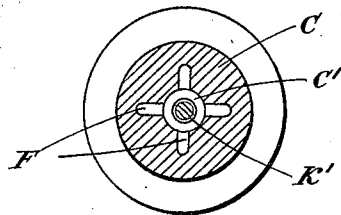


FIG. 3

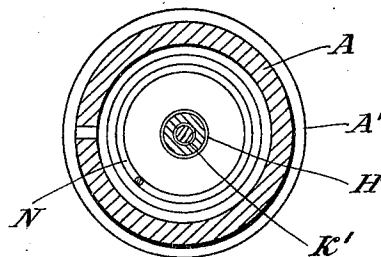


FIG. 4

Inventor:
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By *[Signature]*
att

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UNITED STATES PATENT OFFICE.

FRANK MONTAGUE EVELEIGH, OF AUCKLAND, NEW ZEALAND.

CONSTRUCTION OF AUTOMATIC PRESSURE ALARM.

Application filed July 11, 1922. Serial No. 574,161.

To all whom it may concern:

Be it known that I, FRANK MONTAGUE EVELEIGH, subject of the King of Great Britain, residing at Epsom, Auckland, New Zealand, have invented a new and useful Improved Construction of Automatic Pressure Alarm, of which the following is a specification.

My invention relates to an improved construction of automatic alarm for use in indicating a reduction of pressure in air and the like pressure systems and more particularly designed for use in the air brake apparatus of tramway and other vehicles in order to give an audible alarm when the pressure is reduced below a certain predetermined degree.

The said alarm device is designed to be positioned at any convenient point in the air pressure system and is so constructed that while the usual working pressure is maintained, certain parts of the device will be retained in positions such as to close air ports adjacent to a whistle device, and when the pressure is reduced, will automatically act to open such ports and permit of the escape of pressure through them. This air then being directed on to the whistle, will cause the whistle to sound and thereby give the alarm.

The appliance is illustrated in the accompanying drawings and will be hereinafter fully explained in relation to such drawings, in which—

Figure 1 is an elevation of the appliance.

Figure 2 is a sectional elevation thereof.

Figure 3 is a sectional plan taken on the line 3—3 of Figure 2.

Figure 4 is a sectional plan taken on the line 4—4 of Figure 2.

The alarm is formed by a cylindrical casing A closed at its inner end by a cap A' having means for its connection with the air system as the coupling *a* and also having a plate B with apertures therein, extending across its end between the casing and the said cap. The outer end of the casing A is closed by a screw plug C fitting into it and formed with a central bore C' extending right through and the outer end of which is enlarged as at C² and female screw threaded to receive the threaded socket piece end of a pin D, the other end of which has the whistle E attached to it. The plug C is also formed with a number of port passages F radiating from the bore

C' within the position of the socket piece of the pin D and then bending outwards through the end of the plug around the said whistle pin. These passages F may enter at their outer ends into a groove *c* in the end of the plug and such groove may have positioned in it a spreader flange D' formed on the said pin which will serve to spread the air jets that emerge through the passages F, into a ring and then direct such on to the whistle.

Fitted into the cylindrical casing A is a piston G and attached to it or formed integral therewith is a hollow sleeve H that makes a neat sliding fit within the bore C' of the plug C. The piston G itself is formed with a central recess J in a line continuous with the bore of the sleeve H and the opening of such recess is formed as a valve seat. A flat valve K is provided to fit on to such seat and is attached to a stem K' that passes right up through the hollow sleeve H and projects beyond its outer end. This stem K' is made of a cross sectional shape such as to leave spaces between its surface and the inner wall of the bore extending right through its length, as for instance, the triangular shape shown in Figures 3 and 4. A spring M surrounds the stem K' within the recess J in the piston, and serves normally to press the valve K in from its seat over such recess. The piston itself is spring controlled by a spring N contained within the casing A between the piston and the outer end of the said casing and this spring serves to force the piston inward on to the plate B and when in such position the sleeve H uncovers the ports F in the plug bore beforementioned. This spring, however, is so adjusted that in the normal conditions of affairs, under which the full air pressure of the system is acting on the inner side of the piston, the piston will be forced outward in the casing A and the sleeve H will project across and cover the said ports F, as shown by the full lines in Figure 2. The valve K too by reason of this pressure upon it will be kept on its seat and its stem K' in engagement with a buffer washer O on the inner face of the socket piece D at the outer end of the plug bore.

When the pressure falls below the fixed degree, the spring M controlling the valve K will force the same away from its seat

over the recess J thereby allowing the compressed air of the system to pass up the bore of the sleeve H. The spring N controlling the piston G will also act to force the piston
 5 in so that the sleeve H will be likewise moved in to uncover the ports F in the plug, as indicated by the dotted lines in Figure 2, and thereby allow the air pressure to pass up through the sleeve, escape through the ports
 10 F, and being directed on to the whistle E mounted on the end of the device thus to sound the whistle in the manner desired. When the normal pressure is restored the ports F will be again closed and the valve
 15 K forced back upon its seat.

I claim:—

1. A pressure alarm comprising a cylinder adapted to be connected at its inner end to the pressure system; a plug closing the outer
 20 end of the said cylinder, and formed with a central bore extending through it and with radial bores opening from the side of the central bore and then extending out through the said plug; a whistle device mounted at
 25 the outer end of the central bore and on to which the said ports open; a piston movably mounted in the said cylinder and being under the pressure of the system, a spring controlling said piston and adapted to move
 30 it inwards when the said pressure falls below a predetermined amount, and a hollow sleeve attached to the outer side of said piston opening through the piston, and fitting the bore in the said plug, adapted to close
 35 the said port openings when the said piston moves outward and to uncover them when the piston moves inwards.

2. A pressure alarm comprising a cylinder adapted to be connected at its inner end
 40 with the pressure system; a plug closing its outer end and having ports extending through it to the outer side, a whistle device mounted upon such plug and on to which the said ports open; a spring-controlled mov-
 45 able piston having a central opening fitted

within the said cylinder so as to move outwards with the normal pressure of the pressure system in the inner end of the cylinder, and inwards when such pressure decreases, means upon the said piston whereby the said
 50 ports may be closed and opened by the respective movements of the piston in and out, a spring controlled valve fitted over the inside of the opening through the piston and adapted while the normal pressure of the
 55 system is maintained to seal such opening, and when the pressure decreases to uncover it.

3. A pressure alarm comprising a cylinder adapted to be connected at its inner end
 60 with the pressure system, a plug closing its outer end and having a centrally extending bore and ports opening radially from the bore and extending out through the end of the said plug; a whistle device mounted at
 65 the outer end of the bore, a movable piston having a central opening through it; a hollow sleeve extending from its outer side from such opening and fitting within the bore of the said plug so as to slide therein
 70 with the movements of the said piston; a valve fitted in the inner side of the said piston for closing the opening through it and having its stem loosely fitting within the said sleeve, a spring controlling such
 75 valve so as to permit the same to close when the normal pressure from the system is maintained in the inner end of the cylinder and to force it open when such pressure is reduced, and a spring controlling the said
 80 piston so as to provide for it moving outwards with the maintenance of the system's pressure and inwards when such pressure decreases.

In testimony whereof, I affix my signature.

FRANK MONTAGUE EVELEIGH.

Witnesses:

DAVID BROWN HUTTON,
 ROBERT EDWARD BATTY.