July 23, 1940. G. K. MILLER 2,208,909

PRESSURE ALARM

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Fig. 1.

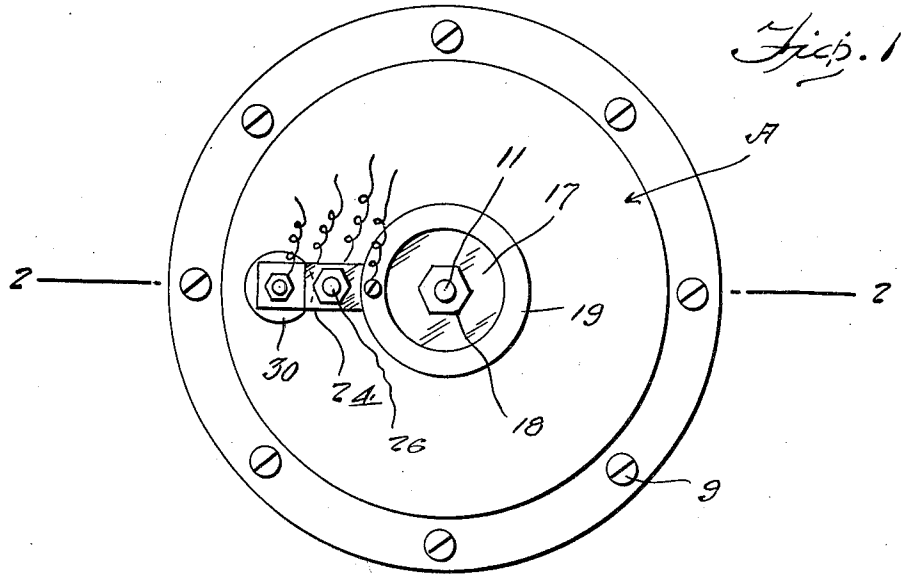
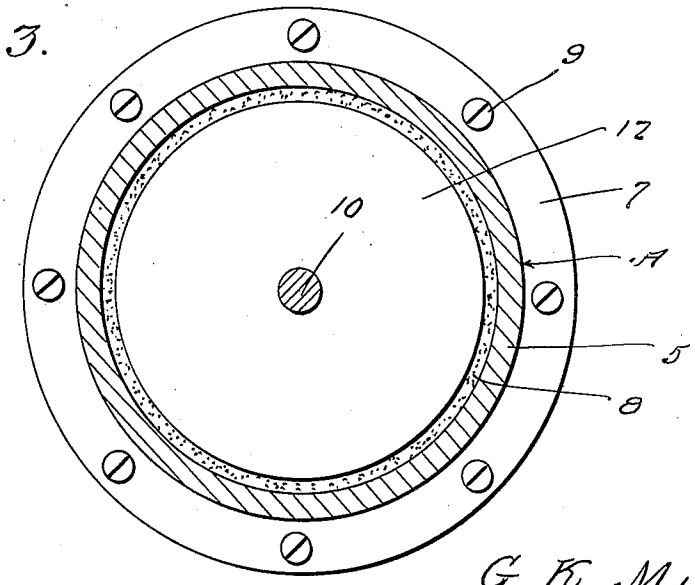


Fig. 3.



Inventor

G. K. Miller

By Clarence A. O'Brien and Hyman Berman

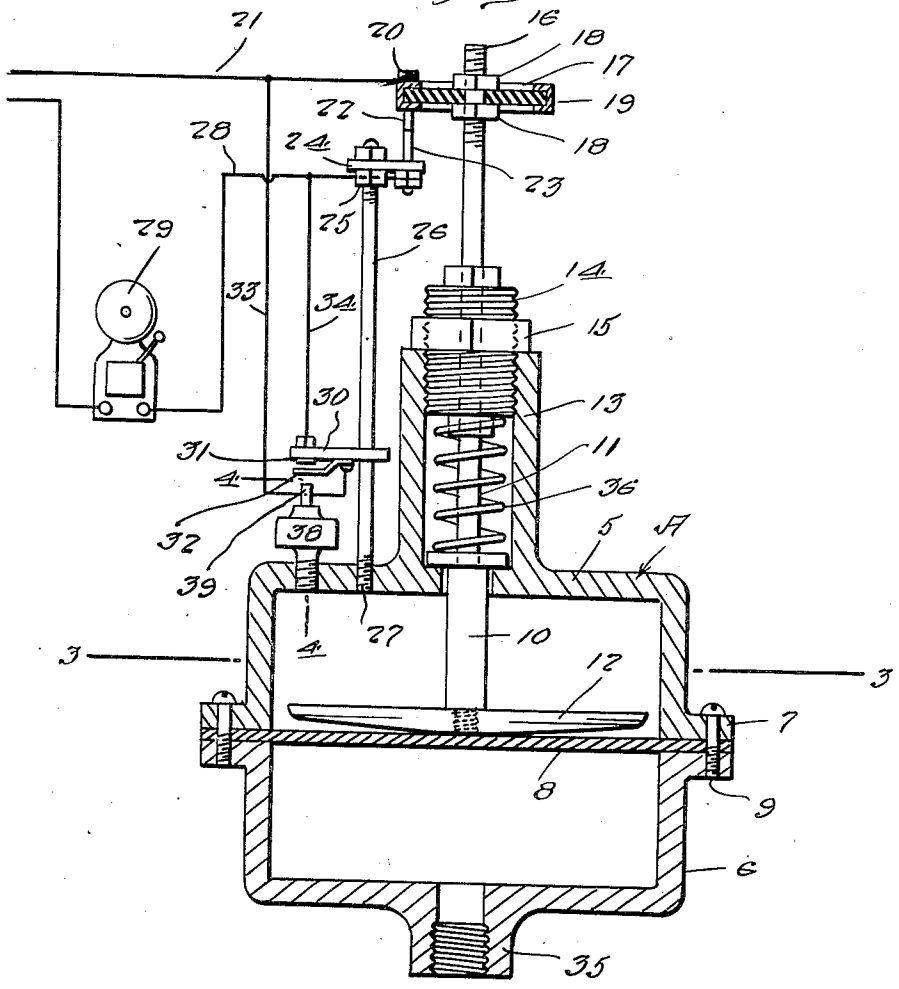
Attorneys

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PRESSURE ALARM

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Fig. 2.



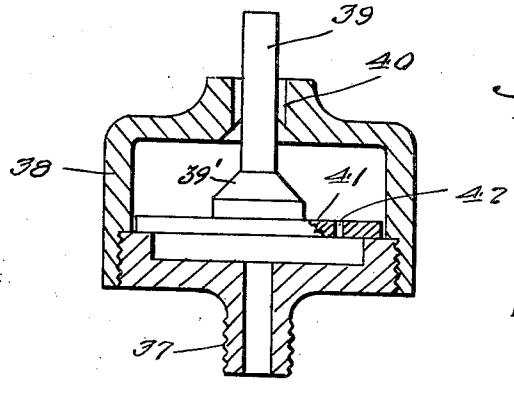


Fig. 4.

Inventor

G. K. Miller

By Clarence A. O'Brien and Hyman Berman

Attorneys

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UNITED STATES PATENT OFFICE

2,208,909

PRESSURE ALARM

George K. Miller, Mobile, Ala.

Application July 7, 1938, Serial No. 218,027

3 Claims. (Cl. 200—83)

This invention appertains to new and useful improvements in electrical signaling and more particularly to a pressure responsive alarm.

The principal object of the present invention is to provide an alarm responsive to the pressure in pressure lines for annunciating the existence of low pressure or the presence of a broken diaphragm in the pressure responsive switch.

Another important object of the invention is to provide an apparatus of the character stated which will be positive acting, of simple construction and substantially fool-proof in operation.

These and various other important objects and advantages of the invention will become apparent to the reader of the following specification.

In the drawings:

Figure 1 represents a top plan view of the switch means.

Figure 2 is a vertical sectional view on the line 2—2 of Figure 1.

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

Figure 4 is a sectional view taken substantially on the line 4—4 of Figure 2 showing the adjunct removed from the case.

Referring to the drawings wherein like numerals designate like parts, it can be seen that the apparatus consists of the case A made up of the upper section 5 and the lower section 6. The opposed portions of these sections 5 and 6 are flanged outwardly as at 7 and between these flanged portions are disposed the edge portions of the diaphragm 8. Suitable securing means 9 is employed for securing the flanged portions 7 together against the diaphragm. Numeral 10 denotes the lower enlarged portion of the stem 11 which has the follower plate 12 detachably secured to the lower portion thereof.

The stem 11 extends upwardly in the neck 13 of the section 5 and through the packing gland 14, this gland being threadedly disposed into the neck 13 and having a jam nut 15 thereon for engaging the upper end of the neck.

The stem 11 is provided with the upper threaded portion 16 which extends through the disk 17 of insulation and nuts 18 are provided on this threaded portion 16 at opposite sides of the disk 17 for securing the disk at the desired position on the stem.

A rim 19 of current conductive material has the binding post 20 thereon to which the conductor 21 connects and from this rim 19 depends the contact pin 22 opposed to the contact pin 23 on the laterally extending arm 24 which is secured as at 25 to the upper end of the post 26, the lower end of the post being threadedly engaged as at 27 in the shoulder portion of the section 5 of the case.

The conductor wire 28 from the alarm 29 connects to the contact 23, it being understood that the arm 24 is of insulation.

A second arm of insulation 30 is carried by the lower portion of the post 26 and this arm has a stationary contact 31 thereon and also the spring contact 32 and to this spring contact connects the jumper 33 which extends from the conductor 21. A jumper 34 extends from the conductor 28 to the contact 31.

It can be seen that normally pressure in the lower chamber 6 which is connected by the internally threaded nipple 35 to the pressure line will hold the diaphragm 8 bulged upwardly maintaining the stem 11 elevated and the contacts 22—23 separated.

Whenever pressure in the section 6 drops, the spring 36 urges the stem downwardly and the contacts 22—23 come together for starting the alarm 29.

An externally threaded nipple 37 is threadedly disposed into the shoulder portion of the section 5 and has the cap structure 38 threadedly engaged over the same. A plunger 39 extends through the opening 40 in the upper portion of the cap 38, the lower portion of this plunger being connected to the follower plate 41 which may have several small openings 42 therein.

The lower end of the plunger 39 forms a valve 39' for closing the lower end of the opening 40 when the plate 41 is in raised position. Thus this part of the device permits atmospheric air to enter the upper part of the casing A and to permit the escape of air from the upper part of the case when the diaphragm rises and if there is a sudden increase of pressure in the line to which the device is connected which would be sufficient to move the diaphragm 8 upwardly to an abnormal degree the sudden pressure formed in the upper part of the case A would raise the plate 41 so that the upper end of the member 39 will engage the spring 32 and move it against the contact 31 so as to close the circuit to the alarm which would indicate to the attendant that something was wrong for he would readily see that the contact 22 was out of engagement with the contact 23 and this would show him that the alarm had not been sounded due to low pressure and he could tell that it was due to high pressure by seeing that the member 39 was in raised position. Also if the diaphragm should break the upward movement of this member 39 due to the

high pressure occurring in the chamber or case A would indicate to the attendant that something had occurred within the case to have caused the member 39 to raise. Any escape of fluid from the case A if the diaphragm should break would be prevented by the valve part 39' engaging the seat formed by the under part of the opening 40 which would close said opening and thus prevent the escape of fluid therefrom.

While the foregoing specification sets forth the invention in specific terms, it is to be understood that numerous changes in the shape, size and materials may be resorted to without departing from the spirit and scope of the invention as claimed hereinafter.

Having described the invention, what is claimed as new is:

1. In a pressure alarm including a case, a diaphragm extending across the case and dividing the same into two chambers and circuit control means actuated by the diaphragm; a casing connected with the case and in communication with the chamber therein above the diaphragm, said casing having an opening in its top, a rod passing through the opening, a plate connected to the lower end of the rod and located in the casing and having a perforation therein for permitting air to pass through the casing into the case above the diaphragm, said plate and the rod rising when high pressure occurs in the case and a switch closed by the rod when the same moves upwardly.

2. In a pressure alarm including a case, a diaphragm extending across the case and dividing the same into two chambers and circuit control means actuated by the diaphragm; a casing connected with the case and in communication with the chamber therein above the diaphragm, said casing having an opening in its top, a rod passing through the opening, a plate connected to the lower end of the rod and located in the casing and having a perforation therein for permitting air to pass through the casing into the case above the diaphragm, said plate and the rod rising when high pressure occurs in the case, and means at the lower end of the rod for closing the opening in the casing when the rod rises to a certain extent.

3. In a pressure alarm including a case, a diaphragm extending across the case and dividing the same into two chambers and circuit control means actuated by the diaphragm; a casing connected with the case and in communication with the chamber therein above the diaphragm, said casing having an opening in its top, a rod passing through the opening, a plate connected to the lower end of the rod and located in the casing and having a perforation therein for permitting air to pass through the casing into the case above the diaphragm, said plate and the rod rising when high pressure occurs in the case, and means at the lower end of the rod for closing the opening in the casing when the rod rises to a certain extent, and a switch closed by the rod when the same moves upwardly.

GEORGE K. MILLER.