

No. 817,009.

PATENTED APR. 3, 1906.

A. L. SCHULTZ.

AUTOMATIC ALARM FOR GAS PIPES.

APPLICATION FILED NOV. 28, 1904. RENEWED NOV. 11, 1905.

2 SHEETS--SHEET 1.

Fig. 1.

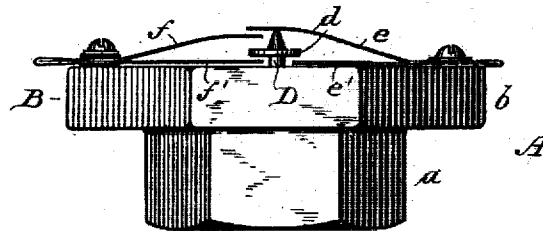


Fig. 2.

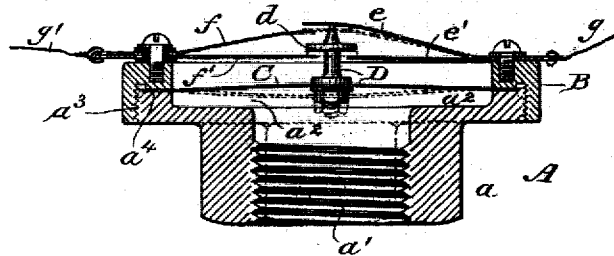
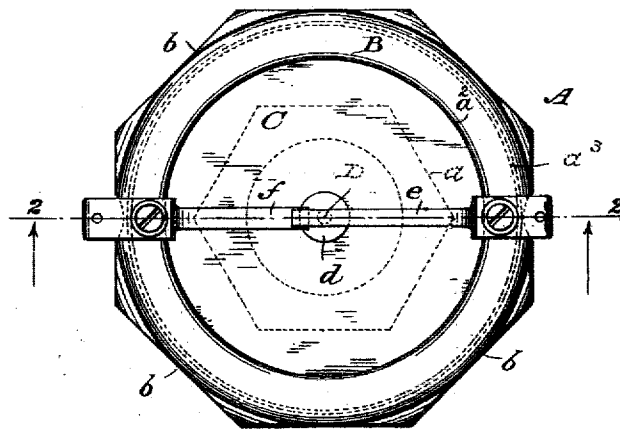


Fig. 3.



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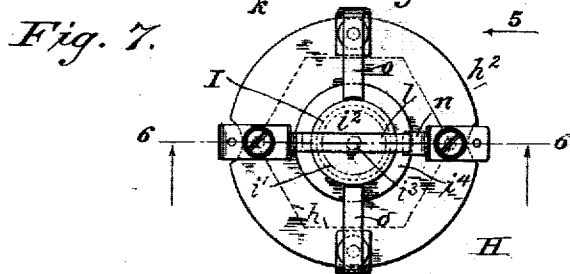
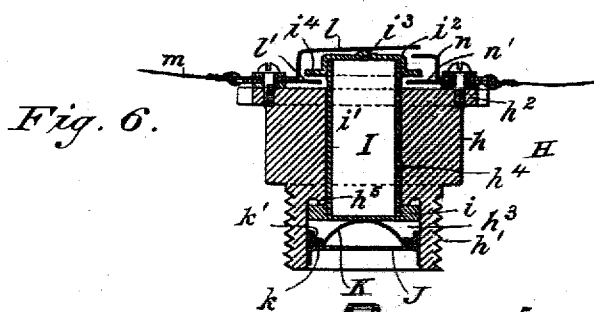
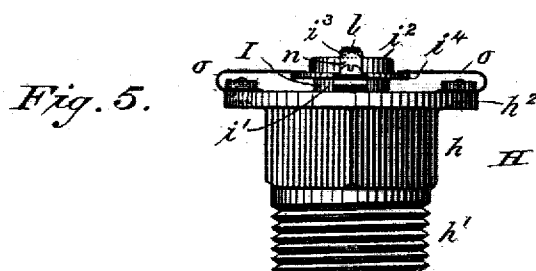
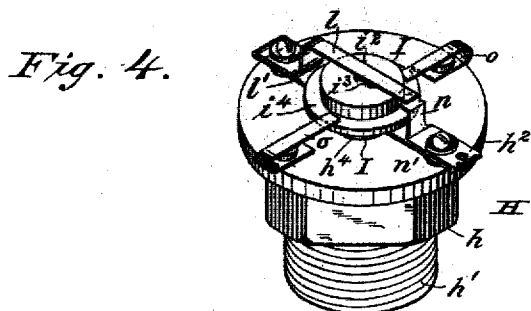
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC ALARM FOR GAS-PIPES.

No. 817,009.

Specification of Letters Patent.

Patented April 3, 1906.

Application filed November 28, 1904. Renewed November 11, 1905. Serial No. 286,913.

To all whom it may concern:

Be it known that I, AUGUST L. SCHULTZ, a citizen of the United States, residing at Cleveland, Cuyahoga county, Ohio, have invented certain new and useful Improvements in Automatic Alarms for Gas-Pipes, of which the following is a specification, that will enable those skilled in the art to which my invention pertains to make and use the same, reference being had to the accompanying drawings, forming a part thereof.

This invention relates to a device for automatically giving notice of the dangerous lowering or the cessation of pressure in pipes, particularly in service-pipes for the delivery of gas to dwellings, &c. Its object is to have the mechanism controlled by the pressure and remain quiescent during the maintenance of normally safe pressures in the pipe; but when the pressure passes below the safe limit it becomes active and operates suitable signaling devices that give notice of the fact and warn the householder to take measures accordingly.

The invention consists of certain details of construction and combinations of parts, as will hereinafter be specifically described and claimed.

The accompanying drawings show this invention in details and combinations now deemed most desirable; but changes not requiring the exercise of invention might be made therein by a skilful mechanic without departure from the spirit of my invention as set forth in the claim at the end of this specification.

Figure 1 is a side elevation of a device embodying my invention in its preferred form. Fig. 2 is a section of the same on the line 2 2 of Fig. 3. Fig. 3 is a plan view of the same. Fig. 4 is a perspective view of a modified form of the device. Fig. 5 is an elevation of the same as viewed from the direction of the arrow 5 in Fig. 7. Fig. 6 is a section on the line 6 6 of Fig. 7. Fig. 7 is a plan view.

In the construction illustrated by Figs. 1, 2, and 3 the body A of my alarm device is provided with a hexagonal extension a , internally screw-threaded, as at a' , for attachment to a gas-pipe. The main portion of the body is recessed or chambered, as at a^2 , and screw-threaded at its periphery a^3 for the reception of a cap-ring B. A recessed seat a^4 is formed on the body for the reception of a

flexible diaphragm C, which closes the chamber a^2 and is clamped on its seat by the cap-ring B, the latter being provided with polygonal sides b , preferably octagonal, for engagement by a wrench. The diaphragm, which may be made of thin sheet metal or rubber or other yielding or pliable substance, is delicately yielding and when relieved from pressure stands normally in the position shown by dotted lines in Fig. 2; but when subjected to the pressure of gas in the pipes it is sprung outwardly to the position shown by full lines and there remains during the continuance of the pressure to which it is adapted. At the center of the diaphragm is secured a stud-pin D, adapted to move freely with the diaphragm and having just below its end an annular flange d . Secured to the face of the cap-ring B is a spring contact-finger e , which bears upon the end of the pin D, and also another contact-finger e' , the free end of which lies normally below but in the path of the flange d on the pin. At the opposite side of the cap-ring are secured two other contact-fingers f and f' , insulated from the ring and standing with their free ends one below the projecting end of the spring e and the other below the flange d of the pin. Now these respective pairs of fingers e e' and f f' are connected by the wires g g' of an electric circuit, included in which is a battery and call-bell, or from any other desired form of annunciator. When the device is in service and the parts in position shown in full lines in Fig. 2, the diaphragm being held up by the gas-pressure, the electrical connection is broken and no current goes through the circuit; but when the pressure ceases and the diaphragm falls to the position shown by dotted lines the circuit is closed through either the fingers e and f or through the fingers e' , flange d , and finger f' , or maybe through both paths, the duplication of contact-paths insuring the closing of the circuit and the operation of the alarm or indicator. This is regarded as an important feature of the invention, for with the duplication of the closing contact-points the chance of failure to close through the presence of dust or corrosion is greatly lessened.

In Figs. 4, 5, 6, and 7 I show a modified form of my device in which the body or base H has a hexagonal section h , with a screw-threaded nipple h' at one end and a flange h^2 at the other. In the lower end of the body is

formed a chamber h^3 , from which a bore h^4 extends through to the top of the body. Around the entrance to this bore a raised seat h^5 is formed in the chamber. A valve I fits in this bore and has a head or flange i , adapted to bear upon the seat h^5 . This valve is preferably composed of a thin metallic tube i' , with the head i pressed upon one end and a cap i^2 upon its other end, which projects out of the body, as shown. For the purpose of securing lightness I prefer to make the valve parts of aluminium and to make them as thin as may be found practicable. Below the valve in the chamber h^3 there is secured a perforated partition or screen J , and above or inside of this a flexible diaphragm K , preferably made of thin rubber or the like, and held at its edges by two clamping-rings $k k'$, pressed into place. When the gas-pressure is on, it passes through the screen and pushes the rubber up against the lower end of the valve and the valve against its seat, as shown in Fig. 6. The cap i^2 of the valve has a central point or projection i^3 and an annular flange i^4 . On the top of the body are secured a pair of spring contact-fingers l and l' , with their free ends extending one above and across the cap and the other below the flange of the cap. The wire m connects these fingers in one side of an electric circuit containing a battery and an alarm-bell or indicator. Other spring contact-fingers $n n'$ are also secured to the top of the body, but insulated from it, as shown. One of these fingers n lies under and in the path of the finger l , while the other lies below the flange i^4 of the cap. Now if the pressure in the pipe fails and the valve sinks the fingers l and n will first contact to close the circuit, and then the flange i^4 on the valve-cap will contact with fingers l' and n' , making an additional closure or path for the electric current. As a still further precaution I may

employ the additional spring-fingers $o o$, attached to the body of the valve and bearing with their free ends upon the top of the valve-cap flange. These not only serve as conductors of the current to the valve-cap, but they also act as guides to steady that portion of the valve projecting from the bore in body.

Having thus described my invention, what I claim as new and useful, and desire to secure by Letters Patent, is—

In an automatic alarm for gas-pipes the combination of a base adapted to be screwed onto a service-pipe, a chamber within said base with access thereto from the pipe, a flexible diaphragm across said chamber, a member adapted to be moved by said diaphragm, a flange on said member, an electrical spring contact-finger with its free end bearing upon and overhanging the end of said member and another finger electrically connected with the first and having its free end beneath and in the path of the flange on said member, with another pair of spring contact-fingers electrically connected to each other but insulated from the base, &c., the free end of one lying below but in the path of the first finger herein mentioned while the free end of the other lies below but in the path of the flange on the diaphragm member, all of said contact being connected in an electric circuit and adapted when the diaphragm and its member move to make several independent closures of the said electric circuit, substantially as and for the purpose hereinbefore set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

AUGUST L. SCHULTZ.

Witnesses:

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S. C. BLAKE.