

(No Model.)

W. WAEGEL.
SAFETY LAMP.

No. 562,208.

Patented June 16, 1896.

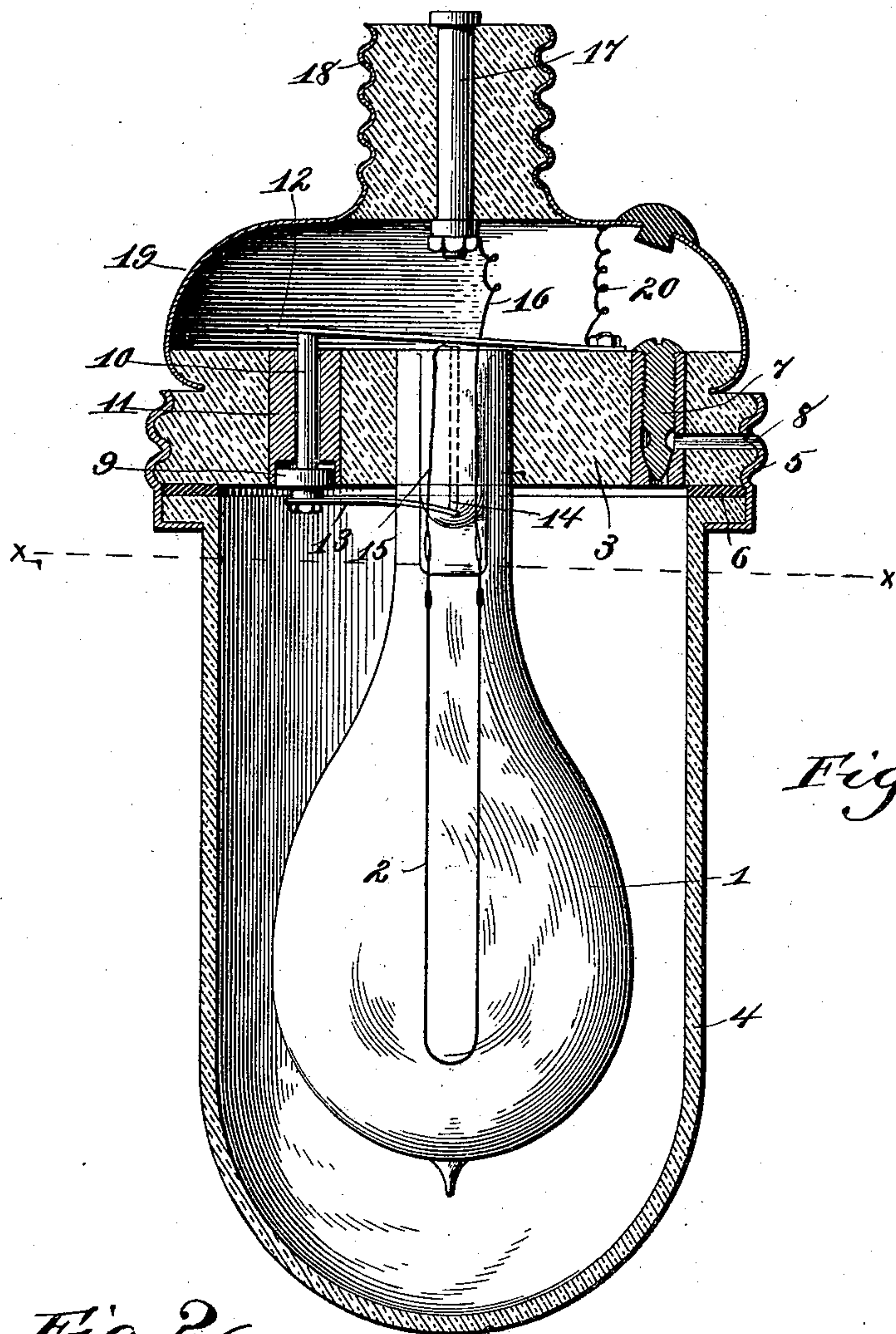
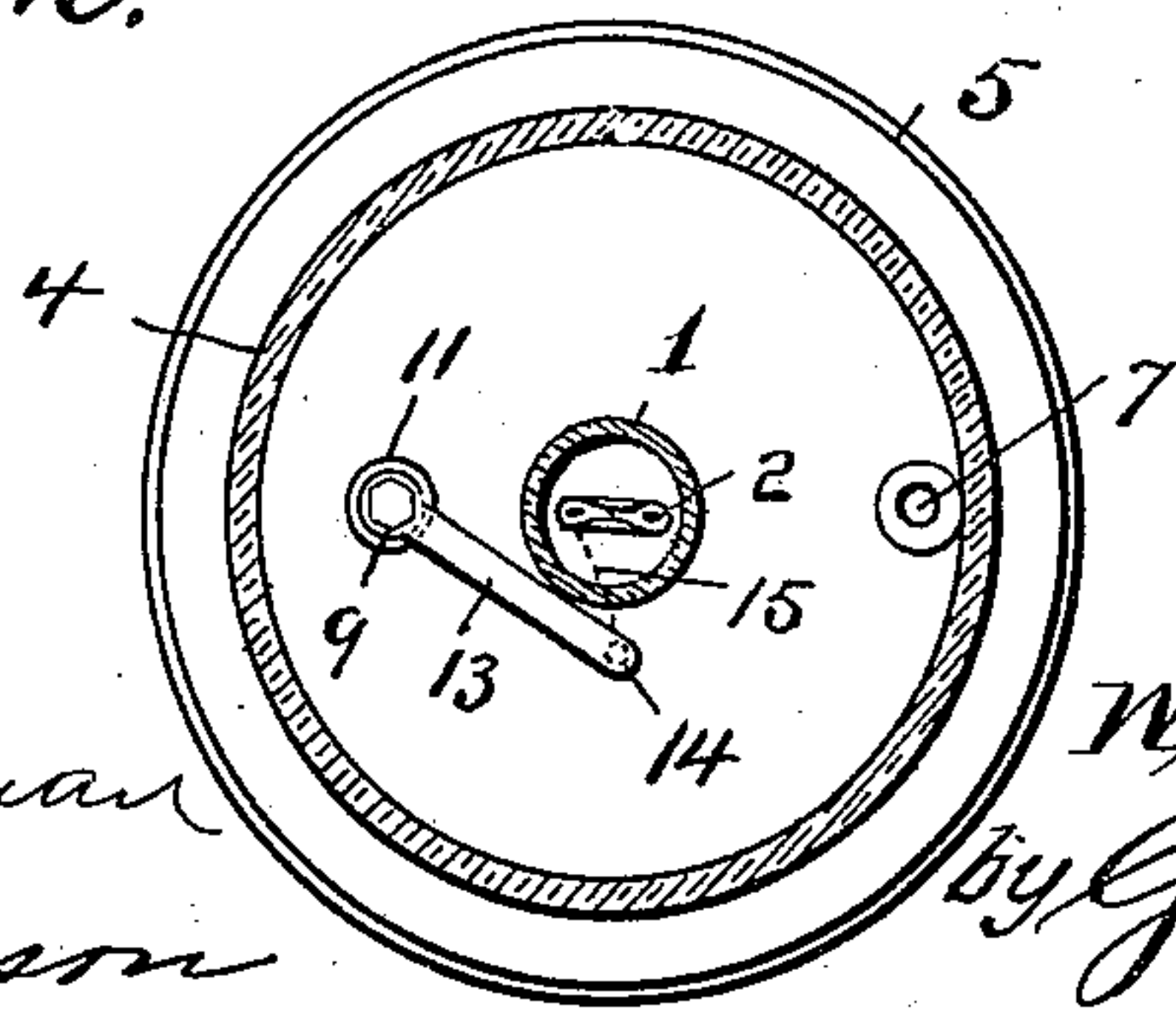


Fig. 1.

Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

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SAFETY-LAMP.

SPECIFICATION forming part of Letters Patent No. 562,208, dated June 16, 1896.

Application filed October 22, 1895. Serial No. 566,506. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WAEGEL, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Safety-Lamps, of which the following is a specification.

My invention relates to a new and useful improvement in safety incandescent lamps for mines and the like, where such lamps are likely to be surrounded by inflammable or explosive gas, and has for its object to provide such an arrangement that will so protect the lamp from contact with the surrounding atmosphere or gas as to prevent an explosion, even though the casing and lamp should be broken.

With these ends in view my invention consists in the details of construction and combination of elements hereinafter set forth, and then specifically designated by the claim.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, I will describe its construction and operation in detail, reference being had to the accompanying drawings, forming part of the specification, in which—

Figure 1 is a vertical central section of the casing, showing the globe, &c., in elevation; and Fig. 2 is a horizontal sectional view of a complete lamp, taken on the line *xx* of Fig. 1.

Referring to the drawings, 1 represents an ordinary incandescent-lamp globe, having the usual film 2, and 3 is a setting of non-conducting material, in which are the globe and film, which are secured in any well-known manner.

4 is a casing of glass, which is secured to the setting 3 by the corrugated collar 5; and 6 is a rubber washer, interposed between the casing 4 and the setting 3, for the purpose of hermetically sealing said casing.

7 is a screw-valve leading into the casing and having connected therewith an opening 8, through which a suitable extinguishing-gas—such as carbonic-acid gas—may be forced when the valve is backed off of its seat, and this gas may then be retained under pressure in the casing by closing the valve, as will be readily understood.

9 is a valve carried by the stem 10, which passes through the plug 11, arranged in the setting 3; and 12 is a contact-spring which presses upon the upper end of this stem, which acts to force the valve from off its seat, for the purpose hereinafter set forth.

13 is a light contact-spring secured to the lower side of the valve and having its free end in the field of the pin 14, and when in the position shown in the drawings presses against said pin. This pin is connected with one end of the film-wire 15, the other film-wire 16 passing up and forming a connection with the plug 17 in the socket 18. This socket is for the ordinary purpose of connecting the lamp with the other fixtures. Arranged around the outer side of the non-conducting center of the socket is a housing, from which the wire 20 leads to the spring 12. From this it will be seen that as long as the valve 9 is in the position shown, and the spring 13 in contact with the pin 14, the circuit will be complete and the lamp permitted to glow; but should the pressure in the casing 4 be reduced below the pressure of the spring 12, the valve 9 will be forced down by the latter, carrying with it the contact-spring 13, which, when moved out of contact with the pin 14, will break the circuit and stop the passage of the current over the film.

In use, the casing 4 is filled with an extinguishing gas or liquid, under a pressure sufficient to force the valve 9 firmly against its seat, by means of which the circuit, as before described, will be completed, so that should the casing and globe be broken, the lamp will be immediately extinguished, first by the shutting off of the current, and then by the inrush of the extinguishing-gas; and as this gas is under pressure it will be seen that it will also expand, completely enveloping the lamp until the parts thereof become cool. Thus an explosion is impossible. It will also be noticed that the making and breaking of the circuit is at a point which is entirely inclosed within the case and entirely surrounded by the extinguishing-gas, so that no explosion can occur at this point.

I am aware that slight modifications might be made in the exact construction here shown and described, and I do not wish to limit myself thereto, as the gist of my invention rests

in the broad idea of providing a safety-envelop for an incandescent lamp, in which sufficient pressure is maintained to close the circuit, and which, when broken, will automatically shut off the current and envelop the lamp with a non-combustible gas, until the latter has cooled.

Having thus fully described my invention, what I claim as new and useful is—

10 In a device of the character described, an incandescent lamp, a casing 4, by which said lamp is surrounded and hermetically sealed, a valve 7, through which said casing may be filled with an extinguishing-gas, a valve 9,
15 adapted to be closed upon its seat by means

of said gas, a spring 13, carried by said valve and adapted to close the electric circuit when said valve is closed and break said circuit when said valve is open, and the spring 12, adapted to open the valve 9, when the pressure in the casing is relieved, as shown and specified.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

WILLIAM WAEGEL.

Witnesses:

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