

SAFETY SIGNALING DEVICE FOR GAS CONNECTIONS.

997,987.

Patented July 18, 1911.

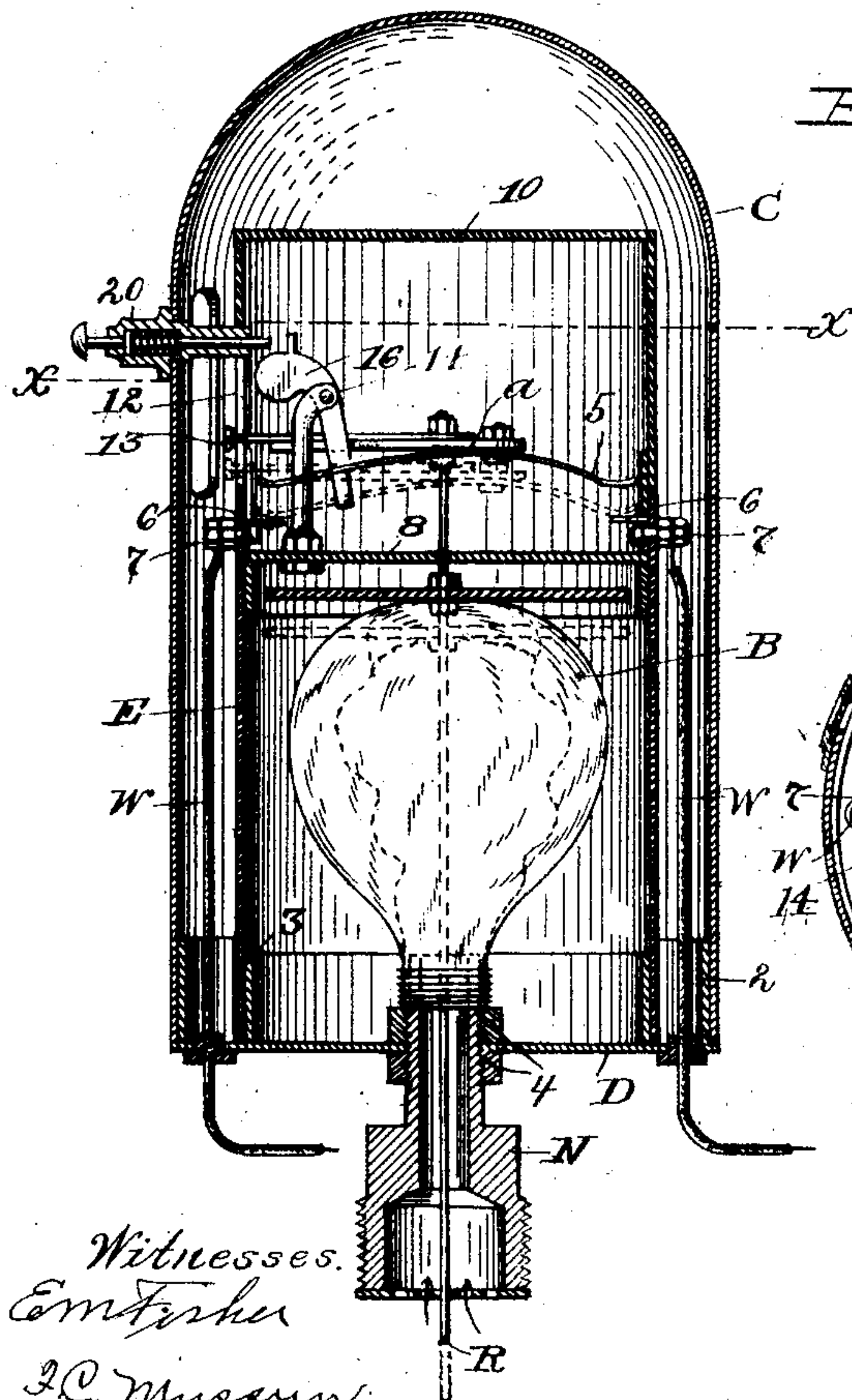
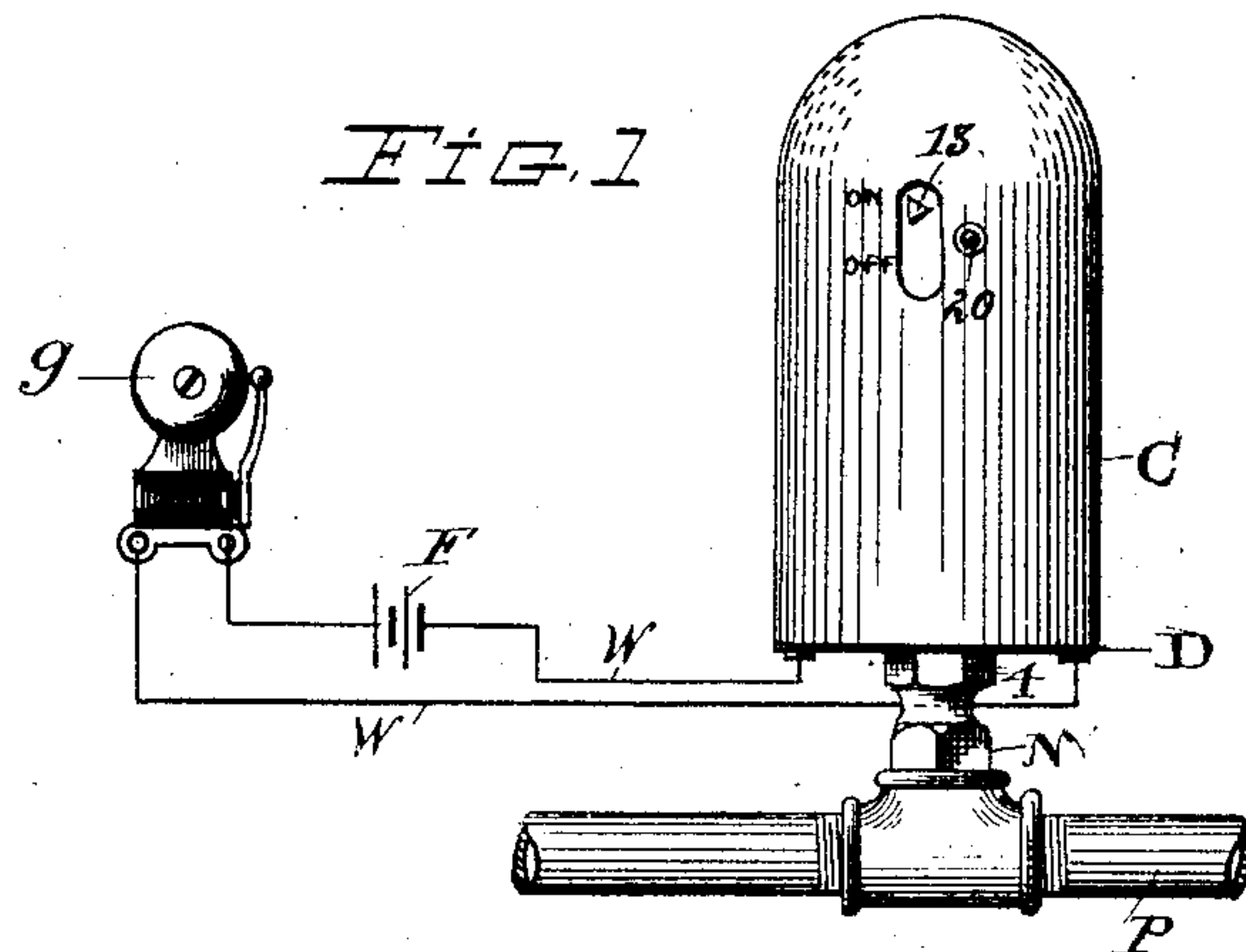
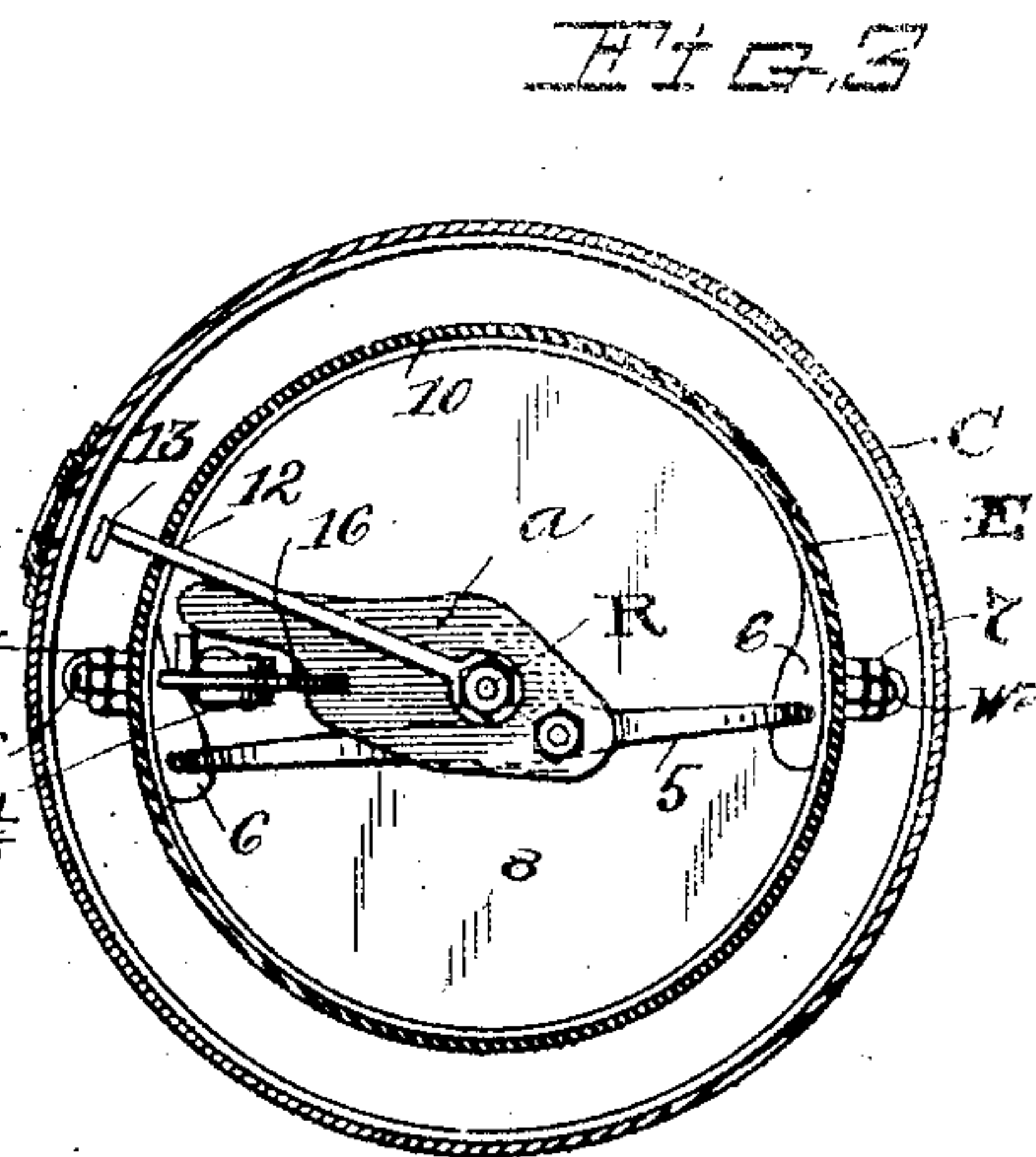


FIG. 2



71-15-3

Witnesses.  
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# UNITED STATES PATENT OFFICE.

FERDINAND FREY, OF CLEVELAND, OHIO.

SAFETY SIGNALING DEVICE FOR GAS CONNECTIONS.

997,987.

Specification of Letters Patent.

Patented July 18, 1911.

Application filed November 2, 1910. Serial No. 590,280.

*To all whom it may concern:*

Be it known that I, FERDINAND FREY, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Safety Signaling Devices for Gas Connections, of which the following is a specification.

My invention relates to a safety signaling device for gas connections adapted to give warning when the pressure of gas falls below a given minimum, or where a flame would probably die out for want of sustained volume and pressure.

In the accompanying drawings, Figure 1 is a side elevation of the device including an electrically connected alarm bell. Fig. 2 is a central sectional elevation of the device, and Fig. 3 is a plan view on a line corresponding to  $x-x$ , Fig. 2.

P represents a gas supply or service pipe to a burner or light in a residence or other building, and the safety device shown is removably supported from a coupling in said pipe by means of an externally threaded stem or nipple N. The device as such is carried by this stem or nipple and comprises an outer inclosing casing C of dome pattern having a base D with two annular flanges 2 and 3 and said base is secured on said nipple at its center by two ring nuts 4 on opposite sides of said base. The casing C is of metal and seated over said outer flange 2, and an inner tube E of non-conducting material is sleeved over said inner flange 3 and contains or supports the electrical mechanism. Said mechanism comprises an inflatable member or bag B of balloon pattern in this instance with a narrow neck or throat bound upon the end of nipple N by cords or wire and adapted to be inflated and expanded upward more or less when filled with gas under pressure from pipe P through said nipple. A slight rod or piece of heavy straight wire R extends up through the said bag and is secured to the top thereof in such manner that the rod will be controlled by the bag and rise and fall with it when inflation or deflation occurs. Normally the bag is expanded and the said rod R is raised as in full lines, but when the bag becomes deflated by fall of pressure of gas it collapses correspondingly and said rod drops with it. A spring metal contact member referred to as a switch, 5, is carried at the top and side of said rod by

a non-conducting support  $a$  fixed on the end of the rod and said switch is bow shaped and reaches across between the two copper or other spring metal terminals 6 affixed to the side of cylinder E and electrically engaged through said cylinder or tube by screws 7 or the like having the electrical wires W connected therewith. These wires are in circuit with battery F and bell G, and it is arranged that when the bag B becomes deflated to the danger point the switch or connection 5 carried by rod R will drop into contact with said terminals 6 at its ends and close the circuit on the battery and ring the alarm bell. Said rod has a limited up and down movement to the top of the bag as above set forth and the switch 5 is carried on the non-conducting support or plate  $a$  relatively at one side of said rod, so that the rod is suspended when the said switch is closed on said terminals. It will also be noted that rod R projects through a hole in a diaphragm 8 in the top of housing tube E as a guide and stay therefor and that said electrical devices are above said diaphragm and beneath the removable cap or cover 10 on said tube. Said cap has a lengthwise slot 12 in its side through which an indicator finger 13 projects from the top of rod R, and a pointer at its end is adapted to show on a scale on the outside of tube E when the gas is "on" or "off" as the case may be, and discloses to an observer through a window or opening in outer casing C at which point the finger 13 stands. A post 14 is fixed on said diaphragm 8 upon which is mounted a gravity or weighted pawl or dog 16 having its lower end shouldered or notched to engage over the edge of plate  $a$  and hold it down when the rod R descends and the alarm connections are made, and said parts cannot then become disconnected unless released personally, thus insuring the sounding of the alarm continuously until changed by hand. This is necessary on account of the flow of gas which presumably has been going on meantime through some extinguished burner or jet and which may have flooded a room to the danger point both as to ignition and explosion. A spring pressed push rod or device 20 is therefore provided in casing C opposite a projection on said dog 16 to disengage the same from plate  $a$  and thus permit the rod R to rise and the switch 5 to break the circuit. This being done the parts are understood to be re-



stored to normal and ready to come into alarm position when the gas again goes down. Of course the danger of such change should at least be infrequent in cities where  
 5 a regular pressure is supposed to be maintained, but experience shows that pressure is liable to go down under the best regulated conditions and especially in the use of natural gas, whether the supply be from a main  
 10 or a local well.

The bag B, so-called, may have any preferred shape so long as by its expansion it will operate to open the electrical circuit, or hold it open as set forth.

15 What I claim is:

1. An alarm device as described for gas connections comprising a gas supply pipe and a nipple thereon, an inclosing casing supported on said nipple, a cap seated with-  
 20 in said casing and electric terminals oppositely therein, in combination with an inflatable bag having its neck secured about said nipple, a rod through said nipple and bag and an electrical contact carried by said  
 25 rod and adapted to be lowered into contact with said terminals when said bag is deflated.

2. A gas alarm device comprising a supply pipe and a nipple therein, and inflatable  
 30 bag having its neck secured about said nipple and a cap over said bag supported from said nipple and closed across its bottom, in combination with a rod through said bag fixed to the top thereof, an electrical contact  
 35 fixed to the top of said rod and electrical terminals on said cap adapted to be engaged by said contact when said bag is deflated.

3. A device as described comprising an inflatable bag of substantially balloon shape  
 40 and a gas inlet supporting the same, a rod through said inlet and through the top of

said bag, a circuit closing contact member operatively connected with said rod above  
 said bag, fixed electric terminals above said bag adapted to be engaged by said contact  
 45 member, a separately mounted counterweighted catch and a plate adapted to be engaged thereby connected with said rod, and means to release said catch and permit the rod to rise and the circuit to open. 50

4. The combination of a gas supply pipe and a nipple thereon, an inclosing casing supported from said nipple and a cap within  
 said casing resting on the bottom thereof, electrical terminals on the inside of said  
 55 cap near its top and circuit wires between said casing and cap connected with said terminals, an inflatable bag connected with said nipple within said cap, a rod through said bag and fixed thereto and a contact en-  
 60 gaged at its middle on said rod and adapted to rest on said terminals and thus close the electric circuit.

5. The combination of the inclosing casing and the cap therein and a gas supply  
 65 nipple supporting said parts, with a bag engaged on said nipple in said cap, an operating rod fixed in said bag and extending above the same, electric terminals in said cap and a contact on said rod adapted to engage  
 70 said terminals, a counterweighted catch adapted to hold said contact down on said terminals and a spring pressed push stem through said casing and cap adapted to re-  
 75 lease said catch.

In testimony whereof I affix my signature in the presence of two witnesses.

FERDINAND FREY.

Witnesses:

R. B. MOSER,  
 VIKTOR KONST.