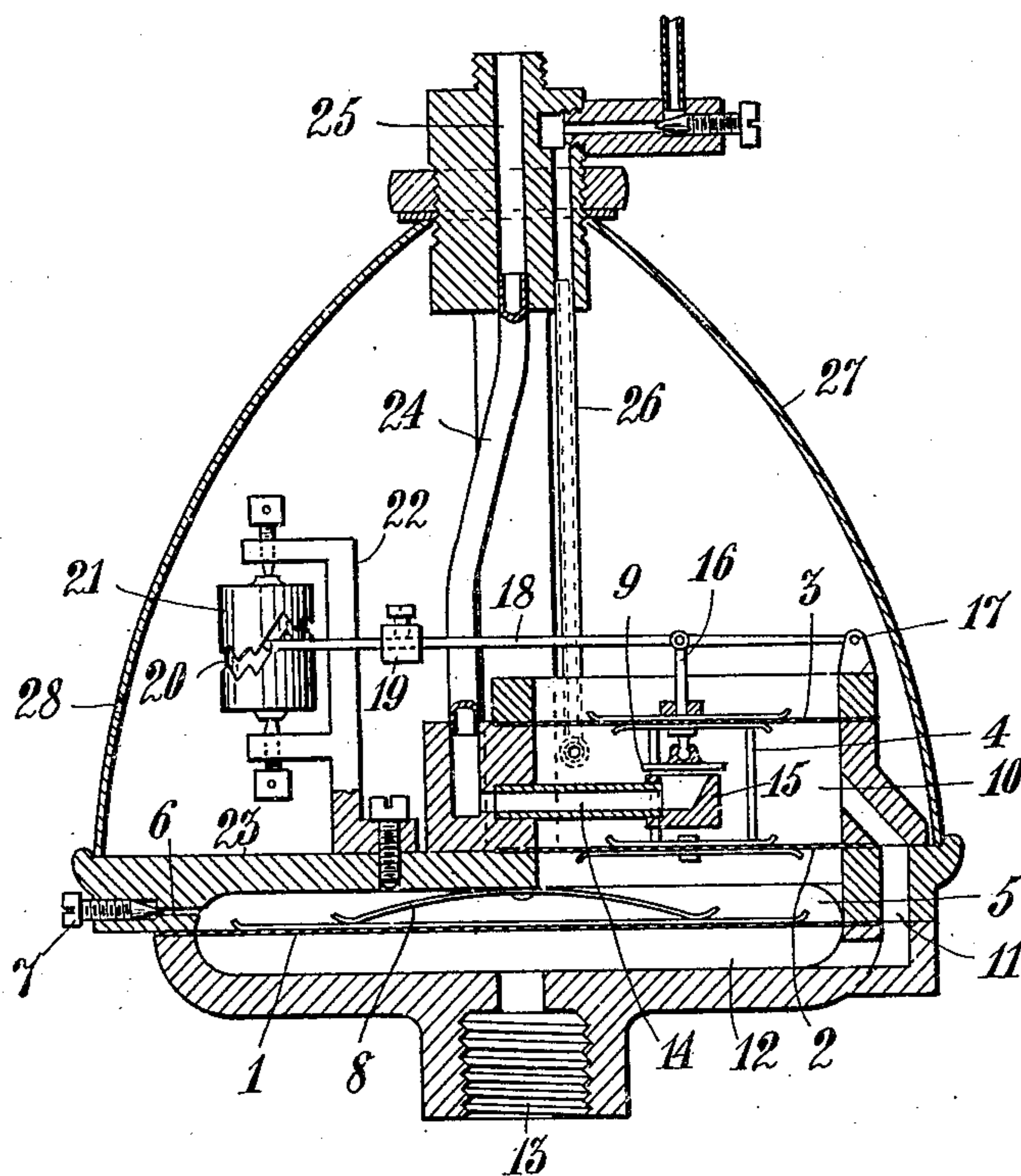


J. F. NÄSSÉN & A. E. T. BERGSTRÖM.
 APPARATUS FOR LIGHTING AND EXTINGUISHING GAS LIGHTS FROM A DISTANCE.
 APPLICATION FILED MAY 5, 1909.

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Witnesses

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, JOHN FRITIOF NÄSSÉN and AXEL EDVIN THEODOR BERGSTRÖM, subjects of the King of Sweden, residing at Stockholm, in the Kingdom of Sweden, have jointly invented new and useful Improvements in Apparatus for Lighting and Extinguishing Gas-Lights from a Distance, of which the following is a specification, reference being had to the drawing accompanying and forming a part hereof.

This invention relates to apparatus for lighting and extinguishing gas lights from a distance.

Several apparatus have heretofore been constructed for lighting and extinguishing gas lights from a distance. These apparatus are generally constructed either so that the lighting is effected by raising and the extinguishing by lowering the gas pressure, or so that the lighting as well as the extinguishing is performed by a series of increases of pressure. Whether the apparatus be constructed according to the one or the other principle, it must always be arranged so as not to be actuated by slow variations in gas pressure due to irregularities in the manufacture and consumption of gas, frictions in the gas conduits, different heights of the lamps etc. In order to fulfil this requirement, it has been proposed to place the diaphragm actuated by the gas pressure and acting in its turn on the gas valve as a partition between two closed chambers connected to each other through a narrow passage in such a manner that the pressure can only slowly expand from the one chamber to the other. A slow variation in pressure at one side of the diaphragm will thus have no influence on the diaphragm, since the pressure has time to spread to the other side of the diaphragm. When, on the other hand, a rapid change in pressure takes place, the diaphragm is moved and actuates the gas valve. In these apparatus it is, however, connected with great difficulties to obtain a sufficiently great movement of the diaphragm without too much increasing the dimensions of the apparatus, since even a very small movement of the diaphragm produces a considerable change of pressure in the chamber, provided said chamber is not very large. The apparatus will, therefore, be big and bulky and in a serious degree spoil the appearance of the lamps.

The object of this invention is to provide an apparatus of the said kind which not only fulfils the requirement that the apparatus is not operated by slow variations in gas pressure but at the same time removes the drawback hereinbefore set forth.

The invention consists, chiefly, in the combination with the gas valve, of a diaphragm or the like operatively connected to the said gas valve, and a second, independently movable diaphragm, suitably of larger extension than the former, said two diaphragms forming between them a closed chamber communicating through a narrow passage with the outer air, so that the valve-operating diaphragm will be actuated when the second diaphragm is rapidly moved by changes of pressure.

The invention further comprises the construction and combination of parts herein- after more particularly described.

In the drawing we have shown a vertical section of an apparatus embodying the invention.

Referring to the drawing, the apparatus is shown provided with three diaphragms, one 1 of which is larger than the two others 2 and 3, which are of about the same size and firmly connected together by one or more rods 4 so that the one diaphragm always partakes in the movements of the other. Situated between the diaphragms 1 and 2 is a chamber 5 communicating through a narrow passage 6 with the outer air. Screwed into the said passage is a regulating screw 7 by which the sectional area of the passage may be regulated. Placed in the chamber 5 is a blade-spring 8 the free ends of which bear on the upper side of the diaphragm 1 so that the spring counteracts the gas pressure acting on the lower side of the diaphragm. The spring is adjusted for an average gas pressure, for instance corresponding to a column of water of a height of 50 millimeters, and need not be provided with any regulating device, it being of no importance if the diaphragm 1 bellies slightly upward or downward.

The gas valve 9 is placed in the chamber 10 between the diaphragms 2 and 3, which chamber communicates through a passage 11 with the chamber 12 below the diaphragm 1 and through the latter chamber with the gas supply conduit 13. A pipe 14 extending into the chamber 10 carries a seat 15 for the

valve disk 9 attached by a ball-and-socket joint or otherwise to the diaphragm 3. This diaphragm is further connected by an arm 16 to a lever 18 pivoted at 17. The lever 18 carries a shiftable weight 19 and is bent at its free end toward the side so as to enter into a groove 20 in the surface of a cylinder 21. The latter is rotatably mounted in vertical position in an arm 22 screwed on to the bottom plate 23. The pipe 14 communicates through a tube 24 with the passage 25 leading to the jet-tips or main burner while the pilot-burner is supplied with gas through a narrower tube 26 issuing from the chamber 10 between the diaphragms 2 and 3. For protecting the parts of the apparatus said parts are inclosed in a casing 27 having a small aperture 28 for smoothing out alterations of pressure in the interior of the apparatus.

The gas enters through the conduit 13 into the chamber 12 from which it passes through the passage 11 into the chamber 10. However, inasmuch as the diaphragms 2 and 3 are of about the same size and connected to each other, the gas pressure cannot produce any movement of the diaphragms, and, on account thereof, the valve 9 remains closed, while, on the other hand, the gas can freely pass through the tube 26 to the pilot-burner. Slow fluctuations of pressure have no influence on the valve, for even if the diaphragm 1 on account thereof rises and sinks, the compression or rarefaction thereby arising in the chamber 5 is smoothed out through the narrow passage 6. If, on the other hand, the pressure in the conduit 13 is rapidly increased, the diaphragm 1 rises so rapidly that the air has no time to escape through the passage 6 but the pressure is propagated through the chamber 5 to the diaphragm 2 and causes the latter as well as the diaphragm 3 connected thereto to rise and thereby open the valve 9. On account of the diaphragm 2 being smaller than the diaphragm 1, the former will obviously move a correspondingly greater distance. It is, however, obvious that the valve 9 cannot

be lifted higher than admitted by the groove 20 in the cylinder 21. When the valve rises or sinks, the cylinder turns, whereby the movement of the lever 18 is determined by the shape of the groove 20. By giving the groove a suitable form it will thus be possible to open the valve 9 by a desired number of increases of pressure. The closing of the valve is produced in like manner by a certain number of increases of pressure dependent on the form of the adjacent part of the groove 20. The apparatus is thus controlled solely by rapid increases of pressure which are considerably easier to produce than decreases of pressure.

It is obvious that the embodiment shown and described is merely an example of carrying the invention into effect and may be modified in various ways without departing from the principle of the invention. Thus, for instance, the mechanism by which the movement of the diaphragm 2 is transmitted to the gas valve may be arranged in any other suitable way.

We claim:

1. In an apparatus of the character described, the combination of a gas valve, a diaphragm operatively connected to the said gas valve, and a second diaphragm movable independently of the former, said latter diaphragm forming together with the former a closed chamber communicating through a narrow passage with the outer air, substantially as and for the purpose set forth.

2. In an apparatus of the character described, the combination of a gas valve, a diaphragm adapted to actuate the said gas valve, and a second diaphragm of larger extension placed at a distance from the former, said diaphragms forming between them a closed member communicating through a narrow passage with the outer air, substantially as and for the purpose set forth.

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