

No. 737,172.

PATENTED AUG. 25, 1903.

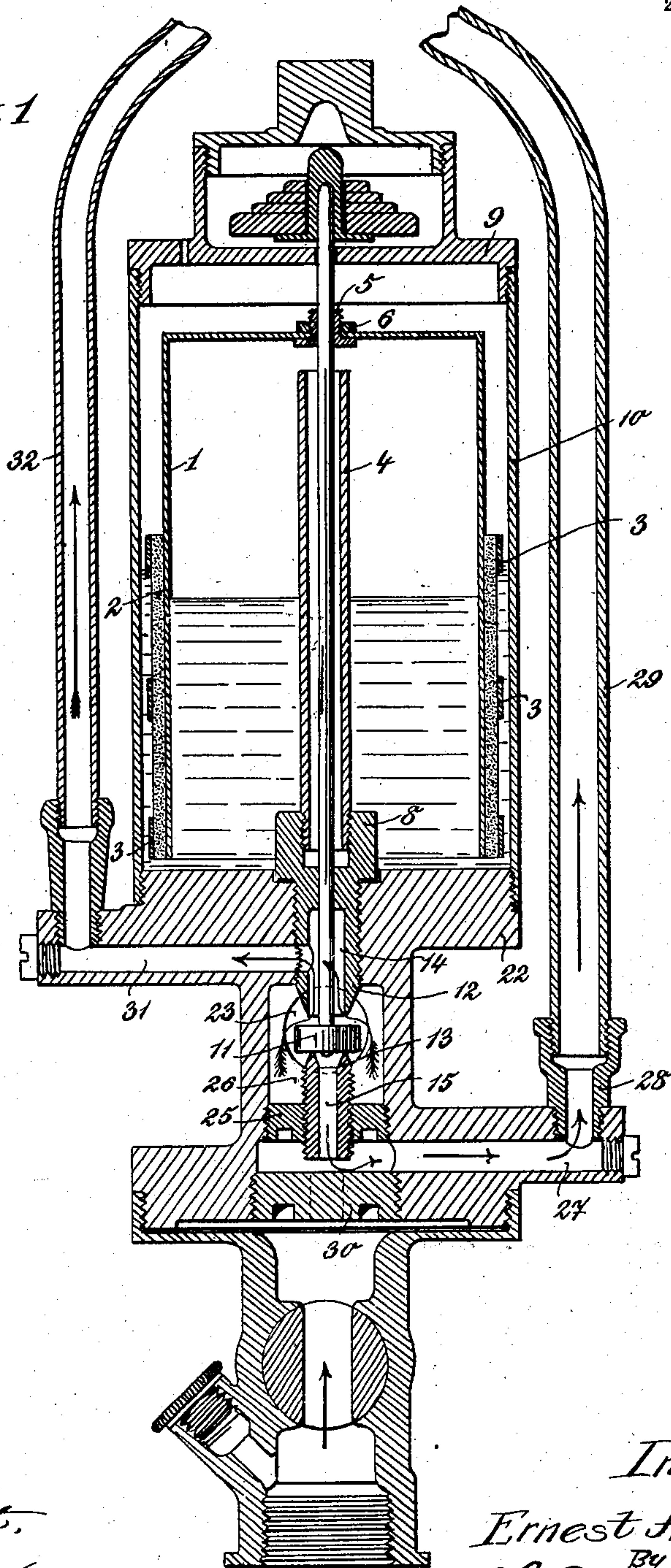
E. A. P. THIEM.  
APPARATUS FOR LIGHTING OR EXTINGUISHING GAS LIGHTS  
FROM A DISTANCE.

APPLICATION FILED APR. 15, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1



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L. O. Hinton

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By  
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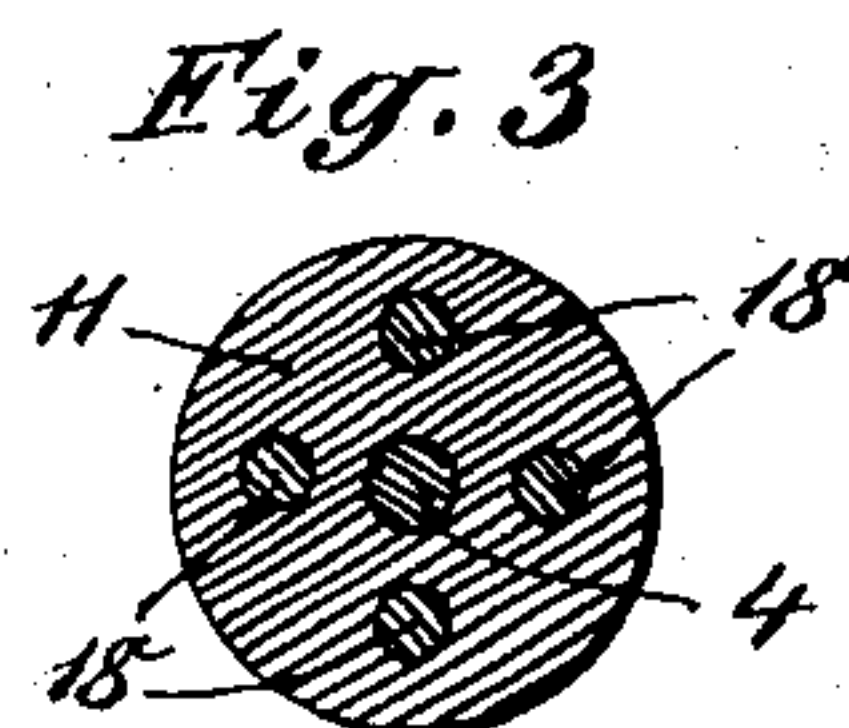
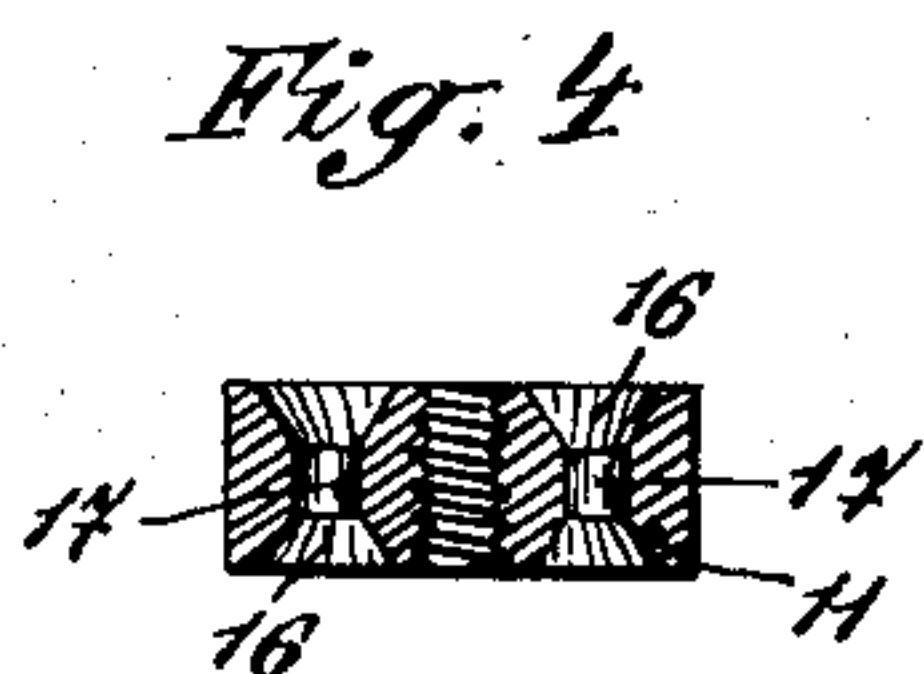
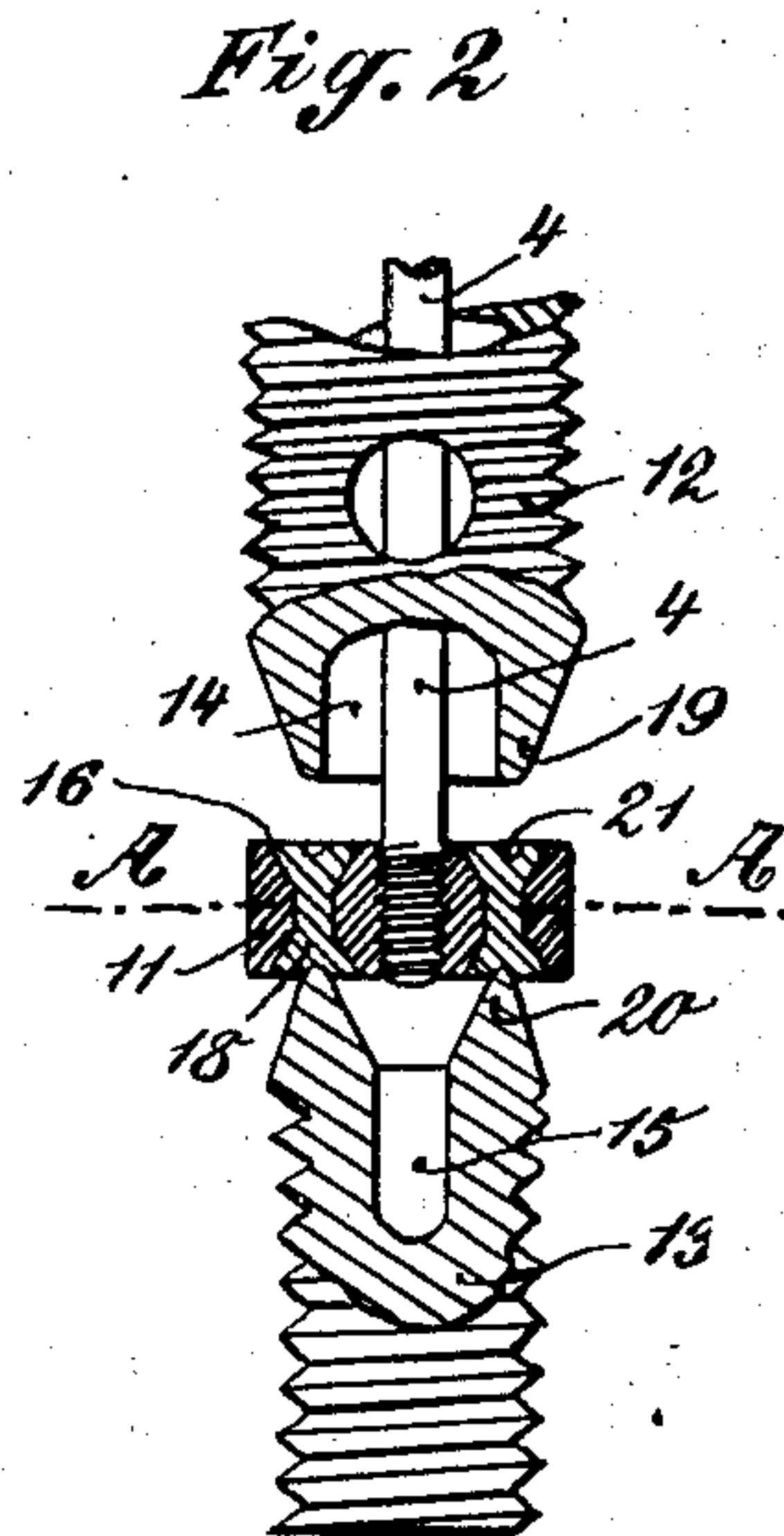
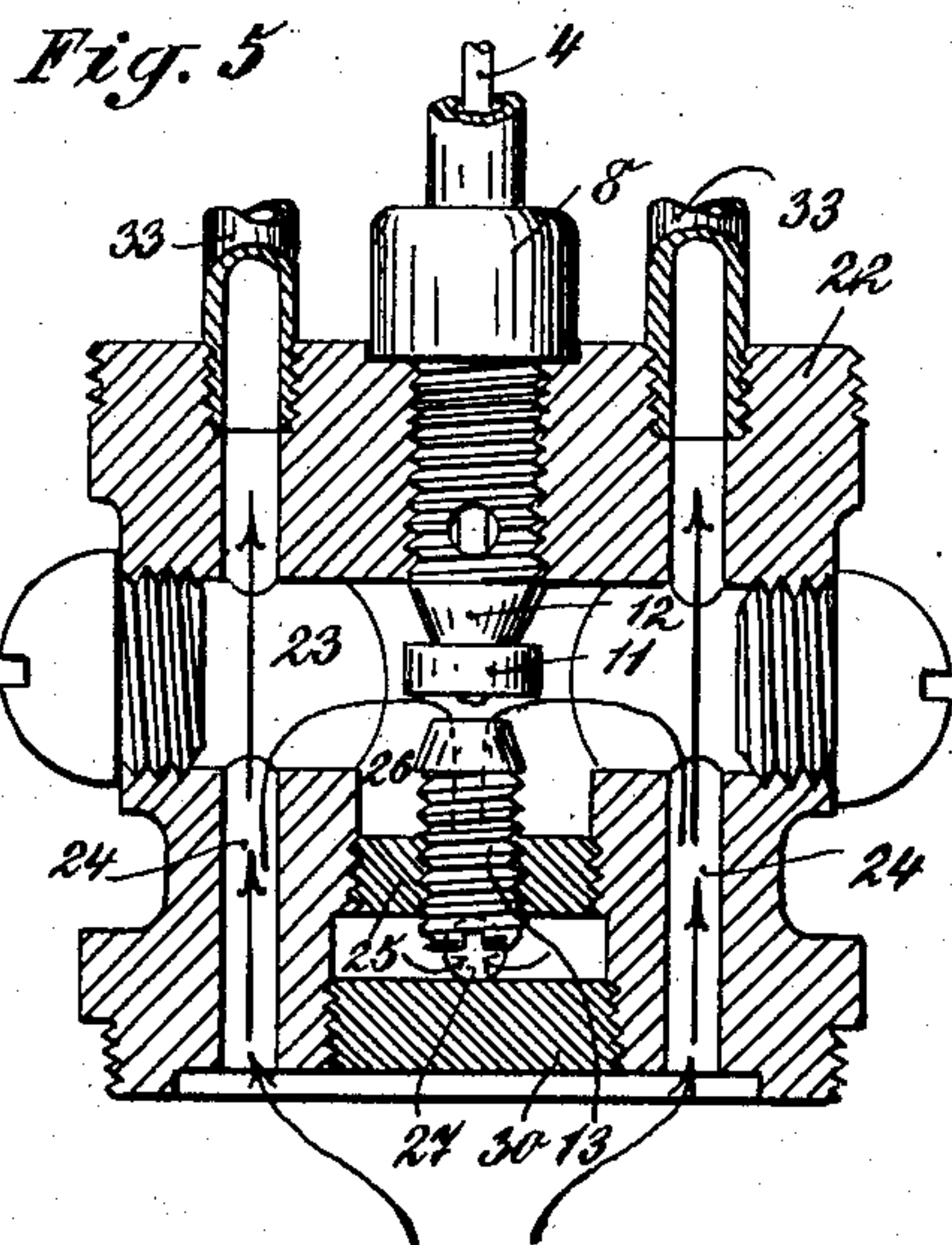
PATENTED AUG. 25, 1903.

E. A. P. THIEM.  
APPARATUS FOR LIGHTING OR EXTINGUISHING GAS LIGHTS  
FROM A DISTANCE.

APPLICATION FILED APR. 16, 1903.

NO MODEL.

2 SHEETS—SHEET 2.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

ERNST AUGUST PAUL THIEM, OF HUSUM, GERMANY.

APPARATUS FOR LIGHTING OR EXTINGUISHING GAS-LIGHTS FROM A DISTANCE.

SPECIFICATION forming part of Letters Patent No. 737,172, dated August 25, 1903.

Application filed April 15, 1903. Serial No. 152,765. (No model.)

*To all whom it may concern:*

Be it known that I, ERNST AUGUST PAUL THIEM, gas superintendent, a subject of the Emperor of Germany, residing at Husum, in the Kingdom of Prussia and Empire of Germany, have invented certain new and useful Improvements in and Relating to Apparatus for Lighting or Extinguishing Gas-Lights from a Distance, of which the following is a full, clear, and exact description.

The present invention has reference to improvements in devices for lighting and extinguishing from a distance, and is primarily concerned with a floating bell which is arranged in a gas-holder and forms a constituent part of such devices, and, further, with the special construction of the alternating valve used in such devices.

In devices in which burners applied to a gas-service system are lighted and extinguished from a central station a so-called "double-seat" or "alternating" valve which is connected with a floating bell made to rise and fall by means of the gas-pressure from the central station by a known method is used for the purpose of closing or opening the one and opening or closing the other of two gasways leading, respectively, to the main burner and the lighting-burner. It is of importance that a very slight increase or decrease of the normal pressure in the main should be sufficient to actuate such a valve. The floating bells hitherto employed have proved inadequate, because lighting devices fitted with such bells can only work under the influence of higher gas-pressure or considerable difference in pressure and work in an unreliable manner, or especially where they are far from the pressure-station do not work at all. These inconveniences are more especially occasioned by the known floating bells being provided with floats on the inside, which only increase the floating capacity of the bell or decrease its weight in such a way that they might be disused altogether if the bells were made of a material with a sufficiently low specific gravity. It is clear that when the surface of the liquid sinks inside the bell such floats must move downward in accordance with it, and therefore in spite of the upward movement which they communicate to

the bell they have also a downward tendency which retards the rise of the bell.

According to the present invention the float is arranged outside the bell, and thus when an increase of pressure causes the surface of the liquid to sink inside the bell the consequent rise of the liquid outside the bell tends to help the rise of the bell to a very appreciable extent, as has been determined by actual experiment. Similarly, too, when the pressure is reduced slightly or when the normal pressure is reestablished this arrangement makes the bell sink with greater rapidity, as the column of liquid rising in the inside of the bell causes a fall in the liquid outside, which acts on the float, and thus helps the downward movement of the bell caused by the diminished gas-pressure inside it. This accelerated upward and downward movement of the bell is also helped by the fact that the alternating valve, which is connected with the bell by the known method and which controls the two gasways to the main and lighting burners, has the movements of the bell imparted to it. The consequence is that an apparatus fitted with the floating bell of the present invention is extremely sensitive and offers great advantages, especially in the case of burners at a great distance from the central station.

Another essential feature of the invention is the means by which the exact working of the double-seat or alternating valve is obtained and which in consequence increases its sensitiveness.

In the surface of the seat of the valve-body a closing-collar, of lead or some other soft yielding metal or other suitable material, is inserted and fixed by suitable means. The object of this insertion is to bring about an automatic leveling and fitting between the surfaces of the valve and valve-seat, and thus to make the working of the valve so exact that lighting and extinguishing at a distance can be accomplished in a more reliable manner than with any method of construction or working hitherto known.

In the appended drawings a form of the invention is illustrated.

Figure 1 shows the device for lighting and extinguishing at a distance in axial longi-



tudinal section. Fig. 2 is a longitudinal section through the alternating valve on a larger scale. Fig. 3 is a section along A A in Fig. 2. Fig. 4 is an axial longitudinal section through the valve-body without the insertion. Fig. 5 is an axial longitudinal section through the lower part of the device illustrated in Fig. 1 in a sectional plane at ninety degrees to the plane of Fig. 1. The valve-body in this instance is shown in its upper closed position.

The floating bell 1 is in the example illustrated provided on its outer side with a float 2, which in the example illustrated is assumed to be made of cork, though any material of low specific gravity or india-rubber made hollow and filled with air would answer the same purpose, and to be kept in its place by means of metal hoops 3. The bar 4, to which the bell 1 is firmly fixed by means of the parts 5 and 6, works through guide-holes in 8 and 9, which are parts of the holder which contains glycerin or other suitable liquid.

To the bar 4 the valve-body 11 is fixed, which plays between the two seats 12 and 13, according to the upward and downward movement of the floating bell—i. e., it opens or closes first the opening 14 of the part 12 and then the opening 15 of the other part, 13. The openings mentioned are connected by the known method with the main and lighting burners, and when the bell moves up and down the lighting-flame is extinguished and the flame of the main burner lighted, and vice versa, also by a known method. The two gasways are indicated in Fig. 1 of the drawings by plain and feathered arrows, and from the bore 23 passages or tubes 33 pass into the hollow space of the bell. In consequence of the working of the external float before described, the play of the valve-body 11 between the two supports 12 and 13 is rendered so delicate and accurate that a rise or fall of seven millimeters in the normal gas-pressure is sufficient to effect lighting or extinguishing at distance greater than two kilometers, while with floating bells of the known type with floats inside and the whole of the cork or other float immersed in the liquid, according to experiments carried out, a variation in pressure of eighteen millimeters is insufficient to light or extinguish the lamps of a gas-service system at a distance of two kilometers.

In order to increase the exact working of the device and its great sensitiveness, the following arrangement has been devised: The valve-closing body 11 is preferably made cylindrical and of bronze or other metallic substance not subject to oxidation. In the upper and lower sides of this valve-body 11 circular grooves 16 are cut, which, as shown in Fig. 4, are connected together by holes 17. In the example shown there are four such holes. With the help of suitable accessories lead 18 or the like is poured into the hollow spaces 16 and 17 of the valve-body 11 and after

cooling is made under pressure to fit tightly against the walls of the hollow spaces 16 and 17. If any other material is used to fill up the hollow spaces 16 and 17, the pouring process is replaced by another, or the fixity of the inserted substance in the body 11 is secured by means of cement, rivets, screws, or the like. The valve-body 11 so prepared is affixed by any optional means to the guide-rod 4, preferably by screwing, as shown in Fig. 2. The seats 12 and 13, which besides being constituent parts of the valve are also extremities of supply and removal tubes 14 and 15 for the gas, are provided with sharp or slightly-rounded edges 19 and 20. When the valve-body 11 is moved first against the seat edge 19 and then against the seat edge 20, this being brought about by variation in the gas-pressure, which is utilized to impart movement to the rod or bar 4, the outer surfaces of the closing insertion 18 strike alternately against the seat edges 19 and 20, and an exact filling of the insertion 18 on the seat edges 19 and 20 results. The gas-pressure which causes this movement is so low that no immediate displacement of the insertion 18 takes place. After continued working only a shallow groove is formed in this, as shown in Fig. 2. This groove 21 may be cut beforehand in order to secure a fixed width of closing surface. When the valve-body 11 rises to its upper position, as shown in Fig. 5—i. e., when the space 14 in the seat-body 12 is closed, this seat-body being regarded as fixedly attached to the body 22 by screwing or otherwise—gas can now pass from the passage 23 and from the adjacent passage 24 along the course shown by the thick-tailed arrow into the hollow space 15 of the lower seat-body 13, which is screwed into a screw-plug 25 by its external threads, this plug itself being screwed in turn so as to be gas-tight in the central passage 26, opening into the transverse passage 23. The position of the lower seat 13 can be finally adjusted by screwing, so that its distance from the lower closing surface of the valve-body 11 may be made greater or less, as required. The gas entering through the space 15 into the lower seat-body 13 can pass into the passage 27 and thence through 28 and 29 can reach the main burner. In order to limit the passage 28, the screw-stop 30 is screwed into the hollow space 26. When the valve-body through an alteration in the pressure of the gas assumes its lower position, as shown in Fig. 1, the lower seat-body is closed, and the gas which passes continuously into the transverse passage 23 then passes through the space 14 on the upper seat-body into the passage 31 and thence on to the passage 32 and the lighting-burner.

The foregoing alternate working of the valve-body 11 can be maintained satisfactorily—i. e., without the necessity of frequent control and repair—only by means of the arrangement of the inserted part 18, whereupon depends the novelty of this arrangement of a



valve-body and seat-body suitably adjusted to each other.

What I claim, and desire to secure by Letters Patent, is—

- 5 1. A machine of the class described, having oppositely-disposed valve-seats with sharpened edges, in combination with a valve adapted to alternately close against said valve-seats and having a yielding surface to engage them.
- 10 2. A machine of the class described, having oppositely-disposed valve-seats with sharp-

ened edges, in combination with a valve adapted to alternately close against said valve-seats and having a yielding, metallic surface to engage them.

In witness whereof I subscribe my signature in presence of two witnesses.

ERNST AUGUST PAUL THIEM.

Witnesses:

JULIUS RÖPKE,

OTTO LAU.