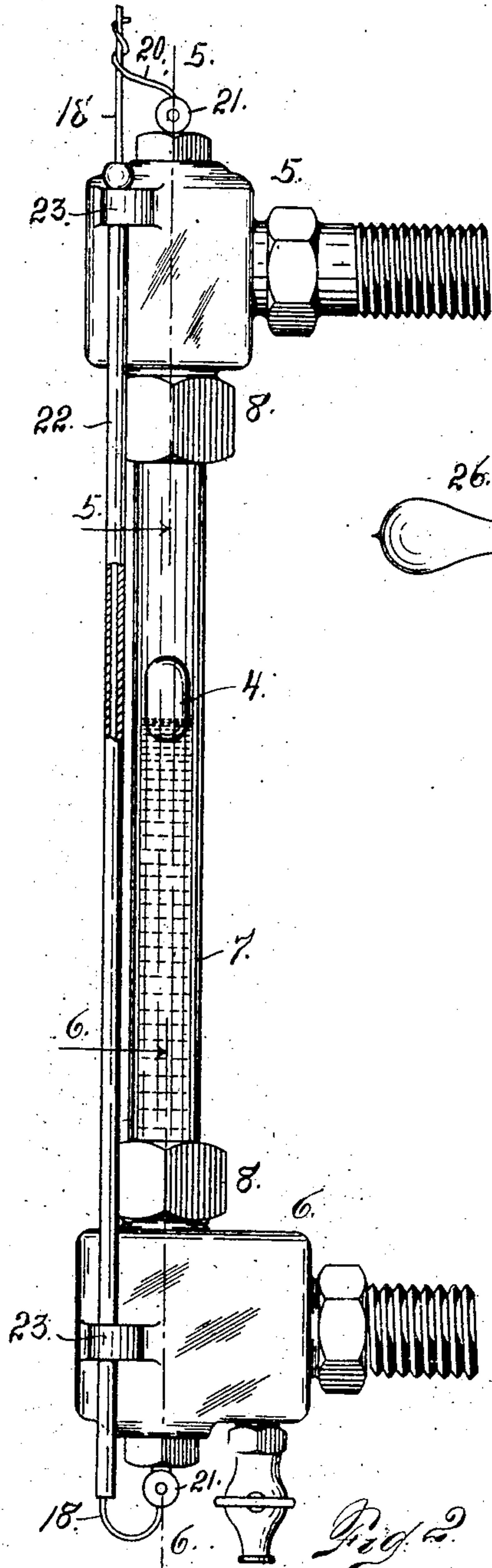


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APPLICATION FILED APR. 8, 1908.

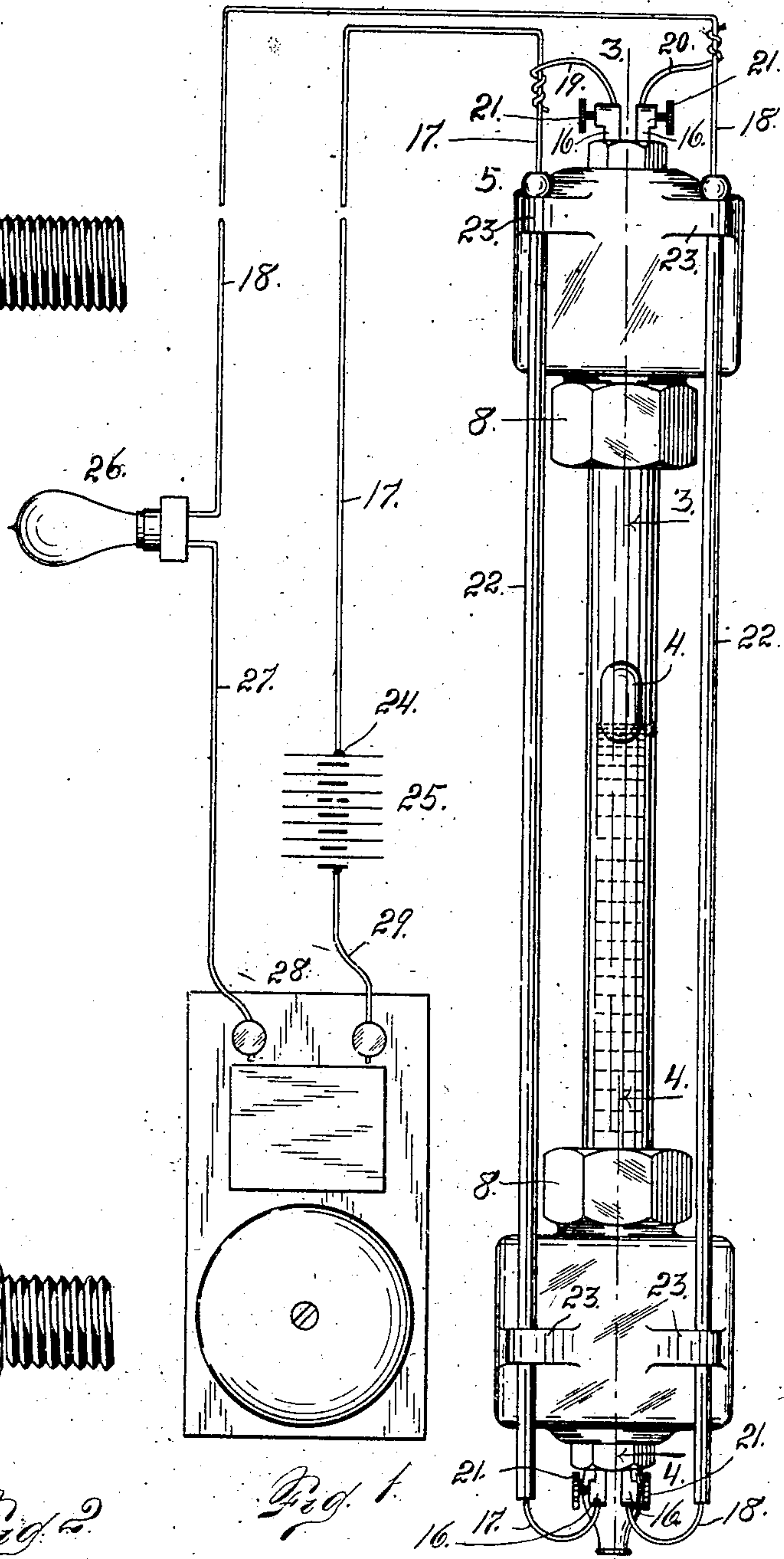
912,970.

Patented Feb. 16, 1909.

2 SHEETS—SHEET 1.



Witnesses
Otto C. Hoddeck
J. D. Thornburgh

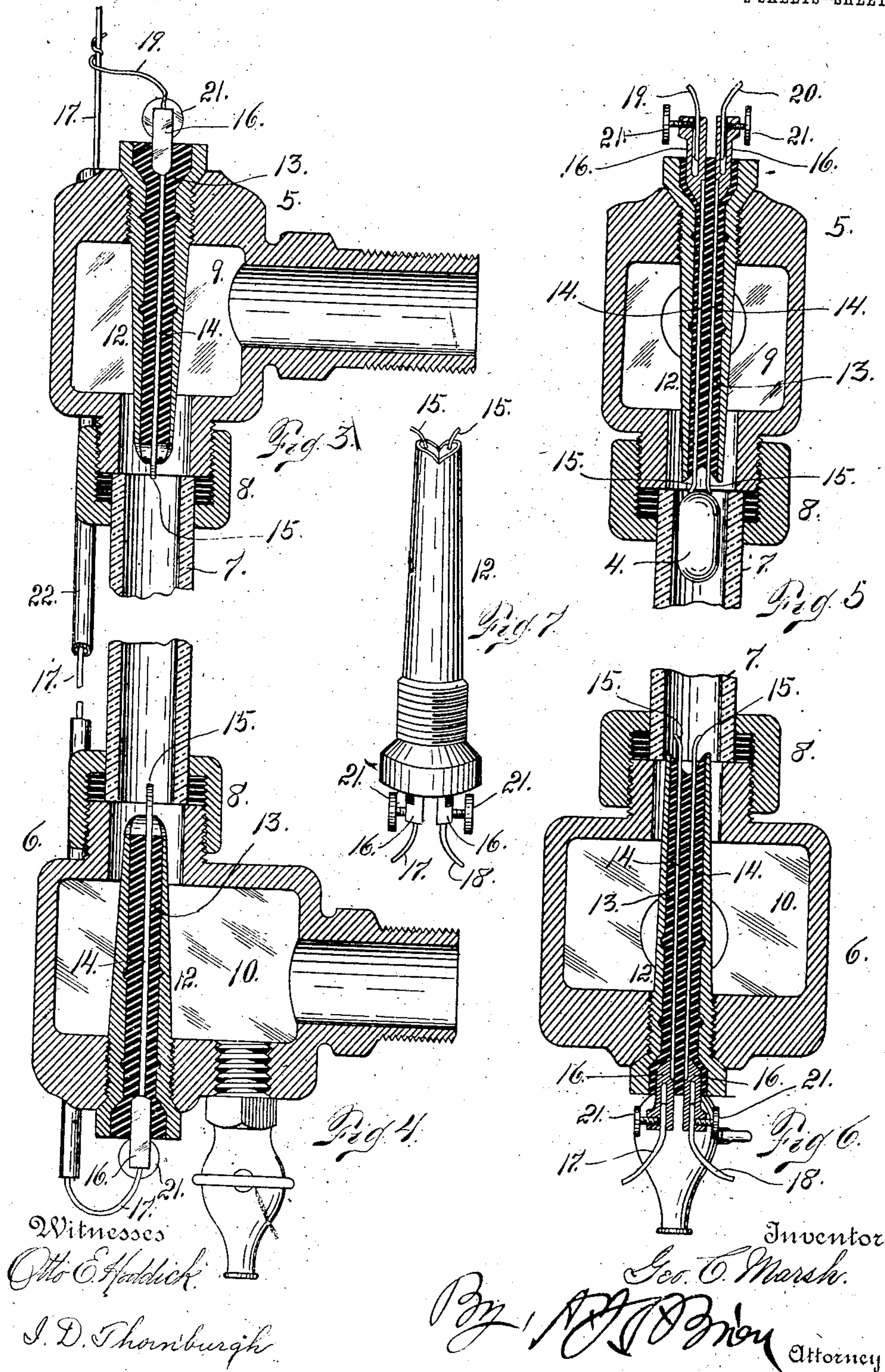


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UNITED STATES PATENT OFFICE.

GEORGE C. MARSH, OF DENVER, COLORADO, ASSIGNOR OF ONE-HALF TO HENRY W. HART,
OF DENVER, COLORADO.

ELECTRIC-ALARM WATER-GAGE.

No. 912,970.

Specification of Letters Patent.

Patented Feb. 16, 1909.

Application filed April 8, 1908. Serial No. 425,930.

To all whom it may concern:

Be it known that I, GEORGE C. MARSH, a citizen of the United States, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Electric-Alarm Water-Gages; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in water gages, my object being to provide an attachment for water gages whereby an alarm may be given whenever the water reaches a predetermined level in either direction.

In my improved construction provision is made for placing a float composed of material forming a good conductor for the electrical current, within the glass tube of the gage and equipping the latter with electrodes at both extremities within which the float is adapted to come in contact whereby the float bridges the space between the electrodes and closes an electric circuit in which an alarm device or devices are located. As illustrated in the drawing provision is made for ringing a bell and lighting an incandescent lamp whenever the circuit is closed by the action of the float. Whenever this alarm is sounded, it will be known that the water has reached a high or low level within the boiler or other receptacle with which the gage may be connected. A device of this class is particularly advantageous by reason of the fact that it is adapted to notify any one in the vicinity of a boiler, that the water is low therein and needs replenishing.

Having briefly outlined my improved construction I will proceed to describe the same in detail reference being made to the accompanying drawing in which is illustrated an embodiment thereof.

In this drawing, Figure 1 is a front view of a water gage equipped with my improvements. Fig. 2 is a side elevation of the same partly in section, without showing the alarm devices. Fig. 3 is a longitudinal section

taken on the line 3—3 Fig. 1 viewed in the direction of the arrow. Fig. 4 is a similar section taken on the line 4—4 Fig. 1. Figs. 55 5 and 6 are sections taken on the lines 5—5 and 6—6 respectively of Fig. 2. Fig. 7 is a perspective view in detail illustrating a casing applied to each extremity of the water gage structure and carrying a pair of electrodes.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate the upper metallic fitting and 6 the lower fitting with which the opposite extremities of the glass tube 7 of the water gage are connected. In each case the tube extremity enters a stuffing box 8 whereby a water tight joint is formed. The fittings 5 and 6 constitute casings in which are formed chambers 9 and 10 respectively, the said chambers being in communication with the opposite extremities of the tube 7 and also in communication with the boiler or other water receptacle to which the water gage is attached. The water gage may of course be connected with the boiler in any suitable manner whereby the opposite extremities of the tube are brought into communication therewith. The fittings 5 and 6 are provided with threaded openings into each of which is screwed a metallic casing 12 which as shown in the drawing is larger at its outer extremity and tapers toward its opposite extremity. Within the casing 12 is located a bushing 13 composed of hard rubber or other suitable insulating material within which are embedded two electrodes 14 which are insulated from each other. The inner extremities 15 of these electrodes are preferably composed of platinum though they may be formed of any suitable conducting material through which the circuit may be closed when the space between these extremities is bridged by a float 4 which may be hollow and composed of aluminum since it is desirable to make it sufficiently buoyant to float whereby it will rise and fall as the water fluctuates in the tube according to the rise and fall within the boiler or other receptacle with which the water gage is connected. The outer extremities of the electrodes 14 are respectively attached to metal contacts 16 to which the outer extremity of the insulat-

ing bushing is vulcanized. These contacts 16 form supports for the conductors 17 and 18 at one extremity of the gage and 19 and 20 at the other extremity thereof. These
5 conductors are connected with the contact 16 by binding screws 21.

The conductors 17 and 18 pass upwardly through insulating tubes 22 mounted upon the fittings 5 and 6 in any suitable manner.
10 As shown in the drawing these tubes pass through apertured ears 23 with which the fittings are exteriorly provided. The conductors 17 and 18 leave the insulating tube at the upper extremity of the gage, the con-
15 ductor 17 leading to a pole 24 of an electric source 25, while the conductor 18 leads to an electric lamp 26. From this lamp a conductor 27 leads to an electric bell 28 from which a conductor 29 leads to the other pole
20 30 of the electric source. The conductors 19 and 20 are respectively connected with the conductors 17 and 18, whereby the electric circuit is closed through the lamp and the bell whenever the electrodes at either ex-
25 tremity of the gage are engaged by the float 4.

From the foregoing description the use of my improved electric alarm water gage will be readily understood. Assuming that the
30 gage is connected with the boiler or other water-containing receptacle in such a manner that the depth of water therein may be indicated by the rise and fall of the water in the tube 7, it will be clear that when the
35 water falls sufficiently to allow the float to engage the extremities 15 of the lower pair of electrodes 14, the electric circuit will be closed through both the incandescent lamp 26 and the alarm bell 28 thus giving both an
40 audible and a visual alarm. Again when the water is high in the boiler and the rise in the tube is sufficient to cause the float to come in contact with the extremities 15 of the upper pair of electrodes, the circuit will
45 be closed and both signals given in the same manner as when the float falls within the tube as heretofore explained.

It may be stated that the float 4 in addition to its function of closing the circuit or
50 bridging the space between the electrodes, has still another function, namely that of an indicator since its position in the glass tube is readily observable whereby the water level within the boiler, tank or other receptacle
55 may be known. If desired this float may be

colored for the purpose of making it more conspicuous.

Having thus described my invention, what I claim is:

1. The combination with a water gage, of 60 a metallic casing threaded into an extremity of the gage, said casing being provided with an insulating bushing, separated electrodes embedded in the said bushing and whose inner extremities protrude into the tube, a
65 float located within the tube and adapted to electrically bridge the space between the electrodes as the water reaches a predetermined level within the tube, a circuit in which the electrodes are located, and an alarm device 70 located within the circuit, substantially as described.

2. The combination with a water gage, of metallic casings threaded into the opposite extremities of the gage, each casing being 75 provided with an insulating bushing, separated electrodes embedded in the said bushing, and whose inner extremities protrude into the tube, a float located within the tube and adapted to electrically bridge the space
80 between either pair of electrodes as the water reaches predetermined levels within the tube, a circuit in which both pairs of electrodes are located, and an alarm device or devices located within the circuit, substantially as 85 described.

3. The combination with a water gage, of metallic casings inserted in the opposite extremities of the gage, a pair of electrodes located within each casing, means for insu- 90 lating the electrodes from each other, the inner extremities of each pair of electrodes being exposed to the water within the tube, two contacts with which the outer extremities of each pair of electrodes are respectively
95 connected, an electric circuit in which the said contacts are located, an alarm device or devices located within the circuit, and a float located within the water tube and composed of conducting material, the said float being
100 adapted to electrically bridge the space between either pair of electrodes and close the circuit as the water rises and falls within the tube, substantially as described.

In testimony whereof I affix my signature 105 in presence of two witnesses.

GEORGE C. MARSH.

Witnesses:

HENRY W. HART,
A. J. O'BRIEN.