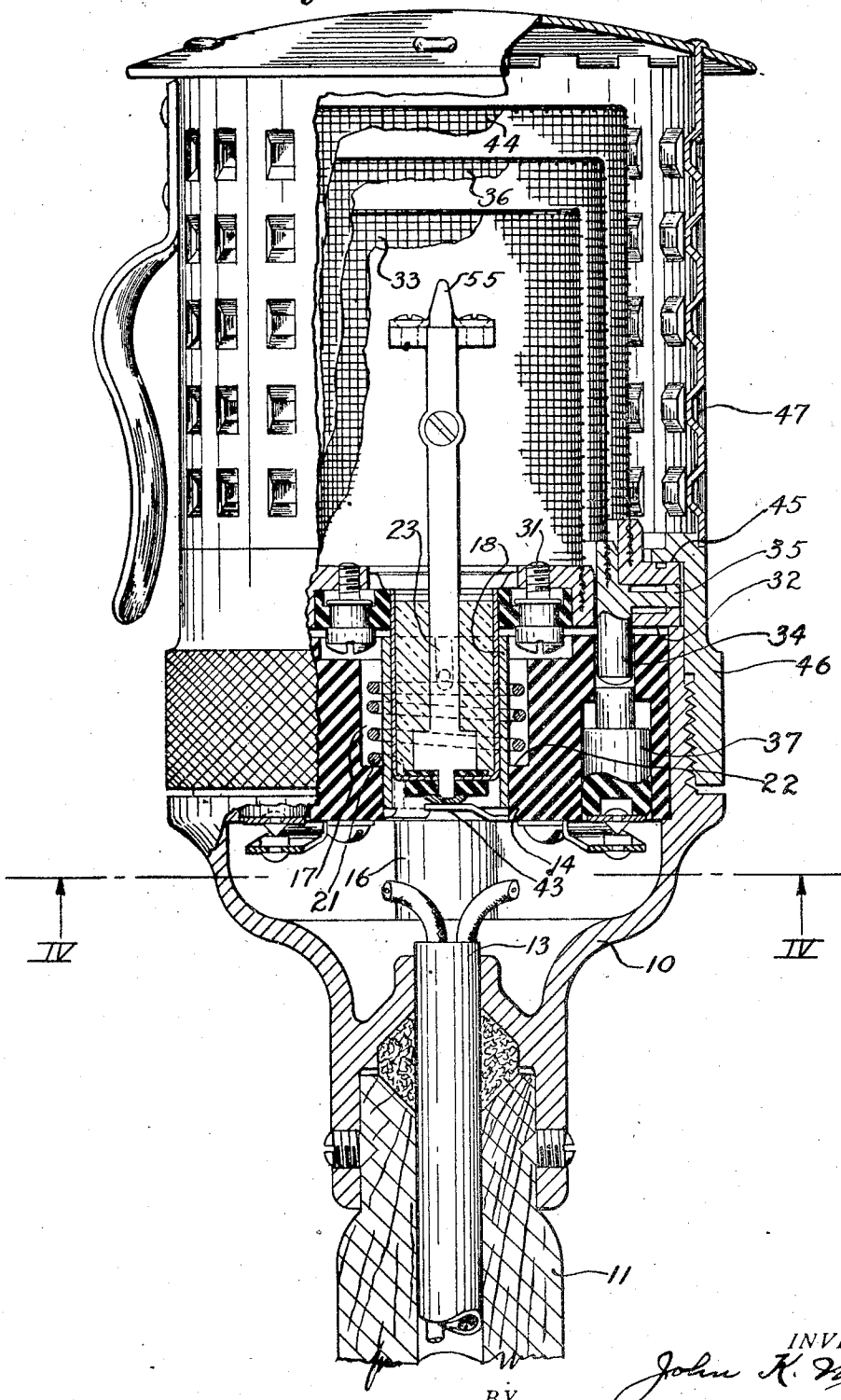
April 29, 1930. J. K. MABBS 1,756,794

HEAD FOR GAS DETECTORS

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Fig. 1.



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Fig. 2.

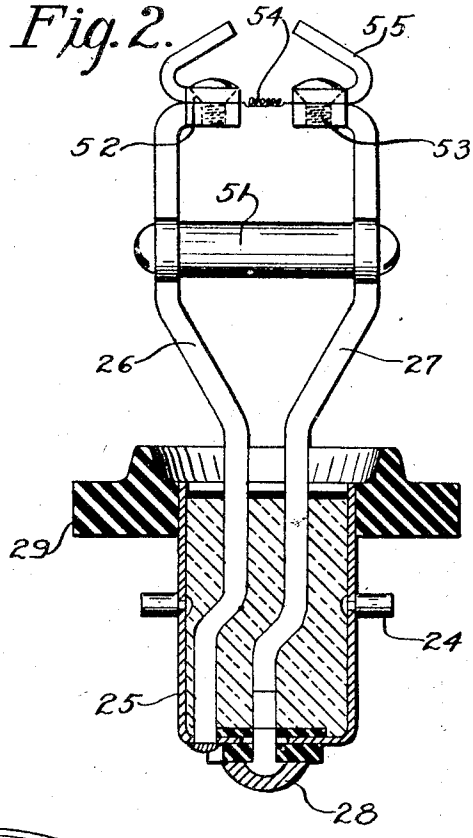


Fig. 3.

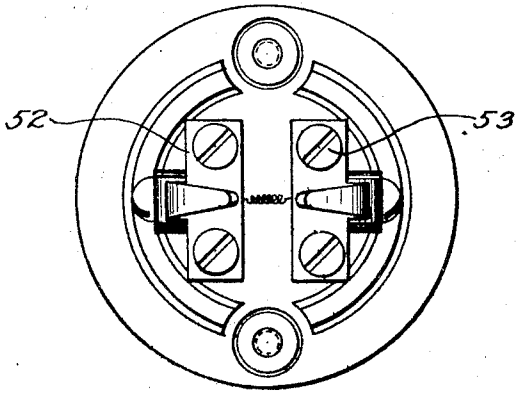
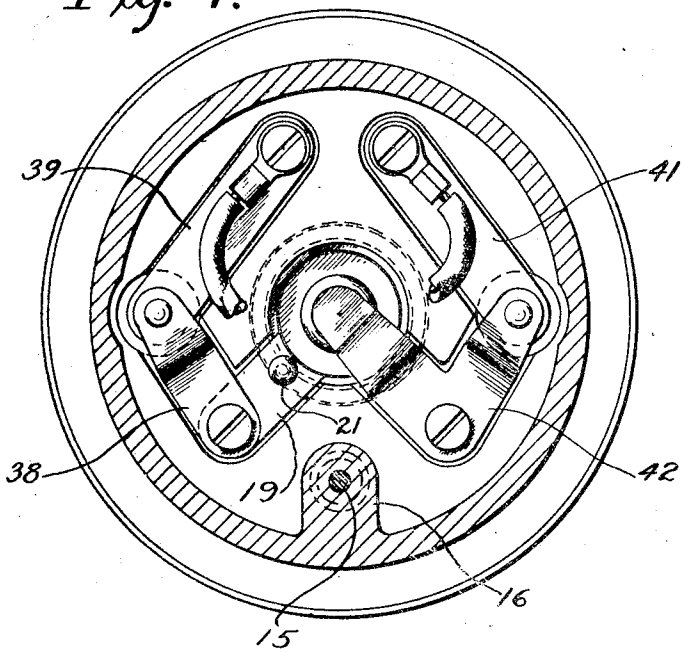


Fig. 4.



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Patented Apr. 29, 1930 1,756,794

UNITED STATES PATENT OFFICE

JOHN K. MABBS, OF BAYSIDE, NEW YORK, ASSIGNOR TO OXWELD ACETYLENE COMPANY, A CORPORATION OF WEST VIRGINIA

HEAD FOR GAS DETECTORS

Application filed August 13, 1928. Serial No. 299,405.

My invention relates to gas detectors of the type in which a surface is heated in contact with the atmosphere to be tested. If a combustible gas be present in the atmosphere the gas will be oxidized and additional heat generated, further raising the temperature of the member the surface of which is heated. This increase in temperature may be measured in any suitable manner but I prefer to determine it by noting the change in electrical resistance of the heated member, which is preferably a filament of chemically pure platinum. While I have found a chemically pure platinum filament advantageous, especially when heated to a temperature in excess of 1,000° C. my invention is not limited to the use of any particular material or to any particular temperature.

An object of my invention is to provide a head or mounting for this filament in which the filament is surrounded by jackets of a material which resists the propagation of flame and which cannot be removed without breaking the circuit to the filament. Another object of my invention is to provide a simple inexpensive and reliable mounting for the filament in which provision is made for preventing damage to the filament. These and other objects of my invention will be apparent from the following description having reference to the accompanying drawings in which;

Figure 1 is a side view, partly in section of a device constructed in accordance with one embodiment of my invention;

Figure 2 is a vertical section through the filament holding unit;

Figure 3 is a top plan view of the filament holding unit; and

Figure 4 is a horizontal section of the head taken on the line IV—IV of Figure 1.

The device is a modification of that disclosed in the copending application of W. F. Hunt, J. K. Mabbs, and W. B. Rowland, Serial Number 229,406, filed August 13, 1928. In the device shown in the drawings a base 10 is mounted on a handle 11, this handle being provided with a suitable index so that the position of the device may be noted. A cable 13 is led into the base in any suitable manner, such as through an opening in the handle and the bottom of the base. Within the base is a block 14 of insulating material. This block is held in fixed relation to the base by a screw 15 engaging a boss 16 on the base. The insulating block 14 is provided with a central aperture 17 within which a shell 18 is mounted. The shell is made of conducting material and is provided with a conductor 19 extending therefrom for purposes to be described below. A spring 21 fits around the outside of the shell in the opening 17 engaging a shoulder 22 provided therein and one end extends through the block and is connected to the conductor 19. The shell is provided with one or more slots 23 for receiving pins 24 on the filament holding unit. I prefer to employ two such slots and pins.

The filament holding unit consists of a cup 25 upon which the pins 24 are mounted. A pair of standards 26 and 27 are secured within the cup, the standard 26 being electrically connected to the cup and the standard 27 being insulated therefrom and terminating in a contact member 28 below the bottom of the cup. Surrounding the cup is a carrying ring 29. This ring is provided with screws 31 for engagement with a flame arresting jacket. The screws are rotatably secured in the carrying rings in any suitable manner as by beading a portion of the screw over a shoulder in the hole through which the screw passes.

In order to prevent the propagation of flame from the gas burning around the filament to the atmosphere being tested, I surround the filament with two or more jackets of a suitable flame arresting material such as the wire gauze that is used in the well known miner's flame safety lamp. These jackets are preferably cylindrical with a gauze top and are provided with flanged bases. The base of the inner jacket is provided with threaded apertures to receive the screws 31. The carrying ring 29 engages the base 32 of the inner protective jacket 33 with a close fit whereby considerable time is required to remove the carrying ring from the base. This is due to the arrangement of the screws in the carrying ring. As one screw is unscrewed the car-

rying ring binds against the base of the gauze screw. The opposite screw must then be similarly unscrewed a short distance and each screw must then be alternately unscrewed a short distance. The base 32 of the inner jacket is provided with one or more holes, preferably two, through which extend projections 34 on the base 35 of the next jacket 36.

The insulating block 14 is provided with holes opposite the projections 34 and in each of these holes is a plunger 37. These plungers are made in part at least of insulating material although they may be provided with conductive wear resistant material for engagement with the projections 34. Disposed beneath the block are conductors 38, 39, 41 and 42. The conductors 39 and 41 are connected to conductors of the cable 13. The ends of the conductors 38 and 39 and of the conductors 41 and 42 are in aligned spaced relation and the conductor 42 terminates in a resilient portion 43 forming a contact for engagement with the contact 28 of the filament holding unit. The conductor 38 is connected to conductor 19. Thus when the plungers are forced downwardly a circuit is provided from the cable 13 through the conductors 39, 38 and 19 to the spring 21 and thence to the pins 24 and to the filament. The other side of the circuit is formed by the conductors 41 and 42, the contact 43 and the contact 28 on the base of the filament holding unit. Surrounding the flame arresting jacket 36 I may provide additional flame arresting jackets such as the jacket 44. This jacket is provided with a flanged base 45 resting upon the base 35. Suitable means are provided for holding the protective jackets in place around the filament such as that disclosed in the drawing which consists of a locking ring 46 which has an inwardly disposed flange for engaging the base of the outer jacket. The height of the locking ring is such that the plungers 37 will not be forced downwardly to close the circuit unless all the protective jackets are in place. I may if I so desire provide a protective bonnet 47 surrounding the outer portion of the flame arresting jacket.

The standards 26 and 27 are held in spaced relation by a spacing member 51, which is composed at least in part of non-conducting material. The upper ends of the standards are formed into flat surfaces upon which bearing members 52 rest. These bearing members are held to the top of the standards by any suitable means as by screws 53 and the ends of a filament 54 are gripped between the bearing members and the tops of the standards. The bearing members are provided with prongs 55 extending upwardly and inwardly to serve as a protection for the filament.

I claim:

1. In a gas detector head the combination of a base, a plurality of gauze jackets above said base in coaxial relation, a filament within said jackets, means including a switch on said base for supplying current to said filament and means carried by one of the outer jackets for operating the switch.

2. A head for gas detectors comprising a base member, a gauze jacket having a base engaging said base member, means for mounting a filament within said jacket, a second jacket having its base surmounting the base of the first jacket, means including a switch for supplying current to said filament, and means carried by said second jacket for operating said switch.

3. A device as claimed in claim 2 in which the base of the first mentioned jacket is provided with an aperture and said switch operating means is a projection on the base of the second mentioned jacket extending through said aperture.

4. A head for gas detectors comprising, in combination, a base member, means engaging said base member for supporting a filament, means including a switch for supplying current to said filament, means for actuating said switch disposed below the upper face of said base member, a plurality of protective jackets enclosing said filament, and means carried by an outer jacket for operating said switch actuating means.

5. A device as claimed in claim 4 in which the jackets are provided with flanged bases, the switch operating means is a projection extending downwardly from one of the bases, and the bases of the jackets within the jacket carrying the operating means are provided with apertures through which said operating means may project.

6. A head for gas detectors comprising a block, a protective jacket having a flanged base engaging said block, said base being provided with an aperture, a filament holding unit engaging said base and said block, conductors including a switch on said block for supplying current to the filament, switch actuating means disposed below the upper surface of said block, outer jackets surrounding said first mentioned jacket, said outer jackets having flanged bases and means on the base of one of said outer jackets adapted to extend through the aperture in the base of the inner jacket and operate the switch actuating means.

7. A filament holding unit comprising a pair of spaced standards having bearing surfaces thereon, a clamping member engaging each of said bearing surfaces, a filament having its ends clamped between said bearing surfaces and clamping members, said clamping members being provided with a prong extending upwardly and inwardly therefrom.

8. In a head for gas detectors, the combina-

tion of a filament holding unit and a protective gauze jacket provided with a base, and screws rotatably mounted and axially fixed on said unit for holding said unit in engagement with said base.

In testimony whereof, I affix my signature.

JOHN K. MABBS.