

O. WIEDERHOLD.
 INCANDESCENT GAS BURNER.
 APPLICATION FILED FEB. 8, 1910.

1,048,016

Patented Dec. 24, 1912.

2 SHEETS-SHEET 1.

Fig. 1.

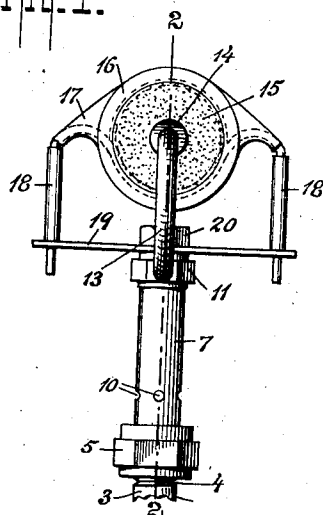


Fig. 5.

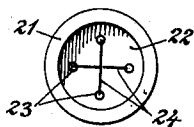


Fig. 2.

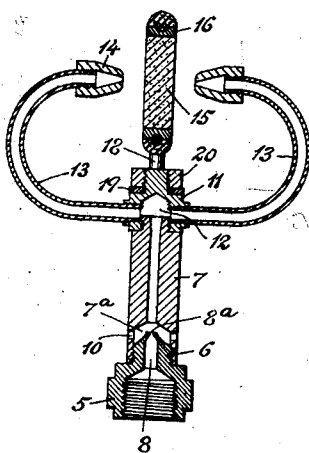
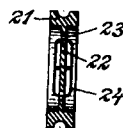


Fig. 6.



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Fig. 3.

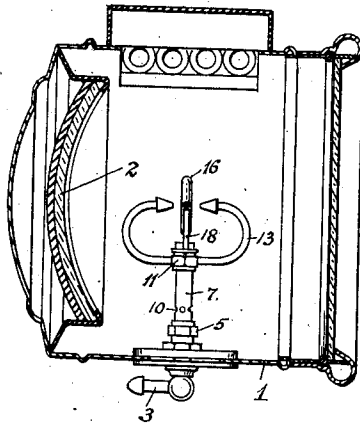
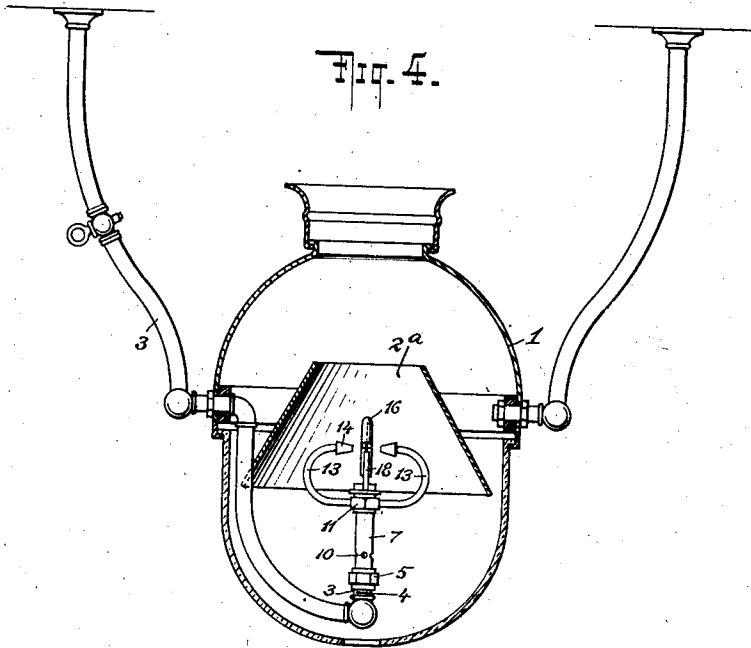


Fig. 4.



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UNITED STATES PATENT OFFICE.

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INCANDESCENT GAS-BURNER.

1,048,016.

Specification of Letters Patent.

Patented Dec. 24, 1912.

Application filed February 8, 1910. Serial No. 542,775.

To all whom it may concern:

Be it known that I, OSCAR WIEDERHOLD, a citizen of the United States, and resident of Jersey City, county of Hudson, State of New Jersey, have invented certain new and useful Improvements in Incandescent Gas-Burners, of which the following is a specification.

My invention relates to burners in which an incandescent body is used in conjunction with a blow pipe or Bunsen tube using acetylene, natural, artificial gas or an oxy-hydrogen flame and has for its object to provide a burner of this description, in which the refractory body is of such a nature as to present two opposite faces to the effects of oppositely directed flames. Thus when the body is brought to incandescence the light from one side may be projected against a suitable reflector to produce an extended shaft of light, in which case the light from the opposite side of said body may be used to illuminate the surroundings in close proximity to or immediately in front of the lamp in which the burner is used. My invention in this form is particularly useful in connection with automobile or locomotive head lights. My improved burner may also be located between two reflectors arranged at an angle thereto or beneath a single cone shaped reflector for car lighting and similar purposes.

A further object of my invention is to mount this lighting body in such a manner that the same may be easily removed from the burner without undue labor so as to permit of a ready interchange of lighting bodies for any purpose.

Other objects of my invention will appear from the annexed description and the features of novelty will be pointed out in the appended claims.

Reference is to be had to the accompanying drawings in which—

Figure 1 is a front elevation of my improved burner; Fig. 2 is a sectional view on the line 2—2 of Fig. 1; Fig. 3 shows a diagrammatic sectional view of an automobile head light with my burner in position thereon; Fig. 4 is a similar view of a lamp for car lighting purposes with my invention applied thereto; Fig. 5 is a face view and Fig. 6 a sectional view of another form of my invention.

1 represents the lamp body which may be of any suitable construction and is provided

with a reflector 2 constructed in any well known and customary manner.

3 is a pipe or tube which is connected with the source of gas or fuel supply and is provided with a screw threaded end 4. A nipple 5 is attached to the screw threaded end 4 and is provided with a screw threaded upwardly extending projection 6. This projection 6 is adapted to screw into the lower end of a tube 7, and is provided with a passage 8, which communicates with the source of gas supply, and with a chamber 7^a in the tube 7. The outlet end 8^a of the passage 8 is very small and need be only about 6/1000 of an inch in diameter if the burner is used in connection with acetylene gas, so that it will readily be seen that with this construction the consumption of gas necessary to secure the best results is a very small one. Of course, if the gas is a weaker gas or not as rich in carbon as acetylene gas the outlet end 8^a of the passage 8 will naturally have to be enlarged. The tube 7 is further formed with apertures 10 for the admission of air to the chamber 7^a in which the proper mixture of air and gas takes place. The upper end of said tube 7 is adapted to screw into a screw threaded collar 11 having oppositely extending channels 12 into which the Bunsen tubes 13 are arranged to screw as shown in Fig. 2. These Bunsen tubes comprise U-shaped tubes extending in opposite directions and have their free ends formed with nipples 14 spaced from and projecting toward each other, and preferably made of lava or some other like material capable of withstanding heat.

15 is the lighting body which, when the lamp is in use, is located between the said nipples 14 as clearly shown in Fig. 3. This lighting body is supported on a frame or support 16 as shown in Fig. 1 provided with members 17 which project first outwardly and then downwardly. These downwardly extending portions are adapted for insertion into tubes 18 located at opposite ends of a cross bar 19, which is secured by a lock-nut 20 upon a projection forming part of the screw threaded collar 11. The said downwardly extending portions are loosely fitted in said tubes so as to be easily inserted therein and readily removed therefrom. The lighting body itself may be of the same kind as described and shown in my pending application Serial No. 447,510,

filed February 13, 1909; and comprises a mixture of thorium and cerium nitrates which has been reduced to the form of oxids by heating or otherwise and then compressed into a ring or other support and baked until it becomes hard. It is not absolutely necessary that this baking take place before the lighting body is introduced into position on the burner as the heat of the Bunsen flame will serve to bake said body after it has been secured in operative position.

The refractory body used in my burner may be made in several forms such as described in my application Serial No. 447,510 and also as follows: By taking the ashes from incandescent gas mantles and making them slightly moist then compressing the same into the holder, then adding a solution containing 50 per cent. of thorium nitrate, 49½ per cent. of distilled water and ½ per cent. of cerium. This mixture is applied to the holder about five drops at a time so as to form successive layers or films and then baking each layer or film with a blow pipe after each application until the refractory body is of a solid coherent mass. I have found that about fifteen applications are sufficient to complete the operation of thus building up said refractory body in successive layers. The refractory or lighting body can also be prepared by laying the holder or ring flat upon a smooth surface of fire brick or non-combustible material which thus forms a bottom for said ring then adding the liquid thorium solution as above given, that is about five drops at a time, and baking it with a blow pipe after each application until the holder or ring is completely filled.

In operation the Bunsen flames are directed against opposite surfaces of the lighting body one of which in case of automobile or locomotive headlights faces toward the reflector and the other of which faces in the opposite direction or toward the front of the lamp. Thus a long shaft of light will be projected from the reflector to illuminate at a distance from the lamp while the forward surface of said lighting body will throw the light in close proximity to or immediately in front of the lamp. If the invention is used in connection with lamps of the kind shown in Fig. 4 the opposite surfaces of the lighting or incandescent body will each face a reflector 2^a so that the light therefrom will be diffused over an extended area. This reflector 2^a may if desired be in the nature of a cone open at opposite ends.

My invention is particularly adapted for use in automobile or other head lights such as locomotive or search lights for army or navy purposes and is especially adapted for army purposes on account of its light weight and small gas consumption. It may also be readily adapted for use in connection with

airships of any description on account of its powerful light and light weight, and as hereinbefore brought out the burner is also readily adapted for use in connection with railroad car or other lighting. The lighting body is quickly brought to incandescence owing to the fact that the Bunsen flames are projected against opposite surfaces thereof and may be easily removed from the burner and as easily returned to operative position. The refractory or lighting body being made of thorium and cerium nitrates it is not necessary to change the position of this refractory body which becomes useless only after a long period of use, a period of at least one thousand hours constant burning being a conservative estimate of its life. In the common and well-known oxy-hydrogen or calcium light, the position of the calcium pencil has to be gradually changed by rotation so as to always present a new surface to the flame as said pencil is readily consumed by the intense heat of the Bunsen flame. I have also discovered that when the Bunsen flame is projected on a refractory body such as shown in Fig. 2 on opposite sides, it does not take any more gas to bring both sides to incandescence than it does to bring a single surface to incandescence with only one flame in use. At the same time with the use of two flames directed against opposite sides of the refractory body each side thereof will give proportionately more light, in fact the burner will give about three times as much illumination with the same gas consumption as when only a single flame is used.

Instead of applying my refractory material to an open ring as hereinbefore described, the said support may comprise a receptacle 21 having a central partition 22 which divides it into two separate compartments each of which may be separately filled as brought out hereinbefore. The partition 22 may be provided with spaced apertures 23 through which platinum wire 24 is strung so as to cross and to form projections in each compartment. The exposed portion of these wires in each compartment will become embedded in the refractory material as it is applied to the holder and will serve as a means for maintaining said material in position on the body after the said material has shrunk due to the heat and become separated from the inner circumferential edges of said compartments. Projections other than those shown and described may be located in each compartment for the same purpose. This construction of support results in a saving of refractory material so that the cost of the lighting body is reduced without affecting its serviceability; that is a smaller amount of material is required to fill the holder owing to the partition 22 occupying some of the space in said holder.

I have found that carborundum owing to

its heat-withstanding properties is particularly adapted for use in making the holders or supports for refractory material used in connection with my invention.

5 Various changes may be made in the specific construction shown and described within the scope of the claims without departing from the spirit of my invention.

I claim as my invention:

10 1. In a burner for incandescent gas lights, a tube in communication with a source of fuel supply, burners connected with said tube and having their ends spaced from and extending toward each other, a
15 support carried by said tube and extending across the axis thereof at an angle to the burners, spaced tubular members secured to said support, a lighting body having faces located between the ends of said burners,
20 arms projecting from opposite edges of said lighting body and arranged to extend into said tubular members whereby said lighting body is removably supported on said tubular members in substantially parallel planes

at right angles to the axes of the burners 25 and held against any substantial movement in any direction at an angle to said planes.

2. In a burner for incandescent gas lights, a button comprising a carrier of heat resisting material, and a solid coherent mass 30 composed of the oxides of rare earth metals located therein with its opposite faces exposed so as to be capable of being brought to incandescence on opposite sides.

3. In a burner for incandescent gas lights, 35 a button comprising a carrier of heat resisting material provided with separate compartments facing in opposite directions, and a solid coherent mass composed of the oxides of rare earth metals in each compartment. 40

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

OSCAR WIEDERHOLD.

Witnesses:

JOHN A. KEHLENBECK,
G. V. RASMUSSEN.