

942,561.

[illegible]

J. H. C. Sumner.

~~Albert Nathan~~

INVENTOR
Geo. E. Hulse
BY
Waford & Russell
ATTORNEYS

G. E. HULSE.
 GAS LIGHTING APPARATUS.
 APPLICATION FILED FEB. 20, 1906.

942,561.

Patented Dec. 7, 1909.

2 SHEETS—SHEET 2.

Fig. 5.

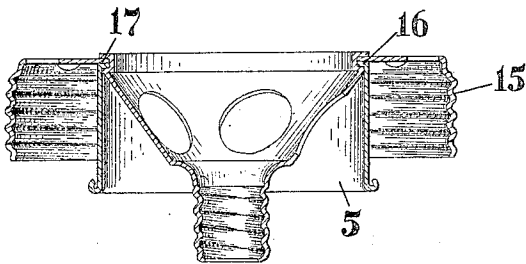
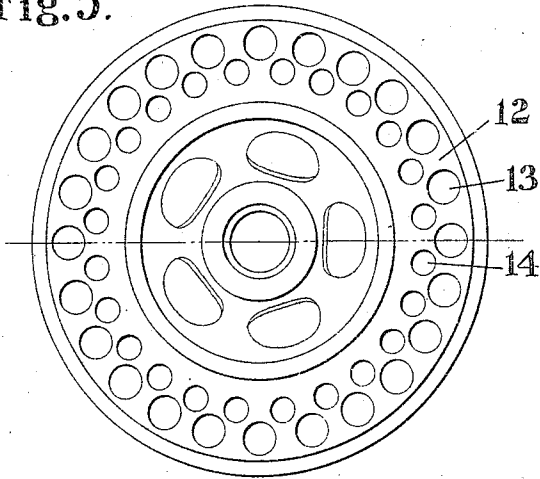


Fig. 4

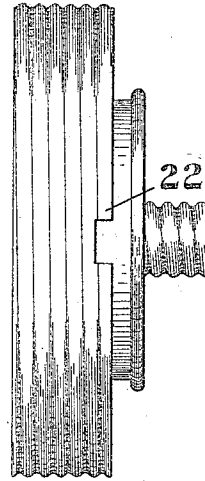


Fig. 6

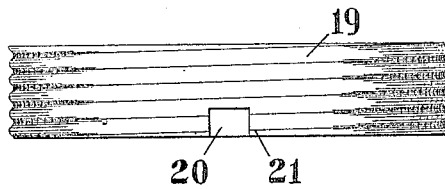


Fig. 7

WITNESSES:

H. C. Sumner
Albert Nathan

INVENTOR
Geo. E. Hulse
 BY
W. J. Drees
 ATTORNEYS

UNITED STATES PATENT OFFICE.

GEORGE E. HULSE, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO THE SAFETY CAR HEATING & LIGHTING COMPANY, A CORPORATION OF NEW JERSEY.

GAS-LIGHTING APPARATUS.

942,561.

Specification of Letters Patent.

Patented Dec. 7, 1909.

Application filed February 20, 1906. Serial No. 301,988.

To all whom it may concern:

Be it known that I, GEORGE E. HULSE, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Gas-Lighting Apparatus, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates generally to systems of gas-burning apparatus, but it more particularly concerns improvements in a gas-illuminating apparatus in which a mantle is arranged in an inverted position.

In devices of the foregoing character, a difficulty has heretofore been experienced in so arranging the parts that, while the air may properly circulate through the device when assembled, a ready removal of the parts may be effected at will. Other inherent defects in prior devices are known to those skilled in the art and need not be specifically enumerated as their elimination through the herein-disclosed invention will be more apparent from the following description.

The invention accordingly has in view, among other objects, the provision of an improved means whereby the globe or shade and mantle may be conveniently positioned upon the burner and may readily be simultaneously detached for purposes of repair, or otherwise, whenever desired.

Another object residing within the contemplation of this invention is an improved means for controlling the circulation of air around the exterior of the mantle, commonly called the "wash", and for effecting a proper removal of such air when it has become exhausted.

Another object of this invention is to provide a mounting for a globe in which a globe holder will bear a semi-permanent relation to such globe so that the combined globe and holder may be quickly attached to and detached from the burner and be used without danger of fracture of the globe due to excessive heating. That is to say, the holder is so secured to the globe that the two may be employed as a unit, without, however, rendering it difficult to replace new unfractured globes in its holder. This globe-holder unit may in turn be quickly affixed to the burner and with the greatest of

facility be removed therefrom for substitution in case of a fracture or undue soiling of the globe.

Another object is to provide a gas-illuminating apparatus which, from an operative standpoint, will possess a high degree of efficiency and durability in usage, and which, structurally considered, will be of the utmost simplicity consonant with the ends to be attained, being composed of but few parts, all adapted for being made at a minimum of cost and individually so formed as to be capable of being easily assembled into a neat and compact arrangement for accomplishing the purposes intended.

Other objects and advantages will be in part obvious and in part pointed out hereinafter.

With these and other ends in view, this invention accordingly consists in the features of construction, combinations of parts, and arrangement of elements which will be exemplified in the embodiment thereof hereinafter described and the scope of the application of which will be indicated in the following claims.

In order that the invention may be more fully understood and made comprehensible to others skilled in its relating arts, drawings illustrating a convenient manner of carrying out the same are appended as a part of this specification, and, while the controlling principles of the invention may be otherwise applied by modifications falling within the scope of the claims, the herein-disclosed embodiment is that which will ordinarily be preferable to employ in practice, and is regarded as representing substantial improvements over the many implied and obvious variations of the same.

In the appended drawings, which illustrate the invention in detailed views, like reference numerals refer to corresponding parts, of which,

Figure 1 is a vertical median section showing the parts as assembled ready for use. Fig. 2 is an enlarged side elevation of a portion of the periphery of the globe holder, showing certain details of the locking means employed for preventing a disengaging movement between the globe and its holder. Fig. 3 is a section taken along the line 3—3 of Fig. 2 and setting forth certain details not clearly apparent from the foregoing figure. Fig. 4 is a sectional median eleva-

tion showing the assembled improved combined globe and mantle holder, apart from the other features of the illuminating apparatus. Fig. 5 is a top elevation of the device shown in Fig. 4 illustrating details not prominently appearing in the latter figure. Fig. 6 is a side elevation of the device shown in section by Fig. 4 and disclosing, in addition to features appearing on the foregoing figure, the side recess constituting the locking means. Fig. 7 is a side elevation of the retaining ring which, in conjunction with the interposed asbestos packing, forms a semi-permanent part of the shade and adapts the same for easy attachment to the holder.

In the practical carrying out of this invention, it will be found to be applicable to various forms and arrangements of lamps or burners, but as it possesses many eminent advantages when applied to mantle lamps of an inverted type, it will be conducive to clearness to describe the preferred embodiment thereof in such connection. This form is shown by the drawings, in which 1 denotes the end or nozzle portion of the burner, which portion, if so desired, may be in threaded or other detachable connection with the lamp body 2, as shown. In the usual practice, it will be convenient to arrange the body portion of the burner in a permanent relation with the lamp body 2, which, as here shown, is so formed at its lower portion as to properly co-act with the present described improvement of combined mantle and globe holder. To this end, the end of said nozzle 1 is preferably reduced and exteriorly threaded, as denoted by 3, to afford a convenient means whereby the holder either with or without the mantle may be securely attached to said nozzle and, at the same time, be capable of a ready removal whenever so desired.

The holder itself will ordinarily comprise three portions: a center or inner portion 4, an intermediate portion 5, and an outer portion 6, each of which will now be more specifically described. The center-portion 4 has a reduced lower end or hub 7, so constructed and proportioned as to be easily engageable with the threaded nozzle end. For this purpose, a very convenient mode of constructing such hub is to form the same of relatively thin metal or light material, which is spun or otherwise shaped so as to afford both exterior and interior threads, as will be clear from an inspection of the drawings. By this means, an outer surface is formed, which may if desired be detachably embraced by a suitable spool 8 of asbestos or like material, having attached thereto a mantle 9 of globular or like shape. At its upper end, such hub enlarges and flares outwardly in a funnel-shaped portion 10 which is provided with a suitably arranged series of perforations 11, adapted to serve as exits

for the vitiated products of combustion, as will be clear from a consideration of the operation of the device. As will be perceived, such interiorly threaded hub primarily operates to secure the shade-holder to the burner, although it may be manually released by a reverse rotation, which, however, is normally prevented by a frictional or other abutment of the shade-holder against a suitable member in fixed relation to some part of the burner, such as the gas delivering conduit. The outer portion 6, which serves as a means instrumental in gripping the globe, preferably extends from the upper peripheral edge of the perforate conical intermediate portion 4 in a radially outward direction, thereby affording a flat top-face 12 which is provided with a series of air-inlet openings 13 and which may also have a series of retaining seats 14 adapted to assist in positioning the holder against an undesirable reflex movement. At its outer extremity, such portion extends downwardly in a direction approximately normal to the top-face, thereby affording a ring which may be threaded and adapted for detachably receiving the retaining ring 19 previously affixed in a semi-permanent relation to the globe or shade 25.

Intermediately located with respect to parts 4 and 6 is a shield 5, which will usually depend from a suitable attachment with one or the other of said parts and preferably from the point of connection of said parts when they are formed of separate pieces. Such shield will ordinarily be of a cylindrical shape, as shown in the drawings, and, as commonly constructed, may terminate a little short of the lower end of the hub, in order that the desired circulation of air may be insured and that it may not obstruct the distribution of the light rays when made of opaque material. It will be understood in this connection that, while the various described parts are shown as separate members which have been united in a substantially permanent relationship, diverse details may be adopted, if desired. Any two or more of the parts may be integral with one another, or may be detachably joined, and other forms of union may be employed, although in ordinary practical cases, it will be found that the arrangement herein shown will be most serviceable and inexpensive. In the connection as here arranged, the inner member is provided with a peripheral groove within which rests an inturned edge 16 of the shield 5, and also the inner peripheral edge 17 of the shade holder. Such parts will ordinarily be spun or stamped into the requisite shape.

The means for securely retaining the globe may now be considered. As preferred in this connection, the globe, which may be of the imperforate type, has at its mounting

end, here shown as the upper end an annular groove within which rests a flat packing-ring 18 of asbestos or other suitable material. A retaining ring 19 embraces such asbestos packing and forces the same with sufficient pressure against the shade or globe to securely hold the parts together. At some suitable point on the periphery of such retaining ring, a portion is cut away, forming a recess 20 and the edges 21 of such recess are sprung out and adapted for being engaged with a similarly-formed edge 22 upon the globe-holding portion 6. This will be clearly understood by reference to Figs. 2 and 3, and need not be further enlarged upon. It will be clear that such expedient will be exceedingly effective in practical use and will positively retain the members in the proper relationship thereby preventing any inadvertent separation thereof.

It will be seen that the herein-described invention is one well adapted for attaining the objects and ends hereinbefore stated.

The device is adapted for being easily affixed to any suitable burner apparatus and is such as will possess great durability in service. The globe having the holder attached thereto in the semi-permanent relation may be used as a unit for the purpose of rapidly replacing globes on burners by screwing the hub on and off a threaded conduit, so as to frictionally or otherwise engage another portion of the holder with a member having a fixed relation to the burner. Such attachment will be made by merely screwing the hub device onto the threaded nozzle and rotating the same until the upper face 12 abuts the lower portion 23 of the lamp. The latter carries a spring clip 24 whose end will interfit with one of the seats 14 and thereby prevent a reverse motion of the holder. When assembled, as shown by Fig. 1, and in operation, the fresh air will enter through the peripheral orifices 13, course downwardly along the outer side of the shield 5 and ultimately impact with the mantle 9, thus supplying the necessary oxygen for the combustion of the illuminating gases. Subsequently, such air, which has become vitiated and heated, will arise on account of its buoyancy and pass along within the shield 5, ultimately escaping through the apertures 11 and thence up through the lamp body to the surrounding air and away from the inspirator. During this operation, the requisite supply of fresh air is afforded to the mantle and, at the same time, undue fluctuations owing to currents of air are avoided and the best illuminating effect can be thereby obtained.

As many changes could be made in the above construction and many apparently widely different embodiments of my invention could be made without departing from the scope thereof, I intend that all matter

contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

Having described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a gas lighting apparatus, a downwardly-extending burner nozzle, and a deflecting member detachably carried by the end thereof, said member comprising a depending imperforate bell having the shape of a right cylinder and having its lower end terminating above the end of said nozzle adapted to direct a current of air downwardly and upwardly in a substantially U-shaped path adjacent the end of said burner nozzle.

2. In a gas lighting apparatus, a downwardly-extending burner tube, and a deflecting member suspended from the end of said burner tube, said member comprising a mantle supporting portion affixable to the lower end of said burner, and a depending annular portion adapted to direct air downwardly along its outer periphery and adjacent said burner end and subsequently direct said air upwardly along its inner periphery.

3. In a gas lighting apparatus, a lamp body an inverted burner tube, and a combined globe and mantle holder secured to the lower end of said burner tube and in abutment with the lower end of said lamp body, said holder having air inlets along its outer periphery and air exits adjacent said burner, and a depending bell extending from said holder intermediate said air inlets and exits, whereby air will be directed in a substantially U-shaped course adjacent the end of said burner.

4. In a gas lighting apparatus, a burner having a threaded lower end, and an annular shield suspended from said burner and adapted to direct fresh air downwardly into proximity with the end of said burner and subsequently direct said air upwardly and away from said burner end along a path distinct from said downwardly flowing air, said shield being detachably suspended from the lower end of said burner.

5. In a gas lighting apparatus, a burner having a threaded lower end, a mantle mounted upon the end thereof, and a member carried by said burner end in threaded engagement therewith and having an annular shield portion and adapted to direct fresh air downwardly along its outer periphery into contact with said mantle and subsequently direct said air upwardly and away from said mantle along its inner periphery.

6. In a gas lighting apparatus, a depending burner tube, a combined globe and mantle holder suspended from the lower end of said burner tube, a mantle mounted on said holder and adapted to be disengaged down-

wardly therefrom and inclosing the end of said burner, a closed globe carried by the outer portion of said holder, said holder providing an inner and outer series of openings, and an annular deflector extending in a vertical direction intermediate said series whereby fresh air will be directed downwardly against said mantle through one series of said openings and be subsequently directed upwardly through the other series of openings.

7. In a gas lighting apparatus, an inverted burner tube, a combined globe and mantle holder detachably secured to the lower end of said burner, a mantle secured to said holder and adapted to be downwardly detached therefrom and inclosing the end of said burner, a globe secured to said holder along the outer periphery thereof, said holder providing a depending, annular shield positioned intermediate the inner and outer peripheries thereof, and having air vents to either side of said shield whereby fresh air will be downwardly directed along one side of said shield and into contact with said mantle and subsequently escape upwardly along the other side of said shield.

8. In a gas lighting apparatus, an inverted burner, and a combined globe and mantle holder detachably secured to the end thereof, said holder consisting of a flaring perforate inner portion adapted to support a mantle on the hub thereof, a ring-shaped bell depending from the outer periphery of said flaring portion, and an annular, perforate, globe supporting portion secured to said connected members, whereby air may be admitted and directed downwardly along said depending member into proximity with the mantle and subsequently escape upwardly along said depending member and through the perforations in said flaring portion.

9. In a gas lighting apparatus, an inverted burner terminating in a peripherally-threaded nozzle, an upwardly-flaring, perforate mantle support having a threaded hub in detachable connection with said nozzle, a mantle detachably secured to the outer periphery of said hub, a globe supporting, annular ring secured to the outer periphery of said flaring mantle support and provided with peripheral perforations, a globe detachably secured to said latter member, and a depending, ring-like shield secured to one of said supports, whereby air may be directed downwardly and against said mantle and upwardly along a different path.

10. In a gas lighting apparatus, a combined globe and mantle support comprising a perforate, funnel-shaped inner member having an exteriorly and interiorly threaded hub, a cylindrical shield extending from the outer periphery of said member, and a perforate, annular member extending radially from said shield and terminating in a down-

wardly-turned threaded rim adapted to carry a globe.

11. In a gas lighting apparatus, a combined globe and mantle support comprising a mantle-carrying portion consisting of a threaded hub flaring upwardly in a perforate body portion, a shield portion extending downwardly from connection with the outer periphery of the aforesaid portion, said shield portion terminating short of the end of said hub, and a globe-supporting portion radially extending from connection with the aforesaid parts and having a downward-turned screw-threaded flange adapted to receive a globe.

12. A lighting apparatus comprising, in combination, a burner, a combined globe and mantle holder, and a mantle having a supporting ring carried by said holder and adapted to be removed therefrom independently of the position of said holder with relation to said burner.

13. A lighting apparatus comprising, in combination, an inverted burner and a combined globe and mantle holder positioned adjacent the end of said burner, the mantle supporting portion of said holder extending below the globe supporting portion of said holder, whereby a mantle will be positioned substantially in the center of the globe carried by said holder.

14. In a gas lighting apparatus, a combined globe and mantle support comprising a tubular inner member having its end exteriorly and interiorly threaded, and an outer portion terminating in a downwardly turned threaded rim adapted to carry a globe.

15. In a gas lighting apparatus, an inverted burner having an exteriorly threaded lower end, and a combined globe and mantle support comprising a tubular inner member having interiorly disposed threads adapting the same for attachment to said burner end, and having exteriorly disposed threads adapted to detachably carry a mantle and an outer annular member adapted to carry a globe.

16. In a gas lighting apparatus, a combined globe and mantle support comprising an outer annular member terminating in a downwardly turned rim adapted to carry a globe, and an inner tubular member extending below said rim and provided with means adapted to detachably secure the same to a lamp.

17. A device of the nature disclosed comprising in combination, a gas conduit, a member normally having a fixed relation with respect to said conduit and providing a portion arranged at a substantial distance measured outwardly from the periphery of the bore of said conduit, a globe support having a central portion adapted to be detachably engaged with said conduit and hav-

ing an outer portion adapted to be abutted against said portion of said fixed member, and means for detachably securing a globe to said support whereby said globe and support may be removed as a unit from said gas conduit.

18. A device of the nature disclosed comprising in combination, a burner providing an abutment member and a gas conduit having a central location with respect to said abutment member and in fixed relation therewith, a globe support having an outer portion adapted to be abutted against said member and provided with a central portion adapted to be detachably engaged with said gas conduit, and means for detachably securing a globe to a peripheral portion of said support whereby said globe and support may be removed as a unit from said burner.

19. A device of the nature disclosed comprising in combination, a burner having a gas conduit, a globe support having a hub adapted to telescope over said conduit, means for detachably securing a globe to a peripheral portion of said globe support, and means for detachably securing said globe support to said burner.

20. A device of the nature disclosed comprising in combination, a gas conduit having a peripherally screw-threaded portion, a member having a fixed relation with respect to said conduit and providing an annular abutment concentric therewith and located a distance back from the end thereof, a globe support having a threaded hub adapted to be threaded on said screw-threaded portion of said conduit whereby an outer portion may be abutted against said fixed member, said support having a peripheral flange protruding in the direction of and parallel with said hub, and an annular ring detachably secured to said globe support and provided with a resilient packing adapted to be contacted with a globe, whereby said globe may through the instrumentality of said ring and packing be detachably secured to said globe-support in unitary relation.

21. A device of the nature disclosed comprising in combination, a burner providing a gas conduit, a member having a fixed relation with respect to said conduit and providing an abutment located a distance back from the delivery end of said gas-conduit, a globe support having a hub adapted to be detachably engaged with said conduit whereby an outer portion may be abutted against said fixed member, and means for detachably engaging a globe to said globe support in a semi-permanent unitary relationship.

22. A device of the nature disclosed comprising in combination, a gas conduit terminating in a peripherally screw-threaded

section, a member having a fixed relation with respect to said conduit and providing an abutment located a distance back from the threaded portion of said conduit, a globe support having an interiorly threaded hub adapted to be threaded on said screw-threaded conduit whereby an outer portion may be abutted against said fixed member, said support having a peripheral flange protruding in the direction of and parallel with said hub, and a member provided with a resilient packing adapted to be wedged against a recessed rim of a globe to operate as a means instrumental in detachably securing the same to said globe support.

23. A device of the nature disclosed comprising in combination, a burner having a gas conduit, a member having a fixed relation with respect to said conduit and providing an annular abutment concentric therewith and located a distance back from the delivery end of said conduit, a globe support having a hub adapted to be telescoped on said conduit whereby an outer portion may be abutted against said fixed member, means detachably securing said support to said burner, said support having a peripheral flange protruding in the direction of and parallel with said hub, and an annular ring detachably secured to said globe support and provided with a resilient packing adapted to be firmly contacted against a recessed rim of a globe whereby said globe and support may be maintained in a semi-permanent unitary relationship through the instrumentality of said ring and packing.

24. A device of the nature disclosed comprising in combination, a gas conduit terminating in a peripherally screw-threaded portion, a member having a fixed relation with respect to said conduit and providing an annular abutment concentric with said conduit and located a distance back from the threaded portion thereof, a globe support having an interiorly threaded hub adapted to be threaded on said screw-threaded portion whereby an outer portion may be abutted against said fixed member, a conical intermediate portion extending outwardly from said hub, said support having a threaded peripheral flange protruding in the direction of and parallel with said hub, and an annular ring screw threaded within said globe-support and provided on its inner periphery with a resilient packing adapted to be wedged against a recessed rim of a globe.

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

GEORGE E. HULSE.

Witnesses:

G. R. JEWETT,
E. E. ALLBEE.