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G. E. HULSE.
LIGHTING APPARATUS.
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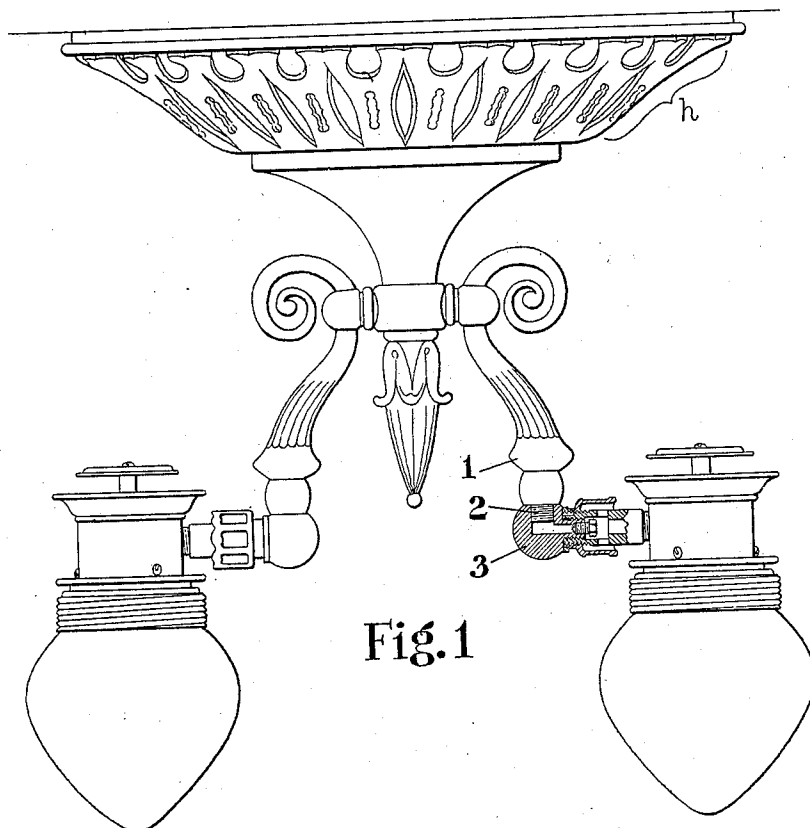


Fig. 1

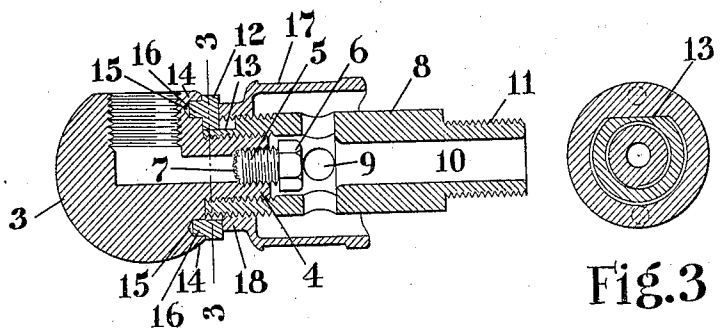


Fig. 3

Fig. 2

WITNESSES:

H.C. Summis.

Albert Nathan

G. E. Hulse
INVENTOR
BY
Warfield & Duff
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.

LIGHTING APPARATUS.

No. 836,114.

Specification of Letters Patent.

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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 Lock Devices for 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 broadly relates to a means whereby through a simple manipulation a plurality of members may be united in such a manner that a spontaneous disengagement thereof will not occur, although a subsequent segregation may be readily effected whenever so desired. However, as it possesses eminent advantages in its application to gas-lighting apparatus, it will be conducive to clearness to disclose the invention by a more specific description as applied in such connection.

In apparatus relating to various types of gas illuminating systems it is customary to resort to screw-threads as a means of making connections between various parts, such as conduit-sections. Joints of this nature, however, are very likely to work loose, particularly when the apparatus is subjected to the vibrations, intermittent shocks, and other conditions such as are invariably associated with railroad service. This is especially true of so-called "detachable" connections in which the parts are necessarily in a more yielding relation than in the case of permanent connections. It has not been found desirable to wholly dispense with easily-detachable joints, since it is requisite that convenient access be had to certain parts in order that repairs, adjustments, or renewals thereof may be made. The inspirator is an example of this necessity, in that it must be maintained in a perfect condition to render certain its most efficient action, and accordingly this feature of a gas-lighting apparatus is so constructed that it may be dissembled with the least trouble commensurate with the probable frequency of so doing. When employed for illuminating units of transportation, the time requisite for such separation and reuniting of parts is a most important element, as it is a costly matter to detain a car for a longer period than is abso-

lutely necessary; but, on the other hand, it is equally imperative that the parts may be so attached that they will not work loose.

This invention accordingly has in view, among other objects, the provision of a means for so locking screw-threaded or other unions against a disengagement that while a manual detachment may easily be made whenever desired the parts will otherwise be permanently maintained in the intended relation.

Another object which this invention seeks to provide is a means which will act to securely retain united members in place and will at the same time serve as an air-shield for an inspirator of the sort usually employed in gas-lighting systems.

Another object residing within the contemplation of this invention is to devise an inspirator for apparatus of the class described which is especially fitted to railroad service, in that all the parts are capable of a wide range of adjustability and that while such parts are normally maintained in a permanent relation they may be dissembled with the utmost speed without resorting to any special implement for the purpose and similarly be reassembled with equal despatch.

Another object is to provide an instrumentality of the class specified which, from a mechanical standpoint, will in usage possess a high degree of efficiency and effectiveness and which, structurally considered, will be of the greatest possible simplicity, 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 readily 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, combination of parts, and arrangement of elements hereinafter more explicitly set forth as an exemplification of the underlying principles involved in the invention.

In order that this 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 such drawings it is to be noted that like numerals refer to corresponding parts throughout all the figures, of which—

Figure 1 is a sectional elevation showing the invention as embodied in a gas-lighting apparatus of the dependent type, such as is generally employed in railroad service. Fig. 2 is an enlarged section through the inspirator of the foregoing apparatus, showing the invention as specifically applied to such part. Fig. 3 is a vertical section taken along line 3 3 of Fig. 2, showing one manner in which the collar may be keyed to one of the conduit-sections.

As tending to render better understood certain of the advantages of this invention, in its present described application to units of transportation it may be preliminarily pointed out that the union of the shown structure is so located that it carries the unbalanced weight of the lamp, and as a consequence the various features which are detachably secured to one another are subject to undue strains and particularly tend to jar loose and be otherwise altered in their mutual relationship.

In the accompanying drawings, 1 denotes a bracket or standard of any desired type, in this case it being illustrated as a suspension-bracket provided with a screw-threaded end 2, taking into a suitable conduit-section 3, which serves as a feed for the consumed gas. While in the present embodiment such feed is elbowed in conformity with the type of apparatus shown, it will be understood that the same may be formed and arranged in conformity with any other preferred type of illuminating apparatus. The feed here specified terminates in an extension 4, which is screw-threaded both interiorly and exteriorly. A suitable nozzle 5 is threaded within the bore of said feed so as to be longitudinally adjustable therein, and to afford a convenient means for effecting such adjustment the nozzle is provided with a head 6, which is of polygonal or other shape, adapted to be engaged by a wrench or other means in order that the nozzle may be rotated and be thereby brought to any desired adjustment with respect to the gas-feed. That foreign matter may be excluded from the nozzle-orifice a screen 7 is positioned adjacent the inner end of said nozzle, preferably by being seated against the shoulder formed by the enlarged bore in which the threads are formed. It

will be found that this expedient will be very simple and well adapted to securely position the screen in its desired relation to the nozzle.

Telescoping with the extension 4 and in screw-threaded connection therewith is a conduit-section 8, which is provided with apertures 9, leading transversely toward the nozzle-orifice, whereby air may be drawn through said orifice by the gas issuing from the nozzle and subsequently be thoroughly mixed and diffused therewith in the enlarged bore 10 of said conduit preliminary to being carried to the point of ignition in the lamp. It is to be observed in this connection that it is highly desirable that the gas-feed and conduit be readily separable, so that convenient access may be had to nozzle 6 to effect adjustments thereof or cleanse or replace the same, and to this end the threaded connection between the gas-feed and conduit while entirely fluid-tight does not bind to an extent sufficient to mitigate against a manual separation of the parts whenever deemed advisable. This invention provides a means for so keying such parts together when set up for use that an inadvertent separation therebetween may not take place. The instrumentality resorted to in ordinary practice and here shown by way of example comprises a member 12, which in its operative position interlocks with each of the parts so as to key the same together, but at the same time permits of being withdrawn from such mutual engagement in order that a separation of such parts may be had whenever desired. Such member may conveniently be in the form of a collar, as shown by Fig. 3, and such collar may be mounted on either one of the said parts, as the conduit-section 8, so as to be capable of being moved therealong while still in a keyed relation thereto. In the preferred manner of effecting this mounting the conduit is cut away from its end to provide a suitable facet 13, whereby the circular contour of the conduit is broken. The collar is provided with an aperture conforming to this shape and is so proportioned as to so closely circumscribe the same that it will be restrained against a rotary motion with respect to such conduit. This arrangement is clearly shown by Fig. 3, and it will be obvious that certain variations may be made in this particular in order to accomplish the same end. The length of such facet will be such that the collar may be retracted therealong a sufficient distance to effect a complete release from the gas-feed, and such length will necessarily depend upon and correspond with the degree of protruding of the interfitting contacting faces between such collar and the shoulder on the gas-feed. In view of this disclosure it will be apparent that various forms of interfitting faces may be provided, but that here shown will be found in practice to be well adapted to real-

ize the desired ends and may be regarded as the preferred form of the invention. The shoulder 14, extending laterally from the above-referred-to threaded extension, is provided with a suitable number of recesses 15, and the collar is similarly provided with studs 16, which are adapted to take into said recesses, and thereby secure such collar against rotation with respect to the gas-feed. These studs are of such a length that a disengagement may be effected by longitudinally retracting the collar upon the facet 13. It will be noted that when in operative position the collar mutually interfits with the gas-feed and the conduit and that a relative movement therebetween is accordingly prevented and a permanent union thereby insured. It will be understood that said collar may simultaneously engage with more than two sections, if desired.

This invention furthermore contemplates a means which is well adapted to releasably maintain the aforesaid keying device in its operative position, and to this end a member may be adjustably engaged with one of said parts so as to be adapted to be moved to either release said collar or to force the same into interlocking relation with both of said parts. In carrying out this feature by means of the herein-shown embodiment, utilization is made of a shield 17, which serves to regulate the flow of air through the aforesaid orifices and to also guard against the accumulation of cinders or other foreign matter within the apparatus. As here shown, such shield is of a bell or cup shape and has a reduced portion 18, which is in threaded engagement with the exterior of the conduit. Such shield is designed at its reduced end to abut the aforesaid collar to translate the same into interfitting engagement with the gas-feed and to so maintain the same, and, conversely, it will be noted that by a reverse movement the shield may be withdrawn from abutment with said collar in order to effect a release thereof. The shield is enlarged at its other end which extends over the apertures 9 at a distance therefrom sufficient to afford a free circulation of the air.

It will thus be seen that the invention herein disclosed is one well adapted to attain the ends and objects apparent from the foregoing. The combination is capable of being readily made at a small cost and is one which will in service possess a high degree of durability and efficacy, and particularly one in which the parts may be dissembled with the utmost facility. To do this, it is merely necessary to manually rotate the shield, thereby releasing the locking-collar, and the parts are then adapted to be readily unscrewed and access be had to the normally concealed features.

Having described my invention, what I

claim as new, and desire to secure by Letters Patent, is—

1. In a gas-lighting apparatus, a plurality of members in screw-threaded connection, and a lock device carried by one of said members but fixed against rotating thereon, said device having features adapted to be inter-fitted with corresponding features on said other member, whereby a relative movement between said members will be prevented.

2. In a gas-lighting apparatus, an inspirator comprising a gas-feed having a tubular portion provided interiorly with screw-threads, an inspirator-nozzle having an engagement with said interior threads and protruding and terminating in a head adapted to be engaged by a suitable means for adjusting it in position, a tubular conduit incasing said nozzle and provided with transverse apertures leading adjacent the outer end of said nozzle whereby air may be admitted for diffusion with the gas ejected from said nozzle, and an adjustable shield embracing said conduit and providing a portion extending over said air-orifices at a distance therefrom, whereby the flow of air may be controlled and foreign matter shielded from said orifices.

3. In a gas-lighting apparatus, a plurality of conduit-sections in screw-threaded engagement, one of said sections having a flattened peripheral face, and a collar slidably mounted in contact with said face and restrained thereby against rotation with respect to said section, said collar being adapted to be moved into interlocking engagement with said first-mentioned section to prevent relative movement thereof with respect to said other section.

4. In a gas-lighting apparatus, a plurality of conduit-sections, the one telescoping into the other and screw-threaded thereto, said latter section providing an exterior facet, and a locking-collar circumscribing said latter section and interfitting with said facet whereby it is restrained to longitudinal movement, said collar having a face matching with a corresponding face on said other section and adapted to be interlocked therewith to prevent relative movement between said sections.

5. In a gas-lighting apparatus, a pair of conduit-sections in screw-threaded engagement, the one having a non-circular contour and the other having a serrated face, and a locking-collar slidably carried by said first-mentioned section and interfitting with said contour whereby it is restricted to a translation with respect to said section, said collar having a face matching with the aforesaid serrated face, whereby said collar may be moved into interlocking relation with said latter section to prevent a relative movement between said sections.

6. In a gas-lighting apparatus, a pair of telescoping conduit-sections in screw-threaded engagement, one of said sections having in its circumference a longitudinally-extending recess and the other providing a recessed shoulder, and a locking-collar slidably mounted on said first-mentioned section and interfitting with said recess whereby it is restrained against rotation, said collar having one or more studs adapted to interlock with said recessed shoulder whereby a relative movement between said sections is prevented.

7. In a gas-lighting apparatus, a plurality of members in screw-threaded connection, a locking device carried by one of said members and interfitting therewith, whereby it is restrained to a translation with respect to said member, said device having features adapted to be interfitted with corresponding features on said other member, whereby a relative movement between said members will be prevented and a means adjustably carried by one of said members and adapted to restrain said collar against movement.

8. In a gas-lighting apparatus, a plurality of members in interlocking relation, a locking device carried by one of said members and adapted to be contacted with the other to prevent relative movement between said members, and a means mounted on one of said members and adapted to be adjustably moved to limit the movement of said locking device.

9. In a gas-lighting apparatus, a plurality of conduit-sections in interlocking relation, a locking device mounted on one of said sections and restrained thereby to a translation movement, said device being adapted to engage with said other section to prevent movement between said sections, and a member in screw-threaded relation with one of said sections and adapted to be actuated to adjustably restrict the translation of said locking device.

10. In a gas-lighting apparatus, a plurality of conduit-sections, the one providing a flat peripheral face and the other a recessed shoulder, a collar slidably mounted in contact with said face and adapted to be moved into interlocking engagement with said shoulder to prevent relative movement between said sections, and a member in screw-threaded relation with the one section and adapted to be actuated to force said collar into engagement with the other.

11. In a gas-lighting apparatus, a plurality of conduit-sections, the one telescoping in a screw-threaded engagement with the other and providing a flat face in its periphery and the other having a recessed shoulder, a locking-collar interfitting with said flat face and thereby restrained to translation, said collar having features matching said shoulder and adapted to be translated thereagainst, and a member in screw-threaded relation with one

of said sections and adapted to be actuated to adjustably restrict the translation of said collar.

12. In a gas-lighting apparatus, a gas-feed terminating at one end in a tubular extension, a tubular conduit secured to said extension, a collar adapted to key said parts together, and a removable means adapted to maintain said collar in the aforesaid relation.

13. In a gas-lighting apparatus, a gas-feed terminating at one end in a tubular extension, a tubular conduit secured to said extension, a key interlocking with one of said parts and adapted to be moved into interlocking relation with the other, whereby a relative movement between said parts is prevented, and a means carried by one of said parts and adapted to be moved to retain said key in the aforesaid relation.

14. In a gas-lighting apparatus, a gas-feed terminating at one end in a tubular extension, a tubular conduit secured to said extension, a locking device keyed to said conduit and adapted to be moved into interlocking relation with said feed, and an adjustable means for retaining said device in the aforesaid relation.

15. In a gas-lighting apparatus, a gas-feed terminating at one end in a tubular extension, a tubular conduit secured thereto, a collar keyed to one of said parts and adapted to be moved into interlocking relation with the other, and a means adjustably mounted on one of said parts and adapted to be moved to restrain said collar in the aforesaid relation.

16. In a gas-lighting apparatus, a gas-feed having a shoulder and terminating at one end in a tubular extension, a tubular conduit secured to said extension, a collar so mounted on said conduit as to be restricted to a translation therealong whereby it may interlock with said shoulder to prevent a relative movement between said feed and said conduit, and a shield in adjustable engagement with said conduit and adapted to be moved longitudinally to force said collar against said shoulder.

17. In a gas-lighting apparatus, a gas-feed having a shoulder and terminating at one end in a tubular extension, a tubular conduit secured to said extension, a collar so circumscribing said conduit as to be restricted to a translation therealong whereby it may interlock with said shoulder to prevent a relative movement between said feed and said conduit, and a shield in adjustable engagement with said conduit and adapted to be moved longitudinally to force said collar against said shoulder.

18. In a gas-lighting apparatus, a gas-feed having a shoulder and terminating at one end in a tubular extension, a tubular conduit secured to said extension and having a facet extending longitudinally from the end thereof, a collar so circumscribing said end

as to be restricted to a translation therealong whereby it may interlock with said shoulder to prevent a relative movement between said feed and said conduit, and a shield in adjustable engagement with said conduit and adapted to be moved longitudinally to force said collar against said shoulder.

19. In a gas-lighting apparatus, a gas-feed having a shoulder provided with a recess and terminating at one end in a tubular extension, a tubular conduit secured to said extension and having a facet extending longitudinally from the end thereof, a collar having a laterally-projecting stud and so circumscribing said end as to be restricted to a translation therealong whereby said stud may be seated in said recess to prevent a relative movement between said feed and said conduit, and a shield in adjustable engagement with said conduit and adapted to be moved longitudinally to force said collar against said shoulder.

20. In a gas-lighting apparatus, a gas-feed having a shoulder provided with a recess and terminating at one end in a tubular extension, a nozzle affixed thereto, a tubular conduit secured to said extension and provided with transverse apertures leading to the outer end of said nozzle, whereby air may be supplied for diffusion with the ejected gas, said conduit having a facet extending longitudinally from the end thereof, a collar having a laterally-projecting stud and so circumscribing said end as to be restricted to a translation therealong whereby said stud may be seated in said recess to prevent a relative movement between said feed and said conduit, and a shield in adjustable engagement with said conduit and adapted to be moved longitudinally to force said collar against said shoulder.

21. In a gas-lighting apparatus, an inspirator comprising a gas-feed having a shoulder provided with a recess and terminating at one end in a tubular reduced extension provided with screw-threads, an inspirator-nozzle having an engagement with and terminating beyond said extension, a tubular conduit telescoping with said extension and engaging with the threads thereof and provided with transverse apertures leading adjacent the outer end of said nozzle, whereby air may be admitted for diffusion with the gas ejected from said nozzle, said conduit having a facet longitudinally extending from the end thereof, a collar having a laterally-projecting stud and closely circumscribing said end so as to be restrained against revolution by said facet but adapted to slide therealong to project said studs into a recess in said shoulder and thereby prevent relative movement between said feed and conduit, and a shield having a reduced end embracing said conduit and in adjustable engagement therewith and adapted

ed to be moved to abut said collar and force it against said shoulder, the enlarged end of said shield extending over said air-orifices at a distance therefrom, whereby the flow of air may be controlled and foreign matter shielded from said orifices.

22. In a gas-lighting apparatus, an inspirator comprising a gas-feed having a shoulder provided with a recess and terminating at one end in a tubular reduced extension provided with screw-threads, an inspirator-nozzle having an engagement with and terminating beyond said extension, a tubular conduit telescoping with said extension and engaging with the threads thereof and provided with transverse apertures leading adjacent the outer end of said nozzle whereby air may be admitted for diffusion with the gas ejected from said nozzle, said conduit being exteriorly threaded and having a facet longitudinally extending from the end thereof, a collar having a laterally-projecting stud and closely circumscribing said end so as to be restrained against revolution by said facet but adapted to slide therealong to project said stud into a recess in said shoulder and thereby prevent relative movement between said feed and conduit, and a shield having a reduced end embracing said conduit and in engagement with the exterior threads thereof and adapted to be turned to abut said collar and force it against said shoulder, the enlarged end of said shield extending over said air-orifices at a distance therefrom, whereby the flow of air may be controlled and foreign matter shielded from said orifices.

23. In a gas-lighting apparatus, an inspirator comprising a gas-feed having a shoulder provided with a recess and terminating at one end in a tubular reduced extension provided interiorly and exteriorly with screw-threads, an inspirator-nozzle having an engagement with said interior threads and terminating beyond said extension, a tubular conduit telescoping said extension and having threads engaging said exterior threads and provided with transverse apertures leading adjacent the outer end of said nozzle whereby air may be admitted for diffusion with the gas ejected from said nozzle, said conduit being exteriorly threaded and having a facet longitudinally extending from the end thereof, a collar having a laterally-projecting stud and closely circumscribing said end so as to be restrained against revolution by said facet but adapted to slide therealong to project said stud into a recess in said shoulder and thereby prevent relative movement between said feed and conduit, and a shield having a reduced end embracing said conduit and in engagement with the exterior threads thereof and adapted to be turned to abut said collar and force it against said shoulder, the enlarged end of said shield extending over said air-orifices at a distance therefrom,

whereby the flow of air may be controlled and foreign matter shielded from said orifices.

24. In a gas-lighting apparatus, an inspirator comprising a gas-feed having a shoulder provided with a recess and terminating at one end in a tubular reduced extension provided interiorly and exteriorly with screw-threads, an inspirator-nozzle having an engagement with said interior threads and terminating in a head adapted to be manually engaged and be thereby adjusted in position, a screen adjacent the inner end of said nozzle, a tubular conduit telescoping said extension and having threads engaging said exterior threads and provided with transverse apertures leading adjacent the outer end of said nozzle whereby air may be admitted for diffusion with the gas ejected from said nozzle, said conduit being exteriorly threaded and having a facet longitudinally extending from the end thereof, a collar having a laterally-projecting stud and closely circumscribing said end so as to be restrained against revolution by said facet but adapted to slide therealong to project said stud into a recess in said shoulder and thereby prevent relative movement between said feed and conduit, and a shield having a reduced end embracing said conduit and in engagement with the exterior threads thereof and adapted to be turned to abut said collar and force it against said shoulder, the enlarged end of said shield extending over said air-orifices at a distance therefrom, whereby the flow of air may be controlled and foreign matter shielded from said orifices.

25. In a gas-lighting apparatus, an inspirator comprising an elbowed gas-feed having a shoulder provided with two recesses and

terminating at one end in a tubular reduced extension provided interiorly and exteriorly with screw-threads, an inspirator-nozzle having an engagement with said interior threads and protruding and terminating in a head adapted to be engaged by a suitable means and be thereby adjusted in position, a screen positioned in an annular seat in said tubular extension adjacent the inner end of said nozzle, a tubular conduit telescoping said extension and having threads engaging said exterior extension threads and provided with transverse apertures leading adjacent the outer end of said nozzle whereby air may be admitted for diffusion with the gas ejected from said nozzle, said conduit being exteriorly threaded and having a facet longitudinally extending from the end thereof, a collar having laterally-projecting studs and closely circumscribing said end and restrained against revolution by said facet but adapted to slide therealong to project said studs into the recesses in said shoulder and thereby prevent relative movement between said feed and conduit, and a cup-shaped shield having a reduced end embracing said conduit and in engagement with the exterior threads thereof and adapted to be turned to abut said collar and force it against said shoulder, the enlarged end of said shield extending over said air-orifices at a distance therefrom, whereby the flow of air may be controlled and foreign matter shielded from said orifices.

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

GEORGE E. HULSE.

Witnesses:

A. C. MOORE,

ELMER E. ALBEE.