

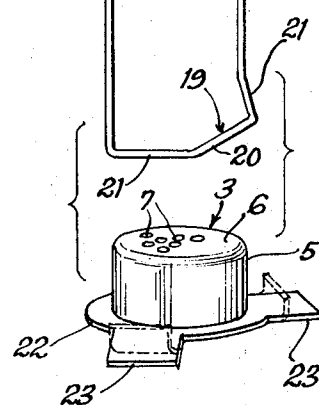
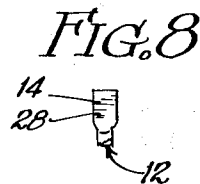
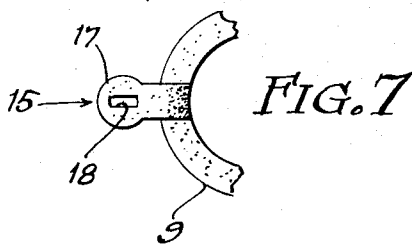
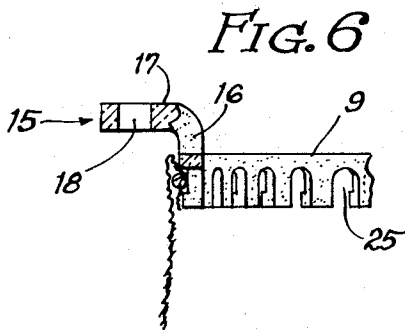
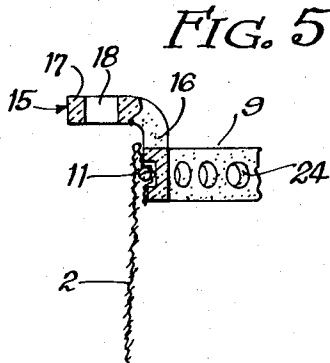
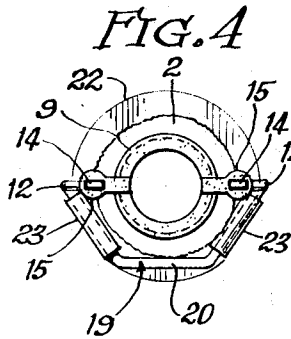
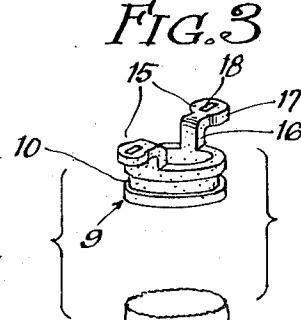
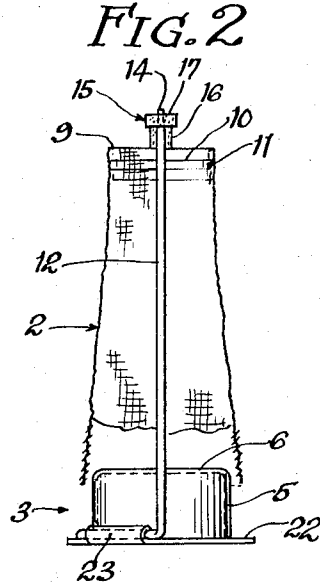
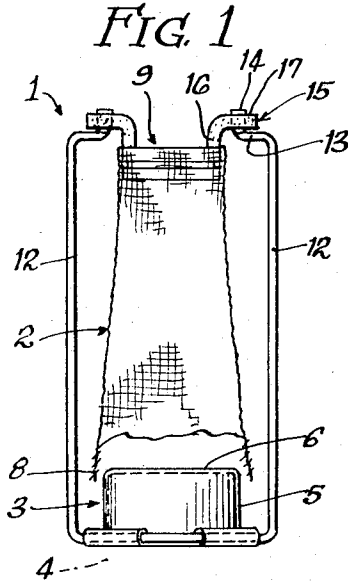
Nov. 28, 1967

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MANTLE WITH IMPROVED MOUNTING

Filed Oct. 18, 1965



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MANTLE WITH IMPROVED MOUNTING

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Filed Oct. 18, 1965, Ser. No. 496,996

2 Claims. (Cl. 67-101)

This invention relates to mantles for gas lamps, lights or other hydrocarbon fuel burning devices. Such mantles are adapted to be heated to incandescence by the flame of the lamp, so as to produce a bright, white light.

One object of the present invention is to provide a new and improved mantle having a supporting arrangement whereby the supporting members for the mantle are removed from the center of the mantle, where the heat of the flame is most intense, and are displaced outwardly, away from the upper end of the mantle to a region where the heating effect of the flame is relatively slight.

A further object is to provide a new and improved mantle having a supporting ring which may be made of metal, but preferably is made of a ceramic material so as to be highly resistant to the heat of the flame.

Another object is to provide a new and improved mantle having a mounting arrangement whereby an old, damaged or broken mantle may readily be removed and replaced with a new mantle, without any substantial danger of damaging the new mantle.

Another object is to provide a new and improved mantle having a supporting ring or head which makes it possible to remove and replace the mantle merely by slipping the head off a pair of supporting wires or rods.

A further object is to provide a new and improved mantle having a supporting arrangement which supports the mantle in a highly stable manner so as to prevent damage to the mantle due to vibration and wind effects.

Another object is to provide a new and improved mantle of the foregoing character which is economical and easy to manufacture.

Further objects and advantages of the present invention will appear from the following description, taken with the accompanying drawings, in which:

FIGS. 1 and 2 are front and side elevational views of a new and improved mantle assembly to be described as an illustrative embodiment of the present invention.

FIG. 3 is an exploded perspective view of the mantle assembly.

FIG. 4 is a top plan view.

FIG. 5 is a fragmentary elevational section showing a modified mantle construction in which the mantle supporting ring is perforated.

FIG. 6 is a fragmentary elevational section similar to FIG. 5, but showing another modified construction in which the mantle supporting ring is slotted.

FIG. 7 is a fragmentary enlarged top view showing the supporting ring of FIG. 4.

FIG. 8 is a fragmentary enlarged elevational view showing the flattened end of the wire for supporting the ring.

As already indicated, FIGS. 1-4 illustrate a mantle assembly 1 adapted to be employed in a gas lamp, or any other similar lamp which burns a hydrocarbon fuel. Thus, the mantle assembly 1 is applicable to lamps adapted to burn gasoline, kerosene, propane or other fuels, as well as natural or manufactured gas.

The mantle assembly 1 employs a mantle 2 in the form of a frusto-conical tube which is adapted to be heated to incandescence by the gas or other flame. The mantle may be produced by any of the methods which will be familiar to those skilled in the art.

The mantle assembly 1 also comprises a burner 3

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adapted to be mounted on the upper end of a burner tube 4 which supplies a mixture of fuel and air to the burner 3. It will be seen that the burner 3 comprises a cylindrical wall or tube 5 which is adapted to be slipped over the upper end of the burner tube 4. A wall 6 extends across the upper end of the cylindrical tube 5 and is formed with a plurality of perforations or ports 7 through which the mixture of fuel and air is discharged upwardly from the burner 3. The fuel is ignited just above the burner 3 so as to produce a generally conical flame which passes upwardly through the inside of the mantle 2.

The lower end or skirt 8 of the mantle 2 is loosely received around the burner 3 so that the flame is largely confined within the mantle 2. The illustrated mantle 2 tapers upwardly and is open at its upper end.

A ring or head 9 is provided to support the upper end of the mantle 2. The ring 9 is preferably made of ceramic material, such as porcelain or aluminum oxide ceramic material, so as to be highly resistant to the heat of the flame from the burner 3.

The upper end of the mantle 2 is received around and secured to the supporting ring 9. The illustrated ring 9 is formed with a peripheral groove 10 to retain the mantle. During the process of manufacture, the fabric sleeve which is to become the mantle is secured to the ceramic ring 9 by means of a cord 11, seated in the groove 10. The fabric sleeve is impregnated with thorium oxide, or some other suitable material, as will be familiar to those skilled in the art of mantle manufacture. The fabric sleeve and the cord are then reduced to ash by heating the sleeve with a gas flame until it ignites and burns. All of the organic material is burned away, leaving only an ash structure which remains adherent to the ceramic ring 9. For shipment and handling, the ash structure is impregnated with collodion or some similar binder. After the mantle has been installed in the lamp or other device, the collodion is burned away, to leave only the ash, which glows with a bright, white light when heated by the flame.

The ceramic ring or head 9 is adapted to be supported by a pair of arms or standards 12, preferably mounted on the burner 3. The illustrated arms 12 are made of metal wire. It will be seen that each of the arms 12 has a shoulder portion 13 near its upper end which is bent inwardly, generally at right angles. The extreme upper end portion of each arm or rod 12 is bent upwardly to form a prong 14. These portions 13 and 14 of the arms 12 are adapted to support the ceramic ring 9. The illustrated prongs 14 are flattened and are generally rectangular in cross section.

The illustrated ring 9 is formed with a pair of diametrically opposite lugs or arms 15 which are adapted to be mounted on the prongs 14. Each lug 15 is generally in the shape of an inverted L, having an upwardly extending portion 16 and an outwardly extending portion 17. The portion 16 is formed integrally with the upper side of the ring 9.

The outwardly extending portions 17 of the lugs 15 are formed with openings 18 adapted to receive the prongs 14. As shown in FIGS. 3 and 4, the openings 18 are in the form of elongated slots, to fit around the flattened prongs 14.

With the illustrated construction, it is easy to change the mantle when it is worn out. The mantle is simply lifted upwardly to disengage the lugs 15 from the prongs 14. The new mantle comes equipped with a new ceramic mounting ring 9. It is a simple matter to slip the lower end of the mantle 2 over the burner 3, while mounting the ring 9 on the arms 12, so that the prongs 14 extend upwardly through the openings 18 in the lugs 15. The prongs 14 support the mounting ring 9 in a stable and secure

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manner so that the mantle is protected from damage due to vibration and wind currents. The engagement between the lugs 15 and the prongs 14 prevents any substantial movement of the mounting ring 9 relative to the supporting arms 12.

As already indicated, the arms 12 are preferably mounted on the burner 3. In the illustrated construction, the arms 12 are formed from a single piece of wire, having a bent portion 19 which extends between the lower ends of the arms. As shown, the bent portion 19 has a central section or leg 20 and a pair of side portions or legs 21. The legs 20 and 21 extend around the cylindrical wall 5 of the burner 3, between the legs 12, which are at diametrically opposite points around the cylindrical wall 5. The illustrated legs 20 and 21 are supported by a flange 22 which projects outwardly from the lower end of the cylindrical wall 5. The side legs 21 are held captive within a pair of sleeves 23 which are formed integrally with the flange 22. The sleeves 23 may be formed originally as tabs, as shown in FIG. 3, and may be curled or rolled around the legs 21 so that the legs will be securely retained on the burner 3.

FIG. 5 shows a modified construction in which the ceramic supporting ring 9 is formed with a series of spaced holes or perforations 24 which extend radially through the ring, so as to communicate with the peripheral groove 10. The holes 24 reduce the weight of the ring 9 and also provide for circulation of heat to the upper end of the mantle and the cord 11 during the process of manufacture. The holes 24 increase the rapidity with which the upper end of the mantle and the cord 11 are reduced to ash. It has been found that the mantle may be weakened if it is not thoroughly reduced to ash at its upper end adjacent the supporting ring 9, during the process of manufacture. The provision of the holes 24 shortens the time required for reducing the upper end of the mantle to ash.

FIG. 6 illustrates another modified construction in which the ceramic supporting ring 9 is formed with a series of slots or notches 25, which serve the same purpose as the holes 24. The slots 25 extend radially through the ring 9 and are spaced around its periphery. The slots 25 are open toward the lower side of the supporting ring 9. As in the case of the holes 24, the slots 25 insure that the upper end of the mantle will be thoroughly and quickly reduced to ash during the process of manufacture.

The flattened prongs 14 are adapted to fit closely within the slots 18. The engagement between the flattened prongs 14 and the slots 18 provides a great degree of stability. The rectangular prongs 14 are preferably formed by flattening the extreme upper ends of the circular wire arms 12. Thus, the prongs have lower portions 28 which are tapered so that they wedge tightly within the slots 18. Due to this construction, the supporting ring 9 is supported so that it will not rock or jiggle due to vibration or wind currents. Thus, the mantle is protected from the damage which may occur due to any appreciable movement of the supporting ring 9 relative to the burner 3. The ash structure of the mantle is extremely fragile and is susceptible to damage due to movement of the mantle against the burner 3.

When it is necessary to replace the mantle 2, the old supporting ring 9 is simply lifted upwardly so as to disconnect the lugs 15 from the prongs 14. The new mantle 2 is simply slipped in place with its lower end around the burner 3, and with the lugs 15 of the new supporting ring 9 in engagement with the prongs 14. It will be understood that the prongs 14 extend upwardly through the openings 18 in the lugs 15 so that the mounting ring 9 is securely retained against any accidental dislodgment from the supporting arms 12. Moreover, the engagement between the prongs 14 and the openings 18 prevents any appreciable movement of the supporting ring 9, so that the mantle 2 is protected from damage due to vibration or wind currents.

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The ceramic supporting ring 9 is highly resistant to the heat of the flame from the burner 3. The wire prongs 14 which support the ceramic ring 9 are spaced outwardly away from the flame so that they are not subject to damage due to the heat of the flame. With this construction, the burner 3 and the mounting arms 12 will last almost indefinitely, so that only the mantle itself and the ceramic supporting ring 9 need to be replaced when the mantle becomes damaged or broken. There is no need for the mantle user to replace the entire mantle mounting each time the mantle is replaced, as has often been necessary with prior mantle mounting constructions.

The replacement of the mantle is easy and quick. The new mantle may be installed without any substantial danger of damaging the fragile mantle.

Prior mantles have generally been supported by suspension systems including members which are located at or extend across the center of the mantle just above the upper end thereof. Such prior suspension arrangements have suffered from the disadvantage that the suspension point, at the center of the mantle, is the hottest point in the flame. Thus, the suspension members have been particularly subject to damage due to the heat of the flame.

With the construction of the present invention, all of the supporting members for the mantle are removed from the center of the mantle and are displaced outwardly to a region where the heating effect of the flame is relatively slight. Thus, the lugs on the supporting ring are turned outwardly, away from the heat of the flame, rather than inwardly, into the heat of the flame. While the supporting ring is preferably made of a ceramic material, this construction, with the outwardly turned lugs, is also applicable to supporting rings made of metal.

Various other modifications, alternative constructions and equivalents may be employed without departing from the true spirit and scope of the invention, as exemplified in the foregoing description and defined in the following claims.

I claim:

1. In a mantle-type illuminating device, the combination comprising a ceramic ring, a tubular mantle having its upper end secured around said ring, a pair of upright supporting rods having elongated upper end portions which are flat and generally rectangular in cross section, each of said flat end portions having a pair of flat vertically elongated side surfaces, and means for supporting the lower ends of said rods, said ring having a pair of outwardly projecting members having substantially vertical slots therein disengageably received over said flat upper end portions of said rods for removably supporting said ring between said rods, said slots being generally rectangular in cross section, each of said members having a pair of flat vertically elongated internal surfaces within said slot therein and engaging said flat side surfaces on the corresponding rod for stabilizing said ring against rocking movement, said ring and said mantle being readily removable from said rods by withdrawing said ring from the upper end portions of said rods.

2. In a mantle-type illuminating device, the combination comprising a ceramic ring, a tubular mantle having its upper end secured around said ring, a pair of upright supporting rods, and means for supporting the lower ends of said rods, each of said rods having a flattened upper end with a pair of flat vertically elongated side surfaces, said flattened ends being rectangular in cross section, said ring having a pair of members formed with generally vertical slots therein which are disengageably

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received over said upper ends of said rods for removably supporting said ring between said rods, said slots being generally rectangular in cross section, each of said members having a pair of flat vertically elongated internal surfaces within said slot therein and engaging said flat side surfaces on the corresponding rod for stabilizing said ring against rocking movement, said flattened upper ends of said rods having tapered lower portions for wedging reception in said slots to hold said ring against movement.

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