A burner which comprises inner and outer members relatively rotatable to produce relative axial movement where a fuel passage is defined through the inner member to a burner nozzle and a valve including an insert and a resilient member is disposed between the fuel passage and the burner nozzle.
STOVE AND BURNER ASSEMBLY

This application is a continuation-in-part of co-pending application Ser. No. 350,950, filed Apr. 13, 1973, now U.S. Pat. No. 3,807,381.

This invention relates to burners and more particularly relates to liquid fuel burners. Liquid fuel burners generally comprise two concentric, rotatable bodies which are provided with engaging threads, so that when the bodies are turned relative to each other they move axially to each other. The outer body usually includes a burner nozzle and the inner body includes a valve member.

Burners of this type are described, for example, in the aforementioned U.S. Patent. The supply of the fuel is controlled by turning the outer body in relation to the inner. In a closed position the outer body is so turned that a valve seat defined on the outer member is against the valve member and prevents the fuel from flowing to the burner.

When a burner of this type is in operation, the outer body attains a higher temperature than the inner body. Consequently, after having closed the burner after operation, the outer body with a higher temperature will contract more than the inner body as the bodies cool. This results in such a high pressure between the two valve surfaces when even temperature has been reached that the two bodies are practically locked to each other.

Accordingly, the present invention provides a new and improved burner of the type described in which compensation is provided for the aforementioned difficulties in relative contraction.

Briefly stated the invention in one form thereof comprises an inner stem member having a fuel passage defined therein to a valve surface, and an outer body member threaded to the stem member and movable axially with respect thereto upon relative rotation. Disposed between the stem and body members is an axially movable member which may provide a seal against the valve surface of the stem member and a resilient insert which urges the insert against the valve surface.

The features of the invention which are believed to be novel are particularly pointed out and distinctly claimed in the concluding portion of this specification. The invention, however, both as to its organization and operation, together with further objects and advantages thereof, may best be appreciated by reference to the following detailed description taken in conjunction with the drawings, wherein:

FIG. 1 is a longitudinal half section of a burner assembly embodying the invention; and
FIG. 2 is an enlarged view of a portion of FIG. 1.

FIG. 1 shows a burner of the kind described in the aforementioned patent. Such a burner includes a burner head 2, which is installed on the upper part of an outer body 3 which may or may not in its lower position have a preheating cup 4. An inner body 5 is equipped with threads 6 to which a flange 7 is threaded. Outside of this flange 7 is a packing 8. The inner burner body extends through a hole in a stover body 10. Cup 4 may be a part of stover body 10. A nut 11 on the inner body's thread 6 squeezes packing 8 and the bottom 9 between it and flange 7 and prevents body 5 from rotat-

The flange 7 is tightened against the seat 12 and from said seat a relatively long cylindrical part 13 extends into the outer burner body 3. Defined on the outside of member 5 is a thread 14 which engages an internal thread 15 in the outer body 3. An externally threaded sleeve 16 surrounds the lower cylindrical part 13 of body 5, which thread engages threads in outer body 3 and squeezes between it and a shoulder 17 two washers 18 and 19 and an elastic packing 20.

Where thread 14 in the inner body 5 terminates there is a tapered section 21 which tapered section terminates at a surface 22. From said surface protrudes a cylindrical part 23 to which is attached a cleaning needle 24.

Approximately perpendicular to surface 25 (FIG. 2) of the tapered section 21 of the inner body 5 is drilled a hole 26 which communicates with a fuel supply passage 27 in member 5.

A nozzle defining member 28 is threaded into the upper part of the outer body 3 and has a tapered surface 29 which seals against a corresponding tapered surface 30 in the outer body 3 (FIG. 2).

In known burners of this kind, the nozzle member has a tapered surface which in combination with surface 25 constitutes a shut-off valve for the fuel from passage 27. In order to solve the problem previously described a new and improved valving arrangement is provided.

The arrangement comprises the definition of a cylindrical cavity in nozzle member 28 with a ring-shaped insert therein 31, which insert can slide axially. The insert 31 has an internal frusto-conical surface 32 which will seal against mating frusto-conical surface 25 of inner member 5. Between the insert 31 and the bottom of the cavity is arranged a resilient ring 33 of suitable heat-resistant material such as an asbestos.

The insert 31 can either be free floating between ring 33 and the tapered surface 25 or be retained therein through some suitable guide or connecting member. When the valve is open the pressure of the fuel in passages 26 and 27 will hold member 31 out of contact with surface 25. When the burner is closed after having reached a high heat from use, the surface 32 will press the insert 31 against ring 33 and ring 33 against nozzle member 28. As the burner cools and body member 31 and nozzle member 28 contract pressure exerted between surfaces 25 and 32 tends to increase, but due to the resiliency of ring 33 the pressure between the tapered surfaces will not be so high as to prevent opening the burner when further use thereof is desired.

From the foregoing disclosure it may be seen that the objects of the invention are efficiently attained. While preferred embodiments of the invention have been set forth for purposes of disclosure, it is to be understood that other embodiments to the invention as well as modifications to the disclosed embodiment which do not depart from the spirit and scope of the invention may become apparent to those skilled in the art. Accordingly, the appended claims are intended to cover all embodiments and modifications of the invention which do not depart from the spirit and scope of the invention.

What is claimed is:

1. A burner assembly of the type utilizing liquid fuel comprising concentric inner and outer members rotatable with respect to each other to produce relative axial movement therebetween, said outer member including a burner nozzle, a fuel passage defined in said inner member and extending to a valve surface on said inner member and a cavity defined between said members,
an axially movable member in said cavity having a surface adapted to seal said valve surface, and a resilient member between said insert and said outer member.

2. The burner assembly of claim 1 wherein said insert is ring-shaped and has a frusto-conical lower surface and said inner member has a mating frusto-conical upper surface.

3. The burner assembly of claim 1 wherein said nozzle is defined by an upper nozzle member carried in said outer member, and said insert is disposed between said nozzle member and said insert.

* * * * *