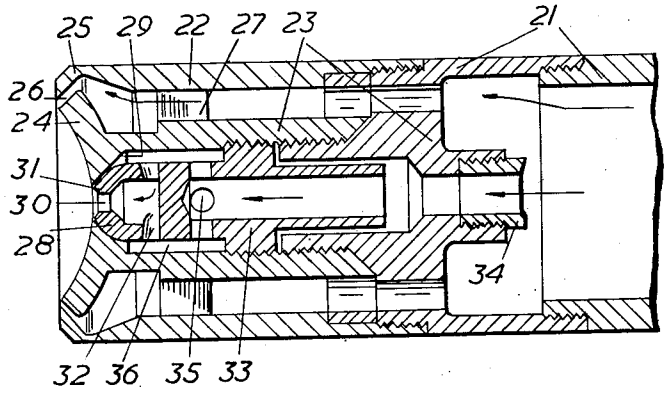
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LIQUID ATOMIZER

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LIQUID ATOMIZER

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5 Claims. (Cl. 299—120)

This invention relates to liquid atomisers and has particular reference to so-called two-fluid or blast atomisers. The present application is a division from my United States patent application Serial No. 250,890 filed October 11, 1951, which relates to a fuel combustion chamber in which the liquid atomiser of the present application is used for atomising liquid fuel within the chamber.

The atomiser of the present invention is of the kind in which liquid is swirled in a swirling chamber and issued divergently from a central exit orifice as a hollow cone of spray, the cone angle of which may vary considerably, and in particular may be as wide-angled as, say, 120°.

The atomiser is also formed with an annular exit or jet passage surrounding the liquid exit orifice for enabling air or steam or the like to issue as a hollow converging cone of gaseous medium, this stream being preferably whirled prior to its issue from the annular orifice in order to form a convergent divergent cylindrical vortex.

The object of the present invention is to provide certain improvements in atomisers of the above stated kind as will now be described with reference to the accompanying drawing.

The atomiser illustrated comprises the tubular outer body or shell **21** with terminal cap **22**, and an inner hollow body member **23** having an externally dish-shaped head piece **24** co-operating at its periphery with an internally conical lip **25** on the forward end of the cap **22** to form a gap **26** of predetermined size so that air or steam supplied to the shell at its rear end will emerge as a conically converging stream from the said gap **26**. Inclined vanes **27** on the cylindrical wall of the hollow body member **23** serve to impart a whirling motion to the stream of air or steam before it reaches the said gap.

Inside the front end of the hollow body member **23** is fitted a liquid spray forming member or swirl spray pressure nozzle **28**. This spray forming member **28** is externally hemi-spherical at its forward end to seat against a conical formation **29** behind the dish shaped head piece **24**. The said spray member is hollow to constitute a swirl chamber and is provided with an exit orifice **30** for register with a central opening **31** through the head piece **24** and is formed with tangentially cut inlet slots **32** in its skirt portion which is seated on the front end of a tubular stem or plug **33** so that liquid fuel entering the interior of the said member will become swirled before

escaping from the orifice **30**. The contact between the cone surface of the head piece **24** and the hemi-spherical surface of the spray member **28** is linear, being substantially a circle, and thereby provides a particularly efficient form of seating for the liquid spray forming member **28**. Such spray forming members may differ in orifice size and are readily interchangeable.

Liquid fuel reaches the inlet slots **32** of the spray forming member **28** from a supply pipe **34** connected axially to the base of the hollow body member. From the pipe **34** the liquid fuel passes into the interior of the body member **23** and along the interior of the aforesaid stem **33** at the rear of the spray member **28** and out through radial holes **35** into the annular space **36** existing between the forward end of the hollow body member **23** and the spray member **28** and thence to the said inlet slots **32**. It will therefore be understood that the liquid fuel emerges as a swirling hollow conical or tulip-like spray from the exit orifice **30** and opening **31** while whirling air or steam emerges convergingly from the annular gap **26**.

Atomisers constructed as above described are particularly useful in liquid fuel combustion chambers as described and illustrated in the specification and drawings of my parent patent application Serial No. 250,890.

What I claim is:

1. A liquid atomiser comprising a liquid spray-forming member having an internal swirl chamber and an exit orifice, a hollow body member having a centrally apertured circular front end piece behind which the said spray forming member is housed, an end cap surrounding the said end piece in spaced relation thereto and thereby providing an annular orifice for the issue of a gaseous medium, and a plug member for maintaining the front end of the said spray forming member pressed against the internal surface of the said front end piece of the hollow body member, the abutting surfaces of the said end piece and the said spray-forming member being such as to constitute a substantially circular linear contact.

2. An atomiser according to claim 1, in which the said abutting surfaces are respectively a hollow conical surface and a hemi-spherical surface.

3. An atomiser according to claim 1, in which the front surface of the front end piece of the said hollow body member is of dished formation.

4. A liquid atomiser according to claim 1, including means for whirling the gaseous medium before it issues from the said annular exit orifice.

5. A liquid atomiser according to claim 1, wherein the shape of the said annular exit orifice for the issue of the gaseous medium is such as to impose a forwardly converging shape on the issuing gaseous stream.

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