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J. S. CLARKE ET AL
AIR-JACKETED ANNULAR COMBUSTION CHAMBERS
FOR JET-PROPULSION ENGINES, GAS
TURBINES OR THE LIKE
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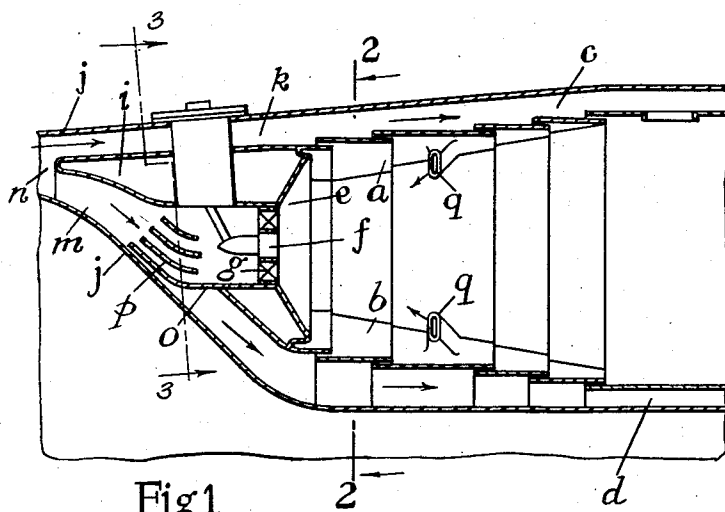


Fig. 1

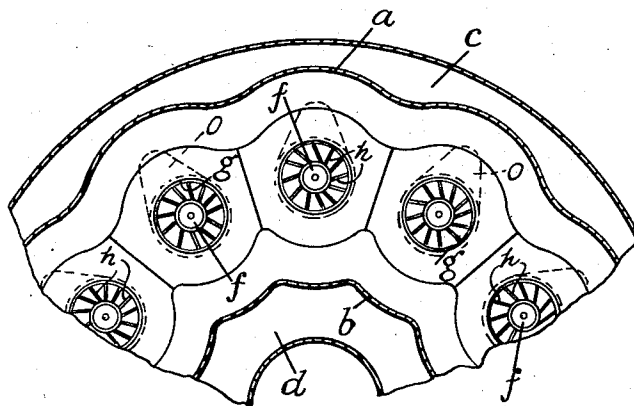


Fig. 2

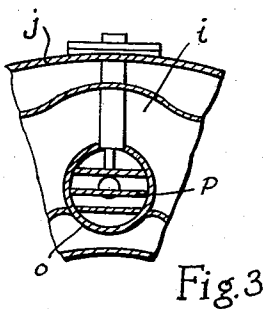


Fig. 3

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AIR-JACKETED ANNULAR COMBUSTION CHAMBERS FOR JET-PROPULSION ENGINES, GAS TURBINES OR THE LIKE

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2 Claims. (Cl. 60—39.65)

This invention relates to an annular combustion chamber for a jet propulsion engine, gas turbine, or the like, and of the type having an air jacket around both its inner and outer walls.

The object of the invention is to provide an improved construction whereby air supplied by a blower can be conveyed to the entrance end of the combustion chamber in a more satisfactory manner than heretofore.

The invention comprises a combustion chamber having combined with its entrance end a hollow annular nose piece shaped to direct air from an annular air entrance to each of the air jackets, and having within the nose piece a plurality of equi-spaced air scoops adapted to gather air from the passage leading to either air jacket and discharge it at a plurality of positions in the entrance end of the combustion chamber.

In the accompanying drawings, Figure 1 is a longitudinal section illustrating diagrammatically an annular combustion chamber provided with the invention. Figure 2 is a fragmentary sectional end view on the line 2—2, Figure 1. Figure 3 is a fragmentary cross sectional view taken on the line 3—3, Figure 1.

Referring to the drawings, the annular combustion chamber there shown is constructed from sheet metal. Its outer and inner cylindrical walls, *a*, *b* consist of overlapping sections of corrugated form. The combustion chamber is surrounded by outer and inner air jackets *c*, *d*. The entrance end of the combustion chamber is wholly or partially closed by an annular end wall *e* on which are mounted the liquid fuel nozzles *f*, these being equi-spaced on a circle which lies centrally between the outer and inner walls. Around each nozzle is provided an air entrance *g* containing air swirling vanes *h*. Preferably and as shown in Figure 1, the end wall is constructed

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from a series of segments each shaped to form a conical cavity around each nozzle. At the said end of the combustion chamber is formed or secured a hollow annular nose piece *i* which together with a surrounding annular hood *j* forms a pair of passages *k*, *m* respectively leading from an annular entrance *n* to the outer and inner air jackets, the outer one of these passages being preferably situated in line with the outer air jacket *c*.

In the said nose piece are secured a plurality of equi-spaced tubular scoops *o*. Each scoop at its entrance end projects into the air passage *m* leading to the inner air jackets, and the other end is connected to the corresponding air entrance orifice *g* in the end wall of the combustion chamber. Preferably in each of the scoops is provided a plurality of guide vanes *p*.

By this invention the combustion zones associated with the burner nozzles can be supplied with the required primary combustion air in a manner which ensures uniform combustion in each of such zones. Additional air is supplied from the jackets through suitably arranged apertures in the walls of the combustion chamber, as for example, through short ducts *q*.

Having thus described our invention what we claim as new and desire to secure by Letters Patent is:

1. An annular combustion chamber having air jackets around its inner and outer walls, and having in combination a plurality of liquid fuel nozzles mounted in equi-spaced relationship and circular formation around one end of the chamber with the axes of the nozzles lying centrally between the inner and outer walls of the chamber, air-swirling means surrounding each nozzle, a hollow annular nose piece extending from the said end of the chamber, and shaped to direct air to the air jackets, an annular air entrance situated adjacent to the outer end of the nose piece, an annular hood surrounding the nose piece and forming therewith air passages leading from the air entrance to the air jackets, and a plurality of air scoops situated in equi-spaced positions within the nose piece and leading from one of the air passages to the air-swirling means around the fuel nozzles.

2. An annular combustion chamber according to claim 1, and having a plurality of guide vanes in each air scoop.

References Cited in the file of this patent

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