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J. S. CLARKE ET AL

2,658,337

COMBUSTION CHAMBER FOR PRIME MOVERS

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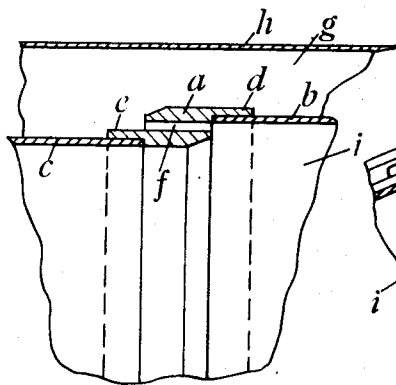


Fig. 1

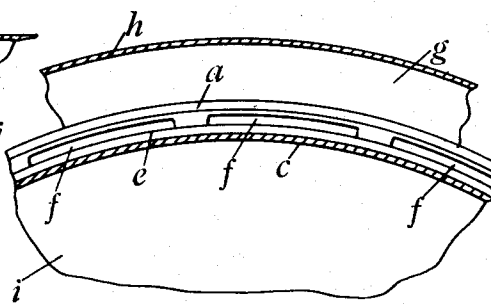


Fig. 2

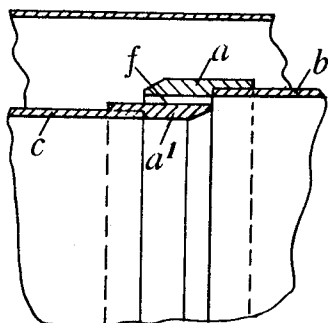


Fig. 3

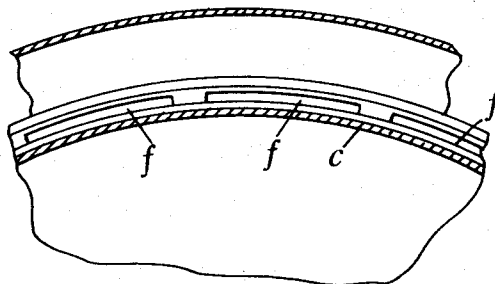


Fig. 4

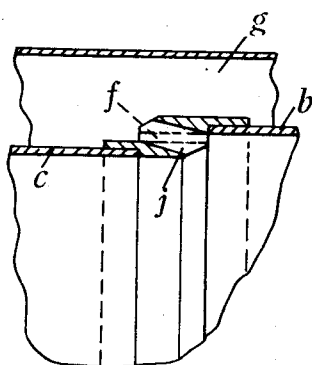


Fig. 5

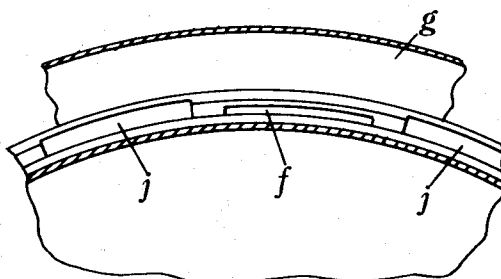


Fig. 6

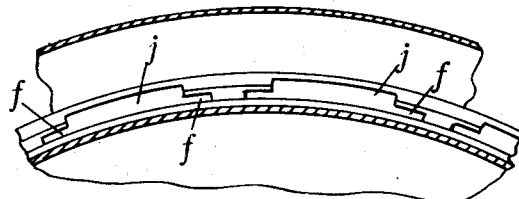


Fig. 7

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COMBUSTION CHAMBER FOR PRIME MOVERS

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1

This invention relates to the combustion chambers for jet-propelled, turbine or other prime movers. A known type of such a chamber is constructed from a plurality of coaxial cylindrical or other sections which at some or all of their adjacent ends are adapted to admit air from a surrounding annular air duct. For some purposes it is desired to admit this air in the form of a thin stream flowing parallel and into contact with the inner surface of the chamber in order to ensure effective protection of such surface against excessive heating, and the object of the present invention is to enable this requirement to be met in a simple and satisfactory manner.

The invention comprises a jointing ring for interconnecting the adjacent ends of a pair of sections, and having formed therein narrow air passages adapted to direct the inflowing air stream along the inner surface of one of the sections.

In the accompanying drawing:

Figures 1 and 2 are respectively fragmentary side and end sections illustrating one embodiment of the invention.

Figures 3, 4, and 5, 6 are respectively similar views to Figures 1 and 2 illustrating two modified constructions, and Figure 7 is an end section illustrating a modification of the construction shown in Figures 5 and 6.

Referring to Figures 1 and 2, the jointing ring *a*, or each of a series of such rings located between the ends of combustion chamber sections as *b*, *c*, is made as a casting of substantially cylindrical and rigid form. The ring is formed with relatively thin projecting annular parts *d*, *e*, or lugs at each end, which are adapted to be inserted in or over the ends of the sheet metal sections *b*, *c*, to be joined. The intermediate part of the ring is of substantial thickness and in this part are formed parallel with the axis of the ring an annular series of narrow slots *f* one end of which is open to the surrounding annular air jacket *g* formed by an outer casing *h*, and the other to the interior of the combustion chamber *i* immediately adjacent to the inner surface of one (*b*) of the sections, the arrangement being such that the slots form narrow passages by which a thin air stream can be directed into contact with the said surface.

In the modified construction shown in Figures 3 and 4 each ring consists of a pair of coaxial rigid parts *a*, *a'* one of which lies within and is slidable relatively to the other so as to form an expansion joint between a pair of sections *b*, *c*. In this case one part is inserted in

2

or over one of the sections, and the other in or over the other section. The slots *f* between the ring parts are formed by transverse grooves in one or the other of the contiguous peripheral surfaces of the said parts. Otherwise these two-part rings are essentially similar to the other form of ring above described and shown in Figures 1 and 2.

In the modification shown by Figures 5 and 6, the slots *f* above described are arranged alternately between other and larger slots *j*. The narrow slots *f* are arranged as above described and adapted to direct a thin stream of cooling air along the inner surface of the section *b*. The slots *j* are not only wider, but are also inclined inwardly as shown to direct into the combustion chamber a quantity of air derived from the jacket *g* for mixing with the hot gases in the combustion chamber.

Alternatively and as shown in Figure 7, instead of providing separate slots *f*, *j*, the narrow slots *f* may be formed at the ends of the wider and inclined slots *j*.

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

1. For use in a combustion chamber constructed from a plurality of coaxially arranged hollow sections having a surrounding annular air duct, a substantially cylindrical and rigid jointing ring structure comprising, in combination, oppositely directed coaxial, and relatively thin annular end parts of different diameters adapted to be engaged with adjacent ends of a pair of said hollow sections, an intermediate part integral with each of said end parts and having a substantially greater thickness than said end parts, and an annular series of narrow passage formations extending axially through said intermediate part and lying radially outwardly with respect to one of said annular end parts and radially inwardly with respect to the other annular end part, whereby said passage formations enable a thin air stream from the outside of one of said hollow sections to be directed along the inner surface of another of said hollow sections.

2. A jointing ring structure as and for the purpose claimed in claim 1, and having additional passage formations in the said intermediate part disposed to direct air from the outside of one of said hollow sections into the combustion chamber for admixture with the gases therein.

3. For use in a combustion chamber construct-

3

ed from a plurality of coaxially arranged hollow sections having a surrounding annular air duct, a substantially cylindrical and rigid jointing ring structure comprising, in combination, oppositely directed, coaxial, and relatively thin annular end parts of different diameters adapted to be engaged with adjacent ends of a pair of said hollow sections, an intermediate part integral with each of said end parts and having a substantially greater thickness than said end parts, said intermediate part being constituted by a pair of coaxially arranged annular parts relatively slidable axially to form an expansion joint, and an annular series of narrow passage formations extending axially through said intermediate part and lying radially outwardly with respect to one of said annular end parts and radially inwardly with respect to the other annular end part, whereby said passage formations enable a thin stream of air from the outside of one of said hollow sections to be directed along the inner surface of another of said hollow sections.

4

4. A jointing ring structure as and for the purpose claimed in claim 3, in which the said passage formations are defined by the said pair of coaxially arranged and relatively slidable annular parts forming the intermediate part of the structure.

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