Sept. 12, 1950 R. H. GODDARD 2,522,114

MEANS FOR COOLING PROJECTED DEVICES

Original Filed Feb. 1, 1947

Fig. 1

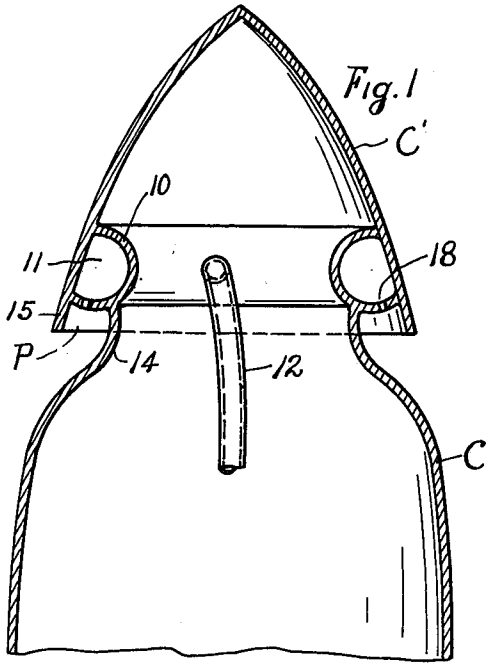


Fig. 2

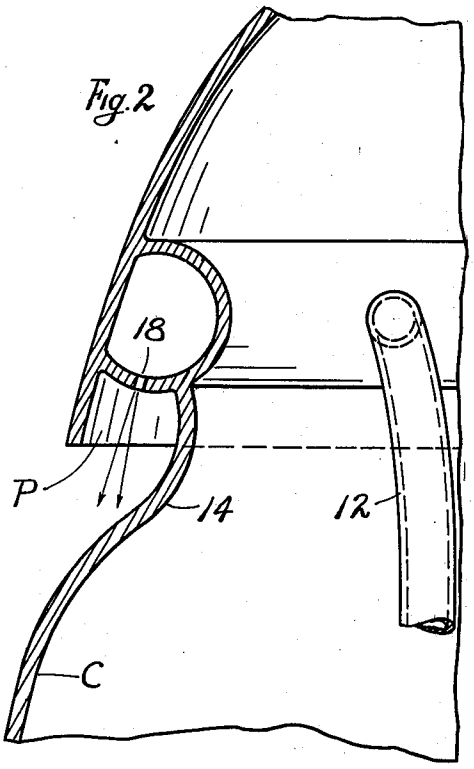
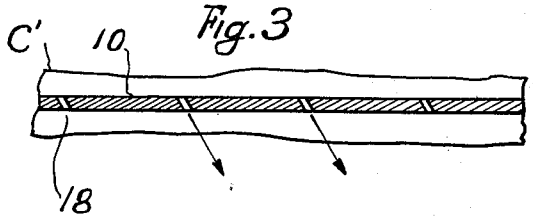


Fig. 3



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MEANS FOR COOLING PROJECTED DEVICES

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Original application February 1, 1947, Serial No. 725,805. Divided and this application December 4, 1948, Serial No. 63,601

1 Claim. (Cl. 102—92)

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This invention relates to the cooling of devices such as rockets, rocket craft and projectiles which are caused to travel through the atmosphere at very high rates of speed. This application is a division of original application Serial No. 725,805 filed February 1, 1947, now Patent No. 2,468,820 dated May 3, 1949.

It is found that the speeds now used for such devices cause an extreme rise in temperature due to friction. The temperatures thus produced may even be above the melting point of any available metal or other material which is suitable for use in the outer casings of such projected devices.

It is the general object of the present invention to provide means for effectively cooling the outer surface of a projected device, even when travelling at excessive speed.

To the accomplishment of this general object, improved constructions have been developed by which water or other suitable liquid coolant may be supplied to the outer surface of the projected device in such manner that it will form a protecting film which is continuously replenished.

The invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claim.

A preferred form of the invention is shown in the drawings, in which

Fig. 1 is a partial sectional elevation of the front portion of a projected device;

Fig. 2 is an enlarged detail section of certain parts shown in Fig. 1; and

Fig. 3 is a detail circumferential section to be described.

Referring to the drawings, the front portion of a projected device is shown in section and is provided with a casing C and a front end casing portion C'. The casing portion C' has an inner annular member 10 which coacts with the part C' to enclose an annular channel 11 to which water or any other suitable coolant may be delivered under pressure through one or more pipes 12.

The front end of the casing C is contracted as indicated at 14 and is joined to the under side of the annular member 10. An annular passage P is thus formed between the contracted casing portion 14 and the rear edge or flange 15 of the front end casing portion C'.

A series of spray openings 18 are formed in the rear face of the member 10 and deliver sprays of

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coolant into the annular passage P and against the contracted front portion 14 of the casing C.

The openings 18 are preferably inclined to the axis of the projected device as shown in Fig. 3, so that the coolant is delivered at a tangential angle to said axis. The coolant is thus caused to circulate helically about the casing C and to form a continuous thin film of cooling liquid. The front portion of the projected device is thus effectively cooled and is kept from overheating, even at the very high speeds now encountered in aerial flight.

Having thus described the invention and the advantages thereof, it will be understood that the invention is not to be limited to the details herein disclosed, otherwise than as set forth in the claim, but what is claimed is:

In a projected device, an enclosing body having a contracted forward portion, a front casing member of substantial length mounted on said body and having its rear end of greater diameter than the contracted forward portion of said body, an annular member mounted in the rear portion of said front casing member and enclosing an annular passage, means to feed a liquid coolant to said passage, said front casing member having a rearwardly projecting annular flange at its outer rear edge, and said annular member in said front casing member having a series of spray openings directed rearwardly and tangentially into the shielded but rearwardly and outwardly open annular space between said flange and the contracted forward portion of said body, and said spray openings delivering said liquid coolant against the forward portion of said body to form a protecting film thereover.

ESTHER C. GODDARD.
Executrix of the Last Will and Testament of Robert H. Goddard, Deceased.

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