

J. W. HASBURG.
ENGINE HEAT RADIATING STRUCTURE.
APPLICATION FILED MAR. 6, 1906.

987,361.

Patented Mar. 21, 1911.

2 SHEETS—SHEET 1.

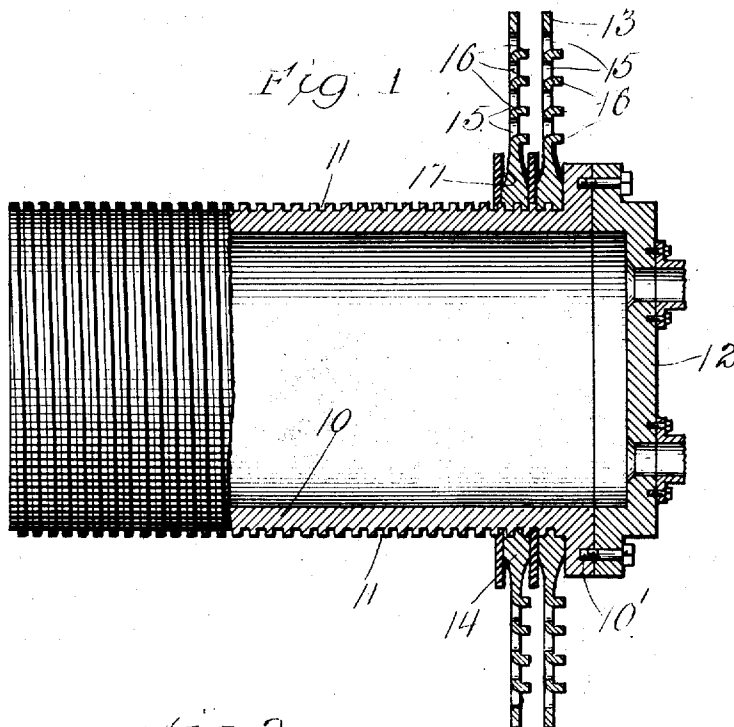


Fig. 2

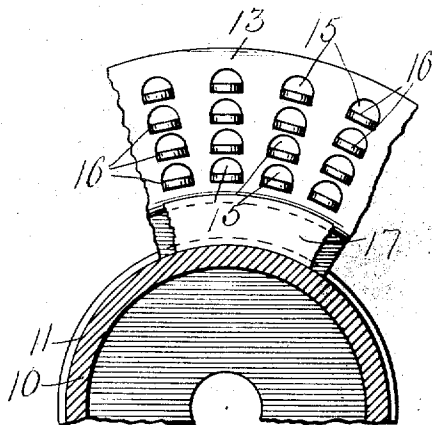
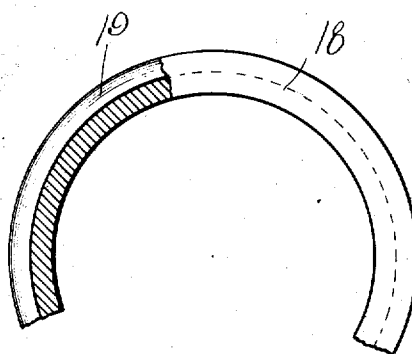


Fig. 7



Witnesses:
Ray White.
Harry R. L. White.

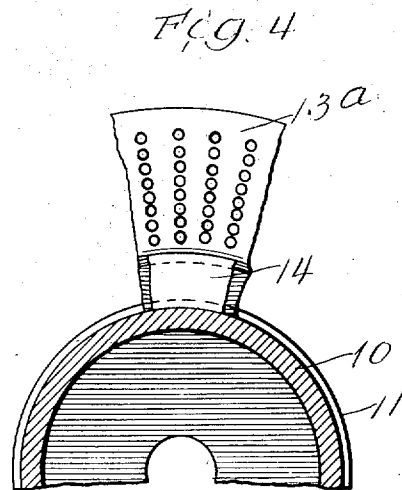
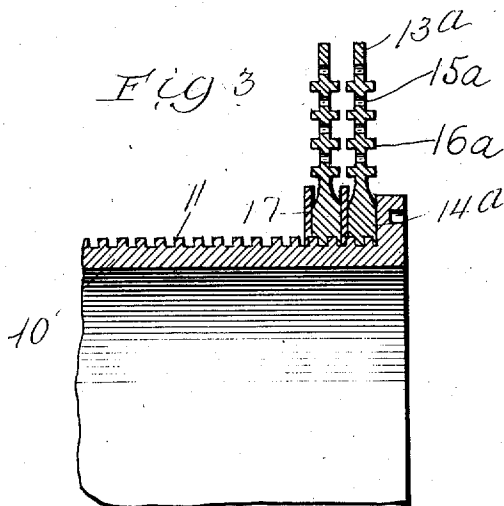
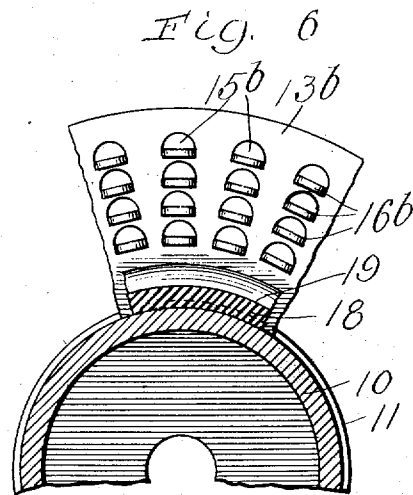
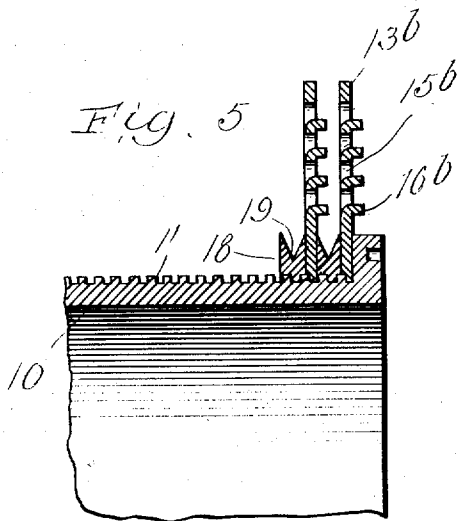
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John W. Hasburg.
Goree Bain & May
Attys.
By

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2 SHEETS—SHEET 2.



Witnesses
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Harry R. White

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UNITED STATES PATENT OFFICE.

JOHN W. HASBURG, OF CHICAGO, ILLINOIS.

ENGINE HEAT-RADIATING STRUCTURE.

987,361.

Specification of Letters Patent.

Patented Mar. 21, 1911.

Application filed March 6, 1906. Serial No. 304,529.

To all whom it may concern:

Be it known that I, JOHN W. HASBURG, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Engine Heat-Radiating Structures, of which the following is a specification.

My invention relates to improvements in engines, and more particularly to air cooled explosive engines, and has for one of its salient objects to provide a means for securing a high efficiency of radiation by a novel construction and arrangement of the radiating blades or fins and intermediate washers, and to provide a built-up radiator structure easy of application to a cylinder body, lending strength to the said body and affording maximum heat-conductivity between the blade structures and the body.

Other and further objects of my invention will become apparent to those skilled in the art from the following description, taken in conjunction with the accompanying drawings, wherein:

Figure 1 is a part-sectional view of an engine cylinder having affixed thereto two blades of a built-up radiator structure. Fig. 2 is an elevation of a fragment of one of said blades, the cylinder being shown in section. Fig. 3 is a fragmentary section of a modified embodiment of my invention, and Fig. 4 a fragmentary elevation thereof. Figs. 5 and 6 are like views of another embodiment of my invention, and, Fig. 7 is an elevation with part in section, of a fragment of a locking ring shown in Figs. 5 and 6.

Throughout the drawings like numerals of reference refer always to like parts.

In the drawings, 10 indicates an engine cylinder body, of any size or proportion, exteriorly screw-threaded, as shown at 11, throughout its length and preferably terminating at one end in a flange 10' to which may be secured the cylinder head 12.

The radiator structure is built up preferably of a series of blade units, each comprising an annular member, screw-threaded for engagement with the threads 11, at its inner periphery, and preferably provided with apertures for air circulation and projections for heat distribution.

Referring now to Figs. 1 and 2, each blade unit 13 has a thickened base portion 14, of size sufficient to include a plurality of the screw-threads on the cylinder, forming a

relatively strong central zone, gradually tapering outward, and each blade is provided with apertures 15 and projections 16, the projections and apertures being formed by striking up from the blade semi-circular lips, which constitute the projections 16 and leave holes 15 in the blade.

In the assembling of the structure, washers or thin rings 17, preferably of copper, are provided between the blade-bases, or enlargements, to receive the enlargements in contact therewith. Such rings 17 are in screw-threaded engagement with the cylinder and are preferably wide enough to form small fins, to project between the tapering parts of the blade enlargements, and they afford means for compensating for slight irregularities of the side surfaces of the blade enlargements should such exist, and insure proper heat conductivity between the adjoining blade enlargements.

In Figs. 3 and 4, I have shown a somewhat similar arrangement, the blades 13^a having base enlargements 14^a, but having its apertures 15^a independent of the projections 16^a, and having said projections 16^a provided on both sides of the blade to afford a much larger area of heat disseminating surface than is provided by the arrangement shown in Figs. 1 and 2.

In Figs. 5 and 6 I show an arrangement embodying blades 13^b, with apertures and projections 15^b, 16^b like those shown in Figs. 1 and 2, the entire blade structure being of uniform thickness and screw-threaded upon the cylinder. Spacing lock nuts or rings 18, each preferably channeled peripherally, as shown at 19 are provided between the blades to hold them properly spaced, lock them firmly together, strengthen the cylinder, and, by the large surface exposure obtained by channeling, afford a good heat disseminating medium. Said nuts or rings 18, in the modified form, are of sufficient width to encompass a plurality of threads of the cylinder, corresponding to the similar formation of the blades 13 of Fig. 1.

In connection with any of these constructions I preferably coat each of the parts before assembling, and the whole structure after it is assembled, with copper, by electroplating, for the purposes of bonding the parts together for heat communication, rendering the structure more heat conductive, and giving a pleasing finish. It will be seen that in each of these constructions intimate

and extended contact is insured between the cylinder body and each of its blades, by the screw threaded connection, the cylinder is strengthened by the addition of the encompassing, peripherally uninterrupted blade-units, and the blade locking members, and that ease of construction and facility in assembling are insured. Thus, the screw-thread feature of my invention not only affords a new method of attaching blades and rings, but it also renders a comparative easy passage for heat from the cylinder body to the blades through the intimate union of the interlocking threads, and renders the structure substantially homogeneous in effect while possessing all the advantage of the assemblage of parts.

The blades themselves provide for circulation therethrough and, by the provision of projections, expose a large heat disseminating area in the path of travel of circulating air. The advantages of the blade structures are, in a measure, retained if the blades be shrunk, brazed or otherwise secured on the cylinder body.

While I have herein described in some detail specific embodiments of my invention, which I believe to be new and advantageous, it will be apparent to those skilled in the art that other changes might be made in the specific construction without departure from the spirit and scope of my invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States, is:

1. The combination with an exteriorly screw-threaded cylinder body, of a series of annular blades and a series of soft metal washers, the members of one of said series being enlarged adjacent the cylinder body and screw-threaded to embrace a plurality of the threads of the cylinder body, and the members of both of said series being screwed over the cylinder in alternating relation.

2. In a structure of the character described, the combination of a cylinder body providing on its outer surface uniformly-spaced, relatively fine pitch, screw-threads, said threads having an electroplated coat of metal thereover, and separable parts including a series of independent annular blades having portions struck therefrom to form air-circulation apertures and heat-distributing projections, each said blade having interior screw-threads corresponding with the threads of the cylinder and having an electroplated coat of metal thereover, and a series of soft metal washers each having an electroplated coat of metal thereover, the members of both of said series being screwed over the cylinder in alternating relation and having a uniting electroplated coat of metal applied thereto after they have been assembled.

In testimony whereof I hereunto set my hand in the presence of two witnesses.

JOHN W. HASBURG.

In the presence of—

GEO. T. MAY, JR.,
MARY F. ALLEN.