

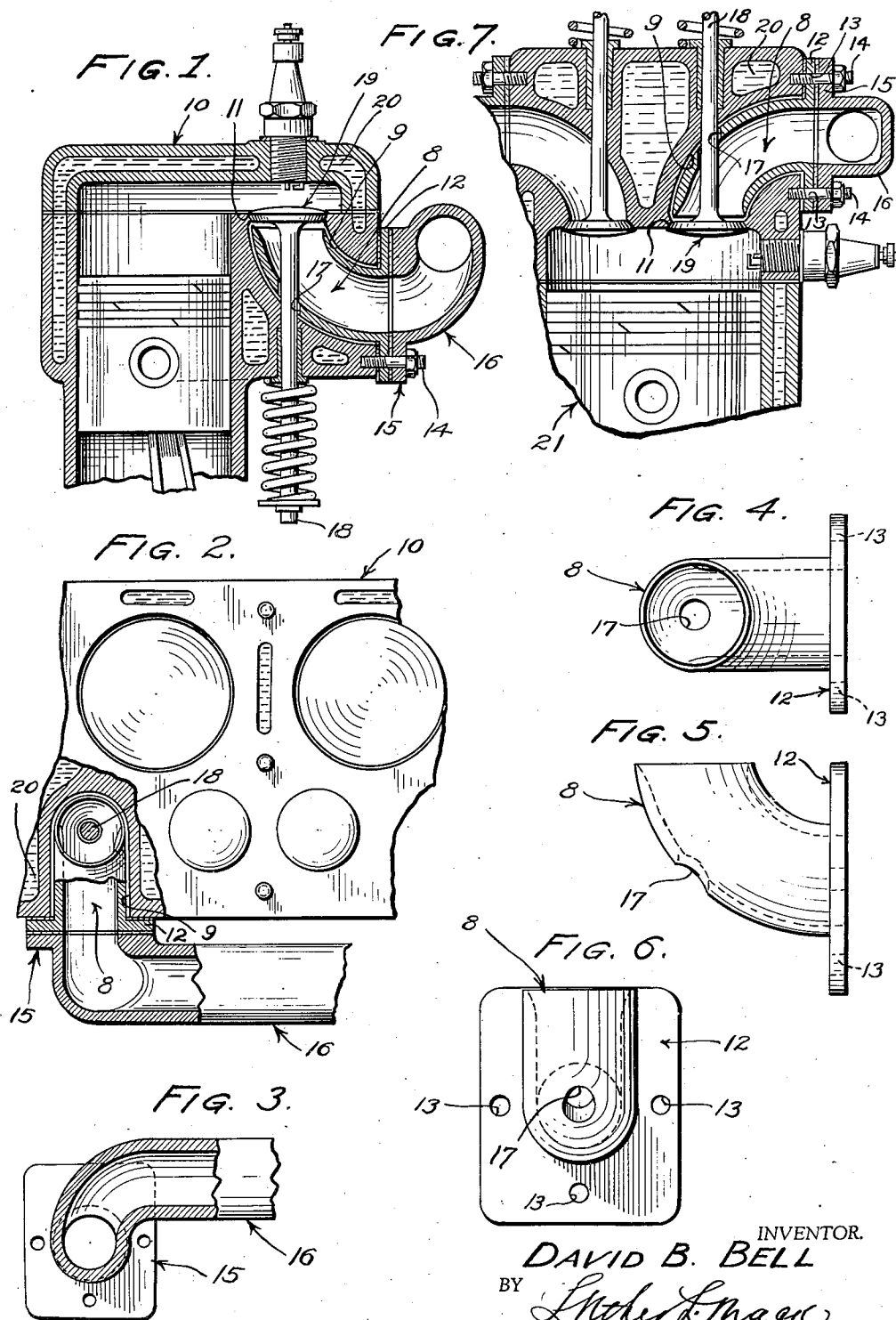
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EXHAUST PORT LINER

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EXHAUST PORT LINER

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2 Claims. (Cl. 60—29)

This invention relates to improvements in an internal combustion engine and more particularly resides in the provision of a simply constructed and comparatively inexpensive means for preventing overheating thereof.

In internal combustion engine driven racing vehicles such as automobiles, airplanes, and speed boats and in fact in any internal combustion engine which is operated in a manner to cause overheating, the efficiency of the engine is often impaired and in some instances break-downs or failure of operation result from boiling out of the water in the cooling system and a consequent overheating of the engine parts. Largely, this overheating takes place around the exhaust ports and at these points, the heat of the exhaust gases is transferred to the water in such a manner as to bring about boiling of the water and the objections above mentioned.

It is a purpose of my invention to provide an exhaust port liner which will absorb the heat of the exhaust gases and prevent an effective heat transfer to the water in the cooling system and an overheating of the engine.

In accordance with my invention, I provide an exhaust port liner which is circumferentially spaced, at least for the most part, from the walls of the exhaust port in order to form an annular dead air insulating space.

Best results are obtained where the liner extends from the valve seat at one end of the port to the other or outlet end of the port. At its outer end, the liner may be provided with a means for connecting it with the engine and the usual exhaust manifold and said means may serve to hold the liner in circumferentially spaced relation to the walls of and within the port. An opening or other means is provided to accommodate the stem of the exhaust valve so that the valve will not be interfered with, yet the port thoroughly covered by the liner. One form of my liner is so constructed that it may be applied to L-head, valve-in-the-head and similar types of engines with equal facility and without requiring any changes in the construction of the engine.

With the foregoing and other objects in view, my invention consists in the particular construction of combination and relative arrangement of the parts and elements as shown in the accompanying drawing, described in the following specification and finally defined in the claims hereto appended. It is to be understood that minor changes as to size, proportion and arrangement of parts and elements of the inven-

tion may be made as required without departing from the speed and scope of the invention as set forth in the claims hereof.

In the drawing:

5 Fig. 1 is a fragmentary vertical section of an internal combustion engine as equipped with an exhaust port liner in accordance with my invention;

10 Fig. 2 is a fragmentary plane view of the engine with the head removed and showing partly in section and in elevation the liner of my invention;

Fig. 3 is a fragmentary side elevation of the exhaust manifold, partly in section;

15 Fig. 4 is a top plan view of the liner of my invention as removed from the engine;

Fig. 5 is a side elevation of the liner as shown in Fig. 4;

20 Fig. 6 is an end elevation of the liner shown in Figs. 4 and 5; and

Fig. 7 is a fragmentary sectional view of a valve-in-the-head type engine as equipped with the liner of my invention.

Referring to the embodiment of the invention as shown in Figs. 1 to 6, inclusive, the exhaust port liner of my invention comprises a tubular member 8 which is arcuate and adapted to be inserted into the exhaust port 9 of an internal combustion engine 10. As here provided, the tubular member 8 is of such diameter as to be circumferentially spaced from the walls of the port 9 so as to define an annular dead air space. Preferably, the liner extends from a point adjacent the valve seat 11 out through the outer end of the port and is provided with attaching flange 12 at its outer end. The flange 12 is formed with openings 13 to accommodate attaching bolts or like fastenings 14 which are extended through apertured flanges 15 of the exhaust manifold 16 whereby to attach the liner and manifold to the engine body. The inner end of the liner may be reduced or bevelled so that it may be disposed in close relationship to the valve seat. An opening 17 is provided in the body 8 to accommodate the stem 18 of the exhaust valve 19 whereby the valve will not be interfered with, yet the port thoroughly covered by the liner.

It is now apparent that an internal combustion engine equipped with exhaust port liners made in accordance with my invention and for example as shown in Figs. 1 and 2 may be operated at maximum speed or otherwise without overheating due to the fact that the liner will absorb the heat of the exhaust gas and prevent an effective transfer of heat to the water in the

jacket portion 20 of the engine. Inasmuch as the water will be prevented from boiling the cooling system will be effective to maintain the engine at the desired temperature, particularly in the case of racing engines where the engines are operated at high speeds over long periods, will the liners of my invention be useful and desirable for the purposes hereinbefore mentioned.

It is seen that the liner of my invention may be readily incorporated with an internal combustion engine without necessitating any changes in the construction of the latter. Moreover, it is to be noted that the apertured flange 12 on the liner provides for securing the liner in the port and maintaining it properly spaced to afford the dead air insulating space.

Referring to Fig. 7, I have shown a liner as installed in a valve-in-the-head type of engine, generally designated 21. It is seen that this liner is of the same construction as shown in Figs. 1 to 6, inclusive. The only difference being that it is inverted from the position in which it is installed as shown in Fig. 1. Consequently the same reference characters are used to designate the parts.

I claim:

1. A liner for the exhaust port of an internal combustion engine comprising: a tubular member adapted to be mounted in the exhaust port and having a diameter such as to provide a dead air space between it and the walls of said port the inner end of said space being open so as to receive exhaust gas, and means at the outer end of said liner for affording the holding of the liner within said port and the connection of the liner with an exhaust manifold.

2. A liner for the exhaust port of an internal combustion engine comprising: a tubular member adapted to be mounted in the exhaust port of a motor and solely supported at its outer end on said motor and having a diameter such as to provide a dead air space between it and the walls of said port said space being closed at its outer end and open at its inner end, and means at the outer end of said liner for affording the holding of the liner within said port and the connection of the liner with an exhaust manifold, said liner extending substantially the full length of the port.

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