March 10, 1942. E. LEIPERT 2,275,634

MARINE ENGINE EXHAUST MANIFOLD

Filed March 19, 1940

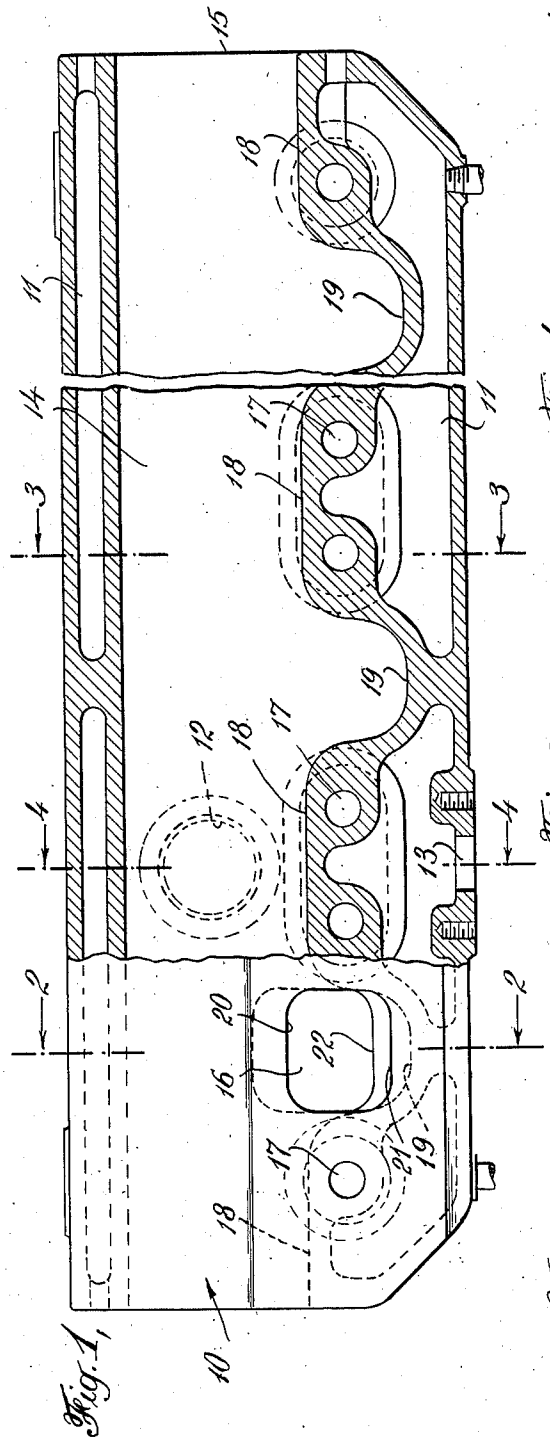


Fig. 1.

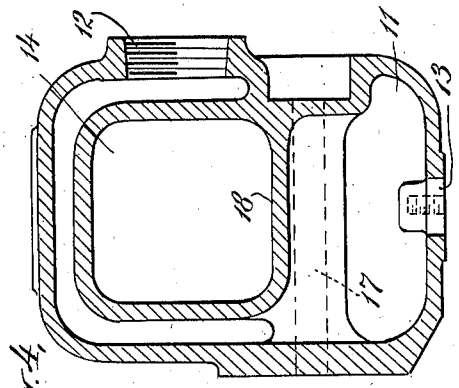


Fig. 4.

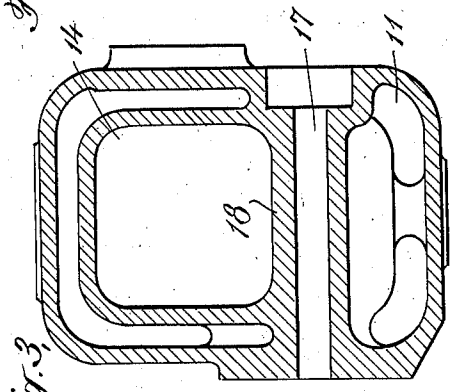


Fig. 3.

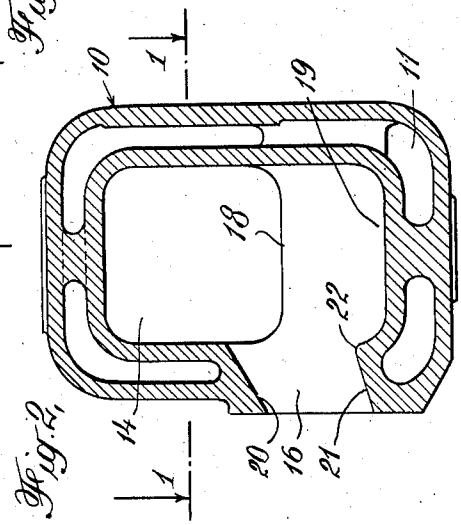


Fig. 2.

INVENTOR
Edward Leipert
BY
Hoguet Neary & Campbell
ATTORNEYS

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MARINE ENGINE EXHAUST MANIFOLD

Edward Leipert, College Point, Long Island, N. Y., assignor to Mack Manufacturing Corporation, Long Island City, N. Y., a corporation of Delaware

Application March 19, 1940, Serial No. 324,741

1 Claim. (Cl. 60—29)

The present invention relates to exhaust manifolds for engines and embodies, more specifically, a manifold construction that is particularly well suited for receiving the exhaust gases from the engine cylinders.

In exhaust manifold designs in current use, it has been found that there is a marked tendency toward condensation. This is especially true in marine engines where the presence of water vapor entrained in the exhaust gas is quite pronounced. The sweating in the manifold when the engine is idling further aggravates the above described condition with the result that, upon standing, the condensate collects and gravitates to one or two end ports and runs into the cylinders.

Inasmuch as this condensate is generally more than slightly acid because of the effect of the products of combustion (producing sulphurous acid), corrosion of the cylinder and piston structure results and, added to the rusting that results on prolonged shut-downs, a condition results that is most undesirable.

In accordance with the present invention, it is proposed to provide an engine manifold design that avoids the undesirable properties above noted, particularly the tendency toward collection of condensate at one point in the manifold.

A further object of the invention is to provide an exhaust manifold wherein means is provided to localize the collection of condensate and prevent substantial quantities from being collected at any one point.

Another object of the invention is to provide a manifold wherein means is provided for preventing the condensate adjacent each port from running back into the cylinder.

Further objects of the invention will be apparent as it is described in connection with the accompanying drawing, wherein:

Fig. 1 is a view in front elevation, partly broken away and in section, on the line 1—1 of Fig. 2, showing an exhaust manifold constructed in accordance with the present invention.

Fig. 2 is a view in transverse section, taken on the line 2—2 of Fig. 1 and looking in the direction of the arrows.

Fig. 3 is a view in section, taken on the line 3—3 of Fig. 1 and looking in the direction of the arrows.

Fig. 4 is a view in section, taken on the line 4—4 of Fig. 1 and looking in the direction of the arrows.

Referring to the above drawing, an exhaust manifold is shown generally at 10, being formed with a cooling jacket 11 having an inlet and outlet 12 and 13, respectively.

The exhaust gases leave the manifold chamber 14 at 15 and enter the chamber through a plurality of exhaust ports 16. The manifold is provided with a plurality of holes 17 to receive through bolts to secure the manifold in position in accordance with current practice.

It will be observed that the bottom 18 of the exhaust chamber proper lies above the axis of the exhaust ports and that these ports communicate with depressions 19 below the bottom 18 of the chamber 14.

The ports 16 are formed with upwardly sloping walls 20 and 21, the walls 21 terminating in lips 22 to hold the condensate collecting in the pockets 19 and prevent it from flowing through the ports into the cylinders.

Inasmuch as the ports 16 and pockets 19 lie generally below the chamber 14, condensate will be prevented from flowing along the chamber to collect in considerable quantities at one point and thus flow back into the cylinders.

By means of the foregoing structure, it will be seen that the condensate that is formed in the exhaust manifold will be prevented from reaching the cylinders and causing rust and corrosion thereof.

While the invention has been described with respect to the structure shown in the accompanying drawing, it is not to be limited save as defined by the appended claim.

I claim:

An exhaust manifold for an internal combustion engine comprising an elongated chamber open at at least one end thereof and having spaced portions cupped downwardly to form sump-like depressions below the bottom wall of said chamber and at spaced points along the length thereof to receive and retain condensate at localized points in the manifold, said manifold having a plurality of ports to receive exhaust gases from the engine, one such port being located at each depression with a portion thereof disposed below the bottom wall of the manifold chamber and having the top and bottom walls thereof sloping upwardly toward the axis of said chamber, and the bottom wall of each port terminating in a lip disposed adjacent to and extending above the bottom of the associated depression to dam up and prevent condensate from flowing backwardly through the port to the engine.

EDWARD LEIPERT.