March 16, 1937. M. E. CARROLL 2,073,608

MANIFOLD FOR INTERNAL COMBUSTION ENGINES

Filed Nov. 20, 1935

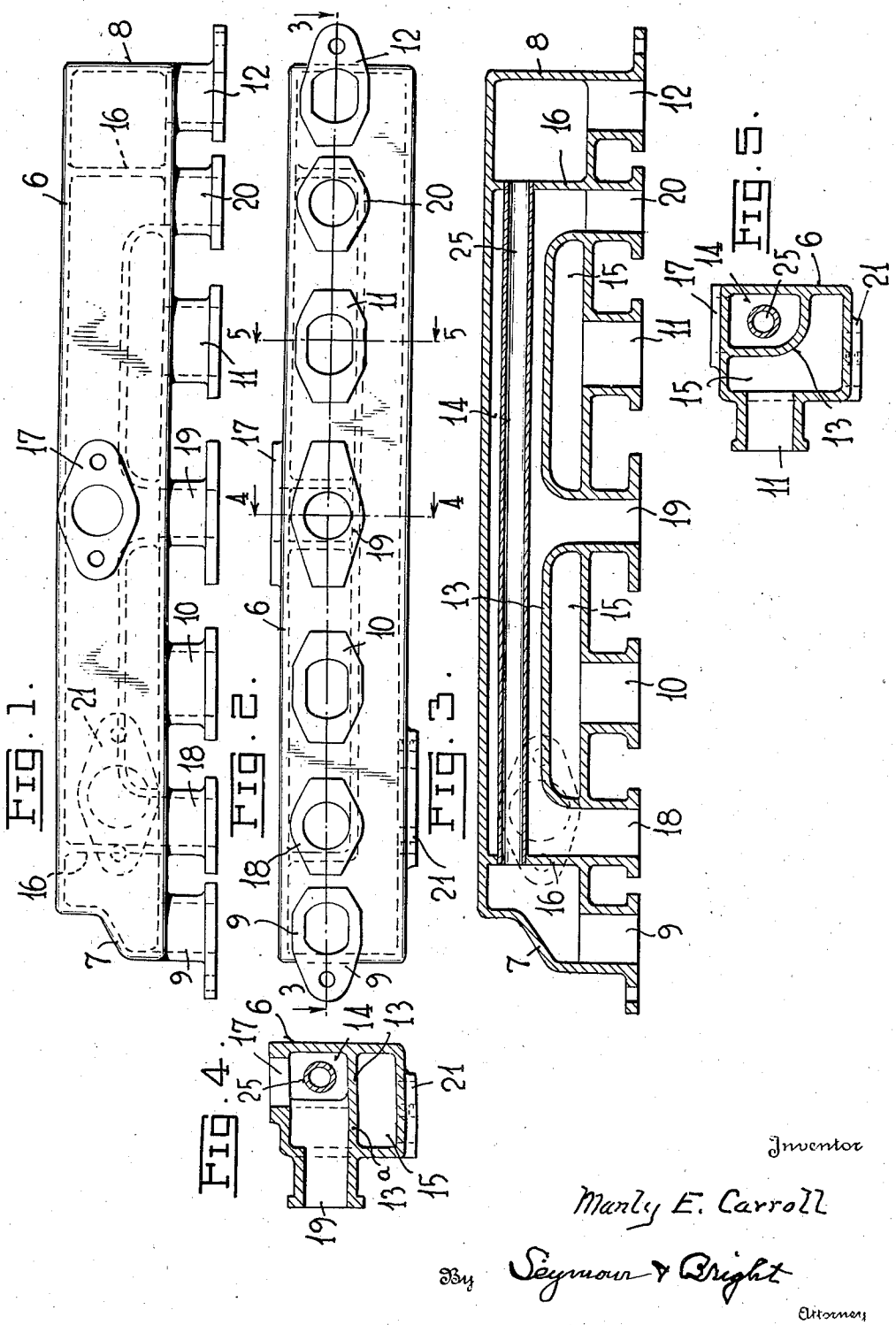


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Inventor

Manly E. Carroll

By Seymour & Bright

Attorneys

Patented Mar. 16, 1937 2,073,608

UNITED STATES PATENT OFFICE

2,073,608

MANIFOLD FOR INTERNAL COMBUSTION ENGINES

Manly E. Carroll, Miami, Fla., assignor to Universal Generators Corporation, Inc., a corporation of Florida

Application November 20, 1935, Serial No. 50,779

1 Claim. (Cl. 123—122)

This invention relates to improvements in manifolds for internal combustion engines and more especially to manifolds of the type in which the heat from exhaust gases is utilized to gasify or vaporize the explosive mixture introduced into the engine cylinders.

One of the objects of the invention is to provide a manifold structure, in which the intake passageway is positioned within the exhaust gas passageway, whereby volatile fluids may be converted into dry gas while the fluid mixture is on the way to the engine cylinders.

Other objects of the invention are to supply a manifold construction which will cause the engine to operate cooler than heretofore, will result in less dilution of the crank case oil, will decrease the formation of carbon, secure greater service from lubricating oils, give longer life to the exhaust valves and will enable the motor to operate with less vibration.

With the foregoing objects outlined and with other objects in view which will appear as the description proceeds, the invention consists in the novel features hereinafter described in detail, illustrated in the accompanying drawing and more particularly pointed out in the appended claim.

In the drawing:

Fig. 1 is a top plan view of the improved manifold.

Fig. 2 is a side elevation of the same.

Fig. 3 is a longitudinal sectional view taken on the line 3—3 of Fig. 2.

Figs. 4 and 5 are vertical sectional views taken respectively on the lines 4—4 and 5—5 of Fig. 2.

In the embodiment of the invention illustrated in the drawing, 6 designates a metal casting preferably of box section and having closed ends 7 and 8. A plurality of exhaust nipples 9, 10, 11 and 12, project from one side of the casting, and of course, when the casting is secured to one side of an engine, the nipples will receive the exhaust gases from the engine.

An imperforate web 13 is positioned within the casting and forms one side and the bottom of an intake passageway 14 that is disposed entirely within the exhaust gas passageway 15 formed by the casting.

As best shown in Fig. 3, the ends of the passageway 14 are closed by vertical webs 16 and the fuel mixture is introduced into the intake passageway through a port 17 in the top of the casting which is adapted to be connected to any suitable carburetor. However, as my improved manifold takes advantage of the heat of the exhaust gases in a most efficient way, distillates heavier than gasolines may be used in place of or in conjunction with gasoline as a fuel for the engine. The manifold is of such a character that the engine may be started with gasoline as a fuel and then as the manifold heats up the use of gasoline may be discontinued and the engine operated by means of a distillate fuel.

Intake nipples 18, 19 and 20 project from the same side of the casting as the exhaust nipples and the intake nipples communicate with the passageway 14.

The exhaust gases are discharged from the passageway 15 by means of a nipple 21 arranged at the bottom of the casting, but before the gases are discharged, they contact with the web 13 and this transfers the heat to the incoming fuel mixture.

In order to better utilize the heat units impounded in the exhaust gases I extend a tube 25 through the intake passageway. The ends of this tube are connected to the ends of the intake passageway and the interior of the tube communicates with the exhaust gas passageway so that some of the exhaust gases can travel through the tube and heat the interior of the intake passageway.

From the foregoing it is believed that the operation of this manifold will be obvious, but briefly it may be stated that when the engine is running, the hot exhaust gases will be introduced by the nipples 9, 10, 11 and 12 into the exhaust gas passageway 15, and will travel through this passageway until they are discharged through the nipple 21 which may be connected to a suitable muffler. The fuel mixture will be introduced through the port 17 into the passageway 14 and will be gasified before it is discharged through the nipples 18, 19 and 20 into the cylinders of the motor.

As shown in Fig. 4, the web 13 has horizontal portions 13a at the points where the intake ports are located, and these horizontal portions are positioned about mid-way between the top and bottom of the casting to facilitate manufacture.

While I have disclosed what I now consider to be a preferred embodiment of the invention in such manner that it may be readily understood by those skilled in the art, I am aware that changes may be made in the details disclosed without departing from the spirit of the invention as expressed in the claim.

What I claim and desire to secure by Letters Patent is:

A combination manifold comprising an elongated hollow casting of substantially box section having a top member, a bottom member, side

walls and ends, a web of less length than the casting arranged within the same and connecting one of said members to one of the side walls, transverse webs positioned within the casting and rigidly united with the ends of the first-mentioned web, said webs dividing the interior of the casting into segregated intake and exhaust gas passageways, an exhaust gas conduit extending through the intake passageway and having its ends connected to the transverse webs and communicating with the exhaust gas passageway, intake nipples projecting from the first-mentioned web through the opposite side wall of the casting for leading a heated explosive mixture from the intake passageway, a port for introducing an explosive mixture into said intake passageway, other nipples projecting from the last-mentioned side wall of the casting for introducing hot exhaust gases into the exhaust gas passageway, some of said last-mentioned nipples leading into the exhaust gas passageway at points between the transverse webs and the ends of the casting, and others of the last-mentioned nipples being arranged to direct hot exhaust gases against the first-mentioned web, and means for discharging exhaust gases from the exhaust gas passageway.

MANLY E. CARROLL.