

Oct. 23, 1923.

1,471,745

F. LUNDGREN

INTAKE MANIFOLD

Filed Jan. 28, 1920

Fig. 1

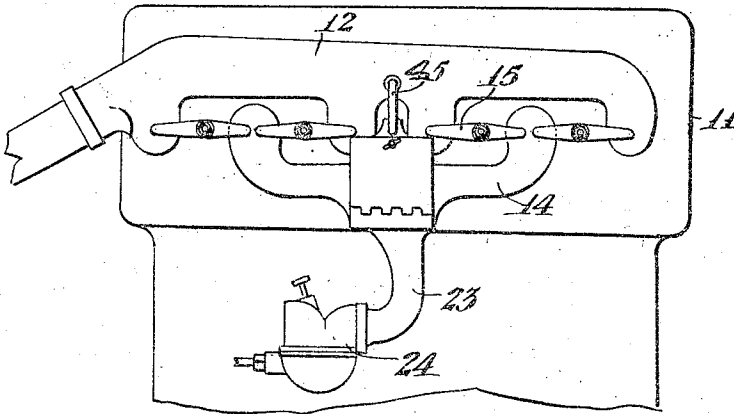


Fig. 2

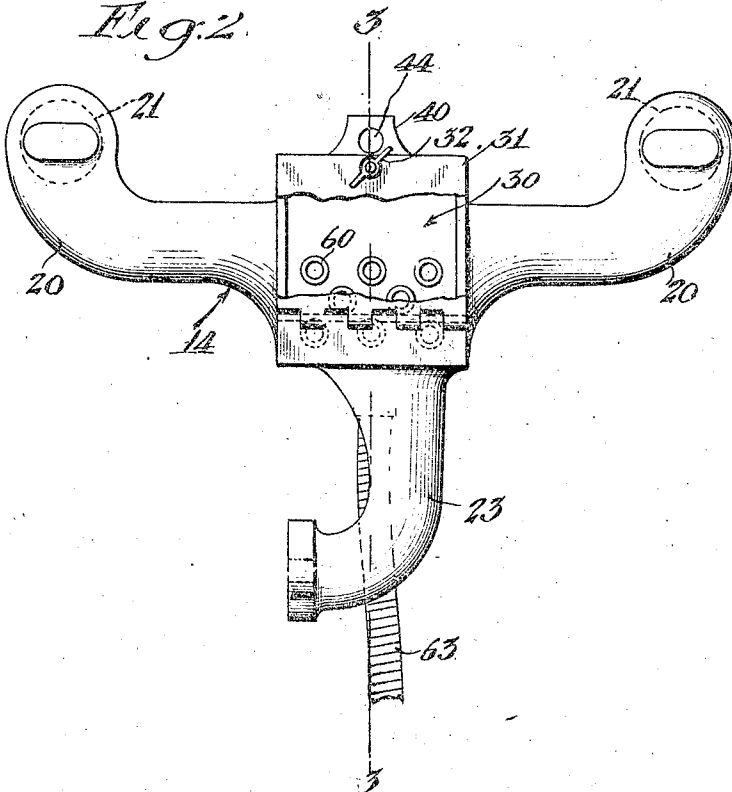
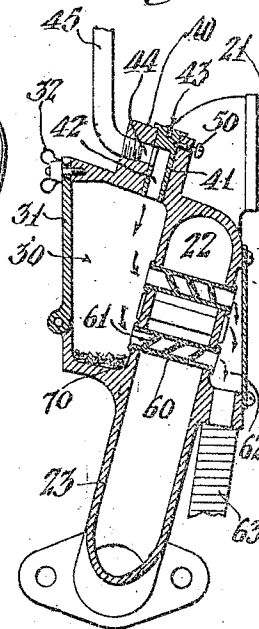


Fig. 3



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UNITED STATES PATENT OFFICE.

FRED LUNDGREN, OF LOS ANGELES, CALIFORNIA, ASSIGNOR OF ONE-HALF TO FRED W. JONES, OF NASHVILLE, TENNESSEE.

INTAKE MANIFOLD.

Application filed January 28, 1920. Serial No. 354,652.

To all whom it may concern:

Be it known that I, FRED LUNDGREN, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Improvement Comprising the Intake Manifolds, of which the following is a specification.

My invention relates to internal combustion engines and is particularly applicable to automobile engines.

The principal object of my invention is to provide an intake manifold for an internal combustion engine which is so constructed that a much greater fuel economy can be obtained from the engine than would otherwise be the case, and which will allow the engine to be run on a low grade and cheap fuel.

Further objects and advantages will be set forth more in detail hereinafter.

Referring to the drawing which is for illustrative purposes only,

Fig. 1 is a side elevation of an automobile engine equipped with my invention.

Fig. 2 is a view of the intake manifold on a somewhat enlarged scale, a portion thereof being broken away to better illustrate the invention.

Fig. 3 is a cross section on a plane represented by the line 3—3 of Fig. 2.

In the form of my invention illustrated in these drawings, 11 is an automobile engine having a standard exhaust manifold 12 and having intake openings to which my intake manifold 14 is secured by means of clamps 15. The intake manifold 14 consists of two hollow arms 20 having openings 21 connecting with the intake openings of the engine, these arms 20 connecting with a heating chamber 22, which in turn connects through a third hollow arm 23 with the carbureter 24 of the engine. Formed on the front of the manifold is a hot gas chamber 30, this chamber being provided with a lid 31 secured in place by a stud and thumb nut 32 or by any other convenient means. Formed on the top of the hot air chamber 30 is a projection 40 having a central opening 41 which connects with the chamber 30. Turning in this opening 41 is a sleeve valve 42 which may be turned by means of a slot 43 in the top thereof to entirely or partially open or close an opening 44 which connects by means of

a pipe 45 with the interior of the exhaust manifold 12. A small screw 50 is provided for locking the valve 41 in place in any position. Extending through the heating chamber 22 and opening into the hot air chamber 30 in front of the manifold are a series of copper tubes 60 which are provided with internal projections 61 to increase their heating capacity, these tubes connect at the back with a discharge chamber 62 which is provided with exhaust pipe 63, this exhaust pipe extending down to any convenient point. Located in the bottom of the hot air chamber 42 is a wick of asbestos 70.

The method of operation of my invention is as follows:—

The explosive mixture from the carbureter 24 is drawn up through the arm 23 into the heating chamber 22 and through the arms 20 and the openings 21 into the interior of the engine. When it is desired to start the engine the cover 31 is opened and a little wood alcohol is poured on the asbestos 70 and lighted. This wood alcohol tends to heat the front wall of the heating chamber 22, so that when the engine is started this wall heats the explosive mixture delivered by the carbureter 24 before this explosive mixture passes into the engine. After the engine is started the exhaust gases from the exhaust manifold 12 are forced outwardly from the pipe 45 passing by the valve 42 into the opening 41 and into the hot air chamber 30. These hot gases then pass through the tubes 60 into the chamber 62 and downwardly through the tube 63 being vented into the air at any convenient point. In the passage through the tubes 60, which are made of copper or brass, the hot gases give up a considerable portion of their heat to the tube, this heat being conducted through the tube and delivered to the explosive mixture in the chamber 22. The tubes 60 are arranged in staggered relationship, as shown in Fig. 2, so that the streak of explosive mixture, which rushes upwardly through the arm 23 strikes against these tubes and is deflected sideways striking against the tube above and being again deflected so that all portions of the explosive mixture are thrown violently in contact with the exterior of the tube 30. The valve 42 can be turned to regulate the amount of exhaust gases passing through the pipes, thus regulating the amount of heat de-

livered to the tube and hence the amount of heat delivered from the tube to the explosive mixture.

I claim as my invention:—

5 In an intake manifold of the class described, the combination of: a pair of hollow delivery arms; a substantially vertical hollow leg connecting with said arms and integrally formed therewith; integrally
10 formed walls projecting outwardly from the point of joinder of said leg with said arms to provide a recess; a front wall extending across the lower portion of said outwardly projecting walls to form a torch pocket; a

cover for said recess; structure providing 15 a discharge chamber on the back of said arms opposite to said recess; heat dispersing tubes extending through said arms and connecting between said recess and said discharge chamber; heat absorption vanes on 20 the interiors of said tubes; a hot gas inlet means leading into said covered recess and a gas outlet means leading from said discharge chamber.

In testimony whereof I have hereunto set 25 my hand at Los Angeles, California, this 21st day of January, 1920.

FRED LUNDGREN.