J. A. HALL.

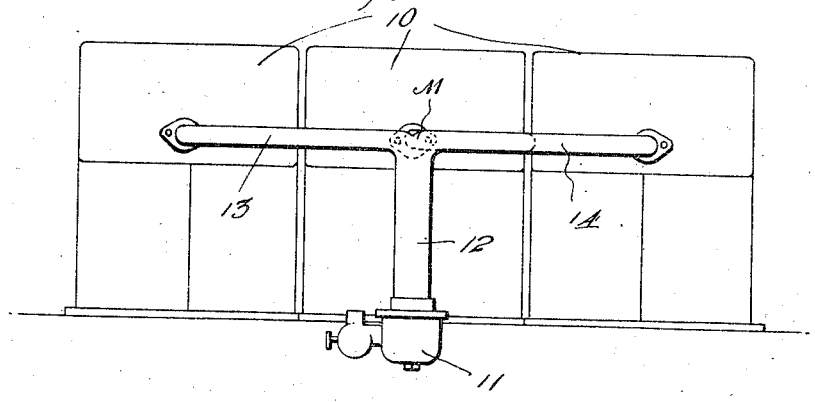
INTAKE MANIFOLD FOR ENGINES.

APPLICATION FILED NOV. 15, 1916.

1,260,895.

Patented Mar. 26, 1918

Fig. 1.



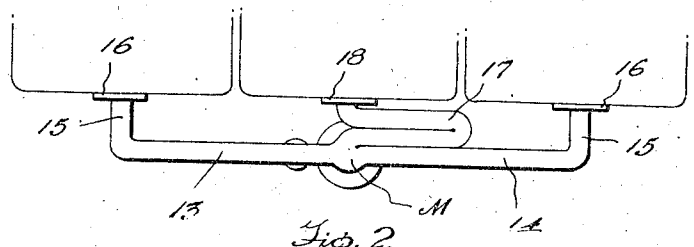
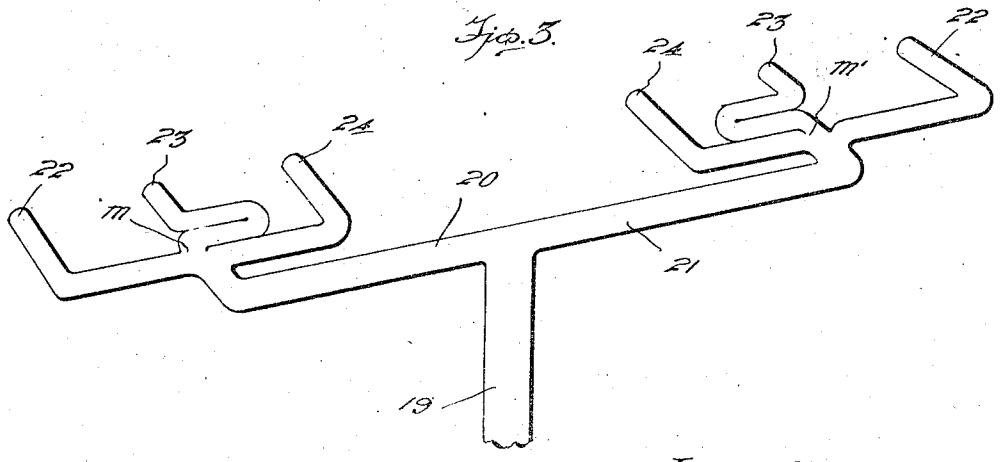


Fig. 2.

Fig. 3.



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INTAKE-MANIFOLD FOR ENGINES.

1,260,895. Specification of Letters Patent. Patented Mar. 26, 1918.

Application filed November 15, 1916. Serial No. 131,478.

To all whom it may concern:

Be it known that I, JAMES A. HALL, a citizen of the United States, and resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Intake-Manifolds for Engines, of which the following is a specification.

The present invention relates to new and useful improvements in charge conveying conduits for multi-cylinder internal-combustion engines commonly known as intake manifolds, the invention having as its primary object the provision of an intake manifold which delivers explosive charges to the various cylinders of an engine simultaneously so that the central cylinders of an engine will not receive the charge before the endmost cylinders, thereby insuring an equal distribution of the explosive charges.

Another object of my invention is to provide an intake manifold of the class described which may be applied to a multi-cylinder internal-combustion engine without material structural alterations of the power plant arrangement.

A further object of my invention is to provide an intake manifold of the class described which does not occupy more space than the manifolds now in use, it being possible to install my improved manifold on any multi-cylinder internal-combustion engine by obtaining the proper measurements and removing the old manifold and substituting therefor my improved manifold.

Other objects and advantages not hereinbefore set forth will appear from the following detailed description and the claim, taken with an inspection of the accompanying drawing, in which:

Figure 1 is a side elevational view of a multi-cylinder engine showing the manifold of my invention applied thereto;

Fig. 2 is a fragmental top plan view of the same; and

Fig. 3 is an enlarged perspective of a modified form of my invention.

Referring more particularly to the drawing, wherein similar characters of reference designate like and corresponding parts throughout the various views, 10 designates the cylinders of a standard type of six cylinder motor vehicle engine, the same being shown arranged in pairs, each pair being cast as an integral power unit.

A standard type of carbureter is shown and designated 11, the main conduit portion 12 of the manifold of my invention extending upwardly from said carbureter. The manifold is designated M in its entirety.

The upper end of the conduit 12 is divided to form a pair of longitudinally and oppositely extending conduit sections 13 and 14, the free ends of which are bent toward the endmost pairs of cylinders as indicated at 15 and connected to the valve housing of said cylinders as at 16.

The intermediate pair of cylinders is fed with explosive charges through the U-shaped conduit section 17, one end of said conduit 17 being in communication with the conduit 12 at its upper end, the other end of said conduit section 17 being connected at 18 to the intermediate set of cylinders.

It is preferable that in forming the conduit section 17 the same be bent upon itself at a point one-half way the length of the conduit 13 or 14, said conduit section as bent lying in snug engagement with the adjacent conduit section, so that a charge passing from the conduit section 12 through the conduit section 17 must travel a distance equal the lengths of the conduit sections 13 and 14, so that the charge for the intermediate set of cylinders does not reach the same any sooner than the charge or charges for the endmost sets of cylinders.

The form of my invention shown in Figs. 1 and 2 and hereinbefore described is particularly adapted for use where the cylinders of a six cylinder engine are cast in pairs. However, when the cylinders are cast as separate units a slightly different arrangement of the intake manifold of my invention is required, this arrangement being shown in Fig. 3. Referring specifically to Fig. 3 the main intake conduit section is designated 19 and communicates with the longitudinally extending conduit sections 20 and 21 corresponding in length.

The free ends of the conduit sections 20 and 21 are divided to provide a plurality of branches generally designated *m* and *m'*, the same being the distributing conduit portions of the intake manifold and being identical in arrangement with the intake manifold M hereinbefore described. Therefore, a detailed description of the arrangement of these branches is not thought to be necessary. However, the branches of the sets *m*

and m' which relatively correspond have been designated 22, 23 and 24, the endmost branches 22 connecting with the endmost cylinders, and the intermediate branches 23 and 24 connecting to the intermediate cylinders. Thus it will be seen that when all of the pairs of branches 22, 23 and 24 are connected to their respective cylinders a fuel supply of equal bulk, duration and quality will be afforded each of the cylinders of a six cylinder engine.

The device of my invention will also be found to remove one of the great difficulties of operating the present six cylinder internal-combustion engine, namely; the two intermediate cylinders of a six cylinder engine are under present conditions worked harder than the endmost cylinders, which very often causes choking of the engine when under heavy load. This will, of course, be impossible with the manifold of my invention in view of the equal distribution of the charges afforded thereby. It will be readily apparent that my improved manifold may be as readily applied to an internal-combustion engine of the present types as the older types of manifolds, no material structural alteration of the power plant arrangement being necessary. By employing a U or V pipe section between the carbureter and a pair of the manifolds in Fig. 1 I am enabled to apply the device to a twelve cylinder engine having cylinders cast in pairs. The same would apply on Fig. 3 where the cylinders were cast separately or in pairs.

From the above description taken in connection with the accompanying drawings, it is thought that a clear and comprehensive understanding of the construction, operation and advantages of my invention may be had, and while I have shown and described the device as embodying a specific structure, I desire that it be understood that such changes may be made in said structure as do not depart from the spirit and scope of the invention as claimed.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

In an intake manifold for gasolene engines, a main conduit having a pair of horizontally disposed oppositely arranged branches extending laterally therefrom, the free ends of said branches being connected to the endmost cylinders of an engine, an intermediate branch leading to the intermediate set of cylinders, and said intermediate branch being disposed in substantially a single horizontal plane with the first-mentioned branches and extending along one of the same and then bent upon itself to a point adjacent its jointure with the main conduit.

In testimony whereof, I affix my signature hereto.

JAMES A. HALL.