

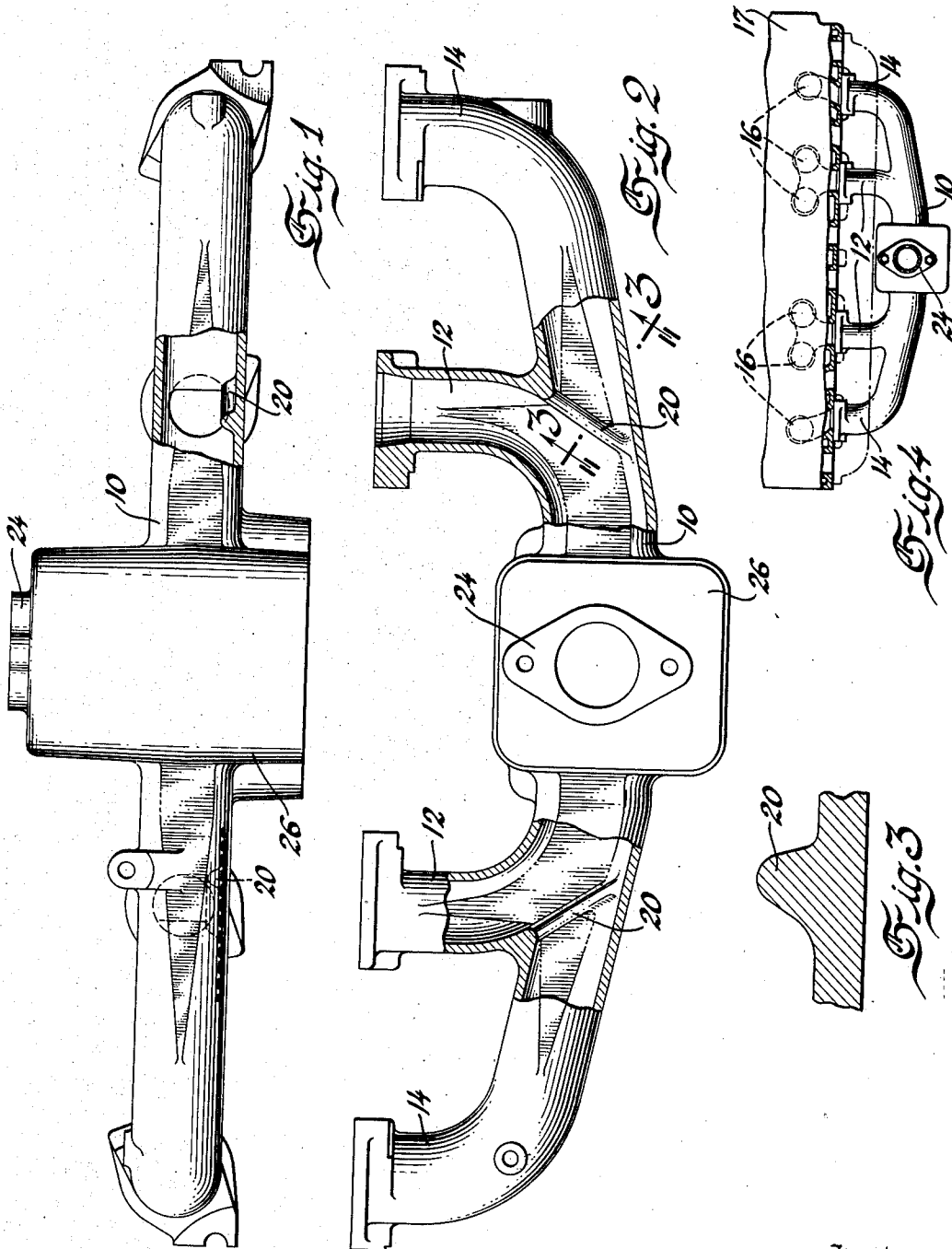
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INTAKE MANIFOLD

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INTAKE MANIFOLD

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4 Claims. (Cl. 123—52)

This invention relates to internal combustion engines and more particularly to the fuel mixture system for such engines, with special reference to an intake manifold for distributing the fuel mixture to the several engine cylinders.

The manifold of the invention has particular application to a six cylinder engine, although certain features of the invention may be used in engines having a greater or lesser number of cylinders.

Tests have shown that ordinarily an excess of fuel tends to enter the outer branches of the manifold. If the fuel is not distributed substantially evenly to the several cylinders of the engine the operation thereof will be faulty and inefficient. The primary object of this invention is to provide a manifold in which a uniform, or substantially uniform, distribution of the fuel to the several cylinders of a multicylinder engine is attained. In carrying out the principles of this invention in a six cylinder engine, the manifold is provided with four branches or arms. Each of the outer two arms or branches lead to a single end cylinder, while each of the inner arms or branches lead to a plurality of cylinders. The outer arms or branches are of larger cross-sectional area than are the inner arms or branches. By providing outer arms or branches of larger diameters the velocity and ram effect therein will be reduced to some extent, thus giving a more uniform distribution to the fuel charge. Cooperating with the several arms or branches, and assisting in providing a more even distribution of the fuel charge, are a plurality of dams. The dams are placed on each side of the riser at the intersection of an inner and outer arm or branch. Liquid fuel is thus prevented from being drawn into the outer arms or branches and is kept near the hot portion of the manifold at the central part thereof adjacent the riser. The dams also assist in directing a portion of the fuel charge into the inner branches of the manifold. The relative sizes of the inner and outer branches may vary considerably. In the embodiment of the invention shown in the drawing the outer arms or branches have an area substantially one and one-third that of the inner arms or branches.

Reference is herein made to the drawing forming a portion of this specification, in which:

Figure 1 is an elevational view, with parts in section, of an inlet manifold built in accordance with the invention.

Figure 2 is a plan view, with parts in section, of the manifold of Figure 1.

Figure 3 is a sectional view on line 3—3 in Figure 2.

Figure 4 is a view showing the relationship of the manifold branches with respect to inlet valves for a six cylinder engine.

In the drawing, 10 is an inlet manifold having inner branches 12, 12 and outer branches 14, 14. The inner branches each lead to, and supply fuel for, two inlet valves 16 for adjacent cylinders in the engine 17, while each of the outer branches leads to a single inlet valve 16 in an end cylinder. Each one of the inner branches is of a smaller diameter than that of each of the outer branches. The ratio of the areas of the inner and outer branches may vary considerably, but in general the area of an outer branch will be preferably about one and one-third that of an inner branch. The bends in the several branches are of a gradual curvature with no abrupt turns.

At the intersection of each of an inner and an outer branch there is provided in the floor or bottom wall of the manifold a dam 20. Each dam is in effect a continuation of a portion of the outer wall of an inner branch and is in substantial alignment therewith. The two dams act to restrain liquid fuel particles from entering the outer branches and keep the liquid fuel near the hot central portion of the manifold until it has vaporized.

While the invention may be used with manifolds of both the "updraft" and "downdraft" types, I prefer the latter form. The riser is formed with a flanged portion 24 which is adapted to have secured thereto any suitable down-draft carburetor assembly (not shown). Surrounding the riser portion of the manifold is a heater indicated generally at 26. Hot exhaust gases are directed into the heater and surround a portion of the manifold in order to assist in the vaporization of the fuel. The specific construction of the heater forms no part of the present invention and, accordingly, is not shown in detail.

By the use of a manifold built in accordance with the present invention the distribution of fuel to the several cylinders of a multicylinder engine has been made substantially uniform and the engine performance improved.

I am aware that many changes may be made in the construction of the several parts without departing from the spirit of my invention and I do not desire to limit the patent granted thereon except as necessitated by the prior art.

I claim:

1. An intake manifold structure for a multi-

- cylinder engine including a plurality of inner branches, a plurality of outer branches of substantially larger cross-sectional area than said inner branches, said inner branches each leading to a plurality of engine cylinders and said outer branches each leading to a single engine cylinder, and a dam in the floor of the manifold at the intersection of an inner and an outer branch to deflect liquid into the inner branch.
2. In an internal combustion engine having six cylinders; an inlet manifold having two outer branches and two inner branches intersecting the outer branches, each of said outer branches supplying fuel to an end cylinder while each of said inner branches is of a smaller cross-sectional area than is each of the outer branches and supplies fuel to two adjacent cylinders, and a dam in the floor of an outer branch.

3. A device as in claim 2, in which the cross sectional area of each of the outer branches is approximately one and one-third that of an inner branch.

4. In an internal combustion engine having six cylinders; an inlet manifold having two outer branches and two inner branches, each of said outer branches supplying fuel to an end cylinder while each of said inner branches is of a smaller cross-sectional area than is each of the outer branches and supplies fuel to two adjacent cylinders, and a dam in the floor of the manifold to deflect liquid into an inner branch and to prevent excess liquid from reaching an end cylinder.

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