June 24, 1930. A. MOORHOUSE 1,768,136

INTERNAL COMBUSTION ENGINE

Filed May 14, 1926

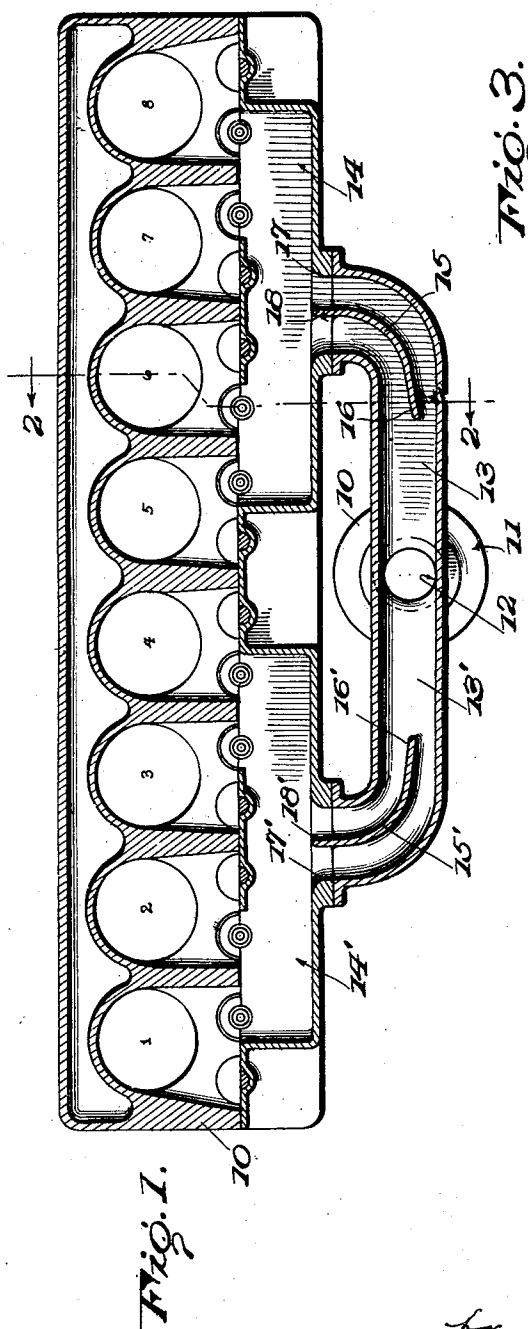


Fig. 1.

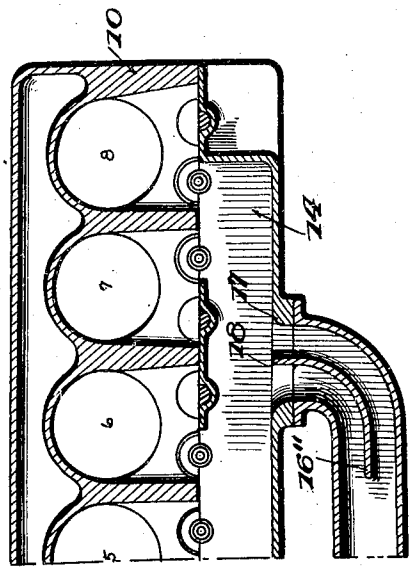


Fig. 3.

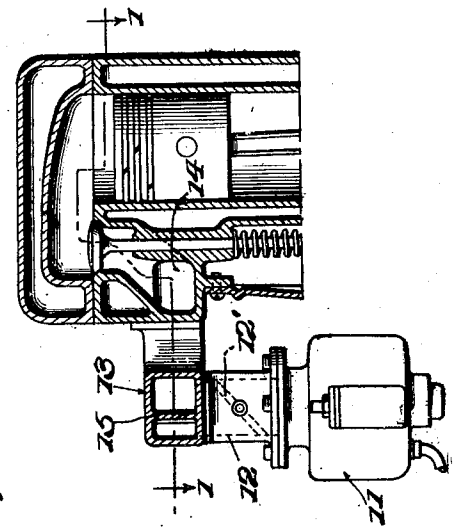


Fig. 2.

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UNITED STATES PATENT OFFICE

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INTERNAL-COMBUSTION ENGINE

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This invention relates to internal combustion engines, and more particularly to means for conducting the explosive mixture from the carburetor to the combustion cylinders. It is common practice in the art to provide a conduit leading from the carburetor to a manifold chamber, which connects with a plurality of combustion cylinders located (one or more) on either side of the point where the conduit connects with the manifold chamber. Such manifolds are known as "Y" manifolds. Even with the best carburetor mixtures, there are particles of the hydrocarbon that remain in the form of small drops of liquid and, because of the draft of the liquid to one side or the other of the point where the conducting conduit connects with the manifold chamber, the heavier drops of liquid will impinge upon and cling to one side of the conduit near its entrance to said chamber when one cylinder is being charged, and when the cylinder on the other side is being charged, these drops are drawn off, resulting in a variation in the richness of the mixture that is received by the cylinders on opposite sides of the entrance of the conduit to the manifold chamber.

The object of the present invention is to more nearly equalize the richness of the mixture supplied to the cylinders on opposite sides of the entrance of the conduit into the manifold chamber. With this object in view, means are provided whereby the current of mixture proceeding from the carburetor is divided into two streams, to the end that the mass of larger molecules of hydrocarbon may be divided and be more uniformly distributed to the cylinders on each side of the entrance to the manifold chamber.

The inventive idea is capable of receiving a variety of mechanism expressions, one of which is shown in the accompanying drawings, in which—

Fig. 1 is a diagrammatic showing of a cylinder block of an eight-cylinder hydrocarbon engine, said figure being on the line 1—1 of Fig. 2;

Fig. 2 is a sectional view on the line 2—2 of Fig. 1; and

Fig. 3 is a diagrammatic broken detail showing another form which the invention may assume.

In said drawings, in which like reference numerals indicate like parts throughout the several views, 10 is a cylinder block with any suitable number of cylinders, here shown as eight, numbered respectively from 1 to 8. Leading from the carburetor 11, of any suitable design, is a passage 12 in which is located the throttle valve 12′ of any suitable type. Leading directly from the passage 12 is a two-branch conduit 13—13′, the branches of which connect with manifold chambers 14, 14′, respectively. These branches take a bend before entering the chambers, and from the points where the conduit branches 13, 13′, connect with the manifold chambers, there are provided inwardly extending partitions 15, 15′. These partitions extend preferably from side to side of the conduit and inwardly along the bend of the same, preferably to the point where the current of the carburetor mixture is passing in a straight and direct line through the conduit branches 13, 13′, as will be readily understood from an inspection of Fig. 1. The inner ends 16, 16′ of these partitions 15, 15′ may, if desired, be spaced nearer one wall of the conduit 13, 13′ than to the other, as shown in Fig. 1, or, if desired, may be spaced midway between the walls of the conduit as shown at 16″ in Fig. 3. In the construction shown in Fig. 1, the column of fluid passing through the conduit would be unevenly divided, whereas in the form shown in Fig. 3 the same would be divided into approximately equal parts.

In operation, it will be understood that the mixture, coming up from the carburetor at the point 12, branches, and part of it goes toward the front four cylinders and part of it toward the rear four cylinders. When this mixture, which usually has more or less liquid particles in it, reaches the bend of the branches, the heavier ends of the mixture hug the outer wall so that, when the mixture reaches the

manifold chambers 14, 14', the heavier particles impinge upon and are inclined to cling to the right-hand wall of the conduit 13 or the left-hand wall of the conduit 13' if the partitions 15, 15', respectively, are absent. When the mixture reaches the manifold chamber, if one of the intake valves, say for the cylinder 5 or 6, is open, the mixture will be drawn toward that cylinder, and since most of the heavier particles are on the right-hand side of the end of the intake conduit, the lighter particles will be drawn toward that cylinder. Then, when the intake valve of cylinder 7 or 8 opens, the mixture will be drawn across the point or edge 17 where the conduit connects with the manifold chamber, and the heavier mixture will therefore be drawn into that cylinder.

By placing the partitions 15, 15', however, in the bends of the conduit, with the inner ends leading to the straight or right line of the conduit, the mixture traveling lengthwise of the conduit is divided into two streams at the points 16, 16', and the result will be that a part of the heavier ends of the mixture will cling to the side 18 of the partition when the valve of cylinder 5 or 6 is open, and the air drawn across the extreme inner end or edge of the partition, where the same joins the manifold chamber, will pull off the heavier particles of fuel that have been clinging to the inside of the partition. This will tend to carry more of the heavier particles toward the cylinder 5 and 6, with the result that the richness of the mixture going, say, to cylinder 5, or 6, will approximately equal the richness of the mixture going to cylinder 7 or 8.

It will be understood that the invention is not limited to the exact form and proportion of parts shown and that the same may be varied within a wide range without departing from the spirit of the invention, the limits of which are defined in the appended claims.

What is claimed is:—

1. In an internal combustion engine, a carburetor, a plurality of motor cylinders, a manifold chamber communicating with said cylinders, a conduit leading from said carburetor and connecting said manifold chamber at a point between said cylinders, said conduit having a bend or curve adjacent the point where it communicates with the manifold chamber, and a partition in said conduit extending from said manifold chamber toward said carburetor past the bend thereof, the end of said partition nearest the carburetor being unevenly spaced between the walls of said conduit.

2. In an internal combustion engine, a carburetor, a series of motor cylinders, a manifold chamber extending along said series of chambers, a conduit leading from the carburetor to said chamber, said conduit having an elbow or curved portion adjacent the point where the conduit enters said chamber, a partition in said conduit terminating at the point where the conduit connects with the chamber, and valved ports leading from said chamber to said cylinders, one for each cylinder, said ports being located to draw the mixture across the mouth of said partitioned conduit when the valves thereof are open.

3. In an internal combustion engine, a carburetor, a series of motor cylinders, a manifold chamber extending along said series of cylinders, valved ports opening from said chamber to said cylinders, one port for each cylinder, a conduit leading from the carburetor to said chamber, said conduit having an elbow or curved portion adjacent the point where it connects with said chamber, and a partition in said conduit terminating at the point where said conduit enters said chamber.

In testimony whereof I have signed this specification.

ALFRED MOORHOUSE.