Feb. 28, 1928. 1,660,859

E. R. BURTNETT

INTERNAL COMBUSTION ENGINE

Filed Jan. 15, 1925

Fig. 1.

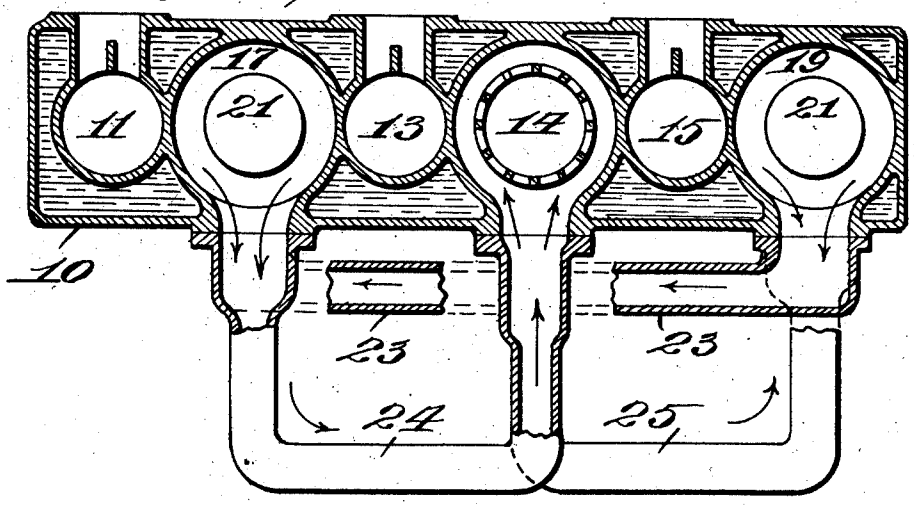


Fig. 2.

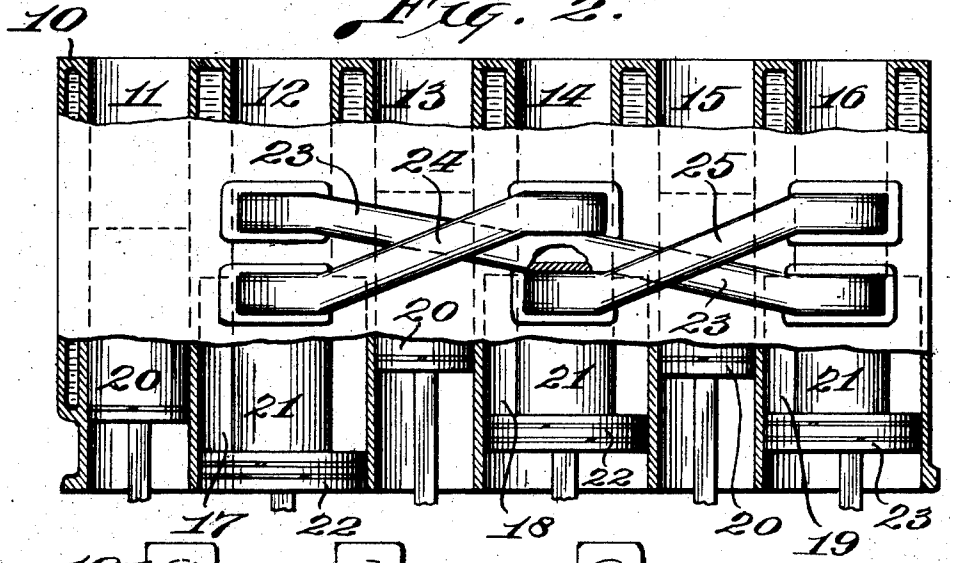
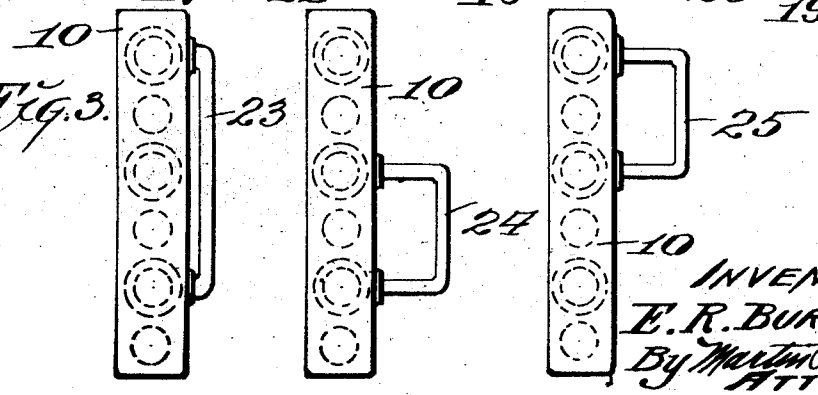


Fig. 3.



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UNITED STATES PATENT OFFICE.

EVERETT R. BURTNETT, OF LOS ANGELES, CALIFORNIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE AUTOMOTIVE VALVES CO., OF LOS ANGELES, CALIFORNIA, A VOLUNTARY TRUST.

INTERNAL-COMBUSTION ENGINE.

Application filed January 15, 1925. Serial No. 2,527.

My invention relates generally to internal combustion engines of the multi-cylinder two stroke cycle type and more particularly to the means utilized for conducting the gaseous fuel charges from the pumping chambers in the combustion chambers.

The principal object of my invention is, to provide a simple and practical arrangement of gaseous fuel transfer ducts for the six cylinder, three unit, two stroke cycle internal combustion engine.

It is an object of my present invention to provide gaseous fuel transfer ducts between the pumping chambers of the two diameter bore cylinders and the transfer inlet ports into the combustion chambers and, in order that the flow of gaseous fuel through the ducts may be uniform and subjected to the same surface friction, I propose to make the three ducts equal in length and substantially equal in cross sectional area.

With the foregoing and other objects in view, my invention consists in certain novel features of construction and arrangement of parts that will be hereinafter more fully described and claimed and illustrated in the accompanying drawings in which:

Fig. 1 is a plan view of a six cylinder engine equipped with gaseous fuel transfer ducts of my improved construction and with parts of said engine and ducts in horizontal section.

Fig. 2 is a side elevational view of an engine equipped with the transfer ducts and with parts of said engine in vertical section.

Fig. 3 is a diagrammatic view that graphically represents the arrangement and relative lengths of the transfer ducts.

Referring by numerals to the accompanying drawings, 10 designates a cylinder block having six combustion chambers 11, 12, 13, 14 15 and 16, the axes thereof being parallel and in the same plane,

The chambers 11, 13 and 15 have uniform diameters throughout their lengths, while the lower portions of chambers 12, 14 and 16 are increased in diameter to form gaseous fuel pumping chambers 17, 18 and 19 respectively.

Pistons such as 20 having straight diameters are arranged for operation within combustion chambers 11, 13 and 15 and the smaller portions of two diameter pistons, such as 21 are arranged for operation within chambers 12, 14 and 16.

The larger portions 22 at the lower ends of pistons 21 operate within the pumping chambers 17, 18 and 19.

Located on the side of cylinder block 10 and leading from pumping chamber 19 to transfer inlet ports that communicate with combustion chamber 12 is a gaseous fuel transfer duct 23.

Leading from pumping chamber 17 to transfer inlet ports that communicate with combustion chamber 14 is a gaseous fuel transfer duct 24 and a similar gaseous fuel transfer duct 25 leads from pumping chamber 18 to transfer inlet ports that communicate directly with combustion chamber 16.

The three gaseous fuel transfer ducts thus constructed and arranged, are equal in length, and as a result, the gaseous fuel charges pumped from the chambers 17, 18 and 19 into the respective chambers 14, 16 and 12 travel equal distances, thereby insuring uniform volume flow and this desirable effect is enhanced by making the ducts practically the same in cross sectional area, so as to secure uniformity of the surface friction that is produced by the gaseous fuel flow through said ducts.

Obviously, the construction of the gaseous fuel transfer ducts as herein described, may be modified in certain minor details without departing from the spirit of the invention, the scope of which is set forth in the appended claims.

The lineal lengths of the three ducts are the same due to the extension of ducts 24 and 25 outward to a plane further away from the body of the engine than the duct 23.

I claim as my invention:

1. The combination with an internal combustion engine having six cylinders, in each of which is formed a combustion chamber and there being charge pumping chambers formed in three of said cylinders, of three fresh charge transfer ducts leading respec-

tively from the three pumping chambers of the engine to three of the combustion chambers, each of the three transfer ducts having the same cross sectional area throughout its entire length, the three ducts having the same total lineal length and said three transfer ducts having the same cubic content capacity.

2. In an internal combustion engine having three combustion chambers and three charge pumping chambers, the six cylinders being disposed in a straight row with their axes occupying the same plane, three fresh charge transfer ducts each being arranged between a charge pumping chamber and a combustion chamber of the engine, the lineal length of the three ducts being equal, said three ducts having the same cross sectional area throughout their lengths, the turns in said three transfer ducts being identical in form, angle and percentage of turn, the internal area of the three ducts being identical, and said three ducts being all located on the same side of the row of six cylinders.

3. In an internal combustion engine having three charge pumping chambers and three combustion chambers, said six cylinders being arranged in a straight row with their axes occupying the same plane, three charge transfer ducts, each providing communication between one of the charge pumping chambers and one of the combustion chambers, the bodies of two of said ducts being shorter than the third duct, the chambers within the three ducts having the same lineal length, having the same cross sectional area throughout their lengths being uniform in volume capacity and the three transfer ducts being arranged on the same side of the row of six cylinders.

In testimony whereof I affix my signature.

EVERETT R. BURTNETT.