

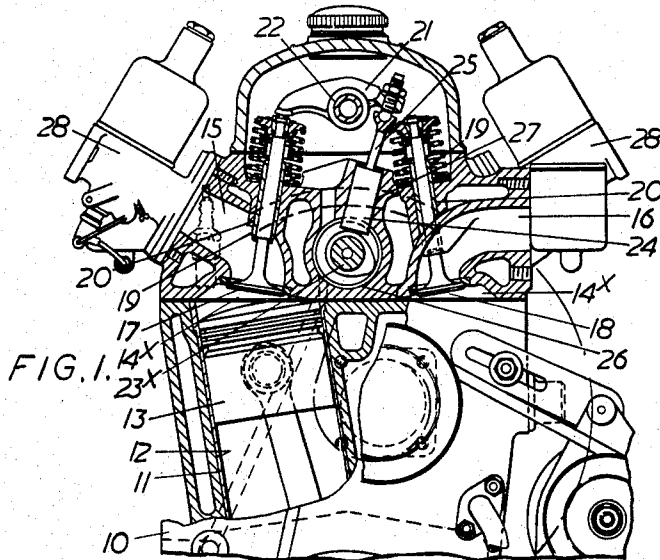
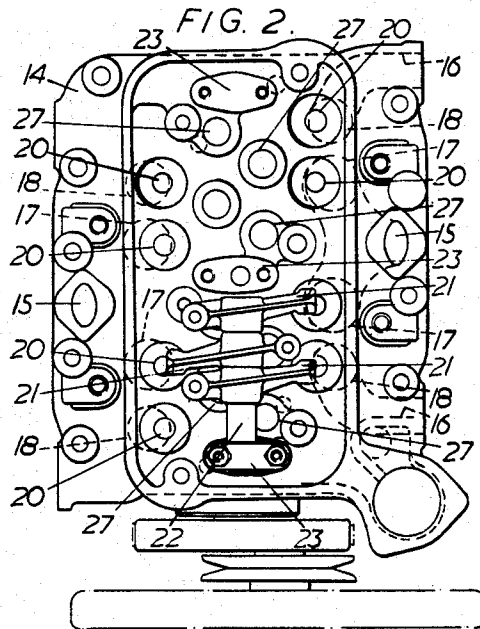
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OVERHEAD VALVE INTERNAL COMBUSTION ENGINES

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OVERHEAD VALVE INTERNAL COMBUSTION ENGINES

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1 Claim. (Cl. 123—55)

This invention relates to overhead valve internal combustion engines of the kind in which the cylinder block is formed with cylinder bores inclined at a small angle, alternately one to the left and one to the right, with respect to a vertical plane (hereinafter referred to as the "centre plane") in which the crankshaft axis is disposed, the arrangement being such as to enable a compact arrangement of cylinder head and valve operating mechanism to be obtained.

A multi-cylinder overhead valve engine of the kind referred to, and according to the present invention, is characterised in that the valves for the cylinders on opposite sides of the centre plane are operated by rockers which are all pivotally mounted on the same rockershaft which is mounted in bearings on the cylinder head with its axis disposed in the centre plane, that a camshaft from which said rockers are operated by tappets and push rods has its axis in said centre plane and is mounted in bearings formed in or carried by the cylinder head at a position low down in the latter and in that the pairs of tappets, for actuating the inlet and exhaust valves of the respective cylinders, operate in guide bores in the cylinder head which are inclined, in pairs, alternately to right and left of the centre plane so that the upper ends of the push rods engage the tails of the rockers which are oppositely disposed on the rockershaft.

The invention will now be more fully described with reference to and by the aid of the embodiment shown in the accompanying drawings; in which:

Fig. 1 is a fragmentary end elevation, partly in section, of a four cylinder overhead valve internal combustion engine of the kind referred to.

Fig. 2 is a plan of the engine shown in Fig. 1, but with the top cover and some parts of the valve gear removed for the sake of clearness.

Referring to the drawings, the engine comprises a cylinder block 10 formed with cylinder bores 11 fitted with liners 12 in which pistons 13 operate, said bores 11 being inclined at a small angle, alternately one to the left and one to the right, with respect to the centre plane in which the crankshaft axis is disposed. The cylinder block 10 is surmounted by a cylinder head casting 14 which is formed on its otherwise flat underside or jointing face with recesses 14* which register with the respective cylinders and afford, jointly with the upper parts of the latter, the combustion chambers.

The cylinder head casting 14 is also cored out to afford branched suction inlet manifolds 15, for the cylinders on opposite sides of the centre plane, and separate exhaust ducts 16 for the four cylinders, whilst poppet type inlet valves 17 and exhaust valves 18 for the cylinders operate in stem guides 19 which are mounted in guide bores 20 in the cylinder head, said guide bores 20 being inclined, in pairs, alternately to right and left of and upwardly toward the centre plane. The valves 17, 18 for the cylinders

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on opposite sides of the centre plane are operated by rockers 21 which are all mounted on a common rockershaft 22 which is itself mounted in bearings at 23 on the cylinder head casting 14 with its axis in the said centre plane, said rockers 21 being oppositely disposed or arranged alternately on the rockershaft 22, that is to say the rockers 21 for operating the valves 17, 18 on one side of the centre plane alternate with those which operate the valves 17, 18 on the other side of the rockershaft 22 (see particularly Fig. 2).

A camshaft 23* from which the said rockers 21 are operated by tappets 24 and push rods 25 has its axis in the centre plane and is mounted in bearings formed or carried in a cored-out housing 26 formed at a position low down in the cylinder head casting 14, and the pairs of tappets 24, for actuating through the push rods 25 the valves 17, 18 of the respective cylinders, operate in guide bores 27 in the cylinder head casting 14, which guide bores 27 are inclined, in pairs, alternately to right and left of the centre plane (see Fig. 2) so that the upper ends of the push rods 25 engage the tails of the rockers 21 which are oppositely disposed on the rockershaft 22.

Separate carburettors 28 (see Fig. 1) would be secured one to each side face of the cylinder head casing to connect with the branched suction inlet manifolds leading to the two cylinders on either side, whilst branches of separate exhaust pipes (not shown), one on either side, would be connected to the separate exhaust ducts 16 from the four cylinders.

The invention lends itself to a very compact cylinder head, camshaft and valve gear assembly employing tappets and very short push rods and only one rockershaft, which assembly can readily be removed as a unit from the cylinder block after disconnecting the camshaft drive from the engine crankshaft.

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

For use with a V-type multi-cylinder overhead valve engine having a cylinder block provided with cylinder bores, a cylinder head having a flat lower face adapted to be secured to the upper face of said block, a rockershaft, a plurality of bearings carried by the cylinder head for mounting said rocker-shaft with its axis disposed in said center plane, a pair of guide bores for each cylinder bore, said guide bores being positioned in the cylinder head on opposite sides of said center plane and being inclined upwardly and inwardly with respect to said flat face toward said center plane, a valve having a stem positioned in each guide bore, and means for operating said valves comprising a camshaft carried entirely within said cylinder head and having its axis positioned in said center plane below said rocker-shaft, rockers carried by said rocker-shaft, and a plurality of push rods sloping upwardly and outwardly with respect to said camshaft and operatively connecting the latter and said rockers.

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