Oct. 18, 1938. E. C. JONES 2,133,769

ENGINE COMPRESSOR UNIT

Filed Sept. 27, 1937

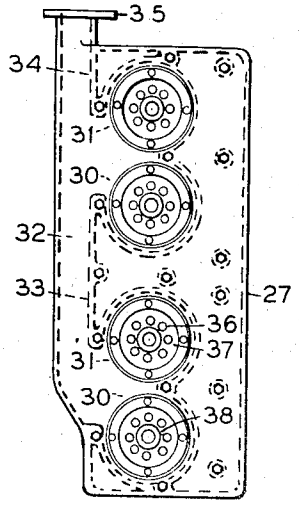

FIGURE 1

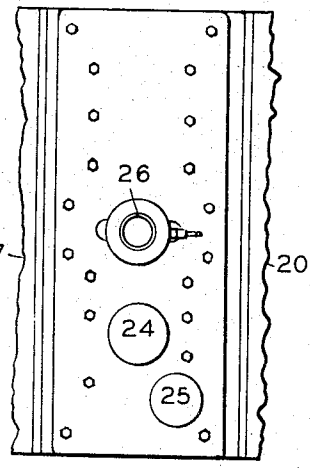

FIGURE 2.

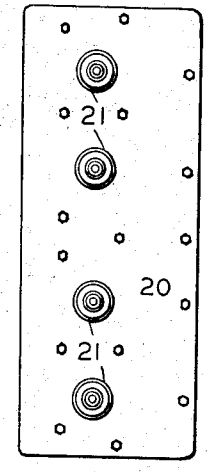

FIGURE 3.

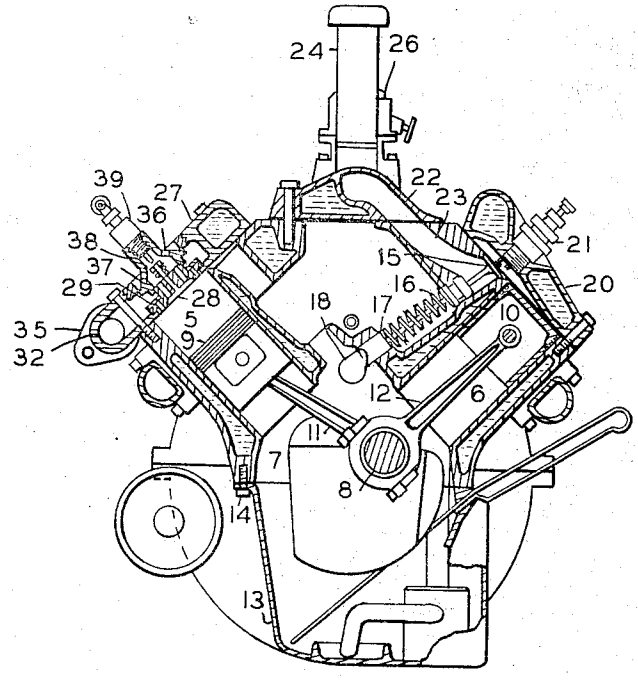

FIGURE 4.

INVENTOR
ERNEST C. JONES
BY
Marvin B. Davis
ATTORNEY

Patented Oct. 18, 1938

2,133,769

UNITED STATES PATENT OFFICE

2,133,769

ENGINE COMPRESSOR UNIT

Ernest C. Jones, Kansas City, Mo.

Application September 27, 1937, Serial No. 165,935

4 Claims. (Cl. 230—56)

This invention relates to the combination of internal combustion engines and pumps.

An object of the present invention is to comprise a unit having a V shape engine cylinder block with a group of cylinders in each side thereof having pistons, bearings, and a common crank shaft, an internal combustion cylinder head attached to one group of cylinders and an air compressor head attached to the opposite group of cylinders with air valves mounted therein to control the flow of air from the compressing pistons.

Another object of the present invention is to provide the above mentioned combination with air flow controlled valves.

Another object of the present invention is to have the compressor head contain an exhaust manifold that is water cooled.

In the drawing:

Figure 1 is a plan view of the improved compressor head.

Figure 2 is a fragmentary plan view of the top of the engine showing the intake manifold, parts of the block, and parts of the compressor and engine heads.

Figure 3 is a plan view of the engine head.

Figure 4 is a fragmentary view in elevation of the engine with certain parts broken away to show the general interior arrangement of the engine and compressor cylinders with their respective heads.

The group of cylinders 5 are arranged to form a V shaped block with the group of cylinders 6 and are connected together by integral crank case 7 supporting the crank shaft 8. Pistons 9 and 10 reciprocate in the cylinders 5 and 6 respectively and are connected to crank shaft 8 by rods 11 and 12. The crank case pan 13 is bolted to the crank case 7 by bolts 14. The engine illustrated in the drawing is a part of the well known Ford V8 engine and the construction of the engine is understood and known by those skilled in the art to which it appertains to contain multiple cylinders, pistons, valves, and bolts; therefore it is not necessary to duplicate parts in the illustration. I do not limit my invention to a Ford V8 but also include other similar makes having a V8 principle.

The valves 15, valve springs 16, pushrods 17 and cam shaft 18 are mounted in the V8 block to function as usual in control of the intake and exhaust gases for the cylinders 6 acting as an internal combustion engine. The usual cylinder head 20 closes the top of the cylinders 6 and contains the spark plugs 21.

An intake manifold 22 mounted on the top of the V8 engine connects to the cylinders 6 through typical openings 23 formed in the block. An oil fill pipe 24, fuel pump 25, and carbureter 26 are arranged on the manifold casting as usual.

The usual valves, springs, and pushrods are removed from the block to the group of cylinders 5 and are not used in this invention. The tops of the cylinders 5 are closed by the improved compressor head 27. This head closes the old intake and exhaust ports, and has air flow controlled intake and exhaust valves 28 and 29 respectfully. The compressed air is exhausted into the pockets 30 and 31 recessed in the head 27 and forced through the integral manifold 32 where the temperature of the air is reduced by the water cooled walls 33 and 34. A connecting flange 35 is a part of the manifold for pipe connection to some other source such as a receiver not shown.

Air is drawn into the valves 28 through openings 36 on the valve frustrums 37. A boss 38 is threaded to receive the unloader valve 39. The usual head gaskets are used for the cylinder heads but are not shown to save minor details.

It is obvious that from the foregoing description and illustrations that the air compressor cylinders 5 are all on one side as indicated by the compressor head 27, valve frustrums 37, and air intake openings 36, making a compact unit for efficient control and conduction of the compressed air to a receiver. The unloading valves are together making it possible to condense and simplify the piping thereto. The internal combustion cylinders 6 are all on the opposite side as indicated by the engine head 20 and spark plugs 21, therefor only one exhaust pipe is necessary and only one ignition set is necessary. One crank shaft serves both the compressor unit and the engine unit.

It is obvious that when two compressor pistons are half way down the cylinders the opposing combustion cylinder is ready for an explosion and two more compressor pistons are rising in their respective cylinders to compress the air therein. The first combustion charge of the engine cylinders is given at the right time to compress the air in the air cylinders and this condition has proven to be more efficient than a straight row of cylinders all arranged in the same plane.

What I claim as new and desire to secure by Letters Patent, is:

1. In an engine pump unit, the combination of a block having two groups of cylinders arranged therein to form a V shape, a crank shaft, connecting rods, pistons connected to said crank

shaft by said rods, said pistons reciprocable in said cylinders, a normal internal combustion cylinder head attached to all of one group of cylinders on one side of the V shaped block, a compressor cylinder head attached to the opposite group of cylinders to render all of them compressor cylinders, and valves mounted in said compressor cylinder head.

2. In an engine pump unit, the combination of a block having two groups of cylinders arranged therein to form a V shape, a crank shaft, connecing rods, pistons connected to said crank shaft by said rods, said pistons reciprocable in said cylinders, a normal internal combustion cylinder head attached to all of one group of cylinders on one side of the V shaped block, a compressor cylinder head attached to all of the opposite group of cylinders to render all of them compressor cylinders, and air controlled valves mounted in said compressor cylinder head.

3. In an engine pump unit, the combination of a block having two groups of cylinders arranged therein to form a V shape, a crank shaft, connecting rods, pistons connected to said crank shaft by said connecting rods, reciprocable in said cylinders, a normal internal combustion cylinder head attached to all of one group of cylinders on one side of the V shaped block, a compressor cylinder head attached to all of the opposite group of cylinders to render all of them compressor cylinders, and said compressor cylinder head containing an integrally built in water cooled compressed air manifold.

4. A cylinder, a second cylinder with the axis thereof located approximately ninety degrees from said first cylinder, a crank case, said cylinders opening into said crank case, a crank shaft extending through said crank case, a piston located in said first cylinder, a second piston located in said second cylinder, a connecting rod connecting said first piston and crank shaft, a connecting rod connecting said second piston and crank shaft, a head closing one end of said first cylinder, an air flow intake valve located in said head, an air flow exhaust valve located in said head, a water cooled manifold located within said head, a second head closing one end of said second cylinder, a spark plug located in said second head, an intake manifold connecting said second cylinder, an exhaust manifold connecting said second cylinder, an intake valve located in said intake manifold, an exhaust valve located in said second manifold, a cam shaft arranged in said crank case to operate said second intake and exhaust valves, whereby said first piston will compress air in said first cylinder at the maximum pressure when said second piston acting with the cylinder as an internal combustion engine approaches its halfway location in the second cylinder with respect to the cylinder's ends.

ERNEST C. JONES.