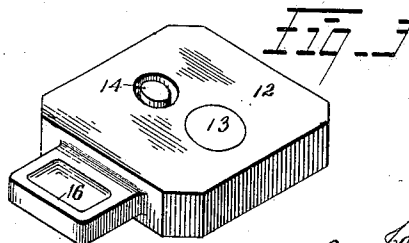
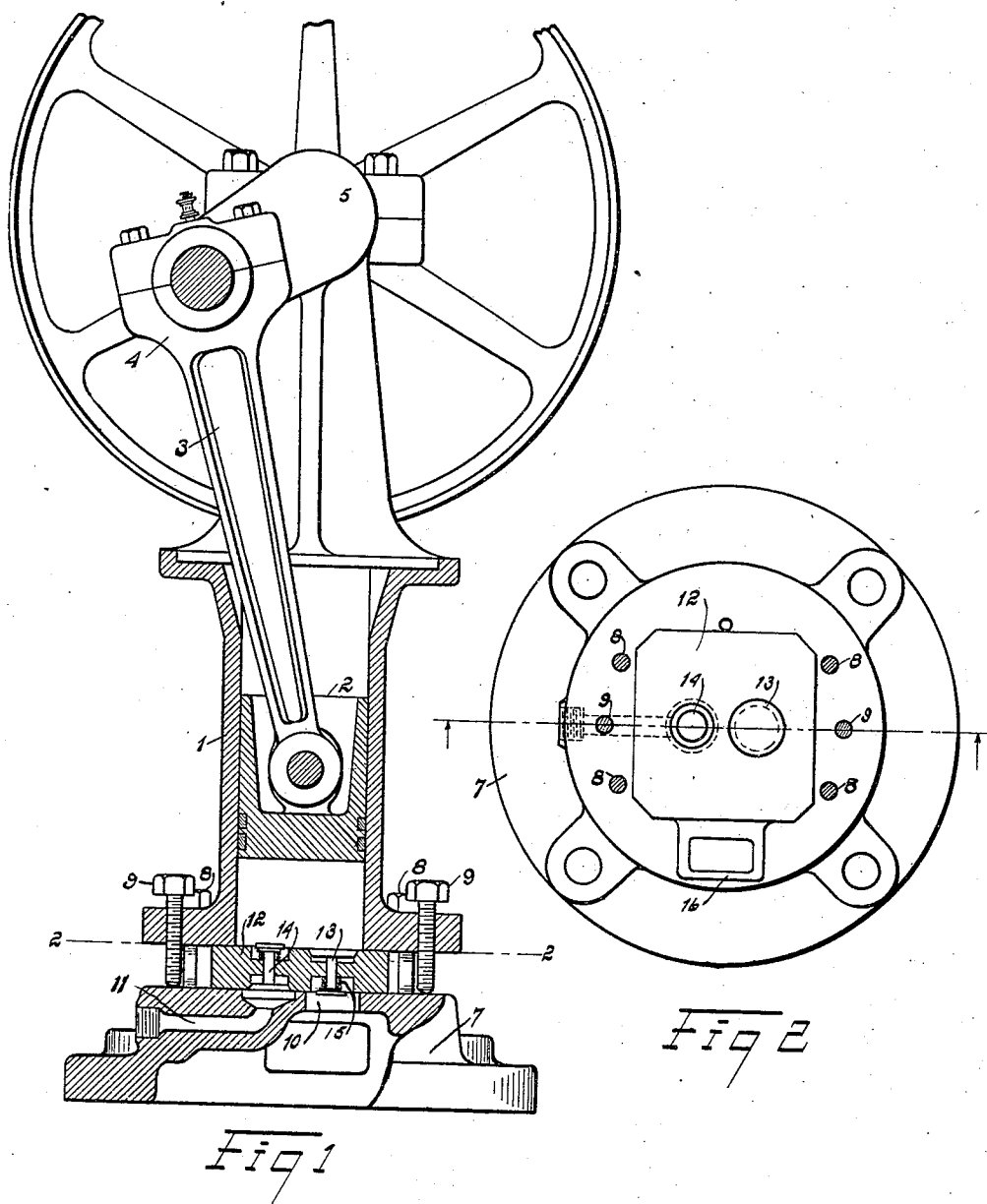


No. 880,746.

PATENTED MAR. 3. 1908.

J. B. MERIAM.
AIR PUMP.

APPLICATION FILED FEB. 16, 1907.



WITNESSES

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JOSEPH B. MERIAM, OF CLEVELAND, OHIO.

AIR-PUMP.

No. 880,746.

Specification of Letters Patent.

Patented March 3, 1908.

Application filed February 16, 1907. Serial No. 357,653.

To all whom it may concern:

Be it known that I, JOSEPH B. MERIAM, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Air-Pumps, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to air or gas pumps or compressors that are designed primarily for use with explosive engines in order to store up compressed air for starting the engines, and it has for its object the arrangement of the valve mechanism in such a manner that the latter may be bodily removed from the machine for inspection or repairs without dismantling the other parts of the pump.

A further object of the invention is to produce a device of the character described that will be economical in manufacture and efficient in operation.

In the drawing forming a part of this application, Figure 1 is a sectional view taken vertically through the pump or compressor substantially on the line 1—1 of Fig. 2; Fig. 2 is a transverse section through the frame of the pump taken on the line 2—2 of Fig. 1 looking in the direction of the arrows; and Fig. 3 is a perspective view of the valve block showing the valves in position therein.

As is well understood, gas engines are not self-starting, but require the application of some exterior power in order to start the same to running. In case large gas engines are employed some powerful means must be available for this purpose, as it is of course impossible to effect this result by hand power. One means for starting these engines consists in providing a source of compressed air which may be turned into the engine cylinders, said air acting upon the pistons in much the same manner as steam acts upon the pistons of a steam engine. In order to provide this source of compressed air some form of air pump or compressor is necessary; and it is to this class of machines that my invention is especially adapted, although it is of course not limited to this particular use.

Taking up a detailed description of the invention by reference to the accompanying drawings, 1 represents the cylinder of my pump or air compressor, within which reciprocates the piston 2. This piston may be of any preferred design, and the specific con-

struction shown need not be further described. This piston is driven by means of a connecting rod 3 which is attached at one end to the piston and at its opposite end to the crank pin 4 of the pump, said crank pin being attached to the crank 5 and being driven by means of the large belt pulley 6.

The frame of the machine consists of the cylinder 1, upon which the said pulley and crank are mounted, and the base section 7 upon which the said cylinder is supported. The cylinder is secured to the base by means of machine bolts 8 which pass through a flange on the lower end of the cylinder and are tapped into the said base section. Also passing through the said flange on the cylinder are adjusting bolts 9, said bolts resting upon the top of the base section and being threaded through the said flange, whereby by turning said adjusting bolts the upper part of the pump or compressor can be lifted away from the base section for a purpose hereinafter set forth. The said base section is provided in its upper part with a port 10 and with a transverse port 11, said latter port terminating at its outer end in a screw threaded socket so that a pipe may be secured to the base section through which the air or gas may be pumped to any suitable receiver.

Between the base section and the cylinder section of the frame I insert the valve block 12, said block being shown in perspective in Fig. 3. As appears from said figure, as well as from Fig. 2, said valve block is substantially square in plan with the corners preferably beveled. This valve block has a thickness which is suitable for the reception of the intake and outlet valves 13 and 14 respectively. These valves are of the ordinary puppet type, resting upon seats formed in the valve block and being held in position on said block by means of coiled springs 15 which surround the valve stems and bear with one of their ends against the said valve block and with the other end against a head that is secured to the valve stem.

It will be understood that in operation the air or gas is drawn into the cylinder, when the latter is lifted, through the valve 13, which is lifted by suction against the tension of its spring, the valve 14 being closed at that time. During the return of the cylinder the operation of these valves is reversed, the valve 13 being forced against its seat while the valve 14 is forced open by the air pressure within the cylinder. By successive

strokes of the piston the air is therefore drawn into the cylinder and forced outwardly again through port 11 and into the receiver.

The valve block 12 is provided on one side with an eye or hand piece 16 so that the said block may be slid into or pulled out of its position in the frame of the machine. In order to loosen the valve block so that it can be removed, the bolts 8 are loosened, and the adjusting bolts 9 are then screwed inwardly which will lift bodily the upper section 1 of the frame away from the base section. The valve block may then be drawn bodily out of the frame of the machine so that the valves may be inspected or repaired without disturbing the other parts of the pump or compressor. Conversely, the valve mechanism may be reinserted by simply sliding the valve block back into its position after which the bolts 9 may be turned backwardly so as to permit the upper section of the frame to rest upon the valve block in which position it may be secured by again tightening the bolts 8. The valve block is thus securely clamped between the sections of the frame.

I claim:

1. In an air or gas pump, a frame made in different sections, means connecting said sections, whereby they are adjustable relatively to each other, a valve block that is adapted to be inserted between two of said sections when the latter are in one of their adjusted positions, means for clamping said two sections against the valve block for holding the latter in position and a valve in said valve block.

2. In an air or gas pump, a frame made in a plurality of sections, a valve block that is adapted to be inserted between two of said sections, bolts for clamping said two sections together against the valve block for holding the same in position, and adjusting bolts threaded through one of said sections and resting against the other section whereby, by screwing upon said adjusting bolts, the said sections of the frame may be separated and the valve block removed from the frame and replaced therein without disturbing the other parts of the pump.

3. In an air or gas pump, a frame made in a plurality of sections, a valve block that is adapted to be inserted between two of said

sections, said block being flat and substantially rectangular in form, bolts passing through one of the sections of the frame and screwing into the other section for clamping the valve block between said sections, and adjusting bolts threaded through one of said sections and resting against the other section whereby, by screwing upon said adjusting bolts, the said sections may be separated so as to permit the ready removal of the valve block.

4. In an air or gas pump, a frame comprising a base section and a cylinder section, a piston operating vertically in the cylinder section, a valve block between said sections, valves in said block below the said piston, intake and outlet ports in the base section controlled by said valves, bolts passing through the cylinder section and screwing into the base section for clamping the valve block between said sections, adjusting bolts threaded through the cylinder section and resting against the base section whereby, by screwing upon said adjusting bolts, the said sections may be separated, and means on said valve block whereby the latter may be withdrawn from between said sections when the latter are thus separated.

5. In an air or gas pump, a frame comprising a base section and a cylindrical section, a piston operating in the cylindrical section, a valve block between said sections, valves in said block opposite the said piston, intake and outlet ports in the base section controlled by said valves, bolts passing through one of said sections and screwing into the other section for clamping the valve block between said sections, adjusting bolts threaded through one of said sections and resting against the other section whereby, by screwing upon said adjusting bolts, the said sections may be separated for removing and replacing the valve block, and means on said valve block whereby the latter may be withdrawn from between said sections when the latter are thus separated.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

JOSEPH B. MERIAM.

Witnesses:

S. E. FOUTS,
J. B. HULL.