

C. L. WALKER.
AIR PUMP.
APPLICATION FILED AUG. 18, 1915.

1,263,166.

Patented Apr. 16, 1918.
2 SHEETS—SHEET 1.

Fig. 2.

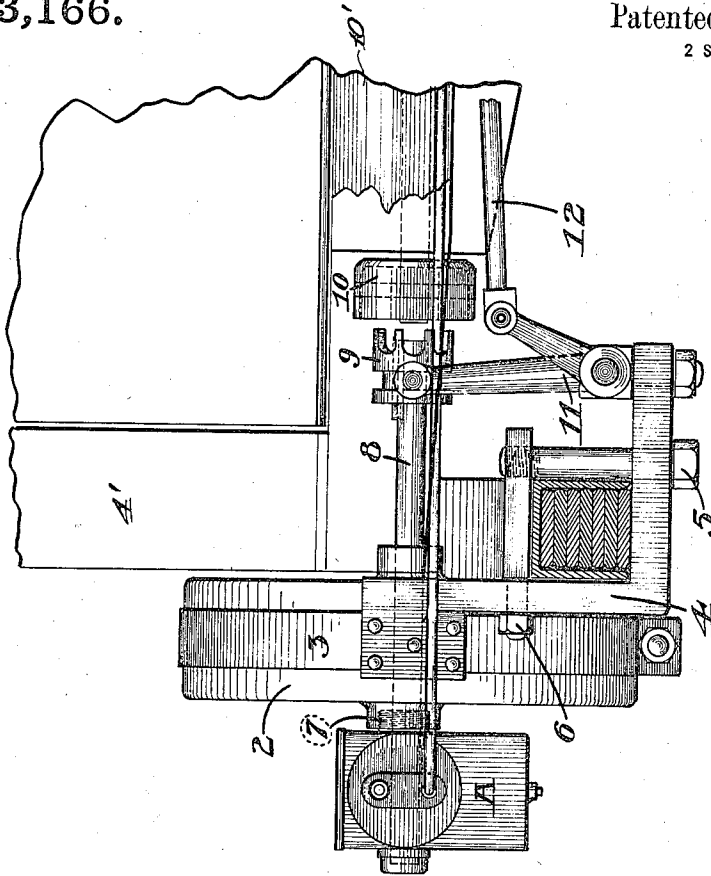
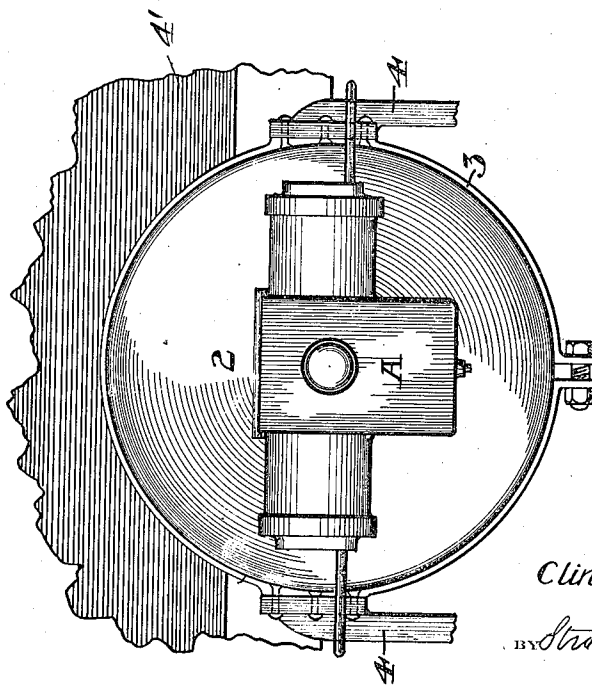


Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 3.

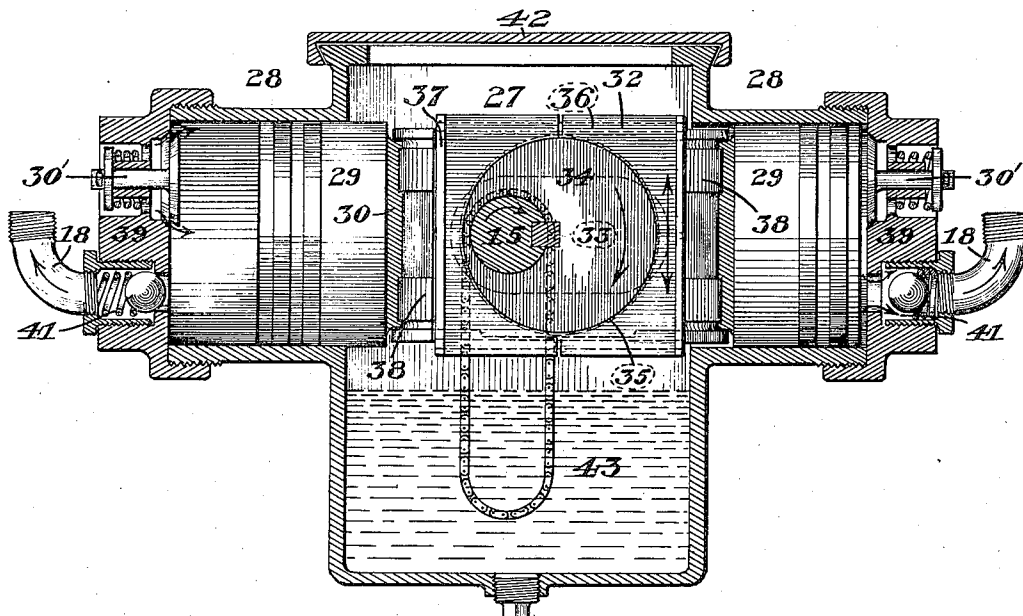
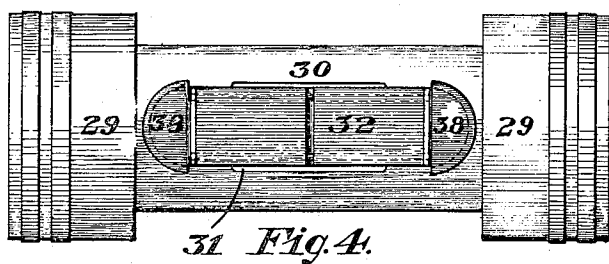
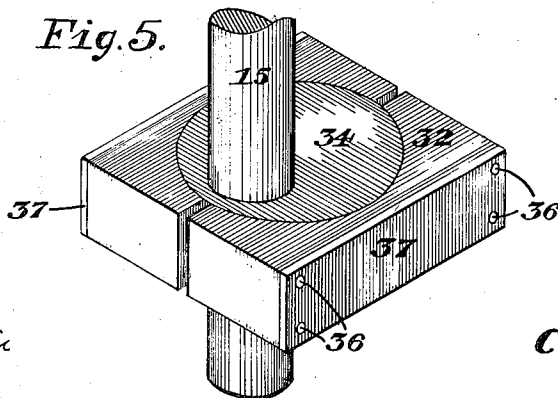


Fig. 4.



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UNITED STATES PATENT OFFICE.

CLINTON L. WALKER, OF PIEDMONT, CALIFORNIA.

AIR-PUMP.

1,263,166.

Specification of Letters Patent.

Patented Apr. 16, 1918.

Application filed August 18, 1915. Serial No. 46,057.

To all whom it may concern:

Be it known that I, CLINTON L. WALKER, a citizen of the United States, residing at Piedmont, in the county of Alameda and State of California, have invented new and useful Improvements in Air-Pumps, of which the following is a specification.

This invention relates to air pumps, and has for its object to simplify and improve the construction and operation of a pump of this general type, and to render it especially suitable for furnishing air to supply a compressed air starter in an automobile.

This object I accomplish by the provision of opposed, integrally united pistons operating in oppositely disposed cylinders, formed on the casing, improved eccentric means for driving said pistons from a shaft, which shaft is adapted to be placed in alignment with the crank shaft of a motor and to occupy the position, and bearings of the ordinary starting crank, and controlling means whereby the crank shaft and pump shaft may be clutched for operating the latter.

One form which my invention may assume is exemplified in the following description and illustrated in the accompanying drawings, in which—

Figure 1 shows a front elevation of an automobile having my invention embodied therein.

Fig. 2 shows a side elevation of the same.

Fig. 3 shows a vertical, central, sectional view of my improved pump.

Fig. 4 shows a detail, in plan, of the pistons and driving means therefor.

Fig. 5 shows a detail, in perspective, of the eccentric connection for driving said pistons.

Referring to the drawings in detail, A indicates the air compressor, forming the subject-matter of the present invention; and 2 a starter of suitable construction. The starter is in this instance shown as secured by a strap 3 carried by angular shaped bracket members 4, which underlie the radiator 4' and in turn are secured to the front channel frame and spring by means of the bolts 5 and 6. The compressor proper is secured to the starter by means of threaded extensions 7, and a shaft 8, passing through the starter, also extends through the compressor to operate same.

Slidably mounted on the inner end of the shaft 8 is a jaw clutch 9, which is adapted

to engage a cooperating member 10, secured on the crank shaft of the engine 10'; the clutch 9 being thrown into and out of engagement by means of a bell crank 11 and a link 12 operated from the seat of the car.

My improved pump comprises a casing 27, having oppositely disposed cylinders 28 formed thereon and a pair of opposed pistons 29 fitted in said cylinders and integrally united by a connecting-rod 30. The connecting-rod has a vertical slot 31 to receive an eccentrically operated block 32. The connecting-rod also has a horizontal slot 33 intersecting said slot 31 to admit the pump shaft 15. Upon the pump shaft is an eccentric 34 keyed to the shaft and fitted rotatably within the block 32. The block is divided into halves and has a tongue and groove connection 35 with the eccentric.

Dowel pins 36 are employed for detachably holding the two parts of the block together, and attached to the vertical faces of the said block are shims 37, held in place thereon by the dowel pins; said shims forming wearing plates to engage with half-round bearing blocks 38 fitted into the ends of the slot 31.

The pump cylinders each have a head 39 screwed in place thereon and provided with inlet valves 30' and outlet valves 41, the latter being connected to the pipes 18. A removable cover 42 is provided for the casing 27 and the latter forms an oil-tight chamber 43 whereby the parts may be operated in oil.

The operation of my device is as follows: The pump shaft 15 is connected to the motor crank shaft through the clutch elements 9 and 10, and the eccentric 34 is driven thereby causing the block 32 mounted thereon to describe a circular path. The horizontal movement of the block is transmitted to the connecting-rod through the bearing blocks 38, while the vertical motion is lost on account of the sliding connection between the shim plates and the bearing blocks. The bearing blocks 38 are capable of turning within the slot 31 and thus insure an accurate centering of the member 32 and prevent any tendency of the driving parts to bind. The split block 32 overcomes expansion difficulties, while the shim plates thereon, being removable, lessen the expense of replacing the worn parts.

While I have shown and described but one form of my device herein, it will be understood, nevertheless, that the same is

susceptible of modification, and, therefore, many changes may be resorted to in the construction and arrangement of the several parts without departing from the spirit of my invention as disclosed in the appended claims.

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

10 1. In an automobile, the combination of an internal combustion engine and a crank shaft therefor, a radiator carried in front of said engine and supported on springs, a pump having its operating shaft in aline-
15 ment with said crank shaft and journaled in a bearing carried on said springs, controllable clutch elements between said shafts, brackets embracing said springs detachably held thereon, a rock-shaft journaled in said
20 brackets, a connection between said rock-shaft and one of said clutch elements for controlling the latter, and means operable from the driver's seat in said automobile for actuating the rock-shaft.

25 2. A pump comprising a casing having oppositely disposed cylinders, opposed pistons operating in said cylinders, a connecting-rod between said pistons, means for driving said rod, comprising a shaft extending therethrough and an eccentric driv-
30 ing connection between the shaft and rod, said eccentric connection comprising an eccentric keyed to the shaft, a block inclosing said eccentric and operating in a slot
35 formed in said rod, and half-round bearing blocks fitted in the ends of the slot in said rod and engaging slidably with the block on said eccentric.

3. A pump comprising a casing having
40 oppositely disposed cylinders, opposed pistons operating in said cylinders, a connecting rod between said pistons, means for driving said rod, comprising a shaft extending therethrough and an eccentric driving con-
45 nection between the shaft and rod, said eccentric connection comprising an eccentric keyed to the shaft, a block inclosing said eccentric and operating in a slot formed in said rod, and means interposed between the

block and the opposing end walls of the rod slot for centering the block and eliminating binding thereof.

4. A pump comprising a casing having oppositely disposed cylinders, opposed pistons within said cylinders, a connecting rod
55 between said pistons, means for driving said rod comprising a shaft extending there-through, an eccentric member fixed to said shaft, a block inclosing said eccentric member and operating in said slot formed in said
60 rod, and means interposed between said block and said connecting rod to prevent binding between these members.

5. A pump comprising a casing having oppositely disposed cylinders, opposed pistons within said cylinders, a connecting rod
65 between said pistons, means for driving said rod comprising a shaft extending there-through, an eccentric member fixed to said shaft, a block inclosing said eccentric member and operating in said slot formed in said
70 rod, means interposed between said block and said connecting rod to prevent binding between these members, and means interposed between said block and said connect-
75 ing rod for taking up wear due to friction between said members.

6. In a pump, a reciprocating yoke block, a bearing block slidably mounted within said yoke and adapted to move at right angles to the path of travel of said block and in the same plane, an eccentric cam rotatably held within said block, a transverse shaft secured to said cam, means for preventing lateral movement of the cam in relation to the bearing block, and means whereby inaccuracy in the transverse alinement of the shaft in relation to the plane of travel of the yoke may be accommodated without binding of the parts.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CLINTON L. WALKER.

Witnesses:

JOHN H. HERRING,
R. B. TREAT.