

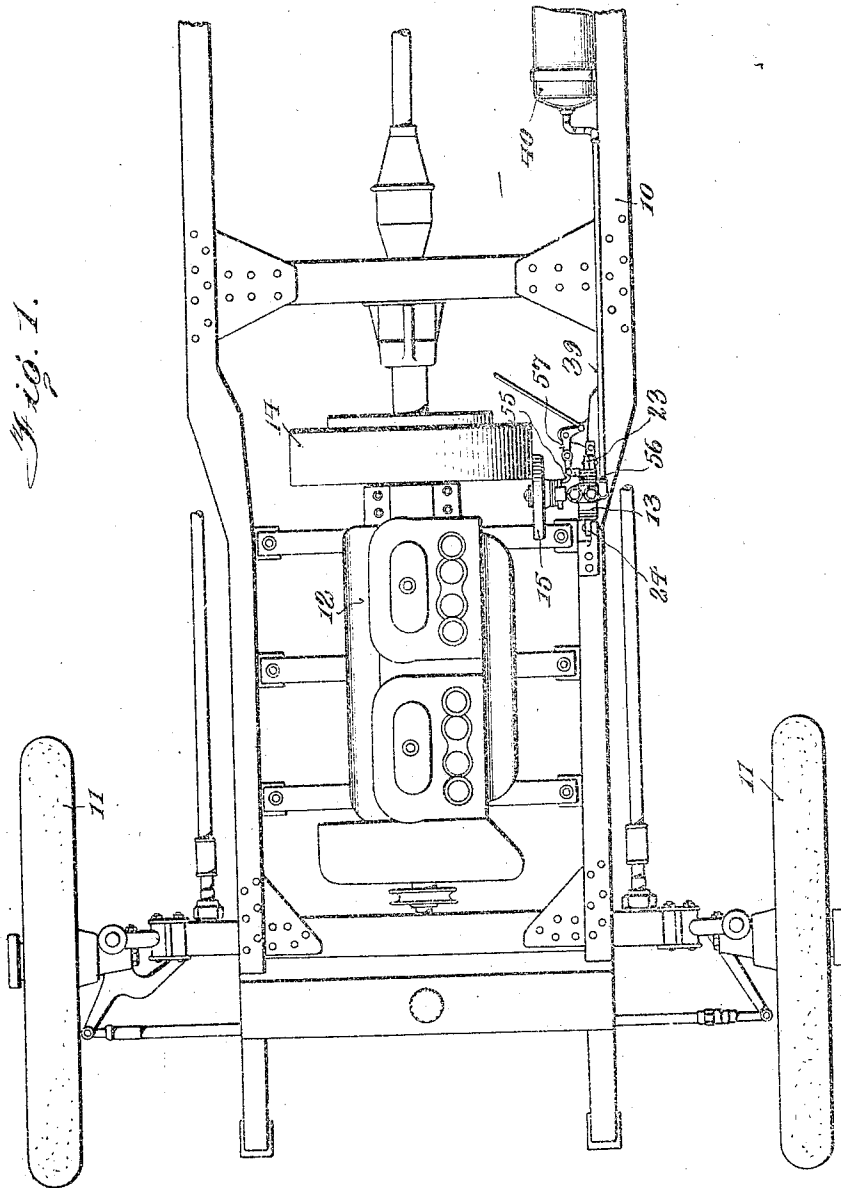
E. J. COOK.
PUMP.

APPLICATION FILED MAR. 5, 1912.

Patented Dec. 10, 1912

2 SHEETS-SHEET 1.

1,046,558.



Inventor

Everett J. Cook

Witnesses

Halgeott Murray.

B. M. Kent

By *John Freeman Watson* Att

Attorney

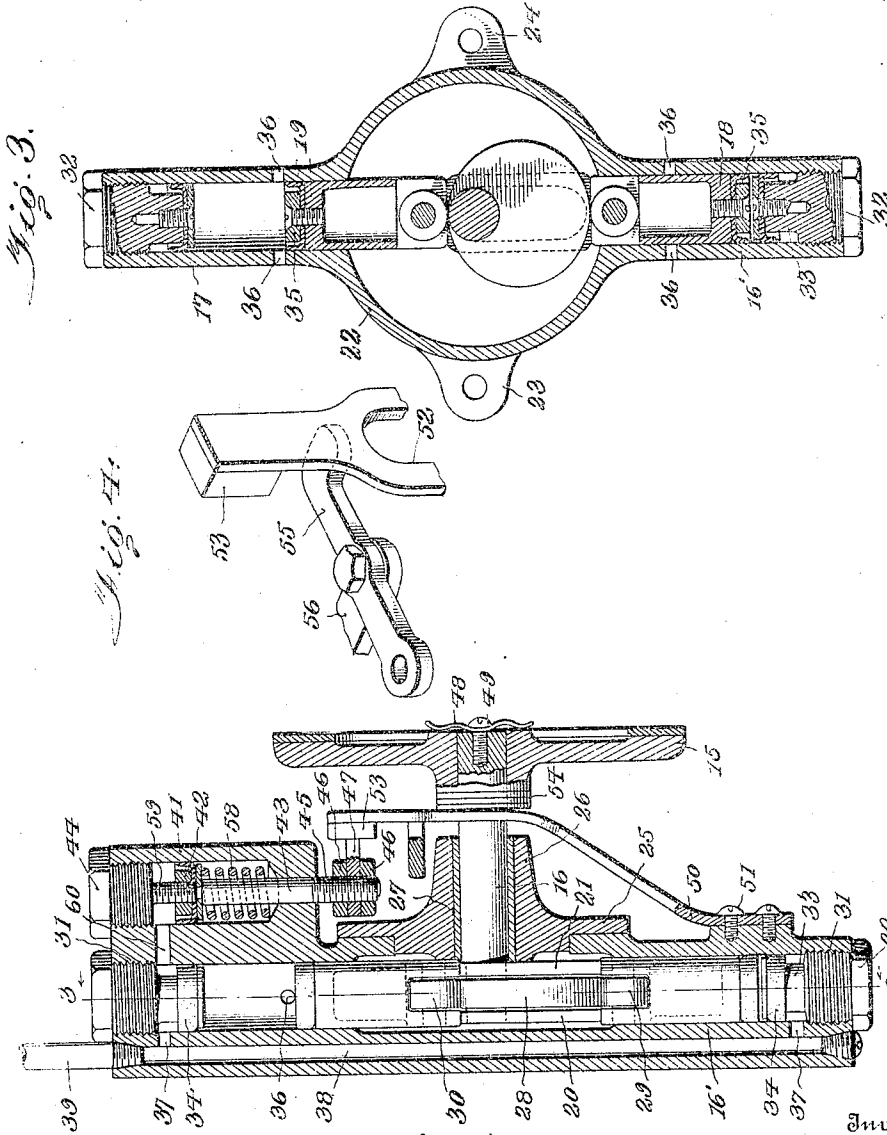
E. J. COOK.
PUMP.

APPLICATION FILED MAR. 5, 1912.

1,046,558.

Patented Dec. 10, 1912.

2 SHEETS-SHEET 2.



Witnesses

Helge M. Murray
B. M. Kent

Fig. 2.

Inventor
Everett J. Cook

Forster Freeman Watson & Co.
Attorney

UNITED STATES PATENT OFFICE.

EVERETT J. COOK, OF DETROIT, MICHIGAN.

PUMP.

1,046,558.

Specification of Letters Patent.

Patented Dec. 10, 1912.

Application filed March 5, 1912. Serial No. 631,737.

To all whom it may concern:

Be it known that I, EVERETT J. COOK, a citizen of the United States, residing at Detroit, in the county of Wayne, State of Michigan, have invented certain new and useful Improvements in Pumps, of which the following is a specification.

This invention relates to pumps and more particularly to air pumps adapted to be carried on a motor vehicle and driven by the engine thereof for the purpose of supplying air for filling the tires, etc.

The objects of the invention are to provide a pump which may be readily thrown into operation and which will be automatically stopped when a certain predetermined air pressure is obtained.

The novel features of the invention will be apparent from the following description taken in connection with the accompanying drawings, in which:

Figure 1 is a plan view of a portion of an automobile showing my invention applied thereto. Fig. 2 is a central longitudinal section of a pump embodying my invention. Fig. 3 is a section on the line 3-3 of Fig. 2. Fig. 4 is a perspective view of a detail of the invention.

Referring to the drawings 10 indicates the frame of an automobile, 11 the front wheels thereof and 12 the engine. At any convenient point, preferably on the frame of the automobile, I secure the pump indicated generally by the numeral 13 so as to be driven by the fly wheel 14 or any other suitable rotating part of the engine. In order to drive the pump from the fly wheel I prefer to use a friction wheel 15 mounted on the shaft 16 of the pump and adapted to engage the periphery of the wheel 14.

The pump may consist of any desired arrangement of cylinders and means for reciprocating the pistons therein, but I prefer to use oppositely arranged cylinders 16' and 17 provided respectively with pistons 18 and 19. The pistons 18 and 19 are connected together by means of the spaced rods 20 and 21. The cylinders 16 and 17 are secured to a casing 22 which is provided with lugs 23 and 24 for attaching the pump to the automobile. One side of the casing 22 is provided with a suitable opening which is closed by means of the cover plate 25, this plate being secured to the casing by screws or any other suitable means. The cover plate 25 is provided with a bearing 26 in

which the shaft 16 is mounted, a suitable bearing sleeve 27 being provided to take the wear due to the rotation of the shaft. The shaft 16 projects through elongated slots in the rods 20 and 21 and is provided with an eccentric 28 which engages the rollers 29 and 30 carried by the rods 20 and 21. By this construction the rotation of the shaft 16 causes the pistons to be reciprocated. The outer ends of the cylinders are preferably screw-threaded as at 31 to receive the plugs 32 which are reduced in diameter at their inner end 33 to receive the cup washers 34 which act as discharge valves. The pistons 18 and 19 are also provided with cup washers 35 which act as inlet valves. Each of the cylinders is provided with suitable inlet ports 36 and discharge ports 37, the latter ports preferably connecting with a conduit 38 which may communicate with a pipe 39 for conveying the air to a storage tank 40 or to the point of use.

I preferably arrange alongside of one of the cylinders and formed integral therewith a cylinder 41 having a piston 42 which is secured to a suitable rod 43. The outer end of the cylinder 41 is suitably screw-threaded and provided with a plug or closure 44. The outer end of the piston rod 43 is screw-threaded as at 45 to receive the nuts 46 between which is arranged the member 47.

The shaft 16 projects outwardly from the bearing 26 and has slidably mounted thereon the wheel 15. A suitable spring 48 is secured to the end of the shaft 16 by means of the screw 49 and has its end portions bearing against the hub of the wheel 15 so as to press the wheel toward the bearing 26. A spring 50 is preferably secured to the cylinder 16' by means of screws 51 and is suitably offset and provided with an elongated slot 52 through which the shaft 16 extends. The free end of the spring 50 is provided with a cam member 53 preferably in the form of a rectangular block. The spring 50 normally tends to move toward the bearing 26, but is arranged to be pressed outwardly against the wheel 15 and in order to prevent undue wear of the parts I provide suitable washers 54 between the hub of the wheel and the spring. In order to move the spring 50 outwardly against the wheel I may use any suitable mechanism, such as the lever 55 which is pivotally connected to the bracket 56 secured to any suitable part of the vehicle. Any suitable operating

mechanism 57 may be connected with the lever 55 so as to move the latter from any convenient point on the vehicle.

Arranged in the cylinder 41 and surrounding the rod 43 is a coil spring 58 which tends to move the piston 42 outwardly toward the plug 44. The rod 43 has an extension 59 toward the plug 44 adapted to engage the latter so as to limit the outward movement of the piston. A suitable port 60 connects the interior of the cylinder 41 between the piston 42 and the plug 44 with the discharge conduit of the pump so that the piston 42 is at all times subject to the discharge pressure.

The operation of the pump is as follows: The wheel 15 will be moved into engagement with the fly wheel 14 of the engine by pressing the spring 50 outwardly by means of the lever 55 and the operating mechanism 57. When the wheel 15 is in engagement with the fly wheel of the engine the pump will be operated and the parts will be in the position shown in Fig. 2, the spring 50 being held in the outward position by the member 47 which engages the side of the cam 53, the spring 58 holding the parts in this position. As the pressure increases the piston 42 will be depressed, thereby compressing the spring 58 and moving the member 47 downwardly along the surface of the cam 53. When the member 47 passes by the lower edge of the cam 53 it will be seen that the spring 50 will move toward the bearing 26, thereby permitting the spring 48 to force the wheel 15 out of engagement with the wheel 14 so as to stop the pump. Under these conditions the lower side of the cam 53 will engage the upper side of the member 47, thereby holding the spring 58 in compression even after the pressure is removed from the piston 42. When it is desired to again operate the pump it is only necessary to press the spring 50 outwardly in the manner above described until the cam 53 is disengaged from the member 47, when the latter will be drawn upwardly by means of the spring 58 to the position shown in Fig. 2. In order to adjust the pump to be thrown out of operation at different pressures I have provided the screw threads 45 and the nuts 46 and as will be readily understood the pressure at which the pump will be stopped may be changed by moving the member 47 upwardly or downwardly along the rod 43, depending on whether it is desired to increase or decrease the pressure.

It will be understood that various changes may be made in the details of the apparatus without departing from the spirit of my invention and I have therefore illustrated what I consider the preferred embodiment of my invention, but do not wish to be limited to the details shown and described as I claim all modifications thereof which

come within the scope of the appended claims.

Having thus described the invention what I claim as new and desire to secure by Letters Patent is:

1. In a pump, the combination of a cylinder, a piston therein, a shaft, means connecting the piston and the shaft and adapted to reciprocate the piston as the shaft is rotated, an axially movable wheel on the shaft, means adapted to move said wheel in one direction along said shaft, means for normally holding said wheel against movement by said last-mentioned means, and pressure-actuated means adapted to release said holding means.

2. In a pump, the combination of a cylinder, a piston, a shaft, means connecting the piston and the shaft and adapted to reciprocate the piston as the shaft is rotated, a driving wheel for said shaft adapted to be moved axially relative thereto, a spring actuated member arranged to engage said wheel, means for holding said member against said wheel to prevent movement of the latter in one direction, and pressure-actuated means adapted to release holding means.

3. In a pump, the combination of a cylinder, a piston, a shaft, means connecting the piston and the shaft and adapted to reciprocate the piston as the shaft is rotated, a driving wheel slidably mounted on said shaft, a spring-actuated member arranged to engage said wheel, means for holding said member against said wheel to prevent movement of the latter in one direction, pressure-actuated means adapted to be actuated at a predetermined pressure for releasing said holding means, and means for adjusting said pressure actuated means for different pressures.

4. In a pump, the combination of a cylinder, a piston, a shaft, means connecting the piston and the shaft and adapted to reciprocate the piston as the shaft is rotated, a driving wheel slidably mounted on said shaft, a spring adapted to move said wheel in one direction, a member adapted to move said wheel in opposition to said spring, means for holding said member against the wheel, and pressure-actuated means for releasing said holding means.

5. In a pump, the combination of a cylinder, a piston, a shaft, means connecting the piston and the shaft and adapted to reciprocate the piston as the shaft is rotated, a driving wheel slidably mounted on said shaft, a spring-actuated member adapted to be pressed against said wheel and normally tending to move away from the wheel, a cam carried by said member, a second cylinder, a piston therein, a spring adapted to oppose the movement of said piston in one direction, a cam member con-

connected with said last-mentioned piston and adapted to cooperate with the first-mentioned cam to normally hold said spring-actuated member against said wheel, and a port connecting said cylinders.

6. In a pump, the combination of a cylinder, a piston, a shaft, means connecting the piston and the shaft and adapted to reciprocate the piston as the shaft is rotated, a driving wheel slidably mounted on said shaft, a spring adapted to move said wheel in one direction, a spring member having one end fixed and provided on its opposite end with a cam, a pressure-actuated cam member adapted to cooperate with said first-mentioned cam to hold the spring member against the wheel and to permit the spring member to move out of engagement with the wheel at a predetermined pressure.

7. In a pump, the combination of a cylinder, a piston, a shaft, means connecting the piston and the shaft and adapted to reciprocate the piston as the shaft is rotated, a driving wheel slidably mounted on said shaft, a spring adapted to move said wheel in one direction along the shaft, a spring member having one end fixed and provided on its opposite end with a cam, a cam member arranged to cooperate with said first-mentioned cam to hold the spring member against the wheel with said spring retracted, a spring adapted to move said cam member in one direction, a pressure-actuated device connected with said cam member and adapted to move the latter in opposition to said last-mentioned spring to permit the spring member to move out of engagement with the

wheel, and means for adjusting one of the cam members to permit such movement of the spring member at different predetermined pressures.

8. In a pump, the combination of a cylinder, a piston, a shaft, means connecting the piston and the shaft and adapted to reciprocate the piston as the shaft is rotated, a driving wheel slidably mounted on said shaft, a spring member having one end fixed and provided on its opposite end with a cam and arranged to engage said wheel to move the same along said shaft, a second cylinder having a piston therein, a member connected with said piston and adapted to cooperate with said cam to hold the spring member in engagement with the wheel, means for connecting the interior of said second cylinder with the discharge conduit of the pump so as to subject one side of the piston therein to the discharge pressure of the pump, a spring arranged to oppose the pressure on said pistons, and means for moving said spring member toward said wheel to slide the latter along said shaft, said cam and its cooperating member being arranged to permit the spring member to move out of engagement with the wheel when a predetermined pressure is reached and to be interlocked by such movement of the spring member.

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

EVERETT J. COOK.

Witnesses:

H. C. ADAMS,
EVERETT M. COOK.