

T. DAVIS.  
PNEUMATIC PUMP.  
APPLICATION FILED MAR. 3, 1909.

969,847.

Patented Sept. 13, 1910.

Fig. 1.

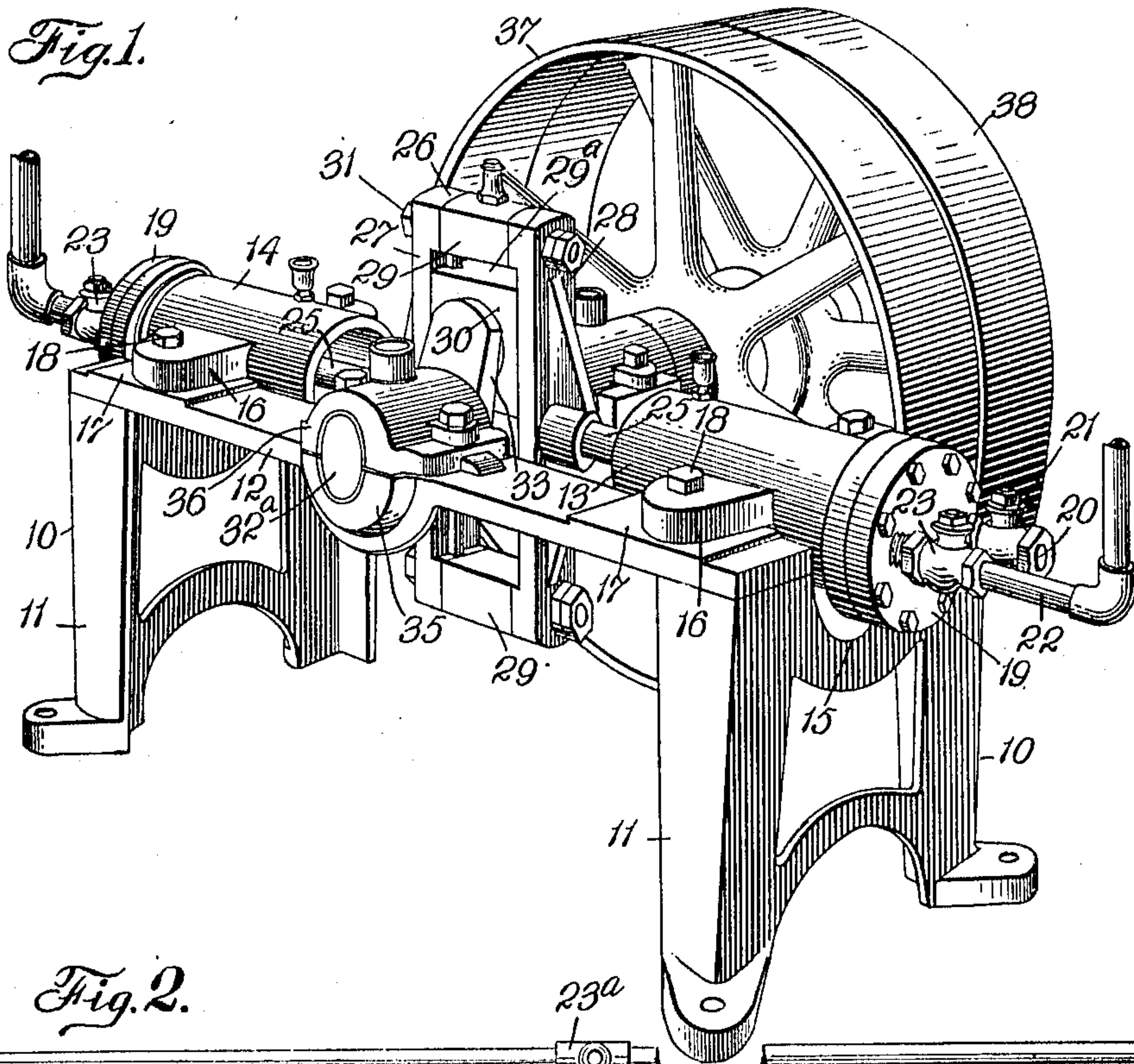
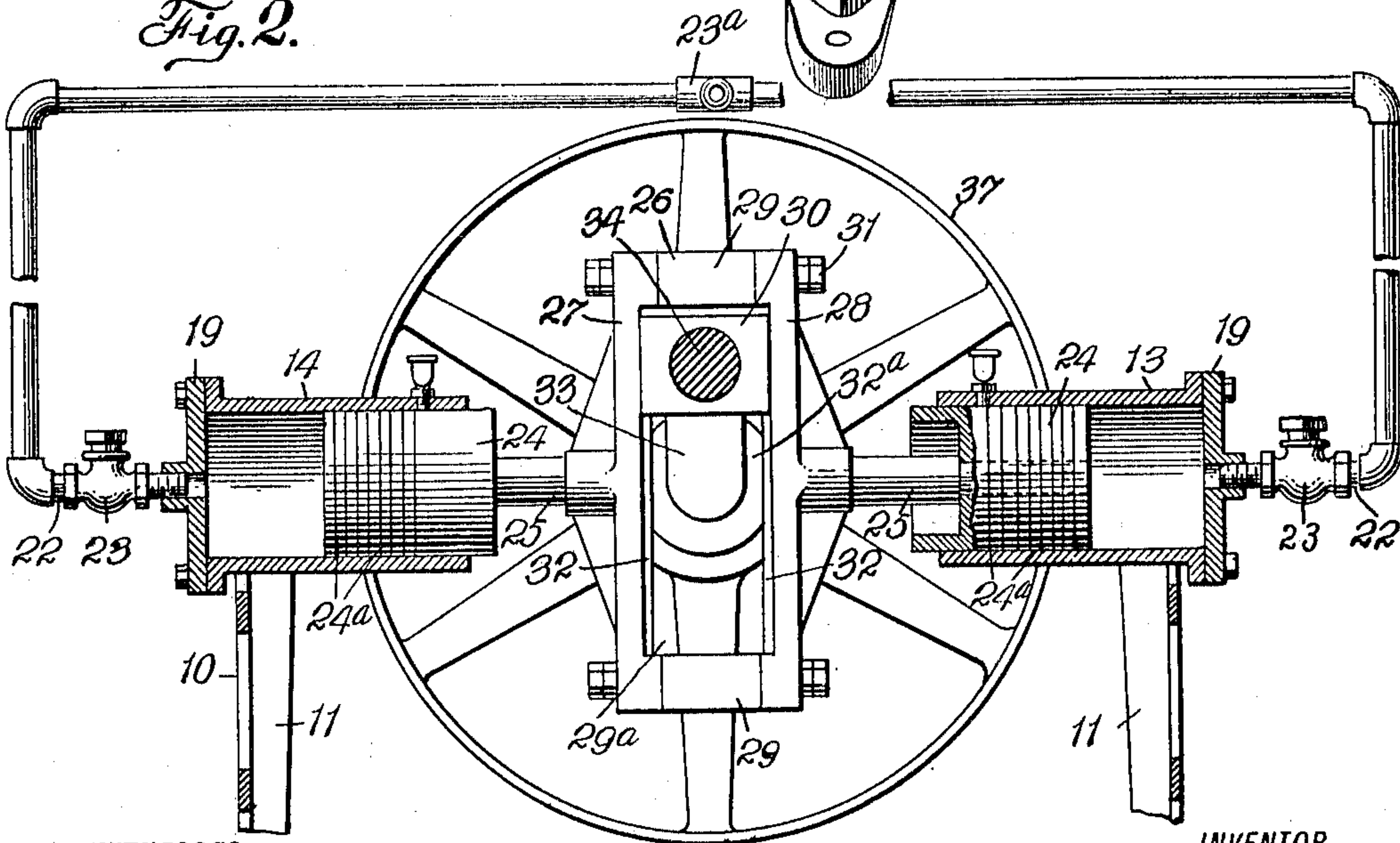


Fig. 2.



WITNESSES  
*Julius H. Smith*  
*H. Winnhaupt*

INVENTOR  
Thomas Davis  
BY  
*Criswell & Criswell*  
ATTORNEYS



# UNITED STATES PATENT OFFICE.

THOMAS DAVIS, OF ORANGE, NEW JERSEY, ASSIGNOR TO ORANGE MACHINE AND MANUFACTURING COMPANY, A CORPORATION OF NEW JERSEY.

## PNEUMATIC PUMP.

969,847.

Specification of Letters Patent. Patented Sept. 13, 1910.

Application filed March 3, 1909. Serial No. 481,094.

### *To all whom it may concern:*

Be it known that I, THOMAS DAVIS, a citizen of the United States, and resident of Orange, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Pneumatic Pumps, of which the following is a full, clear, and exact description.

This invention relates more particularly to a pump for forcing air into a tank or receptacle to be used in connection with automobiles.

The primary object of the invention is to provide a simple and easily constructed pump in which two cylinders may be opposed and by a rotary element to reciprocate the pistons to force air from the cylinders in succession, and so to construct and mount the parts of the pump that comparatively few parts are required.

A further object of the invention is to provide a simple and efficient device which may be readily constructed and assembled, and which may be used for various purposes.

With these and other objects in view, the invention will be hereinafter more particularly described with reference to the accompanying drawings, which form a part of this specification, and will then be pointed out in the claims at the end of the description.

In the drawings, Figure 1 is a perspective view of one form of device embodying my invention; and Fig. 2 is a sectional view, partly in elevation, through the cylinders, showing the means for operating the pistons.

The frame or support 10 may comprise two end-pieces or legs 11 which are held together at their upper parts by the longitudinally-extending bars or members 12, arranged on each side and interposed between the bars 12 are the cylinders 13 and 14. The end-pieces 11 are cut away, as at 15, to permit the cylinders to enter said recesses, and each cylinder is provided with lugs 16 which extend from opposite sides thereof and which are adapted to rest upon the seats 17 of the bars or members 12, and passing through said lugs and the bars or members 12 are bolts 18 for holding the cylinders rigidly to the bars. The cylinders 13 and 14 are each open at one end, and their opposite ends are closed by a head 19, and in

this head is an inlet 20 which is controlled by a suitable check valve 21, and leading from each cylinder is an outlet pipe 22 in which is arranged a check valve 23. The pipes 22 of each cylinder may be connected together, as at 23<sup>a</sup>, and from the connection 23 may lead a pipe to a suitable tank or reservoir, not shown, in which the air, gas, or fluid may be forced from the cylinders and the air or gas held therein under pressure to be utilized in any desired manner.

The cylinders 13 and 14 have their ends opposed and in alinement with each other, and may be supported over the end-pieces 11 of the frame or support, and movable in the cylinders are the pistons 24 which may be provided with suitable packing rings, as 24<sup>a</sup>, and said cylinders may be lubricated by the usual oil cups or in any desired way. Each piston is connected by a rod 25 to the opposite sides of the cross-head 26. This cross-head 26 comprises two parts 27 and 28 which are spaced apart by the blocks 29 to provide a vertically-extending slot opening or guide way 29<sup>a</sup>, in which is adapted to move a bearing or block 30. The parts 27 and 28 are held together by the bolts 31, and each of said parts is provided with a gib or guide 32 which enter grooves in the vertical edges or sides of the block 30, so that said block may move along said guides. A shaft 32<sup>a</sup> extends transversely of the frame or device and is provided with a crank portion 33, the pin 34 of which passes through the block 30 so that when the shaft 32<sup>a</sup> and crank portion 33 are rotated the block 30 will be carried therewith, and during the rotary movement thereof will impart a reciprocatory movement to the cross-head 26 and thereby reciprocate the pistons in the cylinders, and at one stroke of the pistons to draw the air or gas within the cylinders, and at the next stroke force the same past the check valve 23 to the connection 23<sup>a</sup> to be stored or used for any purpose.

Each bar or member 12 of the frame is provided with a boss 35, and over the boss is a cap 36. The caps 36 and the bosses 35 form together a bearing for the shaft 32<sup>a</sup>, and on said shaft 32<sup>a</sup> are loose and fast pulleys 37 and 38 of the usual form by which said shaft may be rotated. When the shaft 32 is rotated by the pulley held thereto, the crank portion will reciprocate the cross-head



and thereby move the pistons in the cylinders to draw the air within the cylinders and then force the same with the next stroke therefrom thus converting rotary motion  
5 into a reciprocatory movement without the use of any intervening pivotally held connections.

An important advantage of my improved construction of frame is that it may be readily  
10 taken apart for convenience in shipment, and a further advantage is that the crank-shaft bearings as well as the cross-head and reciprocating block therein are exposed to facilitate lubrication.

15 From the foregoing it will be seen that a simple and efficient pump is provided for pumping air or other gas or fluid into a receptacle or reservoir to be used for various purposes; that the connections between the  
20 driving means and the pistons are substantially direct thereby simplifying and reducing the number of parts; that by arranging the cylinders on opposite sides of the cross-head, one cylinder is pumping while the  
25 other is drawing air within the cylinder thus making the supply of air substantially constant, and that a pump thus constructed may be readily assembled and may be used for various purposes.

30 Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. In a pneumatic pump, the combination  
35 with a supporting frame comprising end pieces, and longitudinal bars connecting said end pieces, and formed with semi-cir-

cular bosses, of a crank shaft supported by said bosses, caps secured over said bosses and forming therewith bearings for said shaft, two alined cylinders supported upon  
40 the frame, a cross head between said cylinders provided with vertical guides, a block mounted on said shaft and grooved to receive said guides, piston rods rigidly connected to opposite sides of said cross  
45 head and pistons within said cylinders secured to said piston rods.

2. In a pneumatic pump, the combination with a supporting frame, comprising end pieces, and longitudinal bars connecting  
50 said end pieces, and formed with semi-circular bosses and reinforcing seats, of a crank shaft supported by said bosses, caps secured over said bosses and forming therewith bearings for said shaft, two alined cyl-  
55 inders supported upon the frame and provided with laterally projecting lugs overlapping said seats and detachably secured thereto, a cross head between said cylinders consisting of side bars formed with vertical  
60 guides, and spacing blocks between said side bars, a block mounted on said shaft and provided with grooves to receive said guides, piston rods rigidly connected to opposite sides of said cross head, and pistons within  
65 said cylinders secured to said piston rods.

This specification signed and witnessed this 25<sup>th</sup> day of February A. D. 1909.

THOMAS DAVIS.

Witnesses:

M. F. KEATING,  
M. DINNHAUPT.