

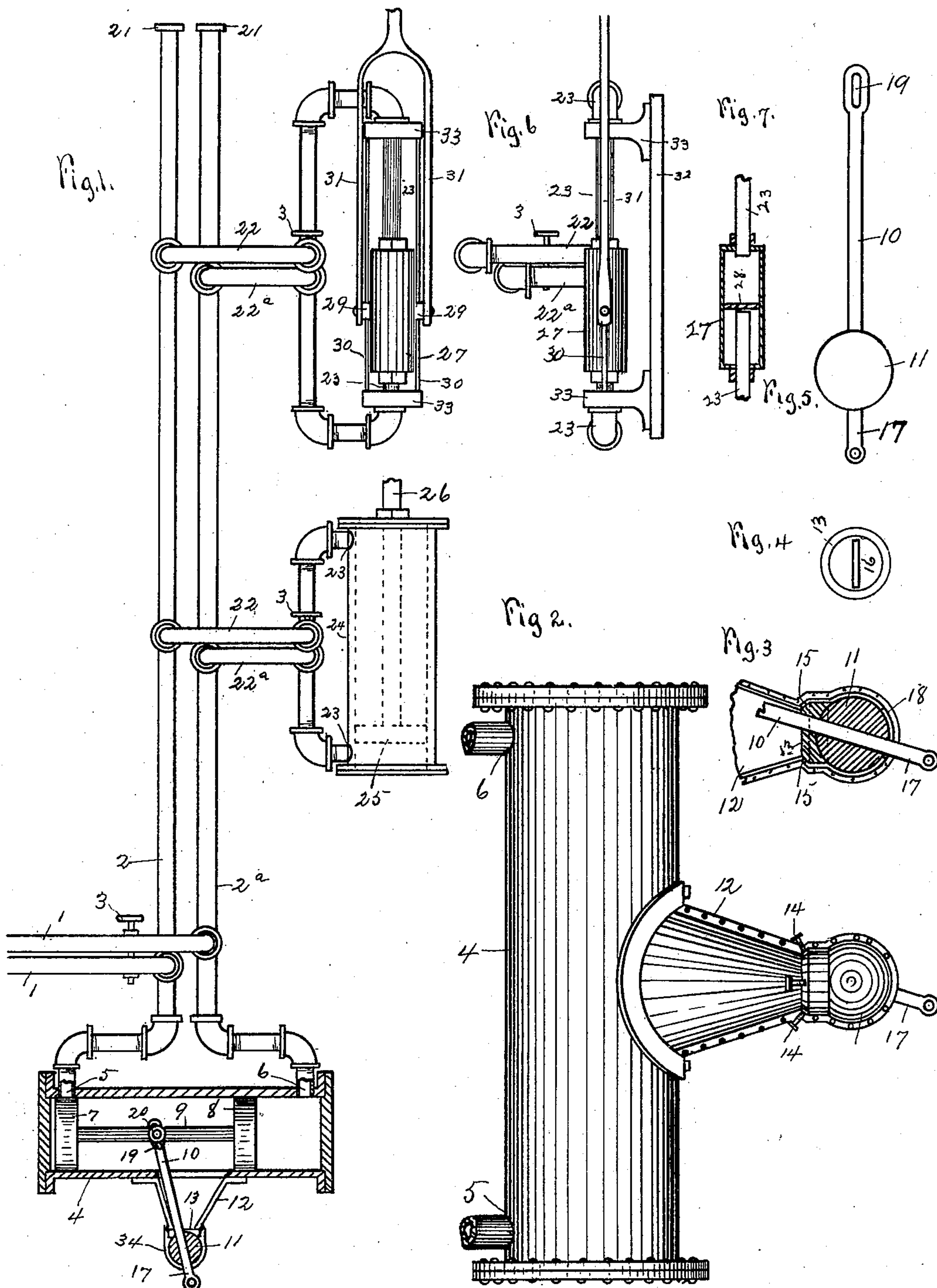
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W. H. BARR.  
ALTERNATING AIR PRESSURE SYSTEM.

(Application filed June 12, 1897.)

(No Model.)



Witnesses  
M. S. Heiman  
J. M. Huff

Inventor.  
William H. Barr  
By N. B. Hagin atty.



# UNITED STATES PATENT OFFICE.

WILLIAM H. BARR, OF WICHITA, KANSAS.

## ALTERNATING AIR-PRESSURE SYSTEM.

SPECIFICATION forming part of Letters Patent No. 615,668, dated December 13, 1898.

Application filed June 12, 1897. Serial No. 640,439. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. BARR, a citizen of the United States of America, residing at Wichita, in the county of Sedgwick and State of Kansas, have invented certain new and useful Improvements in Alternating Air-Pressures, of which the following is a specification, reference being had therein to the accompanying drawings and the figures of reference thereon, forming a part of this specification, in which—

Figure 1 is a plan view of my improved alternating air-pressure system, with a portion of the apparatus shown in cross-section. Fig. 2 is a side view of a cylinder. Figs. 3, 4, and 5 are details of the same. Fig. 6 is a side view of another style of cylinder. Fig. 7 is a sectional detail of the same.

This invention relates to certain improvements in an alternating air-pressure and a mechanism for producing said alternating air-pressure; and it consists in the construction of cylinders and air-pipes and the arrangement of the same and the transmitting of an air-pressure from one pipe to another without the escape or loss of said air-pressure.

Referring to the drawings, 1 represents air-pipes leading from an air-pump through which air can pass into the pipes 2 and 2<sup>a</sup>. Said pipes 1 are provided with the check-valve 3.

4 represents an air-cylinder which is connected with the pipes 2 and 2<sup>a</sup> at either side at 5 and 6.

7 and 8 represent two piston-heads, which are secured to the ends of the piston-rod 9.

10 represents a piston driving-rod which passes centrally through and is integral with the ball or globe bearing 11.

12 represents a conical-shaped hood secured to the side of the cylinder 4. Said hood is provided at its outer end with a cylindrical boxing 34, in which said ball or globe bearing 11 is adapted to freely turn, allowing the driving-rod 10 to have an oscillating movement. 13 represents a cap which is for holding said ball 11 snug against the inner wall of said cylindrical boxing 34, through the medium of the set-screws 14, which pass through the openings 15 in the wall of said

hood and press down on said cap. (See Figs. 2 and 3.) Said cap is provided with the slot 16, (see Fig. 4,) through which said driving-rod 10 oscillates. 17 represents one end of said driving-rod passing through a slot 18 in the cylindrical boxing 34 and extending outside of said boxing, to which power can be applied for operating said rod 11, which will in turn operate the piston-heads 7 and 8. Said arm 11 is also provided with the elongated opening 19, through which it is secured to the piston-rod 9 at 20. 21 represents caps on the outer ends of said air-pipes 2, closing the same. 22 represents air-feed pipes leading from said supply-pipes 2 and 2<sup>a</sup> to cylinders 24 and 27, said feed-pipes 22 entering the cylinders 24 and 27 at 23, and said cylinder 24 is provided with the piston-head 25 and piston-rod 26. 28 represents a central partition in said cylinder 27 and is for the purpose of dividing said cylinder into two separate compartments, so the steam or air from one compartment cannot enter into the other compartment.

29 represents lugs secured to the sides of the cylinder 27. Said lugs are provided with a hole through which the supporting-rods 30 pass said cylinder slides to and fro on said rods and on the pipes 23. 31 represents a divided arm secured to the said cylinder and is for transmitting power from said cylinder. 32 and 33 represent a support for said cylinder.

In use this alternating air-pressure is operated in the following manner: Air is first pumped from an air-pump into the pipes 1, when they will by opening the valve 3 conduct the air to the pipes 2 and 2<sup>a</sup> and the cylinder 4 to any desired pressure. When the piston-heads 7 and 8 are at one end, as shown in Fig. 1, the head 7 covers the port 5, leaving a larger space for the air in the pipe 2<sup>a</sup> than there is in the pipe 2, which will reduce the pressure in said pipe 2<sup>a</sup> and increase the pressure in said pipe 2, when the pressure is greater in the pipe 2 passes through the pipes 22 into one end of the cylinders 24 and 27, forcing the pistons one way, when power can be applied to the end 11 of the rod 10, forcing said pistons 7 and 8 to the opposite end of said cylinder 4, when the cylinder-head 8 will cover the port 6, at



the same time leaving a larger space in the opposite end of said cylinder 4 and pipe 2, which will in turn lessen the pressure in said pipe 2 and increase the pressure in said pipe 2<sup>a</sup>, which will in like manner force the piston-heads of the cylinders 24 and 27, and as many more of said cylinders as may be added, thus giving power to a series of cylinders.

When the air-pressure is in the pipe 2<sup>a</sup>, it is also in the pipe 23, which carries the air into one end of the cylinder 27 and presses against the partition 28, which carries the cylinder 27 in one direction, which in turn carries with it the divided arm 31. In like manner the cylinder 27 and arm 31 are reversed when the air-pressure is in the pipe 2.

Having thus described my invention, what

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

In the alternating air-pressure system, the combination of a cylinder having central partition therein, lugs on the sides of said cylinder, supporting-rods passing through said lugs whereby the cylinder is adapted to reciprocate upon said rods, an air-pipe entering each end of said cylinder, and means for supplying air alternately to each of said pipes, and a driving-arm secured to the cylinder for transmitting power, substantially as described.

WILLIAM H. BARR.

Witnesses:

C. H. ANDREWS,  
J. C. RICHEY.