

No. 667,224.

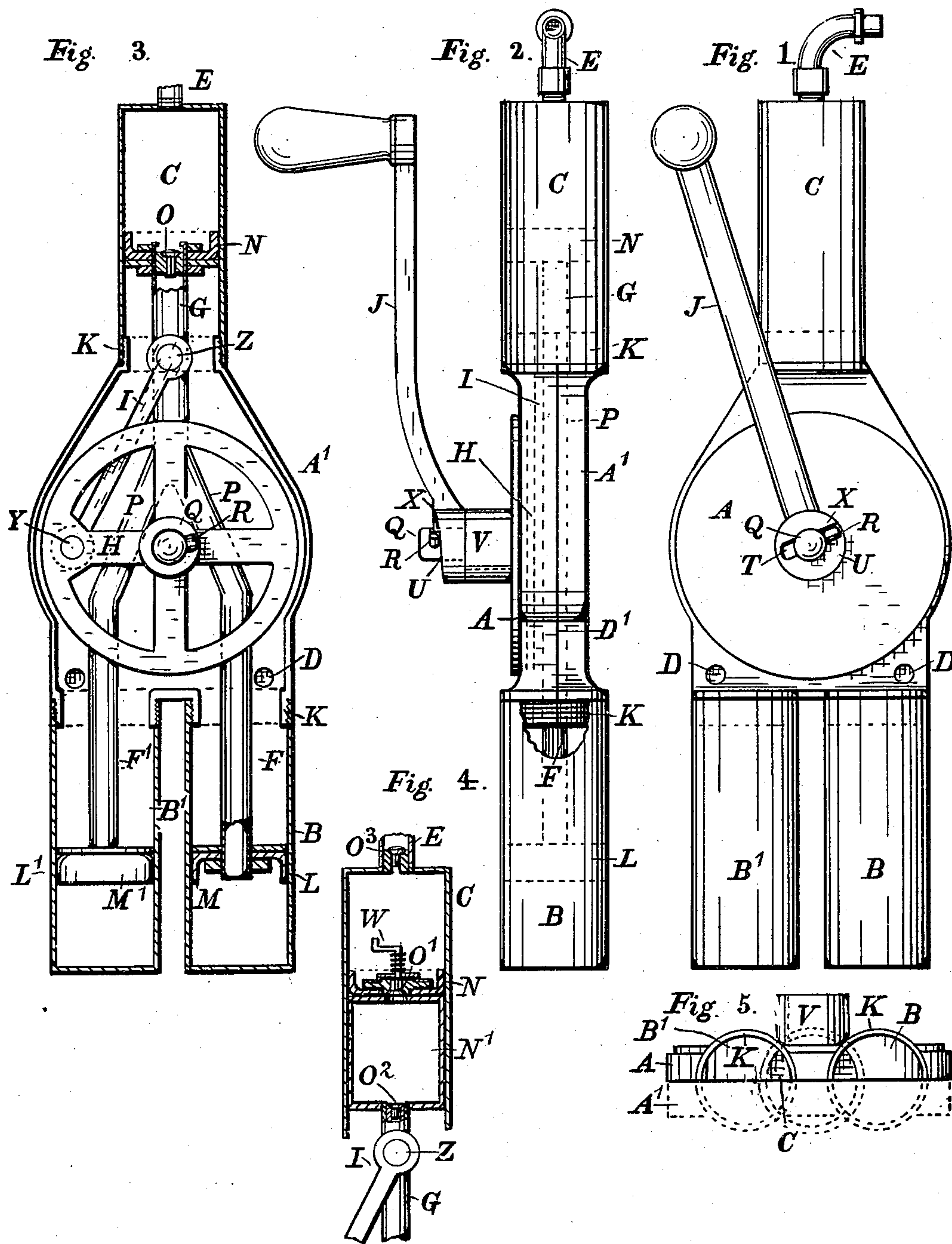
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G. W. KELLOGG.

AIR PUMP.

(Application filed July 8, 1899.)

(No Model.)



Witnesses

G. A. Gillette.
C. H. Crannell.

Inventor

George W. Kellogg,
By George B. Selden,
Attorney

UNITED STATES PATENT OFFICE.

GEORGE W. KELLOGG, OF ROCHESTER, NEW YORK.

AIR-PUMP.

SPECIFICATION forming part of Letters Patent No. 667,224, dated February 5, 1901.

Application filed July 8, 1899. Serial No. 723,192. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. KELLOGG, a citizen of the United States, residing at Rochester, in the county of Monroe, in the State of New York, have invented an Improved Air-Pump, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to the construction of an improved air-pump designed more particularly for the rapid and easy inflation of the pneumatic tires, even of the largest dimensions, now so widely used on bicycles, tandems, automobiles, and other vehicles, but capable of many other applications.

My improved air-pump is fully described and illustrated in the following specification and the accompanying drawings, the novel features thereof being specified in the claims annexed to the said specification.

In the accompanying drawings, representing an air-pump embodying my improvements, Figure 1 is a side view. Fig. 2 is an edge view. Fig. 3 is a central longitudinal section. Fig. 4 is a section representing a modification. Fig. 5 is an end view of the central casing.

A represents the central chamber or casing, having an enlargement A', B B' the air-pumps at one side of the casing, and C the air-pump on the other side. The air enters through openings D in the central chamber, and after being compressed by pistons in the barrels or cylinders B B' is delivered through hollow piston-rods to the cylinder C, where it is further compressed, to be thence discharged through the outlet-pipe E. The pistons in the barrels are connected together by the hollow piston-rods F F' G, Fig. 3, so as to be operated simultaneously by the crank or wheel and link or connection I.

J is a hand-crank by which rotary motion is imparted to the crank H, located within the central chamber A. The crank H is fixed to an axis or stud Q, supported to rotate in the wide bearing in the suitably-apertured boss V, fixed to an extension or enlargement of the casing A.

L L' are the pistons in the cylinders B B', which pistons are provided with cup-leathers M M' of any suitable or preferred construction. As shown, the cup-leathers are secured

to the hollow piston-rods F F' by collars and nuts threaded on the rods. When moving inward toward the crank, the cup-leathers permit the air to pass around them to the outer ends of the cylinders B B'; but when traveling outward the cup-leathers act as valves and prevent the air from passing by them, so that it is compressed and forced through the hollow piston-rods into the space in the cylinder C outside its piston N, a check-valve O being provided which prevents the return of the air, so that it is further compressed in the cylinder C and delivered outward through a pipe E, which may be provided with a check-valve, if preferred. The piston-rods F F' are connected with the hollow Y-tube P, and as this tube, to secure compactness as it reciprocates, passes across the axis of the crank H or of the wheel which carries it such crank can be supported on one side only, and consequently I arrange the handle J so as to bring the axis Q of said crank to a firm seat in its bearings. The axis Q is provided with a projecting pin R, which bears on an inclined surface U of a hub of the handle, which surface as the crank is turned draws the hub on the axis through the perforated boss V on the casing and into contact with the inside of the hub of the crank, so that the parts are securely locked together and compelled to rotate in unison. A shoulder or stop X of the hub limits the movement of the hub of the hand-crank J relatively to the pin R to prevent drawing the crank H too tightly against the inner surface of the casing. This construction not only compels the rotation of the crank H, but also permits the ready removal or reapplication of the hand-crank, as its hub is provided with a slot T, through which the pin R passes when the crank is put on or taken off. The link or connection I is pivoted at one end at Y, Fig. 3, to the crank H and at the other end at Z to a boss on the piston-rod G.

The central chamber consists of the two flanged plates A A', (see Fig. 2,) and in order to fasten these together they are provided with threaded semicircular flanges K, on which the tubes forming the cylinders B, B', and C are screwed. These flanges are threaded exteriorly, and the cylinders being threaded on the inside at their inner ends are screwed onto

the joined flanges, so as to fixedly secure the plates of the casing to each other. Each plate is provided with a projecting flange which meet on the line D', Fig. 2, to form a
 5 complete inclosure for the crank H, the connection I, and the piston-rods. In this way any nuts or bolts on the outside are avoided and the exterior of my improved air-pump is smooth and free from projections, so that it
 10 is peculiarly adapted to being carried in a pocket or other receptacle.

In order to secure increased pressure, I make the piston N hollow, as shown in Fig. 4, and deliver the compressed air from one
 15 or both of the opposite cylinders into the air-reservoir N' in the hollow piston N, in which it is retained by suitable valves until the hollow piston arrives near the outer end of the cylinder, when the arm or stem W is
 20 forced inward by contact with the end, opening the valve O' and allowing the compressed air to escape into the cylinder, whence it is discharged through the pipe E. O² is a check-valve controlling the passage G, and O³
 25 a check-valve in the outlet-pipe. In this alternate construction each piston L and L' compresses air in the hollow piston N', holding the valve O' closed until the valve is opened by the contact of stem W with the
 30 end of the cylinder, whereupon the air previously compressed in the hollow piston N' is delivered behind the air escaping from the cylinder C.

I claim—

35 1. The combination, in an air-compressor, of the central chamber, the cylinders arranged one on one side and the others on the opposite side of the chamber, the pistons in the said cylinders, the Y-shaped hollow con-
 40 nection between the pistons, and suitable valves and mechanism for reciprocating the pistons, as and for the purposes set forth.

2. The combination with the central chamber consisting of the separable casings pro-
 45 vided on opposite sides with threaded projecting counterpart flanges, the piston-cylinders screwed onto the said counterparts and

holding them together, and mechanism for operating the pistons in the cylinders, as and for the purposes set forth. 50

3. The combination, in an air-compressor, of the cylinder provided with a hollow piston forming a reservoir for compressed air, another cylinder and piston adapted to force
 55 air into the said reservoir in the hollow piston, the valve operated by the reciprocation of the hollow piston to discharge the compressed air therefrom into the delivery end of its cylinder, and mechanism for operating
 60 the pistons, as and for the purposes set forth.

4. The combination, in an air-compressor, of the cylinder provided with a hollow piston forming an air-reservoir, two other cylinders and pistons and a tubular connection between
 65 the three pistons, the valve operated by the reciprocation of the hollow piston to discharge the compressed air therefrom into the delivery end of its cylinder, and mechanism for operating the pistons, as and for the purposes
 70 set forth.

5. The combination, in an air-compressor, of the central chamber consisting of the separable casing provided on opposite sides with threaded projecting flanges, the cylinder
 75 screwed onto the flanges, one of the cylinders being provided with a hollow piston forming an air-reservoir, the other cylinder provided with a piston attached to the hollow piston by a tubular connection, the valve operated
 80 by the reciprocation of the hollow piston to discharge the compressed air therefrom into the delivery end of its cylinder, and mechanism for operating the pistons, as and for the purposes set forth.

6. In an air-compressor, a central chamber, 85
 a cylinder at one side of said chamber, a plurality of cylinders on the opposite side of said chamber, pistons in said cylinders, and means to alternately operate the opposite pistons.

GEORGE W. KELLOGG.

Witnesses:

GEO. B. SELDEN,
 C. G. CRANNELL.