

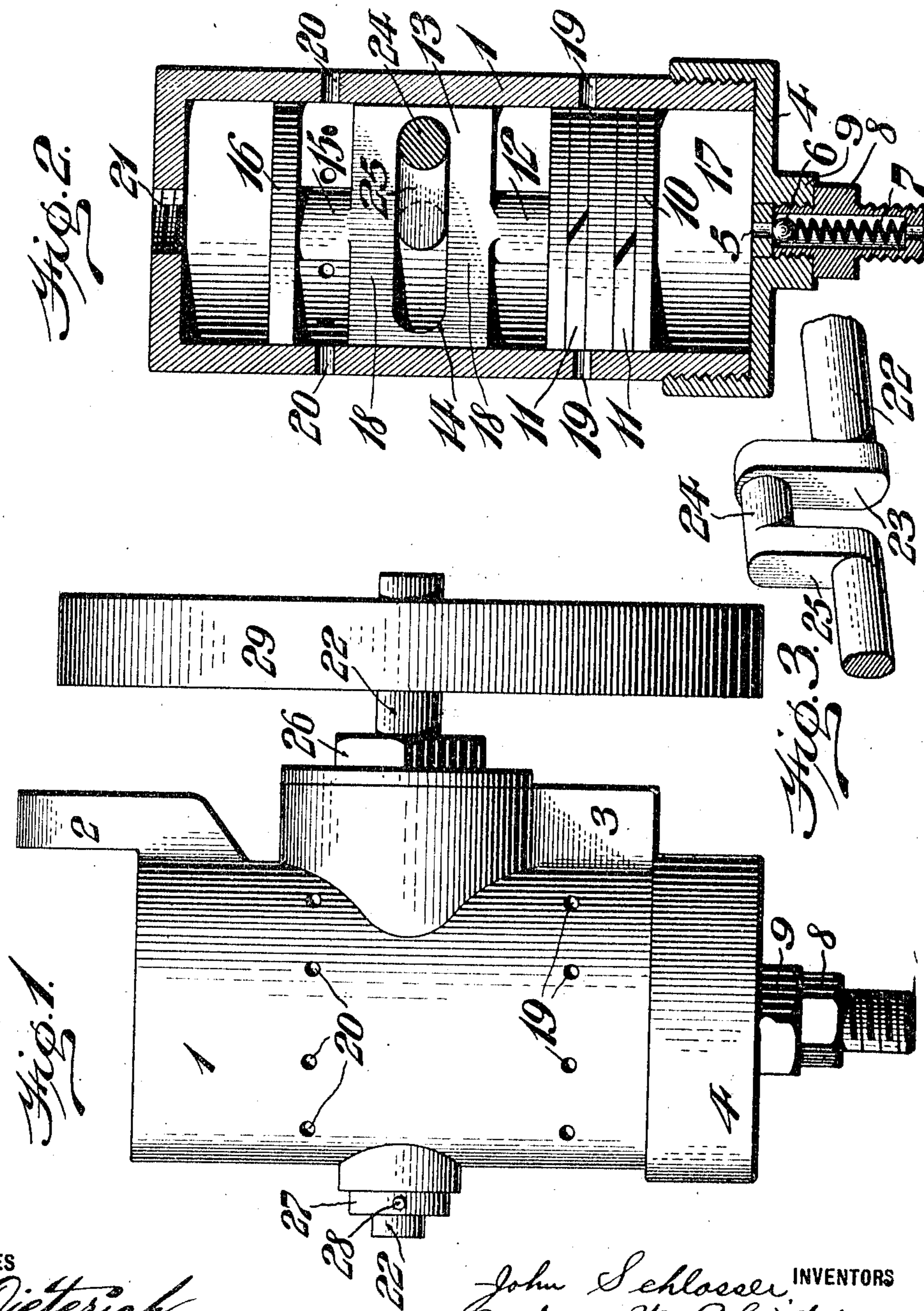
J. SCHLOSSER & A. W. CHRISTIAN
AIR PUMP.

APPLICATION FILED JUNE 22, 1910.

991,902.

Patented May 9, 1911.

2 SHEETS—SHEET 1.



WITNESSES

H. S. Dietrich
L. Dowille

BY

John Schlosser INVENTORS
Andrew W. Christian
Friedersheim & Gaubert
ATTORNEYS

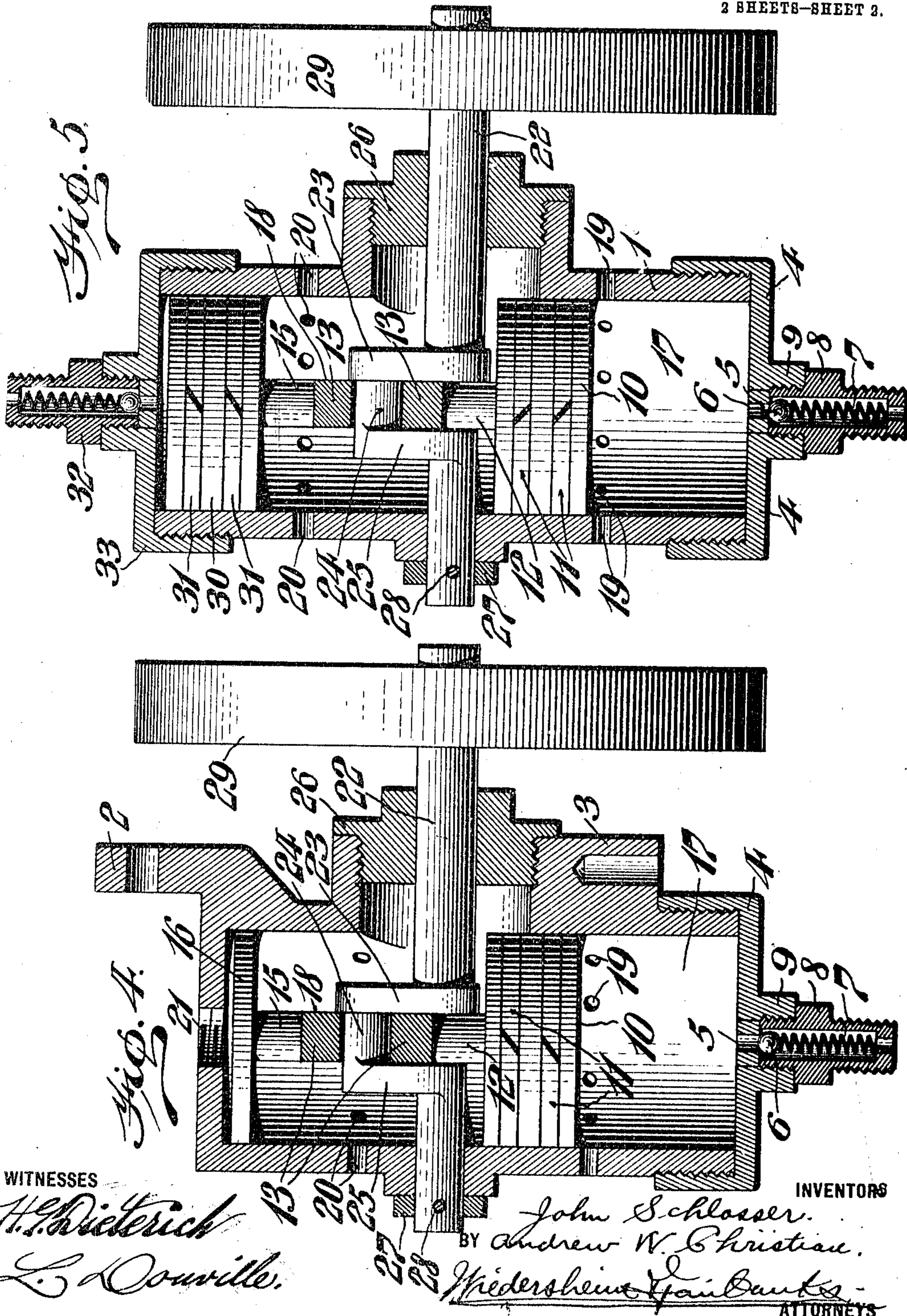
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H. G. Dietrich
L. L. Courville

INVENTORS

John Schlosser.
Andrew W. Christian.

Wiedersheim-Paul & Co.
ATTORNEYS

UNITED STATES PATENT OFFICE.

JOHN SCHLOSSER, OF WILMINGTON, DELAWARE, AND ANDREW W. CHRISTIAN, OF PHILADELPHIA, PENNSYLVANIA.

AIR-PUMP.

991,902.

Specification of Letters Patent.

Patented May 9, 1911.

Application filed June 22, 1910. Serial No. 568,294.

To all whom it may concern:

Be it known that we, JOHN SCHLOSSER, a citizen of the United States, residing at Wilmington, county of Newcastle, State of Delaware, and ANDREW W. CHRISTIAN, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Air-Pump, of which the following is a specification.

Our present invention relates to air pumps which are particularly adapted to be employed in inflating automobile and similar tires although as is evident it is not limited to such use and may be used to advantage in connection with a large variety of devices or where it is desired to compress any desired fluid for any desired purpose such as for example for operating signals or other devices.

Our invention consists of a novel and simplified construction of an air pump wherein all of the working parts are contained within the pump cylinder.

It further consists of a novel construction of a pumping member and a novel construction of a crank coöperating therewith.

It further consists of a novel construction of a pump casing and a novel manner of assembling the pumping elements with respect thereto.

It further consists of other novel features of construction, all as will be hereinafter fully set forth.

For the purpose of illustrating our invention we have shown in the accompanying drawings embodiments thereof which are at present preferred by us, since the same have been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which our invention consists can be variously arranged and organized and that our invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

Figure 1 represents a side elevation of an air pump embodying our invention. Fig. 2 represents a sectional view thereof. Fig. 3 represents a perspective view of the crank in detachable position. Fig. 4 represents a sectional view of Fig. 1. Fig. 5 represents a

sectional view of another embodiment of our invention wherein a plurality of pistons are employed.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings, 1 designates a pump casing which is provided with an apertured extension 2 located at any suitable point thereon and with an apertured lug or boss 3 whereby the casing is adapted to be suitably retained in fixed position.

4 designates a cap or closure having threaded engagement with the casing and provided with a valve seat 5 with which coöperates a suitable valve 6 which is normally retained in seated position by means of a spring 7, the outer end of which abuts against a shoulder in the coupling 8 which latter is in threaded engagement with the lug 9 of the closure 4. The lug 9 is preferably of polygonal shape in order that it may be actuated by a suitable wrench.

10 designates a piston which is suitably grooved in order to adapt the same to receive a plurality of spring clips 11 which serve as a packing for the piston head. The piston 10 is connected by means of a reduced neck 12 with the cross head or crank pin lug 13, the latter being provided with a laterally extending elliptical slot 14. The cross head or crank lug 13 is secured by means of a reduced neck 15 with a head 16, it being understood that the head 16 and piston 10 are adapted to reciprocate in the piston chamber 17. The cross head or crank lug 13 has a bearing against the walls of the piston chamber 17 and is of reduced diameter, as indicated at 18 in Fig. 4. The piston chamber is provided with a series of inlet ports 19 and also with a series of ports 20, which latter permit the free escape of the air in the rear of the piston in order to prevent cushioning of the same.

21 designates an aperture in the rear end of the casing 1 which is suitably threaded, as will be understood by reference to Figs. 2 and 4.

22 designates a crank shaft which is provided with the crank arm 23 to which is connected the crank pin 24, the latter being connected with a crank arm 25 to which the other portion of the crank shaft 22 is connected. The crank shaft, crank arms and

crank pin are preferably made integral and the crank arm 25 is of less dimension than the crank arm 23 and is adapted to pass through the slot 14 in the cross head or crank lug 13, as will be best understood by reference to Fig. 4, it being noted that the cross head or crank lug 13 is of less width than the space between the crank arms 23 and 25. The crank shaft 22 is journaled in the pump casing and in a plug 26 having threaded connection with the pump casing and is retained in place by means of a washer 27 and a pin 28, which latter passes through said washer and engages the crank shaft.

29 designates a friction wheel which is mounted on the crank shaft 22 and adapted to be driven by any rotatable or moving part.

Our invention also embodies a construction wherein a plurality of pistons are employed and in Fig. 5 instead of employing a head 16 we employ a piston 30 constructed in a similar manner to the piston 10 and provided with packing rings 31 corresponding to the packing rings 11 seen in Figs. 2 and 4. In this embodiment we employ a coupling 32 which is adapted to be connected with a hose or other connection through which the compressed fluid is to pass to a desired point of utilization and since this construction is constructed in a similar manner to the coupling 8 we have deemed it unnecessary to describe the same in detail. The coupling 32 is carried by a cap or closure 33 which has threaded engagement with the casing 1 and is constructed in the same manner as the cap or closure 4. In this embodiment it will be apparent that the ports 20 in the casing serve as inlet ports for the piston 30, it being understood that the couplings 32 and 8 would be connected to a single conduit when desired or these couplings could be attached to independent conduits, as is evident.

We wish to call particular attention to the simplified and compact construction of our device since in order to assemble or take the device apart it is simply necessary to unscrew the plug and remove the pin 28, whereupon the crank shaft may be readily removed from its engagement with the reciprocating piston and since the crank arm 25 is of less diameter than the slot 14 in the cross head 13 this may be readily accomplished as is evident.

In so far as we are aware, we are the first in the art to devise an air pump wherein all the moving parts are contained within the pump cylinder and wherein an integral crank shaft may be employed having one crank arm of less dimension than the other whereby the same may be readily assembled with respect to the piston without the employment of any auxiliary devices and it is

to be understood that our claims to these features are to be interpreted with corresponding scope.

It will now be apparent that we have devised a novel and useful construction of an air pump which embodies the features of advantage enumerated as desirable in the statement of the invention and the above description and while we have in the present instance shown and described a preferred embodiment thereof, which has been found in practice to give satisfactory and reliable results, it is to be understood that the same is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent, is:

1. In an air pump, a pumping cylinder formed with a transverse shaft bearing intermediate its ends, a transversely slotted cross-head, a crank shaft having one end and one crank arm of greater dimensions than the other end and other crank arm having one end journaled in said bearing and having its crank pin engaging the slot in the cross-head, a closure for said cylinder, having a bearing therein opposite said first mentioned bearing, a compression piston in one end of said cylinder, and connected to said cross-head, a guide piston in the other end of said cylinder and connected to said cross-head, and an outwardly opening check valve in the compression end of the cylinder, said cylinder having valveless inlet ports at points uncovered by the pistons at the extreme of their inward strokes.

2. In an air pump, a pumping cylinder having one end closed by a removable cap and formed with a bearing in one side and a diametrically opposite opening, a piston in said cylinder, a cross-head guided in the cylinder and connected to said piston and formed with a transverse slot, a crank-shaft formed with a double crank and having one end and one crank-arm and the pin of a size capable of passing through the slot in the cross-head and having said end journaled in the bearing and having the other crank-arm of greater dimensions, and a closure for the opening in the cylinder and forming a bearing for the other portion of the shaft.

3. In an air pump, a pumping cylinder formed with an opening in its side and a diametrically opposite bearing, a transversely slotted cross-head within the cylinder, a piston connected to said cross-head, a crank-shaft formed with a double crank and with one end and one crank-arm and the crank-pin of a size capable of being passed through the slot in the cross-head and to have the end of the shaft fit in the bearing and having the other crank-arm of greater

5 dimensions, a bearing for the other shaft portion and removably secured in the opening in the side of the cylinder, and means for preventing longitudinal play of said shaft.

10 4. The combination with the casing having a pumping chamber provided with inlet ports and uncontrolled leak ports, a piston controlling the inlet ports, a slotted cross-head connected to the piston, a double crank journaled in the casing and having one crank

arm and the crank pin adapted to pass laterally through said slot and the other crank arm of greater dimensions than said slot means for preventing improper movement 15 of the crank, and a friction wheel on said crank.

JOHN SCHLOSSER.

ANDREW W. CHRISTIAN.

Witnesses:

FRED H. MEGAW,
J. HARVEY WOOD.