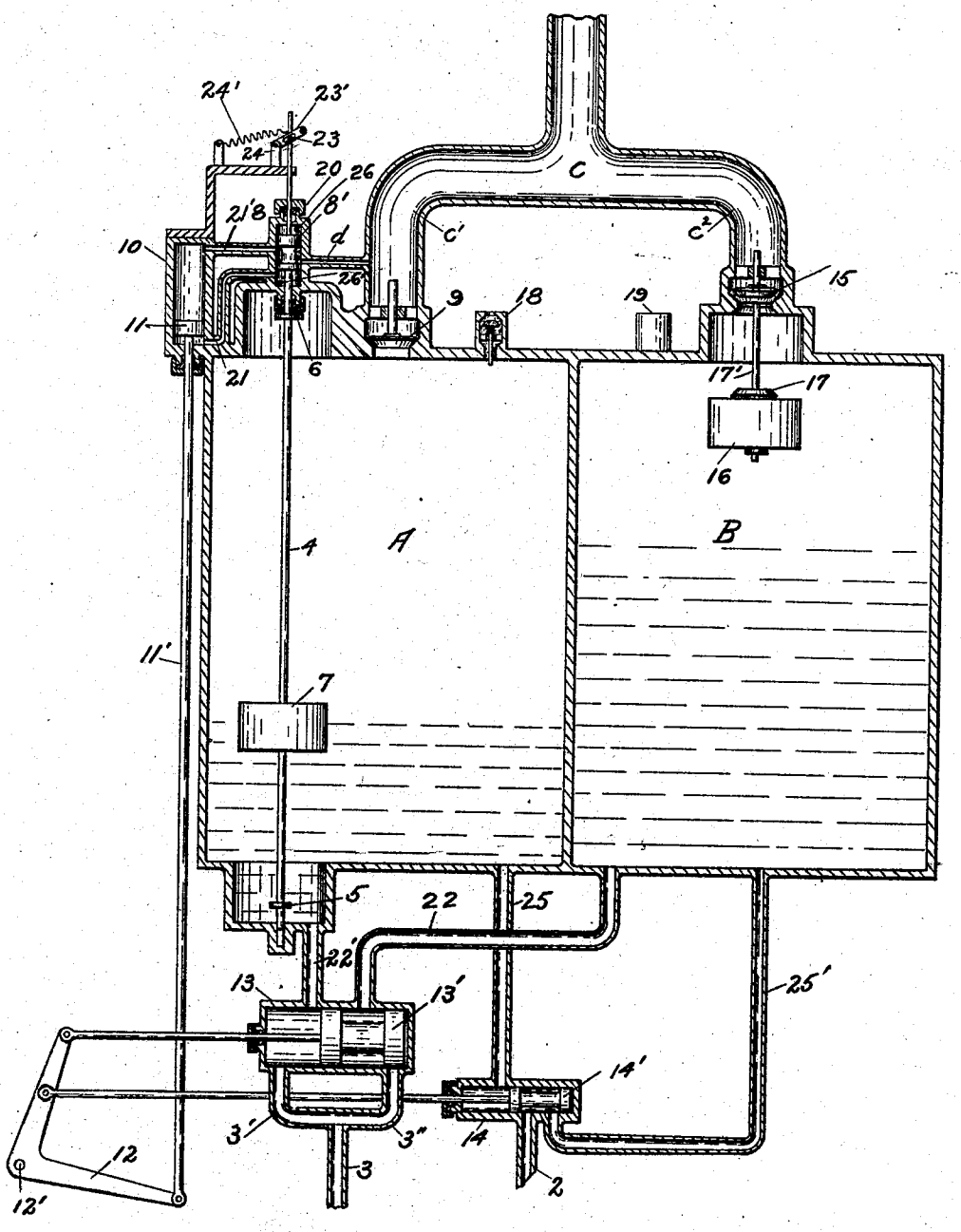
C. W. MOORE.

AIR COMPRESSOR.

APPLICATION FILED MAR. 23, 1908.

905,211.

Patented Dec. 1, 1908.



Witnesses.

Truman J. Glover.

Lester L. Curl.

Inventor.

Caleb W. Moore

by R. E. Wright

Attorney

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CALEB W. MOORE, OF VANCOUVER, WASHINGTON.

AIR-COMPRESSOR.

No. 905,211. Specification of Letters Patent. Patented Dec. 1, 1908.

Application filed March 23, 1908. Serial No. 422,756.

To all whom it may concern:

Be it known that I, CALEB W. MOORE, a citizen of the United States, residing at Vancouver, in the county of Clark and State of Washington, have invented a new and useful Improvement in Air-Compressors, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to that class of machines operated by liquid under pressure for the purpose of compressing air in storage reservoirs.

The object of my invention is to provide a compressor in which clearance is dispensed with at the end of the stroke of valve stems and a single float will operate valves of one, two or more chambers or reservoirs. I attain these objects and other advantages by the mechanism, construction, combination, and arrangement of parts illustrated in the accompanying drawings, which form a part hereof.

The figure is a view in vertical section.

A. and B. are chambers in which air or liquid are received.

C is a pipe extending into an air reservoir at one end and having branches c^1—c^2 at its other end connecting it with chambers A and B respectively.

A feed pipe 2, through which liquid is supplied extends from any convenient power source into a valve cylinder 14. This valve cylinder has two connecting pipes 25—25′ in suitable locations with relation to the valve therein and which pipes extend from the cylinder to chambers A and B respectively.

A discharge pipe 3 having branches 3′—3″ connected with the respective ends of the cylinder 13 extends to a place of discharge which may be into the power source and allow of the liquid being used again after its discharge.

The chambers A and B have outlet pipes 22—22′ which extend therefrom into suitable parts of the cylinder 13.

Piston valves 13′ and 14′ are placed within the cylinders 13 and 14 respectively and the stems of both valves are pivotally secured to a bell crank 12 pivoted on a pin 12.

A vertical rod 11′ is pivoted at its lower end to the bell crank 12. The rod 11′ extends upwardly into a valve cylinder 10 and has a valve 11 fixedly secured to its upper end within the cylinder. The cylinder 10 is placed without and at the top of the chamber A and from each end of it extend pipes 21—21′ into a controlling valve cylinder 8 in suitable locations relative to the exhaust ports 26 and 26′ and other ports of the valve therein. From the cylinder 8 an outlet pipe *d* extends into the reservoir pipe C.

Within chamber A is a vertical rod 4 having its lower end mounted in a recess in the bottom of the chamber. Its upper end extends through the valve cylinder 8 and within the cylinder it has a piston valve 8′ rigidly secured to it. Outside of the cylinder the rod 4 carries a fixedly secured transverse pin 23 which is mounted in slots of a forked arm 23′ pivotally secured to a bearing 24. An actuating spring 24′ is connected with the forked arm 23′ which causes the rod 4 to complete its travel after passing the center of its stroke and to remain at the end of stroke until operated by the float 7.

Within chamber A the rod 4 is provided with buttons 5—6 rigidly secured to it near the upper and lower ends of the chamber and also a float 7 slidably mounted on the rod between the buttons. In branch c^1 of the reservoir pipe is placed a check valve 9. In branch c^2 of the reservoir pipe, is placed a similar check valve 15, the vertical stem 17′ of which extends downward into chamber B. Upon the lower part of the stem 17′, a float 16 is slidably mounted, and on the upper side of the float is placed an upward seating valve, the stem having means at its lower end to retain the float thereon. The chambers A and B are provided with air inlets 18 and 19 respectively each of which has a check valve therein opening inwardly.

The device is now shown with chamber B filling with liquid and discharging air under pressure into reservoir pipe C while chamber A is receiving air through inlet 18 and discharging liquid through the pipe 22′. When the float 7 reaches the button 5, its weight thereon depresses the rod 4 and lowers the piston valve 8′ in cylinder 8, the spring 24′ holding the rod in its position then assumed. This movement allows a back pressure of air exerted through pipe *d* and through cylinder 8 and pipe 21 into cylinder 10 and thus raises the valve 11, carrying the rod 11′, which forces the air above it through the pipe 21′ and out through the port 26. This causes the rod 11′ to move the bell crank 12 which in turn reverses the position of the piston valves in the cylinders 13 and 14 to that shown in the view. When this is done it will be seen that liquid will flow from pipe 2, and

through cylinder 14 into chamber A by means of pipe 25, while liquid will be discharged from chamber B through cylinder 13 by means of pipes 22 and 3″. Air is also then being forced from chamber A through reservoir pipe C. The valve 18 is closed while valve 19 is open. The foot valve 17 and float 16 are auxiliary mechanism, so that if the action of the controlling mechanism of chamber A should not reverse the valves in the upper and lower cylinders at the precise moment that air is exhausted in the chamber B, the liquid therein will raise the float 16 and thus close the port into reservoir pipe branch c^2 by means of the foot valve 17 therein. When chamber A fills with liquid, the float 7 engages the button 6 and reverses the valves, causing liquid and air to be received or discharged as already described and shown in the views. As the mechanism in this chamber controls the valve movement, there is no necessity for the foot valve 17 and float 16 therein.

It is intended that my device may consist of one or more chambers operated in any case by and from the one controlling piston valve 8′ in cylinder 8. The mechanism herein shown may be adapted to and placed within and upon a single chamber without deviating from the principle of my invention.

My device can be used with any ordinary pump or water supply from water mains as the source of power and will thus supply pneumatic pressure for the various pneumatic tools in use.

Having thus fully described my invention I claim:

1. An air compressor of the character described, having two chambers A and B provided with valved air inlets, valved air outlets opening into a common reservoir pipe C, liquid inlets having common opening into a feed pipe connected with a power source, a cylinder with piston valve therein in said feed pipe, liquid outlets having common opening into a discharge pipe, a cylinder with piston valve therein in said discharge pipe, a pivoted bell crank 12 and valve stems connecting same with the liquid inlet and outlet piston valves, also controlling mechanism comprising a piston valve 8′ secured upon and near the upper end of a vertical rod 4 said rod being mounted in a recess in the bottom of chamber A and having thereon in suitable places within the chamber, fixed buttons and a slidable float between the buttons, a cylinder 8 above the chamber A containing piston valve 8′ and having a pipe connecting it with reservoir pipe C and pipes connecting it with auxiliary cylinder 10, also without the chamber, the auxiliary cylinder 10 and valve therein provided with a vertical stem 11′ connecting the same with bell crank 12, all substantially as described.

2. In an air compressor of the character described, controlling mechanism comprising a vertical rod 4, slidably mounted at the lower end within the bottom of a chamber A, said rod being provided with rigid buttons in suitable places thereon and a slidable float upon the rod between said buttons, a cylinder 8 above the chamber A, having a pipe connecting it with an air reservoir pipe C and pipes connecting it with a motor cylinder, a piston valve 8′ rigidly secured upon and near the upper end of the rod 4 which extends through the cylinder 8, substantially as described.

3. In an air compressor of the kind described, the combination of a valve moving means comprising a forked arm 23′, pivoted at one end and receiving a transverse pin of the valve stem in slots in its arms, and an actuating spring 24′, with controlling mechanism comprising a vertical rod 4, slidably mounted at the lower end within the bottom of a chamber A, said rod being provided with rigid buttons in suitable places thereon and a slidable float upon the rod between said buttons, a cylinder 8 above the chamber A, having a pipe connecting it with an air reservoir pipe C and pipes connecting it with a motor cylinder, a piston valve 8′ rigidly secured upon and near the upper end of the rod 4 which extends through the cylinder 8, substantially as described.

CALEB W. MOORE.

Witnesses:
W. W. WAGONER,
M. C. WRIGHT.