H. E. BAILEY.

AIR COMPRESSOR.

APPLICATION FILED JAN. 14, 1911.

992,634.

Patented May 16, 1911.

2 SHEETS—SHEET 1.

Fig. 4

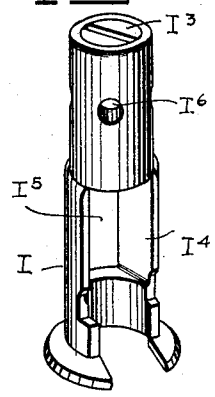

Fig. 1

Fig. 5

WITNESSES

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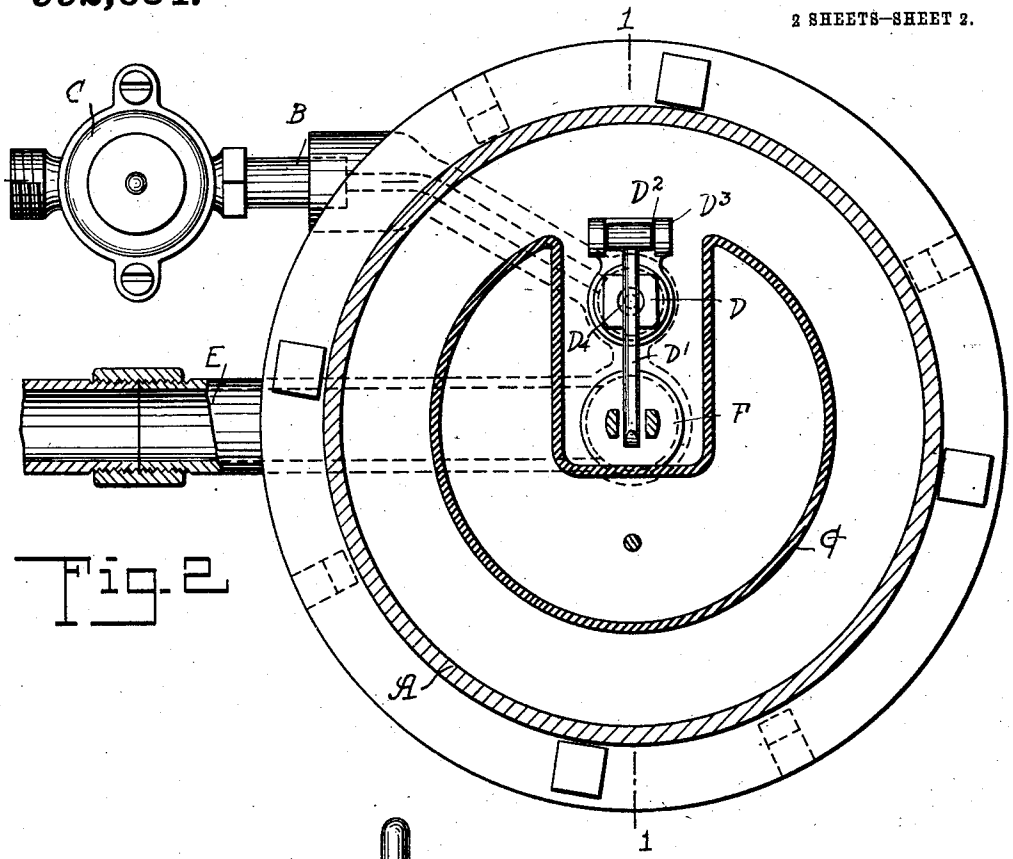
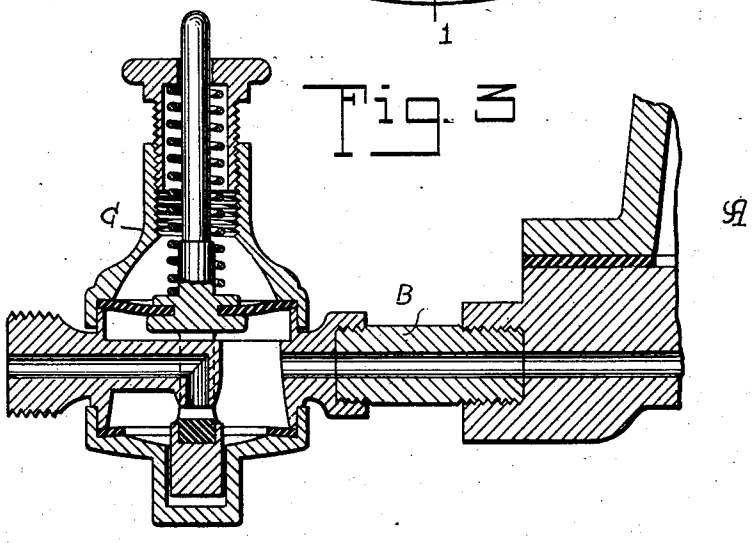


Fig. 2

Fig. 3



WITNESSES

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HARRY E. BAILEY, OF ALBANY, NEW YORK.

AIR-COMPRESSOR.

992,634. Specification of Letters Patent. Patented May 16, 1911.

Application filed January 14, 1911. Serial No. 602,577.

To all whom it may concern:

Be it known that I, HARRY E. BAILEY, a citizen of the United States, and a resident of Albany, in the county of Albany and State of New York, have invented a new and Improved Air-Compressor, of which the following is a full, clear, and exact description.

The invention relates to hydraulic air compressors, such as shown and described in the application for Letters Patent of the United States, No. 904,294, granted to me November 17, 1908, and employed for supplying air under pressure to kegs, barrels or other receptacles containing beer and other liquids to be elevated to a dispensing faucet or the like.

The object of the present invention is to provide a new and improved air compressor, arranged to insure a proper inflow and outflow of the water to prevent the water from accidentally passing into the outflow and into the receptacle filled with the beer or other liquid.

For the purpose mentioned use is made of two floats, adapted to rise and fall with the water in the casing, one of the floats controlling the inflow and outflow of the water, and the other float controlling the inflow of the air and the discharge of the compressed air.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a cross section of the hydraulic air compressor on the line 1—1 of Fig. 2; Fig. 2 is a sectional plan view of the same on the line 2—2 of Fig. 1; Fig. 3 is an enlarged sectional side elevation of the reducing valve in the water inlet pipe; Fig. 4 is an enlarged perspective view of the valve for controlling the air inlet and outlet; and Fig. 5 is a side elevation of the valve controlling the water outlet.

The casing A is provided in its bottom with a water inlet B connected with a street main or other suitable source of water supply, and in the water inlet pipe B is arranged a reducing valve C of any approved construction. The water passage in the inlet pipe B terminates in a valve D of any approved construction, preferably, however, a ball valve, as shown in Fig. 1. The bottom of the casing A is provided with a water outlet E having a valve seat E′ controlled by a valve F attached to a float G adapted to rise and fall in the casing A. The valve F is provided with a stem F′ screwed or otherwise secured to the float G, and the stem F′ is provided with an opening F^2 into which extends the free end of a lever D′, fulcrumed at its other end at D^2 on the casing D^3 of the valve D, and the said lever D′ is provided with a pin D^4 adapted to engage the ball D^5 of the valve D to hold the same off its seat D^6 and thus allow the water to flow from the pipe B into the casing A, to fill the same.

In the stem F′ attached to the float G is screwed or otherwise secured an upwardly-extending stem G′, on which is mounted to slide an upper float H adapted to control a valve I controlling the air inlet J and the air outlet K, having a check valve K′ in the form of a slitted rubber cap which permits the air to escape but prevents the return of air into the casing A. A flexible tube L leads from the upper end of the valve K to carry the compressed air to the keg, barrel or other receptacle in which the air is to be used. The stem G′ is provided near its upper end with a collar G^2 adapted to be engaged by a cushion H^2, in the form of a rubber ring, held in a cup H′ arranged on top of the float H, the said cup H′ being adapted to engage the under side of the valve I to lift the same off the seat of the air inlet J prior to the cushion H^2 engaging the collar G^2. The valve I in the normal position shown in Fig. 1 rests on top of the air inlet J, which latter is provided with a short spout J′ extending to the outside of the casing, the air inlet J being also provided with a guide J^2 for the upper end of the stem G′ to slide in. The valve I is preferably tubular and mounted to slide loosely in the air inlet J, the upper end of the valve I having a rubber disk I′ seated on an annular shoulder I^2 and held in place by a screw I^3. The air inlet J is in the form of

an L-shaped tube, the horizontal member of which extends integrally from a ring J^3 bolted to the upper end of the casing A, and on top of this ring J^3 screws a cap K^2, provided at its upper end with the compressed air outlet K. The lower portion of the valve I is provided with cut-out portions I^4, I^5, of which the portion I^4 straddles the horizontal member of the air outlet J, the vertical member of which extends centrally in the ring J^3 and cap K^2, as plainly shown in Fig. 1. The valve I is also provided below the annular shoulder I^2 with openings I^6 for the passage of air to or from the inlet J at the time the valve I is open.

The operation is as follows: When the several parts are in the position shown in Fig. 1, then the valves F and I are in closed position while the valve D is open, so that water flows from the pipe B into the casing A to gradually fill the same. As the water rises in the casing A, the float H is caused to rise with the water, which latter on rising in the casing compresses the air contained therein, the compressed air being discharged through the air outlet K and the tube L into the receptacle to be charged with compressed air. The float H in rising with the water finally causes the cup H′ to engage and lift the valve I so that the air inlet J is uncovered and the compressed air in the upper end of the casing A is allowed to escape through the outlet J. When this takes place the water, which was subjected to the pressure of the compressed air, is released of such pressure and suddenly moves upward, carrying with it the float H whereby the valve I is raised to the full extent to close the outlet K, at the same time the cushion H^2 engages the collar G^2 and lifts the same, whereby the float G is lifted. When this takes place the valve F is lifted off the seat E′ and the lever D′ is swung upward, whereby the ball D^5 of the valve D is released from the pin D^4 and is forced by the water pressure against the seat D^6 to close the valve D. The water in the casing A now flows through the open valve seat E′ into the discharge pipe E, and from the latter into a suitable place of discharge. As the water recedes in the casing A the upper float H sinks and finally seats itself on the top of the float G, and when the water has fallen in the casing A to a level of about one-half the height of the float G, then the combined weights of the floats H and G cause a downward movement of both floats to return the valve F to its seat D^6 and to swing the lever D′ downward so that the pin D^4 pushes the ball D^5 downward and off the seat D^6 thus re-opening the valve D. Water now again flows into the casing A and the above-described operation is repeated.

It is understood that as long as the valve G is held in the uppermost position the collar G^2 holds the valve I in an open position even if the float H begins its downward movement, so that air can pass through the spout J′ and the inlet J into the casing A to fill the same as the water recedes. When the float G moves downward to its lowermost position, the stem G′ moves with it and the collar G^2 moves out of engagement with the valve I to allow the latter to seat itself in the air inlet J with a view to close the same during the next compressing operation, which takes place on the filling of the casing A with water.

It is understood that by the arrangement described, the compressed air remaining in the casing A at the time the float H nears the uppermost position is released from the said casing to allow a quick upward movement of the float G, as previously explained, with a view to open the valve F and then discharge the water from the casing. By the arrangement described it is impossible for the water to accidentally pass through the air outlet K and the tube L into the receptacle to be charged with air.

It will be noticed that the air compressor is simple and durable in construction, and the working parts are not liable easily to get out of order.

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

A hydraulic air compressor, comprising a casing, a valve located at the bottom of said casing for controlling the admission of water thereinto through a valve located at the bottom of said casing for controlling the discharge of water therefrom, valve mechanism connected with the upper portion of said casing for controlling the admission of air into said casing, and the discharge of air from said casing, said valve mechanism having a stationary member provided with a passage communicating with the open air at a point adjacent to the upper end of said casing and further provided with a movable member partially encircling said stationary member, a pair of floats located within said casing and arranged one above the other, the lower float being connected with said valves in the lower portion of said casing for the purpose of opening and closing the same, the upper float being provided with a member for engaging the lower end of said movable member in order to actuate said valve mechanism located in the upper portion of said casing, a rod connected with the lower float and extending loosely through

the upper float, and mechanism carried by said upper float for shifting the lower float, said mechanism being so arranged that said member carried by said upper float engages said movable member of said valve mechanism and shifts the position of said movable member before said lower float is lifted.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HARRY E. BAILEY.

Witnesses:

JNO. KING,

A. L. AUSTIN.