

No. 674,073.

C. A. ARNSBERGER.
PUMP.

Patented May 14, 1901.

(Application filed Jan. 25, 1901.)

(No Model.)

Fig. 1.

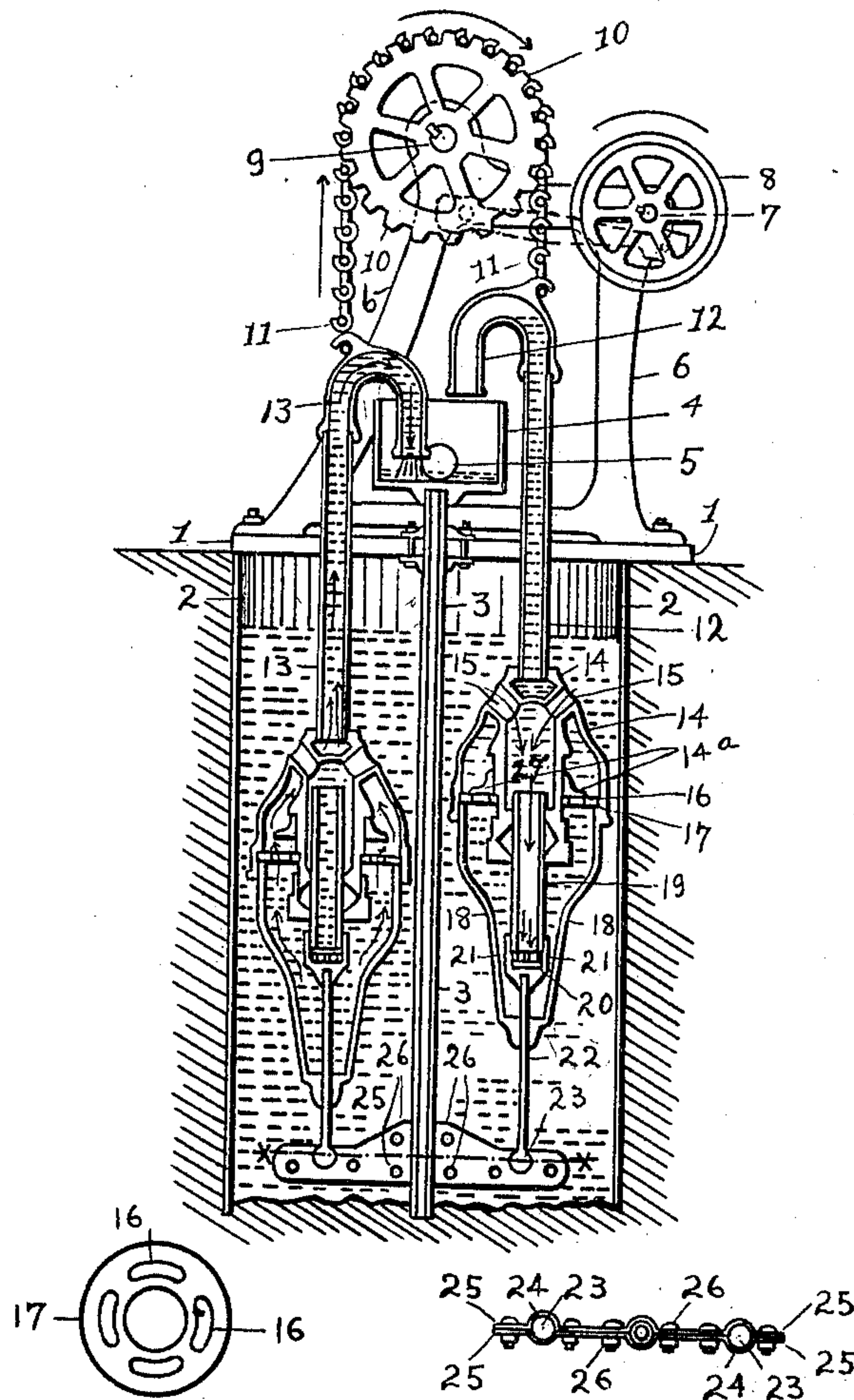


Fig. 2.

Fig. 3.

Witnesses:

Emma Beckel
C. S. Baker

Inventor:

Cyrus A. Arnberger
By *Eugene Ayres*,
Attorney.

UNITED STATES PATENT OFFICE.

CYRUS A. ARNSBERGER, OF COUNCIL BLUFFS, IOWA, ASSIGNOR OF ONE-HALF TO JOHN E. ERICKSON, OF ST. JOSEPH, MISSOURI.

PUMP.

SPECIFICATION forming part of Letters Patent No. 674,073, dated May 14, 1901.

Application filed January 25, 1901. Serial No. 44,657. (No model.)

To all whom it may concern:

Be it known that I, CYRUS A. ARNSBERGER, a citizen of the United States, residing at Council Bluffs, in the county of Pottawattamie and State of Iowa, have invented certain new and useful Improvements in Pumps; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in that class of pumps which are designed for elevating liquids; and the objects of my improvements are, first, to so construct and arrange the parts of a pump that the column or columns of liquid being elevated thereby shall be automatically counterbalanced; second, to so proportion the parts of a pump that its inlets, outlets, and conduits shall aid the free flow of liquids through the same, and, third, to so construct, proportion, and arrange the parts of a pump that said pump shall be easy to operate, substantial, durable, and not liable to get out of order, and the cost of manufacture of which shall be low. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal section of my invention cut vertically through the center. Fig. 2 is a top plan of the check-valve plate, and Fig. 3 is a longitudinal section cut horizontally on the line X X seen in Fig. 1.

Similar figures refer to similar parts throughout the several views.

As shown by the drawings, 1 represents a platform over a well or cistern.

2 and 3 represent a supporting-column secured through the platform. This column rigidly supports catch-basin 4, which is provided with a discharge-pipe 5.

On platform 1 is secured a framework 6, in which rotates driving-shaft 7, driven by its securely-attached drive-wheel 8, which is driven by any well-known means. The usual rod-and-crank connections between shafts 7 and 9 cause a reciprocating movement of sprocket-wheel 10, on which is reciprocated

sprocket-chain 11, causing a reciprocating motion to be given to the pump discharge-pipes 12 and 13.

As the balance of the mechanism to be described consists of duplicate constructions, I will attempt to describe one only, as in so doing I will cover the features of both constructions.

To the lower end of discharge-pipe 12 is securely attached check-valve chamber 14, provided with two inlet-ports 15 15, which pass entirely through said chamber 14 and into chamber 27, serving as liquid-inlets thereinto. An annular check-valve 14^a operates in chamber 14, covering ports 16 16 in check-valve plate 17. To chamber 14 a lower chamber 18 is securely attached. In this chamber there is a displacement plunger or plug 19, with a valve 20 operating against the lower end of said plunger and which is kept in position by cage 21. To the lower end of said cage I attach a stem or rod 22, terminating at its lower end in a ball 23, arranged to operate in a socket 24. This socket is formed in the pieces 25 25, said pieces being arranged to encircle column 3 and to be securely clamped thereon by bolts 26 26. The arrows through ports 15 15 and through check-valve chamber 14 of the duplicate construction just described show the ingress of the liquid into chamber 27, and the further ingress of the liquid is shown by arrows downward through plunger 19 and outward through valve-cage 21 into the lower chamber 18. The egress of liquid from the lower chamber (caused by the compression of the plunger) is upward through ports 16 16 in check-valve plate 17 and upward through valve-chamber 14, around and past the ingress-ports 15 15, and thence upward through pipe 13. Ingress of liquid to the lower chamber takes place (see Fig. 1) in the right-hand mechanism, and egress (synchronously therewith) takes place in the left-hand mechanism, and the position of the valves is placed correctly for such movement. Now when reciprocating motion is reversed the operation is the same, but in the opposite mechanism, and so continues. Each mechanism acts virtually as a complete single-acting ordinary pump, and the two together act as a double-acting

pump, keeping a continuous stream of liquid flowing from the catch-basin through its discharge-pipe.

While I have shown and described my invention in the foregoing manner, I desire to reserve the right to vary the proportions and shape and the arrangements of the chambers, valves, and plungers so far as may be without departing from the spirit of my invention.

10 What I claim, and desire to secure by Letters Patent, is—

1. In a water-elevating device the combination of a single supporting-column and its catch-basin and discharge-pipe, of a drive-wheel and its shaft, of a sprocket-wheel and its chain and shaft having connection with said drive-wheel, of the duplicate pump discharge-pipes carried by said sprocket-chain, of the check-valve chambers at the lower ends of said pump discharge-pipes, of the annular check-valves therein and the check-valve plates and their ports, of the central chambers and the inlet-ports through the check-valve chambers serving as liquid-inlets into said central chambers, of the lower chambers, of the displacement-plungers, of the valves operating against the lower ends of said plungers, of their cages, of the stems and their balls, of the pieces encircling the supporting-column at its base and the sockets therein, substantially as described and shown.

2. The combination with a central supporting-column and duplicate pump discharge-pipes, of the duplicate upper and lower chambers, of the duplicate central chambers and displacement-plungers therein, of the valves

and ports in the chambers and the valves operating against the lower ends of said plungers, of the inclosing cages, of the stems and their balls and sockets, all substantially as described.

3. In a pump, the combination with a single supporting-column, of duplicate discharge-pipes, of the duplicate central chambers and their inlet-ports and the check-valve chambers through which said ports extend, of the duplicate lower chambers and duplicate displacement-plungers, and the necessary valves and sprocket-wheel connection for operating the pump, substantially as described and for the purpose specified.

4. In a water-elevator the combination with a shaft and its drive-wheel, a sprocket-wheel shaft and its wheel, and the rod-and-crank connection, of a single central supporting-column carrying a single catch-basin and catch-basin discharge-pipe, of a pair of pump discharge-pipes and the sprocket-wheel chain having its ends connected therewith, of the pairs of check-valves, central and lower chambers, of the plungers in the central chambers, of the valves below said plungers and the cages, of the stems and their balls, the sockets and all necessary valves and inlet-ports, substantially as described and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

CYRUS A. ARNSBERGER.

Witnesses:

A. L. PUTMAN,
D. E. HEATON.