No. 772,267. PATENTED OCT. 11, 1904.

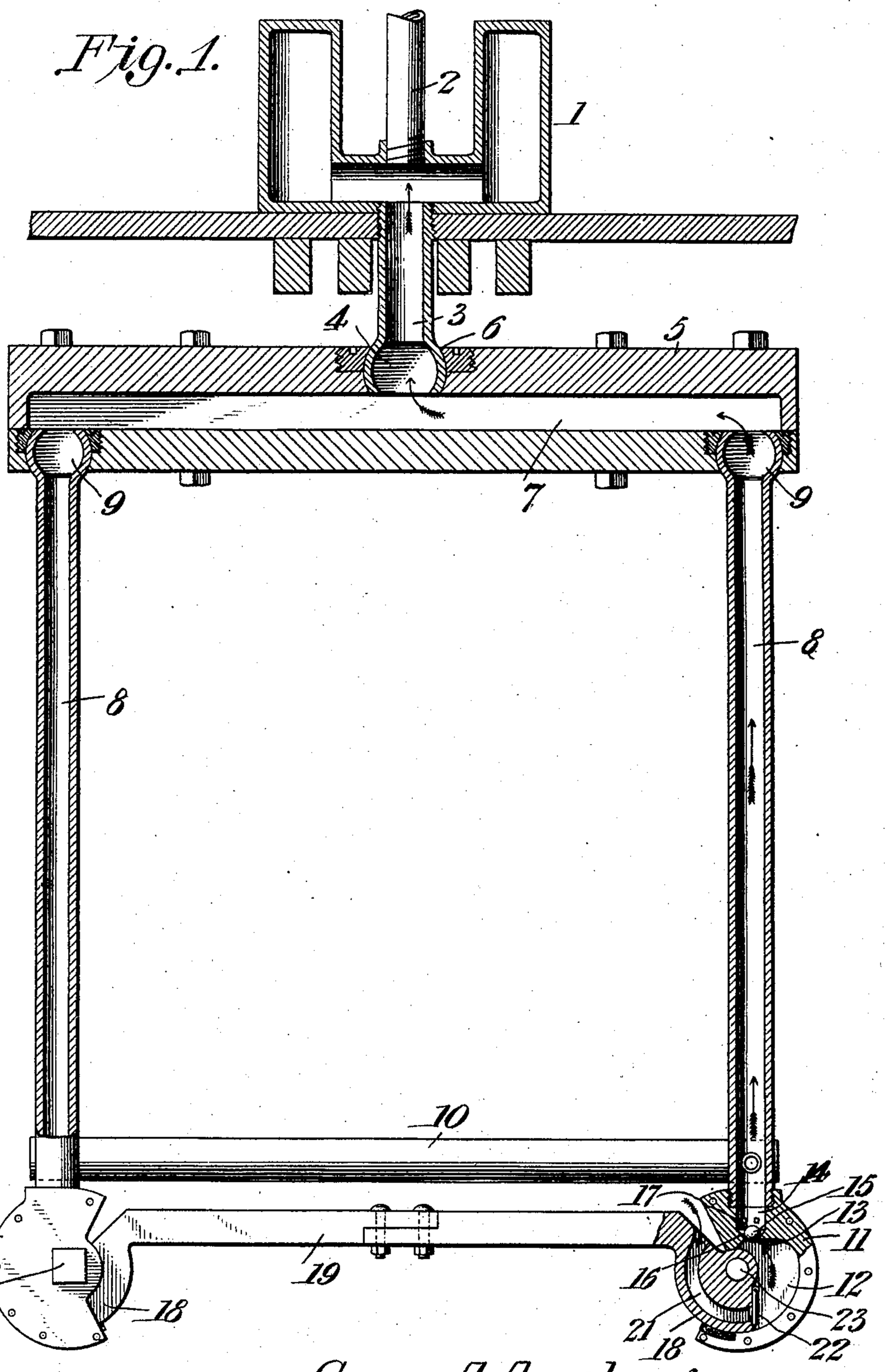
C. A. ARNSBERGER.

PUMP.

APPLICATION FILED FEB. 20, 1904.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.




Witnesses

E. F. Stewart

F. S. Elmore

Cyrus A. Arnsberger Inventor

by C. A. Snow & Co

Attorneys.

No. 772,267. PATENTED OCT. 11, 1904.

C. A. ARNSBERGER.

PUMP.

APPLICATION FILED FEB. 20, 1904.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 2.

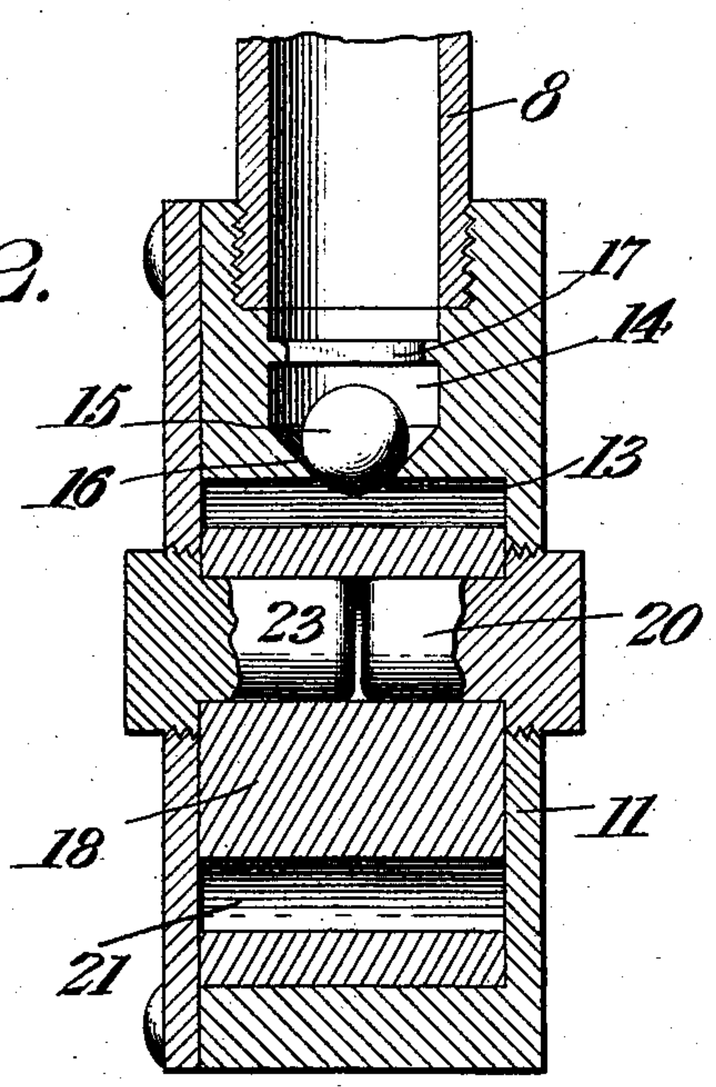
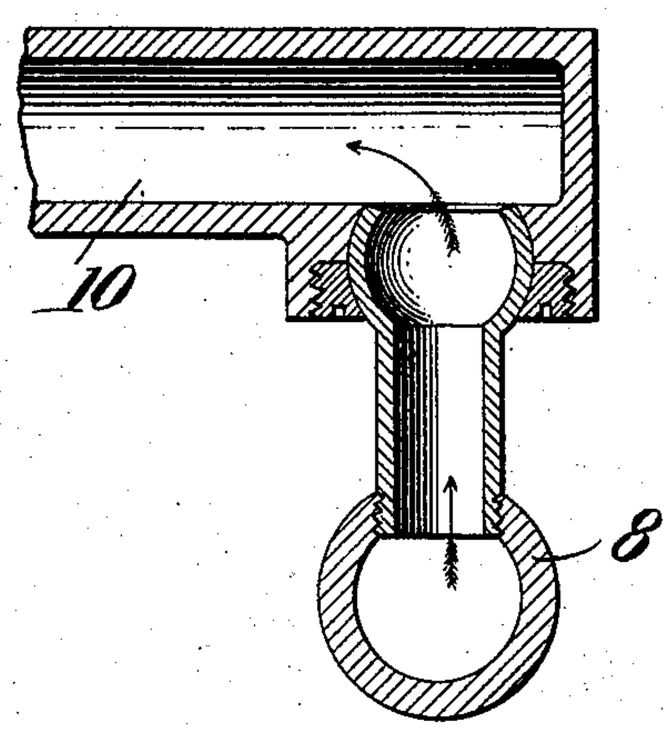



Fig. 3.




Witnesses
E. F. Stewart
F. S. Elmore

Cyrus A. Arnsberger Inventor
by Cushman & Co
Attorneys

No. 772,267. Patented October 11, 1904.

# UNITED STATES PATENT OFFICE.

CYRUS A. ARNSBERGER, OF RUDY, IDAHO.

## PUMP.

SPECIFICATION forming part of Letters Patent No. 772,267, dated October 11, 1904.

Application filed February 20, 1904. Serial No. 194,568. (No model.)

*To all whom it may concern:*

Be it known that I, CYRUS A. ARNSBERGER, a citizen of the United States, residing at Rudy, in the county of Fremont and State of Idaho, have invented a new and useful Pump, of which the following is a specification.

My invention relates to duplex or balance pumps, such as are employed for lifting water from a well or pool and discharging it at an elevated point, and has for its objects to produce a simple efficient device of this character in which a practically continuous flow of water will be maintained through a single discharge-pipe common to and communicating with both of the pump-cylinders or stand-pipes.

To these ends the invention comprises the novel features of construction and combination of parts more fully hereinafter described.

In the accompanying drawings, Figure 1 is a vertical sectional elevation of a pump embodying my invention. Fig. 2 is a detail sectional view through one of the plunger-casings. Fig. 3 is a similar view showing the joint between one of the vertical pipes and the horizontal connecting-pipe.

Referring to the drawings, 1 designates a suitably-supported tank or reservoir, provided at its top with a discharge pipe or duct 2 and at its bottom with a depending tubular coupling pipe or duct 3, having a terminal ball or coupling head 4, upon which is centrally hung for free rocking movement a walking-beam or other suitable operating member 5, provided with a socket 6 for the reception of the ball 4, and with a longitudinally-disposed channel or duct 7, communicating with the duct 3, for the purpose which will hereinafter appear.

Suspended respectively from opposite ends of the walking-beam 5 is a pair of tubular stand-pipes or ducts 8, provided at their upper terminals with coupling heads or balls 9, seated for movement in suitable sockets formed in the wall of the walking-beam, said pipes being connected adjacent to their lower ends for intercommunication by means of a suitable connecting pipe or duct 10 and adapted to communicate at their upper ends with the duct 7.

Connected respectively with the lower ends of the pipes 8 is a pair of substantially circular casings 11. These casings, which are of similar construction, each has provided upon its interior a substantially semicircular plunger compartment or chamber 12, which communicates at its inner end through an opening 13 with a valve-chamber 14, into which the lower end of the adjacent pipe 8 is tapped, there being disposed in the valve-chamber beneath the end of the pipe a freely-movable ball-valve 15, designed to normally rest upon a suitable seat 16 for closing the opening 13, while above the ball or valve there is arranged an open-work guard or stop 17 to prevent the latter from rising sufficiently to close the lower end of the pipe 8.

Disposed respectively of the casings 11 for reciprocation within the chambers 12 is a pair of pump-plungers 18, which are connected for uniform and simultaneous movement by means of an element or web 19, preferably composed of a pair of sections carried, respectively, by the plungers and having their meeting ends detachably connected by bolts or otherwise. The plungers 18, which are identical in construction and operation, are each preferably in the form of a substantially segmental-shaped tubular body, pivoted for oscillation within its casing upon a pivoting pintle or axle 20, the peripheral walls of the casing being cut away or slotted at a suitable point to permit free relative movement of the connecting element 19. Each plunger has a passage or duct 21 constantly open at its outer end to permit inflow of water and provided at its inner end with a suitable flap-valve 22, which opens freely upon the outstroke of the plunger to permit inflow of water through the passage 21 to the chamber 12, but closes during the instroke of the plunger to prevent outflow of the water through said passage.

The pivotal axle 20 for each plunger preferably consists of a pair of oppositely-disposed and longitudinally-alined bolts tapped, respectively, into opposite sides of the casing 11 and provided at their inner meeting ends with reduced portions or journals 23, seated in a bearing-opening in the plunger.

In practice the walking-beam 5 being operated in any suitable manner causes a longitudinal reciprocation of the pipes 8, which of course are immersed at their lower ends in the body of water to be acted upon. As one pipe moves upward the other obviously travels downward, and this alternate reciprocation of the pipes imparts the oscillatory or reciprocatory movement to the plungers 18 necessary for effecting the pumping operation. On the outstroke of each of the plungers a charge of water is drawn into the adjacent chamber 12, and this charge is upon the instroke of the plunger driven upward by the latter into the adjacent pipe 8, it being understood, of course, that the ball-valve 13 opens freely to permit this upward passage of the water, but closes automatically to prevent backflow of the latter during the outstroke of the plunger. Thus the water will be lifted through the pipes 8 and ducts 7 and 3 to the tank 1, attention being here directed to the fact that owing to the pipes 8 being connected by the pipe 10 less resistance is offered to the upward passage of the water, thereby insuring a practically continuous delivery of water into the tank, from which it will be discharged in a uniform stream.

From the foregoing it will be seen that I produce a simple efficient device which is admirably adapted for the attainment of the ends in view; but it is to be understood that I do not limit myself to the precise details herein set forth, inasmuch as minor changes may be made without departing from the spirit of the invention.

Having thus described the invention, what is claimed is—

1. In a pump, the combination with a walking-beam having a duct, of a pair of pipes carried by the beam for alternate reciprocation, said pipes being in communication at their upper ends with the duct and provided at their lower ends with plunger-chambers, a pair of plungers disposed respectively for operation in the chambers and adapted on operation of the beam to alternately lift the water through their respective pipes.

2. In a pump, the combination with a walking-beam having a duct, of a pair of pipes carried for alternate reciprocation by the beam and having communication with the duct, and means operable by movements of the pipes for forcing water upward therethrough.

3. In a pump, the combination with a walking-beam having a duct, of a pair of pipes adapted for alternate reciprocation by and in ball-and-socket connection with the beam, said pipes being in communication with the duct and provided with plunger-chambers, and a pair of plungers disposed respectively in the chambers and connected for simultaneous movement, said plungers being adapted to alternately lift the water through their respective pipes as the latter reciprocate.

4. In a pump, the combination with a walking-beam having a duct, of a pair of pipes carried for alternate reciprocation by the beam and having communication with the duct, means operable by movements of the pipes for forcing water upwardly therethrough, and a duct connecting the pipes adjacent to their lower ends for intercommunication.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presenee of two witnesses.

CYRUS A. ARNSBERGER.

Witnesses:

M. J. HAMMOND,

LAURA CALB.