

No. 731,288.

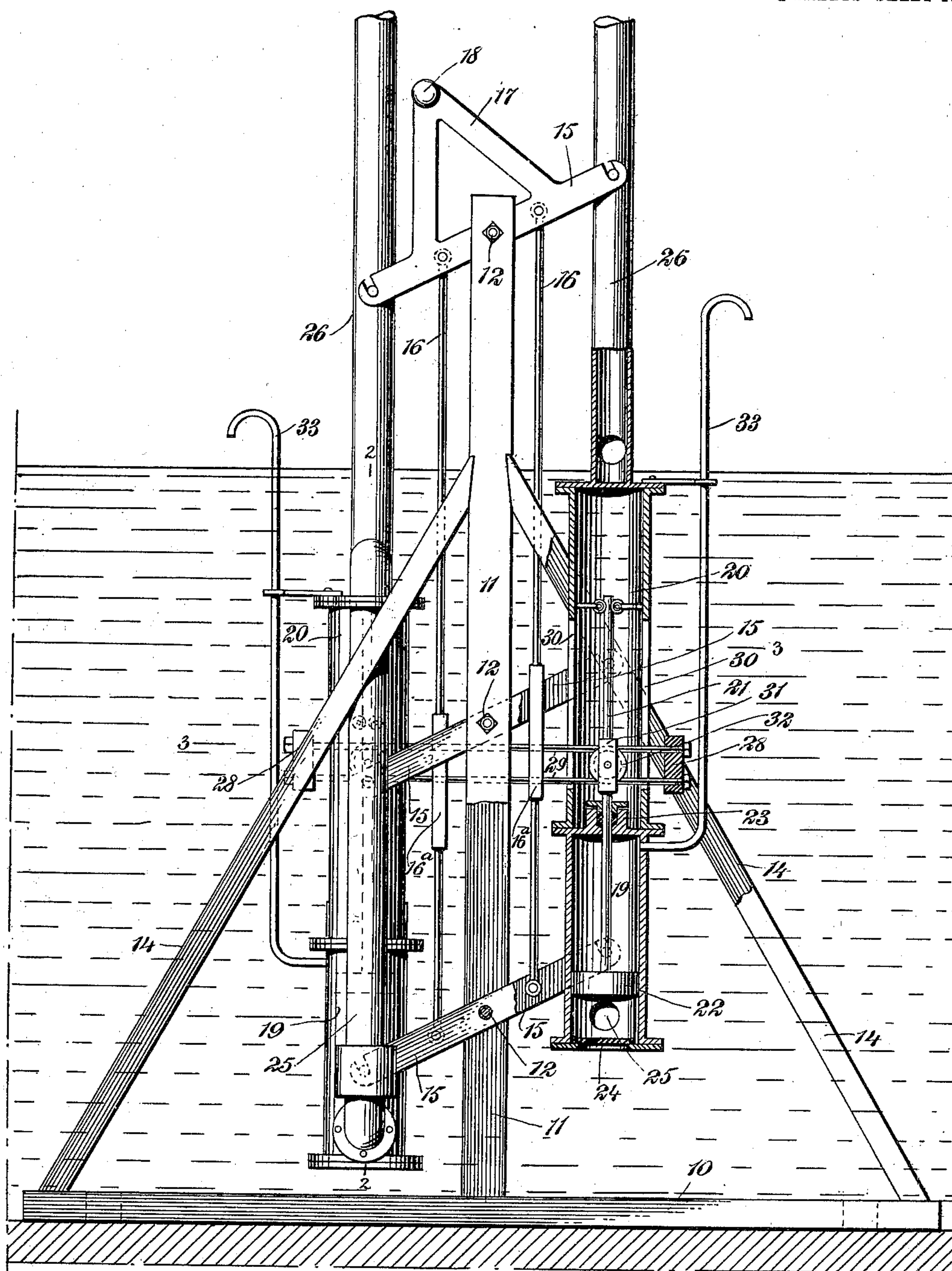
PATENTED JUNE 16, 1903.

A. DELLANNA.  
PUMP.

APPLICATION FILED MAY 23, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

John Bergstrom  
Isaac B. Owens.

Fig. 1

INVENTOR

*Antonio Dellanna*

BY

*Mumford*  
ATTORNEYS.

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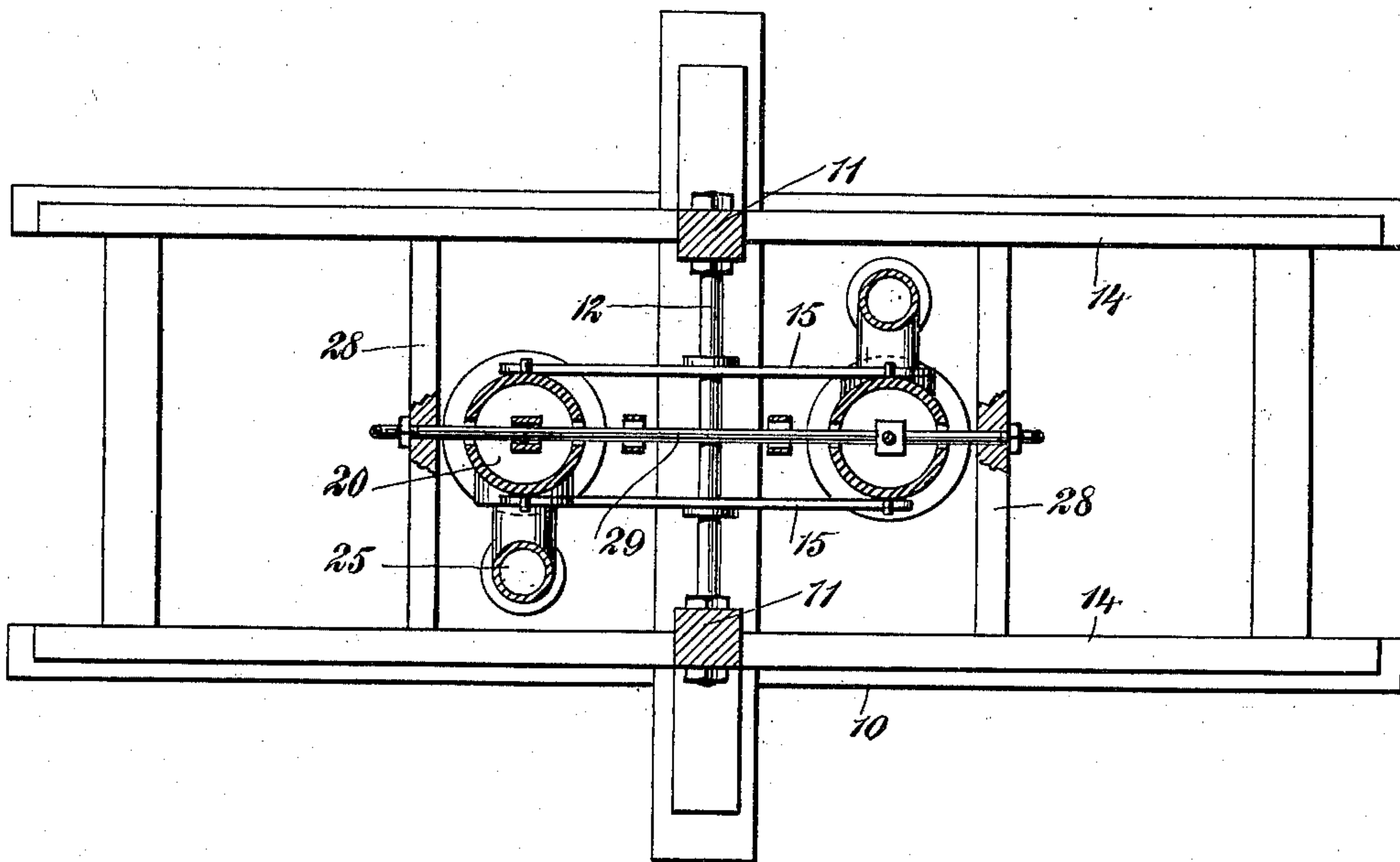
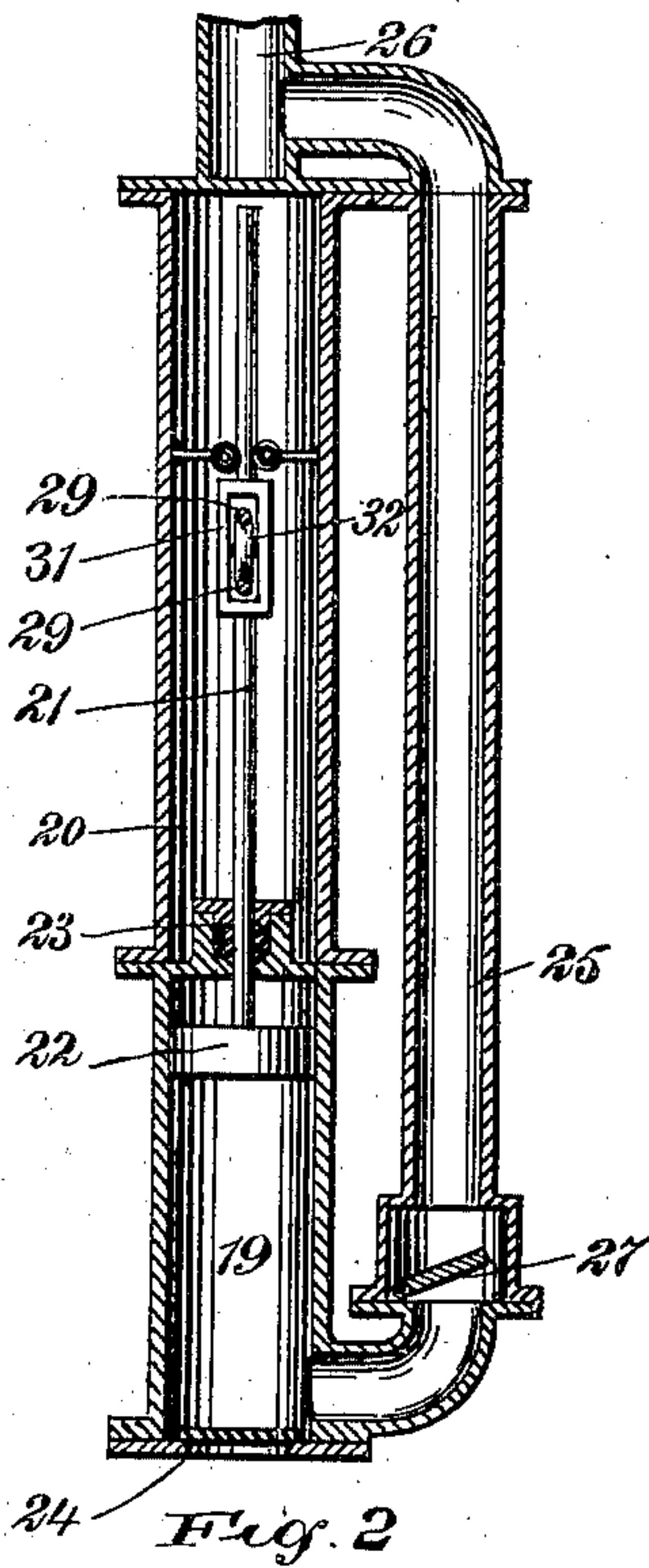
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2 SHEETS—SHEET 2.



WITNESSES:

*John B. Thompson*  
*Isaac B. Owens*

Fig. 3

INVENTOR

*Antonio Dellanna*

BY

*Mum*  
ATTORNEYS.



# UNITED STATES PATENT OFFICE.

ANTONIO DELLANNA, OF SALT LAKE CITY, UTAH.

## PUMP.

SPECIFICATION forming part of Letters Patent No. 731,288, dated June 16, 1903.

Application filed May 23, 1902. Serial No. 108,653. (No model.)

*To all whom it may concern:*

Be it known that I, ANTONIO DELLANNA, a citizen of the United States, and a resident of Salt Lake City, in the county of Salt Lake and State of Utah, have invented a new and Improved Pump, of which the following is a full, clear, and exact description.

The invention relates to a pump the general characteristic of which is one or more cylinders moving on relatively stationary pistons and adapted to be submerged in a body of water to force a column through a discharge-pipe.

The invention involves certain novel features of structure and arrangement which will be fully described hereinafter.

This specification is an exact description of one example of my invention, while the claims define the actual scope thereof.

Reference is to be had to 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 side elevation of the invention with parts broken away. Fig. 2 is a section on the line 2 2 of Fig. 1, and Fig. 3 is a section on the line 3 3 of Fig. 1.

The apparatus comprises a base 10, at each side of which are mounted suitably-braced stanchions 11, these stanchions extending vertically in parallelism with each other. The base 10 is adapted to be sunk to the bottom of the body of water in which the pump works, and the stanchions 11 rise above the level of the surface thereof, as the drawings show. The stanchions are braced together to form a rigid structure by means of transverse shafts 12, extending between them, and side braces 14 are also provided.

Between the stanchions 11 and carried to swing around the shafts 12 are pairs of walking-beams 15. The uppermost and lowermost pairs of walking-beams 15 are connected at each side of the shafts 12 by means of rods 16, thus causing the said walking-beams to move in unison, and the uppermost pair of walking-beams has extensions 17, between which extends a handle-bar 18, which permits the manual or other operation of the pump by swinging the said uppermost walking-beams around the center of the uppermost shaft 12.

19 represents the pump-cylinders, which are preferably two in number, and 20 represents continuations of the pump-cylinders, forming chambers in which the piston-rods 21 are allowed to play idly.

22 indicates the pistons, these elements working in the cylinders 19 and being connected to the rods 21, which rods pass upward through stuffing-boxes 23 in the upper ends of the cylinders 19.

At the bottom of each cylinder 19 is a foot-valve 24, and from the lower portions of the cylinders extend by-pass pipes 25, that lead upward above the chambers 20 and into the discharge-pipes 26, which pass upward in alinement with the respective cylinders 19, as best shown in Fig. 2.

27 indicates a check-valve placed in the lower portion of each by-pass pipe 25.

The parts 19, 20, 25, and 26 are supported to move alternately up and down by means of the walking-beams 15, to which beams said parts are connected, at the ends of the beams, so that as the handle 18 is swung from side to side the walking-beams are operated in unison and one cylinder, with its appurtenant parts, is lowered, while the other is being raised, and vice versa.

Fastened to the braces 14 or to other suitable parts of the framing of the apparatus are cross or transverse bars 28, which carry rigidly two rods 29, these rods extending horizontally in parallelism with each other through vertical slots 30 in the walls of the chambers 20 and through looped or split portions 16<sup>a</sup> of the rods 16. The piston-rods 21 have loops 31 formed therein, and through these loops pass the rods 29. 32 indicates rollers which are carried in the loops 31 of the rods 21 and which lie between the rods 29. These parts serve to hold the rods 21 and the attached pistons 22 effectively against vertical movement; but they allow the said parts to move slightly sidewise to account for the slight sidewise movement of the cylinders 19, due to the swinging of the walking-beams 15.

33 indicates vent-pipes which pass to the atmosphere from the upper portions of the cylinders 19 and which serve to prevent compression within these cylinders.

In the operation of the apparatus the cylinders, with their attached parts, are caused



to move up and down, as before explained; but the pistons are held stationary by the parts in connection with the piston-rods. On the downward movement of the cylinders  
 5 water enters below the pistons through the foot-valves 24, and on the upward movement of the cylinders said water is caused to flow past the check-valves 27 into and through the by-pass pipes 25, by means whereof said water  
 10 finally reaches the discharge-pipes 26. The cylinders move sidewise slightly and the pistons follow this movement, the rollers 32 running on the guide-rods 29, as before explained. No water is allowed to enter into the cylinders above the pistons, and to prevent rarefaction of the air at this point the vent-pipes  
 15 33 are provided.

Various changes in the form and details of my invention may be resorted to at will without departing from the spirit of my invention. Hence I consider myself entitled to all forms of the invention as may lie within the intent of my claims.

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

1. A pump, comprising a cylinder, means mounting the cylinder to move longitudinally, a relatively stationary piston held in the cylinder, and a transversely-disposed guide slidably connected with the piston-rod to allow lateral movement of the piston.

2. The combination of a walking-beam, a cylinder held thereby, a piston fitted in the cylinder, a rod attached to the piston, a guide, and means for connecting the piston-rod with the guide to allow the rod to move sidewise, for the purpose specified.

3. A pump, comprising a relatively stationary piston, a cylinder arranged to move on the piston, a rod to which the piston is joined, walls forming a chamber above the cylinder, into which chamber the rod extends, and means extending through the chamber and having connection with the rod to hold the same against longitudinal movement, said means allowing the rod a slight lateral movement, for the purpose specified.

4. A pump, comprising a relatively stationary piston, a cylinder arranged to move on the piston, a rod to which the piston is joined, walls forming a chamber above the cylinder, into which chamber the rod extends, means extending through the chamber and having connection with the rod, to hold the same against longitudinal movement, said means allowing the rod a slight lateral movement, for the purpose specified, a discharge-pipe, a by-pass pipe passing from the lower portion of the cylinder around the said walls forming the chamber and into the discharge-pipe, and valves commanding the cylinder and by-pass pipe.

5. A submerged pump, comprising a reciprocating cylinder, a stationary piston working therein, a discharge-pipe passing from the lower end of the cylinder, valves controlling

the water-passage, the upper end of the cylinder being closed to the water, and a vent-pipe passing from said upper end of the cylinder to a point above the water-level, for the purpose specified.

6. In a pump, the combination with a support, of a walking-beam mounted thereon, a pump-cylinder mounted at one end of the walking-beam to be moved thereby longitudinally of the cylinder, a piston in the cylinder, a rod connected with the piston, and a horizontally-disposed guide arranged adjacent to the cylinder, with which guide the rod has sliding connection.

7. In a pump, the combination with a support, of a cylinder, walls forming a chamber above the same, said walls having a transverse opening therein, means mounting the cylinder and chamber to move in an arc upward and downward, a piston in the cylinder, a rod attached to the piston and projecting into the chamber, and a horizontal guide extending through the said opening in the said chamber-wall, with which guide the piston has connection, for the purpose specified.

8. In a pump, the combination with a reciprocating cylinder, of a stationary piston, a roller mounted in the piston-rod, and a horizontal guide in which the roller of the piston-rod works, as set forth.

9. A pump, comprising a support, walking-beams mounted in the support, a connection between the walking-beams to cause them to move in unison, cylinders with which the ends of the walking-beams are connected, stationary pistons in the cylinders, a horizontal guide with which the piston-rods have a sliding connection, valved discharge-pipes leading from the lower ends of the cylinders, and vent-pipes leading from the upper ends of said cylinders, as set forth.

10. In a pump, the combination of two moving discharge-pipes with respective cylinders constituting practically two separate pumps operating alternately in unison and means with which the piston-rods are connected whereby the pistons are held from moving vertically while allowed to freely move horizontally, as set forth.

11. In a pump, the combination of two reciprocating cylinders each having an inlet-valve in its bottom and provided with a discharge-pipe rigid therewith and extending above the same, means for alternately operating the cylinders, relatively stationary pistons in the cylinders, having their piston-rods projecting through the upper ends of the cylinders, and means with which the projecting ends of the piston-rods are connected to prevent the piston from moving vertically but allowing them to move laterally, as and for the purpose set forth.

12. In a pump, the combination with a frame, of two cylinders provided with discharge-pipes rigidly secured thereto and extending above the same, walking-beams mounted on the frame, one having its ends pivotally con-



5 nected with the cylinders and the other having its ends pivotally connected with the discharge-pipes, pistons in the cylinders, a transverse guide connected with the pistons, and tie-rods having their ends pivotally connected with the walking-beams, said tie-rods having looped portions through which the said guide passes, as set forth.

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

ANTONIO DELLANNA.

Witnesses:

B. H. SCHETTLER,  
E. F. SCHETTLER.