

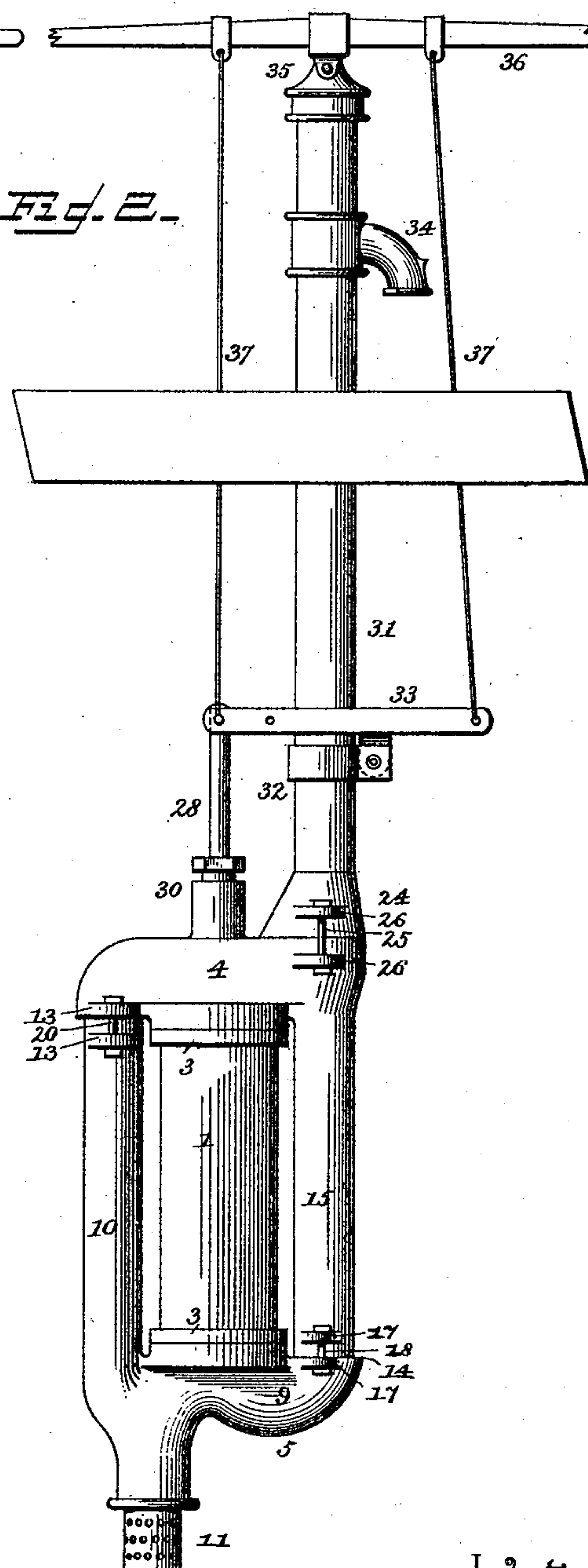
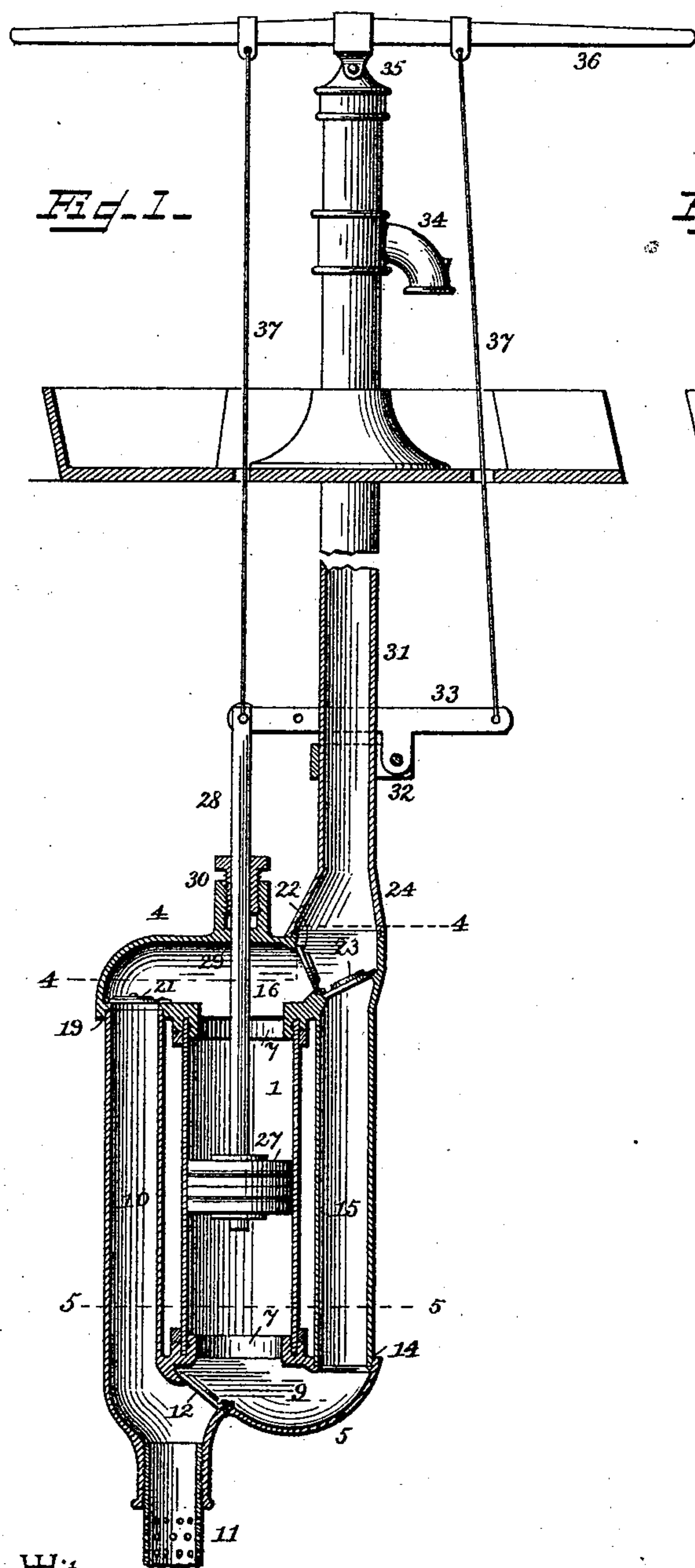
(No Model.)

2 Sheets—Sheet 1.

R. BRADLEY.  
FORCE PUMP.

No. 436,300.

Patented Sept. 9, 1890.



Witnesses

Charles Curand.

Wm. Bagger.

Inventor

Richard Bradley

By his Attorneys,

Chas. H. Co.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

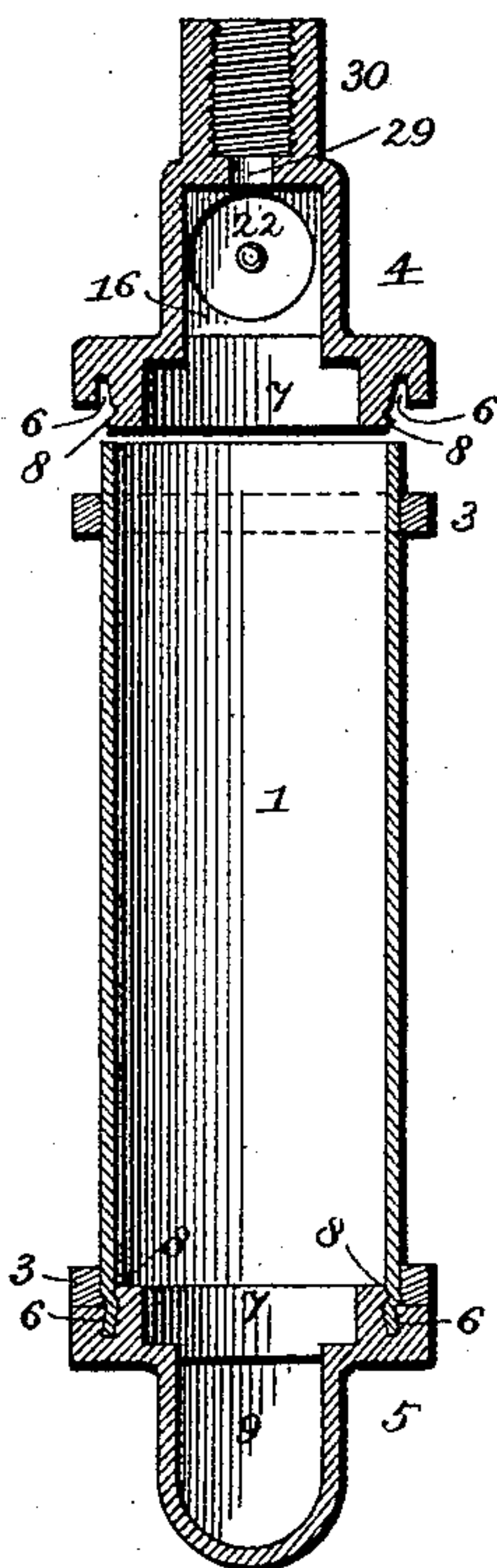


Fig. 4.

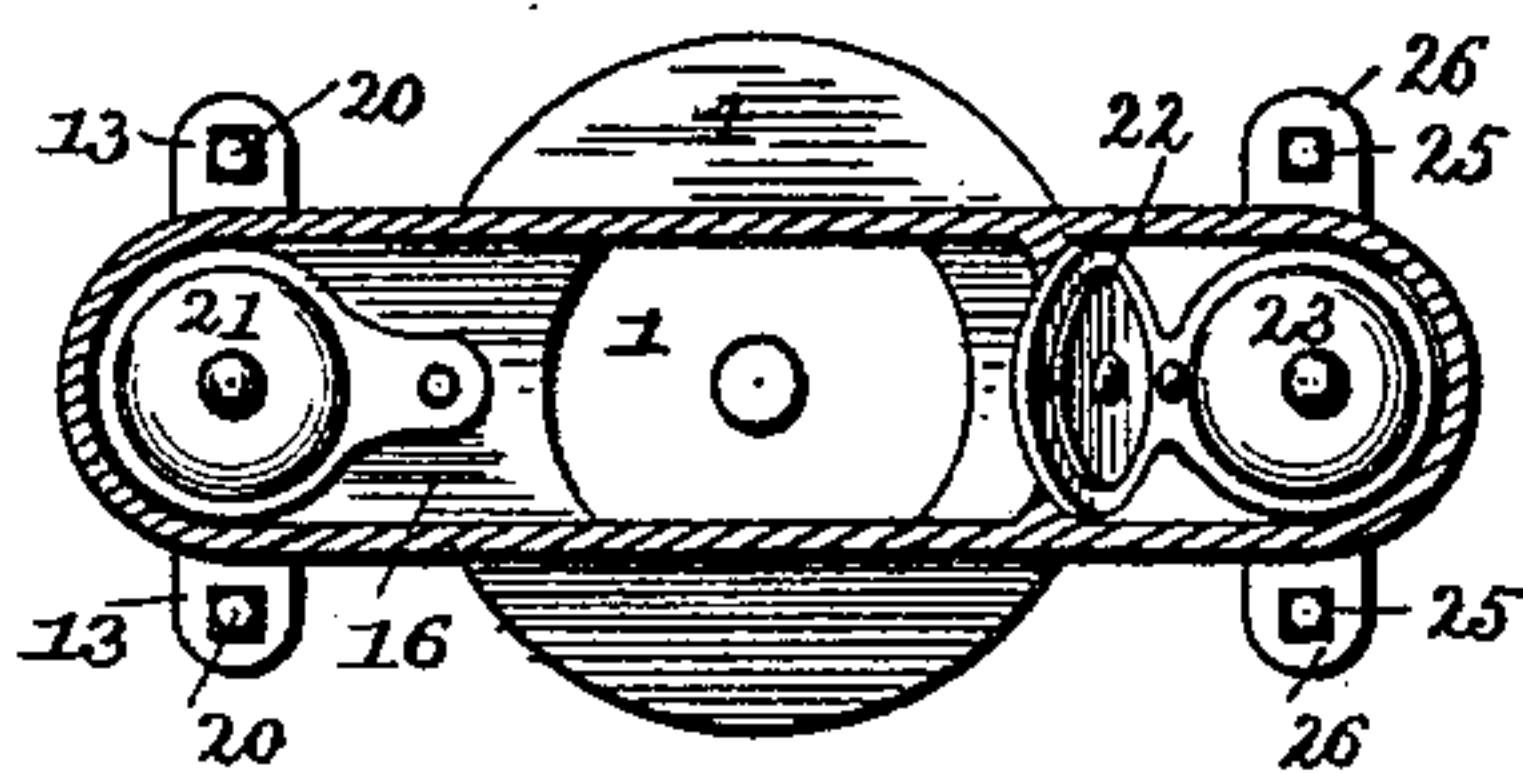
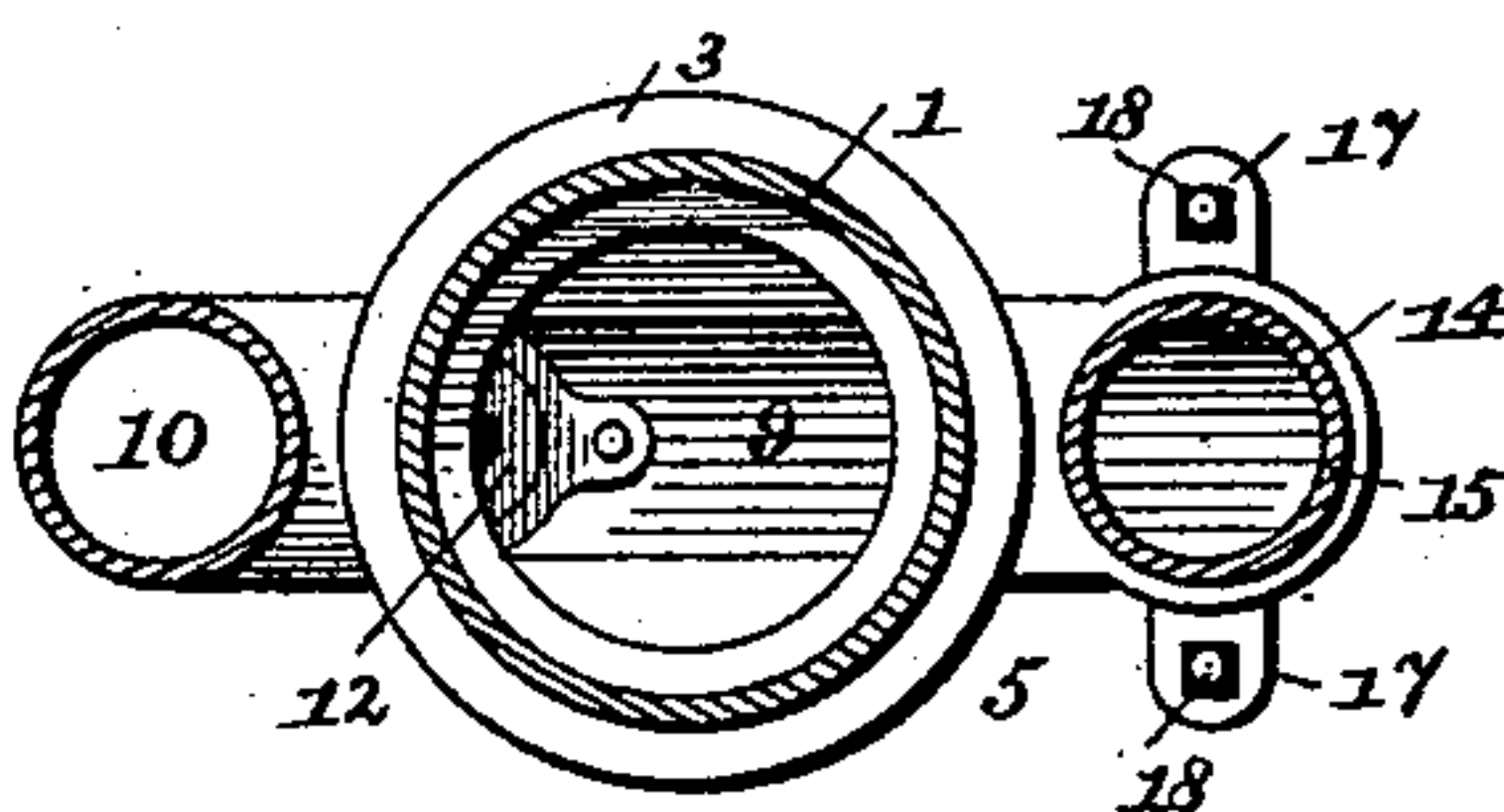


Fig. 5.



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# UNITED STATES PATENT OFFICE.

RICHARD BRADLEY, OF ASHLAND, WISCONSIN, ASSIGNOR OF ONE-HALF TO  
JOHN PARONTO, OF SAME PLACE.

## FORCE-PUMP.

SPECIFICATION forming part of Letters Patent No. 436,300, dated September 9, 1890.

Application filed April 17, 1890. Serial No. 348,329. (No model.)

*To all whom it may concern:*

Be it known that I, RICHARD BRADLEY, a citizen of the United States, residing at Ashland, in the county of Ashland and State of Wisconsin, have invented a new and useful Force-Pump, of which the following is a specification.

This invention relates to double-acting force-pumps, and it has for its object to construct a device of this class which shall be simple and inexpensive, and by means of which a rapid and steady flow of water may be obtained.

The invention consists in the improved construction, arrangement, and combination of parts which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings hereto annexed, Figure 1 is a vertical sectional view of a pump equipped with my improvements, showing also the escape-pipe and the operating mechanism. Fig. 2 is a side elevation of the same. Fig. 3 is a vertical sectional view, on a larger scale, of the pump-cylinder and the caps or heads of the same, one of said caps being in position and the other ready to be placed in position. Fig. 4 is a horizontal sectional view taken on the line 4 4 in Fig. 1. Fig. 5 is a horizontal sectional view, taken on the line 5 5 in Fig. 1.

Like numerals of reference indicate like parts in all the figures.

The cylinder or working barrel of my improved pump, which is designated by number 1, is preferably constructed of brass, and it is provided near its ends with exterior annular hoops or bands 3 3.

4 and 5 designate, respectively, the upper and lower heads, each of which is provided with an annular groove 6, the inner wall of which is slightly beveled in an outward direction. Each of the heads is also provided with a circular projecting seat 7, adapted to enter the end of the cylinder and provided with a circumferential V-shaped rib or bead 8. When the parts are to be connected, the seats 7 of the heads are caused to enter the ends of the cylinder, which latter may then by hammering upon the hoops or bands 3 be driven into the annular grooves 6 of the said heads. The extreme ends of the cylinder will thus be com-

pressed and very tightly fitted in the said grooves, owing to the beveled inner walls of the latter, and at the same time the circumferential beads 8 of the seats will engage the inner walls of the cylinder, thereby making perfectly tight joints. The lower head 5 is provided with a transverse chamber or passage 9, to one end of which is connected the vertical pipe 10, having a downward extension 11, which forms the induction-pipe. In the part of the chamber 9 which communicates with the induction-pipe is located an upwardly-opening valve 12. The upper end of the pipe 10 is provided with laterally-extending lugs or flanges 13, having perforations for the reception of connecting-bolts, to be hereinafter described. The end of the chamber or passage 9 opposite to the end having the induction-pipe is provided with a seat 14, for a vertical pipe 15, which extends downwardly from one end of a chamber or passage 16, formed transversely in the upper head 4. The seat 14 and the lower end of the pipe 15 are each provided with laterally-extending perforated flanges or lugs 17, to receive the connecting-bolts 18, by means of which the parts are tightened together.

One end of the chamber 16 in the upper cylinder-head is provided with a seat 19 for the reception of the upper end of the pipe 10, and the said seat 19, like the pipe 10, is provided with laterally-extending perforated lugs 13 for the reception of the connecting-bolts 20. At the upper end of the pipe 10, in the seat 19, is mounted an upwardly-opening valve 21. The opposite end of the chamber or passage 16 is provided with seats for two valves, designated, respectively, by 22 and 23, the former of which opens upwardly or outwardly from the chamber 16 and the cylinder while the latter 23 opens upwardly from the pipe 15. A funnel-shaped casing 24 is connected with the chamber containing the valves 22 and 23 by means of bolts 25, extending through perforated lugs or flanges 26 upon the parts that are to be connected.

27 designates the piston, which is of ordinary construction, and the rod of which 28 extends upwardly through an opening or perforation 29 in the head 4 of the cylinder,



which is provided with a stuffing-box 30 to effect a tight joint.

31 designates the exit-pipe, which extends upwardly from the funnel-shaped chamber 24. 5 Suitably clamped upon the escape-pipe at a short distance above the cylinder is a bracket 32, to which is pivoted a lever 33, one end of which is suitably connected with the upper end of the piston-rod 28. The discharge-pipe 10 31 is extended upwardly a suitable distance above the curving of the well in which the pump is placed for operation, and is provided with a spout 34. To the extreme upper end of the exit-pipe, which is provided with a cap or bracket 35, is pivoted the working-lever 36, 15 which is connected by wires or connecting-rods 37 on opposite sides of its fulcrum with opposite sides or ends of the lever 33, which may thus be conveniently and effectively operated by means of the working-lever. By 20 making the connection on opposite sides of the fulcrum of the two levers I am enabled to make said connections of comparatively light and inexpensive wires, inasmuch as the strain is evenly distributed and the piston is operated on its down as well as on its up stroke, by a pulling movement upon the connecting-rods on one side of the fulcrum of the levers.

The operation and advantages of my invention will be readily understood from the foregoing description taken in connection with the drawings hereto annexed. The general construction of my improved pump is simple and inexpensive, and by the construction 35 herein described of the cylinder and cylinder-heads I am enabled to effect exceedingly tight and durable joints. The parts of the pump are clamped together by means of the connecting-bolts, as will be clearly seen by reference to the drawings hereto annexed, and said bolts may be readily tightened to any desired degree. On the upstroke of the piston the 40 water will rise through the induction-pipe 11 and valve 12 into the lower portion of the cylinder, the valve 23 at the upper end of pipe 15 being meanwhile held closed by the suction created in pipe 15 by the upward movement of the piston. At the same time the contents of the upper portion of the cylinder are forced up- 50 wardly into the exit-pipe through the valve 22,

backing of the water into the pipe 10 being prevented by the back pressure of the water upon the valve 21. On the downstroke of the piston the water will rise through the inlet-pipe 11, pipe 10, and through the valve 21, 55 and will enter the upper portion of the cylinder, the valve 22 being meanwhile kept closed by the suction created by the piston. At the same time the contents of the lower portion of the cylinder are forced through the pipe 15 60 and valve 23 into the exit-pipe, the back-pressure of the water serving to close the valve 12. It will thus be seen that by imparting a reciprocating motion to the piston, a steady flow of water through the exit-pipe will be 65 assured.

It is obvious that in the construction of the pump packing of any suitable kind may be used at all points where joints are to be effected. 70

While I have in the foregoing described what I consider to be a simple and advantageous construction of my improved pump, I desire it to be understood that I do not limit myself to the precise construction of details 75 herein shown and described, but reserve the right to make any changes and modifications that may be resorted to without departing from the spirit of my invention.

Having thus described my invention, what 80 I claim is—

1. The combination, with the pump-cylinder having circumferential hoops near its ends, of the heads having annular grooves with outwardly-beveled inner walls to receive the ends 85 of the cylinder, substantially as set forth.

2. The combination, with the pump-cylinder provided with circumferential hoops near its ends, of the heads having annular grooves provided with outwardly-beveled inner walls, 90 and seats provided with circumferential sharp-edged beads, substantially as set forth.

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

RICHARD BRADLEY.

Witnesses:

BEN S. SMITH,  
IDA A. FORREST.