

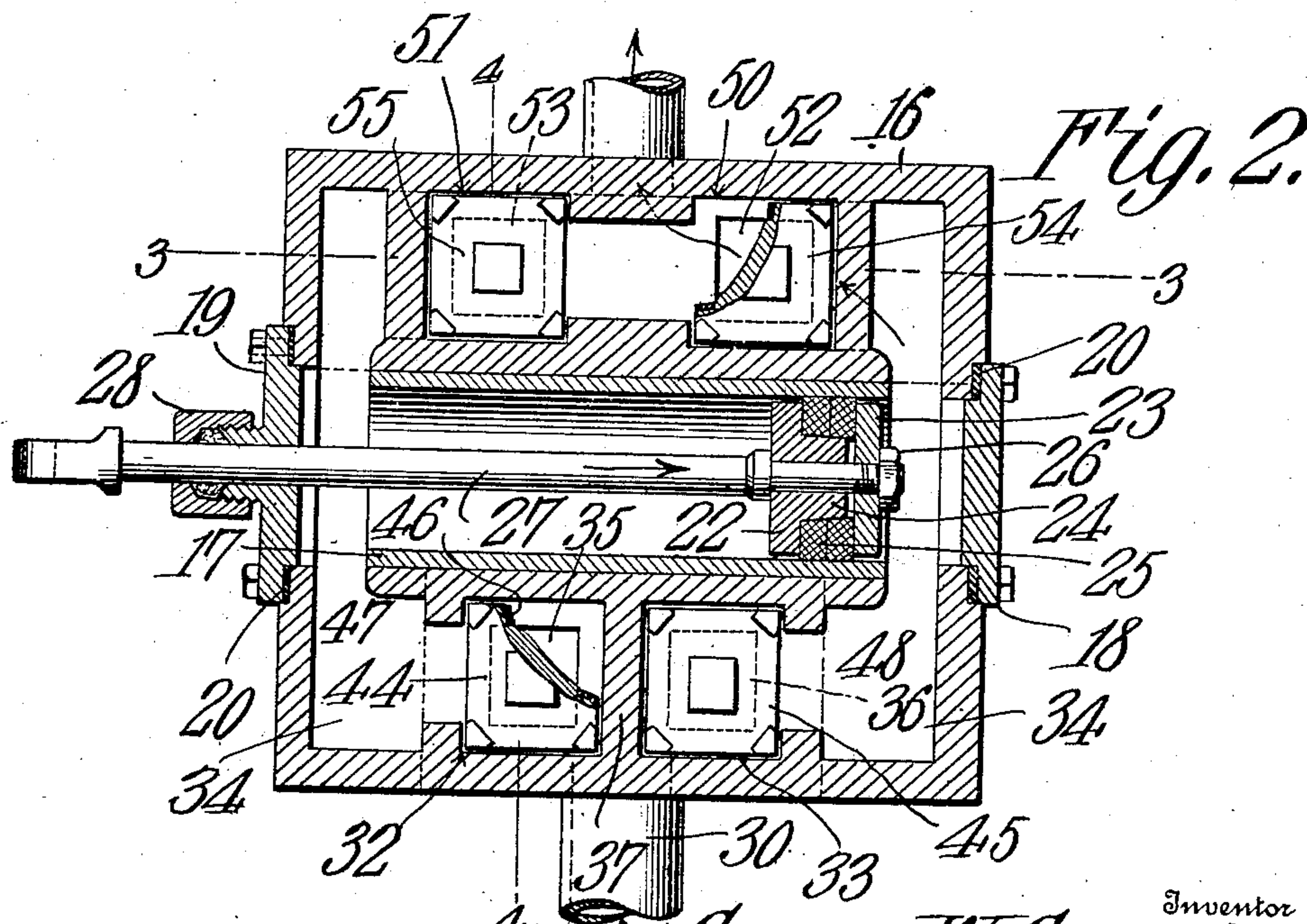
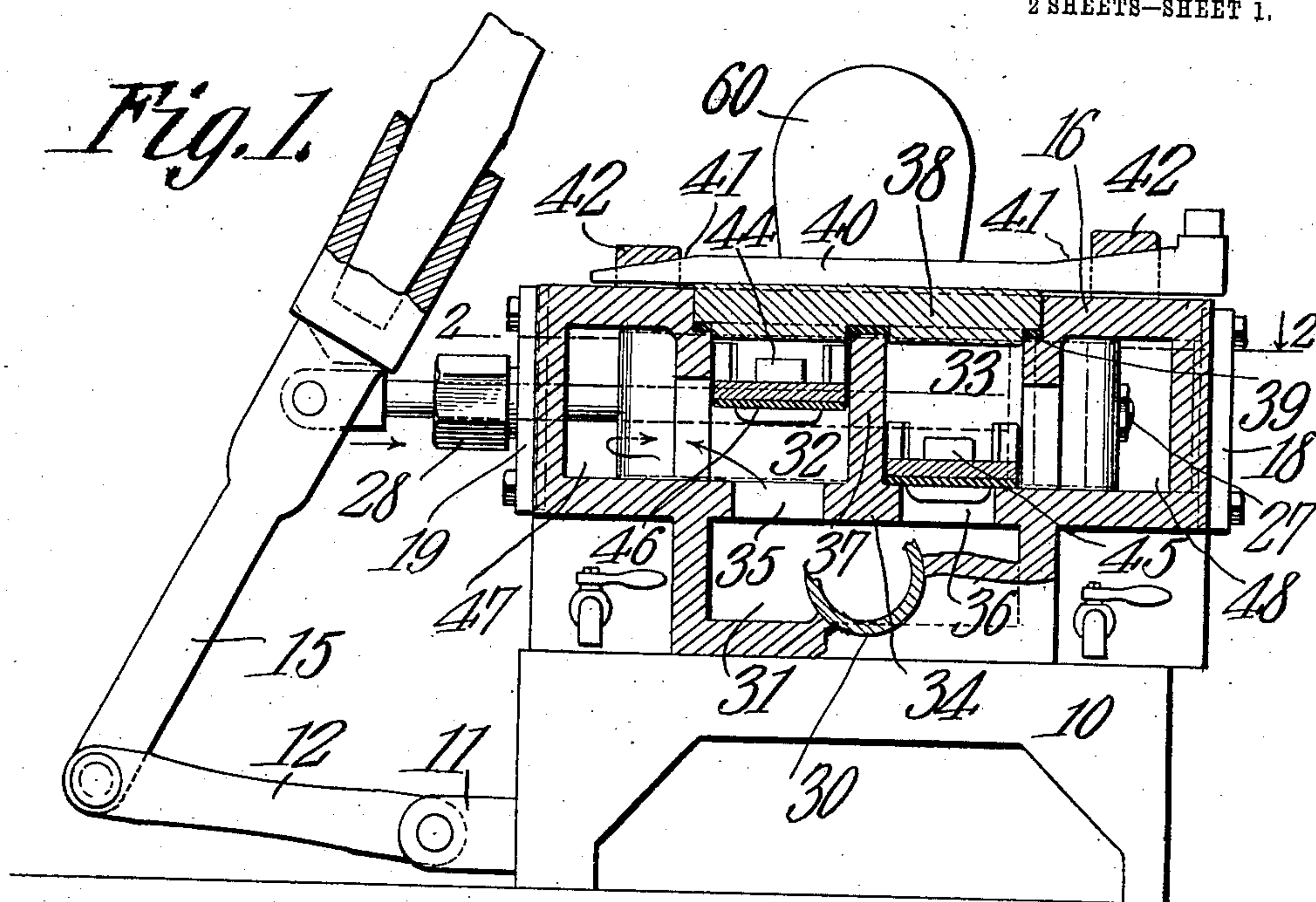
No. 883,864.

PATENTED APR. 7, 1908.

G. W. CURVIN.
PUMP.

APPLICATION FILED JULY 27, 1907.

2 SHEETS—SHEET 1.



Witnesses

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By

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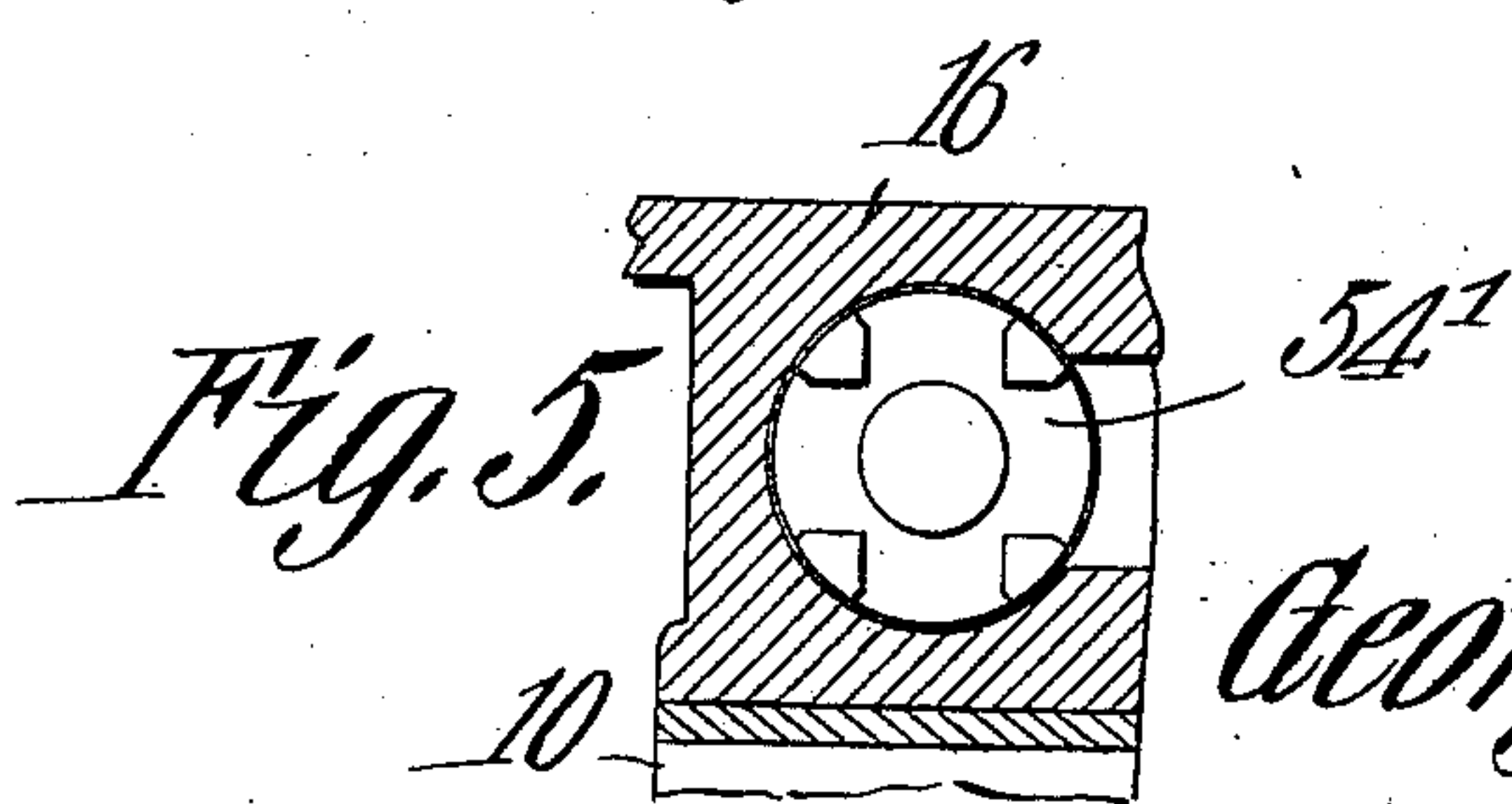
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UNITED STATES PATENT OFFICE.

GEORGE W. CURVIN, OF VIVA, KENTUCKY.

PUMP.

No. 883,864.

Specification of Letters Patent.

Patented April 7, 1908.

Application filed July 27, 1907. Serial No. 385,834.

To all whom it may concern:

Be it known that I, GEORGE W. CURVIN, a citizen of the United States, residing at Viva, in the county of Laurel and State of Kentucky, have invented a new and useful Pump, of which the following is a specification.

This invention relates to pumps, and has for its principal object to provide a pump of very simple and economical construction in which the parts are so arranged as to permit convenient access to all of the valves and the piston for examination and repairs.

A further object of the invention is to provide a pump in which the valve chambers are arranged at the opposite sides of the cylinder and are provided with readily detachable covers, which, when removed, will permit the lifting out of the valves for repacking or removing obstructions.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts, hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings:—Figure 1 is a sectional elevation of a double acting pump constructed in accordance with the invention. Fig. 2 is a sectional plan view of the same on the line 2—2 of Fig. 1. Fig. 3 is a longitudinal section through the exhaust valve chambers on the line 3—3 of Fig. 2. Fig. 4 is a transverse sectional view on the line 4—4 of Fig. 2. Fig. 5 is a detail view illustrating a modified form of valve.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The pump is mounted on a suitable base or foundation 10 which may be of any size and of any desired construction, and in the present instance the base is shown as provided with a bracket 11 from which extends a link 12 the outer end of which is pivoted to the lower end of an operating handle 15 or any suitable power mechanism may be employed, when desired. The body of the pump is formed of an approximately rectangular casing 16 that preferably is in the

form of a single casting, the central portion of which is bored out and receives a cylindrical bushing 17 which may be removed from either end of the pump through detachable caps 18 and 19, the caps being in the form of separate plates which are bolted or otherwise secured to the end walls of the casting, gaskets or packing rings 20 being introduced at the edges of the caps in order to prevent leakage. Fitting within the cylinder is a piston 21 that preferably is formed of two sections 22 and 23, the section 22 having a central hub portion 25 on which are mounted packing rings 25, and these are held compressed and forced outward into close contact with the bore of the cylinder by the piston member 23, the latter being clamped in place by a nut 26 on the inner end of the piston rod 27. The piston rod extends through a suitable stuffing box 28 that is carried by the cap 19 and is connected at the outer end to the operating handle 15 or any other suitable operating device.

The water to be pumped enters through a pipe 30 and passes into an inlet chamber 31 that is arranged immediately below a pair of inlet valve chambers 32 and 33 that are separated from the inlet chamber by a horizontal partition 34 in which are formed suitable openings 35 and 36. The two chambers 32 and 33 are separated from each other by a vertical partition 37 and the top wall of the valve chamber is formed of a removable cap or cover plate 38 that is recessed at the edges and center for the reception of a packing gasket 39 which seats on shoulders formed in the casting, and at the top of the partition 37. The upper face of the cap or cover 38 projects a slight distance above the top of the casting proper, and is held in place by a wedge strip 40, this strip having two inclined or cam surfaces 41 which pass under straps 42 that form an integral part of the casting or are bolted thereto, the wedge strip being driven in place and forcing the cap or cover firmly down to position. By removing this strip, the cap can be lifted off and access had to both of the inlet valve chambers. Arranged in the inlet valve chambers are lift valves 44 and 45, that are provided with gaskets 46 that seat against the top of the partition 34 and close the openings 35 and 36.

The inlet valve chamber 32 communicates with an end passage 47 with which one end of the cylinder communicates, and the inlet valve chamber 33 communicates with an end

passage 48 with which the opposite end of said cylinder communicates, and as a result of this construction movement of the piston in one direction or the other will create a partial vacuum in one or other of the valve chambers causing the valve to lift, and allow the water to pass into that end of the cylinder from which the piston is moving, while any water at the opposite end of the cylinder is forced to the discharge, and a portion of this water passes back to the end passage and pressed down on the idle inlet valve, holding the same in closed position. At the opposite side of the pump are two discharge valve chambers 50 and 51, which communicate with each other, and with a central discharge 52 through which the water is forced. These chambers 50 and 51 are separated from the end passages 47 and 48 by vertical and horizontal walls, the latter of which are provided with openings or ports 52 and 53, which are closed by discharge valves 54 and 55, these valves being provided with packing gaskets which seat in horizontal partitions and alternately close the ports 52—53. The top of the discharge valve chambers is formed of a movable cap or cover 56 having a packing gasket or gaskets on its lower face, and which is held down in place by a wedge strip 57 of a construction similar to the wedge strip 40 previously described.

When water is admitted from one end of the cylinder, it flows through the end passage and thence through one or other of the ports 52—53, raising the valve at that port, and exerting downward pressure on the opposite valve in order to hold the same in closed position, while the main volume of the water is forced out through the discharge pipe.

Leading from the side of the discharge valve chambers, is an air chamber 60 which may be of any ordinary construction.

In operation, the piston is supposed to be traveling in the direction indicated by the arrow in Fig. 2, and in this case is shown at about the completion of its stroke. During this movement, a partial vacuum is created in the passage 47, and the inflowing water from the chamber 31 will raise the valve 44, allowing the water to pass into the passage 47, and thence into that end of the cylinder, from which the piston is moving. The water at the opposite end of the cylinder is being forced out through the passage 48, a portion of this water running back to the inlet chamber 33, and pressing down on the valve 45 in order to hold the latter firmly

closed. The main volume of water flows through the passage 48 and raises the lift valve 54 and thence passes out through the discharge pipe. A portion of the water will act on the lift valve 55 and hold the same in closed position.

In place of using the square valves shown, round valves 54' may be employed, as illustrated in Fig. 5, and the shape of the valve chambers may be correspondingly shaped, if necessary.

It will be observed that by removing the caps free access may be had to all of the valves and valve chambers for the purpose of repacking, renewal or repairs, or for the removal of any obstructions which may enter the pump. The end caps may, also, be readily removed in case it is desired to renew the piston packing or to permit re boring of the cylinder.

I claim:—

1. In a pump, a single piece casing, a cylinder arranged therein, a pair of inlet valve chambers and a pair of discharge valve chambers formed in the casing at the sides of the cylinder, valves for the chambers, removable cover plates for the chambers, a pair of straps carried by the casing adjacent to each pair of chambers and arranged on opposite sides of the opening engaged by the cover, and a bar arranged across each cover and having two wedging surfaces engaging the straps, the said surfaces being arranged to operate simultaneously.

2. In a pump, a casing, a cylinder arranged therein, a pair of inlet valve chambers, and a pair of discharge valve chambers formed in the casing, at the sides of the cylinder; valves for the chambers, removable cover plates for the chambers, a pair of straps carried by the casing adjacent to each pair of chambers, the under walls of the straps being beveled, and the passages through the straps being of different heights, and a bar arranged across each cover and having two wedging surfaces of different heights engaging the under walls of the straps, the said surfaces being arranged to operate simultaneously.

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

GEORGE W. CURVIN.

Witnesses:

JAS. M. WALKER,
FRANK S. APPLEMAN.