

No. 773,796.

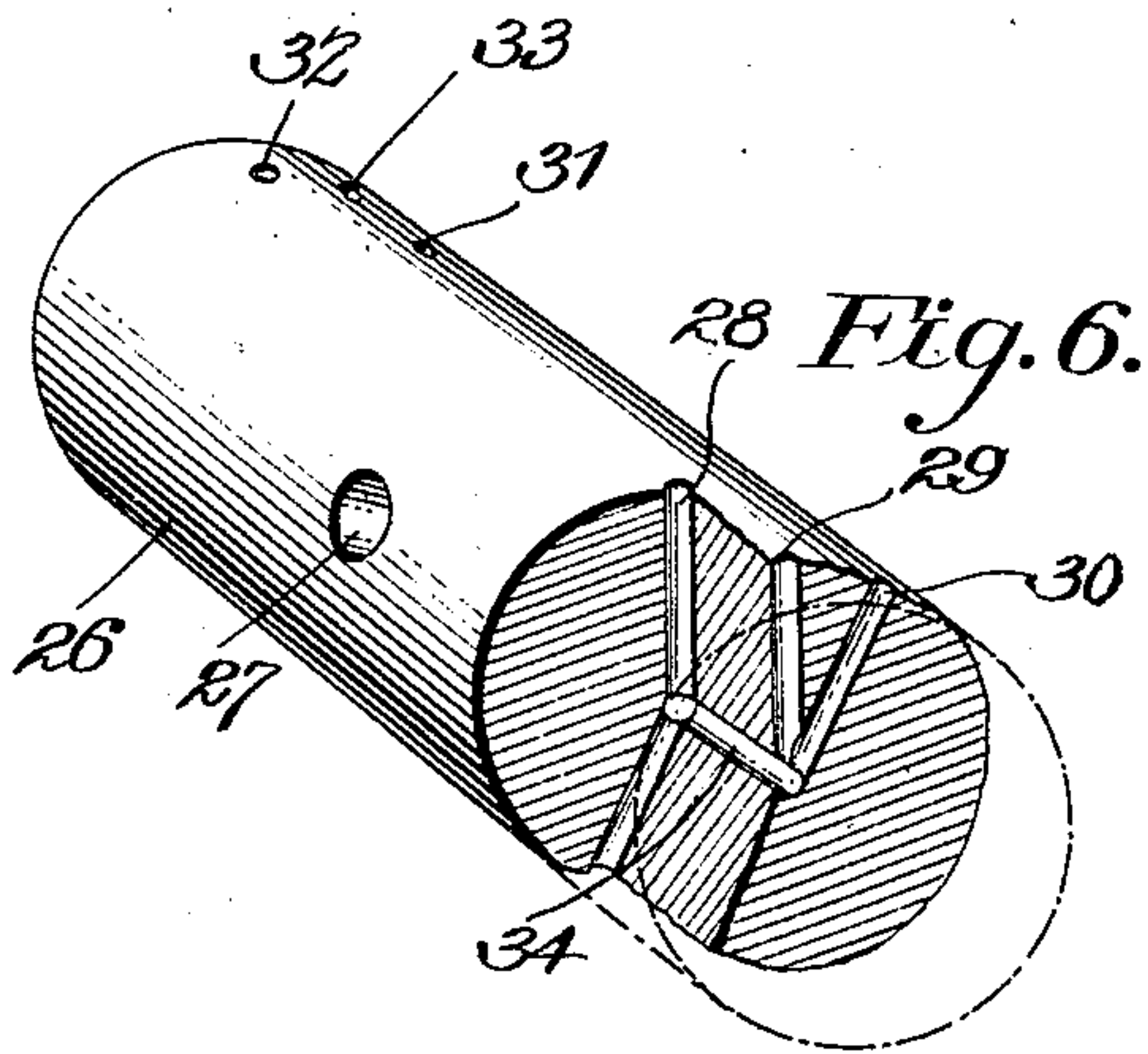
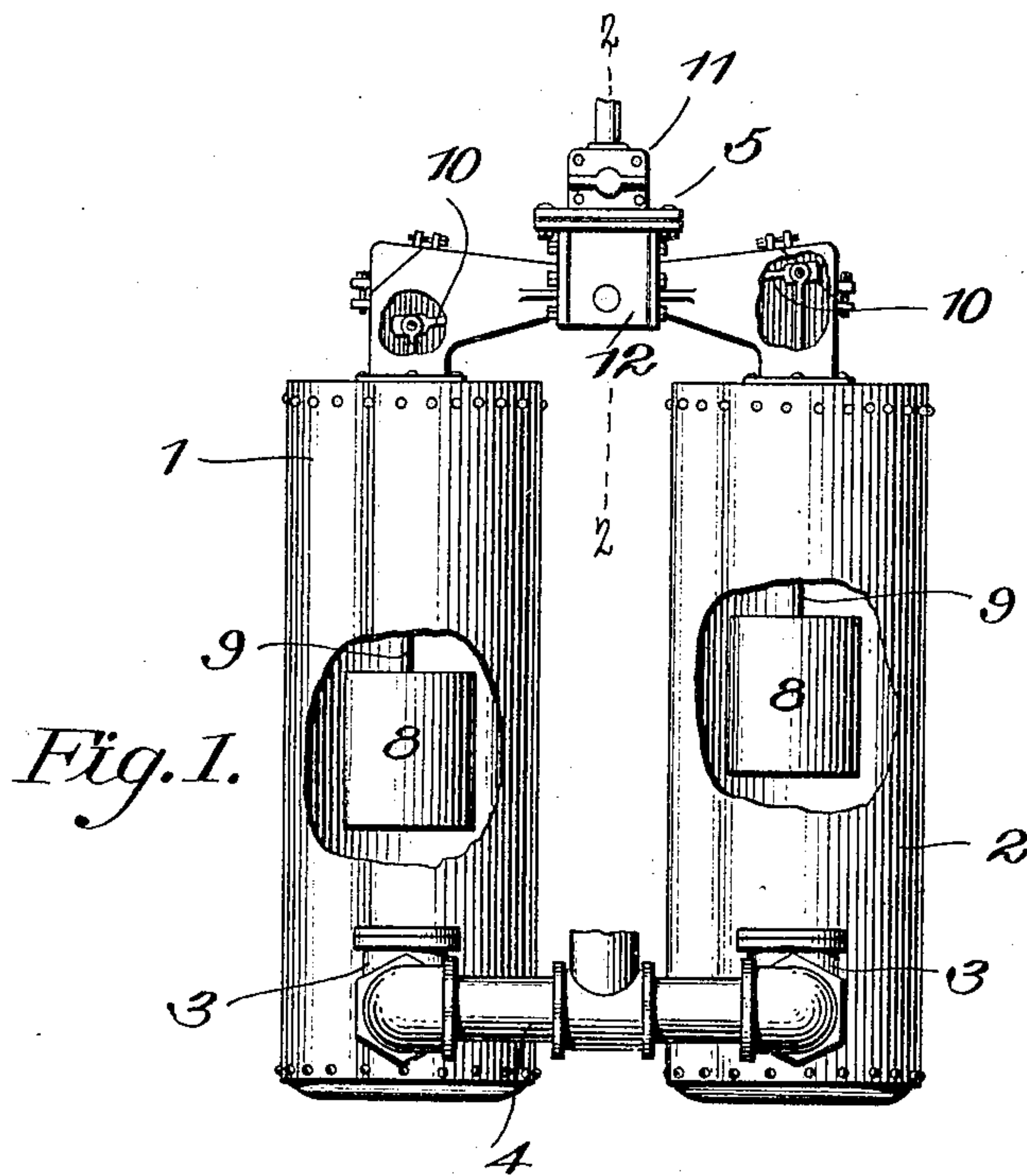
PATENTED NOV. 1, 1904.

J. L. LATTA & J. A. MARTIN.
VALVE FOR COMPRESSED AIR WATER ELEVATORS.

APPLICATION FILED JUNE 26, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses
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J. W. O. Parker

J. L. Latta
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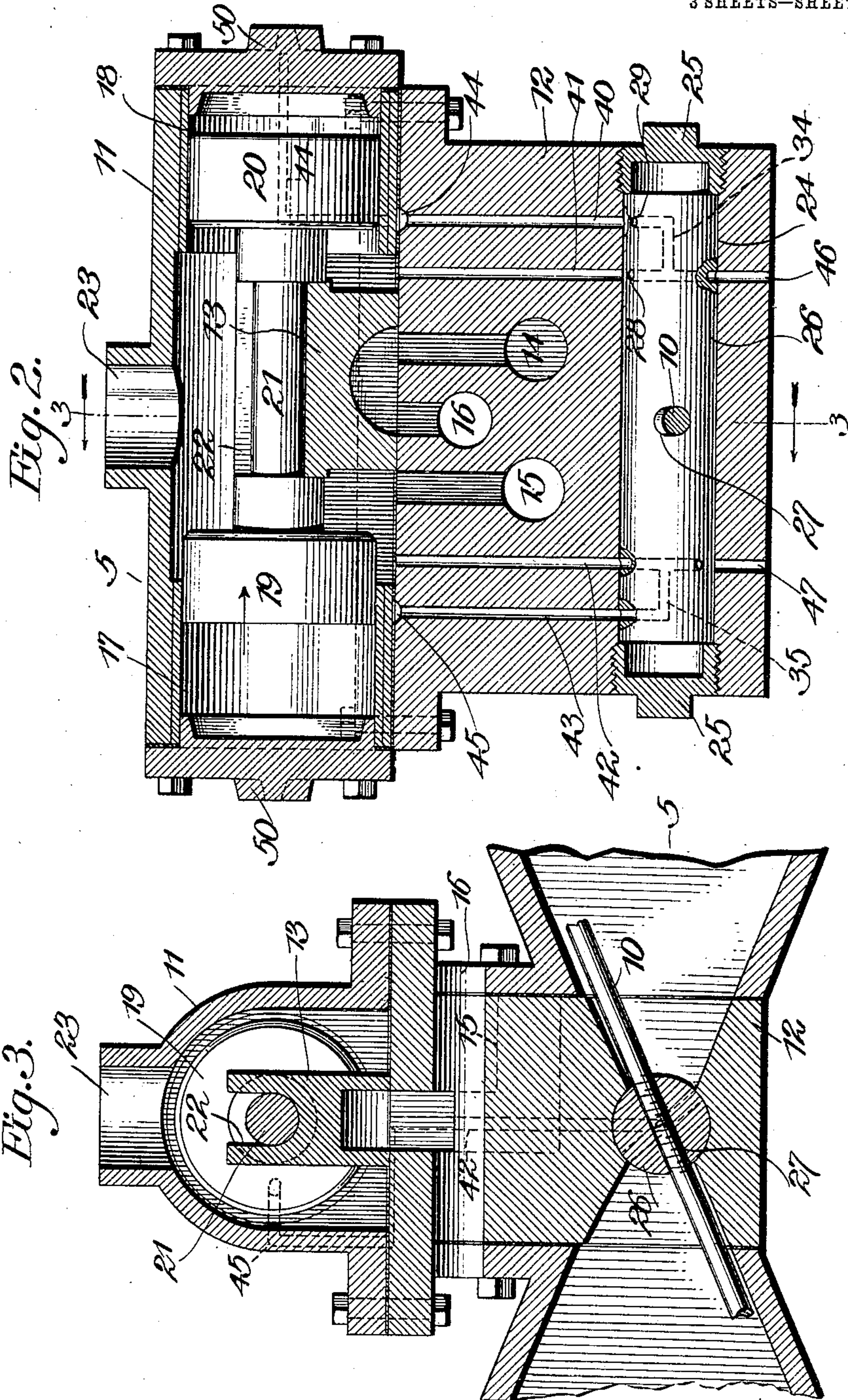
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3 SHEETS—SHEET 2..



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3 SHEETS—SHEET 3.

Fig. 4.

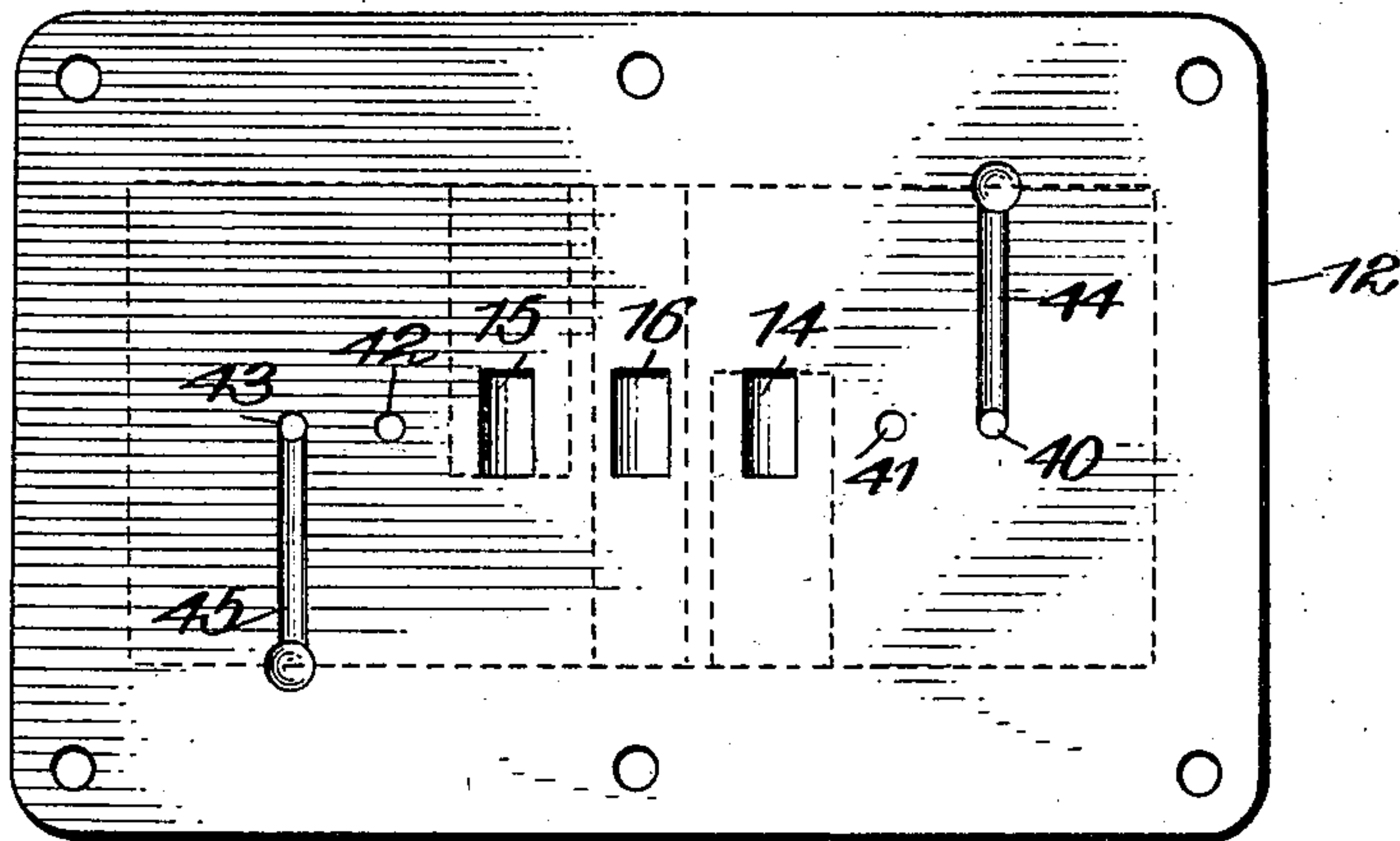
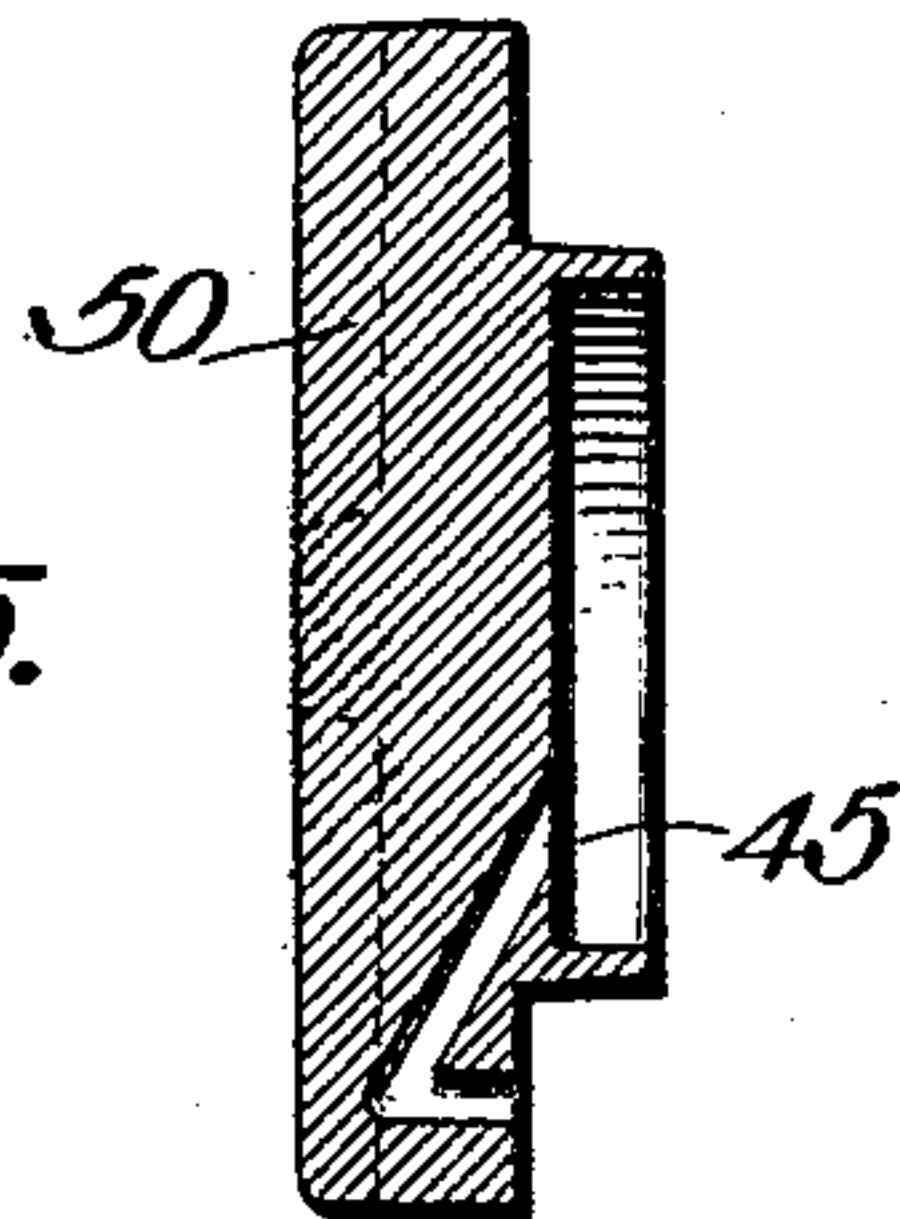


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN L. LATTA AND JAMES A. MARTIN, OF HICKORY, NORTH CAROLINA.

VALVE FOR COMPRESSED-AIR WATER-ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 773,796, dated November 1, 1904.

Application filed June 26, 1903. Serial No. 163,277. (No model.)

To all whom it may concern:

Be it known that we, JOHN L. LATTA and JAMES A. MARTIN, citizens of the United States, residing at Hickory, in the county of Catawba and State of North Carolina, have invented a new and useful Valve for Compressed-Air Water-Elevators, of which the following is a specification.

This invention relates to certain improvements in compressed-air water-elevators of that general type in which quantities of water are successively forced from a plurality of compartments.

The principal object of the invention is to provide an improved valve and mechanism for automatically operating said valve to direct the air under pressure alternately to the water-containing compartments, so that the air may act to force the water therefrom by displacement.

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

In the drawings, Figure 1 is a longitudinal sectional elevation of a compressed-air water-elevator provided with a valve-operating mechanism arranged in accordance with the invention. Fig. 2 is a longitudinal sectional elevation on the line 2 2 of Fig. 1, illustrating, on an enlarged scale, the construction of the valve and its operating mechanism. Fig. 3 is a transverse sectional elevation of the same on the line 3 3 of Fig. 2. Fig. 4 is a plan view of the valve-seat member, showing the location of the several ports. Fig. 5 is a detail sectional view through one of the heads of the valve-chamber. Fig. 6 is a sectional perspective view of the rocker-valve detached.

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

The device forming the subject of the present invention is designed especially for use in

water pumping or elevating devices wherein compressed air acts to successively or alternately displace water from a plurality of chambers.

In the drawings there is shown a water-elevator comprising a pair of chambers 1 2, each provided with a water-inlet valve 3, opening under the influence of external pressure and closing when the air is acting to force the water from the chamber. The two chambers are connected to a common discharge-pipe 4, leading to a point of delivery. At the top of the two chambers is a valve-chamber 5, containing a suitable valve and valve-actuating mechanism, a portion of which is connected to floats 8, one of which is arranged within each of the chambers, said floats being preferably in the form of buckets, which are partly or wholly buoyed up by the water, and when the water is discharged the weight of the bucket or float will act, through the rod 9 and rocker-arm 10, to effect the initial movement of the valve-operating mechanism.

The valve and its operating mechanism are arranged within a two-part casing 11 and 12, having suitable bolting-flanges to permit water and air tight connection between the two. The upper surface of the section 12 is faced off to form a seat for a slide-valve 13, which controls the flow of air to the water-containing chambers 1 and 2. Leading to the valve-seat are three ports 14, 15, and 16, the port 14 being in communication with the water-chamber 1, 15 in communication with the water-chamber 2, and the central port 16 communicating with the open air or with a suitable pipe through which the exhaust-air is delivered. The valve 13 is of the ordinary D type and operates alternately to place the ports 14 and 15 in communication with the exhaust, one of the chambers exhausting while the other receives air under pressure from the main chest 11.

The upper section 11 is bored out at its opposite ends to form a pair of axially-alining cylinders 17 and 18, in which are arranged pistons 19 and 20, respectively, said pistons being rigidly secured together by a stem 21, which also extends through the slot 22, formed in the upper face of valve 13, each of the pis-

ders, a valve-stem connecting the pistons to
the valve, a cylindrical valve-chamber, an os-
cillatory primary valve disposed therein, pres-
sure-ports leading to the chamber, a pair of
5 cylinder-ports leading from the chamber to
the two cylinders, a pair of exhaust-ports also
leading from said chamber, and two sets of
controlling-ports formed in the primary valve,
each set comprising a radial port for commu-
10 nication with the pressure-port, a pair of an-
gularly-disposed radial ports for alternate
communication with the cylinder-ports, a ra-
dial port for communication with the exhaust-

port, an axial passage formed in the valve and
uniting all the ports of each set to each other, 15
and means for oscillating said cylindrical
valve.

In testimony that we claim the foregoing as
our own we have hereto affixed our signatures
in the presence of two witnesses.

JOHN L. LATTA.
JAMES A. MARTIN.

Witnesses:

J. C. MARTIN,
R. J. MAUSER.