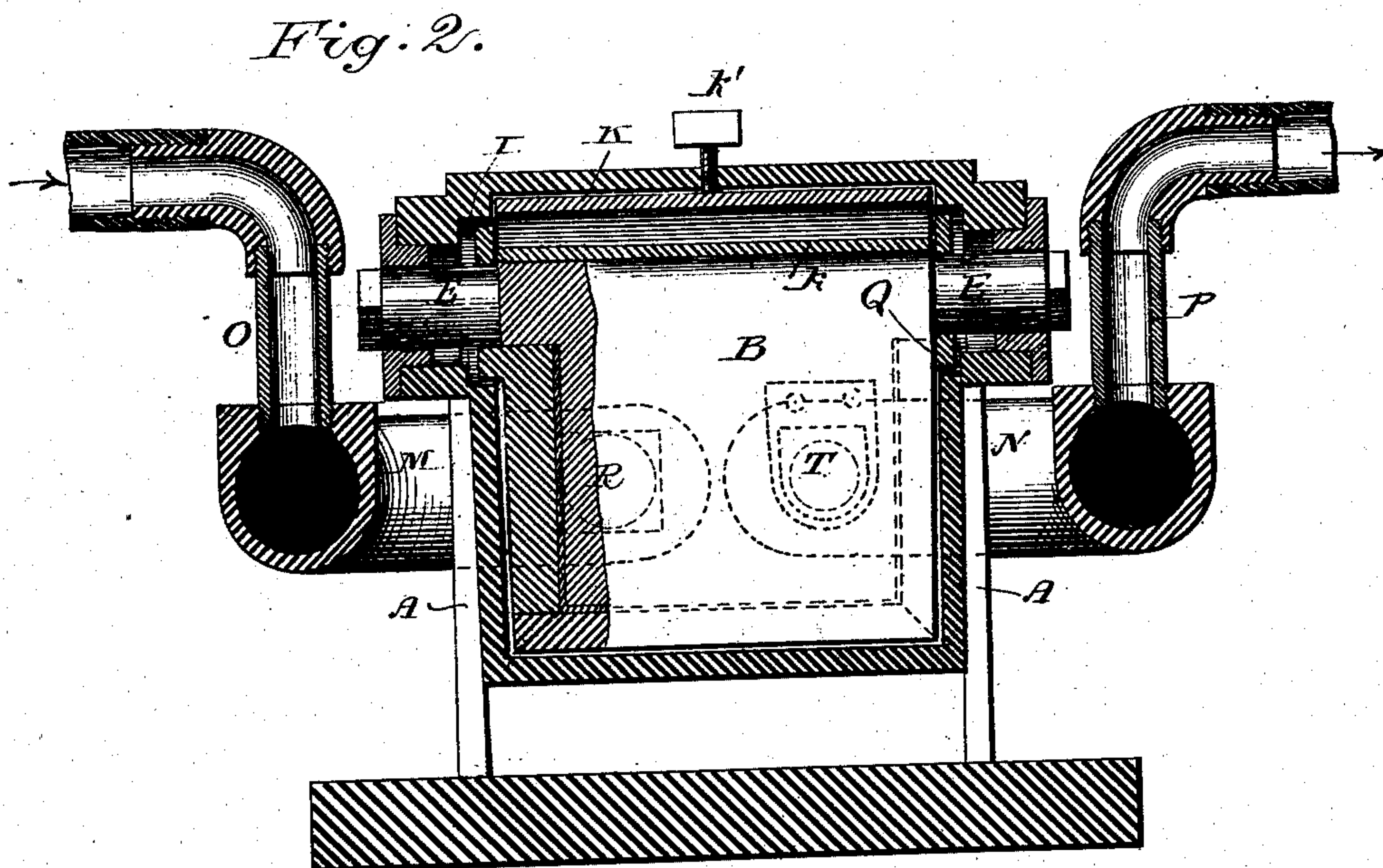
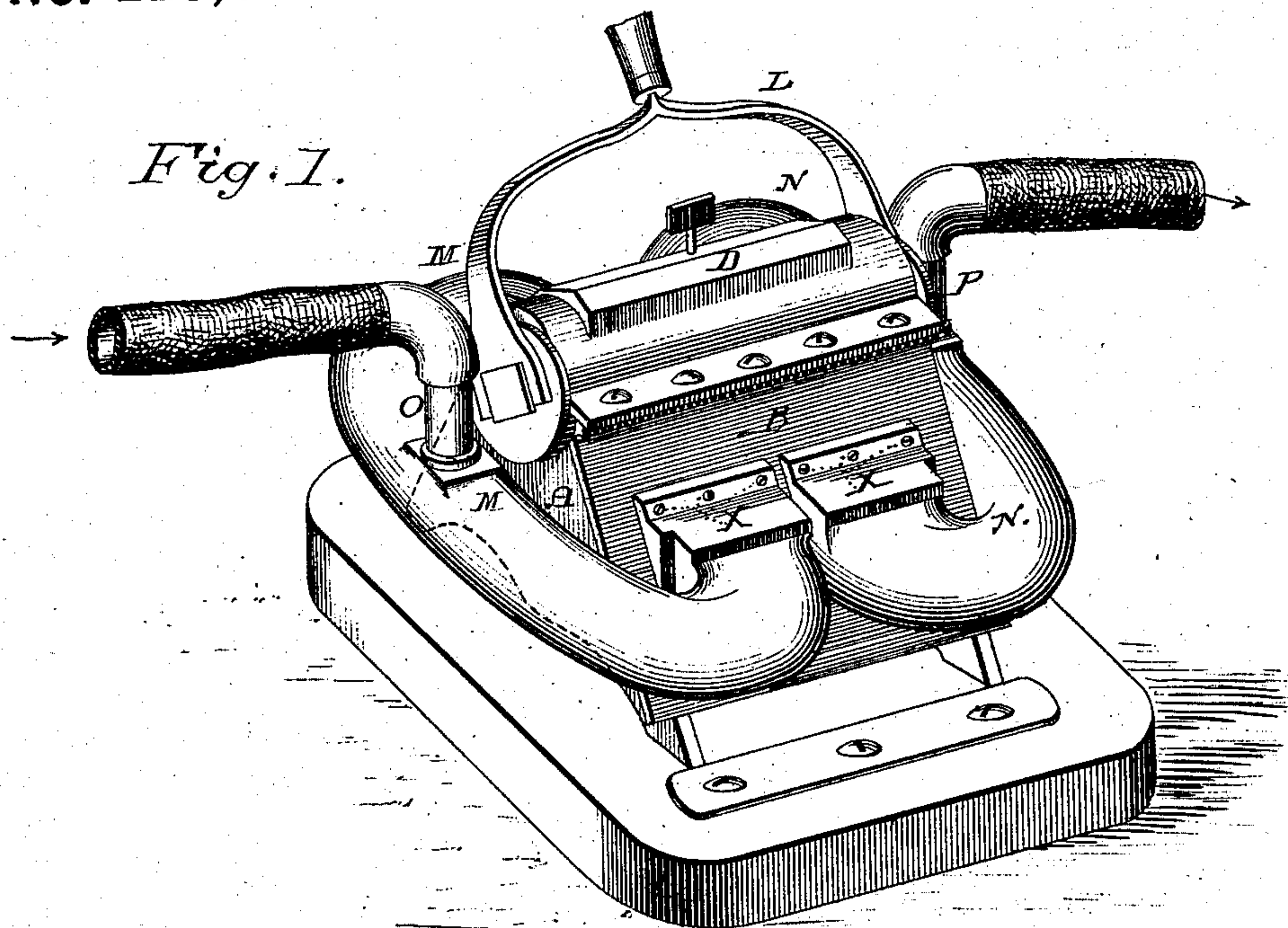


H. S. LOCKMAN.
Pump.

No. 228,089.

Patented May 25, 1880.



Witnesses:

Josephus Van Tassel
Abraham M. Joy

Inventor:

Henry S. Lockman

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Fig. 3.

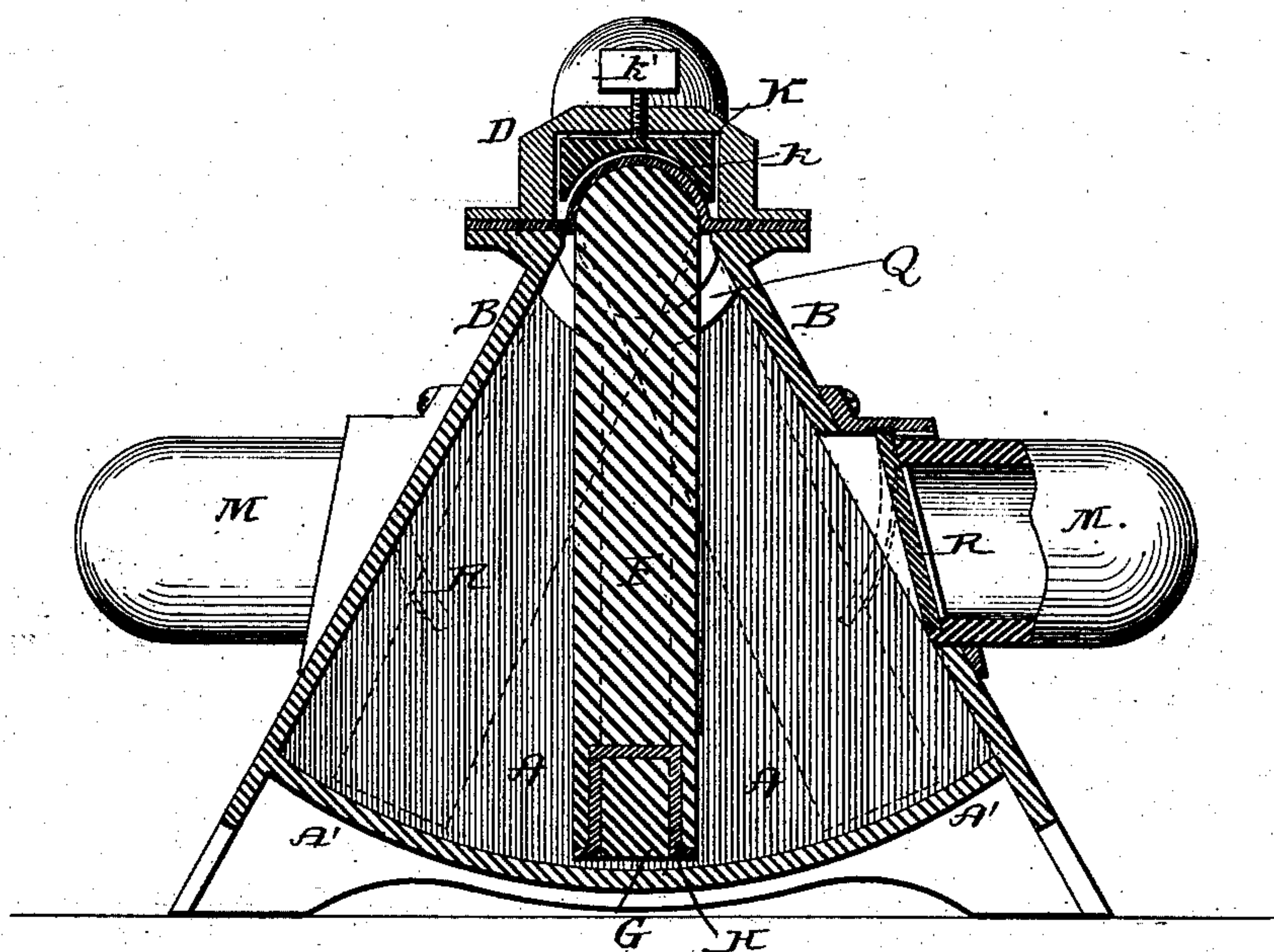
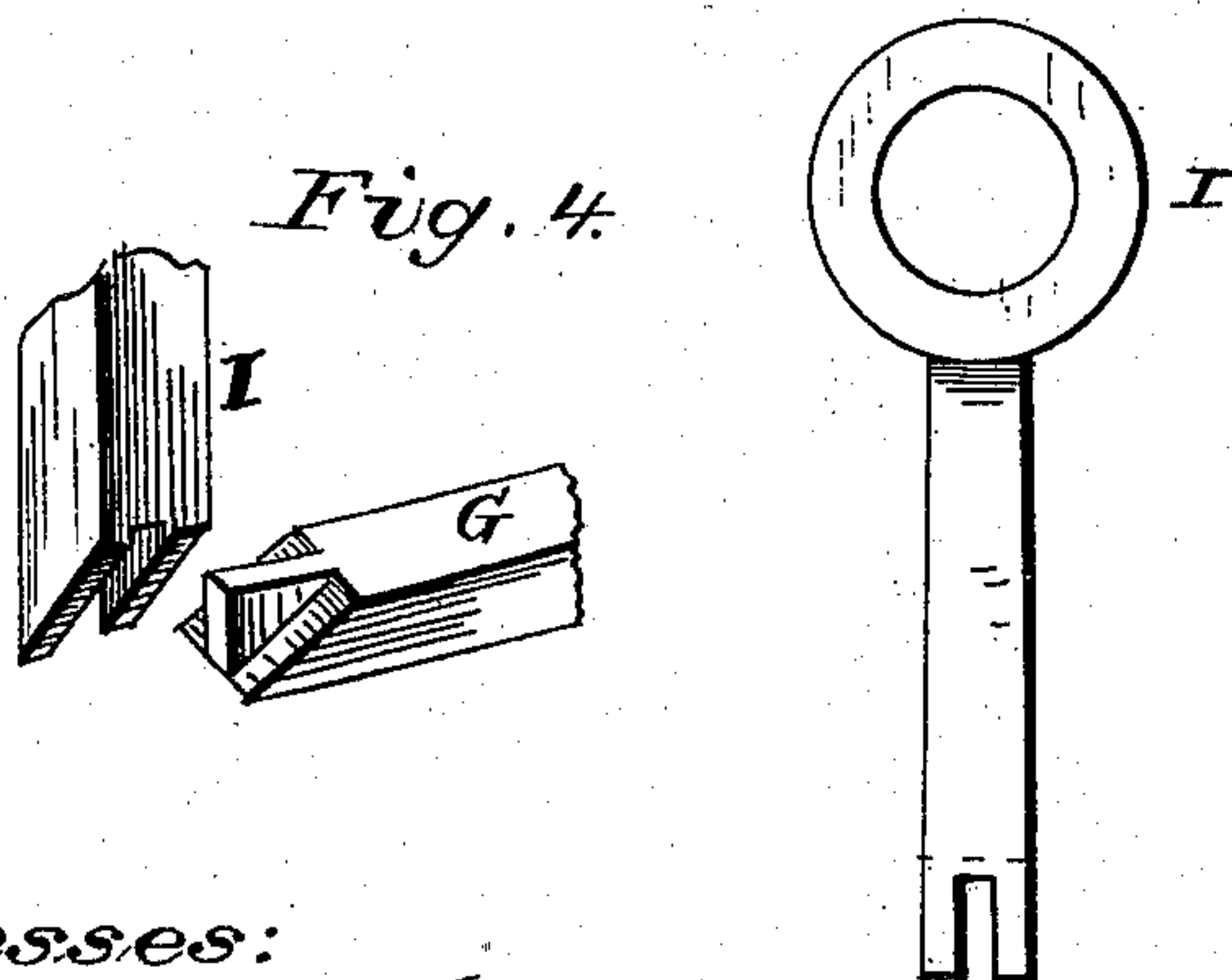


Fig. 4.



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Josephus Van Tappell
Abraham A. Fay

Inventor:

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UNITED STATES PATENT OFFICE.

HENRY S. LOCKMAN, OF CASTLETON, NEW YORK.

PUMP.

SPECIFICATION forming part of Letters Patent No. 228,089, dated May 25, 1880.

Application filed January 26, 1880.

To all whom it may concern:

Be it known that I, HENRY S. LOCKMAN, of the village of New Brighton, town of Castle-
ton, county of Richmond, and State of New
York, (post-office address Tompkinsville,) have
invented certain new and useful Improve-
ments in Pumps, to be operated by hand,
steam, or other power, of which the following
is a specification.

My invention consists of a double-acting
pump having a valveless piston oscillating or
swinging in a triangular piston-chamber, and
in other devices, all of which will be under-
stood by the following description and claims.

In the accompanying drawings, Figure 1 is
a perspective view of my pump. Fig. 2 is a
vertical longitudinal section thereof through
the shell and a portion of the piston. Fig. 3
is a transverse vertical section. Fig. 4 repre-
sents detached parts.

The construction of my double-acting pump
is as follows: The triangular piston-chamber
may have the two end walls, A, and the curved
floor A' cast in one piece. These walls A are
a little farther apart at the top than at the
bottom, in order to make a better fit of the os-
cillating piston F, as will be more fully ex-
plained when the piston is described.

The side walls, B, of the piston-chamber are
set obliquely, being fastened in place by screws
or otherwise. The walls of the chamber are
completed by the cap D, the joints of which
are closed by suitable packing.

The oscillating piston F, to the sides of
which is secured the metallic packing I, hav-
ing at its upper ends the metallic washers, as
shown, fits and swings between the two walls
A, Fig. 2, said walls being a little wider at the
top than at the bottom to accommodate them-
selves to the conformation of the piston. The
piston is supported upon the circular termina-
tions or washers of the metallic packing I,
(the washers fitting around the trunnions E,) which
bear upon semicircular grooves in the
top of the walls A, as shown at Q in Figs. 2
and 3. By this construction the joints at the
bottom and sides of the piston are tightened
as the parts wear by the slight descent of the
piston between the end walls.

The packing of the piston F is very com-
plete. Under the fixed metallic cap D is an

adjustable metallic plate, K, suitably accom-
modated thereto and grooved on its face to
adapt itself to the crown of the piston, and
provided with leather or other suitable pack-
ing, k, and thumb-screw k', by which means
the crown of the piston is kept sufficiently
packed, while the lower edge of the piston is
held in proper relative position to the curved
floor A'.

The vertical edges of the piston have grooves,
into which the plates I, Fig. 4, are fitted with
suitable packing of an elastic nature, the
washer at the top of this plate fitting around
the trunnion E, as seen in section, Fig. 2.

The lower edge of the piston has a metallic
packing, G, with other suitable elastic pack-
ing, H, Figs. 3 and 4. This packing prevents
the friction and wear between the piston and
chamber. The elastic packing H holds the
metallic packing I and G in proper working
position, and yet allows free motion without
undue friction between the piston and walls of
the chamber. Motion may be given to the
piston by means of the oscillating lever L,
Fig. 1, or by any other suitable means.

Attached to the oblique sides of the piston-
chamber are two branching tubes, M and N,
the former connected with the supply-tube O
and the latter with the discharge-tube P. The
branching tube M has at each end a valve, R,
opening or swinging into the piston-chamber,
as seen in Fig. 3, to admit the water alter-
nately on one side and then on the other side
of the chamber as the piston is moved to one
side or the other. Also, the branching tube N
in like manner has two valves, one at each
branch, as seen in dotted lines at T, Fig. 2, the
same being attached on the outside of the
walls B of the piston-chamber and opening
outward to discharge the water. By this con-
struction the valves are all accessible from the
outside of the piston-chamber by simply loos-
ening the screws X (or other fastenings) which
connect the branching tubes M and N to the
side walls, B, of the triangular chamber, Figs.
1 and 3.

As the piston is swung to the right the valve
R upon that side is closed by the pressure of
the water, while the discharge-valve T on the
same side is opened, and thus the stroke of
the piston discharges the water from the cham-

ber on the right-hand side. At the same time the supply-valve on the opposite side is opened and the discharge-valve closed. Then the reverse stroke of the piston opens the discharge-valve on the left-hand and closes the supply-valve.

The discharge-openings are situated in the sides of the piston-chamber opposite the broad face of the piston, which travels directly to such discharge and drives the water in the shortest direction to its exit from the chamber, thus easily and completely emptying the same.

The supply-valves, on account of their peculiar location in the sides of the triangular chamber, admit the water, so that the inflowing current strikes the broad surface of the piston, equally distributing its force, and thus assists in expelling the water from the chamber on the opposite side of said piston. This I have determined by practical experiment.

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

1. In a double-acting pump, a triangular piston-chamber having discharge and supply passages located on opposite sides of said chamber and directly facing the broad surfaces of the piston, in combination with a valveless piston swinging between said discharge and

supply passages, substantially in the manner and for the purposes set forth.

2. In a double-acting pump, an oscillating valveless piston having the described end and bottom packings, in combination with the triangular chamber having inclined end walls, whereby the wear is compensated for, substantially as shown and set forth.

3. In a double-acting pump, a valveless piston, in combination with the metallic and elastic packing in the ends and bottom of said piston, constructed substantially in the manner and for the purposes set forth.

4. In a double-acting pump, the combination of an oscillating piston with a fixed metallic cap, an adjustable plate and thumb-screw, and elastic packing, substantially in the manner and for the purposes set forth.

5. In a double-acting pump, the combination, with an oscillating valveless piston and a triangular chamber, of branching supply and discharge pipes and valves located on both sides of said triangular chamber, the same being accessible from the outside thereof, substantially as and for the purposes set forth.

HENRY S. LOCKMAN.

Witnesses:

J. VAN TAPPELL,
ABRAHAM A. BOYD.