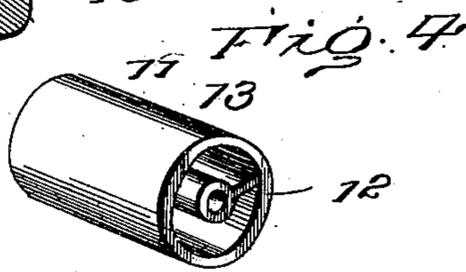
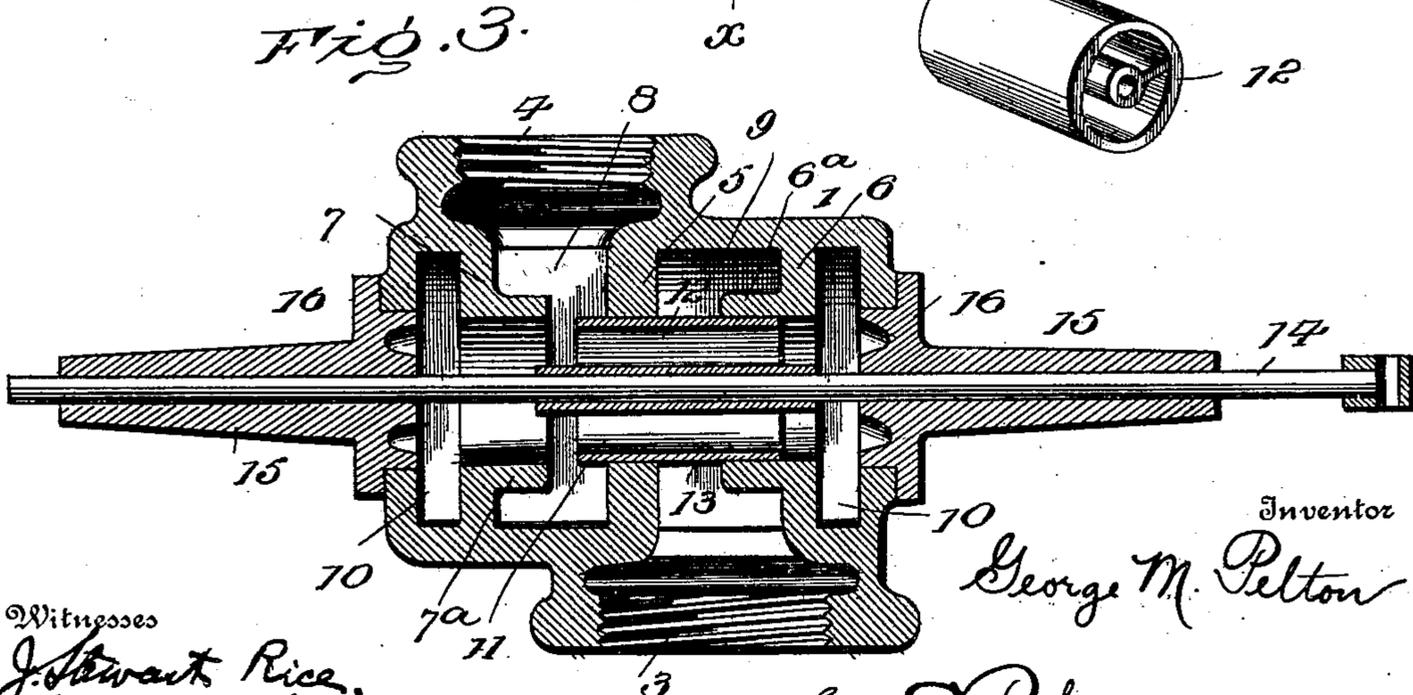
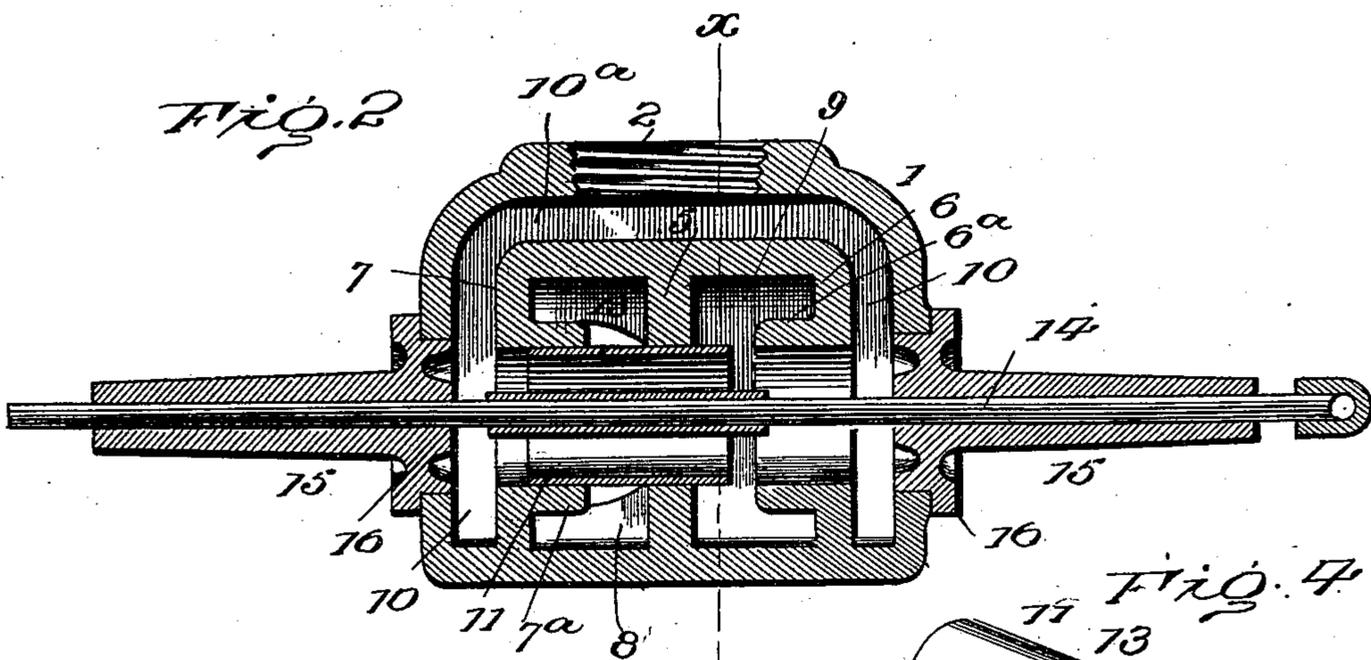
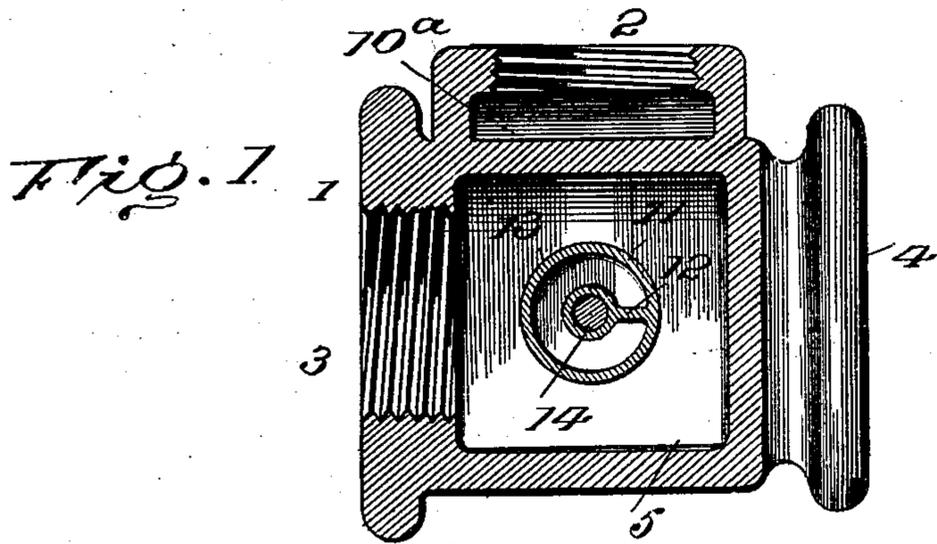


No. 669,284.

Patented Mar. 5, 1901.

G. M. PELTON.  
RECIPROCATING VALVE.  
(Application filed May 2, 1900.)

(No Model.)



Witnesses  
*J. Stewart Rice.*  
*Geo. M. Copenhagen.*

Inventor  
*George M. Pelton*

By *Thos. E. Robertson,* Attorney

# UNITED STATES PATENT OFFICE.

GEORGE M. PELTON, OF WELLSVILLE, NEW YORK.

## RECIPROCATING VALVE.

SPECIFICATION forming part of Letters Patent No. 669,284, dated March 5, 1901.

Application filed May 2, 1900. Serial No. 15,266. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE M. PELTON, a citizen of the United States, residing at Wells-ville, in the county of Allegany, State of New York, have invented a certain new and useful Improvement in Reciprocating Valves, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to reciprocating valves; and it has for its object, among others, to provide a simple cheap double-acting valve which shall combine maximum capacity with minimum space and which shall be perfectly balanced in all directions. The valve is so constructed and disposed with relation to its seats and the passages within the casting in which it is mounted that the inlet and exhaust will be caused to pass through the valve, whereby a double flow is provided in whichever position the valve may be adjusted.

Other objects and advantages of the invention will hereinafter appear, and the novel features will be particularly pointed out in the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the numerals of reference marked thereon, form a part of this specification, in which—

Figure 1 is a cross-section through the line  $x x$  of the figure below it. Fig. 2 is a longitudinal section through the valve and valve-casing. Fig. 3 is a similar view taken at right angles to Fig. 2 with the valve in a different position, and Fig. 4 is a perspective view of the valve removed.

Like numerals of reference indicate like parts throughout the several views.

Referring now to the details of the drawings, 1 designates the valve-casing, having a nipple or other provision 2 for connection to the cylinder, (not shown,) a similar provision 3 for connection with the exhaust, and like provision 4 for connection with the inlet or source of supply. Substantially centrally within this casing there is provided a diaphragm 5, having an opening therethrough in which the valve has a bearing, and extending inward toward this central diaphragm from the diaphragms 6 and 7 are the tubular extensions 6<sup>a</sup> and 7<sup>a</sup>, respectively, as seen clearly

in Figs. 2 and 3, within which the valve is adapted to reciprocate and which constitute its seats.

8 is the steam-port, and 9 the exhaust-port.

10 designates ports at opposite ends of the casing 1, which communicate with the cylinder through the connection 2, as seen clearly in Fig. 2, through the passage 10<sup>a</sup>. These ports 10 communicate with the exhaust or inlet ports, according to the position assumed by the valve.

11 designates the valve. It is, as shown, substantially cylindrical in form, having a radial rib 12 disposed, as shown, and supporting the central concentric tubular portion 13, which receives the valve-stem 14, which latter is adapted to be operated in any suitable manner, which it is not deemed necessary to herein illustrate, and the valve stem or rod is movable through and guided by the tubular extensions 15 on the caps 16, fitted within openings in opposite ends of the casing, which is clearly seen in Figs. 2 and 3. This valve is of a length substantially corresponding to the distance between the outer wall of the diaphragm 6 and the inner wall of the diaphragm 5, or, what is the same thing, the outer wall of the diaphragm 7 and the opposite wall of said diaphragm 5, as seen in Figs. 2 and 3. It will be observed that by this construction of valve I provide a passage there-through about the central tubular portion, and, being disposed with relation to the ports of the casing in the manner shown, the fluid passes through the same in whichever position the valve may be placed.

As seen in Fig. 2 the valve is in position so that the exhaust-port 9 is open and the port 8 closed, the fluid passing through the cylinder, through the passage-way 2, through the port 10 at the right into the exhaust-port 9, and through the passage 10 on the left through the valve into the said exhaust-port. In Fig. 3 the valve is moved to its other position, closing the exhaust-port 9 and opening the port 8, so that the fluid entering at 4 passes into the steam-chamber through the ports 8 and 10 at one end and through the valve 11 into the port 10 at the opposite end and thence out through the passage-way 2 into the cylinder. The direction taken by the fluid in both instances is indicated by arrows in said Figs. 2 and 3,

from which it will be seen that I obtain a double flow of the fluid both in its passage to the cylinder and while it is exhausting.

While the above features constitute what I at the present time consider the preferable form of my invention, I do not wish to be limited thereto, but reserve the right to make such alterations and modifications as come properly within the scope of my invention and the protection prayed.

What I claim as new is—

1. In a valve, inlet and exhaust chambers, passages leading from said chambers and uniting in a common passage, and a tubular reciprocatory valve arranged to place said inlet and exhaust chambers alternately in communication with said common passage.

2. In a valve, inlet and exhaust chambers, passages leading from said chambers and uniting in a common passage leading to the cylinder, a tubular reciprocatory valve, arranged to place said inlet and exhaust chambers alternately in communication with said common passage, a valve-stem, a stem-receiving portion, and a radial web joining the latter to the wall of the valve.

3. An inlet and exhaust valve consisting of a casing, inlet and exhaust chambers, passages connecting said chambers to a common passage leading to the cylinder, and a tubular reciprocatory valve coacting with said chambers and arranged to feed steam through it from the inlet-chamber to said common passage and from said common passage through it to the exhaust-chamber.

4. A valve-casing having two diaphragms

with valve-seats therein, a diaphragm having an opening therein and situated between said diaphragms and dividing the space between them into exhaust and inlet ports, and a tubular reciprocatory valve mounted within the said diaphragms and alternately placing said inlet and exhaust ports in communication with the cylinder.

5. A valve-casing having means for connection with a cylinder, a source of supply and an exhaust, and having chambers upon opposite sides of a central diaphragm and ports leading thereto, and a reciprocatory valve having passage therethrough whereby a free flow of fluid is provided as set forth.

6. The combination with a valve-casing having diaphragm with ports upon opposite sides thereof, of a reciprocatory valve mounted for movement in said diaphragm and having passage therethrough for the fluid in its passage to and from the cylinder.

7. The combination with a valve-casing having diaphragm in which the valve is mounted to reciprocate and diaphragms forming ports on opposite sides thereof with tubular extensions forming valve-seats, of a reciprocatory tubular valve mounted to reciprocate and to seat upon the said valve-seats to provide a free flow of the fluid, as described.

In testimony whereof I affix my signature, in the presence of two witnesses, this 28th day of April, 1900.

GEORGE M. PELTON.

Witnesses:

G. EUGENE FARNUM,  
J. G. WILSON.