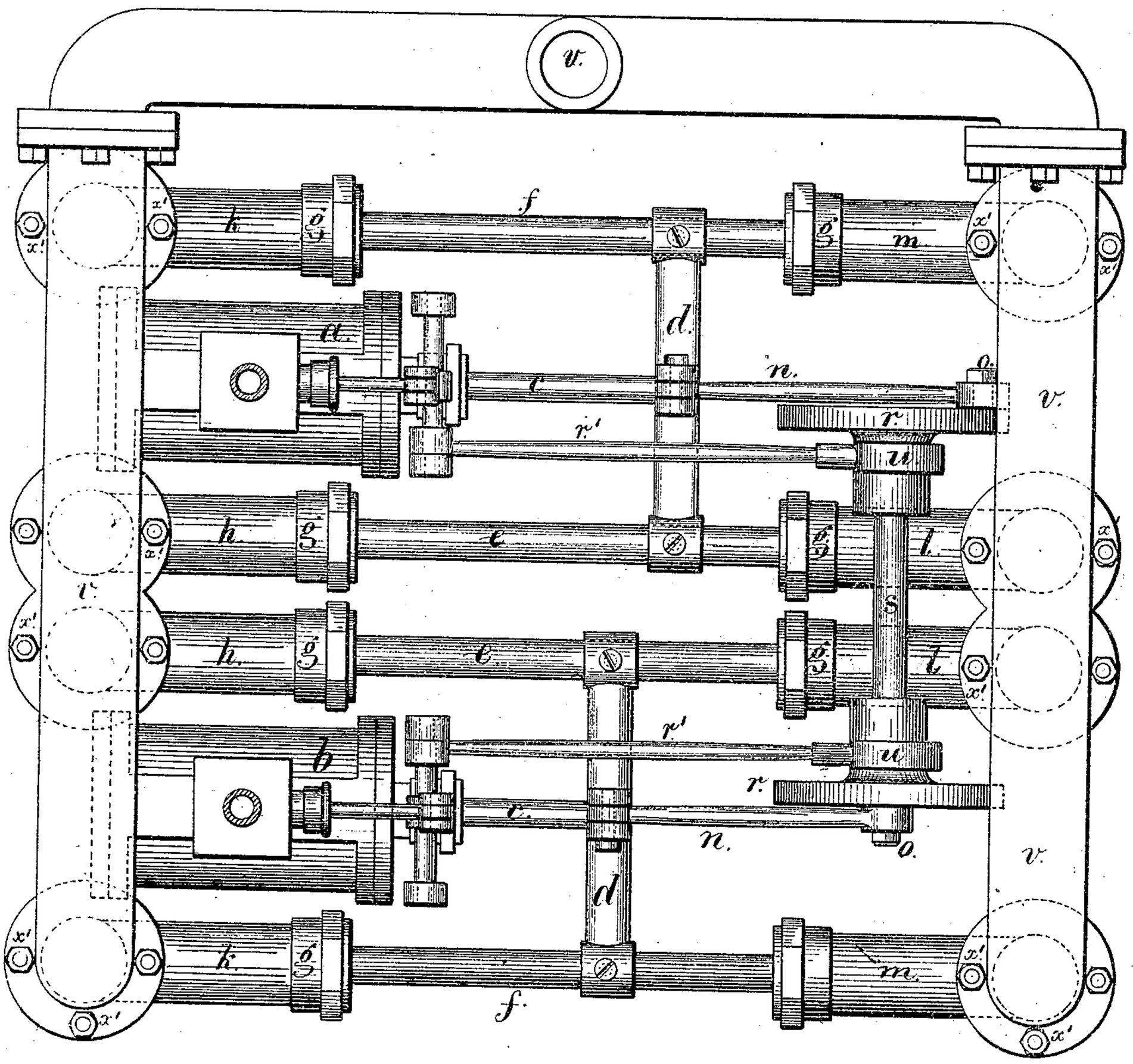
2 Sheets--Sheet 1.

G. B. MARKLE.

Valve-Chambers for Steam-Pumps.

No. 151,409. Patented May 26, 1874.

Fig. 1.



Witnesses,

Chas. H. Smith
Geo. D. Brickney

Inventor
George B. Markle,
per Lemuel W. Serrell
Atty.

2 Sheets--Sheet 2.

G. B. MARKLE.

Valve-Chambers for Steam-Pumps.

No. 151,409. Patented May 26, 1874.

Fig. 2.

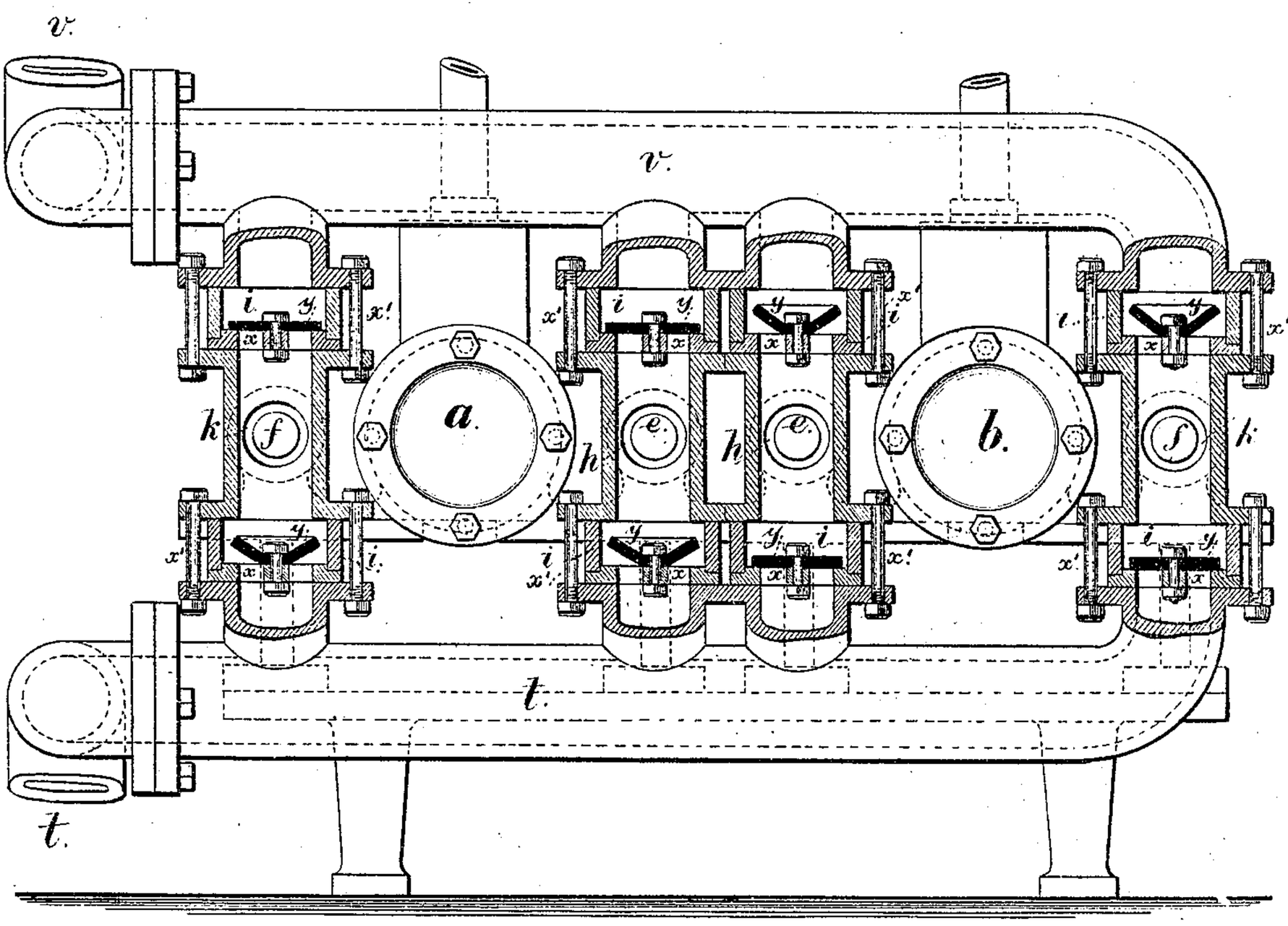


Fig. 3.

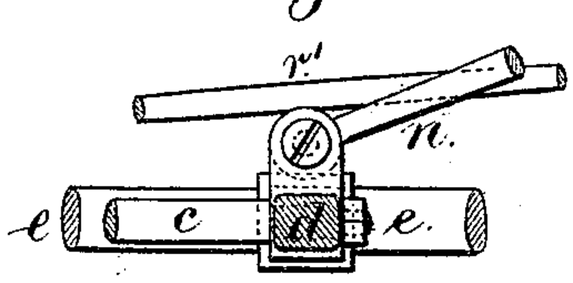
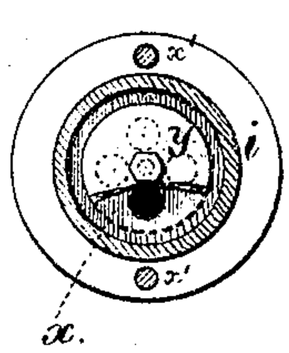


Fig. 4.



Witnesses

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Geo. T. Pinckney

Inventor

George B Markle.

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UNITED STATES PATENT OFFICE.

GEORGE B. MARKLE, OF HAZLETON, ASSIGNOR TO ALBRIGHT & STROH, OF MAUCH CHUNK, PENNSYLVANIA.

IMPROVEMENT IN VALVE-CHAMBERS FOR STEAM-PUMPS.

Specification forming part of Letters Patent No. **151,409**, dated May 26, 1874; application filed March 13, 1874.

To all whom it may concern:

Be it known that I, GEORGE B. MARKLE, of Hazleton, in the county of Luzerne and State of Pennsylvania, have invented an Improvement in Valve-Chamber for Steam-Pumps, of which the following is a specification:

In pumps for mines, and other places where a large volume of water has to be moved, the stand-pipes are usually of considerable size, and several cylinders are sometimes connected with one discharge-pipe. In pumps of this character difficulty has been experienced in removing the valves and seats for repairs without disturbing the other portions of the pump or pipes.

My invention relates to a movable segment of the pipe containing both the valve and valve-seat, and received between the stationary parts of the pump and pipe, and clamped in place by screws. Thereby these valve-chambers can be removed laterally by simply slackening the clamping-screws, and hence can be replaced, cleaned, or repaired with great rapidity.

In the drawing, Figure 1 is a plan of a double steam-pump. Fig. 2 is a vertical section through the valve-chambers and pipes. Fig. 3 is a section of the cross-head; and Fig. 4 is a detached plan and section of one of the valve-chambers.

There are two steam-cylinders, *a b*, forming double steam-pumps for adapting the pump to throwing a large volume of water; but, as only one steam-cylinder might be used, and the parts are only duplicated for the other engine and pumps, I shall confine this description principally to one engine and pump. The steam-piston rod *c* is connected, at the end, to the cross-head *d;* and this cross-head is attached at or near the centers of the plunger-rods *e f*, that pass through the glands or stuffing-boxes *g*, and act, in the respective cylinders *h k l m*, by displacement, there being no pistons in the pump-cylinders; and therefore the packing-glands only will require to be kept in repair.

The plungers, packing-glands, and cylinders, acting as pumps, are well known; but by my arrangement the steam-cylinder is between the pumps, and the power thereof is applied directly to the plungers through the cross-head; and, the parts being parallel, the plungers form guides for the cross-head and piston-rods, the whole moving together, and hence there will be but little wear in the stuffing-boxes or glands.

In order to regulate the length of stroke, the pitman *n* is jointed to the cross-head *d*, and extends to the crank-pin *o* upon the fly-wheel *r*, and the shaft *s* serves to connect the two engines, that they may work in unison when there are double pumps; and upon this shaft are the eccentrics *u* that operate the valve-rods *r'* of the engines. These eccentrics, valves, and connections are of any known or desired character. The suction-pipe *t* is made with branches, that extend below the pump cylinder or cylinders, and the delivery-pipe *v* is shown as similarly arranged, so as to supply to, and receive the water from, all the pumps. The removable valve-chambers *i* are made with parallel ends, and are introduced laterally between the respective stationary portions of the pumps and pipes. Each valve-chamber is made cylindrical, and contains the seat *x* and valve *y*. These are either of metal, ground to each other, or flexible, as shown. No part of the valve is allowed to project beyond the end of the chamber, so that the chamber may be easily inserted or removed laterally, and its parallel ends, and the parallel faces of the stationary portions of the water-ways are clamped or pressed together by the bolts *x'*; and, by loosening these, any valve-chamber may be removed, cleaned, repaired, replaced, or another substituted, without disturbing any of the other parts of the pump.

I claim as my invention—

The valve-chamber *i*, containing the valve and valve-seat, and having parallel ends, in combination with the stationary pipes and water-ways, with parallel faces, between which the valve-chamber is introduced laterally and clamped, substantially as set forth.

Signed by me this 27th day of February, A. D. 1874.

G. B. MARKLE.

Witnesses:

JOHN A. BARTON,

C. BUCHANAN.