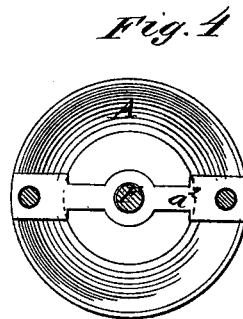
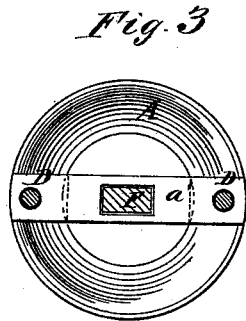
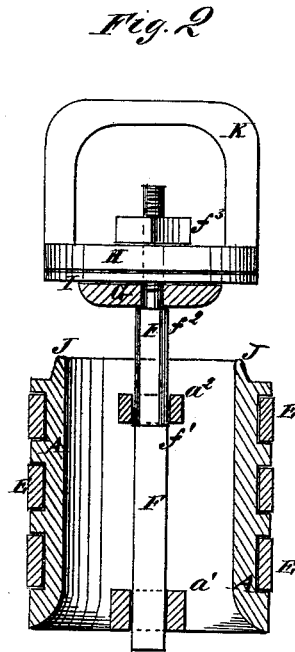
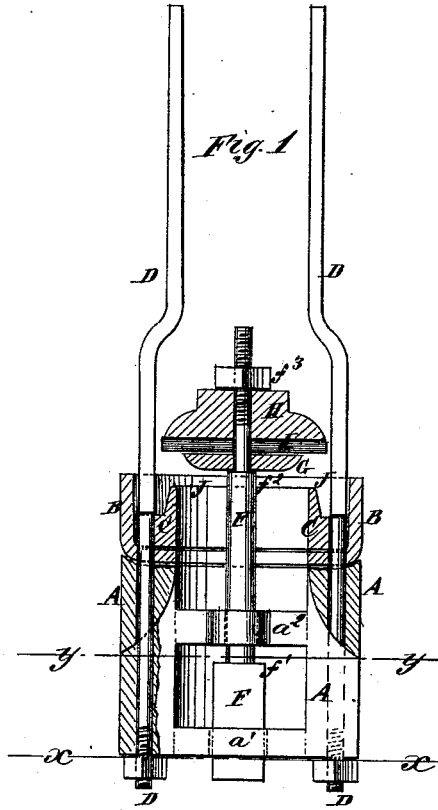


G. D. HOPPER & W. H. LAUFKOTTER.
PUMP-VALVE.

No. 186,131.

Patented Jan. 9, 1877.



WITNESSES:

A. W. Almqvist
John Coethals

INVENTOR:

G. D. Hopper,
W. H. Laufkotter,
BY *Munn & Co.*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

GARRET D. HOPPER AND WILLIAM H. LAUFKOTTER, OF SACRAMENTO, CAL.

IMPROVEMENT IN PUMP-VALVES.

Specification forming part of Letters Patent No. 186,131, dated January 9, 1877; application filed July 1, 1876.

To all whom it may concern:

Be it known that we, GARRET D. HOPPER and WILLIAM H. LAUFKOTTER, of Sacramento city, in the county of Sacramento and State of California, have invented a new and useful Improvement in Pump-Valves, of which the following is a specification:

Figure 1 is a side view, partly in section, of the upper valve of a pump. Fig. 2 is a sectional view of the lower valve of a pump. Fig. 3 is a cross-section, taken through the line *x x*, Fig. 1. Fig. 4 is a cross-section, taken through the line *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish improved valves for pumps, simple in construction, inexpensive in manufacture, and at the same time more durable and less liable to get out of order than valves constructed in the usual manner.

The invention consists in the valve-stem, made rectangular in its lower part, round in its upper part, and with the two shoulders and the two cross-bars, in combination with the valve-box and the valve.

A is the box of the valve, which, in the case of the upper or movable valve, is packed with a leather-cup packing, B, secured in place by the ring C and straps D, to which the valve-rod is attached. The valve-box, in the case of the lower or stationary valve, is packed with ring-packing E, of leather. Across the lower part of the box A passes a cross-bar, a^1 , through which is formed a rectangu-

lar hole, to receive the rectangular lower part of the valve-stem F. Across the upper part of the box A is formed a cross-bar, a^2 , through which is formed a round hole to receive the round upper part of the stem F, so that the shoulder f^1 of the stem F may strike against the cross-bar a^2 , to limit the upward movement of the valve. Upon the upper part of the stem F is formed a second shoulder, f^2 , against which the valve formed of the washers G H and leather packing I is clamped by the nut f^3 , screwed upon the upper end of the stem F. The upper edge of the valve-box, which forms the valve-seat J, is rounded off, so that sand cannot lodge upon it and prevent the valve from closing closely. Upon the upper washer H of the valve G I H of the lower valve is formed a loop or bail, K, so that the said lower valve can be lowered into, and raised from, its place by means of a hooked rod.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

The valve-stem F, made rectangular in its lower part, round in its upper part, and with the two shoulders $f^1 f^2$, and the two cross-bars $a^1 a^2$, in combination with the valve-box A and the valve G I H, substantially as herein shown and described.

GARRET D. HOPPER.

WILLIAM H. LAUFKOTTER.

Witnesses:

ED. M. MARTIN,

C. H. GIRDEN.