

(No Model.)

T. W. HEERMANS.
VALVE.

No. 510,860.

Patented Dec. 12, 1893.

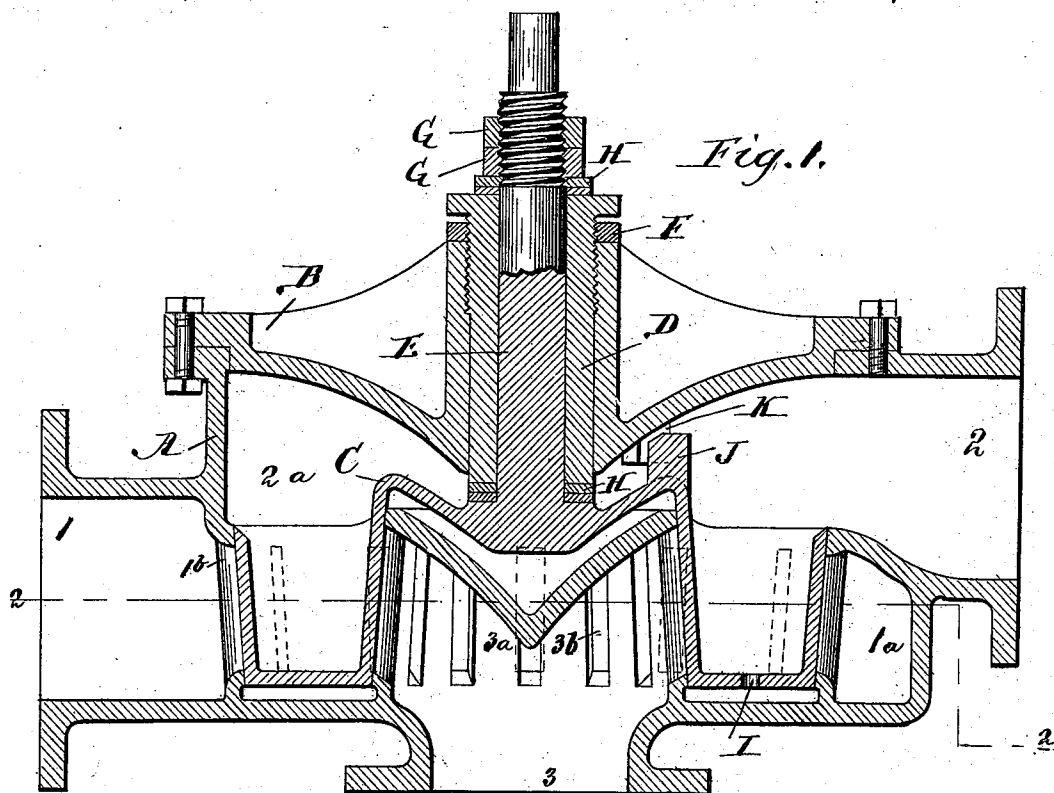
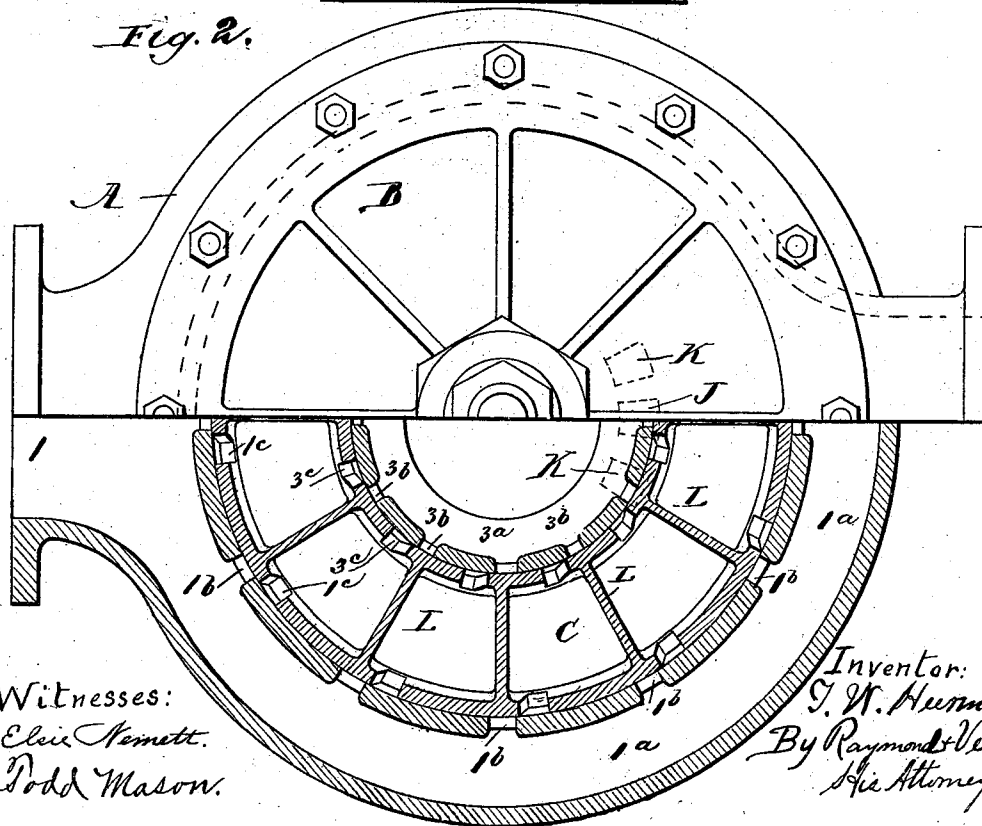


Fig. 2.



Witnesses:
Eliu Kemett.
Dodd Mason.

Inventor:
T. W. Heermans
By Raymond & Veder
His Attorneys

UNITED STATES PATENT OFFICE.

THADDEUS W. HEERMANS, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE NATIONAL COMPANY, OF ILLINOIS.

VALVE.

SPECIFICATION forming part of Letters Patent No. 510,860, dated December 12, 1893.

Application filed June 19, 1891. Serial No. 396,860. (No model.)

To all whom it may concern:

Be it known that I, THADDEUS W. HEERMANS, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Valves, of which the following is a specification, reference being had to the accompanying drawings.

The valve herein described is designed specially for use with hydraulic elevators though it is applicable to other uses in which the admission and exhaust of a comparatively large amount of fluid are to be controlled.

The principal object of my invention is to provide a valve which will pass a large amount of fluid and yet which is easily operated by hand so that auxiliary valves and motors may be dispensed with. To this end the valve is so constructed as to be nearly balanced and the contact between the fixed and the moving parts of the valve is made capable of exact mechanical adjustment. The valve is also constructed in such a manner that its full opening in either direction to admit or discharge water from the apparatus with which it is connected is attained with a comparatively slight motion of the valve. By reason of these peculiarities it is especially adapted for use upon elevators where the opening and closure of the valve must be effected very frequently and quickly and the situation is such as to preclude a great range of motion in the operating devices without the sacrifice of accuracy in such motion.

In the drawings:—Figure 1 is a central section of the valve; and Fig. 2 is a top view of the same, one half being in elevation and the other in section, the line of section being marked 2, 2, in Fig. 1.

A is the main body of the valve which is closed at the top by the cap B, and is provided with the openings 1, 2, 3, respectively. The opening 1 is connected to the supply; the opening 2 is connected to the elevator cylinder or other working chamber of the apparatus whose operation is controlled by the valve; and the opening 3 is the exhaust. The opening 1 leads to a chamber 1^a which extends around the exterior of the valve-casing.

The opening 3 leads to a chamber 3^a in the center of the valve-casing. Between the outer and central chambers 1^a and 3^a is an intermediate chamber 2^a in which is fitted the valve proper, C.

The lower part of the chamber 2^a is in the form of an annular channel between the central chamber 3^a and the exterior chamber 1^a. In the sides of this channel is a series of ports—the ports 1^b leading to the chamber 1^a and the ports 3^b leading to the chamber 3^a. The valve C, which fits the channel of the chamber 2^a, has a series of ports 1^c and 3^c corresponding to the ports 1^b and 3^b, respectively. The size and position of the ports 1^c and 3^c relatively to the ports 1^b and 3^b are so proportioned and arranged that when the valve is in its central position, as shown in Fig. 2, neither ports 1^c nor 3^c register with the ports 1^b and 3^b; but, if the valve be turned to the right from its central position, the ports 1^b and 1^c will register, there being sufficient overlap between the opposite ports 3^c and 3^b to prevent their opening when moved in this direction. If the valve be moved in the opposite direction, or toward the left from its central position, the ports 3^c and 3^b are caused to register while the ports 1^b and 1^c remain closed.

The channel of the chamber 2^a is flared, being larger at the top than at the bottom, and the valve C is tapered to correspond so that its contact in the channel may be regulated by adjusting it up or down. To effect this adjustment a threaded sleeve D surrounds the valve-spindle E. The cap B is threaded to correspond and a jam-nut F is fitted to the sleeve D so as to secure it in position. The valve-spindle E is also threaded exteriorly and nuts G, G, are fitted thereon. Washers H are placed at each end of the sleeve D, the nuts G, G, bearing upon the washers at one end, and a shoulder, formed by the junction of the valve and the spindle, bearing upon the washers at the other. The washers are made of raw-hide, or some material which will bear considerable pressure and form a tight-joint.

By the devices just described all slack is

taken up and the bearing of the valve in the valve casing is regulated irrespective of the pressure on the valve.

To relieve the valve of undue pressure on one side, one or more openings, I, are made in the bottom of the valve so that the same fluid pressure exists beneath the lower edge as above. The downward pressure exerted on the valve is thus simply that due to the difference in area of the upper and lower sides of the valve.

In order to strengthen the valve C laterally, a series of ribs L, L, extends from the inner to the outer walls. These ribs may be the full depth of the valve as shown, or may extend only part way.

To limit the movement of the valve C a stop J upon the valve engages with similar stops K upon the casing.

I do not wish to limit myself to a valve of the precise form shown, as the advantages of my invention may be attained to a certain degree even if the ports are not so small and as numerous as shown, and are not distributed around the entire circumference of the

valve; and various other modifications may be made without departing from my invention.

What I claim as new, and desire to secure by Letters Patent, is as follows:

The combination of a channeled - valve opening into a chamber of the valve-case communicating with the working-chamber of the apparatus to be controlled, and having ports on the opposite sides of the channel; and a valve-case having a corresponding channel into which the valve is fitted, the opposite walls of said valve-case channel having ports communicating with the inlet and exhaust openings, respectively, said valve having an opening in the bottom of its channel communicating with the bottom of the channel in the valve-case whereby the pressure on said valve is partially balanced, substantially as described.

THADDEUS W. HEERMANS.

Witnesses:

ELSIE NEMETT,
TODD MASON.