

No. 681,822.

Patented Sept. 3, 1901.

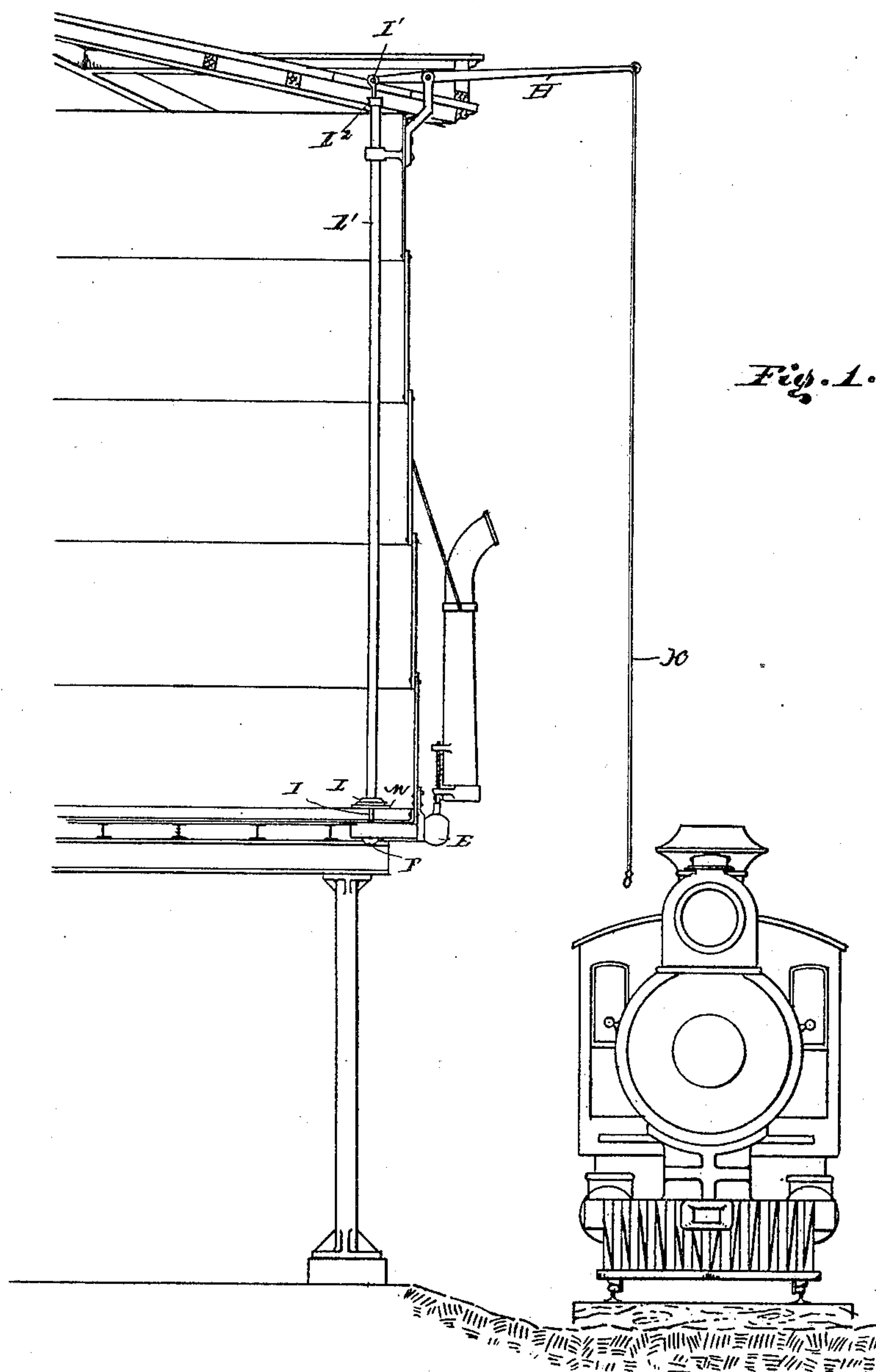
J. H. WALLACE & J. D. ISAACS.

TANK.

(Application filed Nov. 6, 1900.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

Jno. S. Robbins.
S. K. Smith

INVENTORS:

John H. Wallace & John D. Isaacs.

BY *E. J. Mudgett*
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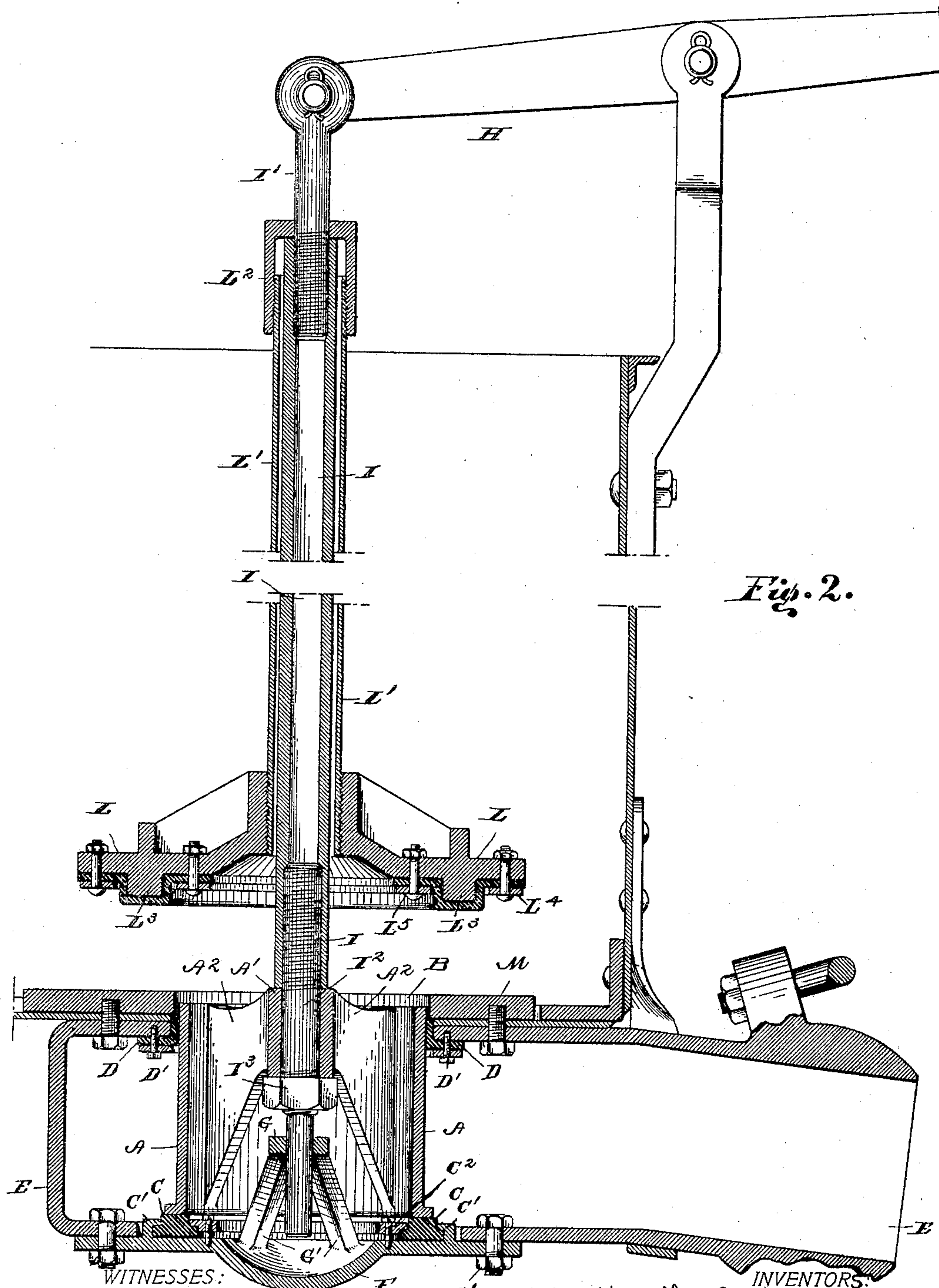
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(No Model.)

2 Sheets—Sheet 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN H. WALLACE AND JOHN D. ISAACS, OF SAN FRANCISCO, CALIFORNIA.

TANK.

SPECIFICATION forming part of Letters Patent No. 681,822, dated September 3, 1901.

Application filed November 6, 1900. Serial No. 35,674. (No model.)

To all whom it may concern:

Be it known that we, JOHN H. WALLACE and JOHN D. ISAACS, citizens of the United States, residing at No. 8 Montgomery street, San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Tanks; and we do hereby declare the following to be a full, clear, and exact description of said invention, such as will enable others skilled in the art to which it most nearly appertains to make, use, and practice the same.

This invention relates to improvements in water and oil tanks, and more particularly to the discharge-valves thereof.

In the drawings, Figure 1 is a vertical section of a water-tank constructed in accordance with this invention and showing it in its application to railroad service. Fig. 2 is an enlarged detail view, in vertical section, of the valve and its connections.

The present invention has particular reference to water-tanks, though being applicable to oil-tanks; and it has for its objects to permit repair to or removal and replacement of the valve or parts thereof with the minimum loss of the liquid contained in the tank, to provide a valve and controlling mechanism which may be easily and readily operated under all "heads" or pressures of liquid contained within the tank, to avoid the "ram" or jar of closing the valve, and to avoid the necessity of entering the tank or any portion thereof and the incident evacuation of the contained liquid and liability to cause leakage of the tank when making any repair to the discharge-valve or connections. Heretofore water-tanks of large capacity have been constructed of wood and of metal. The discharge has been from the bottom of the tank and has been controlled by a seated valve constructed within the tank. These tanks have been used in many instances in arid locations, where the cost of placing the water in these tanks is excessive and where the loss by leakage or by emptying is a serious matter. Further, these tanks are largely employed at railroad-sidings, where the water emptied from the tanks is a nuisance and apt to cause a wash unless care be taken to lead it off. It was in recognition of these objections and with the object to prevent the loss of any con-

siderable amount of water that these tanks have been heretofore provided with an internal shaft, which has communicated with the body of the tank by a closable passage at the bottom of the shaft. The said passage has been closed by a separate gate to prevent the water flowing from the body of the tank into the shaft. The discharge devices communicated with the shaft only, so that when the passage was closed the water could be drawn from the shaft only and the discharge-valves withdrawn or gotten at by a mechanic getting down into the shaft. This, however, has proved only a degree less objectionable than the discharging of the entire tank. The size of the shaft has of necessity been sufficiently large to admit a mechanic, and therefore large enough to hold a large volume of water, which floods the track of the road, causing a considerable loss.

The present invention consists in providing a hollow cylindrical valve A, which fits in a circular opening B and rests in its closed position on the annular packing-ring C. The head pressure is exerted on the inside of the cylinder A, and any tendency on the part of the valve to ram or pound in closing is thereby avoided. The packing D is set between the sides of the opening B and valve A and overcomes any tendency to leakage. The discharge for the tank may be of suitable construction, and is here shown as a pipe E. The packing D and the annular seat C are both carried on the discharge-pipe E, the former being secured directly to the upper side of the same by the screws D' D', and the latter is mounted on the upper face of the plate F, which is bolted to the pipe E by the bolts F'. The plate F further carries the lower valve-stem guide G. The valve-stem guide G is in the present construction raised on the spindle-legs G'. The annular ring C is formed to an inverted-T shape, as shown at Fig. 2, and the flanges are secured by the overhanging flanges C' and C², the former of which is cast integrally with the plate F and the latter is bolted thereto. When thus constructed and the valve rests on the seat-ring C, the discharge of the water is completely cut off. When, however, the valve is raised, the water freely flows from beneath the lower edge of the valve, and when the valve is

closed it is accomplished without the aid of the water-pressure above the valve, thereby avoiding the ram under any height of water in the tank. The raising of the valve is accomplished by the simple lever H and the valve-stem I, to which the lever is connected by the eyebolt I', which is screwed into the hollow end of the valve-stem. The valve-stem is attached to the valve A by the bolt I², which is extended through a central ring or sleeve A' and connected to the cylindrical wall of the valve by the webs A². The bolt I² is provided with a screw-nut I³ and is threaded to extend into the lower end of the stem I, as shown at Fig. 2. The lower end of the bolt I² is diminished in diameter and extended to fit within the stem-guide G. The lever H when adapted to use in railroad service is operated to raise the valve by the draw-cord K, the weight of the valve and stem serving to seat or close the valve. There being no seating pressure on the valve due to water above it the strain needed to open the valve is constant under all heights of water in the tank. It is to cut out the valve A and the valve-chamber when it is desired to repair or remove the same, also to weight the valve to cause it to close promptly when the draw-cord K is released and to quiet or govern the rise and fall of the valve, that we have provided the disk L. The disk L is secured by a screw-threaded connection to the tube L', which surrounds the stem I and from the top of which it is suspended by the screw-cap L², to which it is connected by a screw-thread, as shown. The tube L' is sufficiently shorter than the stem I to raise the disk from the plate M when the parts are connected as described and when the valve is seated or closed. The water being under as well as over the disk the pressure is equalized. The diametrical spread of the disk prevents, however, any sudden movement of the valve or stem to which it is connected by reason of the displacement of the water necessary to its rapid movement. This avoids the throwing the parts out of adjustment by any sudden and strong pull of the cord K and also any rapid fall of the valve and stem. Its added weight, however, secures the prompt fall and closing of the valve where the cord is released. When for any reason it becomes necessary to gain access to the valve A, the disk L is permitted to fall and rest on the plate M. This is accomplished by unscrewing the cap L², when the disk L and tube L' fall. The tube stands above the high-water mark in the tank, so that no water overflows the tube. To form a seat for the disk L, there is formed on the under side a flange L³, which is covered with any suitable soft material, such as leather. This is secured by the rings L⁴ and L⁵, which are bolted to the disk, as shown. When this disk rests on the plate M, the water is shut off from the valve, and the only water to be lost

when the plate F is removed is that contained in the cylinder of the valve A. By removing the plate F the entire valve and valve-seat is exposed. The valve may be taken from the valve-stem by unscrewing the nut I³ and the valve A lowered off the bolt I². If desired, the eyebolt I' may be released from the lever H and the eyebolt unscrewed from the valve-stem, whereby this may also be lowered through the tube L'. These may be replaced by reversing the operations described, when the tube L' is raised and secured by the cap L², the disk L being raised off its seat and the valve A being in operative position, the pressure on disk L having first been equalized by filling the valve and tube L' by pouring water into the tube L'.

Having thus described this invention, what is claimed is—

1. In a tank of the character specified the combination with a discharge having an opening for the passage of a valve on the one side and a seat for the same on the opposite side; of an open-ended hollow valve adapted to fill the said opening while resting on the said seat to close the said discharge and provided with suitable lifting devices; a disk mounted on the said lifting devices and adapted to be released therefrom to cover the opening in the tank over the said valve; and suitable means for admitting access to the said valve from outside the tank, substantially as described.

2. In a tank of the character specified, the combination with a discharge having openings in the upper and lower sides thereof; of a plate adapted to be fastened in position to close the lower opening in the said discharge and carrying on its upper surface a valve-seat; an open-ended hollow valve adapted to fill the said upper opening in the discharge while resting on the said seat to close the said discharge; suitable devices for lifting the valve; and a disk removably attached to the said valve and suspended within the water in the tank and adapted to close the opening in the tank provided for the valve in the said discharge when not attached to the valve, substantially as described.

3. In a tank of the character specified, the combination of a discharge; a suitable valve to close the entrance to the said discharge and provided with suitable devices for opening the said valve; and a disk removably connected to the said valve and suspended within the water in the tank and adapted to close the opening provided for the said valve; substantially as described.

In testimony whereof we have hereunto set our hands this 6th day of October, 1900.

JOHN H. WALLACE.
JOHN D. ISAACS.

Witnesses:

BALDWIN VALE,
D. EWING.