(No Model.)

F. CAVALLARO & J. N. STURM.

GRAVITY VALVE AND VACUUM RELIEF.

No. 538,896. Patented May 7, 1895.

Fig. 1

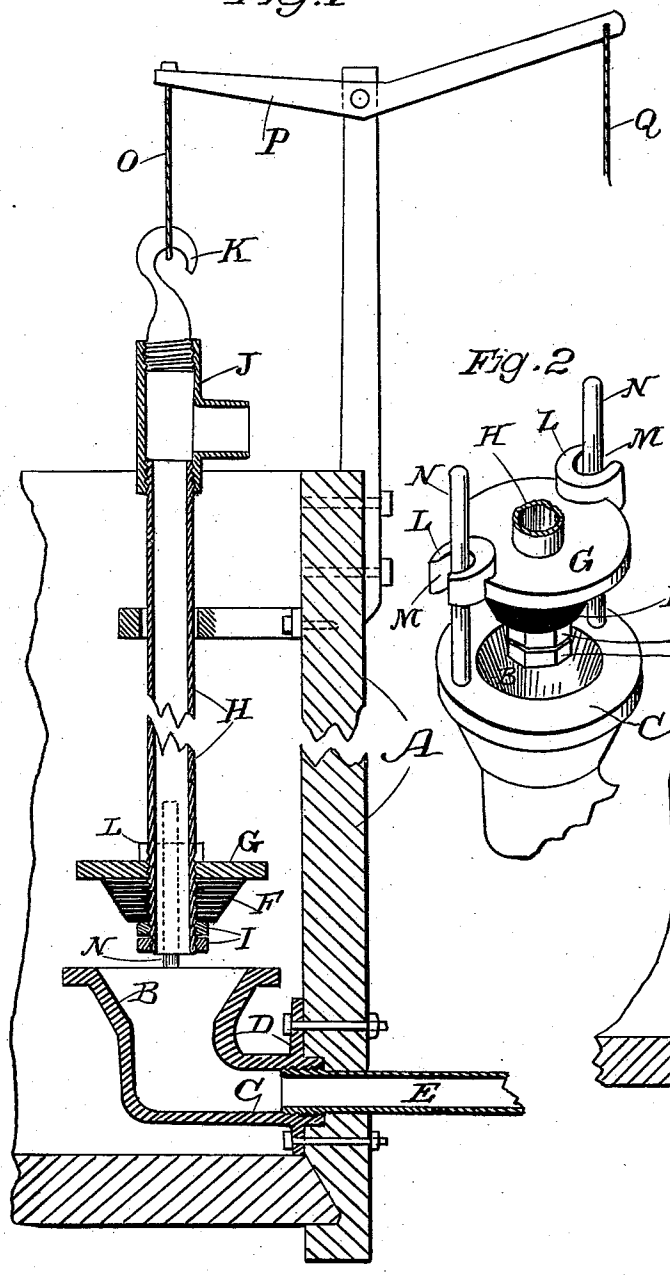
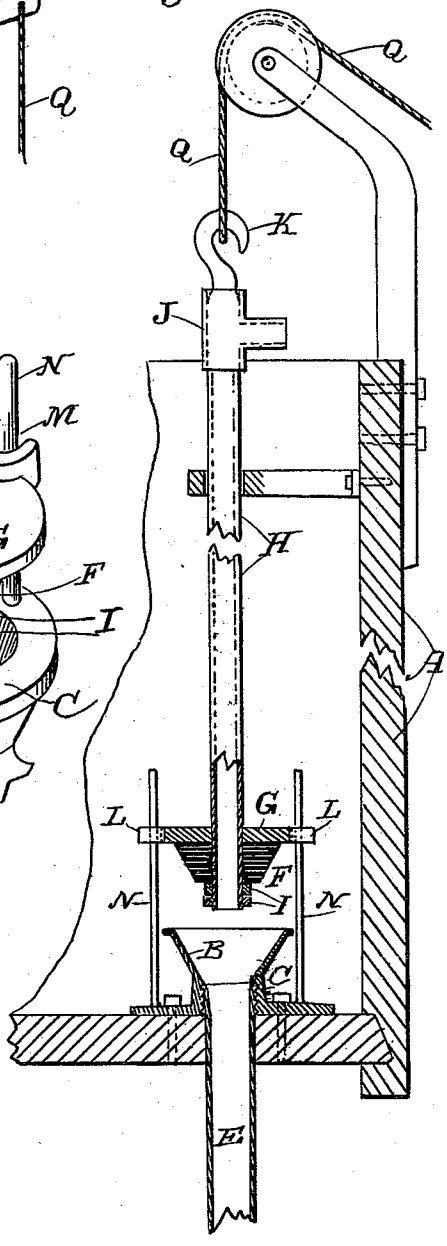


Fig. 2

Fig. 3



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UNITED STATES PATENT OFFICE.

FRANCESCO CAVALLARO AND JOSEPH N. STURM, OF SAN JOSÉ, CALIFORNIA.

GRAVITY-VALVE AND VACUUM-RELIEF.

SPECIFICATION forming part of Letters Patent No. 538,896, dated May 7, 1895.

Application filed November 2, 1894. Serial No. 527,730. (No model.)

To all whom it may concern:

Be it known that we, FRANCESCO CAVALLARO and JOSEPH N. STURM, citizens of the United States, residing at San José, county of Santa Clara, State of California, have invented an Improvement in Gravity-Valves and Vacuum-Reliefs; and we hereby declare the following to be a full, clear, and exact description of the same.

Our invention relates to a device which we term "gravity valve and vacuum relief," which is designed especially to control the flow of water from tanks and to allow the water remaining in the pipe or passage below the valve to escape after the valve has been closed.

It consists in certain details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a view showing the application of our device to a discharge-opening through the side of the tank. Fig. 2 is a perspective view of the valve and seat. Fig. 3 shows the application where the opening is made directly through the bottom of the tank.

The object of our invention is to provide a convenient and ready means for the delivery of any desired quantity of water from a stationary tank to a watering cart or other receptacle, to close the valve perfectly when the receptacle is filled, and to allow the water remaining in the discharge pipe beyond the valve to escape freely and rapidly, and to allow the valve to be easily removed or replaced without emptying the tank.

A represents a tank of any suitable construction, and B is a valve seat which may be formed either in an elbow shaped casting having a passage C opening out through the side of the tank, and a flange D by which it is bolted to the interior of the side of the tank to secure it in place, or it may be constructed with the flange D adapted to bolt upon the bottom of the tank with the opening directly through it. In either case, the discharge pipe E passes through the side or bottom of the tank, and screws into the casing, making a direct communication in connection with the interior thereof, and by reason of this connection, the wood-work of the tank is relieved from any strain or sagging of the pipe which extends outwardly from it.

The valve consists of a rubber or elastic portion F made of proper shape to fit the seat B and form a tight joint. This rubber fits against the bottom of the metal plate G, and the tubular rod H, passing down through the center of the metal plate and of the valve F, is screw-threaded, and the lock nuts I, screwing on to the end of this tube below the rubber, clamp the latter firmly against the plate G, while leaving the lower end of the tube open into the discharge passage below the valve. The tube H extends upward to a point at or above the top of the tank and may be suitably guided so as to rise and fall in line, to insure the proper seating of the valve. Upon the upper end or the tube H is fixed a T J. Into the end which is in line with the tube H is screwed a hook K while the portion of the T at right angles, is opened to the atmosphere so that there may be a free admission of air through it into the tube H.

L L are lugs cast upon the plate G having channels or openings M, made as shown, and these channels or openings fit the vertical guides N which are screwed into the flange of the casting C, extending upward so as to form a guide to insure the proper vertical movement and seating of the valve.

To the hook K is affixed a cord O, and this may either be connected with a lever P fulcrumed at the top of the tank and having a cord leading down outside the tank from its outer end or the cord Q may pass over a pulley journaled upon the top of the tank. In either case, by pulling the outer cord, the tube H and the connected valve will be raised so as to allow the flow of water through the discharge pipe E. When the tank, water-cart, or other receptacle has been filled, the valve will close by gravitation when the cord is released and by reason of the pipe H, the upper end of which communicates with the open air, the air is allowed to flow in through the top, and thence passing down through the valve into the passage C and pipe E, it prevents any vacuum and retention of the water which is in the pipe after the valve closes. By this free admission of air, the water is all discharged the instant the valve is closed, and the pipe is thus left dry with no dripping to take place afterward.

If, for any reason, it is desired to examine

the valve, or any parts connected with it, it is only necessary to lift it entirely out while the outside receptacle is being filled, and this is easily done on account of the channels or openings M in the lugs L of the plate G which can be easily slipped off the guide rods N to allow the valve to be taken out. By the time the outside tank has been filled, the valve being ready, can be again dropped into its place and is ready to close when desired.

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

A discharge apparatus for tanks consisting of an elbow casting having a base flange by which it is bolted directly to the side of the tank, and having a horizontally disposed internally-threaded opening at one end and a conical valve seat at the opposite end, a discharge pipe having one end passing through the side of the tank and screw-threaded whereby it may be fitted directly to the threaded end of the casting, said casting having guide rods extending from its upper or seat end, a tube passing into the tank having its lower end open and communicating with the passage in the casting, and provided with a valve adapted to close against said seat, said tube having its upper portion above the tank and communicating with the outer air whereby air is permitted to flow through the tube and into the passage of the casting to prevent the formation of a vacuum after the valve is closed, and means for raising the valve.

In witness whereof we have hereunto set our hands.

FRANCESCO CAVALLARO.
JOSEPH N. STURM.

Witnesses:
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