No. 806,330. PATENTED DEC. 5, 1905.

E. E. ERVIN & A. J. KONANTZ.

PUMP DRAIN.

APPLICATION FILED MAR. 24, 1905.

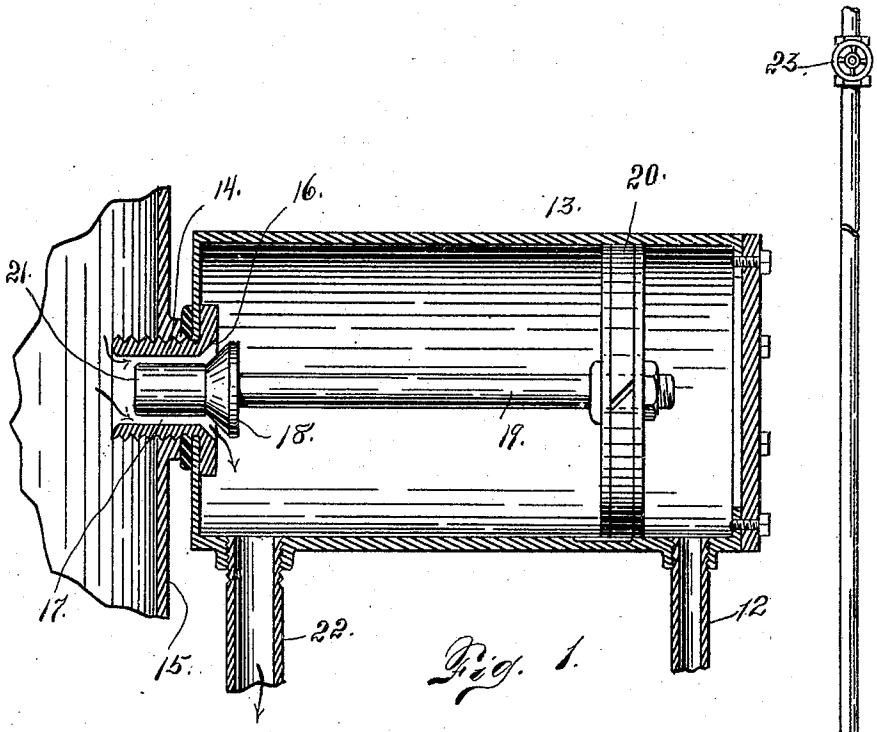


Fig. 1.

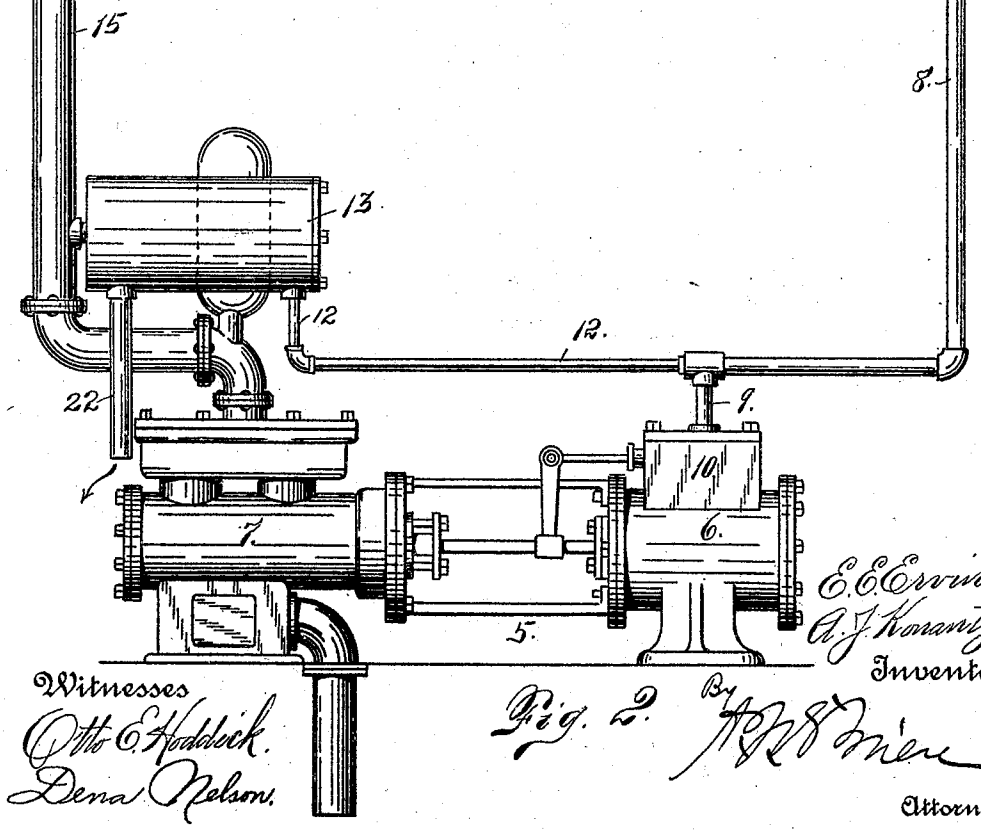


Fig. 2.

E. E. Ervin.
A. J. Konantz.
Inventors

By

Attorney

Witnesses
Otto E. Hoddick.
Dena Nelson.

UNITED STATES PATENT OFFICE.

ERNEST E. ERVIN AND ANTON J. KONANTZ, OF ERIE, COLORADO.

PUMP-DRAIN.

No. 806,330. Specification of Letters Patent. Patented Dec. 5, 1905.

Application filed March 24, 1905. Serial No. 251,898.

To all whom it may concern:

Be it known that we, ERNEST E. ERVIN and ANTON J. KONANTZ, citizens of the United States, residing at Erie, in the county of Weld and State of Colorado, have invented certain new and useful Improvements in Pump-Drains; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

Our invention relates to improvements in automatic pump-drains or mechanism for draining the water from the stand-pipe connected with the pump in order to relieve the pump from the pressure of the column of water in the stand-pipe, thus making it possible to start the pump, which could not be done against the water column of the stand-pipe.

Our invention consists of a valve arranged to close automatically during the operation of the pump, the said valve closing an opening communicating with the stand-pipe and connecting the same with a cylinder in which is located a piston, which when actuated by the pump-operating fluid closes the valve. When, however, the operation of the pump ceases and the operating fluid ceases to act on the piston to hold the valve in the closed position, the pressure of the column of water in the stand-pipe automatically opens the valve and allows the water from the stand-pipe to enter the cylinder and escape therefrom by way of a suitable outlet. This cylinder and valve are connected with the lower portion of the stand-pipe and by virtue of the operation of the valve, as just explained, all the water in the stand-pipe and above the valve is allowed to drain out automatically as soon as the pump ceases its operation.

Having briefly outlined our improved construction, as well as the function it is intended to perform, we will proceed to describe the same in detail, reference being made to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a section taken through the auxiliary cylinder and the stand-pipe, a fragment of the latter only being shown. Fig. 2 is a general view of a pump and stand-pipe equipped with our improvement, the parts being shown on a smaller scale than in Fig. 1.

The same reference characters indicate the same parts in both views.

Let the numeral 5 designate the pump mechanism in its entirety, the same including the engine-cylinder 6, the pump-cylinder 7, and the necessary mechanism employed in connection therewith, which it will not be necessary to describe in detail in this specification, as nothing is claimed thereon.

Let the numeral 8 designate a pipe or conduit connected with any suitable source of operating fluid. This pipe 8 is connected by a branch 9 with the fluid-chest 10 of the cylinder 6. A branch 12 also leads from the pipe 8 to one extremity of a cylinder 13, which will for convenience be termed an "auxiliary." This cylinder is provided with a threaded nipple 14, which enters a threaded opening formed in the stand-pipe 15 near its lower extremity. A suitable seat 16 is formed around the inner extremity of the opening 17, which connects the stand-pipe with the auxiliary cylinder. This seat is adapted to fit a valve 18, mounted on a stem 19, the latter being connected at its extremity remote from the valve with a piston 20, which fits closely within the auxiliary cylinder. The valve extremity of the stem 19 is provided with an extension 21, which enters the nipple 14 and forms a guide to insure the proper seating of the valve.

When the valve is open, (see Fig. 1,) the piston 20 will be in the position shown in said figure. Assuming now that the parts are in this position, it will be evident that the entire column of water above the nipple 17 will flow out of the stand-pipe into the cylinder 13 and thence out of the cylinder through an outlet 22, connected with the cylinder at its valve extremity. After the stand-pipe is thus drained there will be sufficient water in the lower part thereof, which is connected with the pump, for purposes of priming the pump; but the weight of this water will not be sufficient to retard or prevent the starting of the pump, as would be the case if the stand-pipe contained the entire column of water.

Now when it is desired to start the pump a valve 23, connected with the fluid-pipe 8, is opened, allowing the fluid to pass simultaneously to the fluid-chest 10 and the cylinder 13, the fluid entering the said cylinder in the rear of the piston 20 and acting on the latter to close the valve 18. Now during the operation of the pump it is evident that the water will pass upwardly through the stand-pipe 15 and cannot escape into the cylinder 13, since

the valve 18 is closed. As soon, however, as the pump stops and the passage of fluid to the rear extremity of the cylinder 13 is cut off the pressure of the water in the stand-pipe 15 will act automatically on the valve 18 to open the latter or move it to the position shown in Fig. 1, when the water will be drained from the pipe 15, as heretofore explained.

Having thus described our invention, what we claim is—

1. In a device of the class described, the combination with a pump and its stand-pipe, of a receptacle communicating with the stand-pipe by means of a suitable opening, a valve for controlling said opening, a piston located within the receptacle and connected with the valve, and means for simultaneously delivering operating fluid to the pump mechanism and to the receptacle in the rear of the piston whereby the latter is actuated to close the valve, substantially as described.

2. The combination with a pump and the stand-pipe connected therewith, of a cylinder communicating with the lower portion of the stand-pipe by a suitable opening, a piston located in the cylinder, a valve connected with the piston, and adapted to close the opening between the stand-pipe and cylinder, and means for delivering operating fluid simultaneously to the cylinder and pump mechanism, the said fluid entering the cylinder in the rear of the piston and acting on the latter to close the valve, the valve extremity of the cylinder being provided with an outlet for the escape of the water from the stand-pipe when the cylinder-valve is open.

3. In mechanism of the class described, the combination with a pump and the pipe to be drained, of a cylinder connected with the pipe at a suitable point and communicating therewith by a suitable opening, a valve located in the cylinder for controlling said opening, a piston also located in the receptacle and connected with the valve, and means for introducing operating fluid to the pump and the cylinder in the rear of the piston whereby the latter is actuated to close the valve.

In testimony whereof we affix our signatures in presence of two witnesses.

ERNEST E. ERVIN.
ANTON J. KONANTZ.

Witnesses:
WILLIAM O. HARMAN,
RICHARD THOMAS.