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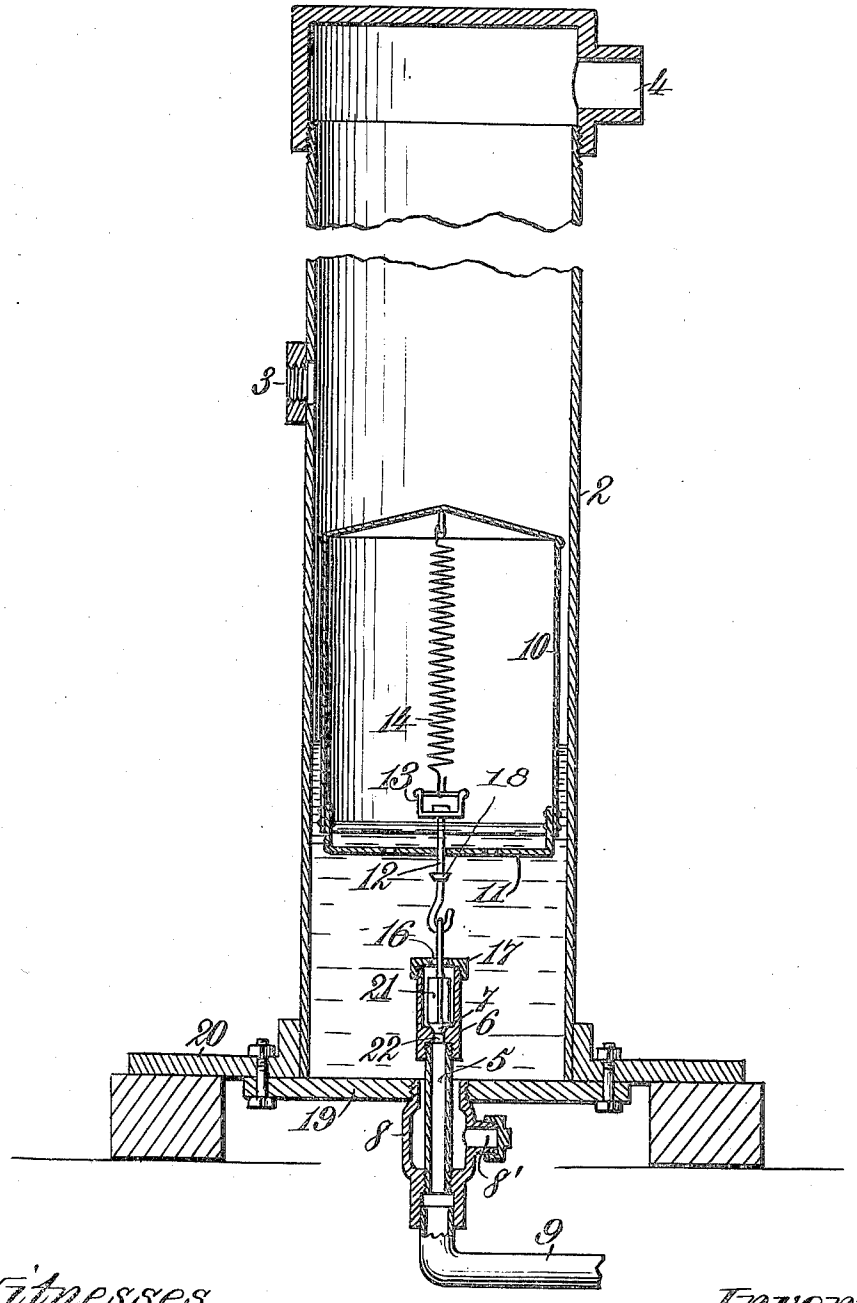
I. L. NEELY.

GAS AND WATER SEPARATOR.

(Application filed Oct. 25, 1901.)

(No Model.)



Witnesses.
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UNITED STATES PATENT OFFICE.

IRA L. NEELY. OF FAIRMOUNT, INDIANA.

GAS AND WATER SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 690,986, dated January 14, 1902.

Application filed October 25, 1901. Serial No. 79,999. (No model.)

To all whom it may concern:

Be it known that I, IRA L. NEELY, a citizen of the United States, residing at Fairmount, in the county of Grant and State of Indiana, have invented new and useful Improvements in Gas and Water Separators, of which the following is a specification.

This invention relates to a gas and water separator; and the object of the invention is to provide a simple and effective device of this character which has means for effecting the sudden and wide opening of a valve controlling the discharge of water from the reservoir of the device, whereby such water will be caused to quickly escape.

The separator includes as one of its features a reservoir having a discharge-outlet for the water, a valve for controlling said outlet, and a float in said casing yieldingly connected with the valve. The yieldable connection between said parts consists in the present case of a coiled spring. The valve is normally held closed by its weight augmented by the pressure of the water in the reservoir thereagainst; but as the float rises the spring is stretched, and at the point in the ascent of said float when the stress of the spring exceeds the pressure of the water against the valve and the adherence of said valve to its side said spring suddenly and quickly contracts, and as it does so it furnishes the power for opening the valve, this action being a sudden one, so as to permit the water in the reservoir to promptly escape, and when the float drops with the escaping water the valve will be permitted to close. The reservoir also has means for securing the removal of accumulations of mud and sediment therein.

The invention includes other advantageous features which, with the foregoing, will be set forth in the following description, while the novelty will form the basis of the claims annexed to said description.

The invention is clearly illustrated in the accompanying drawing, forming a part of this specification, and in which the figure is a vertical sectional elevation of a water and gas separator including my invention.

Like numerals refer to like parts in the figure of the drawing.

I desire to state that the invention is not limited to the exact construction and arrangement of parts hereinafter described and shown in the drawing, for many changes within the scope of the appended claims may be adopted.

The device which I have shown in the drawing as embodying the invention in one simple and convenient form thereof includes in its organization a reservoir, as 2, which is suitably mounted and is shown as having a vertically-disposed pipe or tube of suitable height and size, having in its wall at a suitable place an inlet, as 3, connected with a gas-well for the mixed gas and water or like substance, the water falling to the bottom of the reservoir, while the gas passes through the outlet 4 to be distributed for consumption as may be desired.

The water in the bottom of the reservoir is caused to intermittently escape therefrom through a pipe, as 5, to which is connected, above the bottom of the reservoir, the casing 6, which incloses the discharge-controlling valve 7.

The pipe 5 passes partly through the T-coupling 8, which is tapped into the bottom of the reservoir, the bottom of the pipe being in screw-threaded connection with said coupling. The water let off intermittently from the reservoir therefore passes first through the pipe 5, then into the lower part of the coupling 8, and from thence into a pipe, as 9, to be disposed of as may be desired. The coupling 8 is in the nature of a blow-off for the reservoir 2, into which said coupling opens, and may be cleaned at desired intervals of accumulations of dirt, which pass into the coupling and out the transverse portion 8′ thereof and, if necessary, through suitable piping. (Not shown.)

The reservoir 2 contains a float, as 10, open at its bottom and which is shown as consisting of a cylindrical shell of some suitable material, as copper, and which rises and falls with the water in said reservoir, and said float, as will be hereinafter described, is yieldingly connected with the discharge-controlling valve 7.

The float 10 has the transverse guide-bar 11 at its bottom provided with upturned ends suitably connected rigidly with the float—for example, by means of rivets—at diametrically opposite sides thereof and centrally per-

forated to receive the vertically-disposed and short rod 12, having a swivel 13 at its upper end, adapted to receive a hook at the lower end of the elongated coiled spring 14, having a similar hook at its upper end to detachably engage a ring on the under side of the conical top of the float 10. The lower end of the rod 12 is hooked into a hole near the top of the upwardly-projecting stem of the valve 7, said stem extending through an enlarged hole 16 in the cap 17 of the valve-casing 6.

The rod 12 is shown as having a projection 18, approximately at its middle, which is adapted to sustain the guide or cross bar 11 to hold the float at the limit of its descending movement.

The cap 17, which serves to prevent the valve from being lifted out of its casing, is removable, it being conveniently connected to the casing 6 by a screw-threaded joint, whereby when the cap is taken off the valve can be lifted out for the purpose of cleaning the same and the casing.

The bottom 19 of the reservoir is detachable, it consisting of an enlarged disk bolted or otherwise secured to the plates 20, which abut against the reservoir. When the bottom is disconnected, all the parts within the reservoir can be readily reached and separated from each other, it being understood that they are detachably connected.

The valve has a plurality of wings, as 21, between which when said valve is lifted off its seat the water flows, it first entering the hole 16 in the cap 17, then going downward through the casing or shell 6, then through the outlet 22, and finally into the pipe 5, as previously described.

Normally the valve 7 is closed, it being held in this position by its weight and the pressure of the water in the reservoir thereagainst. As soon as the water rises above its normal level it causes the float 10 to rise therewith, whereby the spring 14 will be stretched. When the stress exerted by the spring exceeds the pressure of the water acting against the valve and the tendency of said valve to stick to its seat, said spring suddenly contracts and quickly opens the valve wide, so as to permit the rapid emptying of the reservoir 2. As the float drops with the escaping water the valve is permitted to close by its weight and is held closed by the water until the operation just described is repeated.

Having described the invention, what I claim is—

1. In a device of the class described, a reservoir having a discharge-outlet, a valve for controlling said outlet and a float in said reservoir yieldingly connected with the valve.

2. In a device of the class described, a reservoir having a discharge-outlet, a valve for controlling said outlet, a float in said reservoir, and a coiled spring connected respectively with the float and valve.

3. In a device of the class described, a reservoir having a discharge-outlet, a valve for controlling said outlet, a float in the reservoir having a guide member, a rod guided by said guide member and connected with the valve, and a spring connected respectively with said rod and float.

4. In a device of the class described, a reservoir having a discharge-outlet, a valve for controlling said outlet, a float in the reservoir having a perforated cross-bar, a rod connected with the valve and extending through the perforation in said cross-bar, and a spring connected respectively with said rod and float.

5. In a device of the class described, a reservoir having a discharge-outlet, a valve for controlling the discharge-outlet, a float in said reservoir, a rod connected to the valve and having a projection to engage a part of the float, and a yieldable connection between said rod and float.

6. In a device of the class described, a reservoir having a discharge-outlet, a valve for controlling said outlet, a rod connected to said valve, a float in said reservoir, and a yieldable connection detachably united to the rod and float respectively.

7. In a device of the class described, a reservoir, a pipe passing into said reservoir, a casing detachably connected with said pipe and having a removable cap, a valve in said casing, a float in the reservoir, and a yieldable connection between the float and valve.

8. In a device of the class described, a casing, a T-coupling connected with said casing, a discharge-pipe inclosed in part by said coupling and communicating with the reservoir, a casing on said pipe, a valve in said casing, a float in the reservoir, and a yieldable connection between the valve and float.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

IRA L. NEELY.

Witnesses:
JACOB BRILES,
O. M. BEVINGTON.