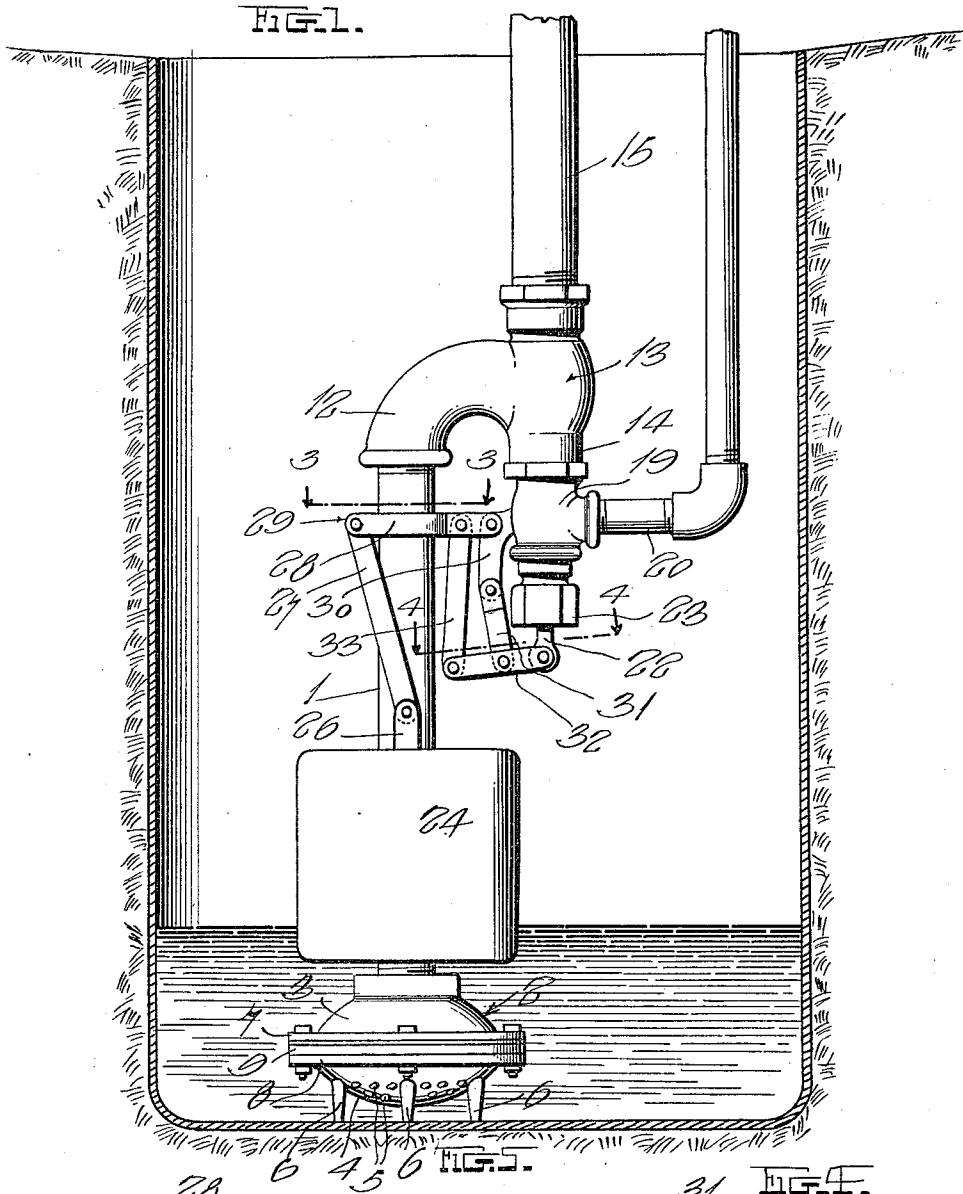
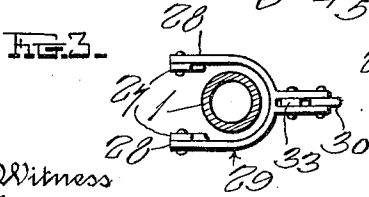


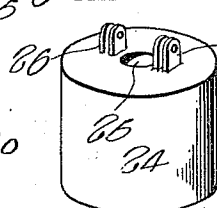
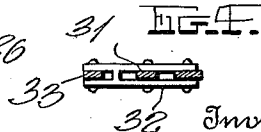
J. D. WOODWORTH.
 AUTOMATIC DRAINING DEVICE.
 APPLICATION FILED JAN. 11, 1917.

1,230,972.

Patented June 26, 1917.
 2 SHEETS—SHEET 1.



Witness
 H. Woodard

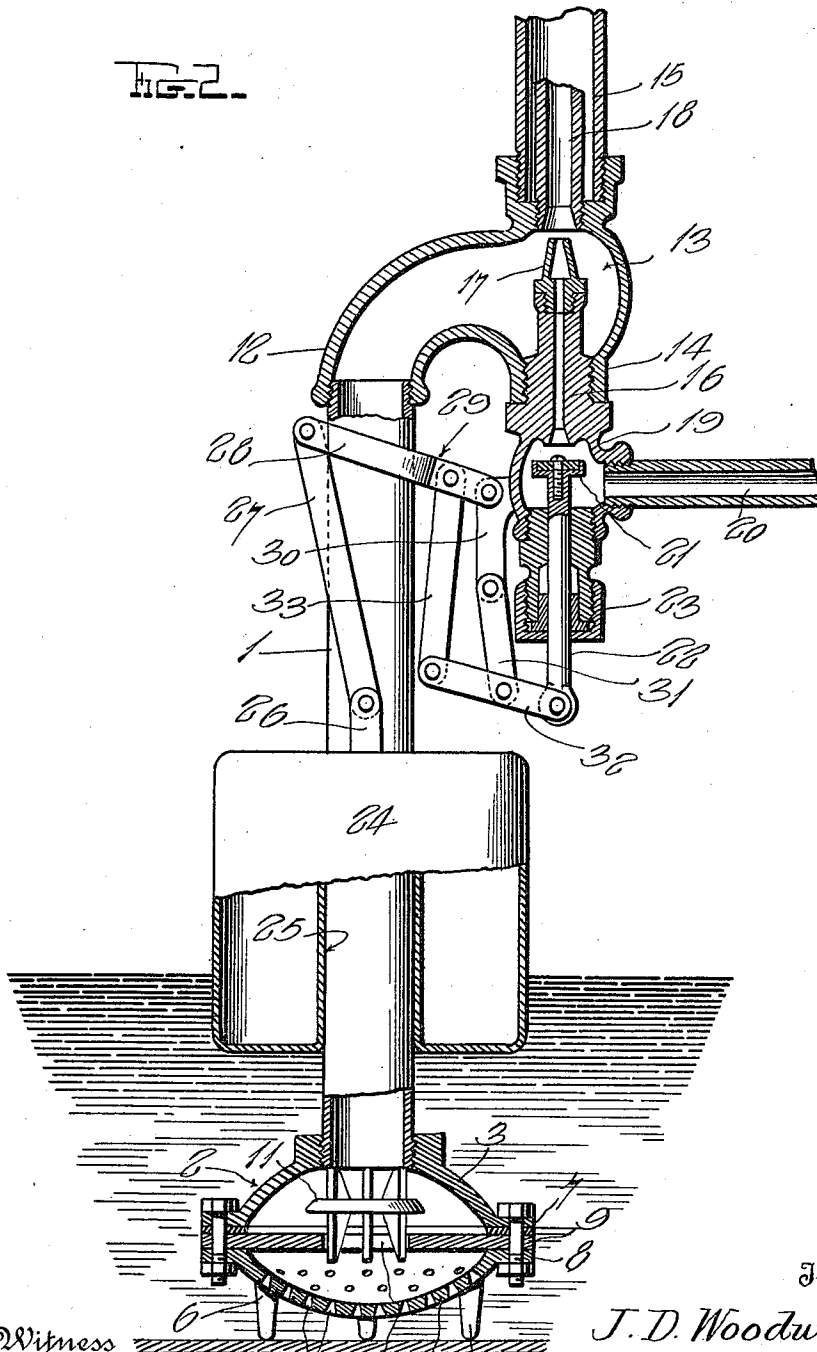


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Fig 2.



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UNITED STATES PATENT OFFICE.

JOHN DONALD WOODWORTH, OF EAST MOLINE, ILLINOIS.

AUTOMATIC DRAINING DEVICE.

1,230,972.

Specification of Letters Patent.

Patented June 26, 1917.

Application filed January 11, 1917. Serial No. 141,860.

To all whom it may concern:

Be it known that I, JOHN DONALD WOODWORTH, a citizen of the United States, residing at East Moline, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Automatic Draining Devices; and I 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.

This invention relates to draining devices to be used more particularly in draining cellars, sewers, and other excavations without attention by the user.

This invention has for one of its objects the provision of a float-operated injector mechanism which will become operative when the water level in the cellar, sewer, or other excavation rises to a predetermined point.

Another object of the invention is to provide a device of this character in which the various parts are arranged in a very neat and compact form.

A further object of the invention is to generally improve upon devices of this character by the provision of a simple, strong, durable, and comparatively inexpensive construction, and one which will be efficient and reliable in operation, and well adapted to the purpose for which it is designed.

With these and numerous other objects in view, the invention consists of certain novel features of construction, and the combination and arrangement of parts as will be hereinafter fully described and claimed.

In the accompanying drawings forming a part of the application, and in which similar reference characters designate like parts throughout the several views:

Figure 1 is a side elevation of a device constructed in accordance with this invention, showing it positioned in an excavation, the water in the latter being at a level whereby the device is maintained inoperative;

Fig. 2 is an enlarged vertical sectional view of the device showing it in its opened or operative position;

Fig. 3 is a detail sectional view taken on the plane indicated by the line 3—3 of Fig. 1;

Fig. 4 is a similar view taken on the plane indicated by the line 4—4 of Fig. 1; and

Fig. 5 is a perspective view of the float

detached from the remaining parts of the device.

In the embodiment illustrated, the reference numeral 1 designates a vertical suction pipe adapted to be disposed in a cellar, sewer, or other excavation wherein the water to be drained off collects. To the lower end of this suction pipe 1 there is connected a strainer 2, the latter being made in two separable sections 3 and 4, the section 3 being threaded to the pipe 1 as shown, while the section 4 is perforated as at 5 and provided with legs 6 to maintain said strainer in slightly spaced relation with respect to the bottom of the cellar or other excavation. The sections 3 and 4 are circular in configuration and are provided with angular flanges 7 and 8 respectively between which is clamped a substantially flat plate 9, the central portion of which is provided with an opening 10. Seated upon the plate 9 and slidably mounted with respect to the opening 10 is a valve member 11. When this valve member 11 is in its lowermost position no water will pass from the strainer into the suction pipe 1, but as soon as the member 11 is moved upwardly under the suction created in the pipe 1, the water is allowed to pass through the strainer into the latter.

The upper end of the suction pipe 1 is threaded to the laterally projecting portion 12 of a hollow housing 13. This housing 13 is very similar to a T coupling, and has its vertically disposed portion 14 arranged out of vertical alinement with the pipe 1. Threaded to the upper end of the vertically extending portion 14 of the housing 13 is a discharge pipe 15, while similarly secured to the lower end of the portion 14 is the stem 16 of an injector nozzle 17. It may well be noted that the injector nozzle 17 is disposed in vertical alinement with the discharge pipe 15, and that the latter is disposed out of alinement with the suction pipe 1 and has its lower end arranged in a plane spaced a short distance above the plane of the upper end of the latter. The reference numeral 18 designates a short length of pipe which is threaded to the upper end of a vertically extending portion of the housing 13 and is arranged centrally with respect to the discharge pipe 15. This pipe 18 has its lower end flared and disposed adjacent the free end of the nozzle 17 to coact with the same

and form a suction in the housing 13 when fluid under pressure is ejected from said nozzle.

The stem 16 of the nozzle 17 projects vertically through the lower end of the portion 14 of the housing 13 and is formed into a valve casing 19, one side of which is connected to one end of a supply pipe 20, the purpose of which will be hereinafter described.

Mounted within the valve casing 19 is a vertically slidable valve 21, which, when in its uppermost position, seats itself against the upper end of the casing and prevents the fluid supplied by the pipe 20 from passing up through the stem 16 and out through the nozzle 17. When the valve 21 is in its lowermost position it is opened, and such fluid may then be allowed to pass through the nozzle.

The reference numeral 22 represents a vertically extending stem connected in any suitable manner to the valve 21. This stem 22 projects downwardly through a packing box 23 arranged in the lower end of the casing 19, and is arranged alongside of and parallel with the suction pipe 1 as shown.

Slidable vertically upon a portion of the suction pipe 1 disposed below the plane of the lower end of the valve stem 22 is a float 24. This float is preferably in the form of a hollow cylindrical casing having a centrally arranged vertically extending tubular opening 25 therein. The top of the float 24 on opposite sides of the pipe 1 is provided with pairs of pivot ears 26, to which are pivotally mounted the lower ends of a pair of links 27.

The upper end of the links 27 are similarly connected to the free ends of the arms 28 of a forked lever 29. The other end of the lever 29 is pivoted to the upper end of a bracket 30 which extends from the side of the valve casing 19 adjacent the pipe 1. This bracket 30 extends in a substantially vertical direction and has pivotally connected to its lower end a link 31, the free end of which is pivotally connected to the intermediate portion of a lever 32. One of the ends of this lever 32 is connected to the lower end of a link 33, the other end of which is similarly connected to the lever 29 at a point spaced a short distance inwardly of its connection with the bracket 30. The other end of the lever 32 is pivotally connected with the lower end of the valve stem 22. By this construction it may be seen that whenever the float 24 is raised, the valve stem 22 will be lowered and consequently the valve 21 will be opened, thereby permitting water, steam, or other fluid under pressure to pass upwardly through the stem 16 of the nozzle 17, then out of the nozzle into the pipe 18. This causes a suction in the housing 13 and also in the pipe 1 sufficient to

raise the valve member 11 and allow the water contained in the excavation in which the device is placed to be drained away. The movement of the float 24 is obviously caused by the change in the water level in the excavation, and it therefore follows that when this level is lowered to an amount where no harm will be done, the valve is closed.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the device will be readily understood without a more extended explanation.

As various changes in form, proportion and in the minor details of construction may be resorted to without departing from the spirit of the invention, I do not wish to be limited to the construction herein shown and described other than that set forth in the appended claims.

I claim:

1. A device of the class described comprising a vertical suction pipe, a vertical discharge pipe arranged out of vertical alinement with said suction pipe and having its lower end disposed in a plane above the plane of the upper end of the latter, a hollow housing connected to the lower end of said discharge pipe and the upper end of said suction pipe, a vertically extending injector nozzle disposed within said housing in vertical alinement with said discharge pipe, the stem of said nozzle projecting vertically downwardly through said housing and being formed into a valve casing, a horizontal supply pipe connected to one side of said casing, a vertically slidable valve mounted within said casing and having its stem projecting vertically downwardly through the lower end of the same alongside and in parallel relation to said suction pipe, a float slidably mounted upon said suction pipe, and connections between said float and the lower end of the stem of said valve for operating the latter upon the movement of said float.

2. A device of the class described comprising a vertical suction pipe, a vertical discharge pipe arranged out of vertical alinement with said suction pipe and having its lower end disposed in a plane above the plane of the upper end of the latter, a hollow housing connected to the lower end of said discharge pipe and the upper end of said suction pipe, a vertically extending injector nozzle disposed within said housing in vertical alinement with said discharge pipe, the stem of said nozzle projecting vertically downwardly through said housing and being formed into a vertically extending valve casing, the latter being disposed alongside the upper end of said suction pipe and in vertical alinement with said discharge pipe, a horizontal supply pipe con-

5 nected to one side of said casing, a vertically
 slidable valve mounted within said casing,
 said valve being closed when in its upper-
 most position and open when in its lower-
 10 most position, a stem projecting vertically
 downwardly through the lower end of said
 casing alongside of said suction pipe and
 having its lower end disposed in a plane
 15 spaced above the lower end of the latter,
 and a float slidably mounted upon the por-
 tion of said suction pipe disposed below
 the plane of the lower end of said valve
 stem, and link and lever connections be-
 20 tween said float and the lower end of said
 valve stem for operating said valve upon
 the movement of said float.

3. A device of the class described com-
 prising a vertical suction pipe, a vertical
 discharge pipe arranged out of vertical
 20 alinement with said suction pipe and hav-
 ing its lower end disposed in a plane above
 the plane of the upper end of the latter, a
 hollow housing connected to the lower end
 of said discharge pipe and the upper end
 25 of said suction pipe, a vertically extending
 injector nozzle disposed within said hous-
 ing in vertical alinement with said dis-
 charge pipe, the stem of said nozzle pro-
 jecting vertically downwardly through said
 30 housing and being formed into a vertically
 extending valve casing, the latter being dis-
 posed alongside the upper end of said suc-
 tion pipe and in vertical alinement with
 said discharge pipe, a horizontal supply
 35 pipe connected to one side of said casing, a

vertically slidable valve mounted within
 said casing, said valve being closed when
 in its uppermost position and open when
 in its lowermost position, a stem projecting
 40 vertically downwardly through the lower
 end of said casing alongside of said suction
 pipe and having its lower end disposed in
 a plane spaced above the lower end of the
 latter, a float slidably mounted upon the
 45 portion of said suction pipe disposed be-
 low the plane of the lower end of said valve
 stem, a downwardly projecting bracket fixed
 to the side of said casing adjacent said suc-
 tion pipe, a lever fulcrumed at one end to
 50 the upper portion of said bracket, the other
 end of said lever being forked to straddle
 said suction pipe, a pair of links pivoted
 at one of their ends to the free ends of the
 forks of said lever and at their other ends
 55 to the top of said float, a second lever ful-
 crumed intermediate its ends to the lower
 end of said bracket and having one of its
 ends pivoted to the lower end of said valve
 stem, and a link pivoted at its lower end
 60 to the other end of said second lever and
 at its other end to the intermediate portion
 of the first mentioned lever.

In testimony whereof I have hereunto
 set my hand in the presence of two subscrib-
 ing witnesses.

JOHN DONALD WOODWORTH.

Witnesses:

HARRY J. BEST,
 JAMES L. BRADY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
 Washington, D. C."