

(No Model.)

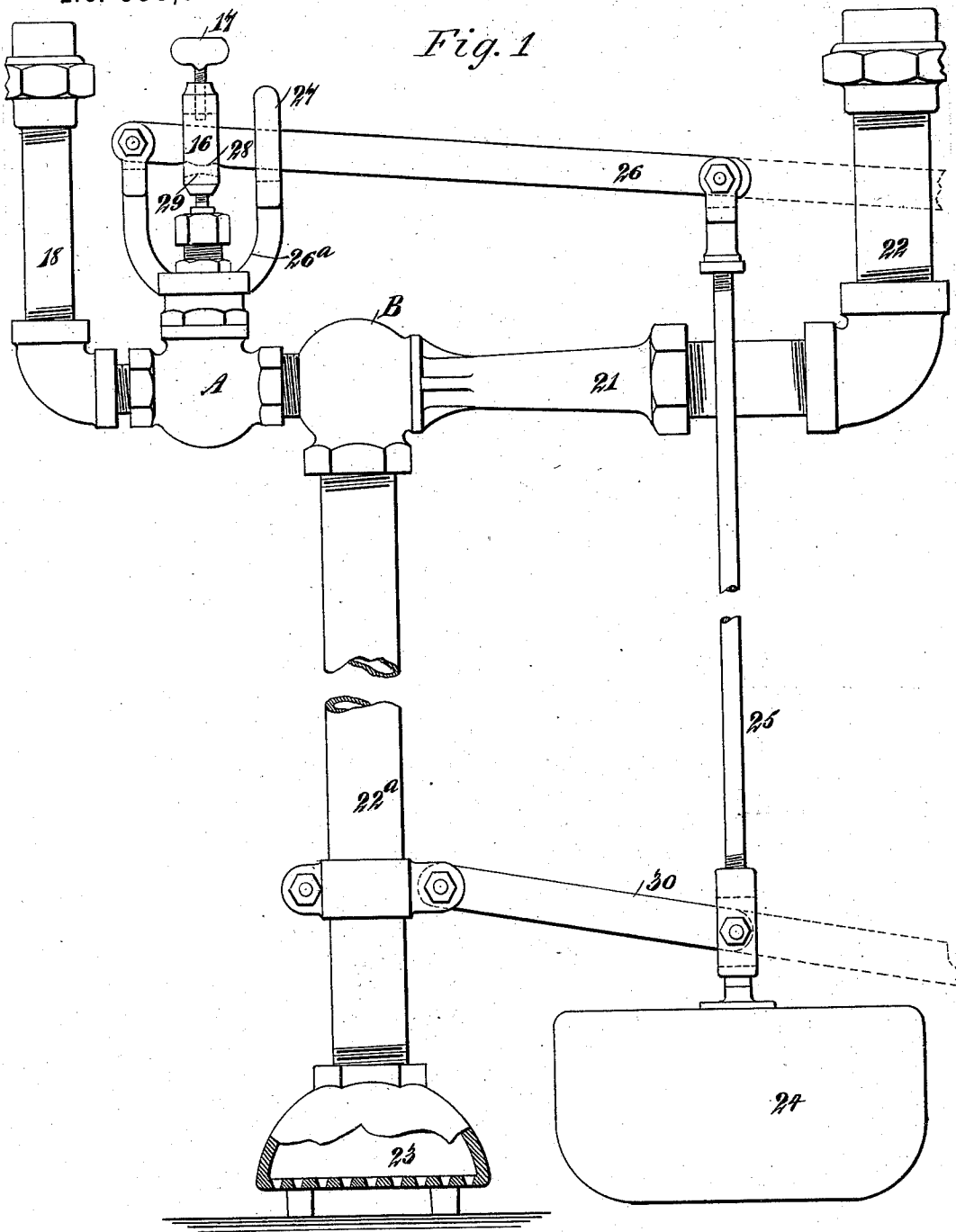
2 Sheets—Sheet 1.

N. POWER.

BILGE WATER DISCHARGING APPARATUS.

No. 558,912.

Patented Apr. 21, 1896.



WITNESSES:

J.B. Walker
J. R. Acker

INVENTOR

A. Power
BY *Munn & Co*
ATTORNEYS

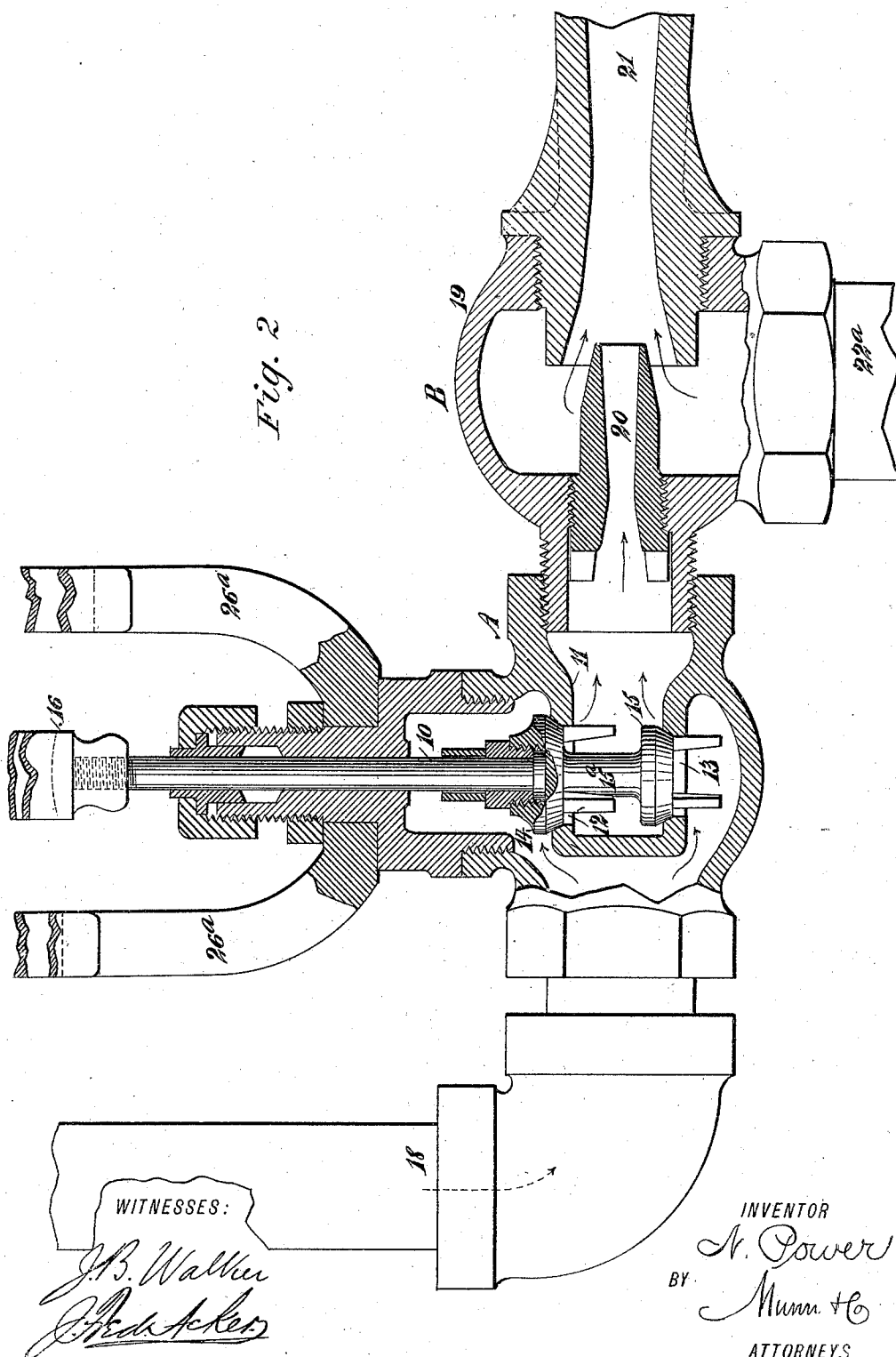
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UNITED STATES PATENT OFFICE.

NICHOLAS POWER, OF NEW YORK, N. Y.

BILGE-WATER-DISCHARGING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 558,912, dated April 21, 1896.

Application filed December 13, 1895. Serial No. 572,066. (No model.)

To all whom it may concern:

Be it known that I, NICHOLAS POWER, of New York city, in the county and State of New York, have invented a new and Improved Automatic Bilge-Siphon, of which the following is a full, clear, and exact description.

My invention relates to an improvement in bilge-siphons; and the object of the invention is to provide a siphon of this character which will be automatic in its action and so constructed that the valves will be opened to their full extent almost instantly when the water has reached a predetermined level in the bilge-well, and whereby, further, when the water has reached a predetermined lower level the valves of the device will be instantly closed.

Another object of the invention is to so construct the lever connection between the float and the valves that the said lever will hold the valves normally closed, and whereby also the lift or surge of the valve will be regulated at pleasure.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improved device, and Fig. 2 is a longitudinal section through a valve-body and the ejector of the device.

In carrying out the invention a differential valve is employed, the body or casing A of which is of the usual character, and within the said body or casing a bonnet 11 is located, having an upper opening 12 and a lower opening 13, the upper opening being larger than the lower one, and these two openings are adapted to be normally closed by two valve-disks 14 and 15, the upper valve-disk 14 having a greater area than the lower one 15, as is clearly shown in Fig. 2. These valve-disks are preferably connected through the medium of a sleeve 15^a or its equivalent and are attached to a stem 10, which stem is carried upward through a suitable gland attached to the top of the casing, and at the top portion of the valve-stem 10 a yoke 16 is formed, be-

ing provided at its upper end with a set-screw 17.

A steam-supply pipe 18 is connected with one end of the differential valve A, and an ejector B is connected with the opposite or outlet end of the aforesaid valve, as shown particularly in Fig. 2. The ejector consists of a body or casing 19 and a steam jet or nozzle 20, interiorly located, the said steam jet or nozzle extending into the siphon-tube 21, forming a portion of the ejector, and the said siphon-tube is connected in a suitable manner with a discharge-pipe 22.

The ejector is furthermore connected, preferably, at its bottom or under surface with a suction-tube 22^a, and the said tube is provided at its lower extremity with a strainer 23, adapted to be located in the bilge-well of a vessel. A float 24 is also adapted to be placed in the said bilge-well, and this float is attached to a vertically-movable guide-rod 25, which rod is carried upward a predetermined distance and attached to one end of a lever 26, the said lever being fulcrumed upon a member of a preferably U-shaped support 26^a, the other member of the said support being provided with a guide-loop 27, through which the lever passes, and the lever also passes through the valve-yoke 16, while the surge or lift of the lever 26 is controlled by the aforesaid set-screw 17.

Where the lever 26 passes through the valve-yoke 16 the said lever is preferably provided with a convexed lower surface 28, and the bottom 29 of the yoke is provided with a convexed surface 29, which opposes the convexed surface 28 of the lever. In order that the float 24 shall have no perceptible lateral movement, one or more guide-links 30 are attached to the guide-rod 25 of the float and to the suction-pipe 22^a, as illustrated in Fig. 1.

In operation the float rising by the accumulation of the water in the bilge brings a tension through the lever and its connections upon the differential valve. The enlarged area of the upper member of the valve holds the valve down by pressure due to the difference in size of the two valve-disks until the accumulated lifting power of the float breaks the contact between the valves and their seats, which is suddenly accomplished, and

the said valves are opened to their full extent, at which time the ejector-siphon starts with its full capacity. As the water is discharged the float descends to nearly its lowest position, bringing the disks of the differential valve to the position at which steam-pressure suddenly shuts the valve.

The amount of free movement of the differential valve is governed by the amount of space in the valve-stem yoke through which the lever 26 passes.

The moment that the float 24 is lifted upward by the rising of the water, the lever 26 is likewise elevated, and when this lever is raised even to the slightest degree the valve-disks 14 and 15 will be unseated, whereupon the steam-pressure in the valve-casing will suddenly and instantly throw the valves completely open, thus starting the ejector at work to its full capacity. The moment that the level of the water is lowered sufficiently to cause the float to drop and seat the valves, the preponderance of steam-pressure will be upon the upper valve-disk, which is of large area, and the said pressure will serve to keep the valves firmly seated.

The lift or surge of the float-lever 26 is controlled by the position of the set-screw 17, and the lever, by contact with the said set-screw, operates the valve-stem to unseat the valve-disks, and when the pressure of the steam in the differential-valve casing throws the valve-disks upward their upward movement is limited by the contact between the convexed surfaces 28 and 29 of the valve-stem yoke and the lever, and when the float 24 is in its normal position the lever will rest upon the bottom of the valve-stem yoke, and the weight of the float will therefore be added to the valve-stem to assist the steam-pressure in keeping the valve-disks seated. In the drawings the lever 26 is shown in the act of rising.

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

1. In an apparatus for the discharge of bilge-water, a differential valve, a steam-supply connected with one end of the valve, an ejector connected with the opposite end of the said valve and provided with a suitable strainer, a support attached to the valve-

casing, a yoke connected with the valve-disk, a lever fulcrumed upon the said support, the lever passing through the valve-stem yoke, and adapted for engagement when the valve-stem is in one position with the bottom of the said yoke, a regulating device located in the said yoke and adapted for engagement with the upper portion of the said lever, a float connected with the free end of the lever, and a guide for the said float, the guide serving to preserve the float against lateral movement, as and for the purpose specified.

2. In an apparatus for the discharge of bilge-water, the combination, with an ejector, a discharge-pipe connected therewith, a suction-pipe also connected with the ejector, and a valve attached to the ejector, and controlling a source of steam-supply, the said valve being provided with two valve-disks, the upper valve-disk being of larger area than the lower one, of a yoke secured to the stem on which the valve-disks are secured, the said yoke being provided with a set-screw at its upper end and a bearing-surface at its lower end or bottom, a lever having its fulcrum on a support connected with the valve-casing, the said lever being passed through the valve-stem yoke and provided with a bearing-surface adapted for engagement with that of the said yoke, a float, a guide-rod connecting the float with the said lever, and a guide-link attached to the guide-rod of the float and pivotally connected with a fixed support, whereby the float will be preserved against lateral movement in the bilge-well of a vessel and will be free to have vertical movement, as and for the purpose specified.

3. In an apparatus for the discharge of bilge-water, a steam-supply pipe, a valve controlling the steam-supply pipe, an ejector immediately adjacent to the valve, a suction-pipe communicating with the ejector and extending downwardly therefrom, a lever fulcrumed above the valve and connected with its stem, a rod connected to the lever and extending downwardly therefrom, and a float actuating the rod, said float being at the lower end of the rod, substantially as described.

NICHOLAS POWER.

Witnesses:

J. FRED. ACKER,
JNO. M. RITTER.