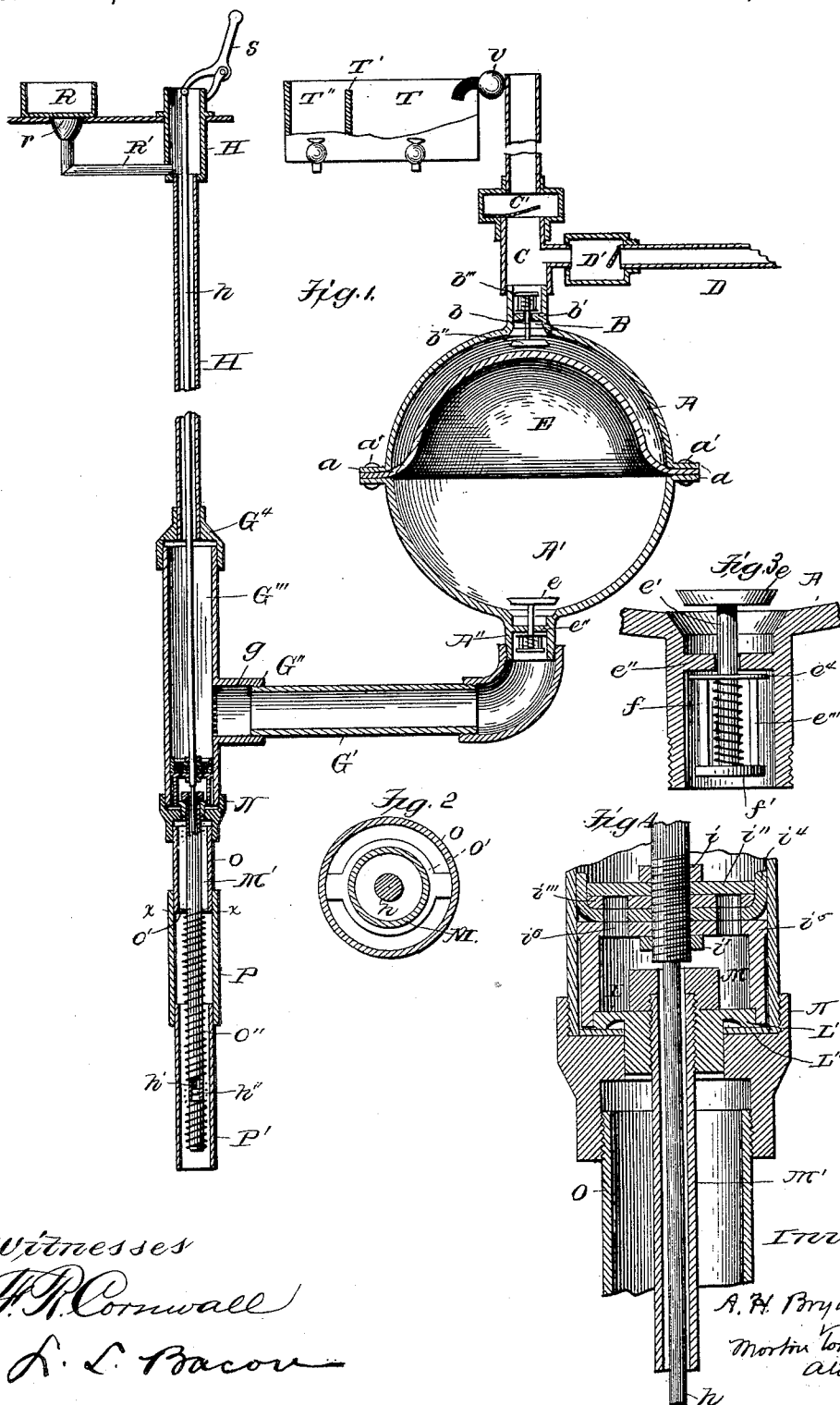


(No Model.)

A. H. BRYAN.
AUTOMATIC PUMP AND WATER ELEVATOR.

No. 462,651.

Patented Nov. 3, 1891.



Witnesses

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ANTHONY H. BRYAN, OF EVANSVILLE, INDIANA.

AUTOMATIC PUMP AND WATER-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 462,651, dated November 3, 1891.

Application filed July 18, 1889. Serial No. 317,965. (No model.)

To all whom it may concern:

Be it known that I, ANTHONY H. BRYAN, a citizen of the United States, residing at Evansville, in the county of Vanderburg and State of Indiana, have invented certain new and useful Improvements in Automatic Pumps and Water-Elevators; 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in automatic pumps and water-elevators for which Letters Patent were granted me September 15, 1885, No. 326,266, and has for its object to utilize a column of waste-water to draw and elevate clear water from any source of supply.

The nature of the invention consists, first, in providing a vessel formed of two halves, each half having flanges, with a diaphragm of some flexible material impervious to water, the diaphragm being placed between the flanges of the upper and lower halves of the vessel and secured by means of bolts or rivets, which pass through the flanges and also through the outer edges of the diaphragm, the diaphragm therefore forming a partition and separating the contents of the upper and lower halves of the vessel; secondly, in providing the upper half with an outlet-valve opening into a vertical pipe provided with a check-valve and connected with a horizontal pipe having an inlet-valve; thirdly, in providing the lower half of the vessel with an inlet-valve (or check-valve) and with a pipe connecting with another vertical pipe just above the top of a valve, (in said vertical pipe,) adapted to be raised and lowered by means of a rod within the last-mentioned vertical pipe.

In the drawings forming a part of this specification like letters indicate corresponding parts of the invention.

Figure 1 is a vertical longitudinal section of the entire apparatus, substantially as I now have it in use. The pipes H and C (broken off in the drawings) extend to the second story

of the building. In this view the sink for waste-water is placed on a table and is provided with strainer *r* and a pipe *R'*, which takes the waste-water from the bottom of the sink to the pipe H. A pivoted lever *S* is attached to the upper end of the rod *h*, by means of which the waste-water valve may be raised or lowered. *T* *T''* indicate the clear-water tank, which is provided with a partition *T'*, which permits the water received by the pipe *C* to overflow into the tank *T''*, thus retaining any sediment in tank *T*. Each division of the tank is provided with a faucet *t t'*, by means of which the clear water may be drawn off in a bucket or other vessel.

Fig. 2 is a transverse section on the line *x*, enlarged. Fig. 3 is a sectional detail view, enlarged, of the valve at the bottom of vessel *A'*. Fig. 4 is a sectional enlarged detail view of the waste-water valve.

The letter *A* indicates the upper vessel.

B is the upper valve, consisting of cross-bar of brass or iron; *b' b*, rod of brass regulating the rise and fall of check-plate *b''*.

b''' is a pin to regulate the drop of check-plate *b''*.

C is a vertical pipe extending upwardly from the vessel *A*, and is provided with a valve *C'*.

D is a pipe extending from the cistern or other source of water supply to pipe *C*. The pipe *D* has an inlet-valve *D'*.

E is the diaphragm.

A' is the lower half of the vessel.

a are the flanges, and *a'* the bolts which secure the upper and lower vessels to each other.

A'' is the valve at the bottom of the lower vessel, consisting of a valve-plate *e*, having a stem *e'*, which enters a central opening in a cross-piece *e''*, to which a short piece of tube *e'''* is soldered. This tube has a slot on each side for the brass pin *e⁴* to play in, which goes through the stem *e'*. A spiral spring *f* surrounds the tube *e'''* and bears upwardly against the pin *e⁴* to raise the valve-plate *e* out of the counter sink.

f' is a brass nut on the lower extremity of the brass tube *e'''*.

G is an elbow connecting the lower vessel with the pipe *G'* and the neck *G''*, forming a part of the cylinder *G'''*.

g are three-eighth-inch holes drilled through the floor or partition between the cylinder *G'''* and neck *G''*. These holes allow the waste water to pass to and from the lower vessel *A'*.

- 5 *G⁴* is a coupling which connects the cylinder *G'''* with vertical pipe *H*, having at its upper extremity a bowl *H'* to receive the waste water.

- 10 *h* is a valve-rod extending from the top of pipe *H* down to and attached to the valve *I*, located in the bottom of cylinder *G'''* by means of nuts *i i'*.

i'' is a leather or rubber gasket.

- 15 *i'''* is an iron or brass plate; *i⁴*, extremities of leather cup; *i⁵*, iron plunger-cup; *i⁶*, five or six three-eighth-inch openings arranged in a circle penetrating leather plate *i''*; iron plate *i'''*, and top of iron plunger-cup *i⁵*; *L*, brass three-winged valve; *L'*, rim of same resting on rubber gasket; *L''*, rubber gasket or valve-seat; *L'''*, two wings of brass valve; *M*, brass cap on pipe *M'*, screwed through brass valve *L*.

- 20 *N* is a coupling on the lower extremity of the cylinder *G'''*, by means of which the nipple *O* is attached thereto.

- 25 *O'* is a ring having two or three wings let into nipple *O*, which affords resistance for spiral spring *O''*, which, when extended, pressing down brass cap *M*, will force valve down firmly upon valve-seat *L''*.

P is a sleeve.

P' is a piece of pipe, the terminal where waste water discharges and flows off through pipe or tiling to the sink or sewer.

- 35 *h'* is the extremity of the small part of valve-rod *h*, and is provided with a lock-nut *h''*, which strikes cap *M* when the upward stroke of plunger is completed, raising valve *L* off its seat, and thus allowing exit of waste water and an influx of clean water from cistern.

In operation the waste water from sink *R* is permitted to flow down through pipe *G'* and up into vessel *A* through the valve in the

bottom thereof. The water forces diaphragm 45 *E* up, and consequently the water above the diaphragm is forced out of the vessel *A* through pipe *C* into tank *T*, the position of sink or tank *R* being on an elevation to increase the hydrostatic pressure, so that the 50 water in the vessel *A* is forced out by the same into tank *T*. When the water is to be drawn from the chamber below the diaphragm, the handle is lowered, raising the piston and cutting off the supply of water from sink *R* 55 and opening the passage between the pipe *G'* and the discharge end of the pump. As the diaphragm is forced down by the water or up by the water below it would be sucked or forced out at the openings and thereby damaged the same. This objection is overcome by the valves located over the opening, which are normally held open and are only closed by the direct pressure of the diaphragm placed against their inner faces. 60

Having described my invention, what I desire to secure by Letters Patent, and claim, is— 65

1. In a water-elevator, the combination of pipe *D*, having check-valve *D'*, vessel *A*, having diaphragm *E*, valve *B*, with pipe *C*, having check-valve *C'*, the said pipe *C* being adapted to discharge water into an elevated tank. 70

2. In a water-elevator, the combination of 75 pipes *G G' G''*, vessel *A'*, having diaphragm *E*, valve *A''*, cylinder *G'''*, having check-valve at the bottom, with rod *h*, and pipe *H*, adapted to receive water at its upper extremity, as described herein, and for the purposes 80 set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ANTHONY H. BRYAN.

Witnesses:

LORENZO L. LONG,
TONY L. BRYAN.