(No Model.)

C. WHITE.

FLUID EJECTOR.

No. 346,792. Patented Aug. 3, 1886.

Fig. 1.

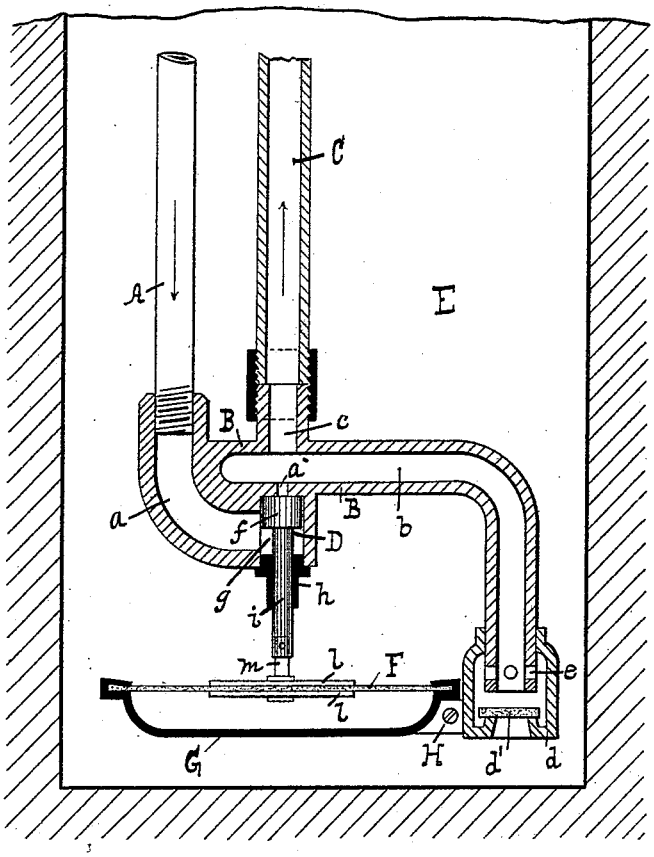
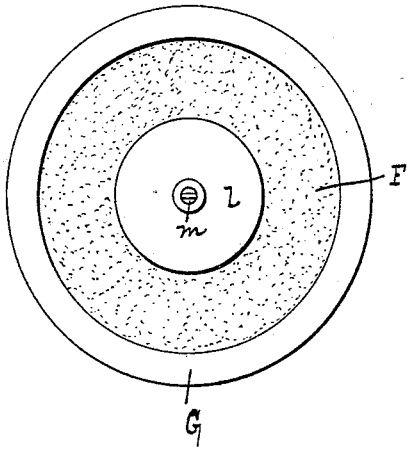


Fig. 2.



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UNITED STATES PATENT OFFICE.

CHARLES WHITE, OF BALTIMORE, MARYLAND, ASSIGNOR TO BENJAMIN B. FRIEDENWALD AND HIRAM W. FRIEDENWALD, OF SAME PLACE.

FLUID-EJECTOR.

SPECIFICATION forming part of Letters Patent No. 346,792, dated August 3, 1886.

Application filed May 7, 1886. Serial No. 201,421. (No model.)

To all whom it may concern:

Be it known that I, CHARLES WHITE, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Fluid-Ejectors, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in valve-operating devices for ejectors, which is so arranged that the weight of a column of fluid operates the cut-off valve between the ejector and the pressure-pipe, as illustrated in the accompanying drawings, in which—

Figure 1 is a vertical sectional view of a well and the ejecting devices placed therein; Fig. 2, a top view of the diaphragm and its casing.

Similar letters refer to similar parts throughout the several views.

The letter A designates the pressure-pipe, which contains fluid under pressure, connected to the ejector B; C, the discharge-pipe, which is also connected to the ejector, and which extends to the desired discharging place. The ejector B, as herein shown, is arranged with the ingress-port *a* connected with the pressure-pipe A, and leads to the orifice *a'*, with the cut-off valve D placed therein. When the valve D is opened, the pressure-water passes from the orifice *a'* across the passage *b* into the egress-port *c*, which is located concentric with the orifice, thereby forming a vacuum in the passage *b*, which permits the atmospheric pressure to act on the static water in the well E, and forces it into the passage, from which it is discharged by and with the jet from the orifice *a'*, by way of the discharge-pipe C, from the well.

To prevent any fluid from passing into the well E by way of the passage *b*, a valve is arranged at its opening to prevent the same, at the same time permitting it to take in the fluid. The valve consists of a casing, *d*, inclosing the opening of the passage, and provided with a disk, *d'*, that will seat itself against the casing and prevent any back action, but as soon as a vacuum is formed in the ejector it is thereby drawn up against the casing of the passage *b* and there held, thus permitting the fluid to pass around the same and into the said passage through the holes *e*.

The cut-off valve D is arranged between the orifice *a'* and pressure-pipe A, and it consists of a piston-head, *f*, neatly fitted to the chamber *g* and located in relation to the ingress-port *a* in such a manner that, when closed, the pressure-fluid will hold it seated over the orifice *a'*, or when opened the same pressure will hold it so by seating it against the cap *h*. From the head *f* projects the stem *i*, which extends through the cap *h*, and is connected to the diaphragm F by the circular plates *l*, riveted to the stem *m*, and the latter connected to the stem *i* by suitable means.

In ejectors that are used to elevate static water, that accumulates slowly, it is desirable that they should work only at intervals, and, when the said water has been ejected, to cease acting until a sufficient quantity has again accumulated. To accomplish this I arrange in combination with the ejector B a diaphragm, F, that is secured perfectly air-tight at its periphery to the outer portion of a concave disk, G, connected to the ejector at H, which permits the central portion to be depressed by the weight of the fluid column, which, when its height is sufficient to exert pressure enough on the diaphragm to overcome that exerted on the piston-head *f*, it withdraws the same and puts the ejector in operation, which continues to operate until the static water has nearly all been ejected from the well, or until the weight of the fluid column has lessened sufficiently to permit the air compressed between the diaphragm F and the disk G, to overcome the pressure in the port *a*, then exerted on the piston-head to hold it open, which again seats the piston-head *f* over the orifice *a'*, and stops the operation. By this device the pressure-water is suddenly applied to the ejector and likewise cut off, and the water permitted to accumulate in the well in sufficient quantity before the ejector is put in operation, and to remain so until all or nearly all of it has been ejected, when it ceases to act, thus resulting in an automatic device to elevate fluid by a similar fluid under pressure, which is very desirous for draining cellars and like purposes.

Having described my invention, what I claim is—

1. The combination of the pressure-pipe A, the discharge-pipe C, the ejector B, connected to the said pipes, the cut-off valve D, and the diaphragm F, attached to the cut-off valve D, and arranged to be operated by the weight of the static water in the well, by which, when the well has accumulated sufficient water, the valve is opened by the weight of the said static water and the ejector put in operation thereby.

2. In combination with the ejector B and a cut-off valve, the diaphragm F, connected to the cut-off valve and arranged to be operated by the weight of the static water in the well, by which the ejector is put in operation by the weight of the said water.

3. The combination of the ejector B, the cut-off valve D, the diaphragm F, arranged to operate the valve D, and the concaved disk supporting the diaphragm and forming an air-space between the diaphragm and the disk, as set forth.

4. In combination with the ejector B, the cut-off valve D and the diaphragm arranged upon a closed air-chamber to open the valve by the weight of a column of water, and close the same by the action of compressed air, as set forth.

5. The combination of the ejector B, the cut-off valve D, the diaphragm F, and the disk G, for the purpose set forth.

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

CHAS. WHITE.

Witnesses:
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