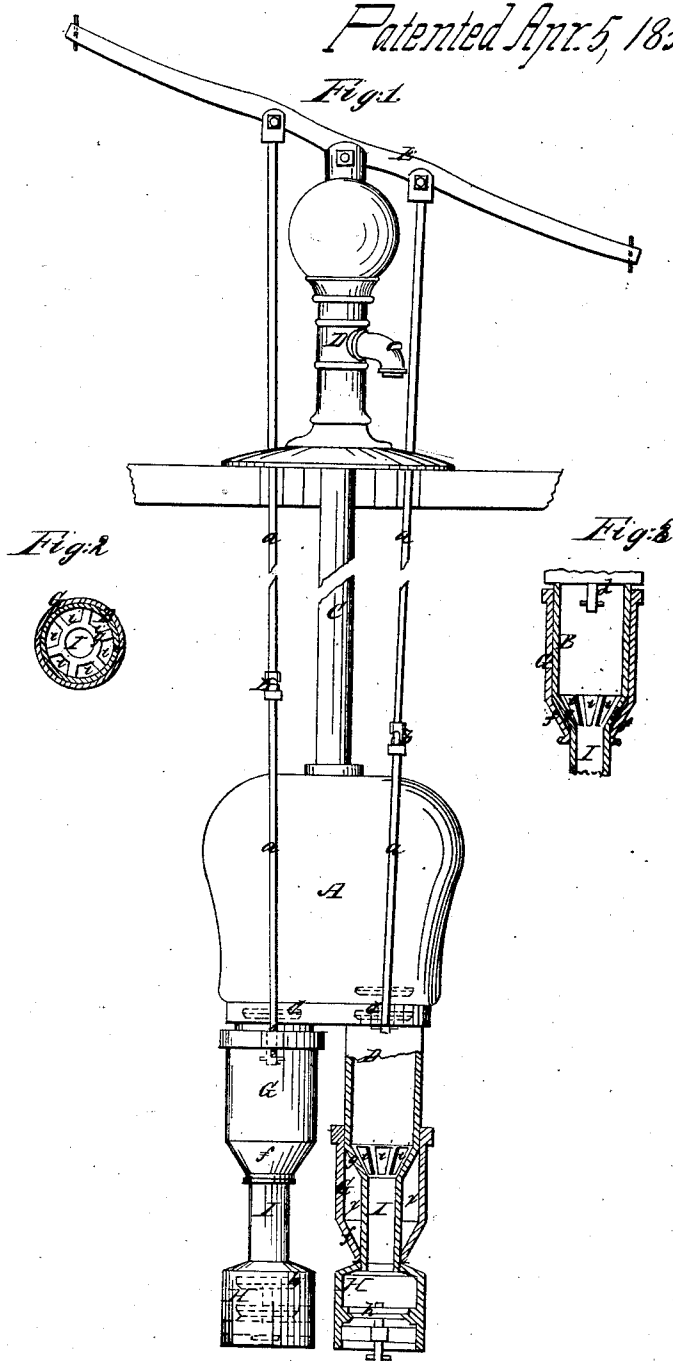


Christian & Beeler Double-Acting Pump.

N^o 23447.

Patented Apr. 5, 1859.



Witnesses.

B. H. Hallitt
W. C. Harris

Inventor.

John B. Christian
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UNITED STATES PATENT OFFICE.

JOHN B. CHRISTIAN AND ABRAHAM BEELER, OF MOUNT CARROLL, ILLINOIS.

PUMP.

Specification of Letters Patent No. 23,447, dated April 5, 1859.

To all whom it may concern:

Be it known that we, JOHN B. CHRISTIAN and ABRAHAM BEELER, of Mount Carroll, in the county of Carroll and State of Illinois, have invented a new and Improved Pump; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification, Figure 1, being a side elevation of our improved pump, a portion thereof being also in section in order to exhibit the interior construction of the essential portion of the invention; Fig. 2, a cross section, and Fig. 3 a vertical section of a detached portion of the pump, indicated by the letters of reference.

Like letters designate corresponding parts in all the figures.

The pump belongs to that class in which the pump proper is located at the bottom of the well, or in the water, and the power is applied from a lever E, at the top of the well through connecting rods *a, a*; and in which a pipe C, conducts the water upward to the spout D, above. The length of the rods *a, a*, is adjusted by the screws *b, b*, in the usual manner.

From the air-chamber A, of the pump, two cylinders B, B, of diameter and length suitable for the purpose designed, extend downward, and terminate in cones *g, g*, which connect them with smaller cylinders I, I, below, of proper length to allow the required length of stroke to be given to the pumping cylinders hereinafter described. To the lower ends of the small cylinders I, I, are attached respectively, valve chambers H, H, containing the induction valves *h, h*. Valves *d, d*, are also located at the upper ends of the cylinders B, B.

Over the cylinders B, B, are closely fitted the pump cylinders G, G, to which the connecting rods *a, a*, are respectively attached, and which perform the functions of pistons, in the following manner:—These pumping cylinders are made of proper size to cover

the cylinders B, B; and their lower ends terminate in cones *f, f*, similar to the cones *g, g*, which terminate the cylinders B, B. The cones *f, f*, terminate in collars which closely encircle the small cylinders I, I, upon which they slide. If they are well fitted, no packing is needed around either the cylinders B, B, or I, I; and both ends of the pumping cylinders G, G, being guided on the cylinders B, B, and I, I, respectively, they work very freely, and require but little weight or strength. The lower ends thereof being conical, their movement also causes but very little disturbance of the water, which is further protected from soiling by the stationary valve chambers H, H.

The cones *g, g*, which connect the cylinders B, B, and I, I, are suitably perforated with apertures *i, i, i*, which offer a free communication between the interior of the cylinders B, B, and the spaces produced by the descent of the cylinders G, G, within the same, and around the small cylinders I, I, when the said pumping cylinders are depressed, as shown at *x, x*, in Fig. 1. When these cylinders are thus depressed, the water rushes in to fill the space; and then, when the cylinders are again raised, as indicated in Fig. 3, the water is forced upward into the air-chamber. Thus a simple and effective substitute for pistons is obtained, and one which can not become disarranged. The motion of the water is also nearly direct; and the whole arrangement is compact.

What we claim as our invention and desire to secure by Letters Patent, is—

The construction, arrangement and combination of the pumping cylinders G, G, and cylinders B, B, and I, I, substantially in the manner and for the purpose herein specified.

JOHN B. CHRISTIAN.
ABM. BEELER.

Witnesses:

B. H. HALLETT,
W. H. HARRIS.