G. C. MERRILL & C. C. UTTER.

Lift-Pump.

No. 197,284. Patented Nov. 20, 1877.

Fig. 1

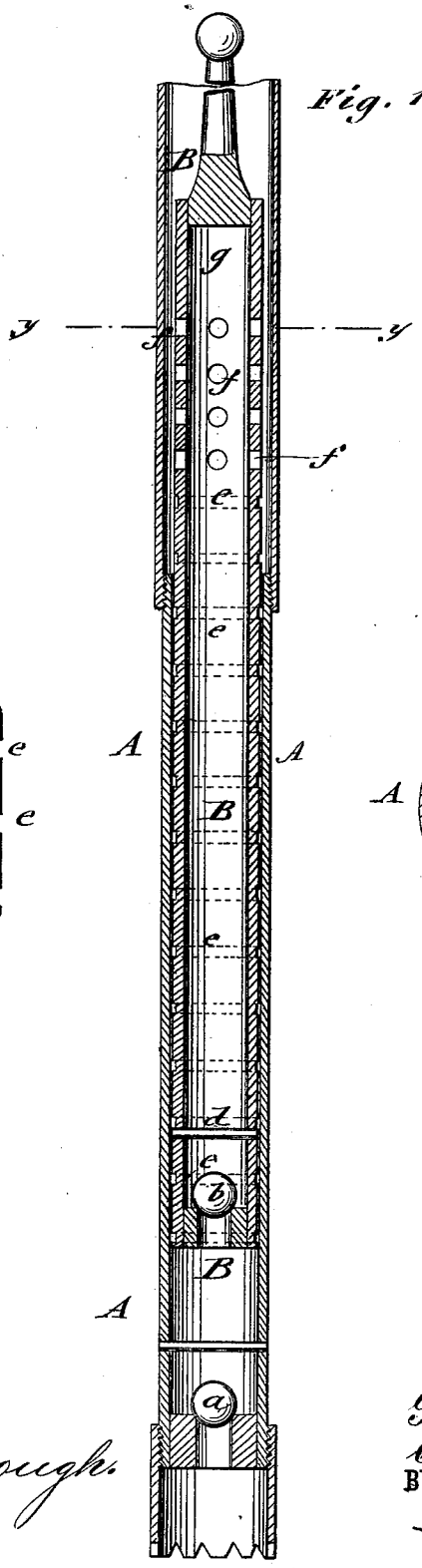


Fig. 2

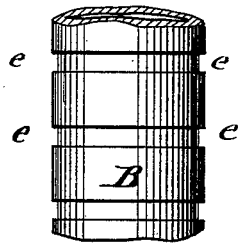
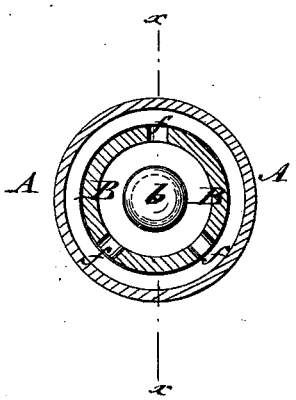


Fig. 3



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UNITED STATES PATENT OFFICE.

GEORGE C. MERRILL, OF EAST SAGINAW, AND CHARLES C. UTTER, OF SAGINAW CITY, ASSIGNORS TO THEMSELVES AND CHARLES H. PLUMMER, OF SAGINAW CITY, MICHIGAN.

IMPROVEMENT IN LIFT-PUMPS.

Specification forming part of Letters Patent No. **197,284**, dated November 20, 1877; application filed September 29, 1877.

To all whom it may concern:

Be it known that we, GEORGE C. MERRILL, of East Saginaw, and CHARLES C. UTTER, of Saginaw City, all in the county of Saginaw and State of Michigan, have invented a new and Improved Pump, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a vertical central section of our improved pump on line *x x*, Fig. 3; Fig. 2, a detail side view of the plunger; and Fig. 3, a horizontal section of the pump on line *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of this invention is to construct a deep-well pump, by which the necessity of packing the plunger is obviated, which is an important feature, as such packing is liable to come off and get into the valves, and cause a large amount of difficulty and expense.

The pump is also intended to save a large amount of the friction of the packed valve by constructing a plunger that can work freely in the pump-chamber, and still prevent the water from passing between the plunger and chamber when the plunger is lifting the column of water.

The invention consists of a valved pump-chamber in connection with a valved plunger, having annular grooves for water-packing, perforations at the upper end, and an air-chamber at the top.

By referring to the drawings, A represents the pump-chamber, which is provided with the customary caged valve *a* at the lower end, to draw in the water on the upward motion of the plunger B.

The plunger B is a hollow cylinder or tube, that is provided with a valve, *b*, and cross-bar *d* at the bottom end, the cross-bar regulating the lift of the valve in the usual manner.

The outside of the plunger B is arranged at suitable intervals with annular grooves *e* over the whole length that works in the chamber A, as shown in Figs. 1 and 2.

The upper end of the plunger-tube that projects out of the chamber A is perforated with holes *f*, as shown in Figs. 1 and 3, and has at its upper end an air-chamber, *g*.

The annular grooves of the plunger fill, when the same is drawn up, with water, and form a water-packing, the plunger being closely fitted to the chamber. The drawing up of the plunger will, therefore, raise the valve of the chamber A, and fill the same with water, and as the plunger returns in the chamber the lower valve will be closed and the valve of the plunger opened, so that the water will be forced up through the plunger, and out through the holes in the upper part of the plunger, while the air-chamber of the top end of the plunger prevents the pounding of the water, and makes a smoothly-working pump.

The upstroke of the plunger lifts the column of water in the barrel, and finally discharges the same at the upper end of the pump-barrel, the plunger working, without packing, in a smooth and effective manner.

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

1. The combination of a valved pump-chamber with a valved tubular plunger, having outer annular grooves for water-packing, discharge-holes at the upper end, and an air-chamber at the top end, substantially in the manner and for the purpose set forth.

2. A tubular plunger having outer annular grooves at suitable intervals on that part within the pump-chamber, discharge-holes at the upper part, and an air-chamber at the top end, substantially in the manner and for the purpose specified.

GEORGE CLIFT MERRILL.
CHARLES CHAPIN UTTER.

Witnesses:
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