# S. S. Hogle,

# Pump Lift,

No. 2,112, Patented May 29, 1841.

Fig: 1.

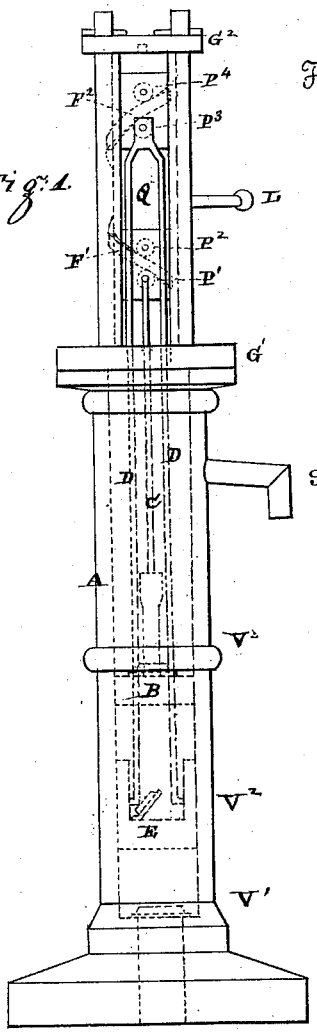



Fig: 3.

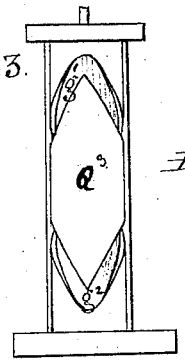
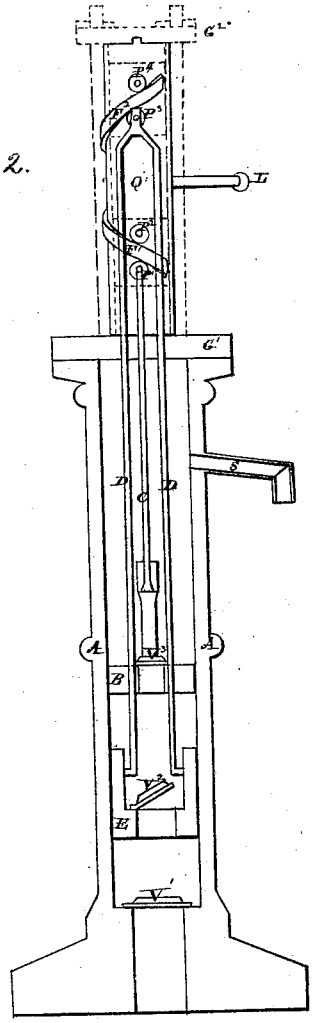



Fig: 2.



# UNITED STATES PATENT OFFICE.

SIDNEY S. HOGLE, OF LANSINGBURG, NEW YORK.

## CONSTRUCTION OF PUMPS.

Specification of Letters Patent No. 2,112, dated May 29, 1841.

*To all whom it may concern:*

Be it known that I, SIDNEY S. HOGLE, of Lansingburg, in the county of Rensselaer and State of New York, have invented a new and useful Improvement in the Construction of Pumps for Raising Water, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is an elevation of the pump—the dotted lines showing the pistons, and their valves, and portions of the rods working in the cylinder and the cams on the periphery of the vibrating shaft for working the pistons; Fig. 2, vertical section of ditto. Fig. 3, represents a shaft with oblique endless or eccentric grooves running in contrary directions around said shaft to produce a reciprocatory movement of the pistons.

The cylinder A and one of the pistons B and rods C are made in the usual manner; except that the piston is perforated with two round openings to admit a double piston rod D to pass through, to which another piston E is fastened. Both pistons work in the cylinder and are furnished with valves of the usual form which have an alternate or reciprocating movement up and down or to and from each other—that is to say when the lower piston E is down, as represented in the drawing, the upper one B will be raised, and when the under piston E is up the other B will be down or nearly touching the former—and when the lower piston E is down as represented its valve $V^2$ will be open to allow it to plunge into the water in the cylinder and at the same time the valve $V^3$ of the upper piston will be shut while the piston B lifts it. And at the next alternate stroke and while the lower piston ascends its valve $V^2$ will be shut and it will consequently lift the water above it and at the same time the valve $V^3$ of the upper piston in descending will open to allow the water to pass through it as it plunges into the water raised by the lower piston; and then as this piston again ascends it will lift the water above it and force it out at the spout S, or up through a hose to any place desired. The cylinder will of course be provided with the usual valves to admit and hold the water, such as that represented at V′ at the bottom of the cylinder through which the water rises in the usual manner.

Motion will be communicated to the pistons in the following manner.

To the head of each piston are secured two revolving pulleys $P'$ $P^2$ $P^3$ $P^4$, between these pulleys are brought two spiral cams $F'$ $F^2$ one inclining to the right and the other to the left fixed at an angle of about 35 or 45 degrees to the periphery of a shaft Q moved horizontally to the right and left about a quarter of a revolution at each stroke by a lever L by hand or other power. The shaft turns between two parallel plates $G'$ $G^2$ one fixed to the head of the cylinder A and the other supported at a convenient distance therefrom by posts, rods, or other convenient fixtures, the gudgeons of the shaft turning in apertures in the said plates. The shaft may be cylindrical, semi-cylindrical, or other shapes.

When the lever L is moved around to the right to the position represented in the drawing the cams F will act simultaneously on the pulleys $P'$ of the upper piston and on $P^4$ of the lower piston causing them to assume the positions before described, and when the movement of the lever is reversed the cam $F'$ will act on pulley $P^2$ and cam $F^2$ will act on pulley $P^3$ and will of course reverse the position of the pistons.

The pump may be worked in a horizontal, vertical, or inclined position.

By forming two eccentric or zigzag grooves $g'$ $g^2$ on a shaft $Q^3$ and having only one pulley on each piston rod placed in these grooves the same alternate movement of the pistons may be produced with a rotary or revolving movement of the shaft, the pulleys traveling along the said grooves and causing the pistons to approach toward and recede from each other as desired, see Fig. 3, which is a representation of said shaft and grooves.

What I claim as my invention is—

The combination of the suction and lift pistons so as to produce an alternate action, as described, by means of the shaft Q constructed with cams $F'$ and $F^2$, or eccentric grooves $g'$—$g^2$, and the pulleys or rollers $P'$ $P^2$ $P^3$ $P^4$ attached to the head of each piston rod D and E the whole being constructed and operated in the manner set forth.

SIDNEY S. HOGLE.

Witnesses:

WM. F. ELLIOT,

C. MAHER.