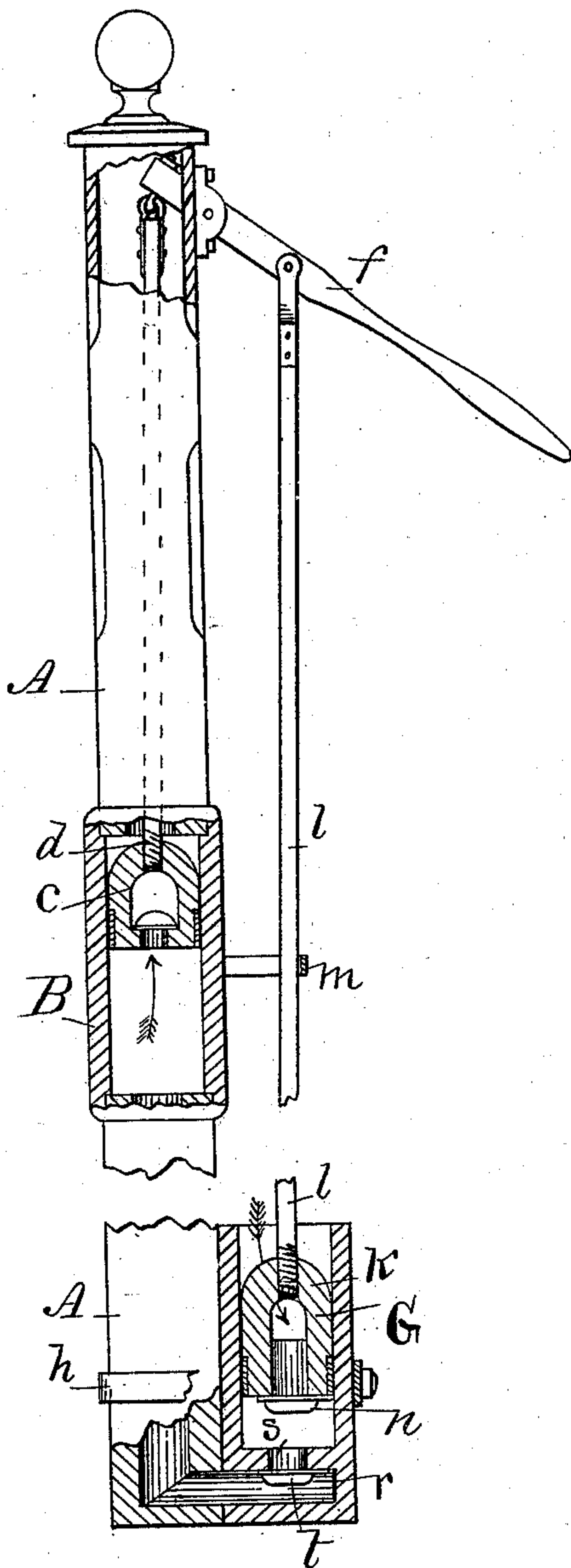


(No Model.)

S. DONALDSON:  
Attachment to Pumps.

No. 235,938.

Patented Dec. 28, 1880.



Witnesses:

*R. G. Orwig,*  
*Frank W. Heers.*

Inventor:

*Samuel Donaldson*  
*By Thomas G. Orwig,*  
*Attorney.*

# UNITED STATES PATENT OFFICE.

SAMUEL DONALDSON, OF ALTOONA, IOWA, ASSIGNOR OF TWO-THIRDS TO  
A. L. McWHORTER AND JACOB P. CLAYTON, OF SAME PLACE.

## ATTACHMENT TO PUMPS.

SPECIFICATION forming part of Letters Patent No. 235,938, dated December 28, 1880.

Application filed July 10, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL DONALDSON, of Altoona, in the county of Polk and State of Iowa, have invented an Improved Deep-Well Pump, of which the following is a specification.

My object is to provide a simple, cheap, and effective pump for raising water easily from wells that are too deep for common suction or lift pumps; and my invention consists in combining a cylinder and piston with the lower end of the well-tube of a lift-pump and an operating lever at the top of the pump, as hereinafter fully set forth.

My accompanying drawing is a side view of my pump, in which sections of the tube and cylinders are removed to show the pistons and valves.

A A represent a wooden pump and well-tube of common form.

B is a cylinder formed in or attached to the pump and tube, as required in the construction of a common lift-pump.

c is a hollow piston, operated in the cylinder B by means of a piston-rod, *d*, connected with the short arm of the lever-handle *f*, that is attached to the top of the pump in a common way to be operated as a lever of the first order.

G is a second cylinder, fixed to the lower end of the well-tube by means of a clamping-yoke, *h*, or in any suitable way.

*k* is a second hollow piston, operated in the second cylinder, by means of a piston-rod, *l*, that extends upward outside of the well-tube, and is connected with the long arm of the lever-handle *f* in such a manner as to produce a lever of the second order, adapted to operate the piston *k*, and also a compound lever, that is adapted to operate the two distinct pistons simultaneously—the one to lift water by suction and the other by pressure. To steady the outside piston-rod, one or more bearings, *m*, may be attached to the well-tube in any suitable way.

*n* is a clack-valve on the under side of the hollow piston *k*.

*r* is a horizontal bore, extending from the bore in the lower and closed end of the well-tube into the lower and closed end of the cylinder G.

S is a vertical bore connecting the horizontal bore *r* with the lower end of the cylinder G.

*t* is a check-valve that prevents the water from flowing back into the cylinder G during the upward movement of the piston *k*.

In the practical use of my invention the second cylinder, G, and its piston and operating mechanism may be advantageously attached to any common lift-pump in a well that is over thirty feet deep in the manner shown and described, or in any suitable way, so that the water can be pressed out of the lower and submerged cylinder into the well-tube by the downward stroke of its piston at the same instant that water is lifted in the well-tube by the upward stroke of the piston in the upper cylinder.

Any suitable material may be used in the construction of the pump and well tube, cylinders, pistons, and valves, and size and form may vary as desired.

I am aware that two pistons have been rigidly connected with a cross-head at the top of a pump, to be jointly operated in a double cylinder to simultaneously draw and force water through flexible hose connected with the double cylinder; but my manner of forming and attaching a cylinder and piston to the lower end of a well-tube and a common pump-handle and lever of the first order at the top of the pump, to produce a lever of the second order and a compound lever, is greatly advantageous in elevating water from deep wells, in that the lower and submerged cylinder and piston force water upward from the bottom of the well from a depth that cannot be reached by the suction-force of the upper cylinder and piston.

I claim as my invention—

In a pump, the combination of the well-tube A, the cylinder B and its piston, the cylinder G and its piston, the lever-handle *f*, and the piston-rods *d* and *l*, substantially as shown and described, to operate in the manner set forth, for the purposes specified.

SAMUEL DONALDSON.

Witnesses:

GEO. JOY,

A. R. JOHNSON.