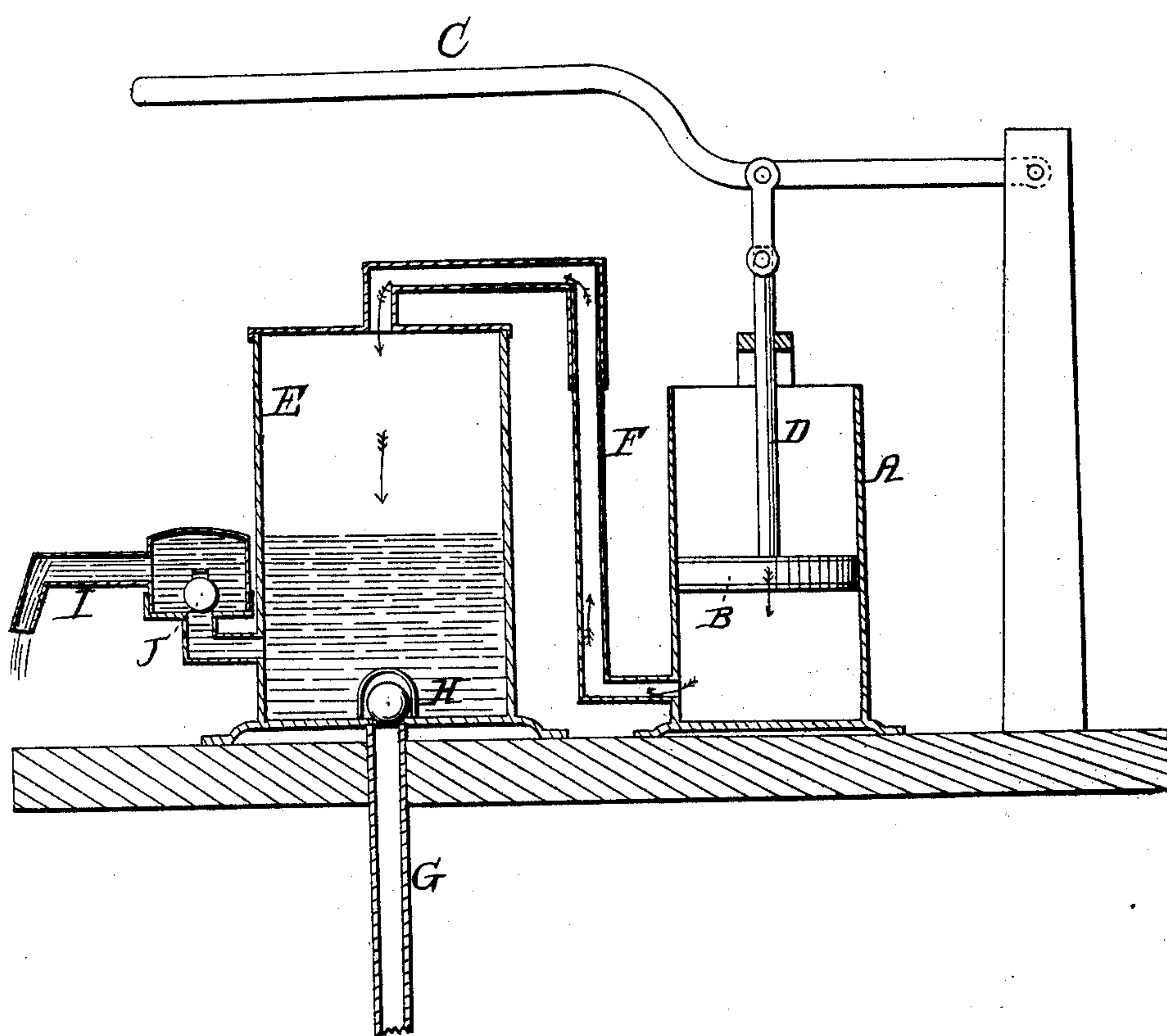


H. A. Sheldon,

Force Pump

No. 18,870.

Patented Dec. 15, 1857.



UNITED STATES PATENT OFFICE.

HARMON A. SHELDON, OF MIDDLEBURY, VERMONT.

PUMP.

Specification of Letters Patent No. 18,870, dated December 15, 1857.

To all whom it may concern:

Be it known that I, HARMON A. SHELDON, of Middlebury, in the county of Addison and State of Vermont, have invented a new and useful Improvement in Pumps for Corrosive and Abrading Fluids; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawing, making a part of this specification, said drawing being a vertical longitudinal section of my improvement.

This invention consists in the employment or use of a supplementary cylinder or air chamber connected with the pump cylinder and so arranged that the liquid or fluid acted upon by the pump will not be brought in contact with its cylinder and piston. By this means the pump may be used for pumping or forcing up corrosive fluids and also abrading fluids, or fluids containing sand and other foreign substances, without being at all injured or acted upon by said fluids.

To enable those skilled in the art to fully understand and construct my invention I will proceed to describe it.

A, represents an ordinary cylinder and B a piston fitted therein as usual.

C is a lever to which the piston is connected by a rod D.

The above parts are of usual construction and therefore do not require a minute description.

E, is a cylinder which may be placed by the side of the cylinder A or below it as occasion may require. In the drawing it is shown by the side of the pump cylinder A. The upper part of the cylinder E communicates with the lower part of the pump cylinder A by means of a pipe or tube F.

G, is an induction pipe the lower end of which is immersed in the fluid to be raised, the upper end communicating with the lower part of the cylinder E. Directly over the upper end of the induction pipe G a valve H is placed, said valve opening upward.

I is a force pipe which projects from the lower part of the cylinder E and is provided with a valve J, also opening upward. Both of the valves may be spherical or what are known as ball valves and they as well as the

cylinder E and its pipes G, I, may be constructed of glass or other substance capable of resisting the corrosive action of acids.

The pump cylinder A and its piston B may be constructed of any of the usual materials used for such purpose.

When the piston B is raised a partial vacuum will be formed within the cylinder or chamber E and the fluid will rise in pipe G, raise the valve H, and enter the chamber or cylinder E, and will rise therein until the air within the chamber E, pipe F, and the lower part of the pump cylinder A, is compressed and an equilibrium obtained between it and the external air. As the piston B, is depressed, the fluid raised within the cylinder or chamber E during the upward movement of the piston, will be forced out through the pipe I, the valve J, being forced upward by the force of the fluid. Thus it will be seen that the fluid to be pumped up or raised will not be brought in contact with the pump cylinder A and its piston B and consequently said parts when acids and fluids containing sand, gravel or other foreign substances are to be pumped up, will be beyond the injurious action of such fluids which injure and soon render utterly inefficient the best pumps, the acid corroding the parts and the sand or gravel abrading them.

I do not claim the employment or use of valves constructed of glass or other acid resisting materials for they have been previously used; but

Having thus described my invention what I claim as new and desire to secure by Letters Patent, is,

The employment or use of the supplementary cylinder or air chamber E communicating with the pump cylinder A by means of the pipe F, and having the induction and force pipes G, I, attached which are provided respectively with the valves H, J, substantially as and for the purpose set forth.

HARMON A. SHELDON.

Witnesses:

JUSTUS COBB,
HIRAM W. PITTS.