W. L. SMITH.

Hydraulic Engine.

No. 161,068. Patented March 23, 1875

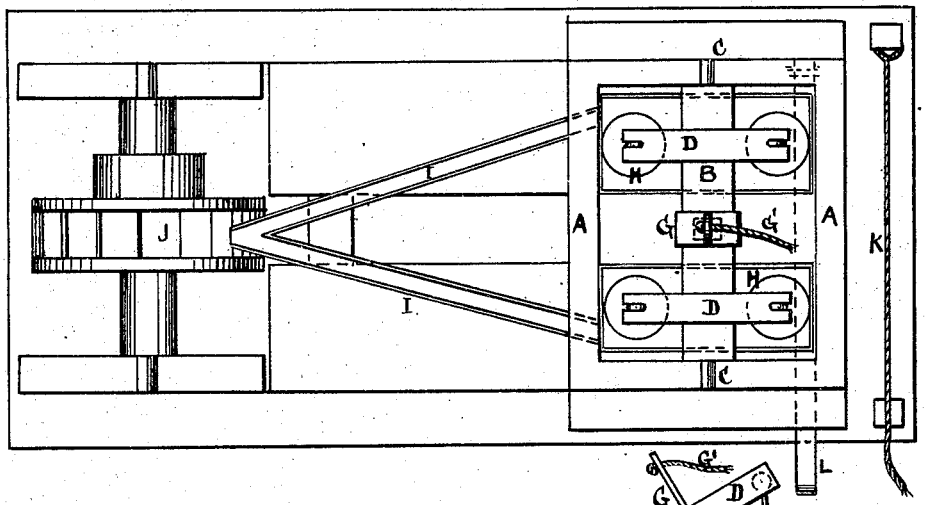

Fig 1.

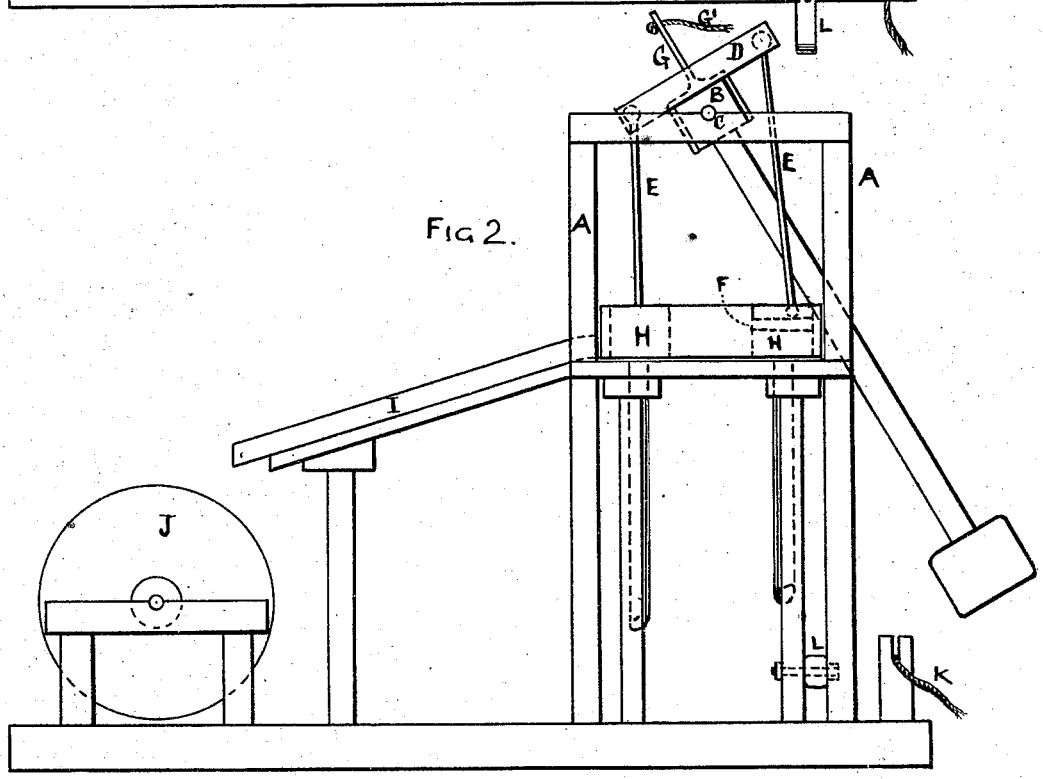

Fig 2.

WITNESSES

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INVENTOR

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UNITED STATES PATENT OFFICE.

WILLIAM L. SMITH, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN HYDRAULIC ENGINES.

Specification forming part of Letters Patent No. **161,068**, dated March 23, 1875; application filed January 30, 1875.

To all whom it may concern:

Be it known that I, WILLIAM LAFAYETTE SMITH, of San Francisco, in the county of San Francisco and State of California, have invented an Improvement in Hydraulic Engines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings and to the letters marked thereon.

This invention relates more particularly to new and improved means for operating pumps by a weighted pendulum employed for raising aqueous bodies for irrigating purposes, and obtaining limited power for driving machinery in localities where a fall or head of water cannot be obtained. It consists mainly in the employment of a weighted pendulum having an auxiliary arm attached to a rock-shaft which carries the pendulum. The rock-shaft is sustained upon a suitable frame, and transverse beams are placed across each end, which carry vertical pump-rods operating in the pump-barrels, which extend down into the pool or tank beneath the frame of the machine, so that the water may be raised to a sufficient height to be distributed by means of troughs for irrigating, or be directed upon a wheel for driving light machinery. It also relates to improved means for arresting the action of the pendulum.

Referring to the drawings for a more complete explanation of my invention, Figure 1 is a plan; Fig. 2, a side elevation.

A represents a rectangular frame, upon the top of which is placed a rock-shaft, B, the bearings of which operate in suitable boxes *c c*. One or more transverse beams, D, are secured to the rock-shaft, and pump-rods E are attached to each end, which connect with the piston of the pump F, which pumps extend down into the water intended to be raised. To the rock-shaft is attached a rigid arm, G, projecting upwardly a sufficient height, to the end of which is connected a rope or cable, G′, by means of which, and a rope or cable attached to the pendulum, mobility is given to the said pendulum, and the pumps operated.

The water as it is raised in this construction of pumps flows over the tops of the cylinders H, which are of short construction, as shown, whereby the friction incident to the raising of the water is considerably lessened, as the tops of the cylinder are on a plane, or nearly so with that of the troughs or conductors I I, by which conductors the water may be directed to any part of a field, or be made to fall upon a wheel, J, at the foot of the frame to drive simple machinery, in which latter case it may be used over and over again. No great advantage, however, is claimed in raising water by the device for propelling machinery. Its utility consists mainly in the fact of its adaptation to locations where both wood and water are scarce, and where no fall or head of water can be had.

In order to stop the vibration of the pendulum readily I employ a spring-rope, K, and a spring-bar, L, which extend from one post of the frame to the other at the rear end of the machine, which arrests the motion of the pendulum, against which it strikes, at the will of the operator.

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

In combination with the frame-work of a hydraulic engine, operated by means of a weighted pendulum, as described, the spring cable or rope K, and spring-bar L, as and for the purposes specified.

In witness whereof I have hereunto set my hand and seal.

WM. L. SMITH. [L. S.]

D. W. MURPHY,
C. W. M. SMITH.