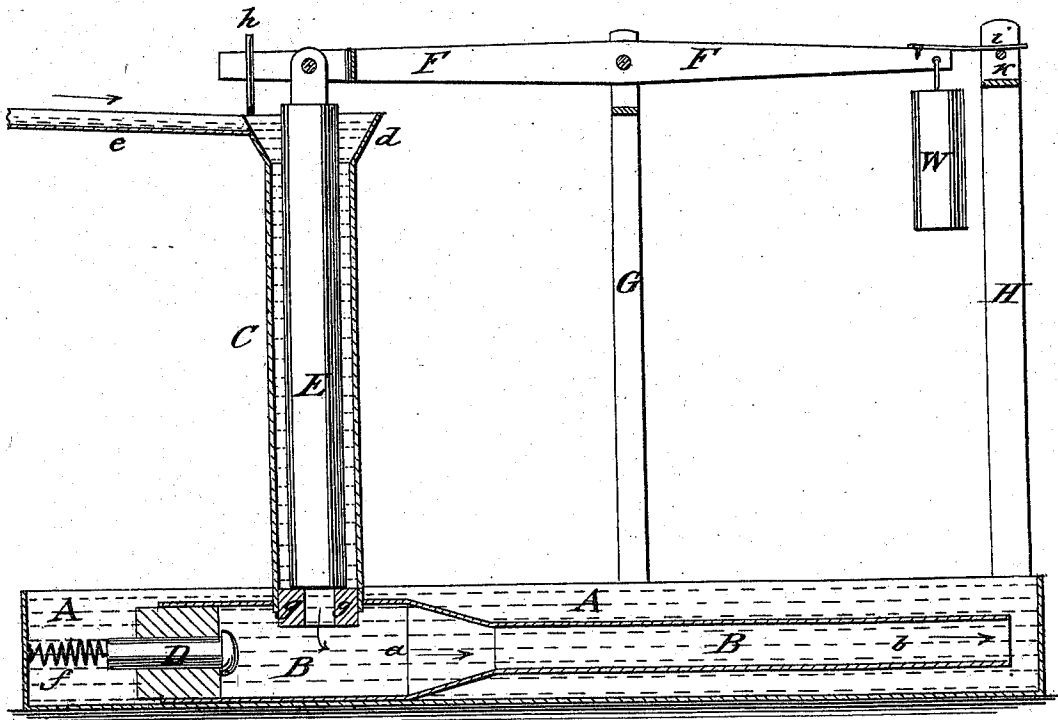


W. WALTER.
Hydraulic Motors.

No. 142,183.

Patented August 26, 1873.



Witnesses.

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WILLIAM WALTER, OF ARKADA, WASHINGTON TERRITORY.

IMPROVEMENT IN HYDRAULIC MOTORS.

Specification forming part of Letters Patent No. **142,183**, dated August 26, 1873; application filed June 7, 1873.

To all whom it may concern:

Be it known that I, WILLIAM WALTER, of Arkada, in the county of Mason, Washington Territory, have invented a new and Improved Hydraulic Motor, of which the following is a specification:

The object of my invention is the utilization of the power of small streams of water for various practical purposes, with or without requiring dams, as all the water can be conveyed through pipes or flumes. By the use of my invention small streams, which have hitherto been useless for water-power, may be applied to impart motion to stamping, pumping, sawing, and other machinery. My invention consists in the application of the stream or body of water to a vertical cistern and cistern-valve, which is balanced by a weighted lever, so that on floating the water rushes into a horizontal pipe and trough filled with water. The forward motion of the water, in connection with the closing of the cistern-valve, produces a forward motion of a piston-valve at closed end of horizontal pipe, which is connected suitably to the machinery to be driven by it.

The drawing represents a vertical longitudinal section of my hydraulic motor for utilizing small bodies of water, in which—

A is a trough, ditch, or other body, constantly filled with water; B, a horizontal pipe placed lengthwise therein, the shorter end *a* of which has a larger diameter than the longer end *b*. To the wider part of pipe B is connected, in suitable manner, the vertical cylindrical cistern C, having about the same diameter as pipe *a*. Its upper funnel-shaped end *d* conducts, from pipe or flume *e*, the stream of water to the cistern C. The shorter end *a* of pipe B is closed and provided with a well-fitting piston-valve, D, which is connected in some suitable manner to the machinery to be operated. The end of cistern C, communicating with pipe A, is provided with a ring, *g*, rigidly connected to cistern C, the opening of which is about half the width of that of the cistern. A cylindrical body or valve, E, of wood or other material,

which is made to float on the water, extends through the full length of cistern C, its diameter being of such width that one-half of the volume of the cistern is taken up by it. Valve E is pivoted at its upper end to a lever, F, sliding in guide-rod *h*, and having its fulcrum in standards or pillars G. To the other end of lever F is suspended a weight, W, slightly lighter than valve E. A projecting band-spring, *i*, acting on stop *k* of standards H, accelerates the down-stroke of valve E.

The operation of the motor is accomplished by filling trough A, pipe B, and cistern C with water, valve E closing the opening of the cistern in ring *g*. When the stream fills up the cistern entirely, valve E will float as soon as there is some pressure from below to start it. By lifting it slightly the water in the cistern will rush under valve E and carry the same upward. It will, at the same time, pass through ring *g* into the larger part of pipe B. The valve E, having no floating pressure from below, in connection with the action of spring *i* of lever H on stop K, is carried back and closes ring *g*. The water in pipe B, being in rapid forward motion or current, causes, by the sudden closing of valve E, the forward motion of piston-valve D. The return of piston D, by means of spring *j*, draws the body of water back, and gives, therefore, pressure enough to float valve E and repeat the same operation.

The power of the motor may be used fast or slow, as required—from forty to sixty strokes a minute down to one stroke in ten minutes—with but slight alterations in the proportions of the parts.

Both the lever-power or piston-power may be utilized, as desired—the lever-power for crushing quartz and stamping bones, the latter, by suitable transmission, for driving different machines.

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

1. The hydraulic motor, consisting of pipe B in trough A, cistern C valve E, weighted

lever F, piston-valve D, and standards G and H, operated substantially as and for the purpose described.

2. The cistern C, having funnel-shaped entrance *d* for water from flume *e*, guide-rod *h*, and ring *g* at lower end, as set forth.

3. The pipe B, with wider and narrower ends *a b*, and piston-valve D at end *a*, as set forth.

4. The lever F, having spring extension *i* and weight W at one end, and valve E arranged at the other end within the cistern C, as shown and described.

WILLIAM WALTER.

Witnesses:

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