I. VAN KERSEN.

Cold Water Engines.

No. 146,849. Patented Jan. 27, 1874.

FIG 1

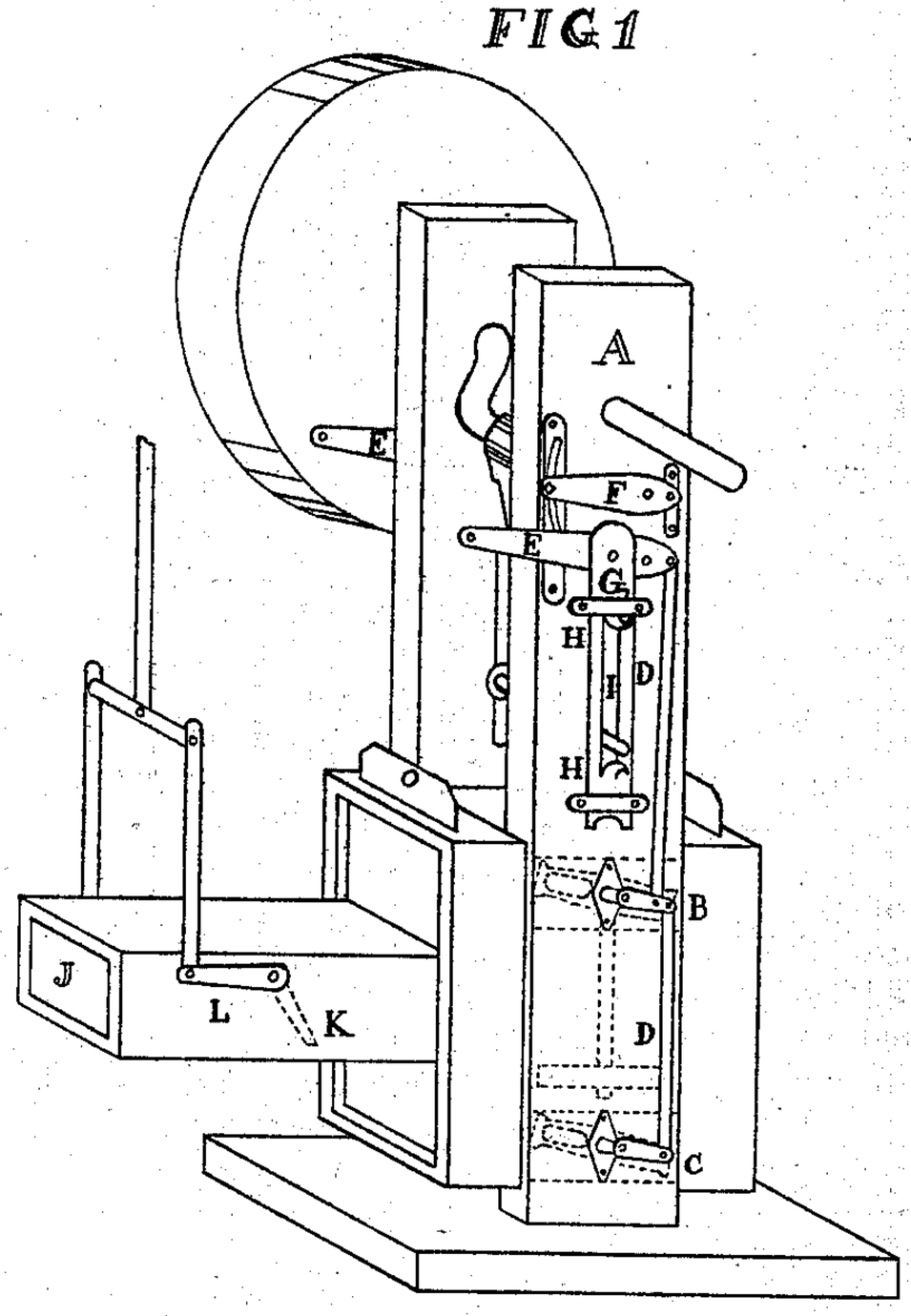


FIG. 2

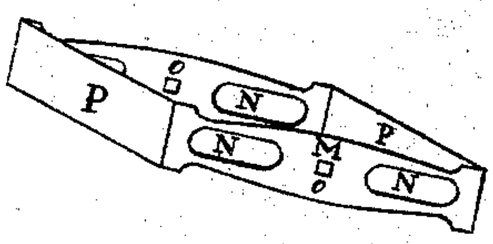
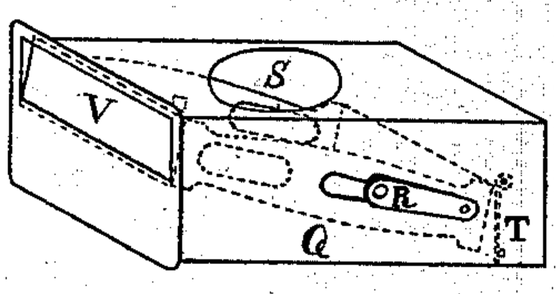


FIG. 3



Witnesses
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IZAAK VAN KERSEN, OF KALAMAZOO, MICHIGAN.

IMPROVEMENT IN COLD-WATER ENGINES.

Specification forming part of Letters Patent No. **146,849**, dated January 27, 1874; application filed February 27, 1873.

To all whom it may concern:

Be it known that I, IZAAK VAN KERSEN, of Kalamazoo, in the county of Kalamazoo and State of Michigan, have invented certain Improvements in Cold-Water Engines, of which the following is a specification:

My invention relates to that class of motors commonly known as hydraulic or cold-water engines; and the nature thereof consists in certain improvements in the construction of the same, and novel combination of the parts thereof, hereinafter shown and described.

In the accompanying drawings forming part of this specification, Figure 1 is a perspective view. Fig. 2 illustrates the equilibrium-valve. Fig. 3 shows the valve arranged within the valve-box.

Within the frame A of the engine are arranged two valve-boxes of the construction shown in Fig. 3, and a piston and rod of the ordinary form. (Designated by dotted lines in Fig. 1.) B and C designate levers attached to the axes of the equilibrium-valves, and connected by the guide-rods D D with the hand-lever E. F designates a set-lever, connected by means of a strap with the said lever E, for the purpose of adjusting the same. G indicates a slide-plate, connected by means of straps to the frame, in such a manner as to admit of its being vibrated in a vertical direction. The said sliding plate is provided with the longitudinal aperture I, through which passes a cross-head attached to the piston-rod and lugs H. The equilibrium-valves are provided with openings N N in the side thereof, for the circulation of the water, and plates P are arranged within the valve-boxes Q, one of which latter is secured within the frame above the piston, and the other below it, as is shown in dotted lines in Fig. 1. The axis upon which the said equilibrium-valve vibrates has its bearings in the sides of the valve-boxes Q, which are provided with doors for cleaning the valve-boxes, as is shown in dotted lines T, Fig. 3, and with openings V to admit the water, and openings above the cleaning-door T to discharge the water, which openings will be alternately shut by the equilibrium-valve. (Designated by dotted lines within the valve-box Q, Fig. 3.) S designates the bottom opening of the cylinder, in which the piston is arranged. If the feed or admitting pipe J is connected with the main pipe of a city's water-works or a common water-fall, and the valve K opened by letting down the levers L, the water will press through the admission-opening in the valve-box, (designated by dotted lines in Fig. 1,) which is shut on the end of discharge, and press through the opening S within the cylinder, and the piston will receive the full power of the water on one surface, while the other valve-box is shut on the end of admission, and open on the other end to discharge air or water. The valves are set in any desired position by means of the hand-lever E, and are operated, through the medium of the levers and connecting-rods, by the cross-head attached to the piston-rod, which vibrates in the longitudinal opening I, and alternately raises and depresses the sliding plate G as it is forced against the lugs H.

Having thus described the construction and operation of my invention, I will indicate in the following clauses what I claim, and desire to secure by Letters Patent of the United States—that is to say:

1. The combination of the equilibrium-valves, constructed as described, with the valve-boxes and piston.

2. The combination of the piston-rod, slide-plate G, lever E, connecting-rods D, and levers B and C, all operating together as and for the purposes described.

3. The combination of the equilibrium-valve M with the valve-box Q, provided with a cleaning-door, T, as set forth.

IZAAK VAN KERSEN.

Witnesses:

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