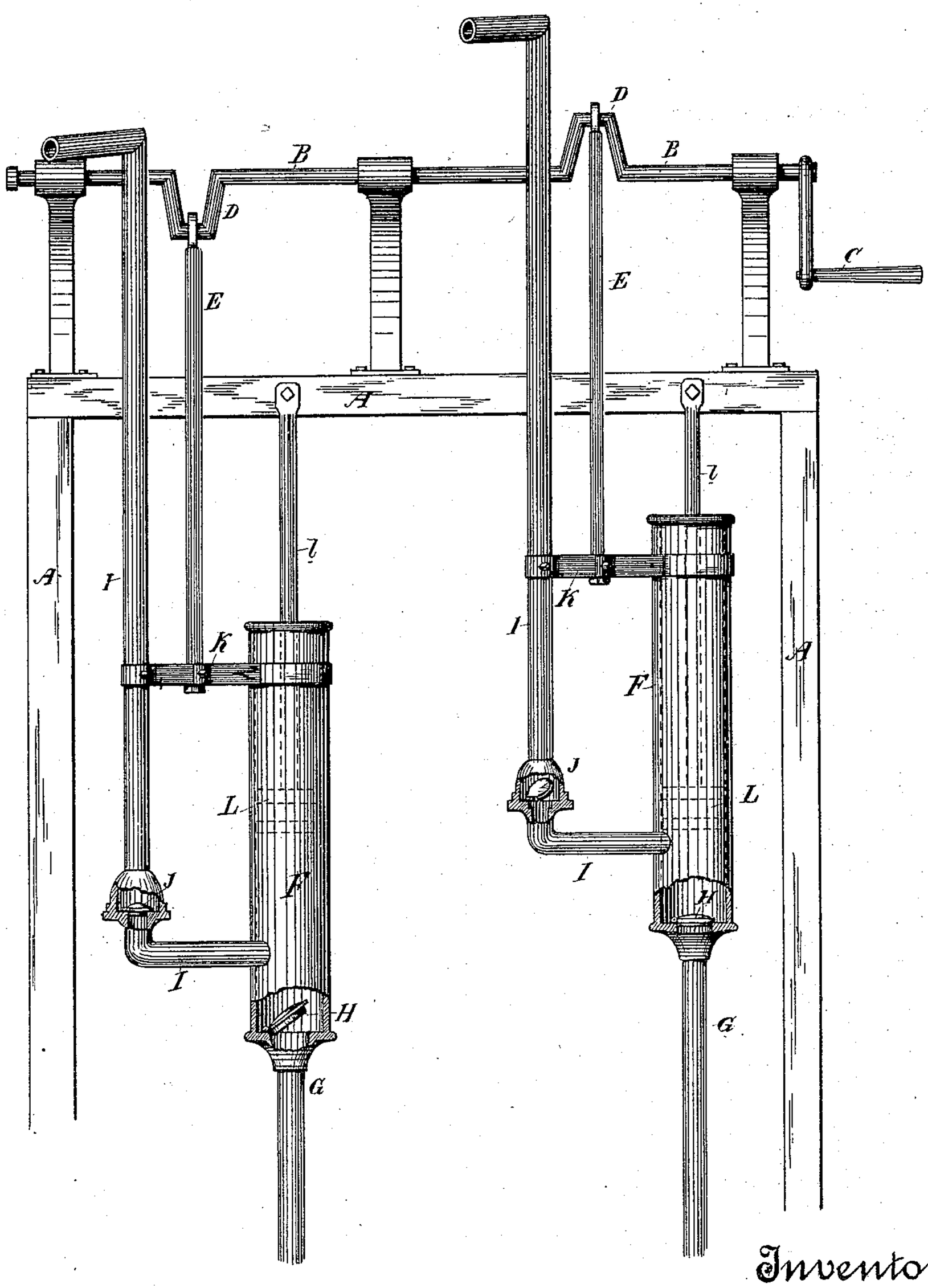
(No Model.)

W. C. McCLAY.

PUMP.

No. 316,049. Patented Apr. 21, 1885.



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WILLIAM C. McCLAY, OF SANTA ANA, CALIFORNIA.

PUMP.

SPECIFICATION forming part of Letters Patent No. 316,049, dated April 21, 1885.

Application filed December 1, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. McCLAY, of Santa Ana, county of Los Angeles and State of California, have invented an Improvement in Pumps; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to the class of pumps, and particularly to that class in which such an arrangement of several pumps is made that the work of one has a tendency to relieve that of the other by reason of effecting a balance between them.

My invention consists, primarily, in a pump having a stationary piston and a reciprocating cylinder provided with suitable valves and a discharge-pipe; and it consists, further, in the arrangement of two pumps of this character in a manner which will enable one to balance the other, so that the power necessary for operating them is reduced to a minimum.

The object of my invention is to provide a simple and easy-acting pump.

Referring to the accompanying drawing, the figure is a front elevation of my pump, a portion of the cylinders and discharge-pipes being broken away to show the valves.

A is a frame, above which in suitable bearings is a shaft, B, having a crank, C, at one end by which it is rotated. This shaft is provided with two cranks, D, extending in opposite directions, and from these cranks depend the hangers E, by which the pump-cylinders F are suspended. These cylinders have at their bases the suction-pipes G, at the tops of which are the upwardly-opening suction-valves H. Opening out of the cylinders are the discharge-pipes I, in which, near their bases, are the upwardly-opening discharge-valves J. Embracing the tops of the cylinders and the bodies of the discharge-pipes, and extending between them, are straps K, to the centers of which the hangers E are attached, whereby the cylinders and pipes are suspended. The pistons L which fit the cylinders have piston-rods *l*, which are secured to and are suspended from the top rail of the frame A. The pistons are therefore stationary, while, by the revolution of the crank-shaft B, the cylinders F move up and down, and by reason of the opposite extension of the cranks D this movement of the two cylinders is an alternately simultaneous reciprocating one—that is to say, while one ascends the other descends, and vice versa. The pumps are ordinary single-acting pumps, drawing in and discharging water in the usual manner, the only difference being one of construction, in that instead of the pistons reciprocating, as is usually the case, the cylinders move up and down. The advantage of the arrangement of the pumps as here shown is as follows: The two pumps are made as nearly as possible of equal weight. The one moving down is taking in water and the one moving up is discharging it; but in the discharge-pipe of the descending pump is a column of water resting on the discharge-valve, which during the stroke more than counterbalances a column of water in the ascending discharge-pipe, which at first was of equal weight, but which by reason of discharging grows lighter, and as the cylinders themselves are of equal weight and are balanced on a lever-beam or a crank-shaft, as here shown, it is obvious that it will require but little exercise of power to operate the pumps, and this power is directed only to raise the water in the cylinders alternately, which will not exceed a lift of over two feet, and not necessarily that, as the pumps can be submerged when there is a sufficient amount of water.

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

1. In a pump, the piston L, having rod *l* suspended from and held stationary by a framework, A, in combination with the cylinder F, having suction-pipe G, with valve H, the discharge-pipe I, having valve J, and a means for reciprocating said cylinder and discharge-pipe, consisting of the crank-shaft B, supported by frame A, and the hanger E, connected with the crank-shaft and with the cylinder and pipe, substantially as herein described.

2. The stationary pistons L, the cylinders F, and discharge-pipes I, of two pumps provided with suction and discharge valves H J, in combination with the means by which said cylinders and discharge-pipes are simultaneously reciprocated in opposite directions, consisting of the crank-shaft B, having the oppositely-located cranks D, and the hangers E,

connected with said cranks, and with the cylinders and discharge-pipes, and the straps K, substantially as herein described.

3. The pistons L, having rods *l*, the cylinders F, having valves H, and the reciprocating discharge-pipes I, having valves J, all forming two pumps, as described, in combination with the frame A, from which the piston-rods *l* are rigidly suspended, the crank-shaft B, supported by the frame and having the opposite cranks, D, the hangers E, suspending the cylinders and discharge-pipes from cranks D, and the straps K, all arranged and operating substantially as herein described.

In witness whereof I have hereunto set my hand.

WILLIAM C. McCLAY.

Witnesses:

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