

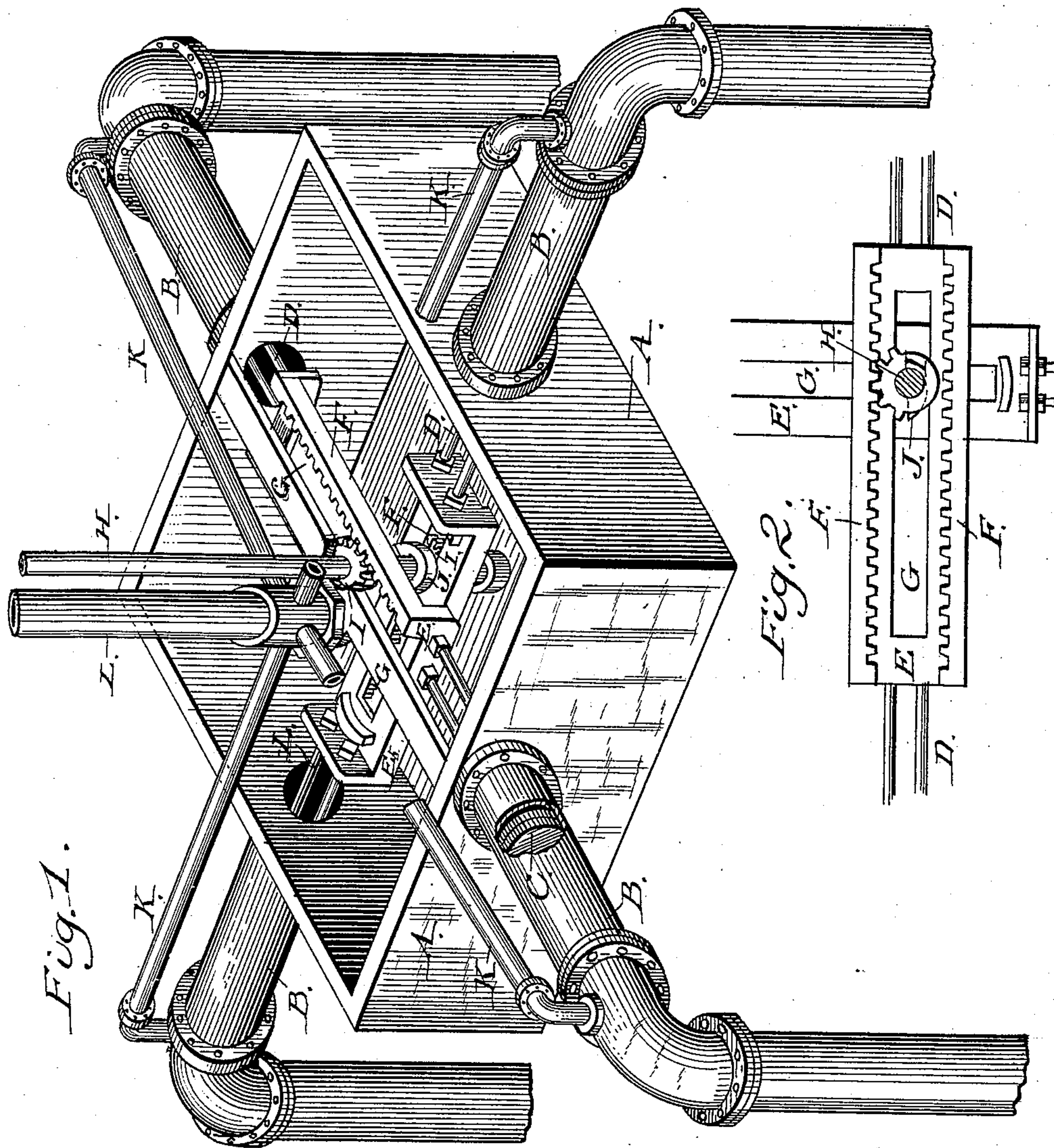
(No Model.)

J. P. COBB.

PUMP.

No. 326,201.

Patented Sept. 15, 1885.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN PERRY COBB, OF COLLEGE CITY, CALIFORNIA.

PUMP.

SPECIFICATION forming part of Letters Patent No. 326,201, dated September 15, 1885.

Application filed May 4, 1885. (No model.)

To all whom it may concern:

Be it known that I, JOHN P. COBB, of College city, Colusa county, State of California, have invented an Improvement in Pumps; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to a pumping apparatus which is specially designed for irrigation and other purposes where it is necessary to throw a considerable body of water.

It consists of a series of pump-cylinders extending radially and horizontally from a central casing, the oppositely-placed cylinders having pistons and rods extending from them into the central casing, where they are actuated by reciprocating racks driven by gearing upon a central shaft, and in connection with these the driving mechanism and discharge-pipes, all of which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is an exterior view of my apparatus. Fig. 2 is a vertical section taken through the central casing and one pair of pump-cylinders.

A is a central casing containing the operating mechanism. In the present case I have shown it in the form of a short vertical chamber, and from its sides the pump-cylinders B extend radially outward, the two which are opposite each other being placed in line, and one pair being placed sufficiently above the plane of the other pair, so that the operating mechanism of each will work without interference with the other. Within these cylinders the pistons C are fitted to work, and piston-rods D extend inwardly through the sides of the casing A and connect with the operating gear or mechanism, which is formed as follows:

E is a plate to which the inner ends of the piston-rods of two opposite cylinders are secured. Upon each side of this plate is fixed a straight toothed rack, F, and through the center of the plate is made a slot, G, through which a vertical central shaft, H, passes. Upon this shaft, between the racks E, is secured a mutilated pinion, I, the teeth being cut away from the proper proportion of its circumference, so that the remaining teeth will engage with the rack upon one side and drive the pistons in one direction, then after

becoming disengaged from this rack will re-engage with the rack upon the opposite side and drive the pistons in the opposite direction.

A precisely similar arrangement of racks and mutilated pinions is arranged below the first-described one, so as to operate the other set of pumps, which are in line with each other below the first pair.

The relative arrangement of the pinions is preferably such that one set of pumps is at about the center of their stroke when the other set has completed the stroke.

In order to reduce the strain upon the first tooth of the pinion when it first engages with the rack upon either side, I form a cam, J, which engages a corresponding lug, J', upon a plate, E, and thus assists to start the plate and the pumps in the opposite direction until two or more teeth of the pinion have become engaged with the rack.

If the pump is a suction-pump, water may be allowed to be drawn into the central chamber, A, and the vertical shaft H is operated by a hollow shaft which extends up through the top of this chamber, and has openings around its lower end within the casing, so that the water which is drawn into the casing may pass up through the pipe and be discharged at any suitable elevation. I prefer, however, to keep the operating mechanism clear of water and grit, which would be apt to cut it in this form of construction; and I therefore make my pumps to act as force-pumps, each of the pump-cylinders having a pipe, K, extending from it to the main discharge-pipe L, which stands a little at one side of the center and is independent of the central driving-shaft.

From the foregoing description it is manifest that in constructing and arranging the parts as shown no water can possibly enter the central casing, A, in which the operating mechanism is placed, thereby avoiding all danger arising from the injurious action of the sand and grit on the working parts of the pump.

In order to relieve the cylinders from pressure when the pumps are not at work, I employ a valve in the pipe L, which supports the body of water above.

Having thus described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

In a pump, the central casing having the oppositely-arranged radial pump-cylinders,
5 with the plungers working therein, the piston-rods extending into the casing, and the pipes K, extending from the pump-cylinders at a point beyond the outward limit of the pump-piston to a common discharge-pipe, L,
10 in combination with the racks to which the piston-rods are connected, the vertical driv-

ing-shaft and the mutilated gear or pinions secured thereto, said pinions adapted to engage the racks alternately, substantially as set forth.

In witness whereof I have hereunto set my hand.

JOHN PERRY COBB.

Witnesses:

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H. C. LEE.