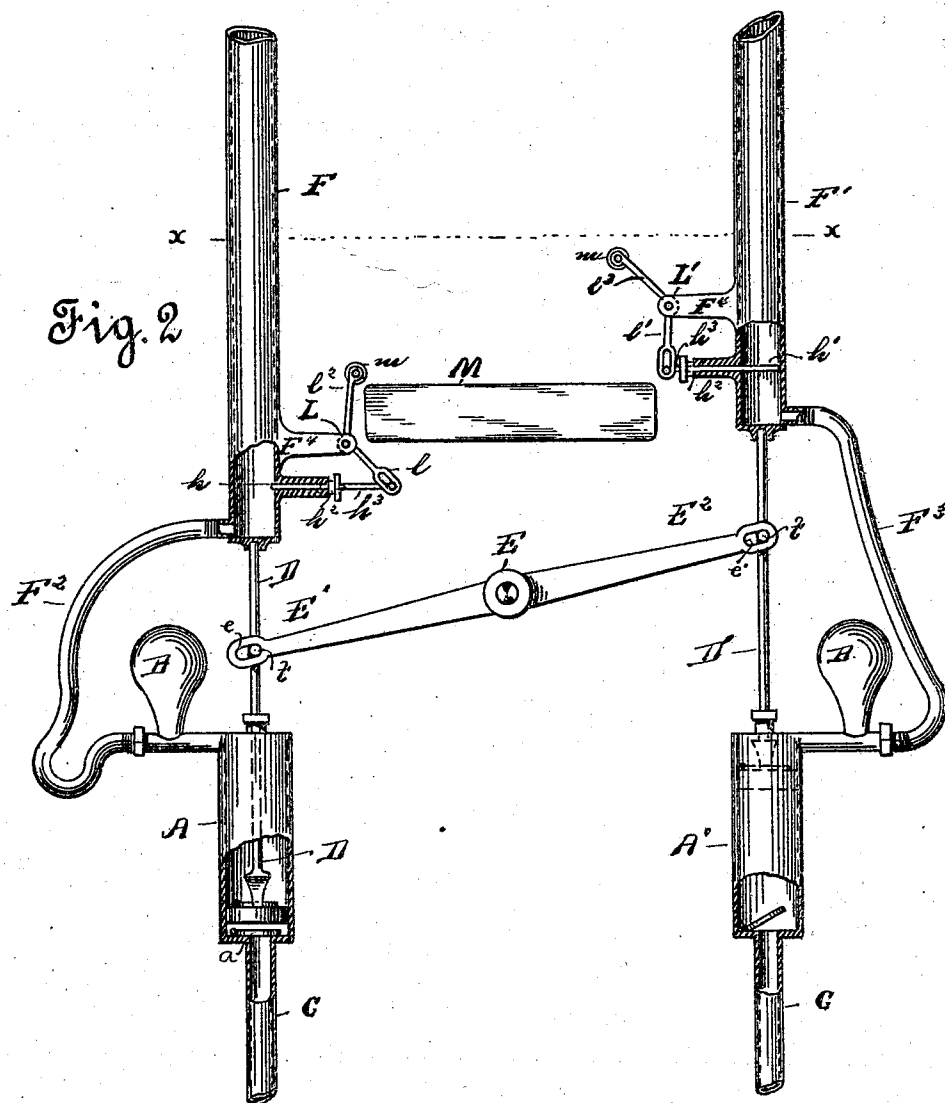
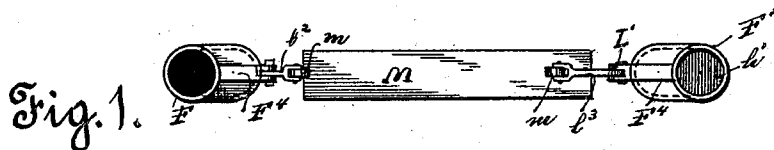


·(No Model.)

W. CAMERON.
HYDRAULIC PUMP.

No. 502,950.

Patented Aug. 8, 1893.



Witnesses.
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Inventor.
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UNITED STATES PATENT OFFICE.

WILLIAM CAMERON, OF MILPITAS, CALIFORNIA.

HYDRAULIC PUMP.

SPECIFICATION forming part of Letters Patent No. 502,950, dated August 8, 1893.

Application filed April 11, 1892. Serial No. 428,564. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM CAMERON, a citizen of the United States, residing at Milpitas, in the county of Santa Clara and State of California, have invented certain new and useful Improvements in Hydraulic Pumps; and I do hereby declare the following to be a full, clear, and exact description of said invention, such as will enable others skilled in the art to which it most nearly appertains to make, use, and practice the same.

My invention has relation to certain new and useful improvements in hydraulic pumps, which consists in the arrangements of parts and details of construction as will be hereinafter more fully set forth in the drawings, described and pointed out in the specification.

The present invention has for its object to permit the raising of water through vertical pipes to high elevation by the utilization of such power as has heretofore been deemed capable of only raising or drawing the water from well to lower end of conveying pipes, thus overcoming necessity for employment of expensive horse power machinery for the purpose of raising water as heretofore.

Referring to the drawings forming a part of this application, wherein similar letters of reference are used to denote corresponding parts throughout the entire specification and views—Figure 1 is a cross sectional top plan, taken on line $x-x$ of Fig. 2. Fig. 2 is a side view, showing stand or conveying pipes partly broken away at lower end in order to more fully illustrate cut off mechanism.

The letters A, A', are used to indicate ordinary single acting pumps, provided with the usual air cylinders B. Pipe C, leads from pump to well or tank, not shown, and water is allowed to pass therethrough into pump by means of valve a , which is opened or closed upon upward or downward stroke of pistons D, D', in the usual manner. The projecting ends of these pistons are connected together by walking beam E, which is provided with elongated end slots e, e' , within which stud or projection f, f' , secured to piston rods D, D', works. The upper ends of said piston rods have secured thereto stand or conveying pipes F, F', which are raised and lowered alternately with the movement of the pistons, as will be hereinafter more fully set forth. These

pipes run vertically any given height twenty-five, fifty, one hundred, or more feet, in order to discharge into tank, &c., for receiving water. These stand pipes are connected to the pumps by means of flexible hose connections F², F³, clearly shown in Fig. 1, and the inflow of water therein is controlled by cut off valves h, h' , which work laterally through stuffing boxes h^2 . These valves are operated so as to move in or out by means of trip levers L, L', the lower arms l, l' , of which are secured to stem h^3 , of valves h, h' , while the upper arms l^2, l^3 , are provided with roller m . The levers are pivotally secured to stand F⁴, projecting from stand pipes. The walking beam is operated by any suitable mechanism, and as end E', E², is raised or lowered, piston-rod secured thereto is likewise carried up or down. As piston rod D, moves downward with end E', of walking beam, piston D', is moved upward by arm E², and forces water within pump through connection F³, into stand pipe F', which pipe is raised by the movement of said piston rod. During the lifting of the stand pipe, arm l' , of lever L', contacts with lower end of beam M, secured in any suitable manner between stand pipes, and as the said pipe continues its upward movement, arm l' , is gradually moved inward, which closes cut-off valve h' , when arm has cleared end of beam, as shown. The water forced into the stand pipe is thus prevented from flowing downward back into the pump. With the upward movement of stand pipe F', stand pipe F descends, and during the movement thereof roller m , of arm l^2 , contacts with beam M, and throws arm l , outward, which opens cut-off valve h , so as to allow water from pump upon up-stroke of piston D, to be forced into stand pipe F. It will thus be seen that each of said valves is open during the up stroke of its respective pipe so that water may be forced into the same by the piston connected thereto, and that just as the pipe reaches the upper limit of its stroke the valve is closed so as to prevent the escape of the water into the pump on the ensuing down stroke of the pipe. Just as the pipe reaches the lower limit of its stroke, the valve is opened so that water may be again forced into the pipe. It will be observed that as the weight of each stand pipe is equal, one counterbalances the other, and

it is only necessary that power of operating mechanism for walking beam be sufficient to allow of pump drawing water from well and forcing same through flexible connecting medium into either stand pipe. The power necessary for this depends upon depth of suction and distance through connecting pipe. When the water is to be forced the discharge height through a single stand pipe it is necessary that the forcing power for pump be sufficient to raise entire weight of volume of water retained within stand pipe. By my arrangement however, a sufficient quantity of water is retained in each stand pipe to counterbalance the weight of the water in the other and, consequently, by its descent aid the ascent of that other body of water. I am thus enabled to use less pumping power, consequently materially reducing cost of running this class of machinery.

It will be observed that inasmuch as the pistons carry the stand pipes and the pumps are connected directly to the stand pipes the

device is reduced to a very simple form and the water is made to travel in almost a straight line. The cost of the apparatus is consequently reduced to a minimum and very little labor is required to operate it, the power being expended in lifting the water and not in raising a heavy pump.

Having thus described my invention, what I claim as new, and desire to secure protection in by Letters Patent of the United States, is—

The combination with the pumps, pistons working therein, walking beam for alternately raising and lowering the pistons, stand pipes connected to the pistons and carried thereby, and of the flexible connection between the pumps and stand pipes.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM CAMERON.

Witnesses:

N. A. ACKER,
J. W. KEYS.