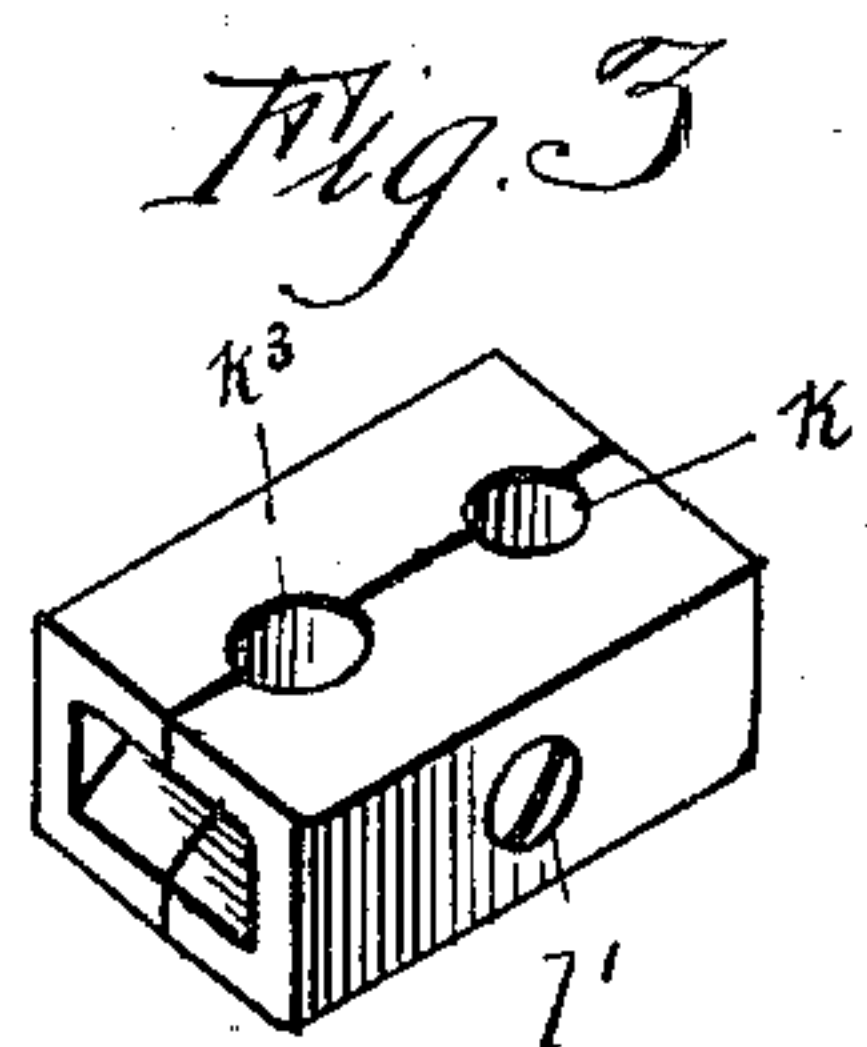
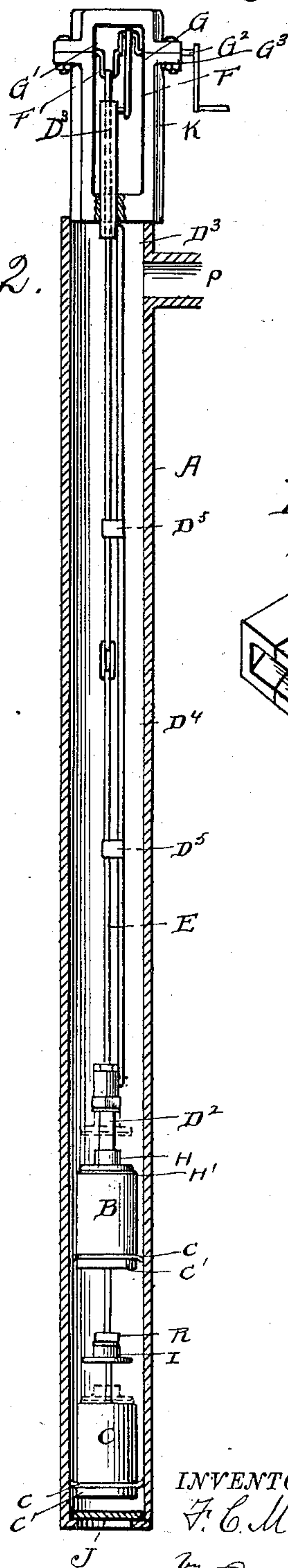


F. C. MATTESON.
DOUBLE ACTING PUMP.

Patented Aug. 25, 1896.



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UNITED STATES PATENT OFFICE.

FREDERIC C. MATTESON, OF BURDETT, KANSAS.

DOUBLE-ACTING PUMP.

SPECIFICATION forming part of Letters Patent No. 566,405, dated August 25, 1896.

Application filed March 30, 1895. Serial No. 543,893. (No model.)

To all whom it may concern:

Be it known that I, FREDERIC C. MATTESON, a citizen of the United States, and a resident of Burdett, in the county of Pawnee and State of Kansas, have invented certain new and useful Improvements in Double-Acting Pumps; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a representation of a central vertical section through invention with plungers at one limit of their movement. Fig. 2 is a similar view of modification, the plungers being at the other limit of movement. Fig. 3 is a detail of bar forming bearings in pump-head.

The object of this invention is to provide a double-acting pump of simple and efficient character, capable of furnishing a continuous stream of water, and which may be used either as a suction or as a force pump; and the invention consists in the novel construction and combination of parts, all as hereinafter described, and pointed out in the appended claims.

Referring to the accompanying drawings, the letter A designates a pump cylinder or barrel in which are arranged to operate two pistons or plungers B and C, carried by the respective rods D and E. The rod D is connected to a crank G of a shaft G², journaled in suitable supports G³, by means of a rod D' and link F, while the rod E is connected to an opposite crank of said shaft by a link F'. Said plungers B and C are arranged one above the other in the pump cylinder or barrel, the rod E of the lower one extending up through the rod D, which is hollow. The upper plunger preferably consists of a hollow cylinder having therein a spider-like core b, which extends but part way through the cylinder from the upper end thereof, and whose central hub has a threaded bore, into which screws the lower end portion of the hollow rod D.

H is a lift-valve which works loosely on said rod D and seats upon the upper end of

the cylinder to close the ports or openings between the arms of the core b. H' is a packing-leather for said valve.

c is a cup-leather which is secured in place by means of a ring c', which has a series of arms c², which extend up into the cylinder, where they are joined to a nut c³, into which the rod D screws.

The lower plunger C is similar to the upper one and is provided with a similar valve I. The rod E has a head e at its lower end, and in connecting it to the plunger it is inserted into the lower end thereof and is screwed up from that way until the head e seats against the bottom of the nut c³, thus making a secure connection of the parts.

J is a check-valve which is placed in the suction-pipe A below the plungers.

The rod D', which connects to a lug of the rod D, has upper and lower guides in the pump-head K at k k'. The rod E is guided at k² k³. The guides k' k² are shown as formed by means of a bar which connects the lateral portions of the pump-head. Said bar is made in two longitudinal sections, each of which has a groove on each end, and these grooves engage ribs l on the lateral portions of the head. A screw or bolt l' is usually employed to connect the two sections.

The operation is as follows: As the shaft G² is rotated the two plungers are caused to alternately approach and recede from each other, one or the other of them sucking all the time. As the upper plunger rises and the lower one falls the valve I opens and water is admitted between the two plungers, the water above the upper one being forced out of the discharge P. When the lower plunger is rising and the upper one falling, the valve H opens and admits water above the said upper plunger. The rod E is packed at the upper end of the hollow rod, as shown, when the pump is used as a forcing-pump.

R designates a nut or collar on the rod E, which limits the throw of the valve I and prevents said valve from coming off should the connecting-links become uncoupled from any cause.

When the pump is used as a deep-well pump, as illustrated in Fig. 2, I prefer, instead of extending the hollow rod D all the way up, to use a short hollow section D² at

the bottom and a second short section D^3 at the top, and to connect these two sections by means of a rod D^4 . The two rods D^4 and E may have one or more guides D^5 between the two sections D^2 D^3 .

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

1. In a double-acting pump, the combination with the upper piston B , comprising a hollow cylinder having a spider-like core at its upper portion, a cup-leather c seated against the bottom edge of the said cylinder, a ring c' which secures the said cup-leather and which has a series of arms c^2 which extend up into said cylinder, and a threaded nut at the upper end of said arms, of a hollow rod-section screwed into said core, and into the said nut, a lift-valve seated around said section upon the upper end of the piston, a stuffing-box at the upper end portion of the said section having a collar which forms a stop for said valve, and a pump rod or link connected to said box, together with a lower piston of similar

form to the upper one and having a rod which extends up through said hollow section and stuffing-box, and means whereby the said rods are actuated to oppositely reciprocate the said pistons, substantially as specified.

2. In a pump, the combination of a pump cylinder or barrel, the two pistons or plungers which work therein one above the other, the valves therefor, the pump-rods connected to said cylinders, one of said rods having the hollow sections D^2 , D^3 , through which the other rod extends and which are connected by a rod-section D^4 , the crank-shaft journaled in a suitable head and having opposite cranks, and the links which connect said cranks with the respective pump-rods, substantially as specified.

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

FREDERIC C. MATTESON.

Witnesses:

W. F. KERFOOR,
L. H. ELSPASS.