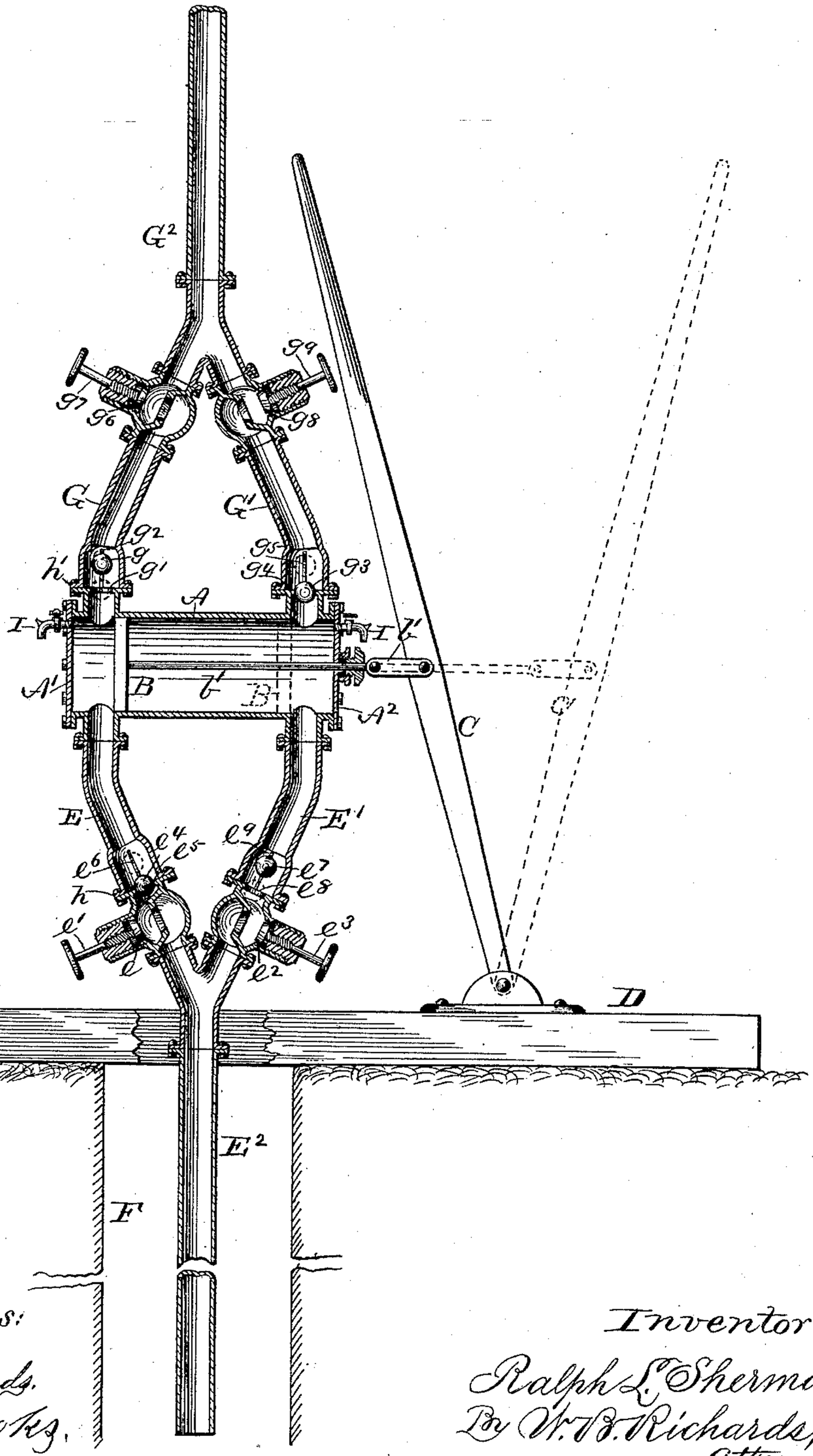
(No Model.)

R. L. SHERMAN.

DOUBLE ACTING PUMP.

No. 411,263. Patented Sept. 17, 1889.



Witnesses:
L. R. Richards.
N. Brooks.

Inventor:
Ralph L. Sherman,
By W. B. Richards,
Atty.

UNITED STATES PATENT OFFICE.

RALPH L. SHERMAN, OF MONMOUTH, ILLINOIS.

DOUBLE-ACTING PUMP.

SPECIFICATION forming part of Letters Patent No. 411,263, dated September 17, 1889.

Application filed June 5, 1889. Serial No. 313,224. (No model.)

To all whom it may concern:

Be it known that I, RALPH L. SHERMAN, a citizen of the United States, residing at Monmouth, in the county of Warren and State of Illinois, have invented certain new and useful Improvements in Combined Single-Acting and Double-Acting Single-Cylinder Pumps, of which the following is a specification.

This invention relates to a combined single-acting and double-acting single-cylinder pump; and it consists in constructions and combinations hereinafter described and claimed.

The accompanying drawing, which forms a part of this specification, is partly an elevation and partly a sectional elevation of a pump which embodies the main features of my invention in the best form at present known to me, and also shows part of a well in which it is mounted.

Referring to the drawing by letter, A represents a horizontal cylinder, in which the piston B is reciprocated by a lever C, which is connected with the piston-rod *b* by a rod-link *b'*, and is fulcrumed at its lower end to the frame D, which covers the well. The piston B may be reciprocated by any other means desired. A suction-pipe E extends downwardly from one end of the cylinder A, and a similar pipe E' extends downwardly from its other end, and these pipes E E' uniting form the main suction-pipe E^2, which extends downwardly into the well F.

A short distance above the union of the pipes E E' the pipe E is provided with a stop-valve *e*, which is operated by turning a handle *e'*, and the pipe E' is provided with a similar stop-valve e^2, operated by a handle e^3. Close to and above stop-valve *e* is a ball-valve e^4, limited in its motion upwardly from its seat e^5 by a cage e^6. A ball-valve e^7 is located on a seat e^8, above the stop-valve e^2, and is limited in its upward motion by a cage e^9.

A delivery-pipe G extends upwardly from one end of the cylinder A, and a similar pipe G' extends upwardly from its other end, and these pipes uniting form a common delivery-pipe G^2. A short distance above the cylinder A the pipe G is provided with a ball-valve *g*, having a seat *g'* and cage g^2, and the pipe G' is provided with a similar valve g^3, having a seat g^4 and cage g^5. A short distance below the union of the pipes G and G' the pipe G is provided with a stop-valve g^6, having a handle g^7, and the pipe G' is provided with a similarly-located stop-valve g^8, having a handle g^9.

This pump may be fixed in position by any means preferred, and no particular means are shown for that purpose. As shown by full lines, the piston B is supposed to be approaching and very near the limit of its throw or movement toward the end A' of the cylinder A, (the stop-valves *e*, e^2, g^6, and g^8 all being open,) water will pass upwardly, as such movement of the piston is made, through the now open valve e^7 to fill the cylinder A, while the same movement of the piston will force the previously-contained water in said cylinder upwardly through the pipe G and now open valve *g*. While the piston B moves, as last described, the valves e^4 and g^3 remain closed. When the piston B is moved in an opposite direction to that last described and toward the end A^2 of the cylinder A, the water contained in said cylinder will be forced outwardly through the pipe G' and now open valve g^3, and water will be drawn in to refill the cylinder A through pipes E^2 and E and now open valve e^4, the valves e^7 and *g* being closed. The pump performing as last described is a double-acting single-cylinder pump. By closing the stop-valves *e* and g^6, and thereby cutting off the passage for water through the pipes E and G, respectively, it will be readily seen, without special explanation, that water will be drawn to the cylinder A through the pipes E' F' as the piston moves toward the end A' of said cylinder, and will be forced from the cylinder through the pipes G G' as the piston moves in an opposite direction. By opening the stop-valves *e* and g^6 and closing the stop-valves e^2 and g^8 water will be drawn through the pipes F E and delivered through the pipes G G^2. The pump performing as described in this paragraph is a single-acting pump.

The stop-valves *e* and g^6 may be closed, as hereinbefore described, for the purpose of cleaning or repairing either or both valves e^4 or *g* while the pump is operating as a single-acting pump, and for the purpose of getting

at the valves e^4 and g the pipes E and G have joints h and h', respectively, which joints may be opened without interfering with the operation of the pump as a single-acting pump. The pipes E′ and G′ have similarly-located joints by means of which the valves e^7 and g^3 are accessible when the stop-valves e^2 and g^8 are closed. Each end of the cylinder A is provided with a faucet I, that one of which may be opened when the stop-valves at same side of pump are closed, to let out quickly sufficient water, so that the remainder will not interfere with pumping, as described.

The valves e^4, e^7, g, and g^3 may be of any other class of valve, as may also the stop-valves, if preferred, as I do not limit my claims to any specific construction of valve.

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

1. In combination with the cylinder A, piston B, and its operating mechanism, the converging pipes G G′, with valves g g^3 and stop-valves g^6 g^8, and the converging pipes E E′, having valves e^4 and e^7 and stop-valves e and e^2, substantially as and for the purpose specified.

2. In combination with the cylinder A and piston B, the converging pipes G G′, united to form pipe G^2, and provided with valves g g^3, and stop-valves g^6 g^8, and the converging pipes E E′, having valves e^4 and e^7, and stop-valves e and e^2, and the faucets I, substantially as and for the purpose specified.

3. In combination with the cylinder A and piston B, the converging pipes G G′, united to form pipe G^2, and provided with valves g g^3 and stop-valves g^6 g^8, and the converging pipes E E′, having valves e^4 and e^7, and stop-valves e and e^2, and each of said pipes E E′ G G′ having a joint at the place where the ball-valve is located therein, substantially as and for the purpose specified.

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

RALPH L. SHERMAN.

Witnesses:

IRVING T. BRADY,

T. G. PEACOCK.