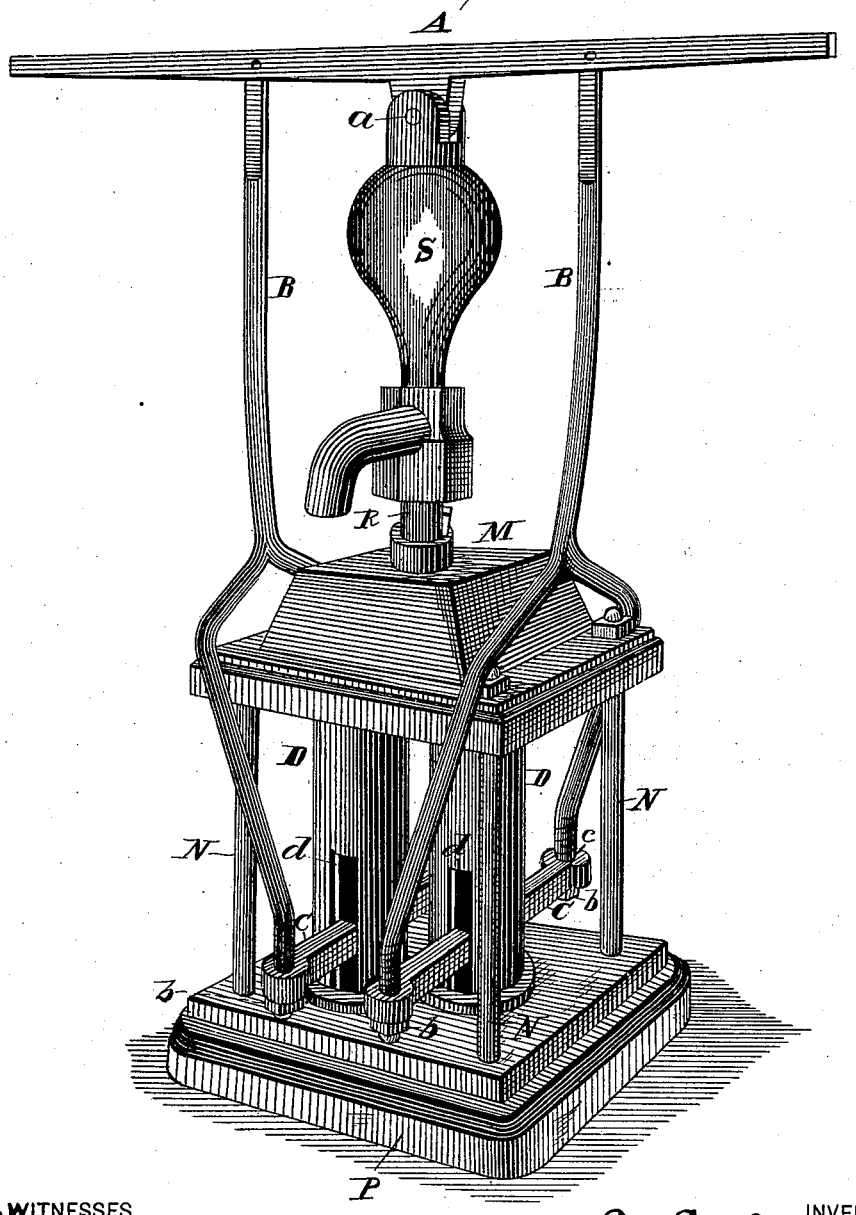
2 Sheets—Sheet 1.

E. L. SPENCER.

Double-Acting Force-Pump.

No. 210,058. Patented Nov. 19, 1878.

Fig. 1



WITNESSES

E. F. Nottingham

A. M. Bright

INVENTOR

E. L. Spencer.

By H. A. Seymour,

ATTORNEY

2 Sheets—Sheet 2.

E. L. SPENCER.

Double-Acting Force-Pump.

No. 210,058. Patented Nov. 19, 1878.

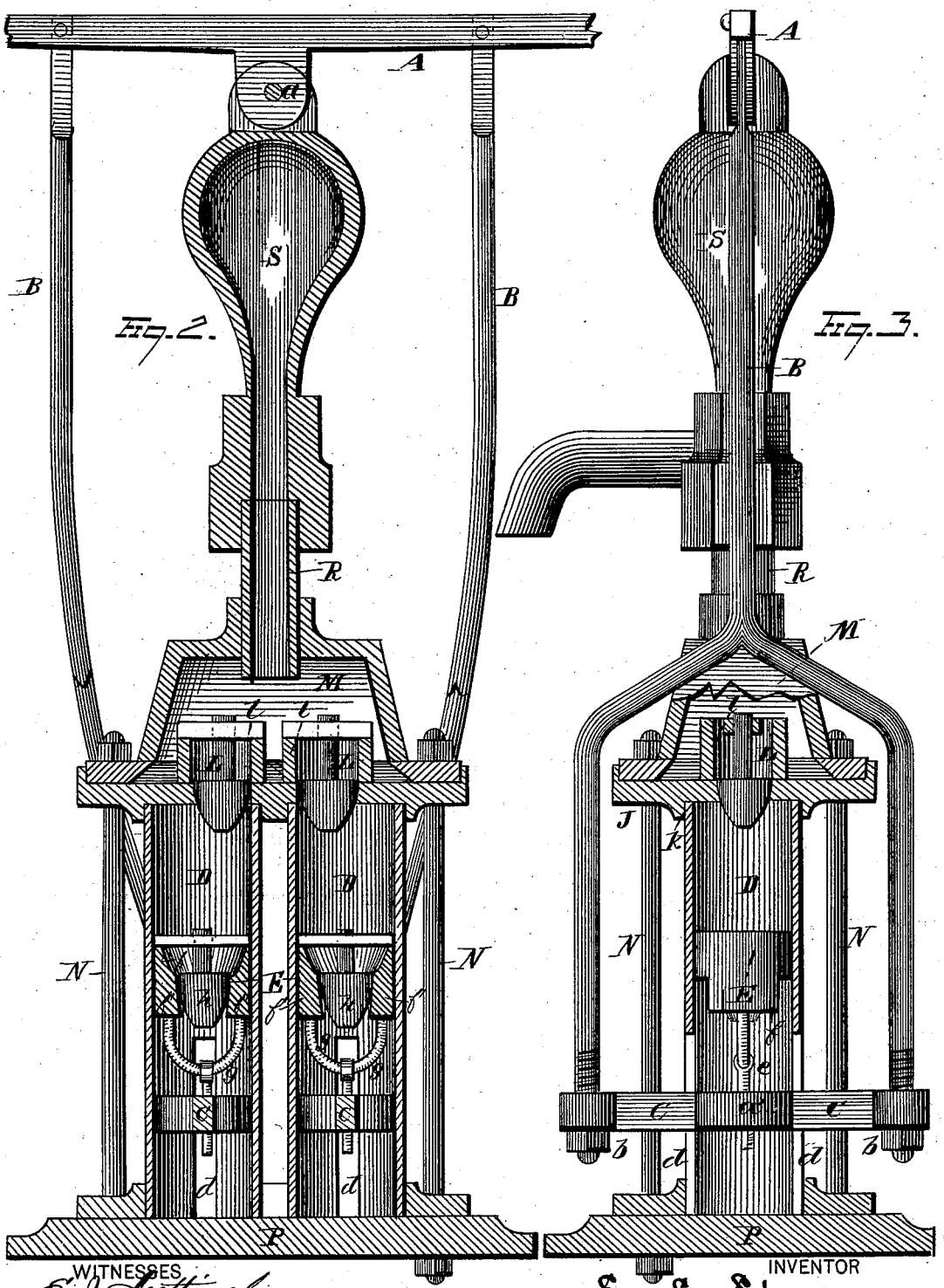


Fig. 2.

Fig. 3.

WITNESSES.

C. L. Nottingham

A. W. Bright.

INVENTOR

E. L. Spencer.

By H. A. Seymour.

ATTORNEY

UNITED STATES PATENT OFFICE.

ELLIS L. SPENCER, OF TAMA CITY, IOWA.

IMPROVEMENT IN DOUBLE-ACTING FORCE-PUMPS.

Specification forming part of Letters Patent No. **210,058**, dated November 19, 1878; application filed September 2, 1878.

To all whom it may concern:

Be it known that I, ELLIS L. SPENCER, of Tama City, in the county of Tama and State of Iowa, have invented certain new and useful Improvements in Double-Acting Force-Pumps; and I do hereby 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to improvements in double-acting force-pumps; and consists, first, in the combination, with a vertically-adjustable guide-bar, working in a pumping-cylinder, with its two extremities projecting through slots formed in the same, of a valve-piston and piston-rod, said guide-bar being made with a central disk formation, which fits snugly within the cylinder, and to which the piston-rod is connected; second, in the combination, with a guide-bar whose extremities project through slots formed in a pumping-cylinder and engage with suitable connections, of a valve-piston provided with an inverted arch and a piston-rod, which latter connects in vertical adjustment with a central disk formed on said guide-bar and fitting within the cylinder.

In the drawings, Figure 1 is a view, in perspective, of the pump. Fig. 2 is a front elevation view of the same, with the pumping-cylinders and water-chamber shown in vertical section. Fig. 3 is a view, in side elevation, with the pumping-cylinder and water-chamber in section.

The double handle A is centrally fulcrumed on pivot *a*, and is engaged at suitable distance on both sides therefrom with the two connecting-rods B, the latter being formed with bifurcated lower extremities, which are screw-threaded and pass through perforations *c* of the respective guide-bars C. Said guide-bars are secured in vertical adjustment on the connecting-rods by means of nuts or other suitable fastening devices *b*, and in this manner they regulate to any desired extent the length of stroke of the pistons, which work respectively within the two pumping-cylinders D. If desired, the upper extremities of the connecting-rods may be provided with vertical series of holes, adapted to permit of the adjustment of length of stroke of pistons from said points. These guide-bars project through vertical slots *d* formed in opposite central sides of the lower body of each of said cylinders. That part of them, *a*, which is inclosed within the respective cylinders is formed circular, and fits within the cylinder so as to work snugly therein as the guide-bars are carried in their vertical movement. The slots *d* serve to admit the passage of water into the cylinders as well as to provide ways in which the guide-bars have vertical movement.

To the central body of each of the inverted arches *g* respectively connect the piston-rods, while the lower extremities of the latter engage in vertical adjustment with the guide-bars.

The valves may be of any suitable character; but I prefer rubber slug-valves *h*. The piston-rods may have connection with the inverted arches, as represented in the drawings, or the same may be of ball-and-socket-joint connection, so as to allow the piston-rods to have free universal movement as they are vertically reciprocated within their cylinders.

The upper plate, J, is formed with openings *k*, which respectively fit over the two pumping-cylinders, and these openings are governed by the independent valves L, having vertical movement in cups *l*.

A cap-plate, M, is secured to the top of upper plate J by means of tie-rods N, the opposite extremities of which latter pass through suitable perforations in the lower plate, P. These tie-rods fasten the several parts of the pump together, as shown, and admit of the pumping-cylinders being removably maintained in position between said upper and lower independent plates. The cap-plate is of such form and dimension as to permit of the due operation of the eduction-valves and the passage of the water into the eduction-pipe R.

A suitable air-chamber, S, is formed at the top of the pump, and the communication between same and the eduction-pipe operates as is usual in producing a constant rather than an intermittent flowing stream from the nozzle of the pumps. To the central top of this air-chamber the double actuating-handle is fulcrumed in pivotal connection, as previously stated.

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

1. In a double-acting force-pump, the combination, with a vertically-adjustable guide-bar, working in a pumping-cylinder, with its two extremities projecting through slots formed in the same, of a valve-piston and piston-rod, said guide-bar being made with a central disk formation, which fits snugly within the cylinder, and to which the piston-rod is connected, substantially as set forth.

2. In a double-acting force-pump, the combination, with a guide-bar whose extremities project through slots formed in a pumping-cylinder and engage with suitable connections, of a valve-piston provided with an inverted arch and a piston-rod, which latter connects in vertical adjustment with a central disk formed on said guide-bar and fitting within the cylinder, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 17th day of August, 1878.

ELLIS L. SPENCER.

Witnesses:
E. G. PENROSE,
W. J. CAMERON,
JAMES RICHARDS.