(No Model.) 2 Sheets—Sheet 1.

E. NEFF.

PUMP.

No. 405,172. Patented June 11, 1889.

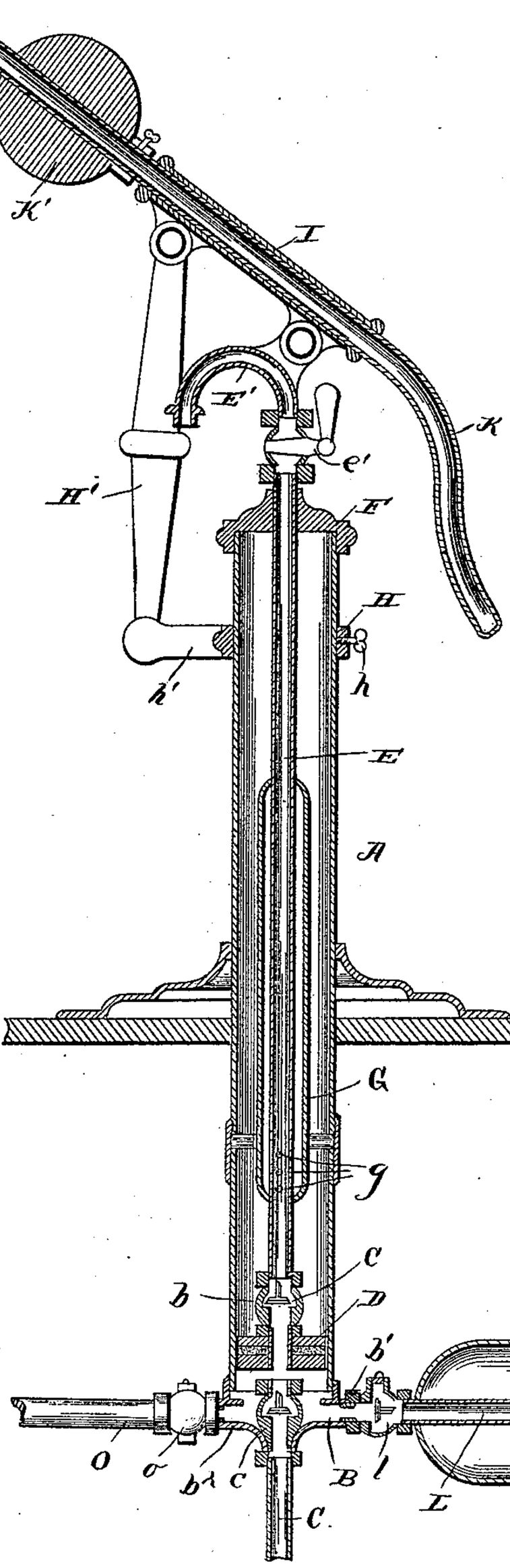
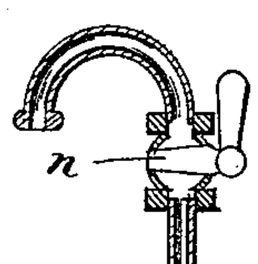


Fig. 1.



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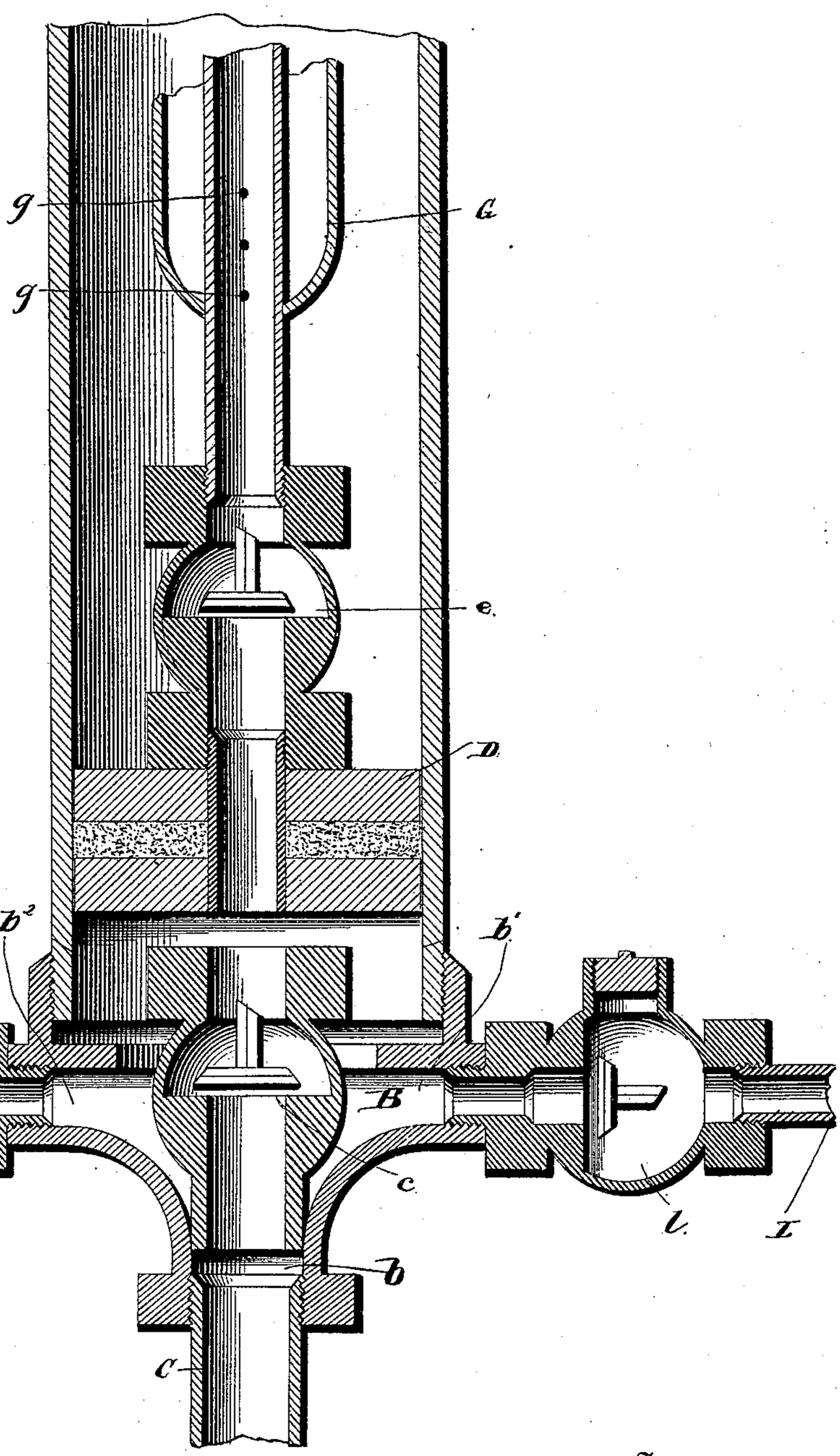
(No Model.) 2 Sheets—Sheet 2.

E. NEFF.

PUMP.

No. 405,172. Patented June 11, 1889.

Fig. 2.



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UNITED STATES PATENT OFFICE.

ELIJAH NEFF, OF ROCHESTER, INDIANA, ASSIGNOR OF ONE-HALF TO ALONZO L. RANNELLS, OF SAME PLACE.

PUMP.

SPECIFICATION forming part of Letters Patent No. 405,172, dated June 11, 1889.

Application filed October 10, 1888. Serial No. 287,782. (No model.)

To all whom it may concern:

Be it known that I, ELIJAH NEFF, a citizen of the United States, residing at Rochester, in the county of Fulton and State of Indiana, have invented new and useful Improvements in Pumps, of which the following is a specification.

The invention relates to improvements in pumps; and it consists in a certain novel construction and combination of devices, fully set forth hereinafter in connection with the accompanying drawings, and specifically pointed out in the appended claim.

In the drawings, Figure 1 is a vertical sectional view of a pump embodying my improvements. Fig. 2 is an enlarged sectional view of the lower end of the cylinder and the pipes connected thereto.

Referring by letter to the drawings, A designates the pump-cylinder, to the lower end of which is attached the head or casting B, which is provided with the vertical channel *b* and the side channels *b'* and *b*², and C represents the suction-pipe, which communicates at its upper end with the vertical channel *b*, and is closed by the upwardly-opening check-valve *c*.

D represents the plunger, which operates in the cylinder, and it is provided with the hollow or tubular pump-rod E, which extends up through a central opening in the removable cap F, which is screwed on the upper end of the cylinder. This pump-rod extends vertically downward through the plunger, so that its open lower end is directly over the check-valve *c*, and it is provided a short distance above the plunger with the vertically-opening check-valve *e*. The pump-rod is surrounded above the check-valve *e* with a cylindrical compressing-chamber G, which communicates with the interior of the said rod through the perforations *g g*, formed in the side of the pump-rod near the bottom of the chamber. The pump-rod is also provided above the upper end of the cylinder A with a goose-neck E' and a stop-cock *e'* to close the passage therethrough.

H represents a sliding adjustable sleeve, which embraces the pump-cylinder, and is provided with set-screws *h h* to secure it at the desired point, and *h'* designates a lateral arm on the said sleeve, to which is pivoted the lower end of the swinging link H'.

I represents a tubular socket, which is pivoted to the upper end of the link H', and also to the upper end of the tubular pump-rod, and through this socket passes the handle K, on which is adjustably mounted the weight K'. From the foregoing description it will be evident that on the upstroke of the plunger, caused by raising the free end of the handle, the check-valve *c* will be opened, and water will be drawn up through the suction-pipe into the cylinder of the pump, and on the downstroke of the plunger the check-valve *c* will be closed, the valve *e* will be opened, and the water will be forced into the compressing-chamber G, and the air above the water thus introduced will be compressed. If the stop-cock *e'* is now opened, the water will be forced in a continuous stream from the upper end of the tubular pump-rod, owing to the pressure in the chamber G. Thus during the operation of pumping a continuous stream may be expelled from the spout E when the valve or stop-cock *e'* is open, as on the upstroke of the plunger. When the valve C is closed, the water will be ejected by the pressure or expansion of the air in the compressor.

L represents a horizontal pipe, which communicates with the channel *b'* in the head B, and is provided at a suitable point with a check-valve *l*, and M represents a compressing-tank, through which the said pipe L passes, and with which it communicates through the short pipe or nozzle *m*. This pipe or nozzle *m* extends downward from the pipe L nearly to the bottom of the compressing-tank, whereby water which is forced through the pipe L is introduced into the tank at its bottom.

N represents a service-pipe, which communicates with the pipe L, and is provided with a suitable stop-cock *n*.

O represents a horizontal pipe, which communicates with the channel *b*² in the head B, and is adapted to be connected to a suitable reservoir. (Not shown.)

As the pump is operated, the water is forced into the compressing-tank M, and when the

stop-cock in the service-pipe is opened the water will be discharged therefrom in a continuous stream.

An important advantage in passing the pipe L through the compressing-tank is that inasmuch as the ends of the tank are firmly secured by solder or equivalent means to the pipe the former is strengthened against being injured by the outward pressure of the contents, which, as before described, are subjected to great pressure.

By forming the pump-rod hollow and constructing it so that the water which is pumped directly passes therethrough, instead of through a separate pipe, and also by arranging the air or compressing chamber around the said pump-rod, so that it is carried thereby, I attain simplicity and convenience in operation, as well as cheapness in construction. The adjustable sleeve allows the handle to be arranged at any desired elevation.

Having thus described my invention, I claim—

The combination, with the cylinder having the tubular piston and piston-rod equipped with a check-valve and a stop-cock at the upper end of the tubular piston-rod, of the cap at the lower end of the cylinder, said cap being provided with a valve-chamber connected with the suction-pipe and having an upwardly-opening valve, and with laterally-extending chambers connected with the interior of the cylinder and with service-pipes having stop-cocks, and in which valves opening outwardly are arranged, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

ELIJAH NEFF.

Witnesses:

AUGUSTUS H. SPENCER,

JOHN M. DAVIDSEN.