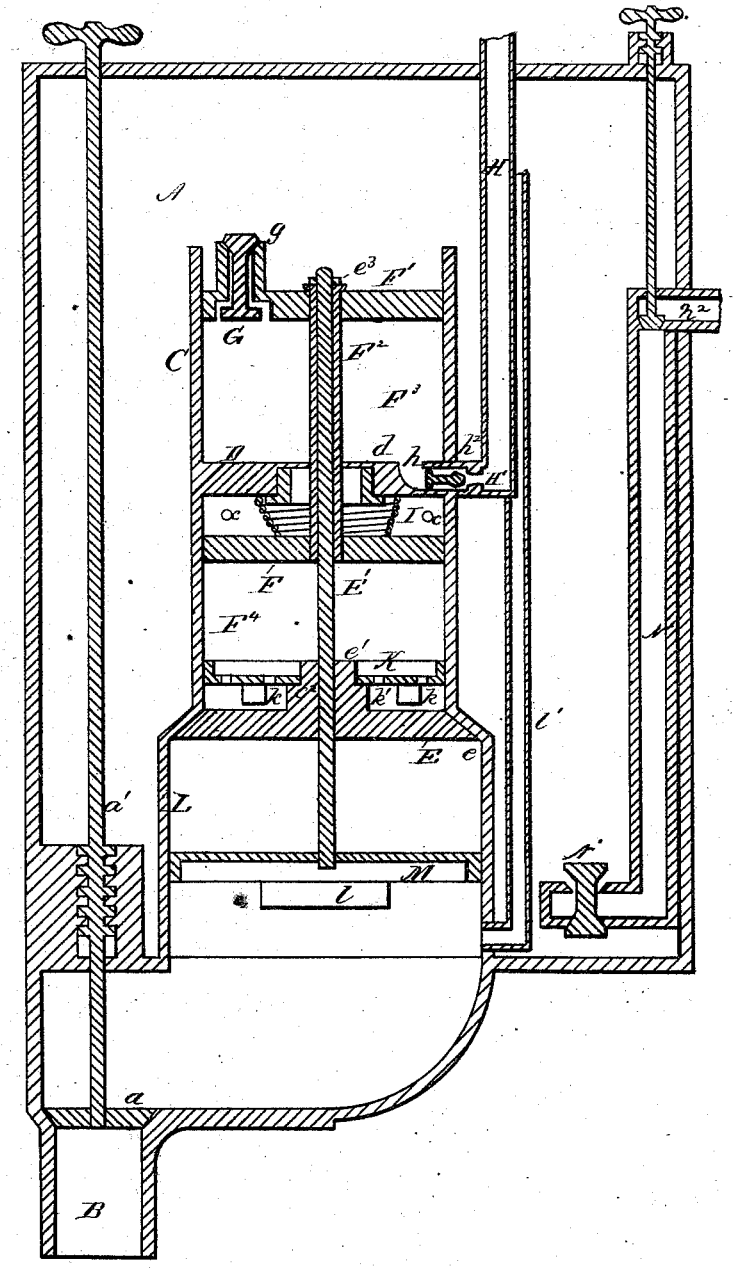
D. MINICH.

Automatic Fire-Plug or Hydrant.

No. 160,941. Patented March 16, 1875.



Witnesses

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UNITED STATES PATENT OFFICE.

DANIEL MINICH, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN AUTOMATIC FIRE-PLUGS OR HYDRANTS.

Specification forming part of Letters Patent No. **160,941**, dated March 16, 1875; application filed February 26, 1875.

To all whom it may concern:

Be it known that I, DANIEL MINICH, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Fire-Plugs, Hydrants, &c.; 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, in which the figure is a vertical section of a fire-plug embodying my improvements.

The object of my invention is to provide a fire-plug, hydrant, pump, or water-lifter, in which air will be compressed, and its expansive force utilized for throwing a stream of water.

Referring to the accompanying drawing, A shows an air-tight metallic stock of cylindrical form, communicating with a water main or pipe by means of a branch, B, closed by a valve, *a*, operated by a screw-rod, *a'*. C is a cylinder within the stock A, having a fixed diaphragm, D, holding a stuffing-box, *d*. E is a valve opening downwardly, and having its seat at *e*. E' is a rod secured to the valve E, and passing through the diaphragm D and pistons F F^1. F^2 is a tube extending from the piston F to the piston F^1, being made fast to each, and working in the stuffing-box *d*. G is a valve in the piston F^1 opening upwardly and having its seat at *g*. H is a pipe extending outside of the stock A, and communicating with the chamber F^3 through the opening *h*. H' is a check-valve, having its seat at h^2. I is a spiral spring for forcing down the pistons F F^1, and K is a ring for closing the exhaust-ports *k*, the hub *k'* of said ring encircling the stem e^1, and resting at times, as hereinafter explained, upon the shoulder or step e^2. L is an enlarged base, on which the cylinder C rests, having an outlet-port, *l*, closed at intervals, as hereinafter explained, by the ring M, connected to a continuation of the rod E'.

The operation is as follows: The valve *a* being opened, the water from the main or pipe enters the cylinder C, acting on the piston F and raising it. At the same time that the piston F is elevated, the piston F^1, through the medium of the tube F^2, is also raised, producing a suction through the pipe H, and drawing air into the chamber F^3. While this suction or ingress of air is going on the valve G remains closed, while the valve H' is open. The tube F^2 on its upward motion meets the nut e^3 on the rod E', and, continuing to ascend, draws up said rod, closing the valve E and opening the port *l*. At the same time the shoulder e^2 meets the hub k^1 of the exhaust-valve K, forcing up said valve and opening the exhaust-port *k*. As soon as the valve E closes, cutting off the pressure of the main, the spring I forces down the pistons F F^1, being aided by the compressed air in the stock A after the first motion, expelling the air from the chamber F^3, through the valve G, into the stock A, and the water from the chamber F^4, into said stock, through the exhaust-port *k*. The piston F in its descent meets the shoulder e^2 and flange k^2, forcing down the ring K, closing the exhaust-ports *k*, and at the same time depressing the valve E away from its seat *e*. The valve E being thus opened, the pressure of the main is again brought to bear on the piston F, operating it as before, drawing air into the chamber F^3, and ejecting it therefrom into the stock A, the successive and accumulated atmospheres thus injected into said stock being compressed into the space of one, the expansive force of this body of compressed air raising the water from the stock A through the pipe N, whence it issues in a powerful stream. A pressure-gage and safety-valve should be located on the stock A to prevent injury from too great force of compressed air.

When the valve E is closed the port *l* is open, allowing the water from the main or pipe to rush through said port into the stock A, thus furnishing an ample supply of water. *l'* is a pipe communicating with the upper part of the tank A and with the enlarged base L, so as to equalize the air-pressures in the said base, and thus facilitate the issuance of the water therefrom.

N^1 is a two-seat valve to produce an intermittent and more impulsive flow through the pipe N, and N^2 is a stop-cock for controlling said flow. On the upward motion of the pis-

ton F the air from the chamber F^4 is expelled through the orifice *c* in the wall of the cylinder C.

What I claim as my invention is—

1. A fire-plug, hydrant, or pump provided with a cylinder, pistons, and valves for compressing air to be used in forcing the water admitted to the stock, substantially as described.

2. The stock A, holding the cylinder C, having diaphragm D, valve E, and pistons F F^1, constructed and arranged as described, for the purpose set forth.

3. The combination, with the stock A, containing the cylinder C, provided with pistons and valves, as set forth, of the branch B and discharge-pipe N.

4. In combination with the cylinder C and branch B, the base L, having an outlet-port, *l*, for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand this 15th day of February, 1875.

DANIEL MINICH.

Witnesses:

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