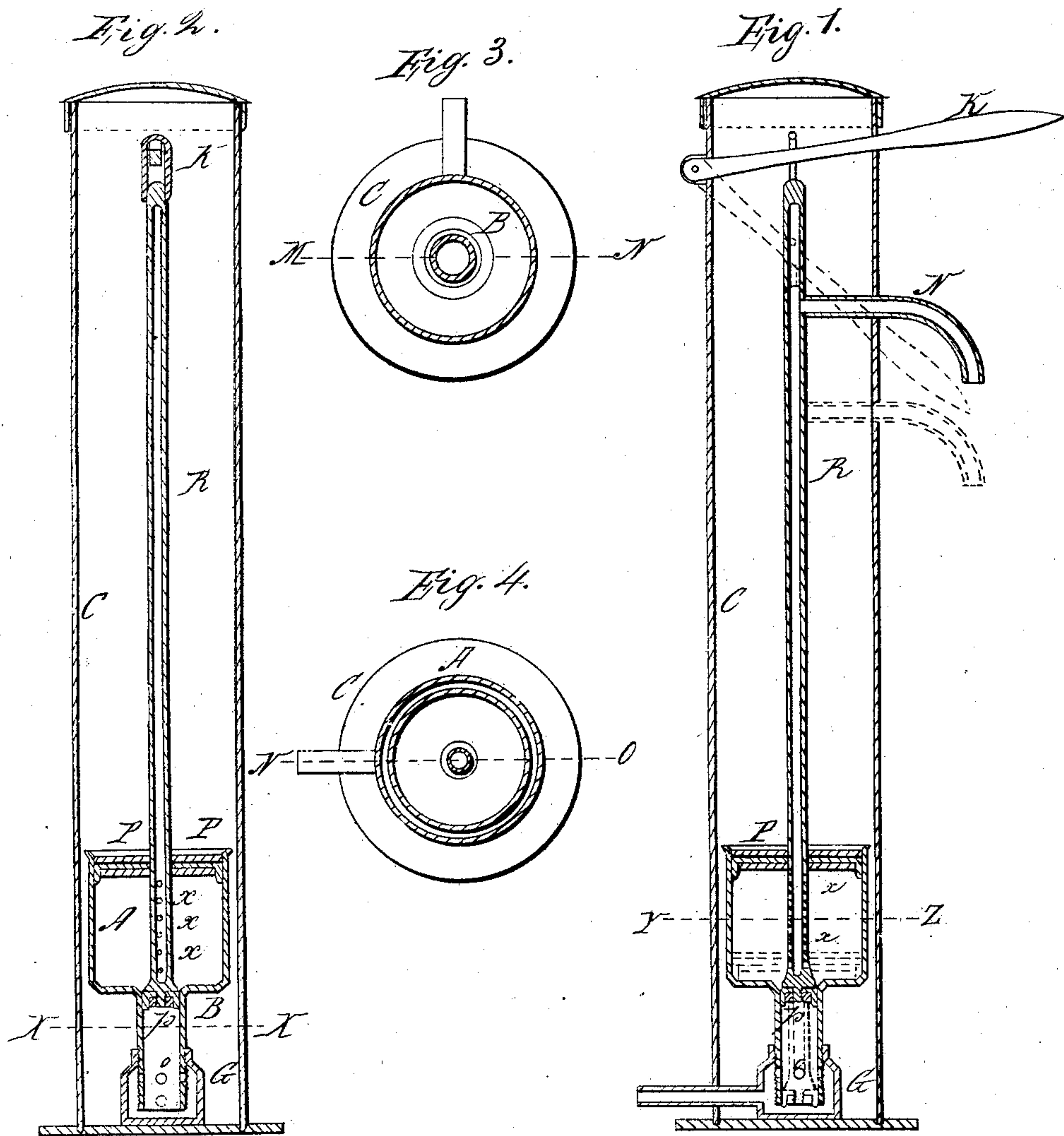


Perrini & Boyle,

Hydrant,

N^o 17,632,

Patented June 23, 1857.



UNITED STATES PATENT OFFICE.

GEO. P. PERRINI AND JAMES E. BOYLE, OF RICHMOND, VIRGINIA.

HYDRANT.

Specification of Letters Patent No. 17,632, dated June 23, 1857.

To all whom it may concern:

Be it known that we, GEO. P. PERRINI and JAMES E. BOYLE, of the city of Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Hydrants; and we hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, in which—

Figure 1 is a vertical section passing through the line N, O, Fig. 4. Fig. 2 is another vertical section through M, N, Fig. 3. Fig. 3 is a transverse section through x , y , Fig. 2, and finally Fig. 4 represents a horizontal section through the line y , z , Fig. 2.

The principal feature of our improvement consists in the peculiar construction of parts and in their relative arrangement whereby we are enabled to operate hydrants without the use of valves of any description. This is very important on account of the disadvantages arising from the use of valves. The shocks and concussions caused by their sudden closing, when the supply of water is stopped is manifestly injurious to the whole apparatus and particularly to the valves themselves.

The operation of our improved hydrant is such as to prevent the water from remaining in the hollow piston rod or pipe, during the intervals when it is not in action thus keeping the said pipe continually free from obstruction by freezing and preserving the water from all disagreeable or injurious qualities which may be imparted to it by prolonged contact with the metal of the pipe.

The body of the hydrant is composed of two cylinders into which plungers play up and down at the pleasure of the operator. These cylinders A and B are of unequal diameters, the larger being superposed to the smaller one and are either cast in one piece or jointed together in any suitable manner. The plungers, P and p are secured at a permanent distance from each other on a pipe-rod which is furnished with perforations throughout its length between the plungers. A chamber connecting by a branch pipe with the main water pipe or the reservoir, surrounds the bottom of the smaller cylinder which has one or more orifices for the admission of water into the cylinder above the little piston p as hereinafter described. The plungers or pistons are secured as above stated to a pipe-rod R. This rod or pipe extends up to the height where the exit of the water is required. It is armed with a nozzle on the side and with a pressure lever on the top.

The operation is as follows: The handle H being a lever the fulcrum of which is in the wall or at any other fixed point of the hydrant casing, when pressed down upon the pipe rod R causes it and all the parts connected with it to descend until the small piston reaches the bottom of the cylinder or clears the orifice D. The water actuated by the pressure of the superincumbent column of water rushes above the piston p through the orifice D into the cylinder B and A. There it has no other exit except through the perforations x , through which it rushes up the pipe R and nozzle N, where it is collected. When the required quantity of water is then drawn up, the handle being released is lifted to its former position by the pressure of the water upon the underside of p . Both pistons P and p are consequently raised the same distance, whereby a partial vacuum is created within the space between the two pistons allowing the water in the pipe R to flow back and out through the orifice x and collect in the cylinder until it is forced out again, by a subsequent operation. It is evident that when the small piston p is elevated so as to pass the orifice o , the supply of water is stopped immediately as it can not rise beyond the position of the piston p . The heights and diameters of the two cylinders have to be calculated in such a manner that the difference of volumes contained in the two cylinders between the two pistons when at their extreme positions *i. e.* when at their lowest and highest points of the stroke, be greater than or at least equal to the volume of water, which is to be drawn off from the pipe or hollow piston rod.

Having now fully described our improvement what we claim on our invention and desire to secure by Letters Patent, is:

The hollow piston rod and nozzle when so constructed and arranged in combination with cylinders of unequal diameters, and their corresponding pistons or plungers, that they will be elevated by the pressure of the water from the supply pipe upon the under surface of the piston p and the water withdrawn therefrom for the purpose specified.

In testimony whereof we have signed our names to this specification before two subscribing witnesses.

GEO. P. PERRINI.
JAS. E. BOYLE.

Witnesses:

D. T. MADIGAN,
CHARLES L. DAWSON.