

J. P. KENYON.
HYDRANT.

No. 173,796.

Patented Feb. 22, 1876.

Fig. 2.

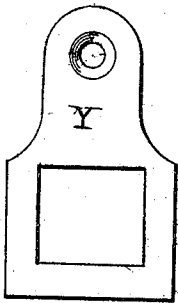
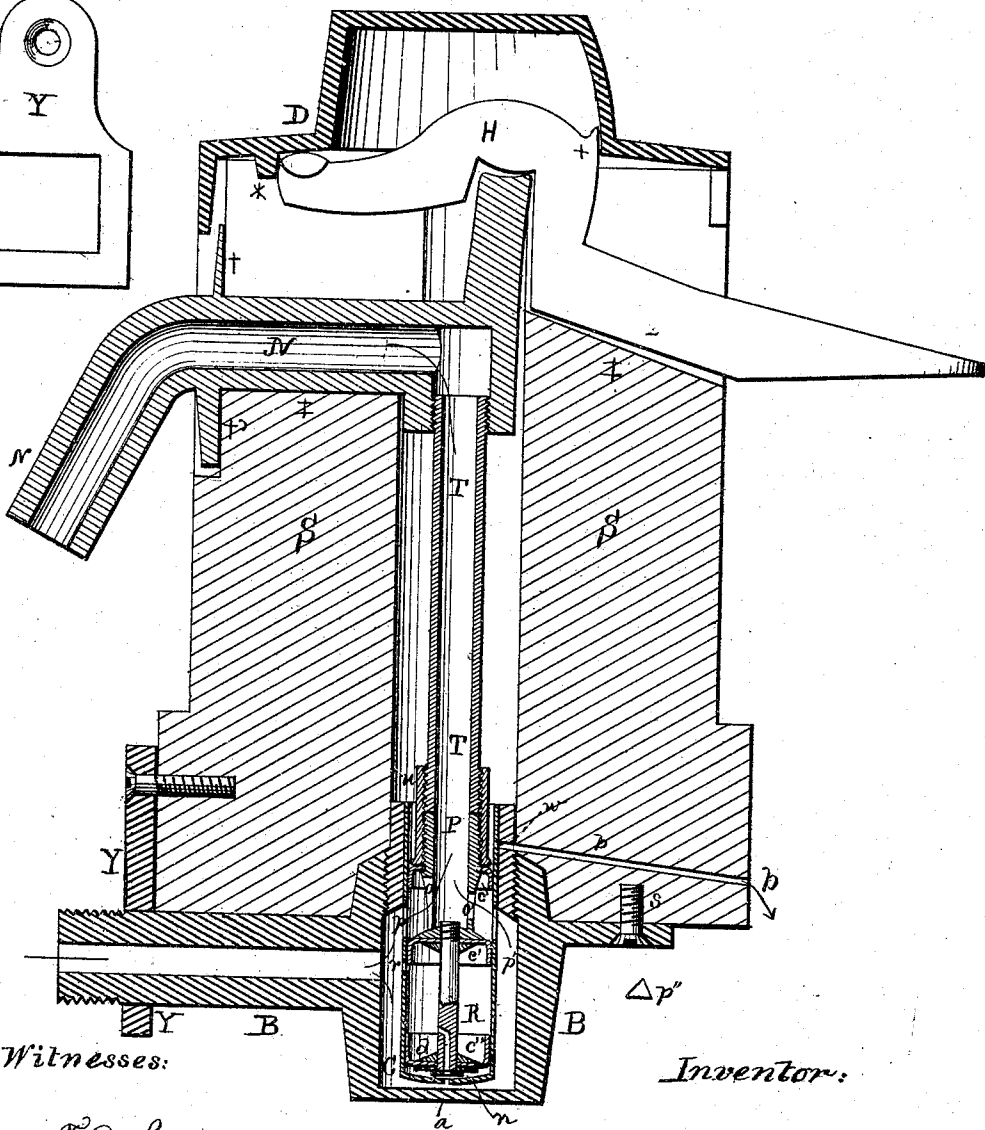


Fig. 1.



Witnesses:

T. D. Sugden.
E. M. Fynell.

Inventor:

James P. Kenyon.

UNITED STATES PATENT OFFICE.

JAMES P. KENYON, OF BROOKLYN, NEW YORK, ASSIGNOR TO ELLEN KENYON, OF SAME PLACE.

IMPROVEMENT IN HYDRANTS.

Specification forming part of Letters Patent No. 173,796, dated February 22, 1876; application filed October 30, 1875.

To all whom it may concern :

Be it known that I, JAMES P. KENYON, of the city of Brooklyn, county of Kings and State of New York, have invented a new and useful Improvement in Non-Freezing and Self-Closing Hydrants, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a vertical central section of my hydrant, the movable parts being all down and the water flowing; and Fig. 2 presents a face view of the yoke Y, which binds the bed-piece B to the stock S, as clearly shown in Fig. 1.

The principal objects of my invention have been—while retaining familiar parts and easy manual operations—to prevent that destructive shock, or “water-hammer,” to which all hydrants with an automatic reaction or self-closing provision have been subject, and to secure the utmost possible exemption from the necessity of digging for repairs. The devices contributive to these ends are to be seen in the cylinder C, plunger P, regulator R, and yoke Y; C being punctured for a wasteway at *w*, a relief-vent at *r*, an auxiliary closing device or relief-vent at *a*, with triangular ports at *p p'*; P being hollow with openings *o o'* at its sides, and two cups, *c c'*, while R has an inverted cup, *c''*, and through the lower part of its stem a channel, *d*, called the closing duct. Y is designed to obviate a great trouble—the separation of the bed-piece and stock, through the pull on the latter in frosty weather.

A secondary object has been the production of a strong and economical combination of parts in the head of the hydrant, dispensing with nuts and bolts and much fitting and finishing.

To enable those skilled in such work to make a hydrant with my improvements, the following description is given:

S is the stock or body of the hydrant, of wood or iron, or partly of each, and of sufficient length to place its lower end below the reach of frost—say, from five to seven feet—according to latitude or exposure. Not much less or more than two feet should be left above the ground. The bore should be two inches

in diameter, and slots are to be cut, as shown at $\ddagger \ddagger'$, for the accommodation of H and N. D is the dome or cap, formed as shown, the rim being extended downward over N, and cut out at the opposite side for H, while the back part of its cavity is curved to match the corresponding convex curve of H at $\ddagger$, which closes the slot when the handle is down. H is the handle. Its bearing is on D, immediately back of the spur *. At that point it is provided with lateral projections, (indicated by the curved line,) which span the nozzle-slot and rest in the stock. The drawing shows clearly how all aberrant motion is prevented. N is the nozzle or spout, provided with fins $\ddagger \ddagger'$, to cover the front slot $\ddagger$, while its inner vertical end is so formed as to close the slot $\ddagger'$ when the parts are up; the upper projection || is hollowed at its top, and H rounded over it to prevent friction and favor a rectilinear stroke. T is the tube, which extends from N to the plunger P. It is connected with the former by a thread, and with the latter by a union, *u*, as shown. C, the cylinder, is suspended in a collar of white or other metal, with an external thread, by which it is inserted in B, as shown. B is the bed-piece, carrying C at its central part, and attached to S by screws, indicated at *s*, Fig. 1. Y is the yoke, embracing the coupling end of B, and screwed to S, as clearly shown in Fig. 1, with the object already mentioned. The upper cup *c* is tightened between *u* and P, *c'* between P and R, and *c''* by the nut *n*, in a manner so plainly shown in the drawing as to render a verbal description unnecessary.

The relief-vent *r* allows the water to recede before the descending cup *c'*, after the latter has reached the bottom of the ports *p p'*. This device will be needed whether its apparent equivalent, the auxiliary puncture *a*, be used or not, as the latter (on every account) must be so small as to greatly hinder the opening stroke in the absence of *r*. The puncture *a*, however, will probably not always be used, but only in connection with impure or weedy water, which makes the relief-vent essential for its ostensible service. The duct *d* must be regarded as equally essential as a closing device, notwithstanding the apparent equiva-

lency of *a*, as, in case of choking, it can be withdrawn and cleared without digging.

As the hydrant is represented in Fig. 1, the hand of the operator is understood to be upon the outer end of *H*. While the parts are in this position, and *c* is below *w*, the water is flowing into the space around *C*, and thence through *p p'* and *o o'* to the nozzle. If the pressure of the hand be withdrawn, the parts react with a rapidity regulated by the diameter of *d*, or, if *a* be used, the combined diameters, the hydrant having no tendency to close faster than the space formed below *c''* can be filled by its feeder. When the closure is complete and the parts are all up, *c'* has passed above *p p'*, cutting off the flow, and *c* has the wasteway below it, allowing the water in *T* to escape through *w*, and thence along the bore *b* into the ground.

When, in the downstroke, the upper line of *c'* passes the apex of the ports, a very small flow of water begins, and this grows so gradually as the stroke advances and the wider part of the ports is uncovered, that no jerk or unequal resistance is felt by the hand. The same equable and gradual feature marks the reaction, the closure commencing with the wide part of the ports, tapering to their apices and ending with the mere thread of water passing through *d*.

Having thus fully explained the construction and operation of my improved hydrant, the devices I claim as new, and desire to secure by Letters Patent, are the following:

1. The dome *D*, handle *H*, and nozzle *N*, formed, arranged, and co-operating, as shown and described, when combined with the rod or tube of a hydrant, to actuate the lower parts thereof, all substantially as shown, and with the objects and for the purposes specified.

2. In combination with the hollow rod of a wasting-hydrant, the plunger *P*, with its openings *o o'* and cups *c c'*, and the cylinder *C*, with its perforations *w*, *p p'*, and *r*, when operating conjointly, substantially as described, to let on and shut off the water, close the hydrant, and allow the contents of *T* to waste.

3. The regulator *R*, cupped and channeled, substantially as shown, and attached to the plunger *P*, to control its reaction, as explained.

4. In combination with plunger *P*, cylinder *C*, and regulator *R*, the auxiliary puncture *a*, as set forth.

5. The yoke *Y*, when combined with the bed-piece and wooden stock of a hydrant, as shown, and for the purpose specified.

JAMES P. KENYON.

Witnesses:

CHARLES H. SHERMAN,
E. M. TYRRELL.