E. HAND.

HYDRANTS.

No. 194,087. Patented Aug. 14, 1877.

Fig. 1.

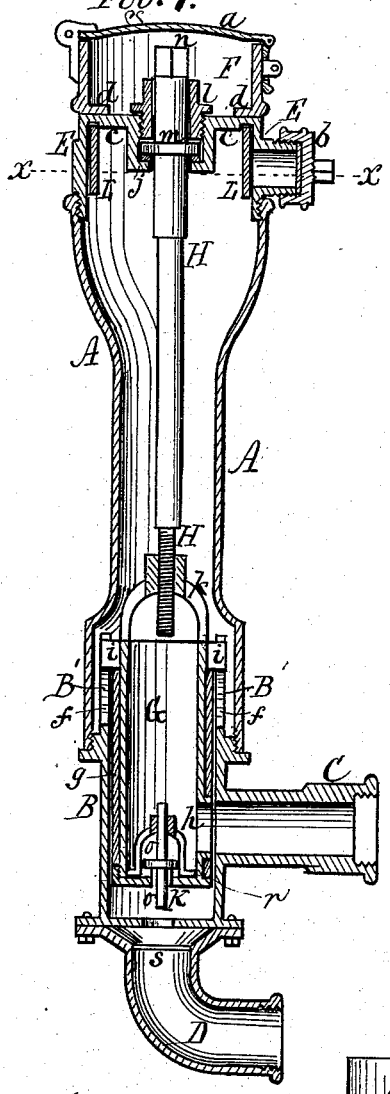


Fig. 2.

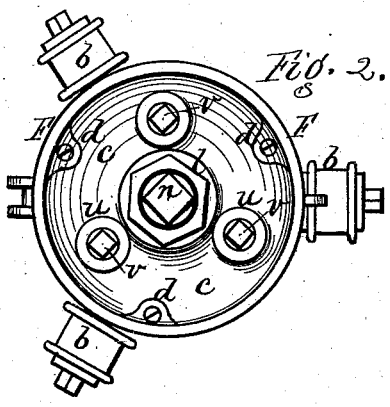


Fig. 3.

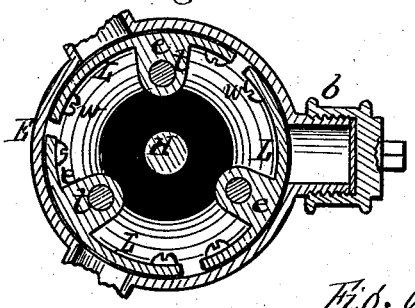


Fig. 4.

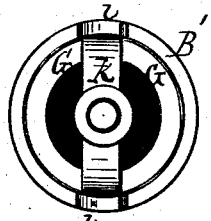


Fig. 5.

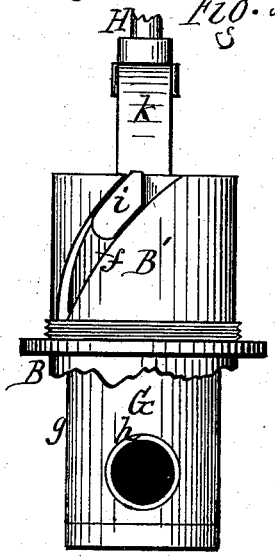


Fig. 6.

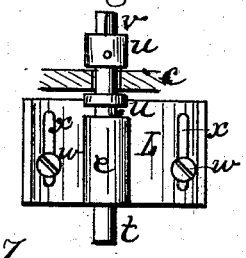


Fig. 7.

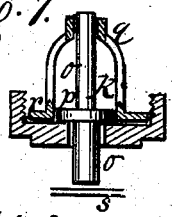
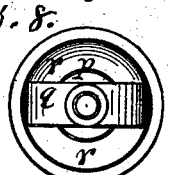


Fig. 8.



Attest.
Jacob Spahn
R. E. White

Inventor.
Elkins Hand,
per R. F. Oggood,
atty.

UNITED STATES PATENT OFFICE.

EKINS HAND, OF ROCHESTER, NEW YORK, ASSIGNOR OF ONE-TENTH OF HIS RIGHT TO ROBERT G. NEWMAN, OF SAME PLACE.

IMPROVEMENT IN HYDRANTS.

Specification forming part of Letters Patent No. **194,057**, dated August 14, 1877; application filed July 6, 1877.

To all whom it may concern:

Be it known that I, EKINS HAND, of the city of Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Hydrants; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, in which—

Figure 1 is central vertical section. Fig. 2 is a top view. Fig. 3 is a cross-section in line *x x*, Fig. 1. Figs. 4, 5, 6, 7, and 8 are detail views.

My improvement relates to the means for controlling and operating the valves for letting on and cutting off the flow of water to the nozzles; also, to the means for letting on and cutting off the flow of water from the main to the hydrant; and, furthermore, in the means for discharging the dead water from the hydrant to the sewer after the flow from the main is stopped.

A is the body or barrel of the hydrant, which is of ordinary form. B is a section which screws into the lower end of the barrel, and forms a continuation of the same. This section connects with the main by a lateral branch, C. D is an elbow at the extreme bottom of the hydrant, which connects with a sewer or other discharge. E is a short cylinder, which screws into the top of the barrel; and F is an open-topped receptacle or box on top of the hydrant, which has a hinged cover, *a*, secured by a clasp, which is locked when the hydrant is not in use. The cylinder E has the ordinary nozzles *b b b* for the attachment of hose, and these nozzles are covered by screw-caps, as usual. A diaphragm, *c*, is left between the cylinder E and box F, and the box is attached to this diaphragm by means of lugs *d d d*, Fig. 2, through which pass screws, by which means the box is easily removed. B′ is a cylindrical extension of the section B, which is of somewhat smaller diameter, and projects up some distance in the bottom of the barrel, as shown in Fig. 1. In this projecting portion are cut two spiral slots, *f f*, Figs. 4 and 5, which start centrally opposite each other at the top, and extend down in an inclined direction till they reach the bottom of said projection. G is a hollow cylindrical valve, which fits in the section B and its extension B′. It is open at the top, but has a check-valve at the bottom. Its exterior is covered by leather *g*, or equivalent packing, which is close fitting to the surface in which it rests. It has in one side and near the bottom a port, *h*, which, when in coincidence with the branch C, admits the water from the main into the valve, and thence up through its open top into the body of the hydrant. It also has at the top two inclined lugs, *i i*, Figs. 4 and 5, which rest in the inclined slots *f f*, and, as the valve is raised or lowered, the lugs travel in the slots, and cause the valve to turn partially around. At the top of the valve is an arched bearing, *k*, having a female thread, into which screws the spindle H. The spindle passes up through a packing-box in the diaphragm *c*, consisting of a socket, *j*, and a hollow screw, *l*, which inclose a head, *m*, of the spindle, and the spindle above the screw is formed with a square head, *n*, for the fitting of a wrench, by which it is turned.

It will be seen that when the spindle is turned it will move the valve G endwise up or down, and will, at the same time, impart to it a turning motion by reason of the lugs *i i* traveling in the inclined slots *f f*, as before described. Therefore the port *h*, in moving over or away from the opening of the main, will do so in an angular direction, and very slowly, preventing sudden shock of the water, and, also obviating the lengthening of the hydrant, which is necessary where a vertical movement alone is produced.

K is a waste-valve in the bottom of the valve G. It is composed of two stems, *o o*, with a central disk, *p*, Figs. 7 and 8. The lower stem projects through a hole in the bottom of the main valve, while the upper one rests in an arched bearing, *q*, whose base *r* is a separate disk, which rests loosely in the bottom of the cylinder, and incloses the head *p*. This allows the parts to be removed readily, and also keeps the waste-valve in proper position. *s* is a cross-bar in the elbow D, located some little distance below the lower end of the waste-valve.

When the valve G is elevated so as to bring the port *h* in line with the opening of the main, the waste-valve will fall to place, and serve as a check to prevent the water passing downward; but when valve G is turned down to cut off the water, then the waste-valve will strike the cross-bar *s*, and be opened to let off the waste water in the body of the hydrant into the elbow D, and thence into the sewer or other discharge. It does not strike the cross-bar till the flow from the main is fully cut off.

L L L are segments which form valves to the nozzles *b b b*. They are formed from a thin cylinder of metal, which is first fitted accurately to the interior of the cylinder E by being ground in, and then cut into sections of considerable length to cover the opening of the nozzles. These sections move vertically. They have lugs *e e e*, Figs. 3 and 6, through which pass screws *t t t*, which are left threaded, and pass up through the diaphragm *c*, having shoulders *u u* above and below the diaphragm to prevent end movement, and being squared at the top, as shown at *v v*, for the application of a wrench by which they are turned. The segments are guided in their up-and-down movement by screws *w w*, Fig. 6, which fit in slots *x x*, and may be tightened up at any time to keep the valves tight. The use of the screws *t t* insures the slow movement of the valves in opening, so that there is no danger of bursting the hose by sudden shock of the water. One special advantage of this form of the valves is that, forming simply rims fitting the cylinder, they are very thin, and occupy but little space, enabling the water-chamber to be made small, and yet insuring sufficient passage for the water to feed any desired number of nozzles.

The top of the elbow D, just below the waste-valve, is made beveled, as shown, to facilitate discharge of the water.

What I claim herein as new is—

1. In a hydrant, the combination, with the hollow valve G, provided with the lugs *i i*, of the cylindrical projection B′, extending up within the body of the hydrant, and provided with the spiral slots *f f*, which receive the lugs, the whole arranged as set forth, so that the valve receives a compound vertical and turning movement, as herein described.

2. The hollow valve G, constructed with a port, *h*, for admitting water from the main, packed upon its outer surface, and provided at its bottom with a waste-valve, which serves as a check, as shown and described, and for the purpose specified.

3. The combination, with the hollow valve G, of the waste-valve K, separate bearing-disk *r*, and cross-bar *s*, as shown and described, and for the purpose specified.

4. In a hydrant, the combination, with the nozzles *b b b*, of the valves L L L, formed of thin segments, which move vertically, the screws *t t t*, connecting with said segments, and the guide-screws *w w*, and slots *x x*, as shown and described, and for the purpose specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

EKINS HAND.

Witnesses:
R. F. OSGOOD,
R. G. NEWMAN.