

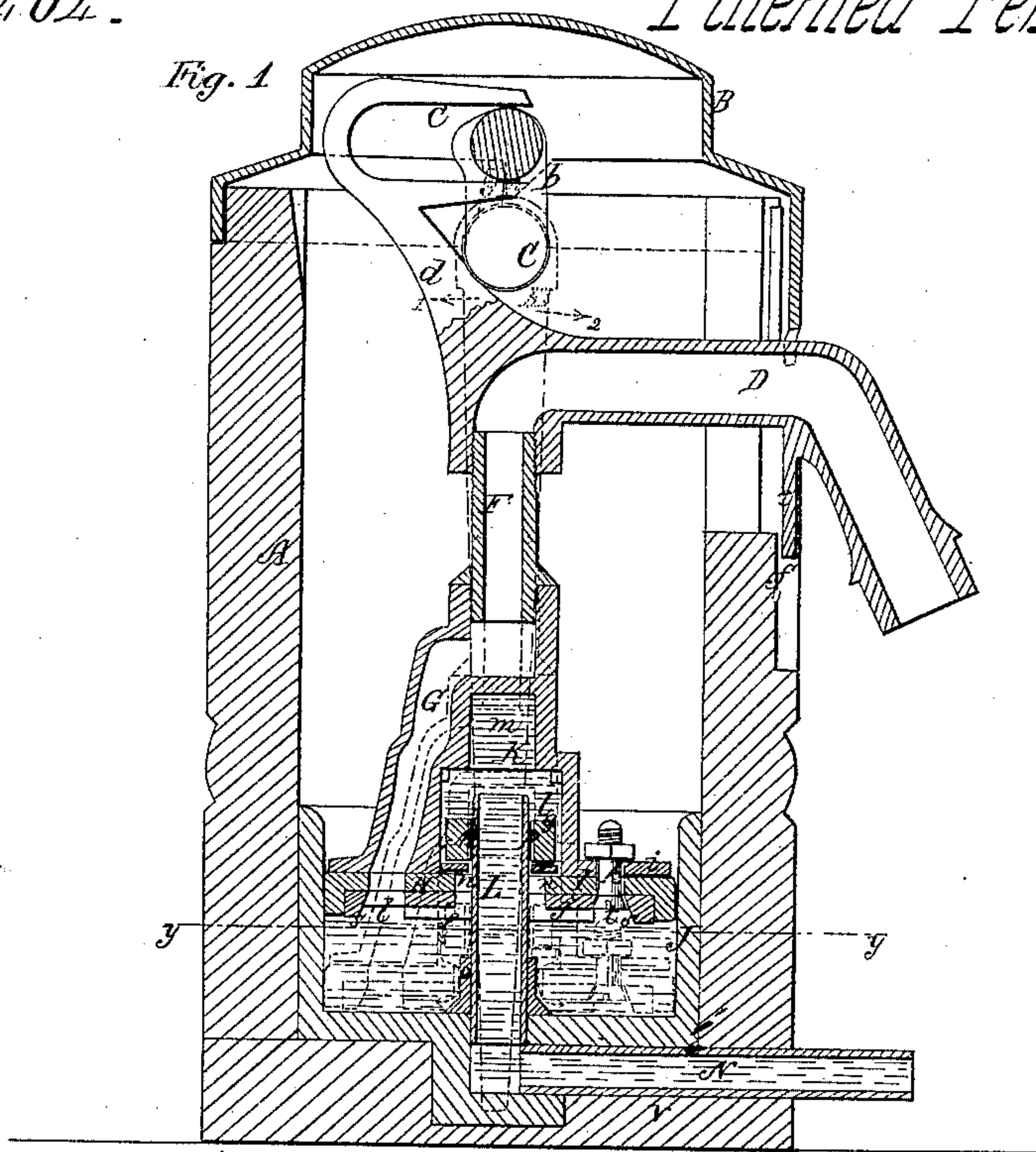
*J. P. Kenyon,*

*Hydrant,*

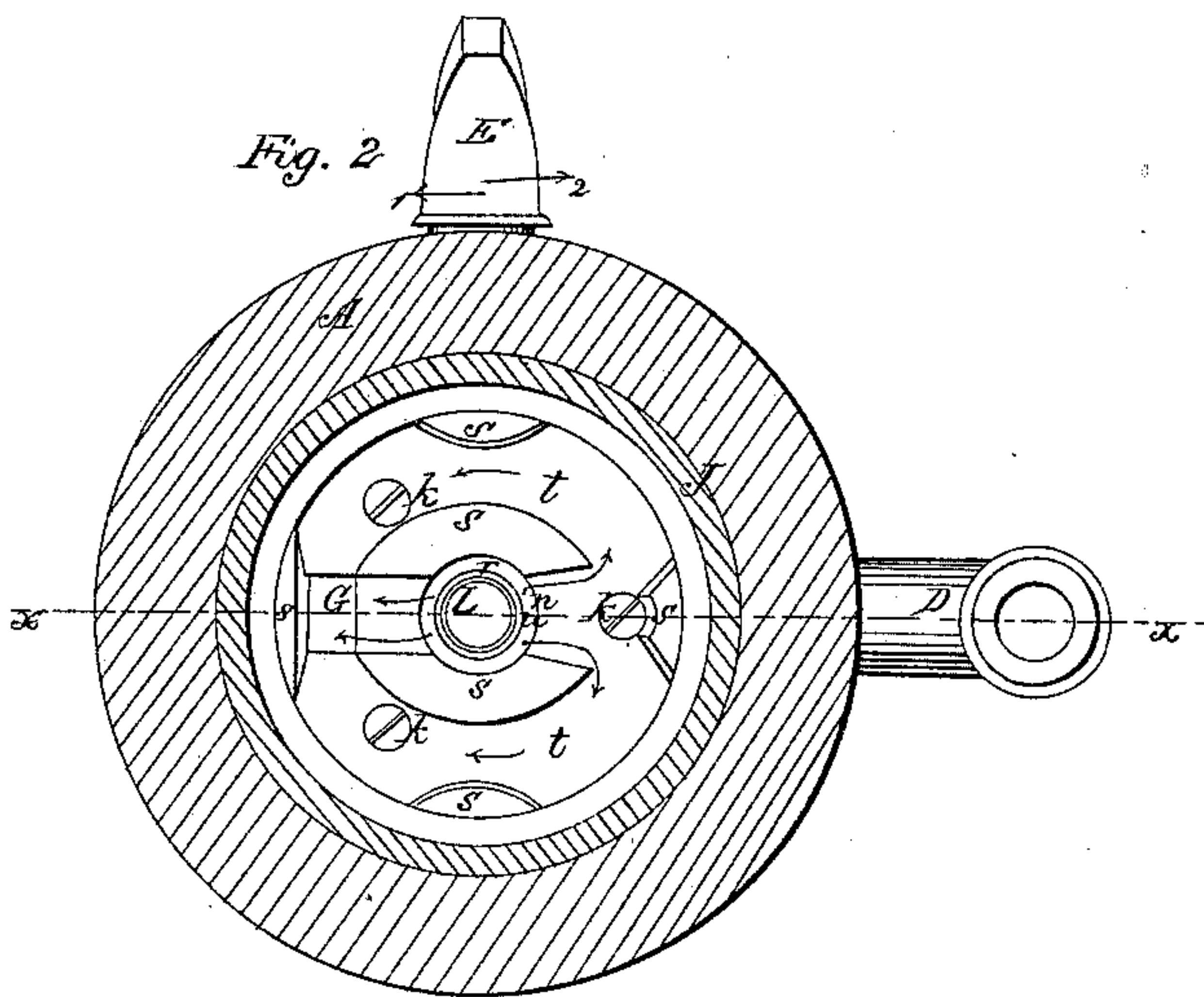
*N<sup>o</sup> 31,464.*

*Patented Feb. 19, 1861.*

*Fig. 1*



*Fig. 2*



*Witnesses:*  
*Wm. Simpson,*  
*Geo. W. Barton*

*Inventor:*  
*James P. Kenyon,*



# UNITED STATES PATENT OFFICE.

JAMES P. KENYON, OF BROOKLYN, NEW YORK.

## HYDRANT.

Specification of Letters Patent No. 31,464, dated February 19, 1861.

*To all whom it may concern:*

Be it known that I, JAMES P. KENYON, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Hydrant; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a vertical central section of my invention taken in the line *x, x*, Fig. 2. Fig. 2, a horizontal section of the same, taken in the line *y, y*, Fig. 1, and looking upward.

Similar letters of reference indicate corresponding parts in the two figures.

The desiderata in an invention pertaining to hydrants and which I have endeavored to supply are: firstly, that (in our climate) the operating parts be so arranged that the water, when at rest, will be perfectly protected from frost; secondly, that no water be allowed to run to waste both on account of its value, and the damage waste water is liable to cause the premises near which it may be discharged; thirdly, that the hydrant react automatically, that is to say, be self-closing, so that the water may not be left running either by evil design or carelessness; fourthly, that it shall by its own operation keep itself free from all sediment: or, in other words, be self cleaning; fifthly, that it shall not require to be removed from the ground in order to effect any repair it may require; sixthly, that it may be opened with facility or with a small effort of strength; seventhly, that it may close in such a manner as to produce the least possible strain or shock to the back pipes; eighthly, that it may be convertible at will into a fire-hydrant, a street or garden sprinkler, or a window washer, by simply attaching a hose; ninthly, that it be so constructed that nothing can be introduced into its interior to obstruct the action of its mechanism; tenthly, that it may be compact, free from external projections or prominences, that it will not be exposed to external accident, and be capable of being conveniently adjusted in the position desired; eleventhly, that it may open with the same ease, react or close in the same manner, and be equally durable under all pressures; and twelfthly, that no particular one of its parts be subject to a relatively excessive or

special wear. By the within described invention it is believed that the above named advantages are fully attained.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A, represents a hollow post or the shell or case of the hydrant and B, is a cap secured on the upper end of the post by screws.

C, is a shaft which is placed horizontally in the upper part of the shell A, and has a crank *b*, at its center, the pin of which is fitted in a yoke *c*, at the upper end of a bar *d*, which is connected with the spout D, the latter projecting downward at its outer part, and having "fins" or guide plates *e, e*, which are fitted in grooves or recesses, *f*, in the shell as shown clearly in Fig. 1.

To one end of the shaft C, a handle E, is attached at right angles. This handle is at the outer side of the post or case A, and to the shaft C, there is attached a projection *g*, and there is a pendent projection *h*, at the inner side of the cap B. These projections shown by dotted lines in Fig. 1, prevent the handle E, from passing in the direction indicated by arrow 1, any farther than a line parallel with the post or shell A. This will be fully understood by referring to the dotted lines in Fig. 1.

F, is a tube the upper end of which has a screw on it which fits in a female thread at the back part of the spout D, the spout and tube communicating with each other as shown in Fig. 1. The lower end of the tube F, is secured to the upper end of a tube G, which extends down through the plunger H, the tube being connected with the plunger.

I, is a packing which may be of leather or other suitable material and fitted between the metallic plates *i, j*, of the plunger, said plates being secured together by screws *k*. The outer edge of the packing I, extends downward all around the plunger and bears against the inner side of a cylindrical metal chamber J, at the bottom of the shell A.

The plates *i, j*, and also the packing I, are of annular form and a chamber K, is at the top of the plunger at its center. The lower part *l*, of the chamber K, is of larger diameter than its upper part *m*, and a tube L, extends up through the center of the plunger into the chamber K, the tube L, being encompassed by a packing M, the seat *n*, of



which is on the inner edge of the packing I, of the plunger H.

The tube L, extends down through the center of the bottom of the chamber J, and communicates with a pipe N, which is connected with the main. On the lower part of the tube L, there is a shoulder *o*, the object of which will be presently shown.

The packing M, which is within the chamber K, and encompasses the tube L, is composed of two or more different materials, to wit, split metal bands *p*, and india-rubber or other suitable elastic body *q* and a washer *r*.

The under side of the lower plate *j*, of the plunger is provided with projections *s*, which when the plunger H, is fully depressed, rest on the bottom of the chamber J, and form water passages *t*, which are shown more particularly in Fig. 2.

There is a space *u*, between the inner edge of the packing I, and the tube L, which space is closed by the washer, when the latter is closed.

The pipe N, enters the base *v*, of the shell A, as shown clearly in Fig. 1.

The operation is as follows: When the hydrant is at rest or closed the plunger H, is elevated and the packing M, closed, the washer *r*, resting on the inner part of the packing I. The parts aforesaid are kept in this position by the pressure of the water in chamber K, the pressure being due to the height of the "head" in the reservoir with which the pipe N, is in communication. The chamber J, below the plunger H, is filled with water (the contents of tube F, at the previous operation of the hydrant) when the hydrant is at rest, therefore, the packing M, and washer *r*, close the communication between the tube L, and the passages leading to the spout D. To operate the hydrant the handle E, is moved in the direction indicated by arrow 2, and the pin of crank *b*, bears on the lower part of yoke *c*, and forces down the spout D, tube F, and plunger H, and the water in J, is forced up through tubes G, F, and out through the spout D, when the plunger H, has descended a certain distance the washer *r*, comes in contact with the shoulder *o*, at the lower part of tube L, and the packing M, is consequently prevented from following the plunger H, which it does down to that point owing to the pressure of water in K. When the downward course of the packing M, is arrested, the plunger still descends and the washer *r*, is freed from the surface of packing I, so that the water will escape from K, down through *u*, into chamber J, and thence up through G, F, and out through spout D, and when the projections *s*, strike the bottom of chamber J, the water passes through the passages *t*, into the tube G. The red-

arrows in Figs. 1, and 2, show the direction of the water when it is allowed to escape from K. When the desired amount of water is drawn from the hydrant, the operator releases the handle E, and the plunger H, is forced upward under the pressure of water in K, such result being due to the larger area of the upper part of K, over the lower surface, the tube L, diminishing the lower area. When the plunger rises above the shoulder *o*, the packing M, of course closes by the pressure of the water in K, the washer *r*, fitting snugly on its seat on packing I, and cutting off the communication between the chambers K, and J, and the latter, as the plunger H, rises fills by the water in the tubes G, F, said water descending immediately when the communication between K, and J, is closed.

From the above description it will be seen that the desiderata enumerated in the preamble are attained. The plunger H, and in fact all the working parts may be readily removed from the shell A, for repairs and also readily replaced without the necessity of excavating. The operating parts, those which are in contact with stationary water when the hydrant is at rest, are all below the reach of frost, and each time the hydrant is used the velocity of the water in passing through the passages *t*, effectually carries out or prevents the deposit of all sediment within the chamber J. There are no parts liable to get out of repair or become deranged by use.

The packing M, in consequence of being formed of two or three materials as shown and described is enabled to perform its function in a very efficient manner. The metallic or other lining *p*, is made to hug the tube L, so that they will be in water-tight contact, in consequence of lateral pressure on *q*, in connection with its dimensions which are such as to allow the water to act properly on its top and outer side. The pressure of the washer *r*, on I, is obtained through the downward pressure on *q*.

The dimensions of the elastic body *q*, may be varied as desired in order to regulate its lateral pressure on the metal or other band *p*, and this result may be favored by having the body *q*, more or less elastic. In cases where there is considerable pressure of the water, the body *q*, is made stiffer or less elastic than if the pressure were less; the band *p*, may also be thicker, as in no case is it necessary to have more than a water-tight connection or fit between the tube L, and band *p*, more than this would cause useless friction, with its consequent wear.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent; is,

1. The arrangement of the chamber J, central tube L, shoulder o, or its equivalent with the plunger H, provided with the chamber K, packing M, and tube G, the latter being in communication with the chamber J, tube F, and spout D, substantially as and for the purpose set forth.

2. The handle E, crank shaft C, and yoke c, when used in connection with the plunger H, chamber J, tube L, and their concomitant parts, all arranged for joint operation as set forth.

JAMES P. KENYON.

Witnesses:

CHAS. W. COWTAN,  
M. M. LIVINGSTON.