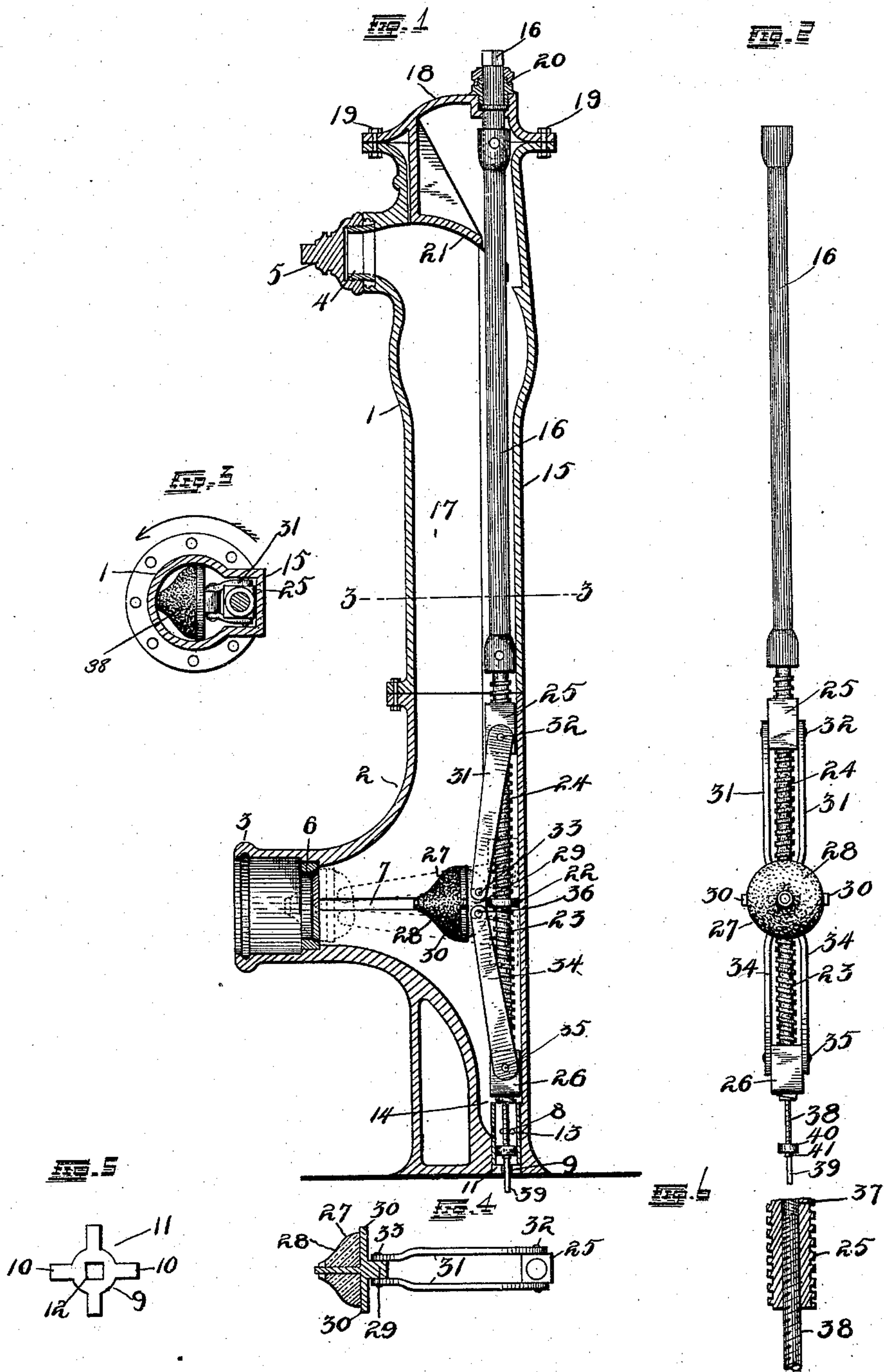


(No Model.)

W. W. COREY, Jr.
FIRE HYDRANT.

No. 535,614.

Patented Mar. 12, 1895.



Witnesses

Witnesses
M. P. Smith,
Maud Griffin.

Inventor

William W. Corey, Jr.

By Higdon & Higdon & Longan. Attorneys,

UNITED STATES PATENT OFFICE.

WILLIAM W. COREY, JR., OF ST. LOUIS, MISSOURI.

FIRE-HYDRANT.

SPECIFICATION forming part of Letters Patent No. 535,614, dated March 12, 1895.

Application filed July 16, 1894. Serial No. 517,664. (No model.) Patented in Canada September 24, 1894, No. 47,087.

To all whom it may concern:

Be it known that I, WILLIAM W. COREY, Jr., of the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Fire-Hydrants, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

This invention was patented in Canada on September 24, 1894, No. 47,087.

My invention relates to an improved fire hydrant, and consists in the novel construction, combination and arrangement of parts, hereinafter described and designated in the claims.

The object of my invention is to provide a hydrant with a continuous curved water passage devoid of abrupt bends, valve-rods, offsets or projections, whereby when the hydrant valve is open a clear and direct passage of greater area than the valve-opening will be provided from the mains to the hose connection.

Referring to the drawings: Figure 1 is a sectional side elevation of a hydrant constructed in accordance with my invention. Fig. 2 is a front elevation of the valve and its operating mechanism detached from the shell of the hydrant. Fig. 3 is a transverse section on the line 3—3 of Fig. 1. Fig. 4 is a detail sectional plan view of the valve and its immediate connections detached. Fig. 5 is a detail plan view of a spider made use of in the invention. Fig. 6 is a detail sectional elevation of devices located at the lower end of the valve-rod.

1 indicates the casing or body of the hydrant, preferably made in two sections which are secured together by means of suitable bolts, or screws. The lower section 2 is provided with a horizontal projection 3, to which the water main is to be connected, and the upper section is provided with a horizontal hose connection 4, having the usual screw-cap 5. Seated within the projection 3, preferably in a vertical position, is an annular detachable valve-seat 6. The projection 3 extends laterally from the vertical axis of the lower section 2 such a distance that a sufficient space is formed between the valve-seat 6 and the diametrically opposite wall of said section, whereby ample room is pro-

vided for the reception and operation of the valve and its connections upon the interior of said section. A horizontal groove, or guideway, 7 is formed in the opposite walls of the section 2 for a purpose hereinafter mentioned.

8 indicates a small waste-valve cylinder located vertically at the lower end of the shell 2. In the lower end of the shell 2 a spider 9 is located, and has a series of radial arms 10, intervening water passages 11 and a central vertical bearing 12. Formed in the cylinder 8 at a point about midway of its height, or length, is a series of small apertures or perforations 13. This series of apertures should be arranged annularly in a plane a slight distance above the lower end of the waste passage 14, so that the waste from the interior of the hydrant may flow through said apertures. However, instead of a series of apertures, I may use but one and the operation will be substantially the same in each case. In this connection I may also state that instead of one hose connection 4, a number may be used, the construction of each being only a duplication of the one herein shown.

Formed upon the side of the casing 1 and the lower section 2 which is opposite the valve-seat 6, is a single lateral projection 15 which extends continuously in a straight vertical line from points adjacent to the upper and lower ends of the hydrant casing, and forms a vertical recess in which the valve-rod 16 operates. This recess, it will be observed, is located to one side of the water passage 17 of the hydrant, so that there are no projections in said passage to obstruct the free flow of water from the valve-seat to the hose connection.

18 indicates a removable cap at the upper end of the hydrant, the same being securely positioned by means of suitable bolts 19, and provided with the common stuffing-box 20, through which the valve-rod 16 operates. The cap 18 carries upon its under side a curved head 21, the under surface of which is flush with the walls of the water passage 17, so that said head is interposed between the upper end of said water passage and the space beneath said cap 18, whereby an eddy in said space is prevented during operation, and the body of water passing upward through said passage 17 is diverted laterally upon striking

the easy curve of said head 21 and directed to the hose connection 4.

Formed on the valve-rod 16, at a point in horizontal alignment with the groove 7, is a collar or annular projection 22 used to support the rod. The lower portion of said valve-rod below said collar 22 is provided with a left-hand screw-thread 23, and a portion of said valve-rod above said collar is provided with a right-hand screw-thread 24, or vice versa as the case may be.

25 indicates a toggle-block, which is mounted upon the right-hand threads of the valve-rod 16 in a manner similar to that in which a common nut is mounted upon a bolt, and 26 indicates another toggle-block mounted in a similar manner upon the left-hand threads of said rod.

27 indicates a valve, which preferably has a tapered, or inclined, face 28, made of rubber, or other suitable material, to engage with the valve-seat 6. On the rear of the valve is formed a vertical rib or ear 29.

30 indicates opposite peripheral projections formed on the valve 27, and which engage and loosely slide in the guide-grooves 7 of the lower section 2 after the valve has moved about three-fourths of an inch toward closing.

31 indicates a pair of links which extend parallel one upon one side of the block 25 and the rib 29, and one upon the opposite side thereof, and have their upper ends pivotally connected to said block 25 by means of two lugs 32 cast upon the block 25, and their lower ends pivotally connected to said rib by means of a bolt or rivet 33.

34 indicates an additional pair of links, identical in construction to the links 31, which extend parallel one upon one side of the block 26 and the rib 29, and one upon the opposite side thereof, and have their lower ends pivotally connected to said block by means of two lugs 35 cast on the block 26, and their upper ends pivotally connected to said rib 29 by means of a bolt or rivet 36. This forms a sort of "toggle" connection between said valve-rod and said valve.

Extending into the valve-rod 16, from its lower end upward a suitable distance, is a screw-threaded socket 37. (See Fig. 6.) A pin or shaft 38, having its lower portion angular in cross-section and its upper end provided with a right-hand screw-thread, is mounted within the threaded socket 37 of said valve-rod. Fixed upon the screw-threaded body of said pin or shaft 38 is a valve 40, which slides up and down in the cylinder 8. This valve is preferably in the form of a cup-packing made of leather, rubber, or analogous material, in any common manner. It is locked in position by means of a common locking nut 41 threaded upon said pin or shaft 38 beneath said valve. The above is my preferred manner of mounting this valve. The angular portion 39 of said pin or shaft is loosely mounted to slide up and down in the bearing 12 of the

spider 9, said bearing being also angular in cross-section, corresponding with the cross-section of said part 39.

The operation is as follows: When the main valve is open, it occupies the position in which it is shown in Fig. 1 and removed almost entirely from the path of the body of water passing to the hose connection. When closed, the valve and its connections occupy the position indicated by dotted lines in Fig. 1. The valve-rod may be turned by means of a common wrench. When the valve 27 is open, the waste-valve 40 occupies a position in a plane below the apertures 13 of the cylinder 8, so that said waste-valve effectually closes said cylinder, but when the main valve 27 is in a closed position, the waste-valve occupies a position in a plane above said apertures, thereby permitting the waste from the interior of the hydrant to freely flow through said apertures into said cylinder, and thence downward and make its exit by way of the water passages 11 of the spider 9. By turning the valve-rod 16 in the direction indicated by the arrow in Fig. 3, the toggle-blocks 25 and 26 will be made to gradually approach each other, and the outer ends of the links 31 and 34, and the valve 27 connected thereto, will be thrown outward a corresponding distance, and the main valve will be forced forward into contact with its seat 6, being guided by said links and by the guide-grooves 7 in a horizontal line at a right angle to the face of said valve-seat. To open the valve the valve-rod 16 is turned in a reverse direction, and the toggle-blocks 25 and 26 will be separated a corresponding distance, and the valve 27 will recede bodily from its seat in the direction of the entering water. As the valve-rod 16 is revolved, the pin or shaft 37 is held against revolution by the bearing 12 of the spider 9, but it does not prevent its moving up and down in said cylinder and said cup-packing is moved up or down in said cylinder according to the direction in which said valve-rod is revolving, closing or opening the waste apertures.

It will be observed that the water passage 17 of my improved hydrant is devoid of abrupt bends, valve-rods, offsets, or projections, so that when the valve 27 is open a clear and direct passage of greater area is provided from the mains to the hose connection than that of the valve-opening, and all obstructions, such as valve, rod and projections, are obviated, reducing the friction of the water to a minimum while passing through the hydrant and enabling the highest possible pressure to be made use of at the hose connection.

The main valve 27 closes very slowly in ordinary operation, but the construction is such that it may be closed very quickly without causing water-hammer in the mains. This is so, because the walls of the section 2 flare inwardly from the valve-seat 6, so that when the main valve is moving toward its seat the

water is shut off very gradually by the periphery of said valve approaching the base of said flaring portion of said section. The nearer said valve approaches to said seat the narrower the passage grows between said valve and said flaring walls, so that no water-hammer will be occasioned in closing said valve.

By removing the bolts 19, which may be done in a few moments, the cap 18 may be removed and the valve-rod, main valve 27, waste-valve 40, and parts connected directly thereto, may all be removed from the shell of the hydrant without disturbing its position in the ground, and without removing any additional nuts or bolts.

What I claim is—

1. The combination, in a hydrant, of a casing, a main valve, a main valve-seat, means for operating said main valve, and a detachable cap 18 having a curved head 21 upon its under surface, the under surface of which head lies flush with the adjacent walls of the

water passage upon the interior of the hydrant, substantially as herein specified.

2. The combination, in a hydrant, of a casing, a main valve, a valve-rod, connections between said valve-rod and said main valve, whereby the latter may be operated, a vertical waste-valve cylinder 8 having a waste aperture in its wall, a screw-threaded pin or shaft 37 connected by screw-threads at its upper end to said valve-rod, a valve or piston mounted upon said pin or shaft within said cylinder to move up and down therein with said pin or shaft, and a bearing for the lower end of said pin or shaft, substantially as herein specified.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM W. COREY, JR.

Witnesses:

MAUD GRIFFIN,
JNO. C. HIGDON.