(No Model.)

J. A. GREGG.

HYDRANT.

No. 462,003. Patented Oct. 27, 1891.

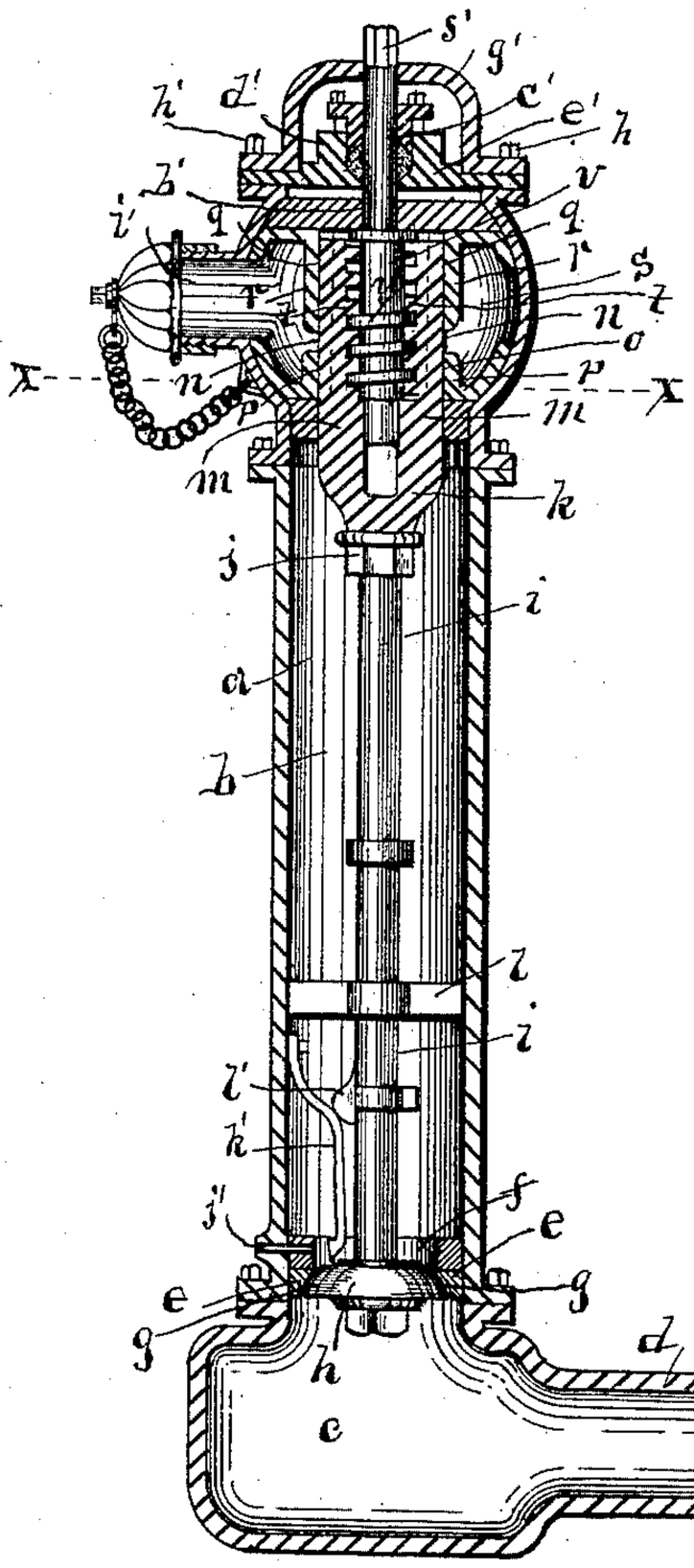

Fig. 1.

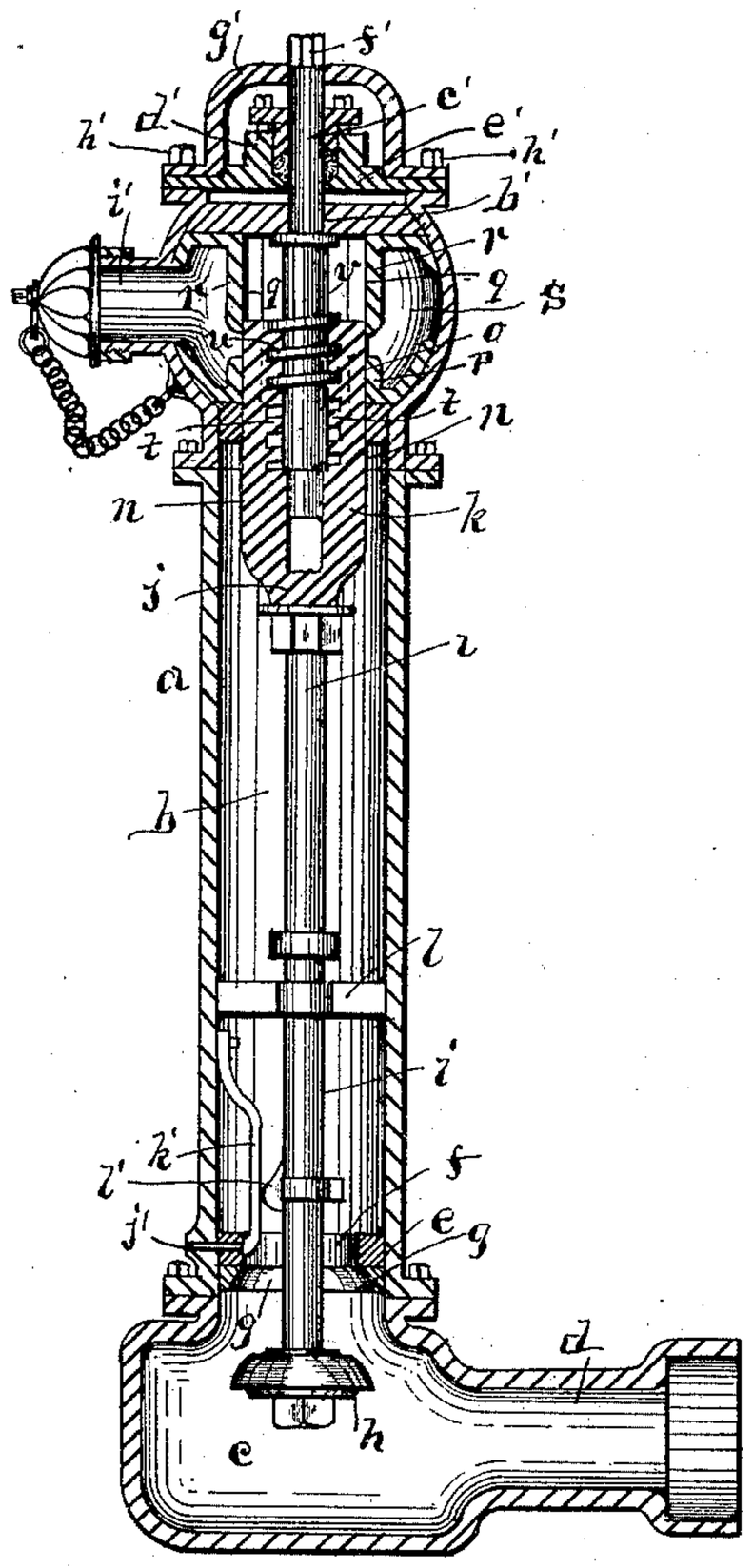

Fig. 2.

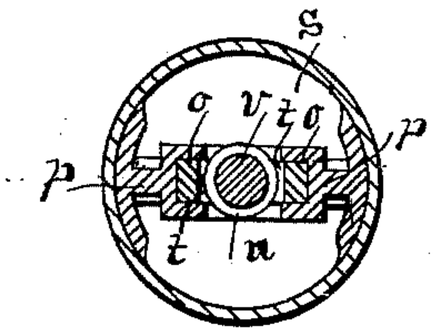

Fig. 3.

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By Jas E. Thomas Atty.

UNITED STATES PATENT OFFICE.

JOHN A. GREGG, OF WEST BAY CITY, MICHIGAN, ASSIGNOR OF ONE-HALF TO JOHN H. BLOOMSHIELD, OF SAME PLACE.

HYDRANT.

SPECIFICATION forming part of Letters Patent No. 462,003, dated October 27, 1891.

Application filed April 23, 1891. Serial No. 390,086. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. GREGG, a citizen of the United States, residing at West Bay City, in the county of Bay and State of Michigan, have invented certain new and useful Improvements in Hydrants, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improvements in hydrants, and pertains more particularly to improvements in hydrant-valve-operating mechanism; and the invention consists in the arrangement, construction, and operation of the device, together with the combination of the several parts thereof, as I shall hereinafter specifically explain, and which will be especially designated in the claim of this specification.

The objects of the invention are to arrange and construct devices for opening and closing the valve of a hydrant, so that a free flow of water may be had and a slow movement of the valve will be obtained, whereby great power can be obtained for opening or closing the valve against a pressure of water.

Another object of the invention is to so construct and arrange the valve-operating mechanism that all corroding, sticking, and clogging the parts will be avoided and allow the valve to be freely and easily opened or closed at all times.

I attain these objects by the devices illustrated in the accompanying drawings, in which the same letters of reference will be found indicating the same parts throughout the several illustrations.

Figure 1 is a vertical central section of my improved hydrant with the parts in position when the valve is closed. Fig. 2 is the same showing the position of the parts when the valve is open. Fig. 3 is a transverse section of Fig. 1, taken at *x x*.

a represents the vertical column or body portion of the hydrant, and *b* is the chamber contained therein, while *c* is a chamber at the base of the column portion, having an enlarged area, and is connected to a water-main by a side portion *d*. The chamber *c* is separated from the chamber *b* by a web *e*, which is provided with a central opening *f*, containing a valve-seat *g*, preferably arranged to face downwardly, and *h* is a valve fitted to rest upon the valve-seat and close the opening against the passage of water, and is held in position by a vertical rod *i*, with its lower end secured to the valve, while the upper end of the rod is secured to the lower end or head portion *j* of a frame *k*, a rigid support or guide portion *l*, provided with a central opening for the rod, being arranged transversely with the chamber *b* above the valve for guiding and sustaining the lower end of the rod.

The frame *k* is composed of the head portion *j*, provided on each side with upwardly-extending vertical arm portions *m*, having their outer sides fitted with ways *n* to slide in grooves *o*, contained in the lower transverse supports *p*, and also in the grooves *q*, contained in the upper transverse supports *r*. This frame *k* and supports *r* and *p* are contained in an enlarged chamber *s* at the upper end of the column, and the supports are permanently secured in position by their ends to the sides of the upper and lower portions of the chamber *s*.

The inner adjacent sides of the vertical portions *m* are provided with teeth *t*, arranged to engage with a worm-thread *u*, surrounding a vertical shaft *v*, which is located between the parts *m*, and is journaled at its lower end in a box or opening *a'*, which is secured to or is a part of the lower support *p*, while the upper support *r* is provided with an opening *b'*, carrying the upper journal *c'*, which, after passing upwardly through a packing-box *d'* upon the upper removable head portion *e'* of the chamber, is provided with an upwardly-projecting end *f'*, having a rectangular face or other suitable engaging devices, whereby a wrench or lever may be applied for revolving the shaft *v*, and a cap *g'*, provided with an opening for the end *f'*, is placed over the packing-box and secured by screws *h'* to the portion *c'*, which closes the upper end of the chamber.

One or more openings *i'* of the usual form are arranged upon the sides of the chamber *s* in the usual manner for attaching hose thereto and a vent or drainage-opening *j'* is provided through the lower portion of the cham-

ber b', and k' is a spring-arm rigidly secured to the side of the chamber b by its upper end and with its lower end reaching over and arranged to close the opening j' when the arm is pressed inwardly, and upon the rod i' is secured a projection l', which as the rod is moved downwardly engages with the arm k' and moves the free end thereof inwardly and closes the drainage-opening.

In practice the wrench or lever is applied to the end f', and the shaft is thereby revolved in the required direction, and the worm-thread u, then engaging with the teeth l moves the frame k and the valve h downwardly, so that a free opening is formed for the admission of water to the chamber b, and thence through the chamber s to the hose connected therewith, the arrangement and construction of the support p permitting a free flow of water upon each side thereof, and the area of the chamber s provides a full supply of water for filling the hose, so that no irregularity of pressure upon the hose will be produced by the water eddying or swirling through reduced channels in the hydrant. As the rod i moves downwardly for operating the valve the piece l' comes in contact with the spring-arm and closes the free end thereof over the drainage-orifice to prevent the exit of water while the valve is open, and as the shaft is operated to raise the frame the rod moving upwardly disengages the piece l' from the arm when the valve has reached its seat, and the spring of the arm then operates to raise the free end thereof away from the drainage-orifice, and the water then contained in the column after the valve is closed is allowed to pass out through the orifice into a suitable drain or tank, so that in freezing weather the space above the valve will be entirely free from water and liability of being burst or closed by freezing, and the worm-thread, operating upon the vertical racks m, allows the sides of the worm to be exposed and free to clear the teeth of the racks and the worm from all dirt or grit, and provides, also, against freezing the parts together, so that the shaft cannot be revolved. The area of the contact being limited, only a few drops of water can adhere for freezing, so that the thin shell of ice, if formed, may be easily broken as the shaft is revolved, and the shaft being arranged with a single worm-thread only provides great power for operating a valve of considerable area against a water-pressure from the mains.

Of course I do not limit my invention to the precise form of the valve shown, nor to the precise construction shown for supporting the vertically-moving frame, as these may be arranged in any well-known form, and provide for the proper movement of the valve in the same way, and I wish it understood that it is not entirely necessary to move the valve against the water-pressure, as the same appliances would operate the valve when seated upon the upper side of the web e in the same manner without change of the construction.

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

The combination, with a hollow vertical column provided on its upper end with an enlarged chamber, a vertical shaft within the chamber and journaled in transverse supports and having its upper end projecting through the upper end portion of the chamber and provided on its middle portion with a worm-thread, the vertical arms m on opposite sides of the shaft and provided on their inner sides with teeth for engaging with the said worm-thread and having their lower ends connected to a head portion, the guides r and p for supporting the said arms, a valve-rod secured by its upper end to the said head portion and carrying on its lower end a valve, and a seat for the valve secured within the lower portion of the column, substantially as set forth.

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

JOHN A. GREGG.

Witnesses:
GEO. P. THOMAS,
JAS. E. THOMAS.