(No Model.)

J. KNICKERBACKER.

HYDRANT.

No. 504,594. Patented Sept. 5, 1893.

Fig. 1.

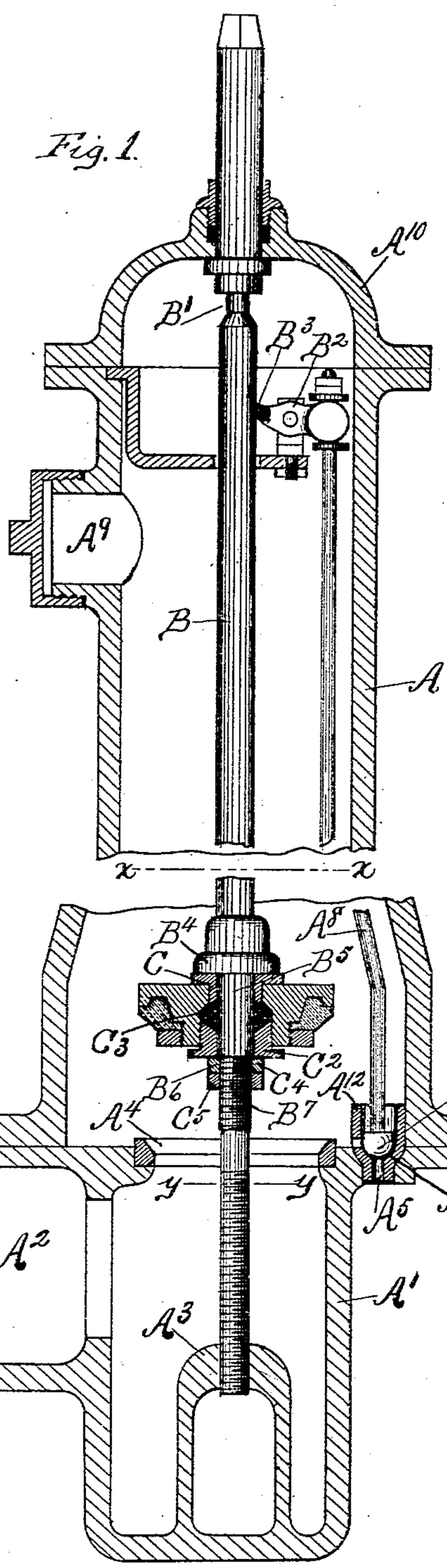
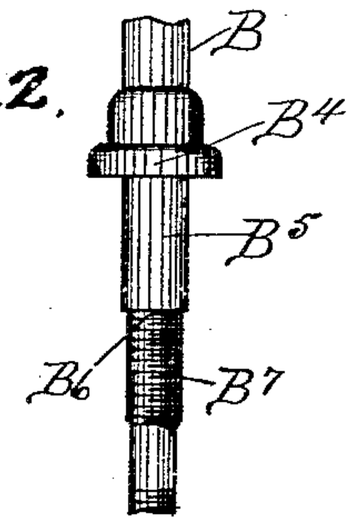


Fig. 2.



Witnesses:
Frank E Curtis
A E Delaney.

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Atty.

UNITED STATES PATENT OFFICE.

JOHN KNICKERBACKER, OF TROY, NEW YORK.

HYDRANT.

SPECIFICATION forming part of Letters Patent No. 504,594, dated September 5, 1893.

Application filed April 18, 1892. Serial No. 429,549. (No model.)

To all whom it may concern:

Be it known that I, JOHN KNICKERBACKER, a citizen of the United States, residing at Troy, county of Rensselaer, and State of New York, have invented certain new and useful Improvements in Hydrants, of which the following is a specification.

My invention relates to such improvements and consists of the novel construction and combination of parts hereinafter described and subsequently claimed.

Reference may be had to the accompanying drawings, and the letters of reference marked thereon, which form a part of this specification.

Similar letters refer to similar parts in the several figures therein.

Figure 1 of the drawings is a central vertical section of my improved hydrant, showing the main valve open, and the drip-valve closed, the middle portion of the barrel and valve-stems being broken away for convenience in illustration. Fig. 2 is a view in side elevation of that portion of the main valve stem located between the broken lines *x*—*x*, and *y*—*y*, in Fig. 1, with the valve removed.

This application is intended to cover an improvement upon the construction shown and described in application, Serial No. 332,085, for improvements in hydrants, filed by me November 30, 1889, as assignee of the entire interest of W. H. Bootman, inventor, and I do not herein claim such construction.

My invention relates specifically to means for securing a tight joint between a centrally apertured valve and its stem rotary in the valve, as hereinafter fully set forth and claimed.

The hydrant-barrel, A—, is bolted upon the casting A′—, constituting a well known form of base having an inlet opening, A^2—, a screw-threaded stem-nut, A^3—, a valve-seat, A^4—, a drip-opening, A^5—, and seat, A^6—, for the drip-valve, A^7—, secured to the lower end of a stem, A^8. The upper end of the barrel is provided with a capped outlet opening, A^9—, and is closed by a cover, A^{10}—, bolted to the barrel in the usual manner. The cover is provided with a central aperture through which the upper end of the main valve stem, B, projects. The upper end of the main valve stem is provided with a cross-groove, B′—, the walls of which engage with one end of the drip-lever, B^2, pivoted upon a fixed support, the other end of the drip lever engaging with the drip-valve-stem, whereby an upward movement of the main valve-stem which opens the main valve serves to communicate a downward movement to the drip-valve stem to close the drip-valve. A downward movement of the main valve stem closes the main valve and opens the drip-valve.

In the use of large valves it is important that the valve-stem should turn in the valve as it would require too much power to turn a large valve upon its seat after it was partially seated to complete the work of fully seating it to form a tight joint. To secure a tight joint between the valve and its stem rotary therein, I provide the stem with a collar, B^4, a bearing surface, B^5— having at its lower end a shoulder, B^6— and a threaded portion, B^7—. A sleeve or bushing, C—, having on one end a flange, is inserted from the upper side in the central stem-aperture in the valve so that the stem-collar will bear upon the flange. A similar bushing-sleeve, C^2—, is inserted from the lower side, sufficient yielding packing material having been first inserted in such aperture to fill a space formed between the two sleeves. The upper sleeve is driven into the aperture and made to fit tightly therein, forming a permanently tight joint between the sleeve and the aperture wall. A ground joint is formed between the flanged end of the sleeve and the stem-collar. The lower sleeve, C^2—, is made to fit loosely in the disk aperture and is forced inwardly against the packing, C^3—, by means of the nut, C^4—, and the locking nut, C^5—. The nut, C^4—, is turned until it is forced along the threaded portion of the stem into engagement with the shoulder stop, B^6—. The shoulder-stop is so located that the loosely fitting sleeve will sufficiently compress the packing and so that the flange of such sleeve cannot be forced into engagement with the lower side of the valve-disk even if the packing is entirely removed. Without the shoulder-stop the lower sleeve might be forced so far into the disk aperture as to cause its flange to tightly engage the disk and cause the parts to bind and render it difficult or impossible to turn the valve stem within the valve. The valve would ordinarily

be operative without the packing, the ground joint between the stem-collar and the flanged end of the upper sleeve being sufficient; but in case the ground joint became unequally worn or became obstructed, the packing would still afford a tight joint, and prevent leakage. I am thus able to afford a double protection against leakage. When no packing is used, the loosely fitting sleeve serves as a guide support to steady the valve-disk, and the shoulder-stop secures uniformity in the manufactured article, and interchangeability of parts. I prefer to make the lower end of the plug forming the drip-valve spherical in form as shown at A^7—, and inclose the same in a cup, A^{12}—, having an outlet, A^5—, in the bottom, surrounded by a concaved seat A^6 adapted to receive and fit the spherical part of the plug, so that lateral movement of the drip-valve stem will not prevent the plug from being fully seated. I am thus able to dispense with expensive and nicely fitting guide-supports for the valve or valve stem.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a hydrant, the combination with the main valve stem; and a collar secured thereon; of a centrally apertured valve-disk; a flanged bushing-sleeve inclosing the stem and fixed in the disk-aperture on the side of the disk adjacent to the stem-collar; a bushing-sleeve inclosing the stem and loosely inserted in the disk aperture to project from the opposite side of the disk; packing in the disk-aperture between the inner ends of the sleeves; screw-threads on the stem adjacent to the lower bushing sleeve; a nut on the stem to hold the parts in position, substantially as described.

2. In a hydrant, the combination with the main valve stem; and a collar secured thereon; of a centrally apertured valve-disk; a flanged bushing-sleeve inclosing the stem and fixed in the disk-aperture on the side of the disk adjacent to the stem-collar; a bushing-sleeve inclosing the stem, and inserted in the disk aperture to project from the opposite side of the disk; packing in the disk-aperture between the inner ends of the sleeves; a shoulder-stop on the stem at the projecting end of the latter sleeve; screw-threads on the stem adjacent to the shoulder-stop; and a similarly threaded nut on the stem, for holding the parts together in position, substantially as described.

In testimony whereof I have hereunto set my hand this 15th day of April, 1892.

JOHN KNICKERBACKER.

Witnesses:
FRANK C. CURTIS,
A. E. DELANEY.