W. W. COREY.

FIRE HYDRANT.

APPLICATION FILED JULY 25, 1910.

983,268. Patented Feb. 7, 1911.

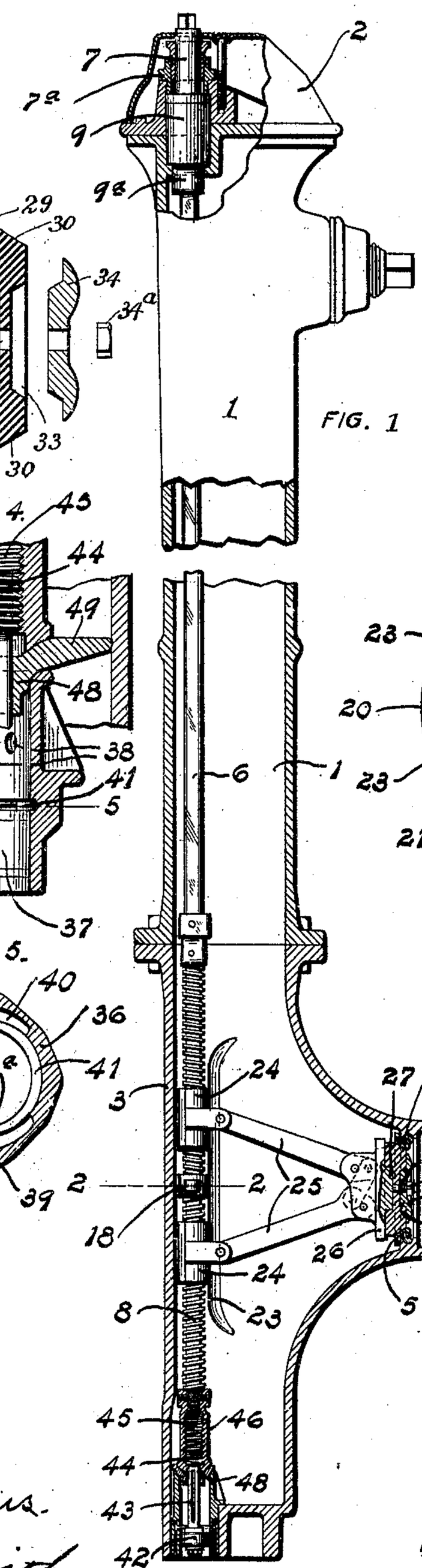

FIG. 1.

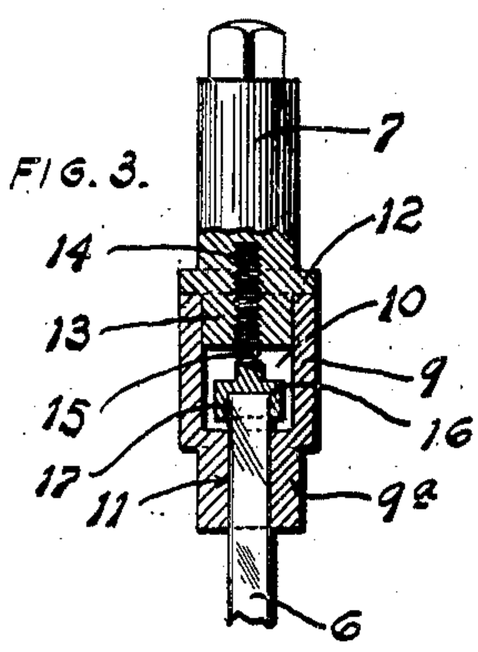

FIG. 3.

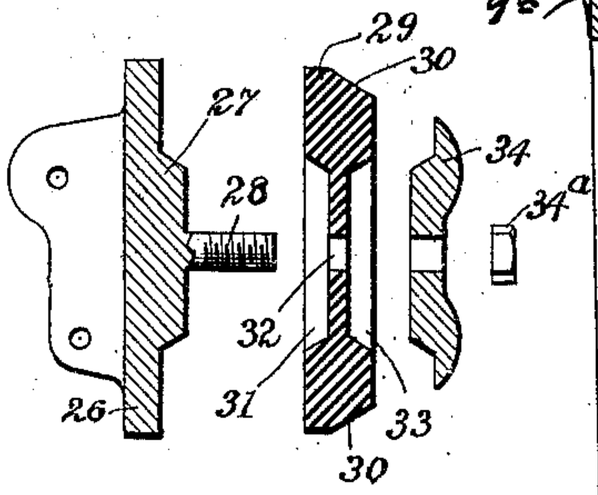

FIG. 6.

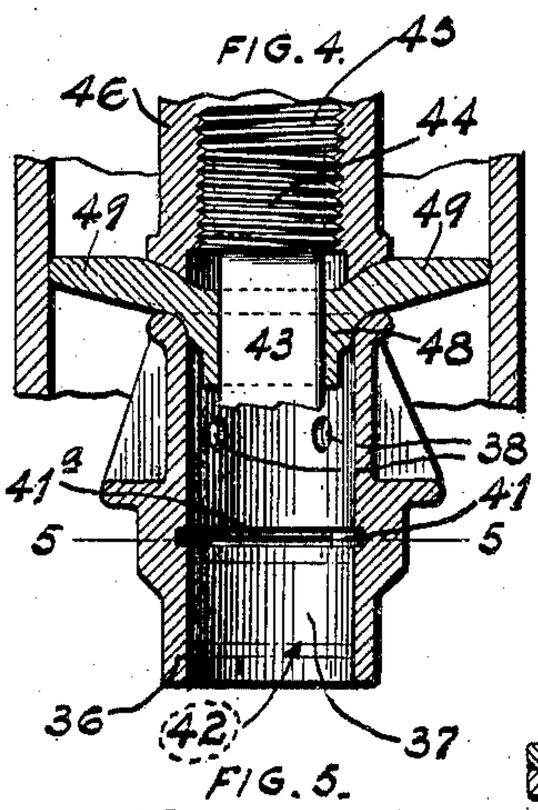

FIG. 4.

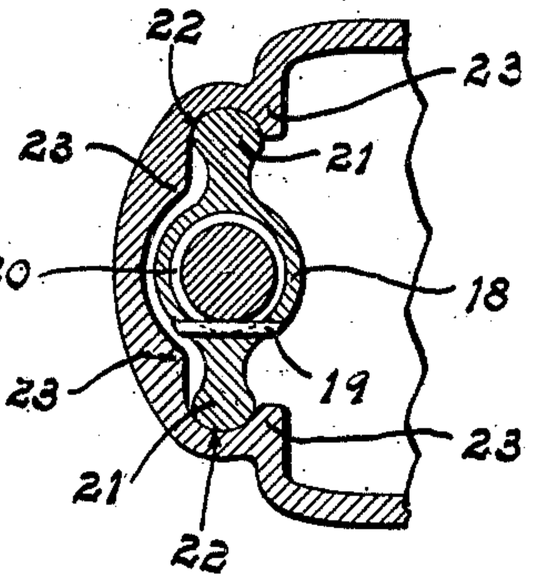

FIG. 2.

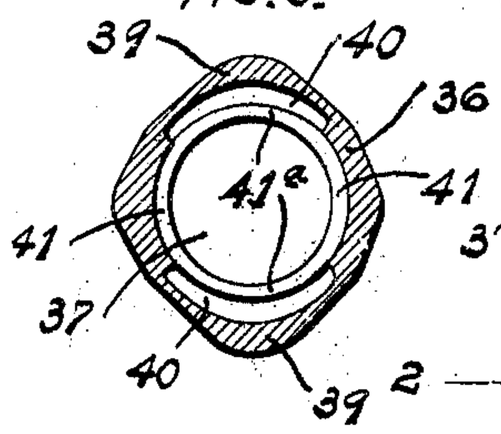

FIG. 5.

WITNESSES

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FIRE-HYDRANT.

983,268. Specification of Letters Patent. **Patented Feb. 7, 1911.**

Application filed July 25, 1910. Serial No. 573,795.

To all whom it may concern:

Be it known that I, WILLIAM W. COREY, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Fire-Hydrants, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of my improved hydrant with parts thereof shown in vertical section. Fig. 2 is an enlarged detail view taken on the line 2—2 of Fig. 1. Fig. 3 is an elevation partly in section of an adjustable coupling utilized in connecting the two parts of the valve operating rod. Fig. 4 is an elevation partly in section of the barrel or cylinder utilized as the drain valve housing at the lower end of the hydrant casing. Fig. 5 is a horizontal section taken on the line 5—5 of Fig. 4. Fig. 6 is a sectional view of the flexible body of the main valve utilized in my improved hydrant.

My invention relates to a fire-hydrant of the type shown and described in Letters Patent issued to me March 12, 1895, No. 535,614, December 3, 1895, No. 550,595 and Patent No. 410,026 issued to E. L. Rowe, August 27, 1889.

The principal object of my present invention is to generally improve and simplify the construction of the type of hydrants shown and described in the patents above referred to, and particularly to provide a simple adjustable connection between the adjacent ends of the two parts of the valve operating rod, at the point where the same passes through the top of the stand pipe, to support the central portion of the threaded section of the valve operating rod, and hold the same against flexure, to improve the construction of the drain valve and the barrel or housing in which said drain valve operates, and to provide a simple self packing flexible main valve body, which is constructed and so mounted as to prevent leakage through the opening in the center of said valve body.

To the above purposes my invention consists in the construction, arrangements and combination of the several parts comprising my invention, as will be hereinafter more fully described and claimed.

Referring by numerals to the accompanying drawings 1 designates the stand pipe, 2 the head on the upper end thereof, and 3 the lower portion of the stand pipe, which lower portion is provided with a lateral extension 4 within which is arranged a valve seat 5.

All of the parts just described are of the type now in general use.

6 designates the main section of the valve operating rod the ends of which are square or non-circular cross section.

7 designates the short section of the valve rod which is arranged for rotation in a suitable packed bearing 7^a in the head 2, and detachably connected to the lower end of the section 6 is the threaded section 8 of the valve rod, which threaded section occupies the part 3 of the stand pipe. Part of this section 8 is provided with a right-hand thread, and the remaining part is provided with a left-hand thread. This construction is essential to bring about the proper movement of the blocks or nuts mounted on the threaded section, and the movement of which blocks or nuts controls the movement of the main valve of the hydrant.

In the manufacture of the various parts of a hydrant the stand pipe 1 and the section 6 of the valve operating rod often vary in length, and to overcome this slight defect I propose to arrange an adjustable connection for the sections 6 and 7 of the valve operating rod, which adjustable connection is located in the head of the stand pipe 1, immediately below the packed bearing 7^a in which the section 7 operates.

Arranged for rotation in a suitable bearing formed in the head of the stand pipe 1 is a sleeve 9 in the upper portion of which is formed a square or non-circular recess 10 and leading therefrom downward through a stem 9^a, formed on the lower end of the sleeve 9 is a square or non-circular opening 11 adapted to receive the upper end of the valve operating rod 6. The lower portion of the section 7 is provided with a flange 12 which normally rests on top of the sleeve 9 and projecting downward from the section 7 into the upper portion of the recess 10 is a square or non-circular lug 13.

Formed through the lug 13 and into the lower portion of the section 7 is a threaded bore 14 which receives a threaded stem 15 carried by a square or non-circular block 16 which latter occupies the lower portion of the recess 10. This block 16 is provided in its under side with a square or non-circular

recess 17 adapted to receive the upper end of the section 6 of the valve operating rod.

When the parts just described are assembled to connect the sections 6 and 7 of the valve operating rod the sleeve 9 is positioned in its bearing with the upper end of the section 6 extending through the non-circular opening 11, through the stem 9ª; the stem 15 is now screwed into and out of the bore 14 to adjust the part in such a manner so that when the parts are assembled the block 16 engages the upper end of the section 6, and the flange 12 is forced upward and bears against the underside of the bearing 7ª.

The adjustment of the threaded stem in the section 7 takes place before the block 16 and stem 15 are inserted in the sleeve 9, and before the sleeve 9 is inserted in its bearing in the head 2.

After the parts are properly adjusted, the block 16 is inserted in the recess 10 in the sleeve 9 and the upper end of the rod 6 engages in the recess 17 after which the gland of the bearing 7ª is tightened around the section 7 above the flange 12, and with the parts so arranged the valve rod 6 will be rotated whenever the section 7 is rotated, owing to the manner in which the parts 13, 9, 9ª and 6 fitted to one another.

The means for supporting the central portion of the threaded rod 8, and holding the same against flexure, comprises a block 18, in which the central portion of the threaded rod is loosely mounted for rotation and said block is held against longitudinal movement upon said rod, by means of a pin 19 seated in the block and occupying a groove 20 formed in said threaded rod.

Formed on or fixed to the sides of this block 18 are lateral extensions in the form of lugs 21 which normally occupy grooves 22 formed in the inner face of the part 3 of the stand pipe and which grooves are formed between vertically disposed ribs 23 (see Fig. 2). These ribs 23 are preferably formed integral with the wall of the part 3, of the stand pipe, at a point directly opposite the extension 4 in which the valve seat 5 is formed, and said ribs extend above and below the center of the rod 8 a distance approximately equal to half the length of said rod. The primary object of said ribs is to form a bearing or seat for the lugs 21 on the block 18 and prevent said block and the central portion of the threaded rod from moving rearwardly, laterally in either direction, or toward the main valve opening. This support for the central portion of the threaded rod is essential, inasmuch, as while the main valve is closed or partially closed there is considerable water pressure exerted against said main valve, which pressure tends to force the valve toward and onto its seat, thereby tending to pull the rod 8 out of its vertical alinement. The secondary object of these ribs is to provide guides for the lower working parts of the hydrant including the drain valve, when said parts are moved into and out of position, while being assembled, or replaced during repair.

Threaded blocks 24 are mounted upon the threaded portions of the rod 8 and pivotally connected to said blocks are the rear ends of a pair of links 25. The forward ends of these links are pivotally connected to a disk 26 forming the base of the main valve of the hydrant, and formed integral with the outer face of this disk is a boss 27 from which projects a stem 28, the outer end of which is threaded.

29 designates the body of the main valve which is preferably constructed of rubber, and provided with a beveled face 30 adapted to fit snugly against the seat 5. Formed in the rear side of the body of the valve is a recess 31, which receives the boss 27 and formed through the center of the body of the valve is an aperture 32 through which the stem 28 projects.

Formed in the outer face of the body of the valve is a recess 33 which receives a boss 34 formed on the rear side of a plate or washer 35. This plate or washer is positioned on the outer face of the body of the valve, and the various parts are rigidly held in position by means of a nut 34ª located on the threaded end of the stem 28. When this nut 34ª is tightened the thin wall in the central portion of the body of the valve between the recesses 31 and 33 is compressed to a certain degree, thereby forming a tight joint between the wall of the aperture 31 and the stem 28, thus forming a very thorough packing which prevents the leakage of water through the opening in the center of the flexible valve body. Ordinarily a large opening is formed through the center of the valve body, and said large opening naturally permits leakage especially after the valve has been in service for a considerable length of time.

Seated in the bottom of the part 3 of the stand pipe is the barrel or cylinder 36 for the drain valve, which barrel or cylinder is provided with a valve opening 37 having the same diameter throughout its length, and formed through the upper portion of the wall of this barrel is a series of drain openings 38.

Formed on or fixed to the lower portion of the barrel 36 on opposite sides thereof are walls 39 inclosing the spaces 40, and formed on the interior of the barrel 36 is an annular groove 41. This groove 41 is of such depth as to extend entirely through the wall between the interior of the barrel or cylinder 36 and the spaces 40. The openings, which establish communication between the interior of said cylinder 36 and the spaces 40, are designated by 41ª.

42 designates the body of the drain valve, which is preferably constructed of rubber or analogous material, and which valve fits snugly within, and is adapted to slide through the valve chamber 37. Extending upwardly from this valve body is a stem 43 noncircular in cross section, and the upper end of said stem is provided with a threaded head 44, which occupies the interiorly screw threaded bore 45, of a sleeve 46, which latter is rigidly fixed to the lower end of the threaded section 8 of the valve rod.

A block 48 is loosely seated in and normally closes the upper end of the barrel 36, and formed in the center of said block is a non-circular opening adapted to receive the valve stem 43. Extensions 49 on the sides of the block 48 normally bear against the inner face of the lower portion of the stand pipe, thus preventing the block 48 and the valve from rotating with the main valve operating rod.

The block or holder 48 is loosely mounted in the upper end of the barrel of the drain valve housing in order that it can be readily removed when the parts of the drain valve are withdrawn from the housing for the purpose of repair, and such construction also makes it possible to attach said block together with the stem 43 when said parts are inserted in the barrel or housing.

When the main valve of the hydrant is closed, as shown in Fig. 1, the drain valve 42 occupies a position within the barrel 36, below the openings 41[a], and water from the lower portion of the part 3 of the stand pipe drains through the apertures 38 into the upper portion of the barrel 36, and passes from thence into the groove 41, through the openings 41[a] and finally through the spaces 40.

When the valve operating rod is rotated to move the blocks 24 away from one another, thereby opening the main valve, the sleeve 46 is rotated, thus causing the threaded block 44 to move upwardly in the threaded bore in said sleeve, and elevating the valve 42, and when the latter closes the openings 41[a], the escape of water through the drain valve is cut off.

When the main valve rod is rotated to open and close the main valve, the threaded block on the upper end of the valve stem moves vertically within the sleeve 46, and as said valve stem occupies the noncircular opening in the block 48, it is prevented from rotating during its vertical movement.

I am aware that minor changes in the form arrangement and construction of the various parts of my improved hydrant may be made and substituted for those herein shown and described without departing from the spirit of my invention.

I claim:

1. In a hydrant, the combination with a stand pipe having a main valve. of a sectional valve operating rod, a sleeve which receives the adjacent ends of two of the sections of the valve operating rod, and a longitudinally adjustable member within said sleeve and forming a connection between the sections of the valve operating rod.

2. In a hydrant, the combination with a stand pipe having a main valve, of a sectional valve operating rod, a sleeve mounted for rotation in the upper end of the stand pipe, which sleeve receives the adjacent ends of two of the sections of the valve operating rod, and a member within said sleeve which is adjustably mounted on the end of one of the sections of the valve operating rod, and engages the end of the opposite section of said rod.

3. In a hydrant the combination with a stand pipe having a main valve, of a valve rod for operating the main valve, and means loosely mounted on said rod and held against longitudinal movement thereon for holding said valve rod against flexure.

4. In a hydrant, the combination with a stand pipe having a main valve, of a sectional valve operating rod and a member loosely mounted upon one of the sections of said valve rod, and held against longitudinal movement thereon for holding said section of the valve rod against flexure.

5. In a hydrant, the combination with a stand pipe having a main valve, of a sectional valve operating rod, a member loosely mounted upon one of the sections of said valve operating rod, and held against longitudinal movement thereon, and which member engages the stand pipe to hold the sectional rod against flexure.

6. In a fire hydrant, the combination with a stand pipe and its valve seat, of a valve adapted to engage the valve seat, a valve operating rod having a threaded portion, means operated by said threaded portion and connected to the valve for actuating the same, and means loosely mounted on the threaded portion of the rod, and held against longitudinal movement thereon, for holding said rod against flexure.

7. In a fire hydrant, the combination with a stand pipe and its valve seat, of a valve adapted to engage the valve seat, a valve operating rod having oppositely pitched threaded portions, blocks on said threaded portions, connections between said blocks and the valve, and a support loosely mounted on the threaded portion of the rod between the blocks thereon for holding the central portion of said rod against flexure.

8. In a fire hydrant, the combination with a stand pipe, and its valve seat, of a valve adapted to engage the valve seat, a valve operating rod having oppositely pitched threaded portions, blocks on said threaded portions, connections between said blocks and the valve, and a block loosely mounted

on the threaded portion of the rod between the blocks thereon, which block bears against the stand pipe.

9. In a fire hydrant, the combination with a stand pipe, and its valve seat, of a valve adapted to engage the valve seat, a valve operating rod having oppositely pitched threaded portions, blocks on said threaded portions, connections between said blocks and the valve, means loosely mounted on the threaded portion of the rod between the blocks thereon, and means on the stand pipe and engaging parts of the loosely mounted means for holding the same against lateral movement.

10. In a fire hydrant, the combination with a stand pipe and its valve seat, of a main valve adapted to engage upon said seat, and which main valve comprises a pair of plates provided with bosses projecting toward one another, means for clamping said plates together, and a flexible valve body interposed between said plates, and provided in its faces with recesses which receive the bosses.

11. In a fire hydrant, the combination with a stand pipe and its valve seat, of a main valve adapted to engage upon said seat, and which main valve comprises a plate, a boss on the face thereof, a threaded stem projecting from said boss, a flexible body provided with a centrally arranged aperture adapted to receive the stem, and there being a recess formed in the face of the flexible body, which recess receives the boss on the plate, a plate on the outer face of the flexible body, and means for locking the parts together.

12. In a fire hydrant, the combination with a drain valve housing, there being outlet openings formed through the drain valve housing, a drain valve adapted to move freely through said drain valve housing, and means seated in the top of the drain valve housing for holding said drain valve against rotation during its vertical movement.

13. The combination with a hydrant having a main valve, and a valve operating rod, of a drain valve housing in the lower end of the stand pipe, the internal diameter of which housing is uniform throughout its length, there being an outlet formed through the wall of the housing, a drain valve within the drain valve housing, a connection between said drain valve and valve rod, whereby said drain valve is raised or lowered when the valve operating rod is rotated, and a detachable holder seated in the upper end of the drain valve housing, directly in line with the valve operating rod, and engaging a part of the drain valve stem for holding the same against rotation.

14. In a hydrant, the combination with a drain valve housing, of a valve arranged for operation therein, there being an annular groove formed in the inner face of the housing and which groove is formed entirely through portions of the wall of the housing establishing communication between the groove and the exterior of said housing.

15. In a hydrant, the combination with a drain valve housing, having a uniform internal diameter throughout its length, of a valve arranged for operation in said housing, there being an annular groove formed within the housing, and which groove is of such depth as to cut entirely through the wall of the housing for establishing communication between the interior and the exterior of said housing.

16. In a hydrant the combination with a drain valve housing, of walls on the lower portion of said housing, which walls inclose outlet spaces, a valve arranged for operation within the housing, there being an annular groove formed in the inner face of the lower portion of the housing, and which groove is of such depth as to cut through the wall of the housing between the interior thereof and the outlet spaces.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this 23d day of July, 1910.

WILLIAM W. COREY.

Witnesses:
M. P. Smith,
B. S. Reid.