No. 734,251. PATENTED JULY 21, 1903.

A. O. BABENDREIER.

HYDRANT.

APPLICATION FILED JAN. 31, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

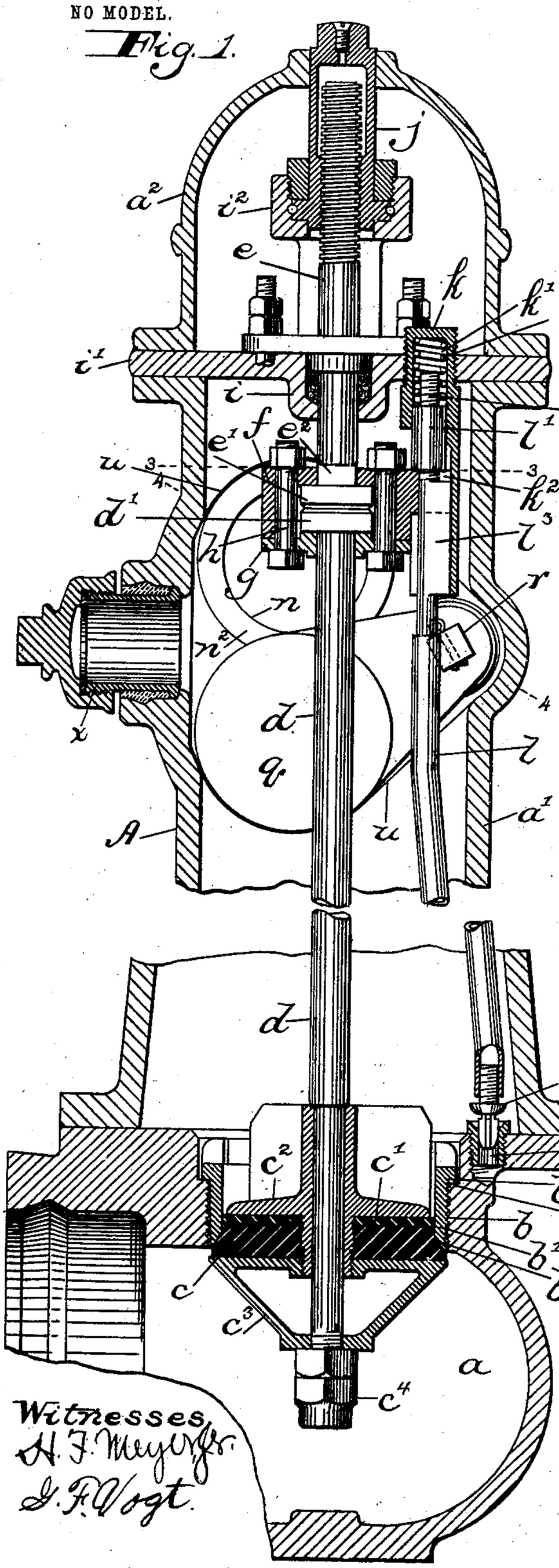


Fig. 2.

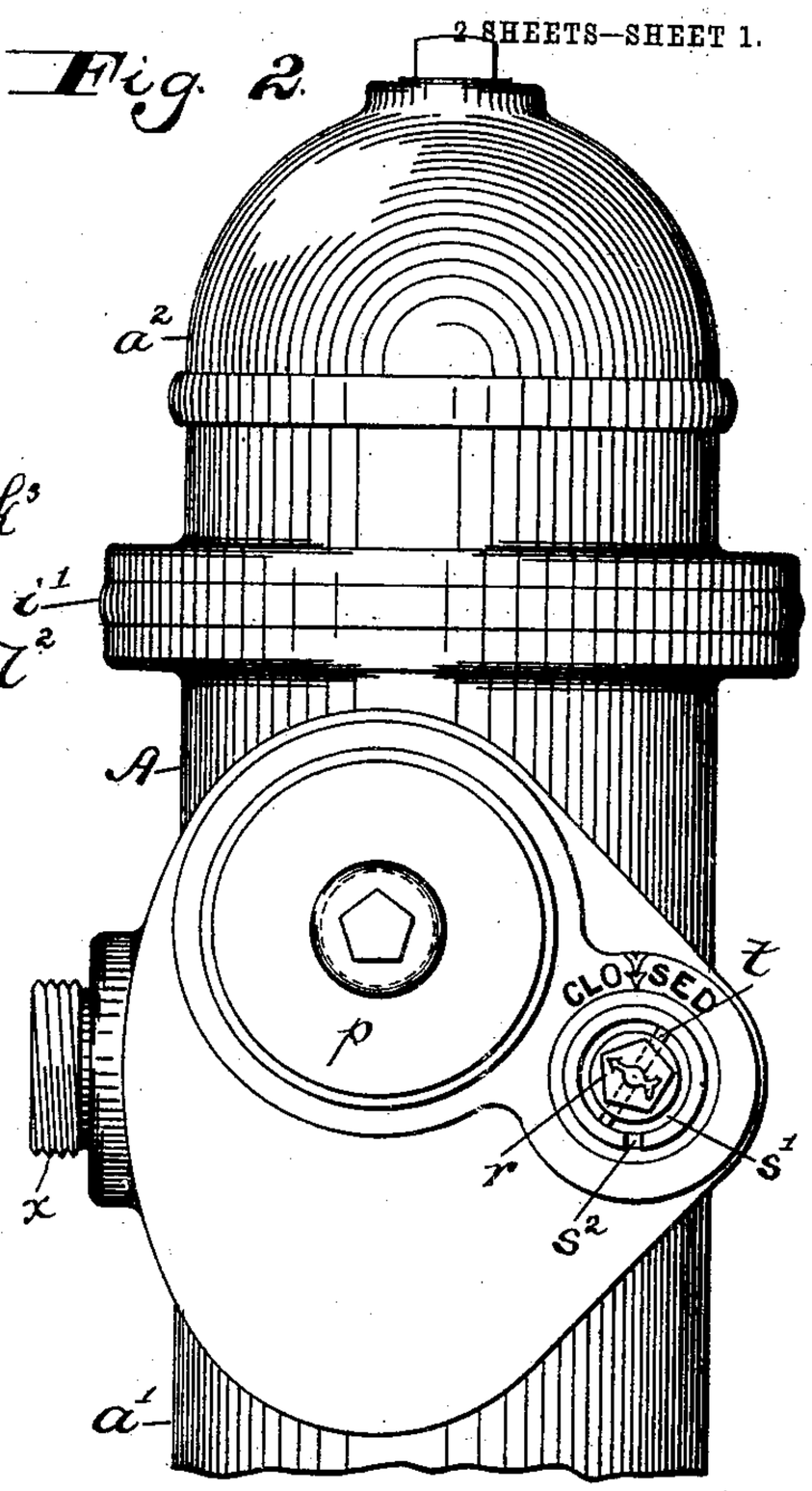
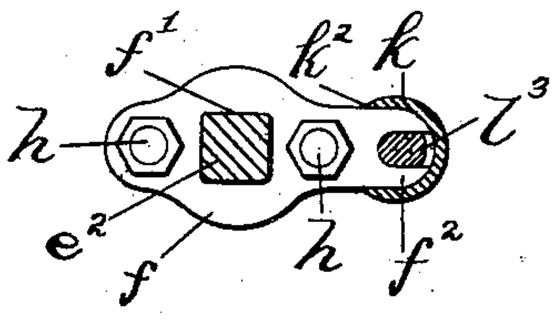


Fig. 3.



Witnesses,
H. J. Meyer, Jr.
L. F. Vogt.

Inventor.
Arthur O. Babendreier
By Mann & Co.
Attorneys.

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 4.

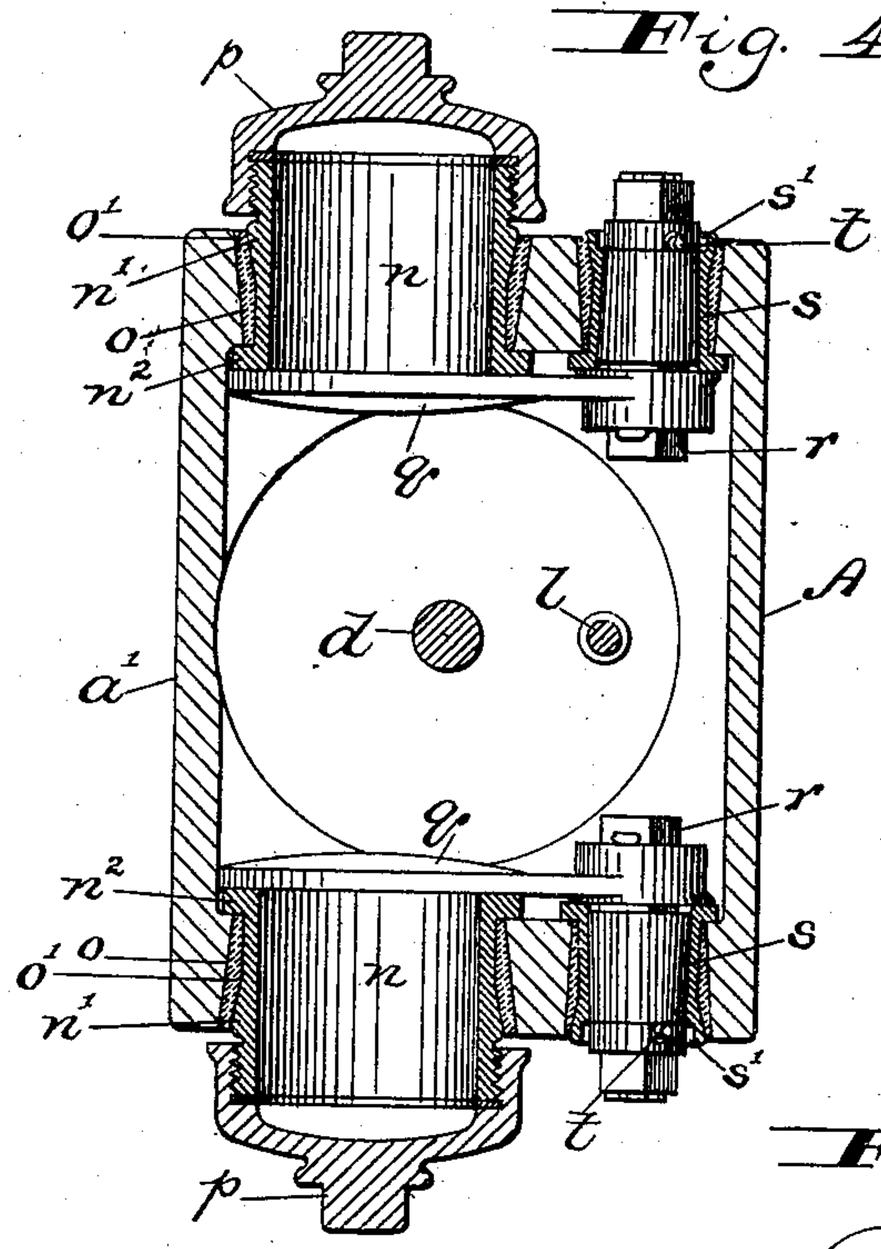


Fig. 5.

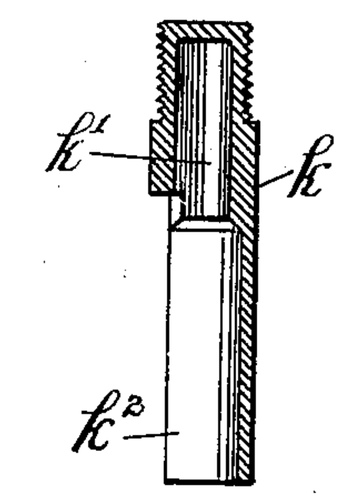


Fig. 6

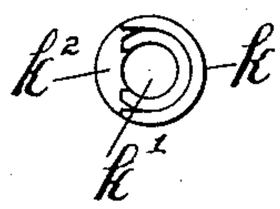


Fig. 7.

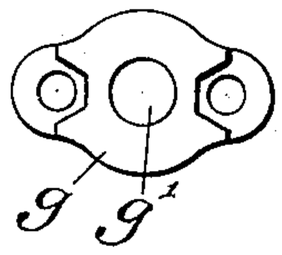


Fig. 8.

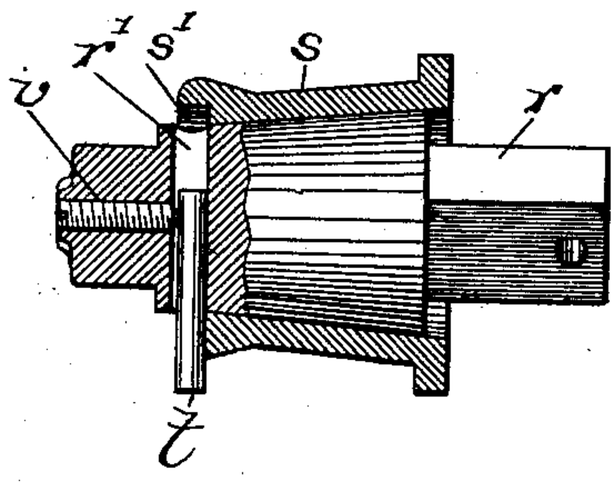
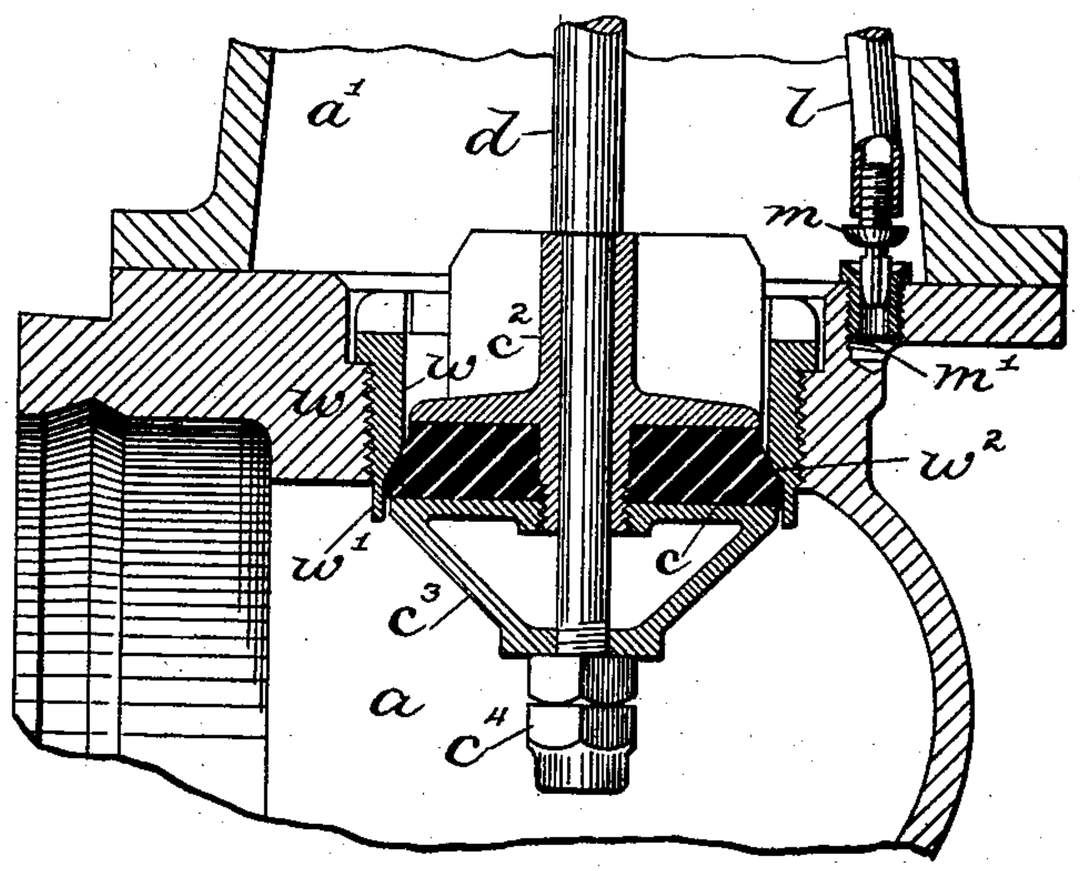


Fig. 9.



Witnesses.
H. J. Meyer, Jr.
G. F. Vogt.

Inventor.
Arthur O. Babendreier
By Mann & Co.
Attorneys.

No. 734,251. Patented July 21, 1903.

UNITED STATES PATENT OFFICE.

ARTHUR O. BABENDREIER, OF BALTIMORE, MARYLAND.

HYDRANT.

SPECIFICATION forming part of Letters Patent No. 734,251, dated July 21, 1903.

Application filed January 31, 1903. Serial No. 141,227. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR O. BABENDREIER, a citizen of the United States, residing at Baltimore, State of Maryland, have invented certain new and useful Improvements in Hydrants, of which the following is a specification.

This invention relates to improvements in that class of hydrants known as "fire-hydrants" or "fire-plugs," which comprise a stand-pipe adapted to be connected to a street-main and provided with an inlet-valve or main valve controlling the admission of water to the stand-pipe, and which valve is a compression-valve—that is, closes with instead of against the pressure of the water—a drip-valve controlling a drip-outlet, so that the stand-pipe may be drained to prevent its freezing after the main valve has been closed, and outlet valves or gates controlling the passage of the water to a plurality of outlet necks or nozzles intended for the attachment of hose thereto.

One of the objects of this invention, as will be hereinafter fully set forth, is to provide in a hydrant of this character an improved construction and arrangement of the main-valve mechanism, drip-valve mechanism, and outlet valve or gate mechanism; and another object of the invention is to provide an improved construction of outlet neck or nozzle.

With this and other objects in view the invention consists of certain constructions, arrangements, and combinations of parts hereinafter fully described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical sectional view of my improved hydrant. Fig. 2 is a side elevation of the upper portion of the hydrant. Fig. 3 is a detail horizontal sectional view taken approximately on the line 3 3 of Fig. 1. Fig. 4 is a horizontal sectional view taken approximately on the line 4 4 of Fig. 1. Figs. 5 and 6 are respectively a detail vertical section and a bottom or inverted plan view of a part of the valve mechanism hereinafter described. Fig. 7 is a detail bottom plan of one part of the coupling for connecting the rod of the main valve to its actuating-rod. Fig. 8 is a detail sectional view, partly in side elevation, illustrating the manner of securing the stub-shaft for the outlet-valve in its bushing. Fig. 9 is a vertical sectional view illustrating a modification of the main-valve mechanism.

Referring to the drawings, the letter A designates the casing of my improved hydrant, comprising a base-chamber a, intended to be connected with a street-main, and a stand pipe or body a', supported on said base-chamber and provided with a dome or cap-piece a^2.

The base-chamber a, as illustrated in Fig. 1, is provided with a vertically-extending passage b, preferably screw-threaded, and detachably secured in said passage by threaded engagement is a valve-seat ring b', provided with an outwardly-extending stop-flange b^2, adapted to abut against an upwardly-facing shoulder b^3 in the wall of the base-chamber. By this arrangement the valve-seat ring b' can be readily inserted in and removed from the base-chamber from the stand-pipe side of the same.

Coacting with the valve-seat ring b' so as to control the passage of water therethrough is a valve c, preferably of soft rubber or similar compressible material, adapted to seat upwardly against a valve-seat b^4, formed by the lower edge of the ring b', and also coacting with said ring is a piston c' above said valve and adapted to fit within the ring b' and to be moved downwardly out of the latter to open the same. The said valve and piston are secured on the lower end of a vertically-extending valve-rod d, in the present instance between a winged plate c^2 on the upper side and a web-follower c^3 on the lower side, the said plate being inserted on the valve-rod and abutting upwardly against a shoulder thereon and the follower screwing on said plate and also held on the valve-rod by lock-nuts c^4, all as illustrated in Fig. 1. By this arrangement of valve the latter may be adjusted while off the rod d and then secured on the same by the nut c^4.

The valve-rod d is provided at its upper end with a circular head d', preferably flat and smooth on top, and adapted to abut against a similar head e' on the lower end of an actuating screw-rod e. The valve-rod d and its actuating-rod e are coupled together by an upper and lower coupling member f g, of which the latter, g, (shown in detail in Fig. 7,) is provided with a circular opening g', re-

ceiving the valve-rod d, that the same may turn freely therein, and of which the former (the upper member f) is provided with a square opening f', receiving a correspondingly-shaped portion e^2 of the actuating-rod, so that the said rod is prevented from turning in its coupling member. The two members f g of the coupling are firmly fastened together by means of bolts h, as illustrated in Fig. 1. The actuating-rod e is mounted in a stuffing-box i, formed in the base-plate i' of a yoke i^2. The threaded portion of said rod works in an interiorly-threaded sleeve j, mounted to turn in said yoke, and the upper end of said sleeve projects through the dome a^2 for engagement with a key or other suitable tool.

In the base-plate i' of the yoke i^2 is detachably secured a guide-tube k, which depends from said base-plate and is provided at its upper end with a chamber k', closed at the top, and is also provided with a longitudinal slot k^2. Said tube may be readily taken out and put in place by merely first taking off the dome a^2. This guide-tube is illustrated in detail in Figs. 5 and 6.

Within the chamber k' is located a spring k^3, which bears down upon a collar l', slidable vertically in said chamber, and the said collar rests on the upper coupling member f and is adjustably mounted on the upper screw-threaded end l^2 of a valve-stem l, which is provided with a vane l^3, received in a forked or bifurcated projection f^2 on the upper coupling member f. This projection f^2, as illustrated in Figs. 1 and 3, is guided in the slot k^2 of the guide-tube k. Hence by the arrangement just described it will be seen, first, that the coupling is confined to a vertical movement and is prevented from turning by the projection f^2 taking in the slot k^2, and, second, that the valve-stem l is also confined to a vertical movement by the vane l^3 taking in the fork of the said projection f^2.

The reason for providing means to prevent the valve-stem l from turning is that in hydrants of this character the stand-pipes are generally wider at the base than at the upper end, as illustrated in the present instance in Fig. 1, and the valve-stem is therefore bent as illustrated. Hence if it were permitted to turn it would be apt to bind and not move freely. In the lower end of the valve-stem l, which is preferably tubular, is screwed for vertical adjustment a drip-valve m, adapted to control a drip-outlet m' at the bottom of the stand-pipe, and said drip-valve may also be adjusted vertically by turning the collar l' on the valve-stem, which will raise or lower the said stem; but it is not essential that the collar l' be adjustable. It may be rigid on the stem l.

The outlet necks or nozzles n (illustrated in Figs. 1, 2, and 4) are in the present instance two in number and each is provided with an exterior swell or bulge n', which at its widest point is of a diameter just sufficient to clear the inner narrow side of an outwardly-flared opening o, formed in the stand-pipe, and the said nozzle is also provided at its inner end with an outwardly-extending flange n^2, adapted to abut against the stand-pipe wall to prevent the outward movement of the nozzle.

To secure the nozzle n in place it is inserted from the inside of the stand-pipe into said flared opening o until its flange abuts against the stand-pipe wall and then molten lead or a similar cementing substance is poured around the nozzle, as illustrated at o', Fig. 4. Hence it will be seen that as soon as the lead sets or hardens the nozzle will be effectually prevented from being pushed inwardly on account of the bulge formation n'. A screw-cap p normally covers the outer end of each nozzle.

The innermost face of each nozzle n forms a valve-seat for a swinging gate q, of which there are two, one for each nozzle, and each of said gates is secured at one end to the square end of a stub-shaft r, which is mounted to turn in a bushing s, secured in an opening in the stand-pipe in the same manner as the nozzle n, before described. As best shown in Figs. 8 and 2, the stub-shaft r is provided with a transverse hole r', and the bushing s is provided with a circular recess or groove s', registering at one point with a slot s^2. To connect the stub-shaft to the bushing the former is turned until the hole r' registers with the slot s^2 of the bushing, and a pin t is then inserted through the slot s^2 into the hole of the stub-shaft and bears against the wall of the groove s' to prevent the withdrawal of the stub-shaft. This fastening just described is performed before the gate is secured in place, and it is to be observed that the formation or shape of the stand-pipe, as illustrated in Figs. 1, 2, and 3, forms shoulders u, which limit the gates to a movement of an arc of, say, sixty degrees. Now, the entrance slot s^2 for the pin t is outside of the said arc. Hence when the pin has been once inserted in the hole of the stub-shaft and the latter turned around so as to receive the gate in proper position the stub-shaft cannot be again turned far enough to allow the pin to come out of the slot s^2 until the gate has been removed. This makes a very simple construction, which prevents any one from loosening or detaching the gate from the outside of the stand-pipe.

To take up any wear on the bushing s or stub-shaft r the hole in the latter is of slightly larger diameter than the pin t, and a screw v works through the end of the stub-shaft and impinges against said pin to draw the stub-shaft outwardly.

To admit water from the street-main into the stand-pipe the actuating-rod is moved downwardly by turning the sleeve j, and this action will move the valve-rod d downwardly and will move the valve c off its seat and at the same time allow the drip-valve m to move to its seat to close the drip-outlet m'; but it will not effect the opening of the ring b' for

the free passage therethrough of water until the valve-rod d has been moved downwardly still farther—that is, far enough to carry the piston c' out of the ring b'—and to shut off the water from the stand-pipe the valve-rod d is raised to first close the ring b' by means of the piston c' and then move the valve c tightly against its seat, while at the same time opening the drip-outlet $n\iota'$. It will therefore be observed that the arrangement of valve is such that the drip-outlet is closed before the water is admitted to the stand-pipe and is opened only after the piston has again shut off the water from the stand-pipe. This lost motion, so to speak, is not effected by any longitudinally-yielding connection between the actuating-rod and the valve-rod d, for it will be seen that the actuating-rod, the valve-rod d, and the connection therebetween are all unyielding or rigid in a longitudinal direction, though of course movable longitudinally as a whole; but said lost motion is effected by the construction of the valve with its piston above it, which allows the valve in its initial movement to move off its seat without opening the ring b', while at the same time the drip-valve is closed, and which permits on the return movement the drip-valve to open only when the valve c is being again moved to its seat and after the ring b' has been closed by the piston c'. This action just described may also be effected, as shown in Fig. 9, by projecting the seat-ring (designated w) downwardly to form a flange w' below its seat w^2, so as to allow the valve c itself to act as a piston instead of using a separate piston.

In the practical use of a fire-hydrant having two nozzles and gates therefor, as illustrated in the present instance, the inlet-valve c is normally closed and the gates q are both normally open. In case of a fire the firemen of the first engine or "steamer" at the hydrant will unscrew one cap p and attach the hose to the nozzle and then open the inlet-valve c. The firemen of the next engine that arrives at the hydrant will first close the gate of the other nozzle, then unscrew the cap p and attach the hose to the nozzle, and then finally open the gate. It is believed that the construction which enables this operation to be carried out is an advantageous one, as the hydrant can be very quickly brought into active use, which is an important desideratum in case of fire.

As illustrated in Figs. 1 and 2, the hydrant is provided with a third outlet neck or nozzle x for flushing or the like.

It is manifest that the invention is not limited to any specific number of outlet necks or nozzles.

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

1. In a hydrant, the combination of a casing provided with an inlet-passage; a main valve therefor; a piston adapted to move in and out of said passage above said valve; actuating mechanism for said valve and piston; a drip-valve provided with a stem, l, and a guiding connection between said stem and actuating mechanism, such connection being arranged to permit the drip-valve to close before the piston has been moved out of said passage and permitting said drip-valve to open only after the piston has been moved back into said passage to close the same.

2. In a hydrant, the combination of a main valve and valve-rod; an actuating-rod therefor; a coupling connecting said valve-rod and actuating-rod; a guide for confining said coupling to a longitudinal or vertical movement; a drip-valve; means whereby the drip-valve is controlled by said actuating-rod; and means whereby the drip-valve is confined to a longitudinal or vertical movement by the said coupling.

3. In a hydrant, the combination of a main valve and valve-rod; an actuating-rod therefor; a coupling connecting said valve-rod and actuating mechanism and provided with a forked projection; a guide-tube provided with a slot receiving said projection; and a drip-valve provided with a stem received in the fork of said projection.

4. In a hydrant, the combination of a main valve and valve-rod, the latter having at its upper end a head; an actuating-rod provided at its lower end with a head and a non-circular portion thereabove; a coupling connecting together the said ends of the valve-rod and actuating-rod and comprising an upper and lower member, one of which has a forked projection, the upper member being provided with a non-circular opening receiving the corresponding portion of the actuating-rod; a guide-tube provided with a longitudinal slot receiving the said projection; a drip-valve having a stem provided with a vane received in the fork of said projection and said stem at its upper end mounted in said tube; a collar on the upper end of said stem and adapted to rest on the upper coupling member; and a spring in said tube bearing down upon said collar, as set forth.

5. In a hydrant, a stand-pipe provided with an outlet neck or nozzle; a swinging gate adapted to cover and uncover said nozzle on the inside of the stand-pipe; a stub-shaft on which said gate is secured and said stub-shaft being provided with a transverse hole; a bushing secured in the stand-pipe and in which bushing the stub-shaft is mounted, said bushing being provided at its outer end with an annular groove and with a slot entering into, said groove; and a pin adapted to be passed through said bushing-slot into the hole of the stub-shaft to bear against the bottom wall of the groove, as and for the purpose set forth.

6. In a hydrant, the combination of a main valve; actuating mechanism therefor, including an actuating-rod; a guide-tube adapted to prevent said actuating-rod from turning; and a drip-valve whose stem is provided with

a vane arranged for guiding engagement with said actuating mechanism, as set forth.

7. In a hydrant, the combination of a main valve; an actuating-rod therefor; a guide-tube provided with a longitudinal slot; a forked projection rigid with respect to said actuating-rod and entering said slot; and a drip-valve whose stem is provided with a vane received in the fork of said projection, as and for the purpose set forth.

8. In a hydrant, the combination of a main valve; actuating mechanism therefor including an actuating-rod; a guide-tube arranged to prevent said rod from turning; and a drip-valve provided with a stem whose upper end is received in said guide-tube.

9. In a hydrant, the combination of a main valve; actuating mechanism therefor; a guide-tube; a drip-valve having a stem whose upper end is received in said tube; and a spring in said tube tending to press said stem downwardly.

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

ARTHUR O. BABENDREIER.

Witnesses:

CHARLES B. MANN, Jr.,

FREDERICK S. STITT.