

(Model.)

2 Sheets—Sheet 1.

J. GILES.  
HYDRANT GATE VALVE.

No. 373,523.

Patented Nov. 22, 1887.

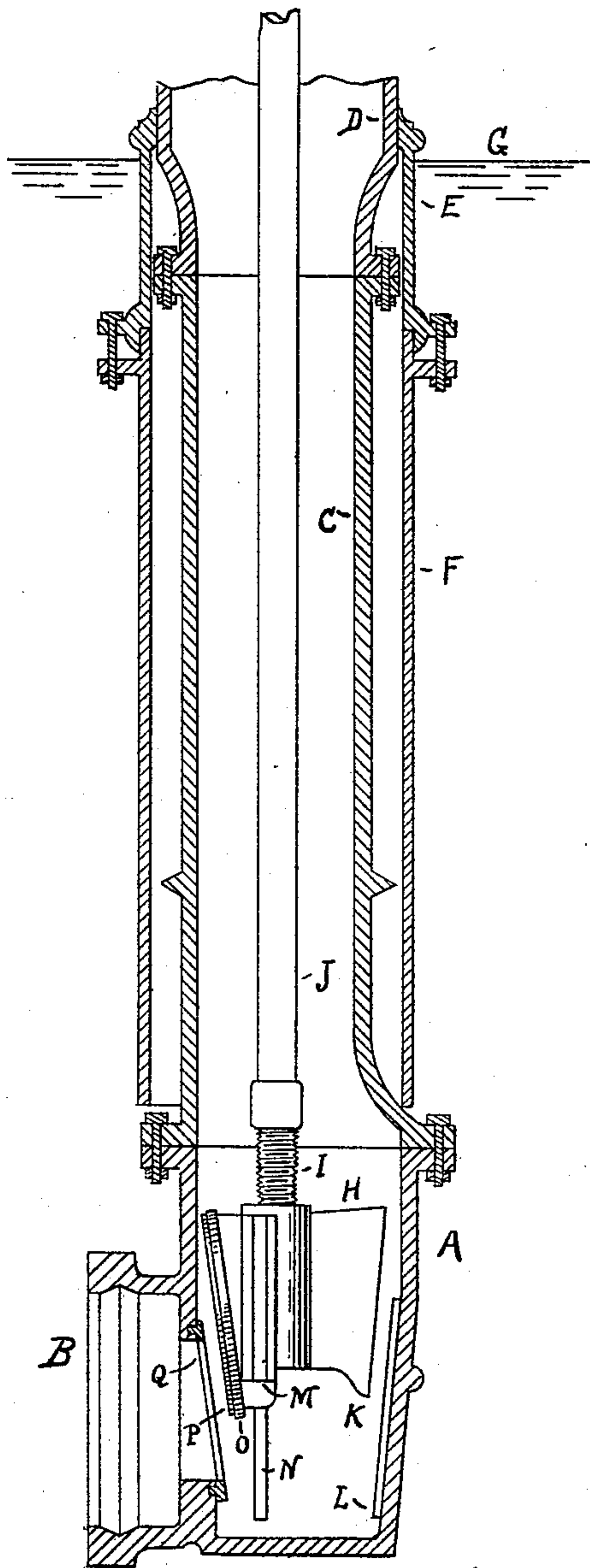


Fig. 1.

Witnesses

*A. L. Holman*  
*A. T. Chapman*

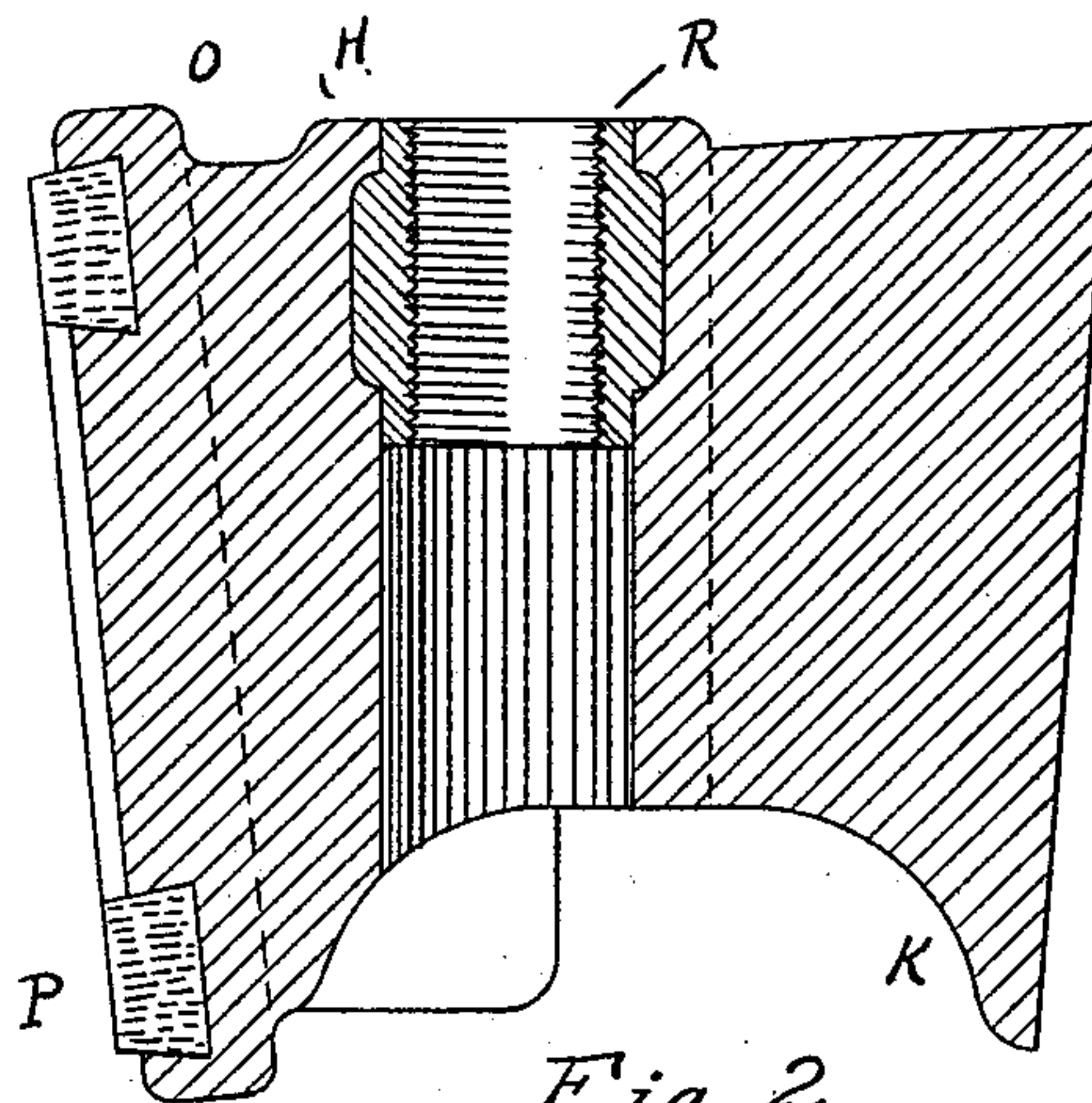


Fig. 2.

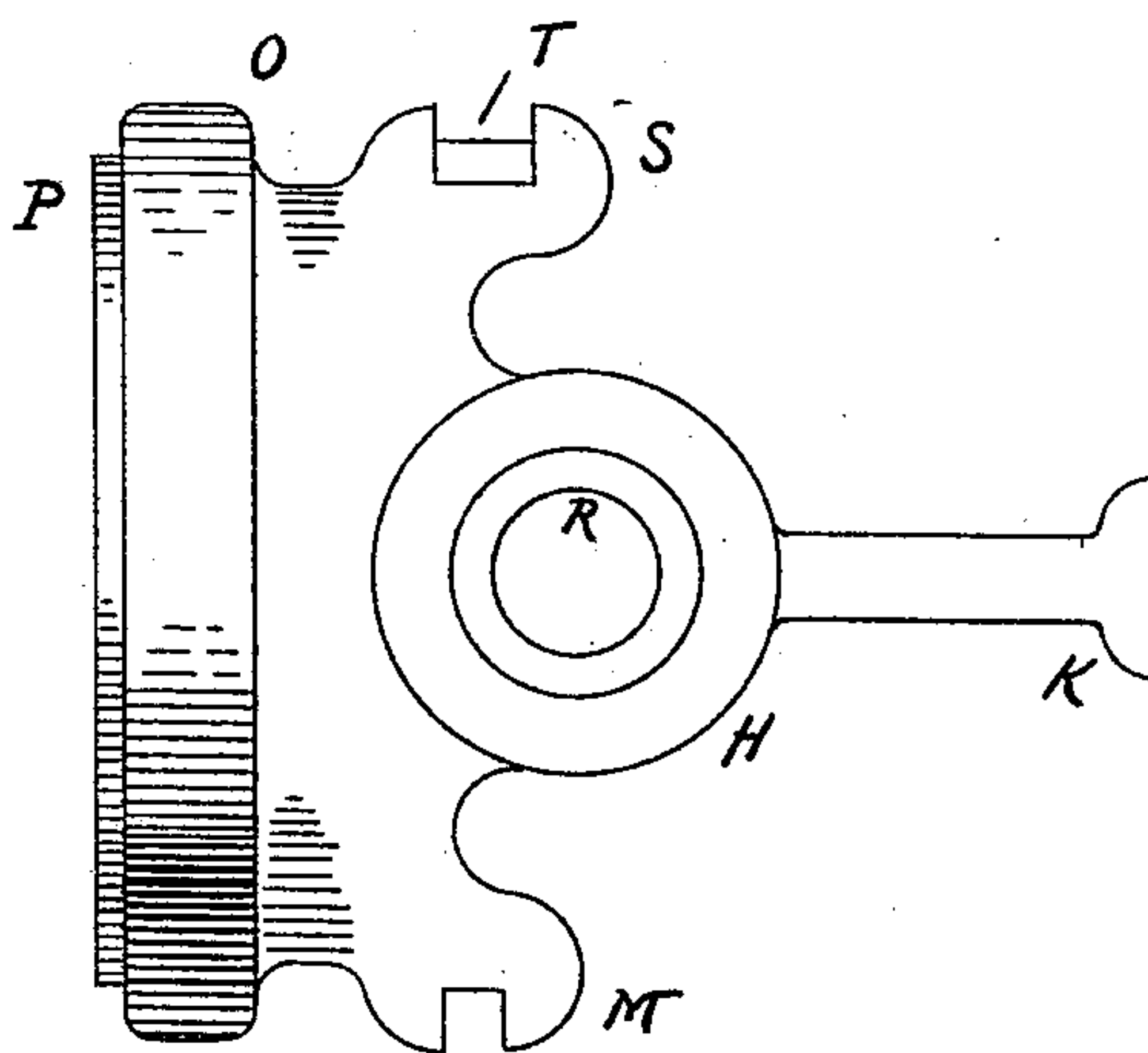


Fig. 3.

Inventor  
*Jason Giles*  
By *Howes & Chapman*  
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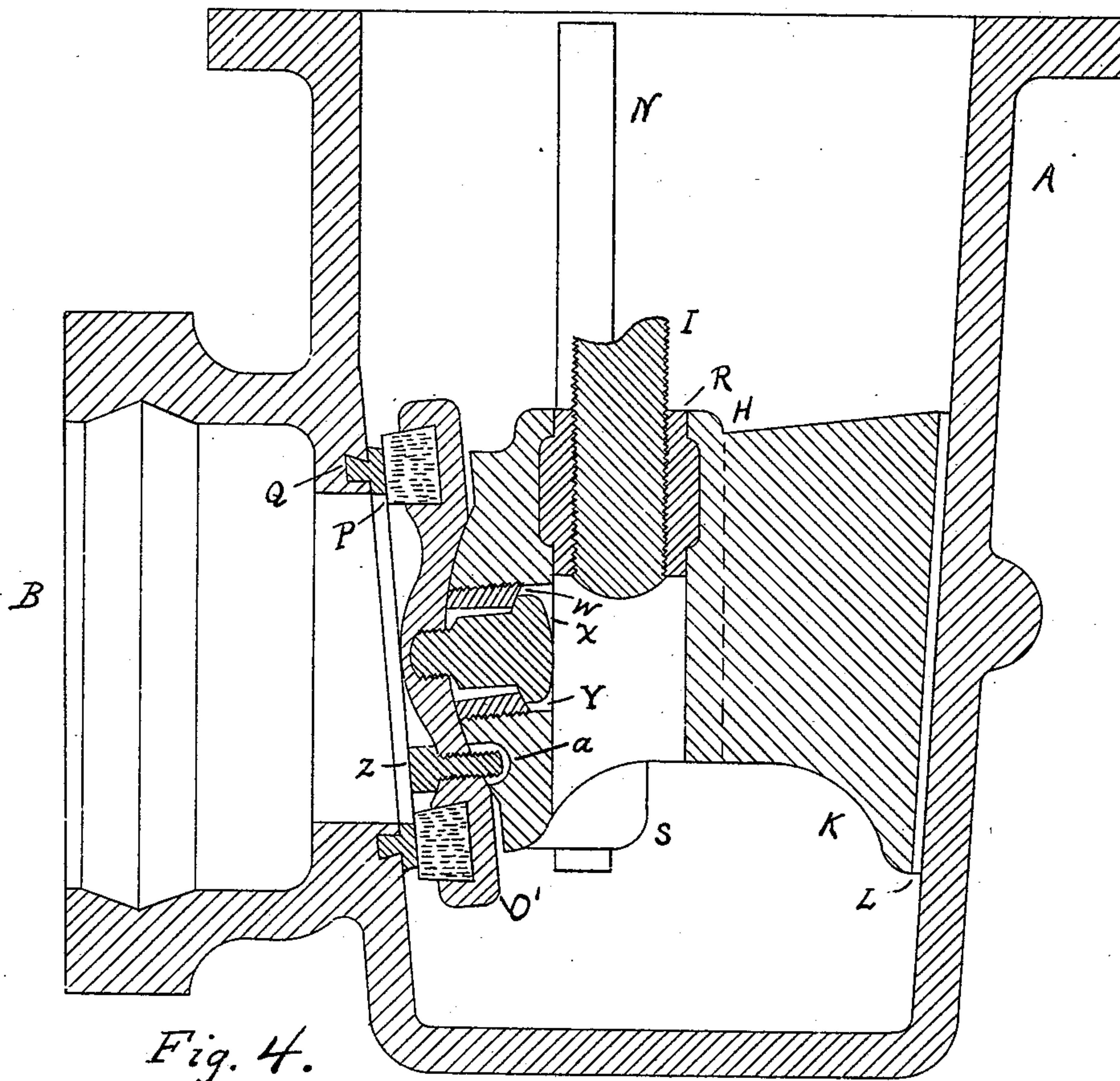


Fig. 4.

Witnesses\_\_

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*H. T. Chapman.*

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*Jason Giles.*  
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# UNITED STATES PATENT OFFICE.

JASON GILES, OF INDIAN ORCHARD, MASSACHUSETTS.

## HYDRANT GATE-VALVE.

SPECIFICATION forming part of Letters Patent No. 373,523, dated November 22, 1887.

Application filed February 28, 1887. Serial No. 229,090. (Model.)

*To all whom it may concern:*

Be it known that I, JASON GILES, of Indian Orchard, in the county of Hampden and Commonwealth of Massachusetts, have invented a  
5 new and useful Improvement in Gate-Valves for Hydrants, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof.

Heretofore in hydrant gate-valves the contacting faces of the valve-seat and the gate or  
10 plug have been composed of various metallic substances, that known as "Babbitt metal" having been extensively employed. While these metallic bearing-surfaces secure good results  
15 during the early period of their use, it is found that when they become worn by the friction incident to opening and closing the gate they cease to form a tight joint, and it then becomes necessary to renew the contacting faces. Again,  
20 it is found that the gravel and other gritty matter contained in the water as it comes from the street-main lodges between the opposing faces of the valve-seat and the gate when the latter is shut down, or settles at the bottom  
25 of the shell and obstructs the descent of the gate, in either case causing more or less fracture or indentation to the bearing-surface of the gate; and as the metal possesses no recuperative properties these fractures and inden-  
30 tations constitute a permanent injury, which can be remedied only by providing a new bearing-surface for the gate, or a new gate itself. I have found that these objections can be obviated by providing the gate with a  
35 bearing-face composed of a continuous annular ring of wood seated in an undercut annular groove in the face of the gate adjacent to the valve-seat, and projecting beyond said face in such manner as, with the annular metallic valve-seat, to make a tight joint. The  
40 inherent recuperative properties of wood render it much less liable to be permanently injured by the gritty sediment in the water, and the initial cost thereof, as well as the cost of renewal, is trifling as compared with the metallic faces heretofore employed. As it requires great care to cut both faces of these  
45 wooden rings exactly true, I prefer to mount them upon a disk, and to secure the disk to the  
5c gate by means of a universal joint, so that if

the front and rear faces of the ring should not be parallel throughout, the self-adjustment of the disk will still insure a tight joint between it and the valve-seat.

My invention, therefore, consists in a hy- 55  
drant gate-valve having its bearing-surface composed of a continuous ring of wood seated in an undercut groove, either in the face of the gate itself or in the face of a disk secured to the gate by means of a universal joint. 60

Referring to the drawings, in which like letters designate like parts in the several figures, Figure 1 is a view, partly in section, of so much  
65 of a hydrant as is necessary to show the application of my invention to the ordinary gate-valve thereof. Fig. 2 is a central vertical section of the gate or plug. Fig. 3 is a plan view of the gate. Fig. 4 is a central vertical section of a hydrant gate-valve having my inven-  
70 tion applied thereto by means of a disk and universal joint.

The letter A designates the shell, B the "wa-  
ter-way" or connection with the street-main, C the stand-pipe, D the post, E F the frost-  
75 case, H the gate, and I J the spindle, of a gate-hydrant, well known as the "Chapman fire-hydrant," the continuation of the post above the ground-surface, G, being omitted. In these  
80 hydrants the gate has a tapering face, O, and a tapering wing, K, upon the back, which, in connection with the tapering valve-seat Q and way L, act as a wedge to force the gate to its  
seat in closing. The gate is also provided with guides at the sides, consisting of the splines N  
85 on the shell, which project into grooves M and S in the gate, the groove S also containing a gib, T, pressed outward by springs (not shown) to insure an easy movement of the gate and prevent binding.

It has been customary heretofore to make 90  
the contacting faces of the gate and shell (lettered O and Q, respectively) from Babbitt metal and other metallic compositions, to the end that when closed a tight joint may be se-  
95 cured.

As hereinbefore stated, the broader feature  
of my invention consists in providing the gate  
with a bearing-surface of wood in the form of  
a continuous annular ring, and in Figs. 1, 2,  
and 3 this wooden ring (designated by the let- 100



ter P) is shown as being seated within a groove undercut in the face of the gate itself. The groove is undercut to prevent accidental displacement of the ring, and the latter is forced into the groove under pressure, its expansive properties causing its edges to occupy the undercut portions, as shown in Fig. 2. The ring P is made continuous and not in segments, because the unequal contraction and expansion of the various segments would be liable to leave more or less open space between their meeting ends, and thus impair the tightness of the joint made with the valve-seat, whereas a continuous ring obviates all danger from such source.

The amount of pressure exerted against a hydrant-valve by the water in the main is so great that the valve must have a compact and very strong structure in order to resist it, and the ring P, made continuous and seated as described, fully meets this requirement. The ring is preferably cut transversely of the grain of the wood, as shown, in order to take full advantage of the well-known property existing in wood of recovering itself from indentation and abrasion of its surface in the direction of its grain. Should it become necessary to renew the bearing-surface, the old ring can be quickly and easily removed from the groove with a chisel or other tool, and a new ring inserted, which, it will be observed, is a simple operation, compared with the necessity existing heretofore of planing off or otherwise removing the metallic face and renewing it by casting, welding, or other expensive process.

By the practice of my invention as thus far described I am enabled to secure a tighter joint than has heretofore been possible with opposing metallic faces, I provide the gate with a face which, if fractured or indented by contact with gritty matter in the water, will recover itself, instead of being permanently injured, and I provide a face the initial cost of which, as well as the cost of renewal is trifling as compared with the metallic faces heretofore employed.

Turning, now, to the preferred form of my invention illustrated in Fig. 4, the wooden ring P, instead of being seated within the face of the gate itself, is seated within the undercut groove in the face of a disk, O', and the said disk is secured to the gate by a universal joint. I prefer this manner of mounting the ring, for the reason that the self-adjusting properties of the disk cause the ring to always make a tight joint with the seat Q, but more especially because it may be necessary to insert a new ring in the valve when the requisite machinery or tools for making its front and rear faces exactly parallel are not at hand, and by means of the disk and universal joint any slight inequalities in the two sides are prevented from impairing the tightness of the joint.

The means shown in Fig. 4 for securing the disk to the gate consist of a bolt, X, having

its outer end secured to the rear side of the disk, and having at its inner end a ball-shaped head, which, being inserted within a lateral opening, Y, in the gate, is retained therein by a gland, W, screwed into the mouth of said opening, said gland having a cup-shaped inner end, which serves as a socket to receive the head of the bolt, thus securing a free universal movement to the disk. The face of the gate and rear side of the disk are provided with corresponding concavo-convex bearing-surfaces, the area of which is but slightly less than that of the face of the gate to afford an extended resisting-surface to pressure exerted against the face of the disk by the water, and thus obviate all liability of such pressure to impair the successful operation of the universal joint. A check-screw, Z, passing through the disk into a recess, d, in the gate prevents accidental rotation of the disk upon the bolt X.

As this means of securing the disk to the gate forms the subject of a separate application filed by me November 16, 1886, serially numbered 219,328, it need not be more particularly described herein. It will be understood that, so far as the invention claimed herein is concerned, any means for universally mounting the disk upon the gate could be substituted for those shown in Fig. 4 without departing from the spirit thereof. The face Q of the valve may be constructed, as heretofore, from any suitable metallic substance; and in two-way valves having double seats and double-faced gates my invention will be applied to both faces thereof in the same manner as hereinbefore described with reference to a single face. By subjecting the ring P to any of the common wood-preserving processes its durability may be enhanced; but the removal of an old and insertion of a new ring is such a convenient and inexpensive operation that such preservation is not essential.

I am aware that the use of wood to cooperate with a metallic face to form a valve is not broadly new; and I am also aware that wood in a ring form for such purpose has been utilized in clack-valves for pumps and similar constructions; but I believe myself to be the first to discover that its peculiar recuperative properties render it particularly applicable to hydrant gate-valves where the gritty sediment in the water is forced into direct contact with the face of the gate, as I also believe myself to be the first to devise a practical means for utilizing it in such a valve.

Having thus fully described my invention, what I claim is—

1. In a hydrant gate-valve, the combination, with the shell having an annular metallic valve-seat, of a gate having upon the side adjacent to said seat a bearing-surface consisting of a continuous ring of wood seated within an annular undercut groove and projecting beyond the side of the gate, substantially as set forth.



2. In a hydrant gate-valve, the combination, with the shell having an annular metallic valve-seat, of a gate having secured to its side, adjacent to said seat, by means of a universal  
5 joint, a valve-disk, said disk having in its outer face an annular undercut groove, and a continuous ring of wood seated within said groove and projecting beyond the face of the disk, arranged and operating substantially as and for the purpose set forth.

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Witnesses:

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T. M. BROWN.