No. 620,386. Patented Feb. 28, 1899.

G. S. WALKER.

VALVE FOR HYDRANTS, &c.

(Application filed Dec. 8, 1898.)

(No Model.) 2 Sheets—Sheet 1.

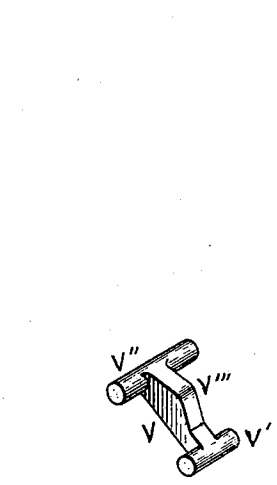

Fig. 4.

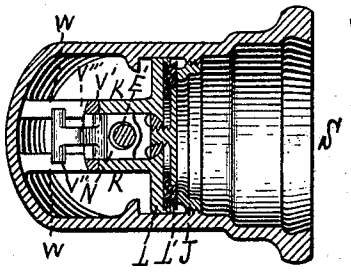

Fig. 2.

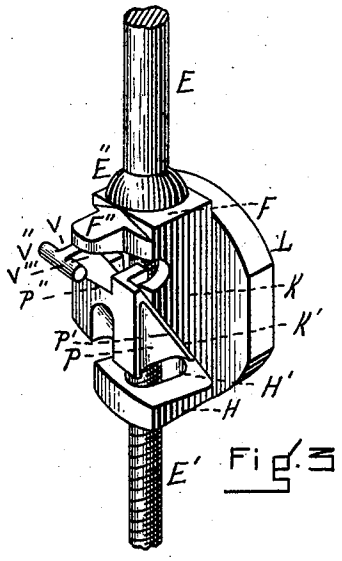

Fig. 3.

Fig. 1.

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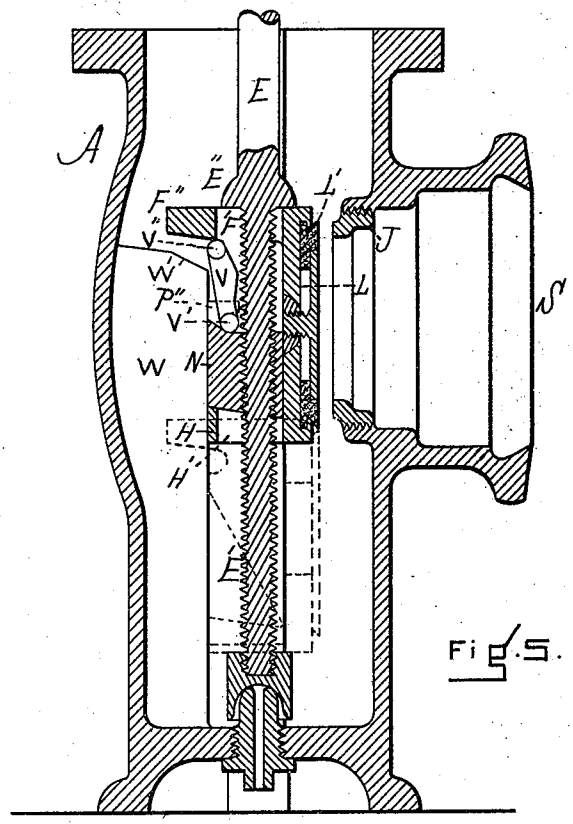

Fig. 5.

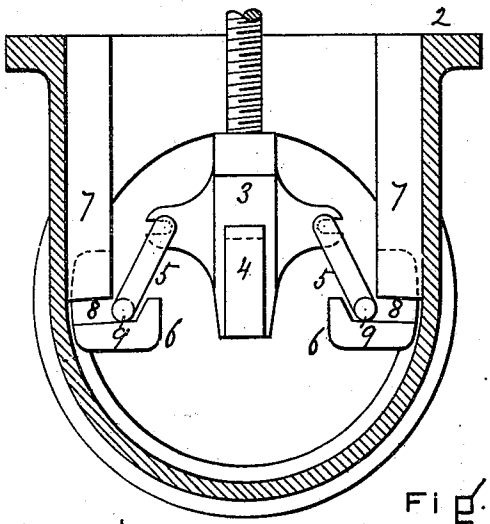

Fig. 6

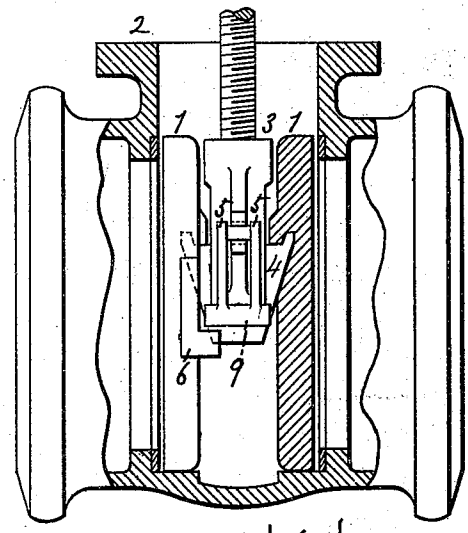

Fig. 7

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VALVE FOR HYDRANTS, &c.

SPECIFICATION forming part of Letters Patent No. 620,386, dated February 28, 1899.

Application filed December 8, 1898. Serial No. 698,607. (No model.)

To all whom it may concern:

Be it known that I, GEORGE S. WALKER, a citizen of the United States, residing in Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Valves for Hydrants and other Structures for the Passage of Water or Steam, of which the following is a specification.

This invention relates to valves intended more particularly for use in fire-hydrants, although they may be employed in the form of either single or double gate valves in many other structures through which water or other liquid or steam is intended to pass; and the invention relates particularly to that class of valves in which a wedge-nut is employed.

In this invention when the valve in a hydrant is opened it first moves horizontally away from its seat and then vertically down within the hydrant below the mouth of the connecting-pipe. By this means the face of the valve, as well as the seat, is prevented from abrasion and wear, which in most sliding-gate valves result from the two surfaces rubbing or scraping against each other.

The nature of the invention is fully described below and illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section of a fire-hydrant provided with my improved valve. Fig. 2 is a section taken on line 2, Fig. 1. Fig. 3 is a perspective view of the valve removed. Fig. 4 is a perspective view of the cam-lever removed. Fig. 5 is an enlarged longitudinal section of the lower portion of the hydrant, showing in full lines the valve moved away horizontally from its seat and in broken lines the valve dropped below the connecting-pipe. Figs. 6 and 7 represent vertical sections, taken at right angles with each other, of a modification of my invention, whereby it is applied to a double-gate valve.

Similar letters and figures of reference indicate corresponding parts.

A represents the stand-pipe, provided with the ordinary bottom A′ and dome or cover B.

C represents the packing-plate, and C′ the gland of the stuffing-box around the sleeve D, which sustains the valve-stem E, screw-threaded at E′ and seated at its lower end in the ordinary manner.

The valve comprises the horizontal top plate F, the horizontal bottom plate H, said plates provided, respectively, with the elongated openings F′ and H′, through which the threaded portion of the stem extends, the side walls K, beveled inward, as shown at K′, and the gate L, provided with the ordinary rubber L′ and adapted to set against the seat J, all preferably made integral. The openings F′ and H′ are elongated toward the mouth of the connecting-pipe S in order to allow the valve to move horizontally toward and from its seat J, and the flange E″ on the stem E overlaps the edges of the upper opening F′. The upper plate F is elongated into a lip F″, which extends over the wedge-nut.

The wedge-nut comprises the central portion N, screw-threaded to be engaged by the portion E′ of the stem, and the sides P, whose inner edges P′ are beveled reversely to the edges K′ on the valve. The nut is recessed centrally at P″ to receive the cam-lever V, which is pivoted therein by means of trunnions V′ and extends through said notch outward, being provided at its outer end with the T-shaped portion V″. The lower side of this cam-lever is preferably straight, and its upper side is provided with the cam or protuberance V‴.

W represents a pair of parallel guides set vertically within the hydrant and preferably beveled at their upper inner corners W′.

The inner edges of the guides W are straight and parallel with the valve-stem and are in contact with or very near to the vertical surface of the wedge-nut.

In use the relative position of the parts when the valve is closed and against its seat is indicated in Figs. 1, 2, and 3. In these figures it will be seen that the wedge-nut N is raised and the valve forced against its seat by the lifting of the beveled surface P′ of the wedge-nut against the beveled surface K′ of the valve. The cam-lever V extends between the wedge-nut over and upon the upper ends of the two guides W by means of its T-shaped end V″. When the water is to be let into the hydrant, the valve-stem is turned toward the left, with the effect of lowering the wedge-nut. As this is done the valve is first loosened from its position on its seat and allowed by the elongated openings F′ H′ to move inward therefrom horizontally, the lowering of the wedge-nut bringing the under surface of the cam-lever into

contact with the corners W′ of the guides W, pushing said cam-lever back as the wedge-nut descends and pressing the cam portion V‴ thereof against the under side of the lip F″, holding said lip up as the nut descends, and serving also to swing the cam-lever V up into a nearly-vertical position, in which it supports the valve in a raised position with relation to the wedge-nut by means of the lip F″, all as indicated in full lines in Fig. 5. Further turning of the valve-stem carries both valve and wedge-nut down into the position indicated in broken lines in Fig. 5, the cam-lever lying between the valve-stem and the edges of the guides W and the lip F″ extending between the two guides. As will readily be seen, by first loosening the valve or moving it horizontally away from its seat instead of sliding it downward vertically therefrom scraping or abrasion of the face of the valve or the seat produced by such surfaces rubbing over each other is effectually prevented, inasmuch as it is not until the valve has moved horizontally away from its seat that it begins to descend. By reversing the stem the valve is raised vertically until it is opposite its seat, and then it moves horizontally to said seat and is locked in that position.

In Figs. 6 and 7 the principle of the lever moving the valve with relation to the wedge-nut by means of a structure acting upon said valve within the hydrant is illustrated in connection with a double-gate valve. In these figures, 1 1 represent two opposite gates or valves within a structure 2, actuated by a central nut 3, provided on opposite sides with the wedges 4. Levers 5 extend downward from the nut and are guided between the projections 6, extending inward from the gates, and the lower ends of the guides 7. As will be noticed, the nut is raised to withdraw these valves instead of lowered, as in the first five figures. Moreover, the spaces 8 constitute grooves for the outer ends 9 of the levers 5 to move in.

It will be understood that the horizontal movement rearward of the valve from its seat is produced by the inflow of water and allowed by the construction of the parts. When the valve is raised, the cam-lever holds it up and prevents its horizontal movement until it is opposite the connecting-pipe.

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

1. In a valve of the character described, a valve-stem; a wedge-nut adapted to be raised and lowered on said stem; a valve provided with a suitable gate and adapted to be operated on said stem by engagement with the inclined surface of the wedge-nut; a guide placed within the pipe behind the wedge-nut; and a lever pivotally secured at one end to the wedge-nut and adapted to extend outward therefrom between said guide and valve, substantially as described.

2. In a valve of the character described, a valve-stem; a wedge-nut adapted to be raised and lowered on said stem; a valve provided with a suitable gate and adapted to be operated on said stem by engagement with the inclined surface of the wedge-nut; a guide placed within the pipe behind the wedge-nut; and a lever pivotally secured at one end to the wedge-nut and adapted to extend outward therefrom between said guide and valve, the openings in said valve through which the stem passes being sufficiently large to allow of a horizontal movement of the valve toward and from its seat, substantially as set forth.

3. In a valve of the character described, a screw-threaded valve-stem; a wedge-nut on and engaged thereby; a gate-valve on said valve-stem adapted to be moved both horizontally and vertically with relation thereto and provided with the lip F″ extending substantially horizontally from said valve; a guide located within the pipe and provided with a substantially vertical edge next and behind the wedge-nut; and a lever pivotally secured to the wedge-nut and extending therefrom between the guide and said lip, whereby as the nut moves vertically on the stem the valve is moved with relation to the nut by the action of the lever upon the lip as it is swung by being drawn over the edge of the guide, substantially as described.

4. In a valve of the character described, the stem E, E′; the wedge-nut N provided with the inclined surface P′; the valve provided with a suitable gate and formed with the elongated openings F′, H′ through which the stem extends and with the inclined surface K′, said valve being provided with the lip F″; the parallel guides W set between the wedge-nut and the opposite surface of the pipe; and the cam-lever V pivotally secured at one end to the wedge-nut and with its outer end formed to be engaged by the upper and inner edges of said guides, the inner edges of said guides being set sufficiently apart to allow the lip F″ to travel vertically between them, substantially as described.

5. In a valve of the character described, a screw-threaded valve-stem; the wedge-nut on and engaged thereby and comprising the central portion N having its upper edge formed with the notch P″ and the sides P formed with the inclined edges P′; the valve K provided with the gate L, elongated openings F′, H′, inclined edge K″ and overhanging lip F″; the parallel guides W secured within the pipe; and the cam-lever V pivotally secured to the wedge-nut and extending out therefrom through said notch, said cam-lever being formed on its upper surface with the protuberance V‴ and with its outer end formed with the wings V″, substantially as set forth.

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