

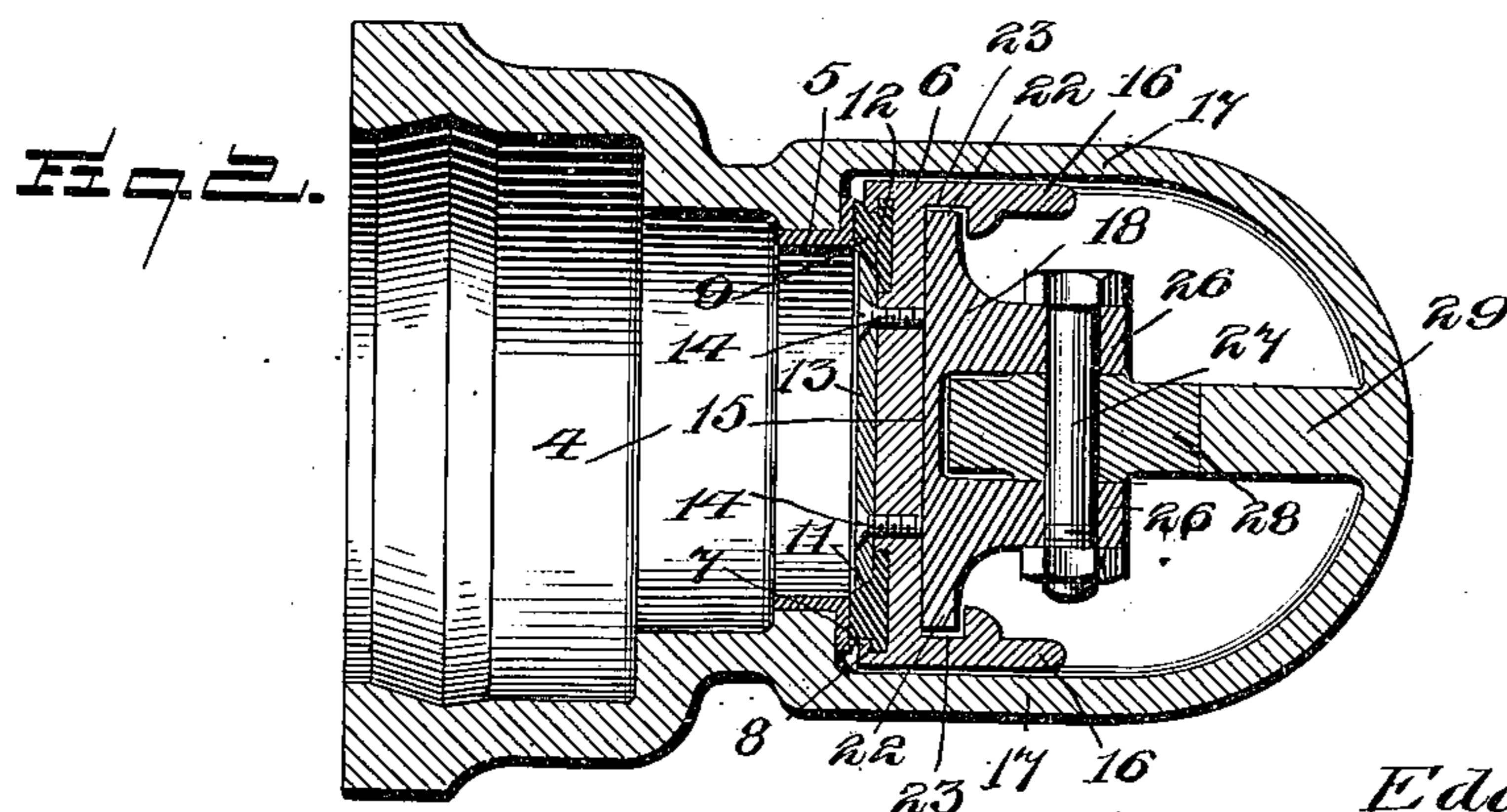
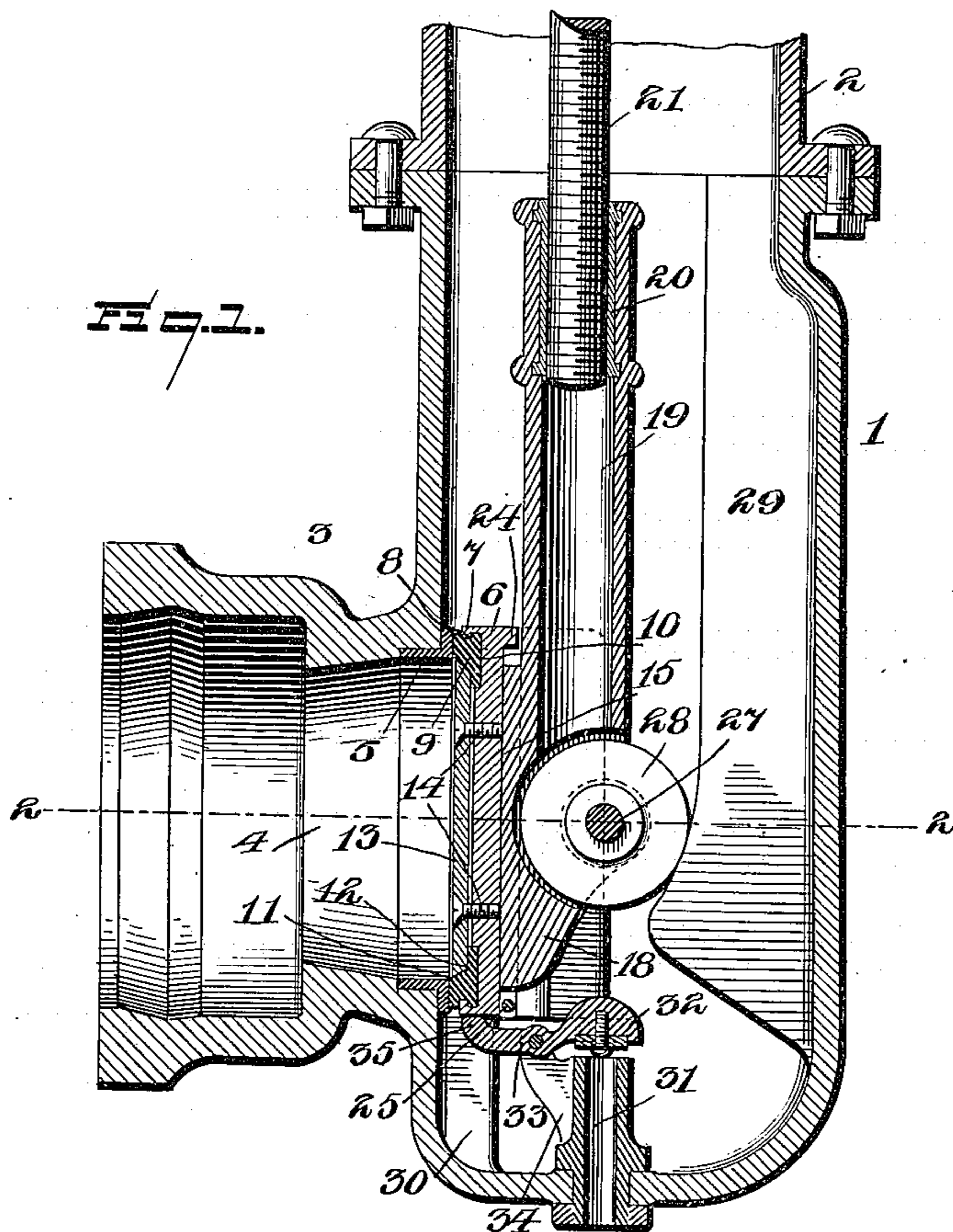
**No. 653,600.**

**Patented July 10, 1900.**

**E. C. WILEY.**  
**GATE VALVE FOR HYDRANTS.**

(Application filed Mar. 8, 1900.)

(No Model.)



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# UNITED STATES PATENT OFFICE.

EDGAR C. WILEY, OF RADFORD, VIRGINIA, ASSIGNOR OF ONE-HALF TO  
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## GATE-VALVE FOR HYDRANTS.

SPECIFICATION forming part of Letters Patent No. 653,600, dated July 10, 1900.

Application filed March 8, 1900. Serial No. 7,866. (No model.)

*To all whom it may concern:*

Be it known that I, EDGAR C. WILEY, a citizen of the United States, residing at Radford, in the county of Montgomery and State of Virginia, have invented a new and useful Gate-Valve for Hydrants, of which the following is a specification.

This invention relates to gate-valves, and more especially to that type of valves intended for use in connection with fire-hydrants, although the improvements are necessarily applicable for use with such mains and fittings as utilize a single gate-valve.

To this end the invention primarily contemplates novel means of mounting and operating a single gate-valve, whereby the faces of the valve and seat are prevented from abrasion and wear incident to the sliding movement of the gate, while at the same time means are provided for tightly wedging the gate upon its seat to effectually close the port of the valve-casing.

A further object of the invention is to associate with the gate improved means for permitting the gate to "bottom itself" or entirely reach its lower limit of movement before being wedged upon its seat, and vice versa—that is, to entirely relieve the gate from lateral pressure before it is lifted away from the seat—thus insuring a positive and reliable action of the valve without frictional wear of the contacting faces of the gate and the seat.

A further object of the invention is to effect the wedging and unwedging of the gate with a minimum amount of friction and with the absence of sliding wedging-surfaces, such as are commonly employed in connection with gate-valves.

With these and other objects in view, which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

While the fundamental features of the invention are necessarily susceptible to some modification without departing from the spirit or principle thereof, still the preferred embodiment of the improvements is shown in the accompanying drawings, in which—

Figure 1 is a vertical sectional view of a gate-valve involving the improvements contemplated by the present invention and shown associated with the valve-casing of a fire-hydrant stand-pipe. Fig. 2 is a cross-sectional view on the line 2 2 of Fig. 1.

Like numerals of reference designate corresponding parts in both figures of the drawings.

Referring to the drawings, the numeral 1 designates the valve-casing of an ordinary fire-hydrant, which is surmounted by the usual stand-pipe 2 and is provided at one side with a coupling-neck 3, associated with the main in the usual way, and which coupling-neck provides the inlet or entry port 4 for the hydrant. At the inner end or side of the entry-port 4 the valve-casing is fitted with a valve-seat bushing 5, with which coöperates the sliding gate 6, arranged to work vertically within the casing across the entry-port 4 to provide for covering and uncovering the same.

The sliding gate 6 has a vertical play within the casing to permit of the same entirely covering the entry-port 4, as well as being carried to position above the plane of said port, and the body of the gate is provided at the closing side thereof with a peripheral interturned holding-flange 7, which has an interlocking engagement with a peripheral or annular groove 8 in the outer edge of the gasket-ring 9, projecting beyond the adjacent side of the gate-body to form a contacting surface for the valve-seat 5. The said gasket-ring 9 not only has an interlocking engagement with the interturned holding-flange 7 of the gate-body, but has the base thereof seated in a superficial groove 10, formed in one side of the gate-body, and the inner edge of the gasket-ring is beveled, as at 11, to receive thereagainst the correspondingly-beveled edge 12 of the securing-plate 13, held to the body of the gate by the screws 14 or other suitable fasteners.

At the side opposite its closing face the gate-body is formed with a seat 15, confined between the oppositely-arranged vertical guiding-flanges 16, projected laterally from one side of the gate-body and disposed in vertical parallel planes and working at the inner sides

of the opposite vertical side walls 17 of the valve-casing 1, said guiding-flanges 16 and the vertical side walls 17 of the valve-casing cooperating to guide the gate in its reciprocatory movement.

The seat 15, formed at one side of the gate-body, between the guiding-flanges 16 thereof, loosely receives therein the carrying-head 18, provided at the lower end of a vertically-movable valve-stem 19 and preferably formed integral therewith. The vertically-movable valve-stem 19 is usually tubular and has fitted in the upper end thereof a threaded bushing 20 to receive the threaded portion of the operating-rod 21, extending to the top of the hydrant and manipulated in the usual way to provide for raising and lowering the valve-stem 19, and consequently the gate carried thereby. The carrying-head 18 at the lower end of the valve-stem 19 has a registering, though loose, fit within the seat 15 of the gate, and it is preferably provided at opposite side edges thereof with the sliding lips 22, slidably engaging in the retaining-grooves 23, formed in the inner sides of the guiding-flanges 16 of the gate and providing, in connection with the lips 22, for maintaining a loose interlocking connection between the carrying-head of the valve-stem and the gate or valve body. At the upper and lower ends of the guideway for the carrying-head 18 the gate-body is provided with the upper and lower stops 24 and 25, respectively, the lower of which stops 25 is preferably in the form of a removable pin, which holds the gate or valve body upon its carrying-head, while at the same time permitting of the ready separation of the parts for purposes of repair or adjustment. At this point it will be observed that the distance between the upper and lower stops 24 and 25 is somewhat greater than the length of the carrying-head proper, so as to permit of an independent play between the carrying-head and the gate for a purpose to be presently explained.

At one side, approximately opposite the center of the valve-gate, the carrying-head 18 of the valve-stem is provided with spaced bearing-lugs 26, receiving a journal-bolt 27, upon which is loosely mounted a wedging-roller 28, adapted to ride against a wedge-abutment 29, arranged longitudinally within the valve-casing, at one side thereof, and preferably in the form of an inclined rib, with its greatest width disposed approximately opposite and below the plane of the center of the entry-port 4 to provide for the uniform wedging of the gate upon its seat.

The gate or valve may be arrested when it reaches its lower limit of movement by providing the valve-casing, within the bottom portion thereof contiguous to the valve-seat 5, with a stop-lug 30, arranged in the plane of the vertical movement of the gate, and to provide for carrying off the waste water after the gate is closed upon its seat the valve-cas-

ing has fitted in the bottom thereof a waste vent-tube 31, over the upper end of which plays the weighted waste-valve 32, arranged at one end of the valve-lever 33, pivoted on a suitable supporting-bracket 34 and having the heel end 35, opposite the valve 32, adapted to be engaged by the lower side of the gate upon the descent of the latter, thereby providing for the elevation of the valve 32 from its seat and the consequent venting or discharge of the waste water through the vent-tube 31.

Assuming the gate-valve to be open and it is desired to close the same, the operating-rod 21 is manipulated to provide for the descent of the valve-stem 19. The parts are lowered until the gate "bottoms" itself or, in other words, reaches the lower limit of movement and lies completely across the plane of the entry-port 4, whereupon the carrying-head 18 of the valve-stem 19 will continue its downward movement and pass below the upper stop 24 on the gate. This continued independent downward movement of the gate-carrying head necessarily carries the wedging-roller 28 over the inclined face of the wedge-abutment 29, thereby causing a lateral wedging pressure to be exerted upon the gate, with a consequent tight closing of the same upon its seat.

In the reverse operation—that is, when the gate is to be opened—the initial upward movement of the gate-carrying head will relieve the lateral wedging pressure upon the gate, thereby loosening up the contact of the gasket-ring 9 with the valve-seat before the upper end of the carrying-head reaches the upper stop 24 of the gate, and when this occurs the gate will rise with the carrying-head of the valve-stem, so as to completely uncover the entry-port of the casing. This operation necessarily provides for the seating and unseating of the gate without any frictional or abrasive action between the contacting faces of the gate and the valve-seat, and by reason of the employment of the wedging-roller 28 to provide for applying and easing up of lateral wedging pressure upon the gate this action is secured with a minimum amount of friction and overcomes the many disadvantages of the sliding wedging-surfaces commonly employed in the ordinary types of fire-hydrants. On the descent of the gate the engagement thereof with the heel end 35 of the valve-lever 33 unseats the valve 32 and permits the waste water to be vented, and upon the ascent of the gate the valve 32 seats itself by gravity, and thus automatically closes the vent 31.

The construction, operation, and many advantages of the herein-described improvement in gate-valves will be readily apparent to those familiar with the art without further description, and it will be understood that various changes in the form, proportion, and minor details of construction may be resorted

to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a gate-valve of the class described, the casing provided with a seat, a sliding gate cooperating with said seat, a valve-stem having a carrying-head, and means for slidably interlocking the said head with the gate to hold the same to a limited independent play in the direction of movement of the stem, and means, independent of the connection between the head and the gate, for exerting a lateral wedging pressure upon the gate.

2. In a gate-valve of the class described, the valve-casing having a seat, the gate, and the valve-stem carrying a head having at one side a loose interlocking connection with the gate to permit of a relative independent play of the parts, and at its opposite side having a wedging-roller cooperating with the casing to exert a lateral pressure upon the gate.

3. In a gate-valve of the class described, the valve-casing having a seat, the gate, and the valve-stem carrying a head loosely interlocked with the gate and provided with a wedging-roller cooperating with the casing to exert a lateral pressure upon the gate.

4. In a gate-valve of the class described, the casing provided with a seat, and with opposite vertical side walls, the sliding gate having oppositely-arranged vertical guiding-flanges working at the inner side of the vertical side walls of the casing, a carrying-head having a loose interlocking engagement with the gate, between the guiding-flanges thereof, and means for exerting a lateral wedging pressure upon the gate, substantially as set forth.

5. In a gate-valve of the class described,

the valve-casing having a seat, the sliding gate provided at the side opposite its closing face with a seat having opposite guiding-grooves, and upper and lower stops, a carrying-head loosely fitting in the seat of the gate and provided with sliding lips engaging the said grooves, said carrying-head having an independent play between said upper and lower stops, and means for exerting a lateral wedging pressure upon the gate, substantially as set forth.

6. In a gate-valve, the valve-casing having a seat, the gate, and a valve-stem having a loose interlocking connection with the gate to permit of a relative independent play of the parts, and at the side opposite the gate having a wedging-roller cooperating with the casing to exert a lateral pressure upon the gate, substantially as set forth.

7. In a gate-valve of the class described, the casing having the seat and a wedging abutment, the sliding gate, and the valve-stem carrying the gate and having a limited play independent thereof, said stem also carrying a wedging-roller cooperating with the wedge-abutment, substantially as set forth.

8. In a gate-valve of the class described, the valve-casing having the seat, and opposite said seat being provided with a longitudinally-arranged wedge-abutment, the sliding gate, a valve-stem having a carrying-head loosely interlocking with the gate, and a wedging-roller supported at one side of said carrying-head and cooperating with the wedge-abutment, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

EDGAR C. WILEY.

Witnesses:

J. C. PETER,

A. P. MONTAGUE.