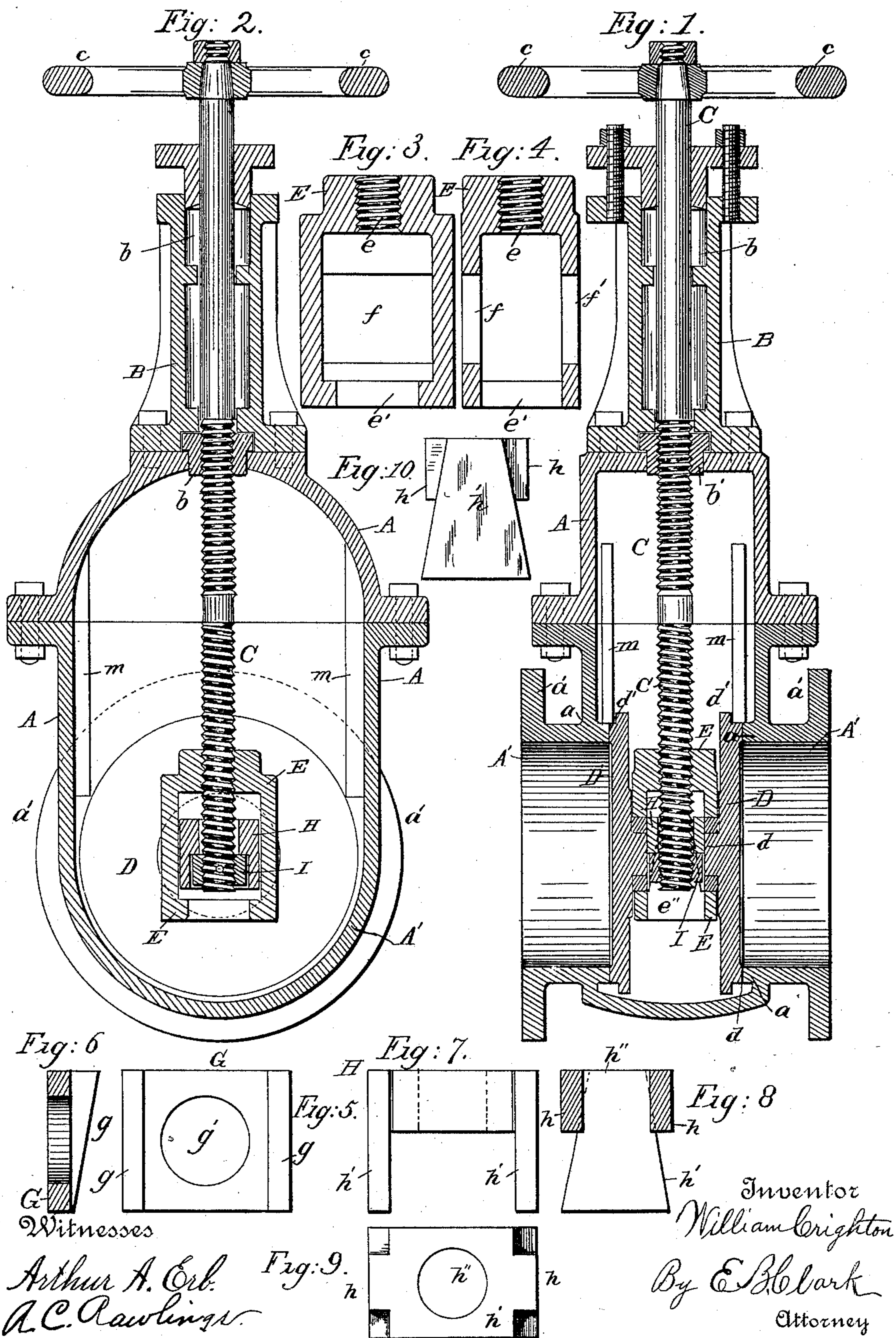


(No Model.)

W. CRIGHTON.  
SLIDING GATE VALVE.

No. 467,369.

Patented Jan. 19, 1892.



# UNITED STATES PATENT OFFICE.

WILLIAM CRIGHTON, OF FORT WAYNE, INDIANA, ASSIGNOR TO THE KERR-MURRAY MANUFACTURING COMPANY, OF SAME PLACE.

## SLIDING GATE-VALVE.

SPECIFICATION forming part of Letters Patent No. 467,369, dated January 19, 1892.

Application filed March 28, 1890. Serial No. 345,755. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM CRIGHTON, a citizen of the United States, residing at Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Sliding Gate-Valves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to sliding gate-valves, and particularly to that class having two independent valve-disks and means for forcing such disks outward and holding them to their seats.

The object of the invention is to provide simple and effective means for supporting the valve-disks upon or in a lifting-nut and screw-stem and to provide improved means for thrusting or forcing the disks outward from the lifting-nut to their seats; also, to provide for so hanging or supporting the valve-disks by central journals that such valves are free to rotate and to readily adjust themselves to their seats.

In carrying out my invention I provide short journals at the centers and backs of the valve-disks and fit over each of such journals a rectangular plate having a central opening and lateral inclined projections or wedge-shaped flanges and properly fitted in the sides of the hollow lifting-nut. I also fit within the hollow lifting-nut a compound wedge-block composed of a horizontal top plate having a vertical central opening and two wedge-shaped end pieces, which pieces bear upon the wedge-shaped flanges of the rectangular plates fitted over the journals of the valve-disks, whereby the parts, when properly moved one upon the other at their inclined faces, will force the valve-disks to their seats.

I will first particularly describe my improved valve with reference to the accompanying drawings, and then define the matter constituting my invention in the claims.

In the accompanying drawings, Figure 1 represents a vertical longitudinal section of

the valve-casing, valve-disks, and lifting-nut. Fig. 2 represents a transverse section through the valve-casing, showing one of the valve-disks in full. Figs. 3 and 4 represent, respectively, vertical sections taken at right angles to each other of the lifting-nut. Fig. 5 represents a front face view of one of the rectangular plates provided with lateral inclined wedge-shaped flanges. Fig. 6 represents a vertical section thereof. Fig. 7 represents a side view of a compound wedge-block constructed to bear upon the inclined lateral flanges of the plates shown in Figs. 5 and 6. Figs. 8, 9, and 10 represent, respectively, a transverse section, a plan view, and an end view thereof.

The valve-casing A and pipe-section A' are constructed in the usual manner, and such section A' is provided internally with annular valve-seats *h* and externally with the flanges *a'*. A housing or box B for the valve-stem is mounted upon the valve-casing, and is provided at the top with a suitable stuffing-box *b* and gland in the usual manner. The internal screw-threaded hexagonal nut *b'* is fitted in a suitable recess between the housing B and valve-case for the screw-threaded valve-stem to work in. The valve-stem C is provided at the top with hand-wheel *c*, and has cut on its lower portion right and left hand screw-threads, the upper right-hand screw-thread working through nut *b'* and the lower left-hand screw-thread working into the lifting-nut E. The lifting-nut E is made hollow, and is provided at the top with a screw-threaded opening *e* for the passage of the valve-stem and at the bottom with opening *e'* for the passage of valve-stem and the retaining nut or collar I. It is also provided with rectangular openings *f f'* in its sides, as shown in Figs. 3 and 4, for inserting compound wedge-block H and for holding the rectangular plates G on each side. These rectangular plates are each provided with a central opening *g'*, and at the outer edges with the vertically-inclined flanges *g*, as clearly shown in Figs. 5 and 6. These plates are of just the correct size and shape to fit within the rectangular openings

$ff'$  in the lifting-nut, and by means of their round central openings they are fitted upon the short journals  $d$  of the valve-disks.

The compound wedge-block H is composed of the horizontal top plate  $h$ , having a vertical central opening for the passage of the screw-threaded valve-stem, and with the doubly-inclined or wedge-shaped end plates  $h'$ , as clearly shown in Figs. 7, 8, 9, and 10. As shown in Figs. 1 and 2, the compound wedge-block H is inserted within the hollow lifting-nut E, so that the wedge-plates  $h'$  will bear upon the inclined flanges  $g$  of the rectangular trunnion-plates G. The valve-disks D D' are provided centrally at their backs with short journals  $d$ , and near the periphery with annular lips or rims  $d'$  on their inner faces for bearing against the seats  $a$ . Vertical and parallel guideways  $m$  are provided internally on each side of the valve-casing for guiding the valve-disks.

In putting the valve-disks, the lifting-nut, and the wedge-pieces together for operation the compound wedge-block H is first inserted through one of the side openings  $f$  of the lifting-nut E, then the nut is turned upon the screw C, and the retaining nut or collar I is secured to the end of the screw by a pin. The rectangular side plates G are then inserted in the rectangular openings  $f$  of the lifting-nut E and the valve-disks hung by their short journals  $d$  in the circular openings of such plates, and then the parts thus connected are lowered or set in position in the pipe-section. The top of the valve-casing, with nut  $b'$  and housing B in position, can then be secured in place. At any suitable time, either before or after the top of the casing is secured in place, the stuffing-box may be closed and the hand-wheel  $c$  secured to the top of the valve-stem.

The operation of the valve is very simple and can be readily effected as follows: When the valve is raised and it is desired to close it, the valve-stem is turned to the right, thereby forcing it downward through nut  $b'$ , while at the same time the lifting-nut E is caused to travel downward on the left-hand screw-threaded portion of the stem, effecting a rapid downward motion of the valve-disks. As the valve-disks approach the end of their downward motion the lifting-nut E forces the rectangular plates G, with their inclined flanges, against the wedge-shaped end plates  $h'$  of wedge-block H, while the top plate of such block is jammed down against the retaining-nut I and held in place, thereby forcing such rectangular plates and the valve-disks outward, so that the annular lips or rims  $d'$  of such disks will be tightly closed upon their seats  $a'$  and make perfectly-tight joints. When it is desired to raise and open the valve and the stem is turned to the left, the lifting-nut E is caused to travel upward on the stem C, thereby releasing the projecting wedge-shaped flanges  $g$  of the rectangular plates G from contact with the wedge-shaped plates  $h'$  of

wedge-block H, thus relieving the pressure upon the valve-disks, so that they are readily withdrawn from their seats and raised by the continued turning of the valve-stem. This valve and its operating parts are very simple and compact in construction and are very quick and effective in operation. The motion of the inclined or wedge-shaped surfaces of the rectangular plate G upon the wedge-plates  $h'$  of the wedge-block H is quite short, and is therefore quickly effected with very little friction, since the parts are neatly fitted one to the other and require very little motion to effect a perfect closure of the valve-disks upon their seats.

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

1. In a sliding gate-valve, a hollow lifting-nut having side plates, each provided with two inclined lateral flanges, in combination with the valve-disks having short central journals fitting in the circular openings, a screw, a wedge-block for bearing against said lateral flanges, and a nut on the screw for supporting the wedge-block, the combination permitting the forcing of the side plates outward for holding the valves to their seats, substantially as described.

2. In a sliding gate-valve, a hollow lifting-nut having rectangular openings in its sides in connection with rectangular plates fitting in such openings and each having inclined lateral flanges, and a circular opening between such flanges, the valve-disks having short central journals fitting in the circular openings of the rectangular plates, a screw, and intermediate means connecting with the screw for bearing on said lateral flanges and forcing such rectangular plates outward for holding the valves to their seats, as described.

3. In a sliding gate-valve, a hollow lifting-nut connected with and supporting the valve-disks, in combination with a compound wedge-block fitted in the hollow lifting-nut and having wedge-shaped end plates and vertical openings for the valve-stem, a retaining nut or collar secured to the valve-stem below the wedge-block, and the valve-disk having connected inclined flanges, substantially as described.

4. In a sliding gate-valve, a hollow lifting-nut provided with means for receiving short journals projecting from the backs of the valve-disks, in combination with a compound wedge-block fitted in the hollow lifting-nut and having wedge-shaped end plates and a vertical opening for the valve-stem, and a retaining nut or collar secured to the valve-stem below the wedge-block, as and for the purpose described.

5. In a sliding gate-valve, a hollow lifting-nut E, having rectangular side openings and the vertical openings, in combination with rectangular plates G, having lateral inclined flanges  $g$  and circular openings, the valve-

disks D, having short journals *d* fitting in the circular openings of the plates G, the compound wedge-block H, having wedge-shaped end pieces *h'* and fitted in the lifting-block  
5 E, and a retaining nut or collar secured to the valve-stem below the wedge-block, substantially as described.

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

WILLIAM CRIGHTON.

Witnesses:

SIDNEY C. LUMBARD,  
IRVING D. EVANS.