

No. 631,263.

Patented Aug. 15, 1899.

L. E. WALKINS.
ELECTRICALLY OPERATED GATE VALVE.

(Application filed Dec. 20, 1898.)

(No Model.)

2 Sheets—Sheet 1.

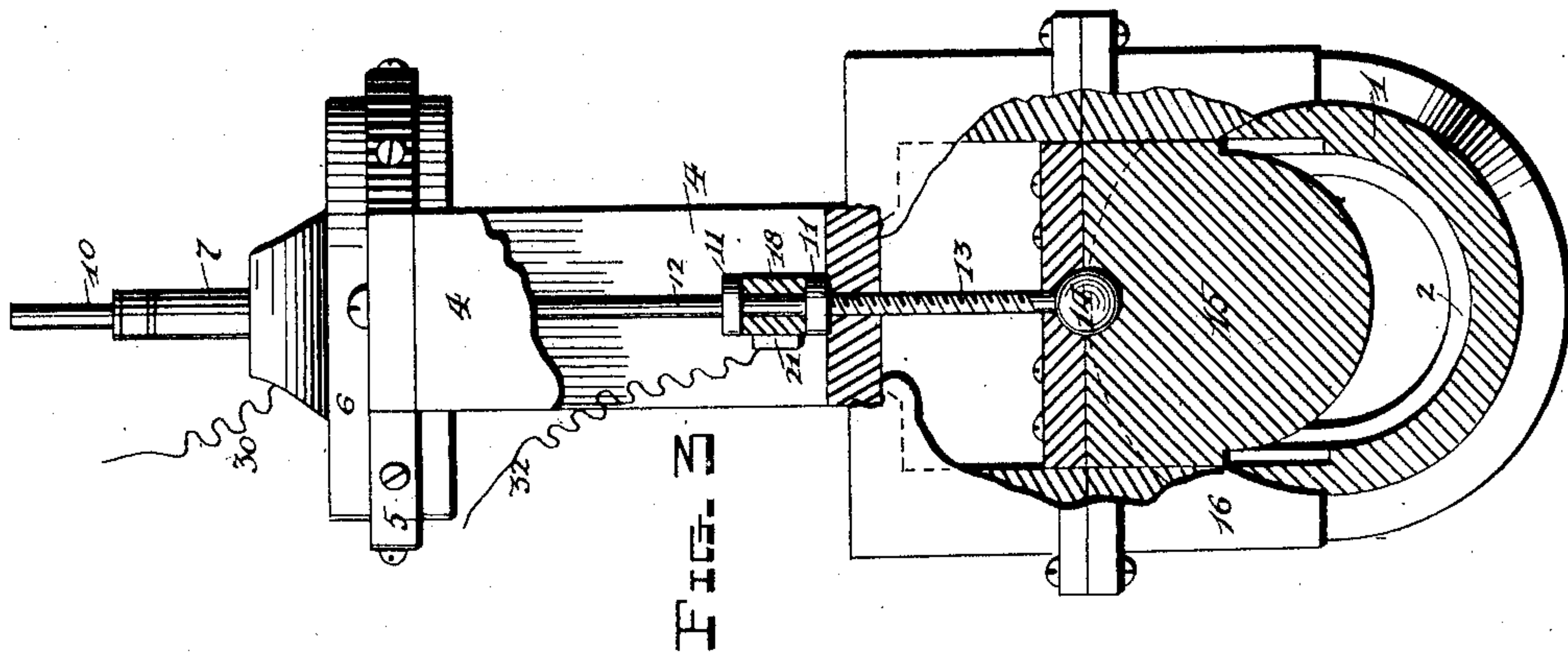


FIG. 2

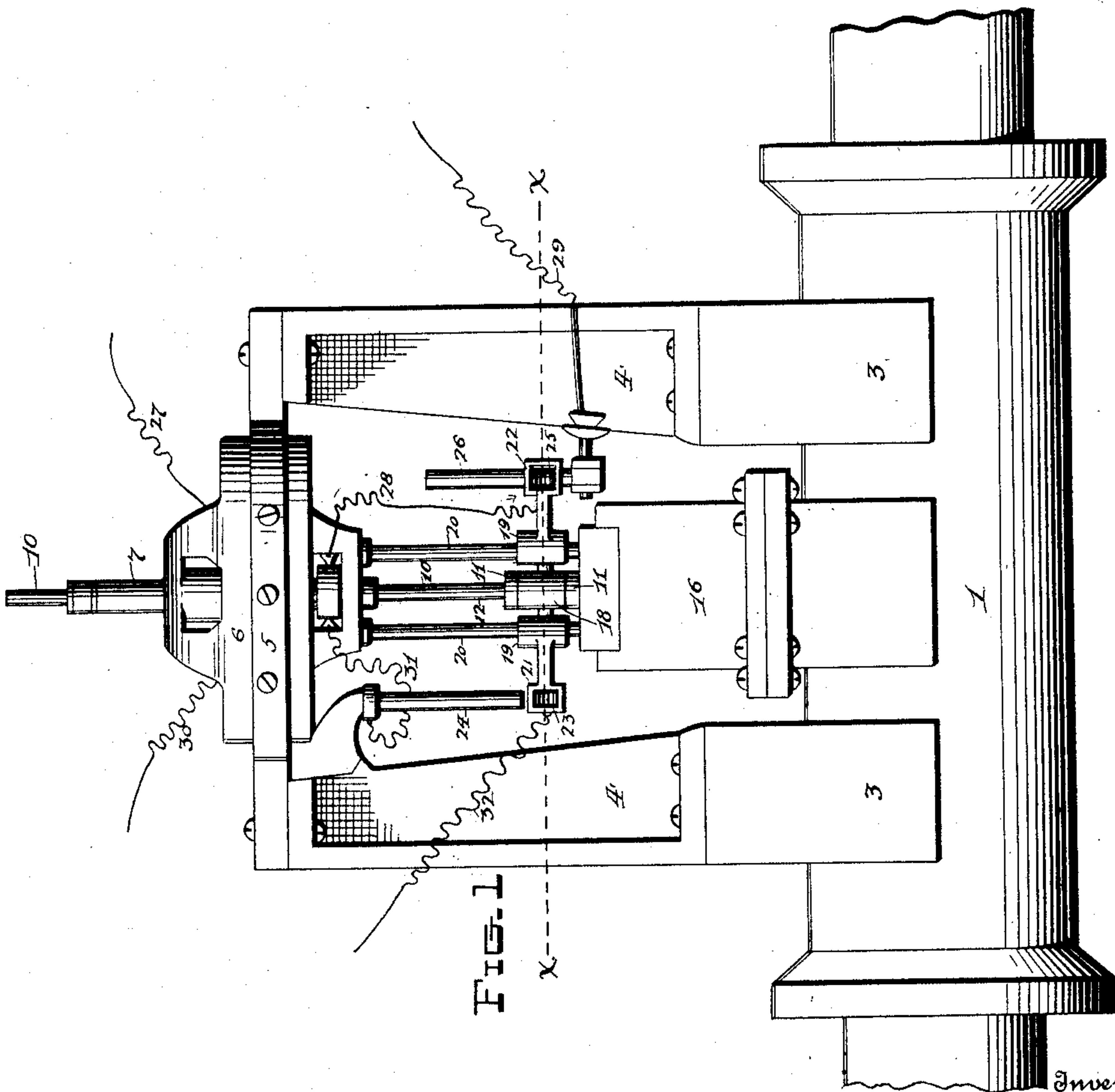


FIG. 1

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UNITED STATES PATENT OFFICE.

LOUIS E. WALKINS, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR OF ONE-FOURTH TO FRANCKE W. DICKINSON, OF SAME PLACE.

ELECTRICALLY-OPERATED GATE-VALVE.

SPECIFICATION forming part of Letters Patent No. 631,263, dated August 15, 1899.

Application filed December 20, 1898. Serial No. 699,806. (No model.)

To all whom it may concern:

Be it known that I, LOUIS E. WALKINS, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Electrically-Operated Gate-Valves; and I do 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.

My invention relates to an improved form of electrically-operated gate-valve for water-mains and the like, and the object is to provide a simple and effective device of this character that may be controlled from a central station or other distant point, so as to automatically open or close said valve or a series of them as occasion requires.

To this end the invention consists in the construction, combination, and arrangement of the several parts of the device, as will be hereinafter more fully described, and particularly pointed out in the claims.

In the accompanying drawings the same reference characters indicate the same parts of the invention.

Figure 1 is a side elevation of my electrically-operated gate-valve. Fig. 2 is a similar view, partly in section. Fig. 3 is a transverse section through the valve proper, with the upper structure in elevation. Fig. 4 is a top plan view. Fig. 5 is a horizontal section on the line $x x$ of Fig. 1.

1 denotes the valve-casing, which forms a section of the main. This casing is provided with parallel guide-flanges 2 2, which form the seats for the valve-gate 15.

3 3 denote parallel brackets formed integral with the casing, and 4 4 denote parallel standards fixed to said brackets and connected at their upper ends by the yoke 5, in which is fixed an electric motor 6, provided with a tubular driving-shaft 7, having an internal spline or key 8, engaging a corresponding groove or keyway 9, formed in the valve-stem 10, the central portion 12 of which extends through the cross-head 18 and is provided with collars 11 11 above and below said cross-head to carry the latter with it as the

stem is moved longitudinally. The lower end 13 of said stem 10 is screw-threaded to engage the hood 16, and its immediate end terminates in a ball 14, which has a bearing in a socket in the upper end of the valve 15, as shown.

The cross-head 18 is provided with guide-sockets 19 19, which encompass the guide-rods 20 20, extending between the hood and the motor-casing.

21 and 22 denote lateral arms carried by the cross-head sockets and in which are mounted the insulated conductors 25 23, which have a traveling contact with the conductor-posts 26 and 24, secured to though insulated from the standards 4 4.

The field-magnet of the prime motor is wound to rotate the armature in either direction, depending on the polarity of the current, which if transmitted in one direction over the conductor 30 and from the commutator over the conductor 28 to the contact-finger 25, conductor-post 26, and conductor 29 to the source of energy will rotate the valve-stem 10 and raise the valve 15, and the conductor-post 26 is of such a length that when the valve is fully opened the conductor-finger 25 will have passed beyond the free end of said post, and thereby break the circuit. Consequently the motor stops. At the beginning of this operation or when the valve is closed, as shown in Fig. 1, the conductor-finger 25 is in contact with the post 26 and the conductor-finger 23 is out of contact with the post 24; but when the motor is energized, as above described, to raise the valve the cross-head 18 carries the conductor-finger 23 upward and into contact with the conductor-post 24 and leaves it in contact with said post, when the cross-head arrives at its upward limit and the motor is stopped by the interruption of its energizing-current between the finger 25 and post 26. When it becomes necessary to close the valve, a current of opposite polarity is transmitted over the conductor 27 and from the commutator over the conductor 31 to the post 24, thence through the finger 23 and conductor 32 back to the source of energy. This operation causes the motor to rotate in the opposite direction and

force the stem downward, carrying with it the valve and cross-head, which places the conductor-finger 25 in contact with the post 26 and when the valve is closed leaves the 5 finger 25 and post 26 in contact, while at the same time breaking the energizing-circuit between the finger 23 and post 24, and consequently stopping the motor.

From the above description it will be seen 10 that a municipal water-main system supplied with valves of this character and controlled from a central station enables the attendant to cut off the supply from one section and increase it in another during such emergencies 15 as are liable to occur in such system.

It will be understood that various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing 20 any of the advantages of this invention.

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

25 1. The combination with a valve and its threaded stem, provided with a longitudinal keyway, of a hood encompassing the valve, and provided with a threaded orifice, to receive the valve-stem, a reversible motor, pro- 30 vided with a splined, tubular shaft, encompassing said stem, and means for energizing

said motor in either direction, to open or close said valve, as set forth.

2. The combination with the gate-valve and its casing, of the threaded stem, having a 35 threadless portion formed with a keyway, the hood to receive the threaded portion of the valve-stem, an electric motor, provided with a splined, tubular shaft to receive the thread- 40 less portion of the valve-stem, a cross-head carried by said stem, conductor-fingers carried by the cross-head, and contact-posts, interposed in the paths of said fingers, and forming the terminals of independent motor- 45 circuits, which are adapted to rotate the motor in opposite directions, as set forth.

3. In an electrically-operated gate-valve, and its stem having a threaded engagement with the valve-case, a motor wound to rotate in opposite directions, and engaging said stem, 50 conductor-fingers carried by said stem, and contact-posts fixed in a part of the path of said conductor-fingers, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set 55 my hand in presence of two subscribing witnesses.

LOUIS E. WALKINS.

Witnesses:

F. E. CARPENTER,
E. L. DUMAS.