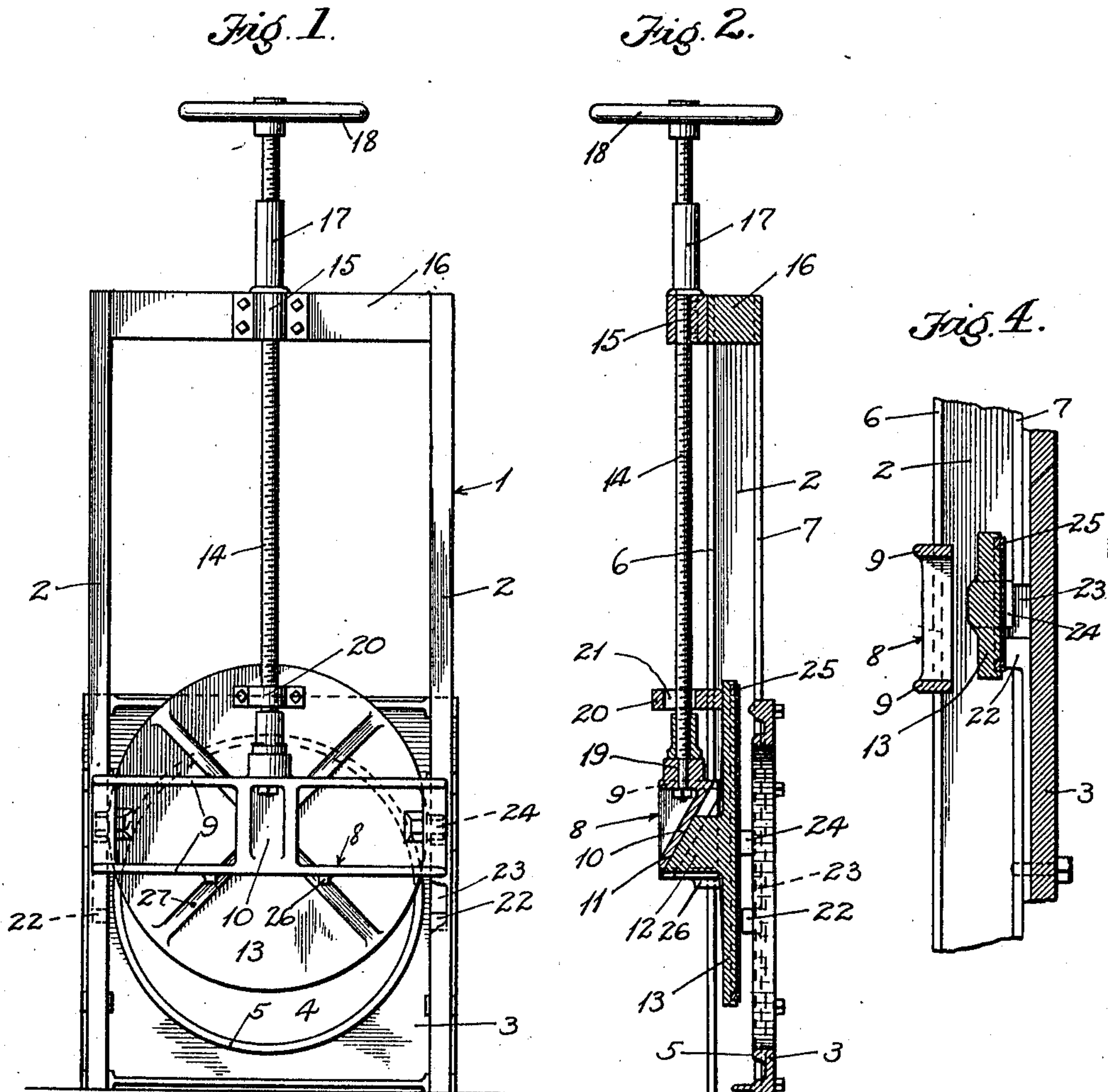


F. P. SNOW.
VALVE OR GATE.
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989,201.

Patented Apr. 11, 1911.



Witnesses.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANK P. SNOW, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Valves or Gates, of which the following is a specification.

This invention relates to valves or gates, and the object of the invention is to produce a device of this class having a simple construction for moving a disk or gate into position before the valve opening and for giving the disk a lateral movement which will bring it securely upon its seat. The arrangement is such that the same movement which advances the disk across the opening suffices to move the disk laterally on to the seat when it has come into a central position with respect to the valve opening.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

In the annexed drawing which fully illustrates my invention, Figure 1 is a front elevation of the valve or gate constructed according to my invention, certain parts being broken away. Fig. 2 is a longitudinal vertical section of this valve or gate. This view, like Fig. 1 shows the gate in a partly open position. Fig. 3 is a horizontal cross section taken through the valve or gate and further illustrating details of its construction. Fig. 4 is a vertical section taken near one side of the device and particularly illustrating details of the means for arresting the transverse movement of the gate or disk so as to move the same laterally on to the seat.

Referring more particularly to the parts 1 represents a gate frame which comprises two oppositely disposed vertical guide bars 2 the lower portions of which are connected by a valve plate 3, said plate having a circular valve opening 4. The edge of this valve opening 4 presents an outwardly projecting bead or raised seat 5. The guide bars 2 are formed into channels presenting flanges 6 and 7 which project inwardly toward the central longitudinal axis of the device. On the flange 6 there is guided a cross head 8 said cross head presenting a pair of flat bars 9 arranged parallel with each other as shown. At its middle point the cross head is formed with a slide 10 which is disposed

in an inclined position as indicated in Fig. 55 2. This slide approaches the valve seat in an upward direction. As indicated in Fig. 3 the slide presents under cut guide grooves 11 at its side. This slide 10 is adapted to receive a slide block 12 which extends outwardly from a valve disk or gate 13 being formed integral with the gate as shown. This block fits nicely in the under cut groove 11 so as to form a guide for the disk or gate, as will be readily understood. If the block 12 slides upwardly in the slide it will approach the seat, and if it moves downwardly it will recede from the seat.

I provide a screw 14 for raising and lowering the cross head 8, said screw having threaded engagement with a fixed nut or bearing 15 attached to a cross bar 16 which forms the upper portion of the frame 1. On this nut or block 15 a sleeve 17 is seated which envelops a portion of the screw above the frame. The upper end of the screw is provided with a hand wheel 18 for rotating the screw, and the lower end of the screw forms a swivel connection 19 with the cross head. Near its upper edge the gate or valve disk 13 is provided with a bracket 20 which is rigidly secured thereto and this bracket is formed with an elongated slot 21 through which the stem or screw 14 passes. This bracket assists in supporting the gate or disk 13 in an upright position and relieves the slide 10 from some of the strain.

Referring especially to Figs. 2 and 4, the plate 3 is attached to the flanges 7 and, at a point substantially on the same level as the center of the disk, the plate 3 presents lugs or stops 22. Just above these stops angular notches 23 are formed which pass through the flange 7 as indicated. At its side the disk or gate 13 is provided with dog blocks or dogs 24 which are formed integrally therewith as indicated. These dogs are in the form of substantially square blocks which are adapted to be received in the notches 23 as will be readily understood. These dogs present flat inner faces which slide on the inner sides of the flanges 7 when the gate is being opened or closed. They are arranged so that the stops 22 will project into their path as the disk descends into position to close the opening 4. The inner face of the gate or disk 13 is provided with an annular packing ring 25 which is adapt-

ed to come upon the seat 5 so as to close the opening 4 water tight which will be readily understood.

In order to assist in supporting the disk 5 in an upright position, I provide the lower part of the cross head 8 with inwardly projecting lugs 26 which are adapted to engage the rear sides of radiating ribs 27 formed on the back of the disk. It will be 10 evident that these lugs assist in supporting the disk in an upright position and they form stops which limit the downward movement of the block 12 in the slide 10.

The mode of operation of the gate will 15 now be described.

When the screw 14 is rotated in the proper direction by means of the hand wheel 18 the cross head 8 will descend and carry with it the disk or gate 13. At this time the 20 block 12 will lie near the bottom of the slide 10 and the disk will be disposed in a position withdrawing somewhat from its seat. When the disk 13 has come into a central position over the opening 4, the lugs 24 25 will engage the stops 22 and this will arrest a further transverse movement of the disk or gate. A continued downward movement of the cross head will then operate through the slide 10 to force the gate inwardly to- 30 ward its seat. In this lateral movement which brings the gate upon its seat, the dogs 24 are supported on the upper faces at the stops 22 and they slide back into the notches 23 until the packing ring 25 seats itself firmly 35 on the seat 5. When the gate is opened an upward movement of the cross head occurs before the upward movement of the disk begins. In this connection it should be noted that the upper edges of the notches 23 en- 40 gage the upper faces of the dogs 24 and prevent the disk from rising intermediately. On account of the slide 10 the upward movement of the cross head produces a lateral withdrawal of the disk from the seat and 45 this lateral withdrawal movement continues until the dogs 24 clear the notches 23 and clear themselves also from the stops 22. The disk will then drop back into the position shown in Fig. 2 and will completely clear 50 the seat whereupon it can be opened by continued rotation of the screw 14.

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

1. A valve plate having an opening, a 55 member guided transversely with respect to said opening and having an inclined slide, a disk adapted to close said opening and guided in said slide, a means for arresting the transverse movement of said disk to en- 60 able said slide to force said disk laterally toward said opening.

2. A valve plate having an opening, a cross head, means for guiding said cross head transversely with respect to said open- 65 ing, said cross head having a slide inclined with respect to said opening, a disk having a member mounted in said slide, said slide being arranged to approach the plane of said opening in an upper direction, means 70 for arresting the transverse movement of said disk, said slide affording means thereafter to force said disk laterally toward said opening.

3. A valve plate having an opening, a seat 75 formed thereabout, a cross head, means for guiding said cross head transversely with respect to said opening, said cross head having a slide inclining toward said seat in an upper direction, a disk having a block mount- 80 ed in said slide and having lugs on the inner face thereof and at the sides of said disk and fixed stops projecting into the path of said lugs and adapted to arrest the transverse movement of said disk, said slide af- 85 fording means for forcing said disk laterally onto said seat.

4. A valve plate having an opening with a seat formed thereabout, a cross head, means for guiding said cross head transversely with 90 respect to said opening, said cross head having an inclined slide, a disk mounted in said inclined slide and having dogs at the sides thereof, members guiding said dogs and having notches therein adapted to re- 95 ceive said dogs when said disk comes upon said seat, and means projecting into the path of said dogs to arrest the transverse movement of said disk, whereby the continued movement of said cross head advances said 100 disk laterally on to said seat.

In witness that I claim the foregoing I have hereunto subscribed my name this 27th day of June, 1910.

FRANK P. SNOW.

Witnesses:

F. D. AMMEN,
EDMUND A. STRAUSE.