

No. 646,767.

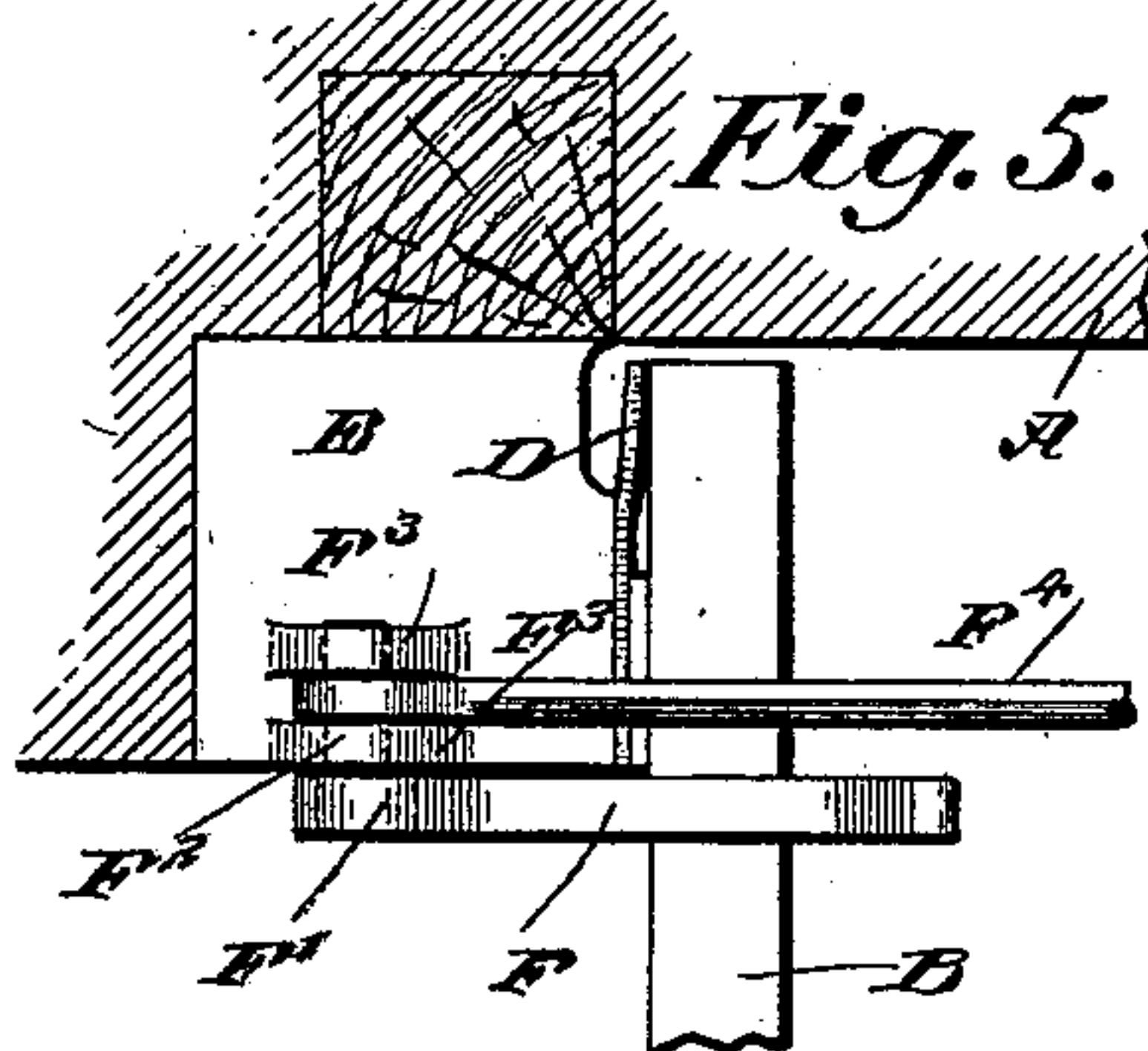
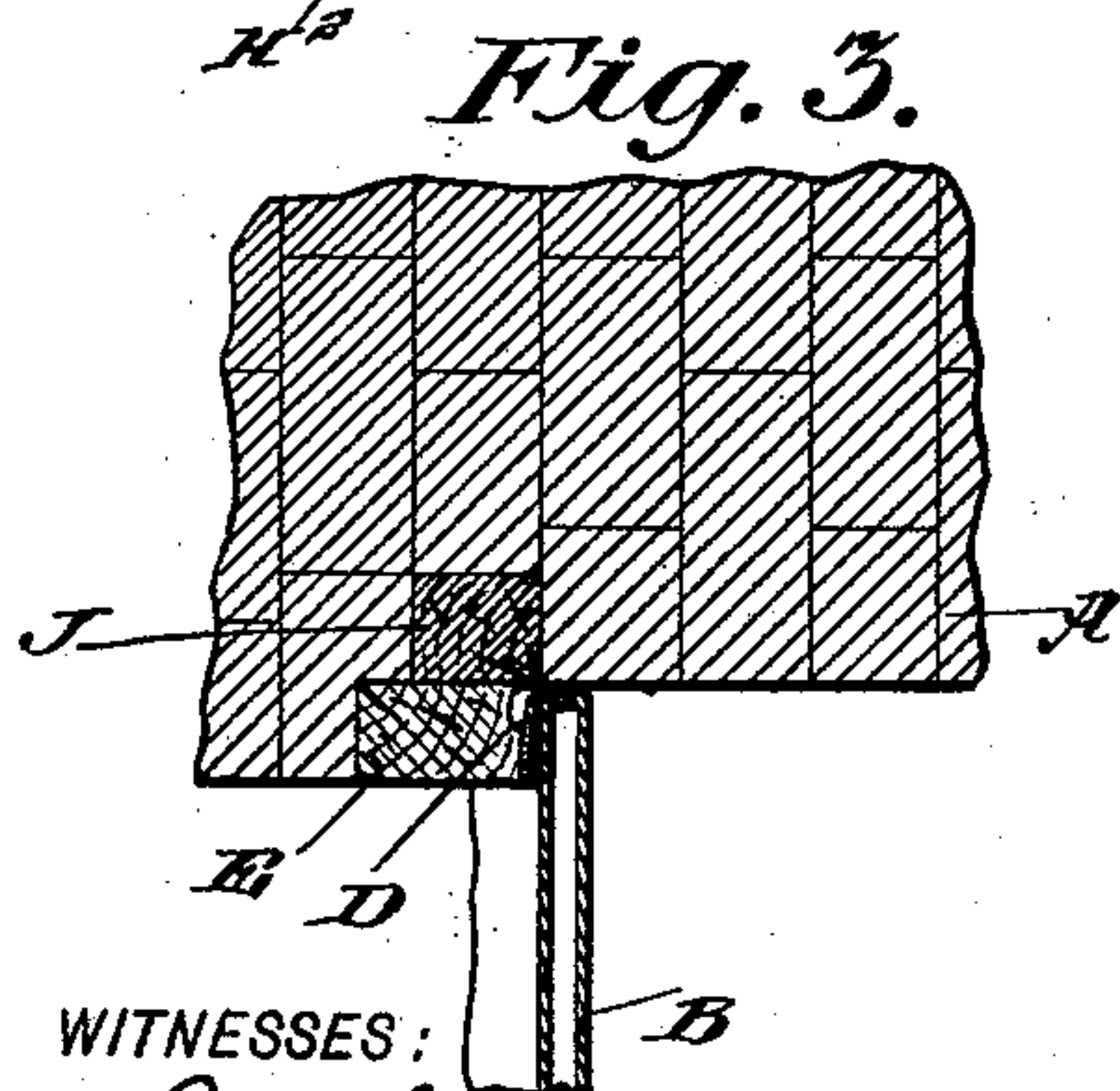
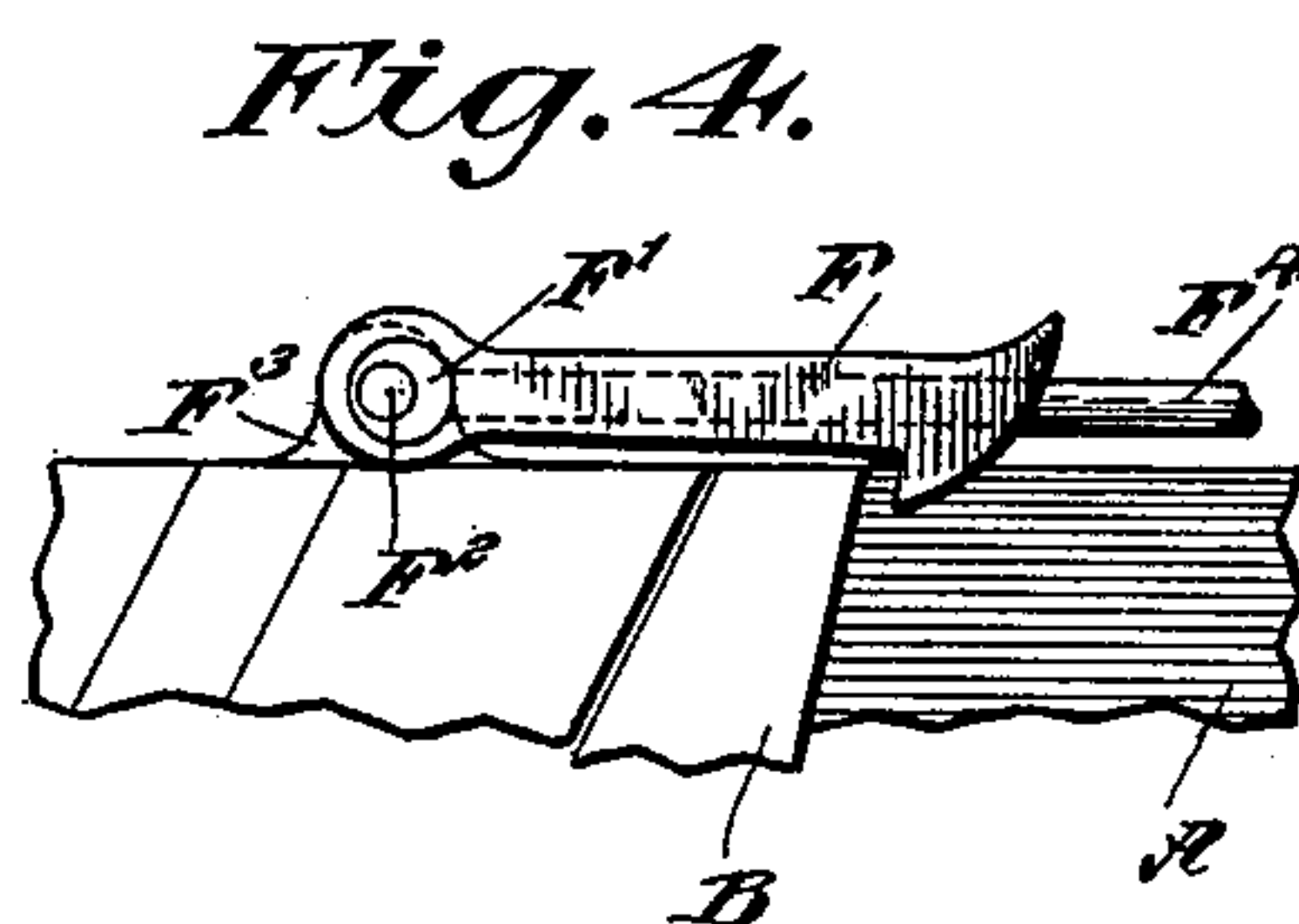
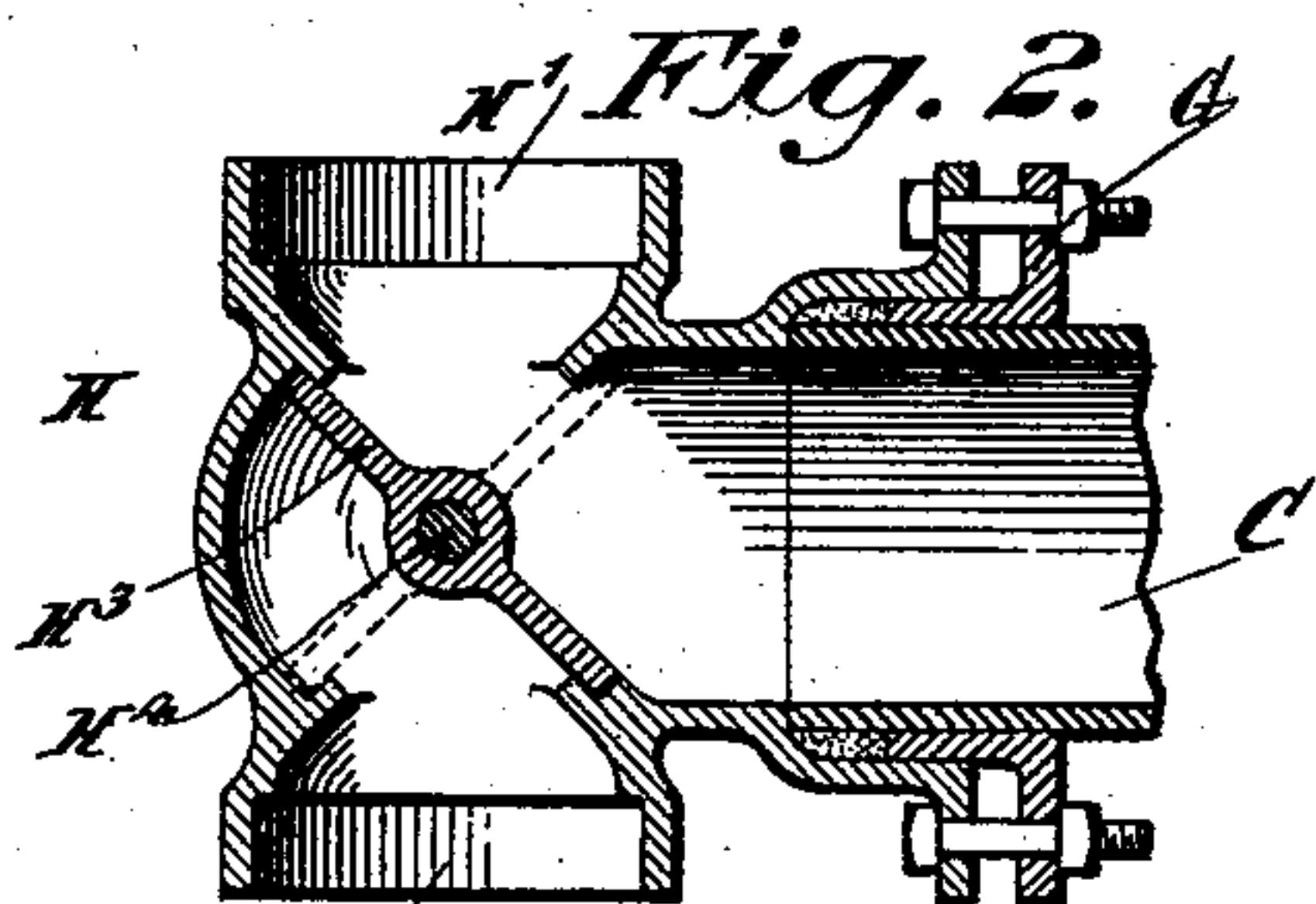
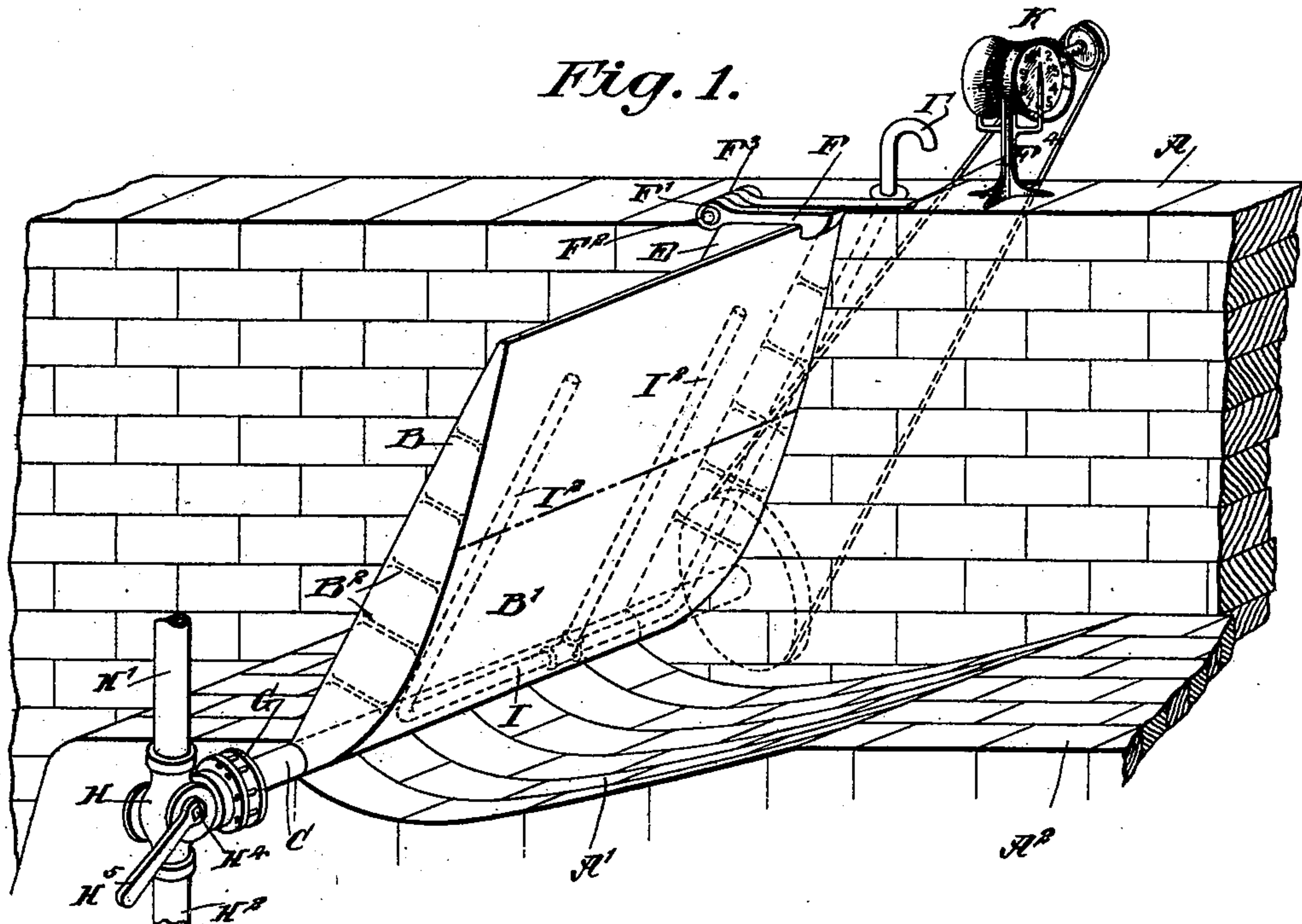
Patented Apr. 3, 1900.

T. T. STODDART.

LOCK GATE.

(Application filed Nov. 10, 1899.)

(No Model.)



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

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## LOCK-GATE.

SPECIFICATION forming part of Letters Patent No. 646,767, dated April 3, 1900.

Application filed November 10, 1899. Serial No. 736,470. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS TILLEY STODDART, a subject of the Queen of Great Britain, residing at Ottawa, in the Province of Ontario and Dominion of Canada, have invented a new and Improved Lock-Gate, of which the following is a full, clear, and exact description.

The invention relates to lock-gates for canals and other waterways; and its objects are to provide a new and improved lock-gate which is simple and durable in construction and automatic or self-moving, to facilitate the opening or closing of the lock for the passage of vessels, and to dispense with the use of chains, swinging arms, crab-wrenches, or moving machinery such as heretofore used for opening or closing a lock-gate.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

A practical embodiment of my invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a perspective view of the improvement as applied and in a closed position. Fig. 2 is an enlarged transverse section of the controlling-valve. Fig. 3 is a sectional plan view showing the stonework, the stop, the holding-down cap, and the gate proper. Fig. 4 is an enlarged side elevation of the locking device for holding the gate in a closed position, and Fig. 5 is a plan view of the same.

Between the side walls A of a lock or other waterway is arranged a gate B, made hollow and secured at its lower horizontal edge on a hollow shaft C, mounted to turn in suitable bearings, so that the gate can swing into closed position, as shown in Fig. 1, or into an open position, to bring its top face flush with the bottom A<sup>2</sup> of the lock, the under curved face of the gate B then fitting into a recess A', formed in the bottom A<sup>2</sup> of the lock to receive it. The hollow gate B is provided with lattice-girders B<sup>2</sup>, extending from one end to the other, so as to materially strengthen the gate, it being understood that the curved

or spheroidal face B' of the gate also gives additional strength to the gate to withstand the pressure of the water when the gate is in a closed position. The gate B when in a closed position is inclined upward and forward, as shown in Fig. 1, and its edges press against packings or cushions D, of leather or other suitable material and facing the inclined stops or abutments E, arranged on the side walls A of the lock. When the gate is in a closed position, it is securely locked therein by hooks F, held on an eccentric F', secured to a transverse shaft F<sup>2</sup>, journaled in suitable bearings F<sup>3</sup>, attached to the top of the stop or abutment E, a lever F<sup>4</sup> being secured on said shaft, so that when the lever is swung the shaft is turned, and with it the eccentric F', so as to draw the hook F rearward and pull the gate firmly in position against the cushion or packing D. When it is desired to unlock the gate, the lever F<sup>4</sup> is swung down into the position shown in Fig. 4, to move the hook end of the hook out of engagement with the gate B, to then allow of swinging the hook upward for the gate to be free to move into a lowermost open position.

One end of the shaft C is journaled in a suitable bearing in the side wall A, and the other end of said shaft is likewise journaled in bearings and extends outside of the opposite side wall into a stuffing-box G, held on a controlling-valve H, provided with a water-supply pipe H', connected with an overhead reservoir, said valve H being also provided with a discharge-pipe H<sup>2</sup> for allowing the water to escape from the gate when it is desired to cause the gate to automatically swing into a closed position, as hereinafter more fully described. The valve or wicket H<sup>3</sup> in the valve H is secured on a stem H<sup>4</sup>, provided on the outer end with a handle H<sup>5</sup> under the control of the operator to throw the wicket into either of its two positions, as shown in full and dotted lines in Fig. 2, to connect the pipe H' with the hollow shaft C and allow water to flow from the reservoir into the gate B to fill the same, or when the wicket is in the dotted position shown in Fig. 2 to allow the water in the gate to flow through the shaft C into the discharge-pipe H<sup>2</sup> and to a suitable place of discharge.



In the hollow gate B extends an air-pipe I, extending through the shaft at the end opposite where the valve H is located to then connect with the air-pipe I', leading to the top of the corresponding side wall A and open to the atmosphere, as illustrated in Fig. 1. The pipe I at one end of the gate is provided with one or more branch pipes I<sup>2</sup>, extending upward in the gate to within a short distance of the top thereof, so that when water is passed into the gate from the overhead reservoir, as described, the air in the gate can pass through the branch pipes I<sup>2</sup>, the pipe I and pipe I' to the outside to allow the water to fill the gate. This takes place when the gate is in a closed position and it is desired to open the same, as it is evident that when the gate is thus loaded it will swing down into an open position into the recess A' at the bottom A<sup>2</sup>. When it is desired to open the gate, the handle H<sup>5</sup> is manipulated to bring the wicket H<sup>3</sup> into the position shown in dotted lines in Fig. 2, whereby the water-supply is cut off from the overhead reservoir and the water in the gate B can flow through the shaft C and valve H into the discharge-pipe H<sup>2</sup>, and at the same time the gate fills with air through the pipes I', I, and I<sup>2</sup>. When this takes place, the gate automatically swings upward into a closed position against the cushions or packings D, the gate then being securely locked in this position by the hooks F, as above explained. Thus by alternately filling the gate with water or air or gas said gate is caused to swing into an open or closed position without the employment of chains, swinging arms, crab-wrenches, or moving machinery such as heretofore employed for opening or closing lock-gates.

In order to permit convenient removal of the gate B whenever desired and to hold the gate in position, I provide a holding-down cap J, held removably in a recess in the side wall A and with the lower end over the hollow shaft C. Thus when the holding-down caps are removed from the side walls A, together with the stops E, the gate can be removed for repairs or other purposes.

In order to indicate the position of the gate, any suitable indicator may be employed. For instance, as shown, the double-faced indicator K faces both up and down the lock and is actuated from the hollow shaft C by a suitable mechanism to indicate the position of the gate.

If desired, the arrangement may be made that the gate fills itself with water from the lock or waterway for causing the gate to swing into an open position, and when it is desired to close the gate the water is expelled therefrom and replaced by air, it being understood

that in this case the air is obtained from a suitable air-compressor or other machine.

I do not limit myself to the particular construction of the gate as shown and described, as the same may be differently arranged or constructed. For instance, the gate when filled with water may be made to slide down into the recess instead of swinging, as before explained. I also do not limit myself to the peculiar arrangement for filling and emptying the gate, as the same may be varied, if desired.

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

1. A hollow lock-gate mounted to swing in a vertical plane, a hollow shaft for said gate, said shaft being arranged for connection to a fluid-supply, and an air-pipe connecting the interior of said gate with the outer air, as set forth.

2. A hollow lock-gate mounted to swing in a vertical plane, a hollow shaft for said gate, said shaft being arranged for connection to a fluid-supply, and an air-pipe opening into the outer air and extending through said shaft, said pipe having branches extending upwardly within the gate and opening into the same, as set forth.

3. A lock-gate, constructed hollow and mounted to swing on its lower horizontal edge between the side walls of the waterway at the bottom thereof, a hollow shaft for said gate and opening into the interior thereof, a valve on said hollow shaft, and having a water-supply pipe and a water-discharge pipe adapted to be alternately connected with said shaft, and an air-pipe leading into said hollow gate to vent the hollow gate for the passage of the water, and for filling the gate with air when water discharges from the gate, substantially as shown and described.

4. A hollow lock-gate provided with a shaft at its lower end about which it is mounted to swing, a fluid-supply discharge-pipe connected to said shaft and having a valve adapted to direct fluid through said shaft into the gate and out of said shaft into the discharge-pipe, and an air-pipe leading into the gate, as set forth.

5. A lock-gate mounted to swing, a hook for locking the gate against its abutments when in a closed position, an eccentric on which the hook is mounted, and a shaft carrying a lever and the said eccentric, substantially as shown and described.

THOMAS TILLEY STODDART.

Witnesses:

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THOS. J. MORRIS.