

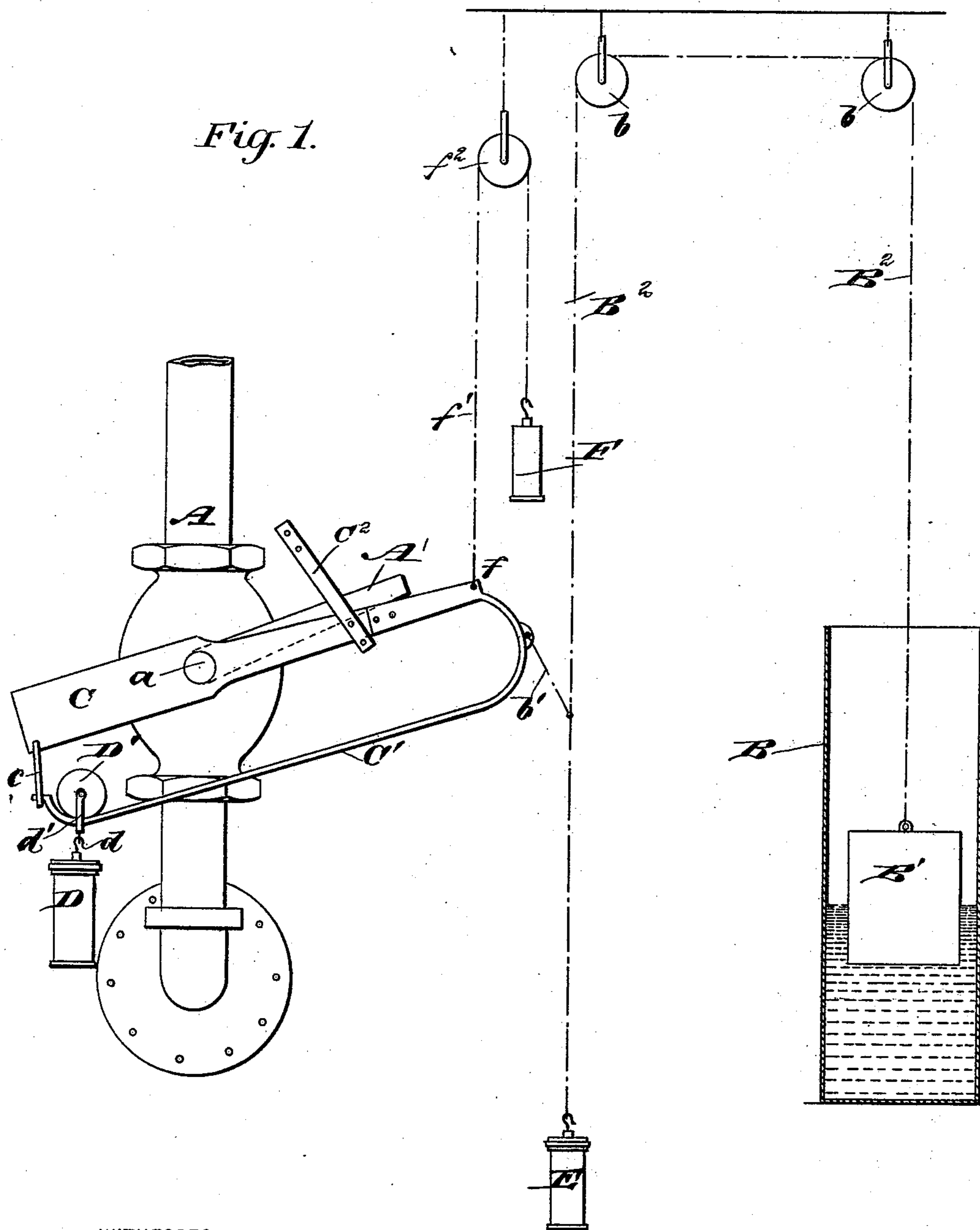
(No Model.)

2 Sheets—Sheet 1.

C. OTIS.  
VALVE OPERATING DEVICE.

No. 528,385.

Patented Oct. 30, 1894.



**WITNESSES :**

J. H. C. Sewell.  
W. Sedgwick.

***INVENTOR***

*Co. Otis*  
BY *Munn & Co*  
ATTORNEYS.

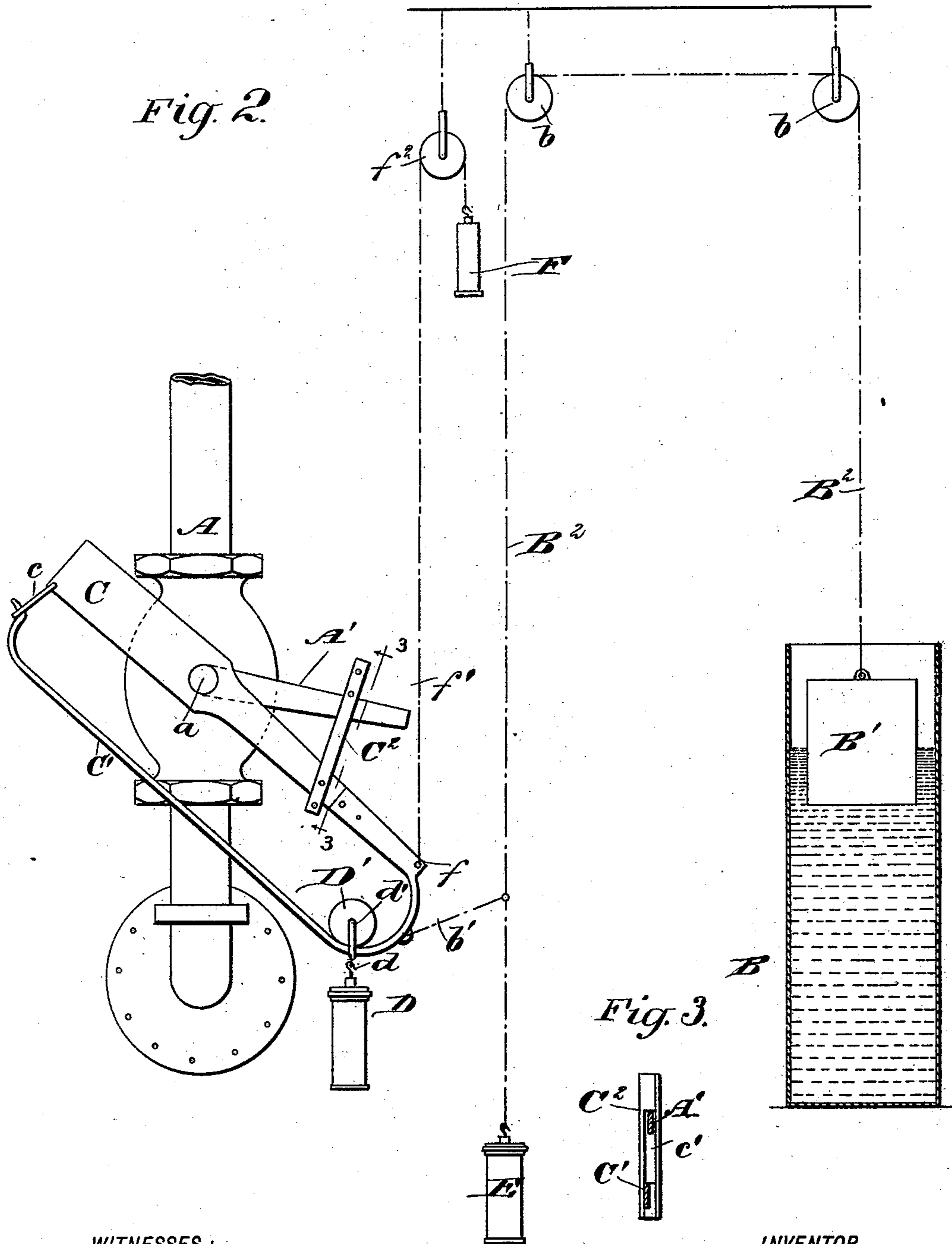
(No Model.)

2 Sheets—Sheet 2.

C. OTIS.  
VALVE OPERATING DEVICE.

No. 528,385.

Patented Oct. 30, 1894.



WITNESSES:

J. A. Griswell.  
C. Sedgwick

INVENTOR

C. Otis  
BY Munn & Co  
ATTORNEYS.

# UNITED STATES PATENT OFFICE.

CHARLES OTIS, OF NEW YORK, N. Y.

## VALVE-OPERATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 528,385, dated October 30, 1894.

Application filed June 23, 1892. Serial No. 437,721. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES OTIS, of New York city, in the county and State of New York, have invented a new and Improved Valve-Operating Device, of which the following is a full, clear, and exact description.

The invention relates to means for automatically opening and closing the throttle valve of the pump by which the water for operating the elevator is pumped, the devices being actuated to open and close the valve by the rising and falling of a float in one of the tanks.

The invention consists in the novel means hereinafter particularly described and defined in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation illustrating the invention applied to the steam supply pipe of a pump, and indicating the arrangement of the same in connection with a float in the lower or discharge tank, the parts being in position after closing the valve. Fig. 2 is a similar view showing the parts in position after opening the valve; and Fig. 3 is a detail sectional view on line 3—3, in Fig. 2.

In the drawings, the pipe A represents the steam supply pipe of any suitable pump having the usual throttle valve, to the stem *a* of which is secured the usual valve lever A', and in the discharge tank B is shown a suitable float B', said float acting through the improved valve operating devices, to open the valve when the water in the discharge tank rises, and to throttle the same when the level of the water falls as the water is pumped from the discharge tank to the upper or storage tank. Thus, to the valve stem *a* or other suitable stud, a yoke C is pivoted at one side of the center the lower arm or member C' of which forms a support and a track for a trolley weight D, the weight proper being suspended by its hook *d*, from the bail or yoke *d'* of the traveling wheel or roller D'. At one end the yoke is open for the removal or replacing of the traveling weight, the separated ends of the upper and lower arms being united by a link *c* which is loosely connected

with the upper arm and adapted to engage the end of the lower arm as shown.

To the upper arm of the yoke C, a trip arm C<sup>2</sup> is secured and embraces by its longitudinally slotted portion *c'*, the valve lever A', to throw said lever in the up and down movements of the yoke. A chain or cord B<sup>2</sup> leads from the float B' over suitable guide pulleys *b*, and carries a weight E, which gives the initial movement to the yoke C, to open the valve, the chain B<sup>2</sup> being connected through the short chain or cord *b'* with one end of said yoke. There is further connected with the yoke near one end, as at *f*, a weighted chain or cord *f'*, which passes over a suitable idler *f''*, the weight F of which cord acts as a counterweight to the traveling weight D, to prevent undue shock when the movement of the traveling weight is arrested.

In the operation of the device, the parts being in the position shown in Fig. 1, and the valve thus closed, as the water is discharged into the tank B after operating the elevator, the float B' gradually rises, which permits the weight E to fall and rock the yoke C. The slot in the trip arm C<sup>2</sup> of the yoke permits the latter to rock a considerable distance without affecting the valve lever A', but as the water continues to rise in the discharge tank and the yoke is so rocked as to bring the track C' to a position inclined in the opposite direction to that it occupied in Fig. 1, the weight D will quickly travel to the opposite end of the yoke, causing the latter to assume the position shown in Fig. 2, and throw the valve lever to open the valve, all shock by the traveling weight being prevented by the smaller counteracting weight F. The shock to the traveling weight and the yoke is further avoided by reason of the swinging connection of the weight D to its traveler D', since by this construction the whole weight including the traveler wheel is not instantly arrested, but the weight may swing on the traveler. Thus it will be seen that the valve is not moved until practically the full volume of water is discharged, at which time the valve will be thrown wide open at once to start the pump. The pump having been thus started, the level of the water in the tank B will gradually fall and with

it the float B', which will raise the lowered end of the yoke C, against the action of weights D, E. When now, the upper tank is substantially filled the float B' will have so far rocked the yoke C as to cause the traveling weight D to return to the former position shown in Fig. 1 to throttle the valve, and the latter will occur immediately upon the filling of the upper tank, as at the time the upper tank is filled, the water will have fallen sufficiently in the discharge tank B to cause the traveling weight to move.

The devices are also applicable to the pumps of water supply tanks, feed pumps, and the like.

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

1. In a valve operating device, the combination of a yoke comprising two arms separated at one end and having a link for connecting said separated ends, a shifting weight adapted to travel on said yoke, and a float

operated weight connected with said yoke substantially as described. 25

2. In valve operating devices, the combination with a yoke pivoted to rock, and having connection with the valve to be operated, of a float, a weighted cord or chain controlled by said float and connected with the yoke, a shifting weight on the yoke, and a counter-acting weight connected by a cord or chain to the yoke, substantially as described. 30

3. In valve operating devices, the combination with the valve, of a yoke mounted to rock, and having an arm engaging the valve arm, a float operated weight connected with such yoke and a roller traveling on such yoke and having a suspended weight adapted to swing relatively to the roller, substantially as described. 35 40

CHARLES OTIS.

Witnesses:

THEODOR KATZ,  
JOHN E. RICKER.