

(No Model.)

J. KELLY.  
VALVE DEVICE.

No. 505,272.

Patented Sept. 19, 1893.

Fig. 1.

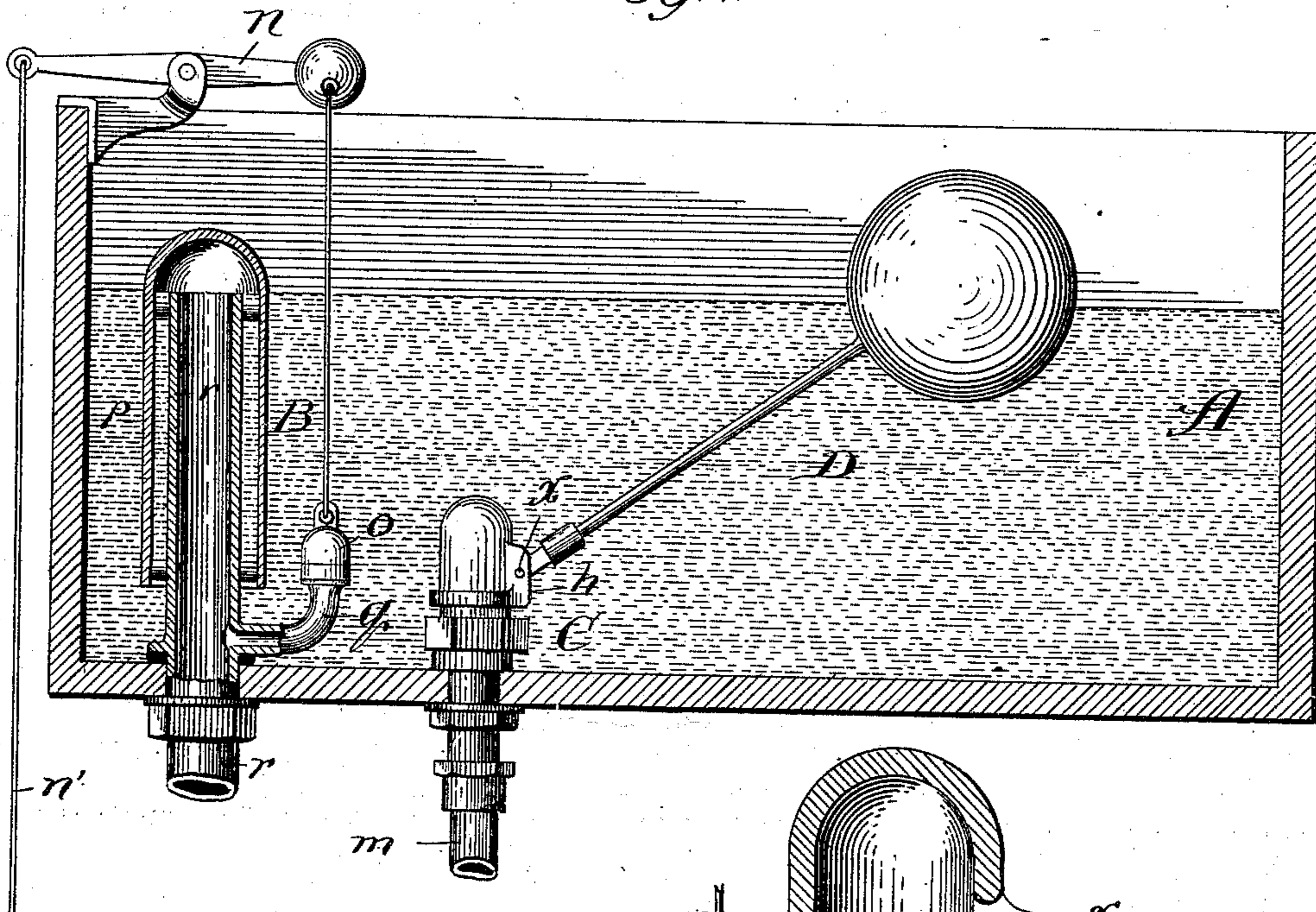


Fig. 2.

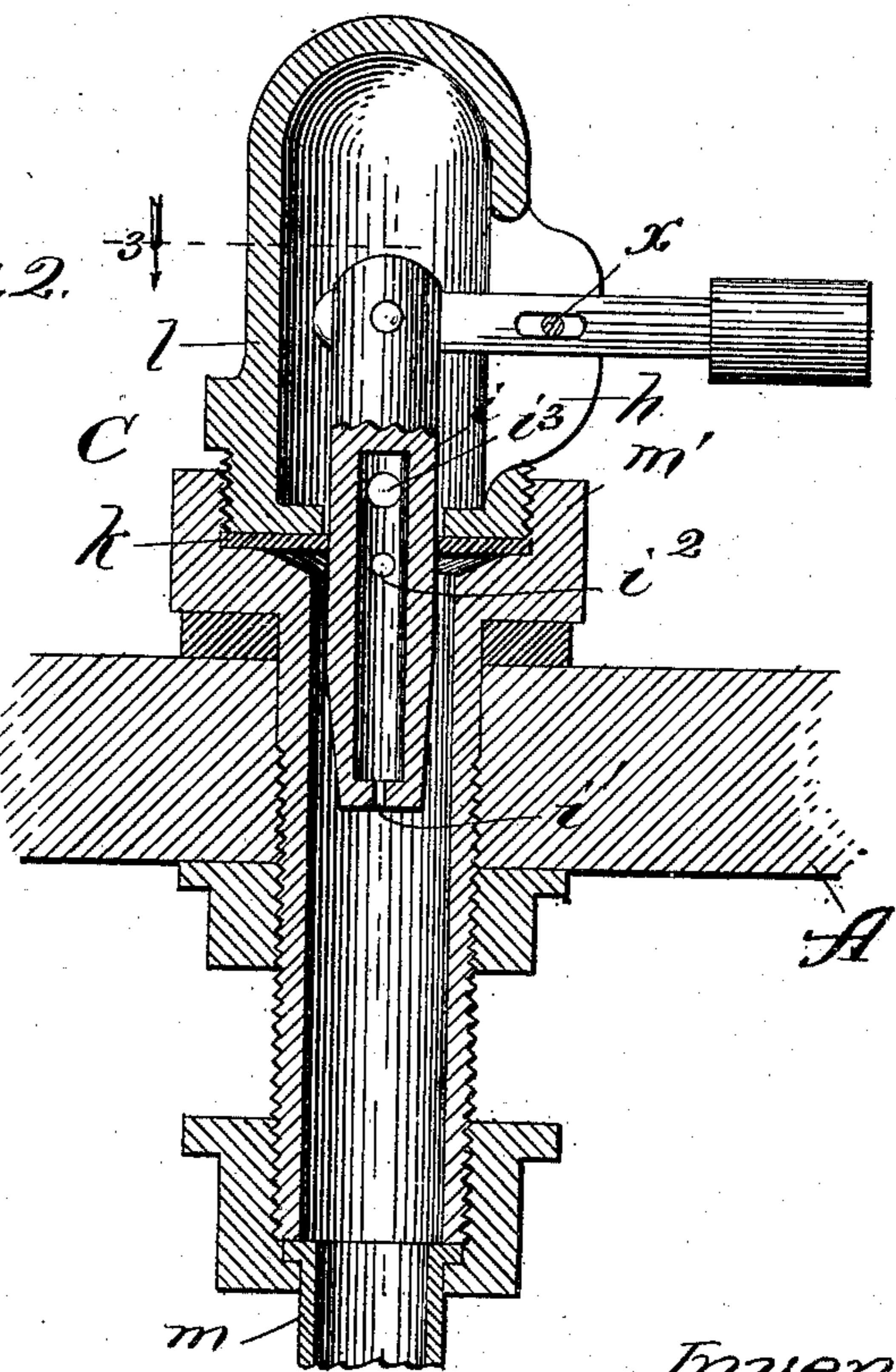
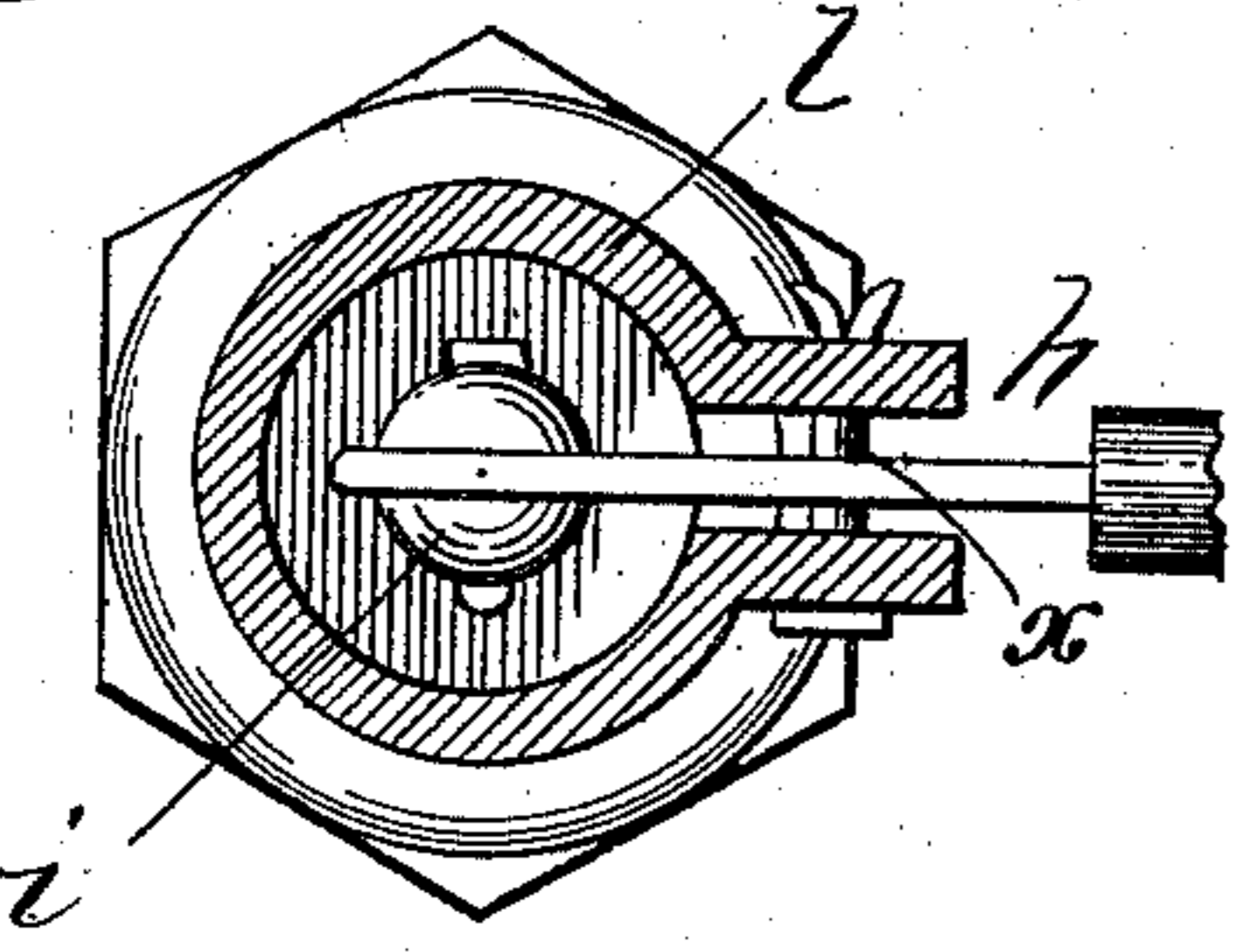


Fig. 3.



Witnesses:  
Chas. Gaylord,  
E. Shipley.

Inventor:  
John Kelly,  
By Dymforth and Dymforth,  
Attorneys.

# UNITED STATES PATENT OFFICE.

JOHN KELLY, OF CHICAGO, ILLINOIS.

## VALVE DEVICE.

SPECIFICATION forming part of Letters Patent No. 505,272, dated September 19, 1893.

Application filed April 7, 1893. Serial No. 469,470. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN KELLY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have  
5 invented a new and useful Improvement in Valve Devices, of which the following is a specification.

The object of my invention is to provide for use in the overhead siphon-operated flushing-tank of a water-closet a construction of  
10 valve-device whereby it shall be adapted to operate automatically to graduate the flow of the liquid it controls until the flow is, finally, shut off altogether.

15 In the accompanying drawings, Figure 1 is a broken view in sectional elevation of the overhead flushing-tank of a siphon-closet provided with my improved valve-device. Fig. 2 is a vertical section, enlarged over the scale  
20 in Fig. 1, of the valve-device involving the same construction as that presented in the first view. Fig. 3 is a section taken at the line 3 on Fig. 2 and viewed in the direction of the arrow.

25 A denotes an overhead water-closet tank containing a siphoning device B of any desired construction, that shown involving the flush-pipe *r* having a branch *q* and covered by the cap *p*; a valve *o* being seated on the  
30 branch *q* and connected with a lever *n* operated by the usual depending chain *n'*. The siphon operates in the well-known manner: namely, by raising the valve *o*, it draws the water of the tank through the cap *p* down  
35 the pipe *r* till the water-supply in the tank falls below the entrance between the cap and flush-pipe, when air is admitted and breaks the siphon.

40 C is my improved valve-device fitted over the water-supply pipe *m*, which, as shown, leads through the base of the tank, wherein it, (or the coupling connecting it with the tank, as the connection is represented in Figs. 1 and 2) terminates in an internally threaded  
45 cup *m'* into which is screwed the lower end of a hood *l*, which confines an annular diaphragm or washer *k*, preferably of leather or rubber, seated in the cup. A tube *i* extends through the annular washer at one end into  
50 the hood *l* and at its other end into the supply-pipe *m* and is pivotally supported at its head-portion, which is closed, on the inner

end of the rod of a float D, the rod being fulcrumed at *x* in the outlet-opening *h* of the hood, forming the discharge-opening from the  
55 valve-device into the tank. In the lower end of the tube *i* is a minute opening *i'*; and between the ends of the tube are the two openings *i<sup>2</sup>* and *i<sup>3</sup>*, the latter being shown the larger of the two. These openings *i<sup>2</sup>* and *i<sup>3</sup>*  
60 may be in one side or in different sides of the tube, or they may be in each side thereof, and there may be more of them than the two; and, if desired, instead of providing a number of the openings, one elongated opening  
65 will answer, as will be apparent from the description, hereinafter contained, of the operation.

As described, the device operates as follows: While the tank A contains its supply  
70 of water, the float D is floated at the position in which it is represented in Fig. 1, wherein the tube *i* is so far protruded downward through the annular diaphragm *k*, that both openings *i<sup>2</sup>* and *i<sup>3</sup>* are below the plane thereof.  
75 In this position of the tube, while water from the pipe *m* may enter it through all the openings *i'*, *i<sup>2</sup>* and *i<sup>3</sup>*, none can enter the hood *l* and thence discharge through the outlet *h*, into the tank, since the diaphragm prevents.  
80 On operating the siphon B, however, which withdraws the water from the tank, the float sinks with the level of the water, thereby raising the tube *i* till its opening *i<sup>3</sup>* reaches above the plane of the diaphragm *k*, when  
85 the water, which enters the tube from the pipe *m*, can escape into the hood *l* and thence discharge into the tank. This supply through the tube *i* obviously increases, till the tube has been so far raised, by the falling of the  
90 float to a low position, as to bring both openings *i<sup>2</sup>* and *i<sup>3</sup>* above the washer. Then, the only supply being through the minute opening *i'*, it is too little to keep the water-level in the tank above the entrance to the siphon,  
95 which eventually ceases to operate by air entering it. Then the tank begins to re-fill, and as the level of water rises in it, the float D is raised, thereby lowering the opening *i<sup>2</sup>* of the tube below the plane of the diaphragm, where-  
100 by the feed-water enters the tube through both openings *i'* and *i<sup>2</sup>*, and discharges through the opening *i<sup>3</sup>* into the tank. Thus the feed is increased till the supply in the

tank becomes sufficient to have raised the float so high that it has lowered the tube  $i$  far enough to pass the opening  $i^3$  across the plane of the diaphragm  $k$ , during which passage, obviously, the flow of the feed water is diminished till it is eventually shut off altogether by the opening  $i^3$  passing the plane of the diaphragm.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a valve-device, the combination with the supply-pipe to a flushing tank A containing a siphoning device B, of a hood  $l$ , a diaphragm  $k$  covering the lower end of the hood, a tube  $i$  supported to extend through the diaphragm with one end in the hood and the other end presented to the supply-pipe, the hood and tube being adapted to be reciprocated one with relation to the other, an opening in the tube between its ends, and an opening  $i'$  in the end of the tube presented to the

supply-pipe, substantially as and for the purpose set forth.

2. A valve-device comprising, in combination with the supply-pipe to a flushing-tank A containing a siphoning-device B, a diaphragm  $k$  on a seat  $m'$  in said supply-pipe, a hood  $l$  confining the diaphragm on its seat and provided with a lateral discharge-opening  $h$ , a reciprocating tube  $i$  supported to extend through the diaphragm with one end in the hood and the other end in the supply-pipe, an opening  $i'$  in the lower end of the tube and an opening in the tube between its ends, and a float D on a rod fulcrumed in the opening  $h$  and fastened at its inner end to the tube, substantially as and for the purpose set forth.

JOHN KELLY.

In presence of—

M. J. FROST,  
W. N. WILLIAMS.