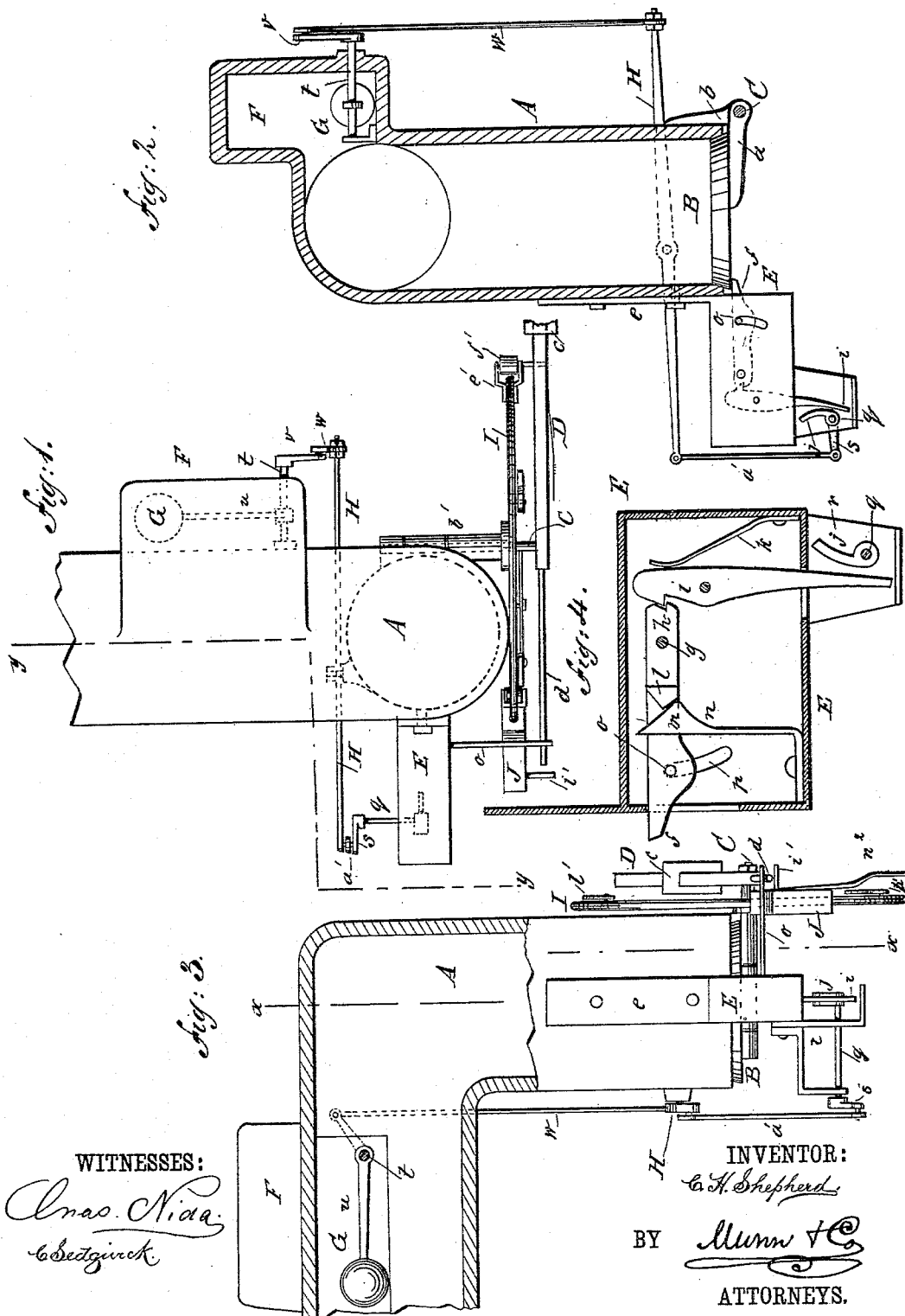


C. H. SHEPHERD.

VALVE MECHANISM FOR SEWERAGE SYSTEMS.

No. 384,396.

Patented June 12, 1888.



WITNESSES:

Chas. Nida
W. Sedgwick

INVENTOR:

C. H. Shepherd

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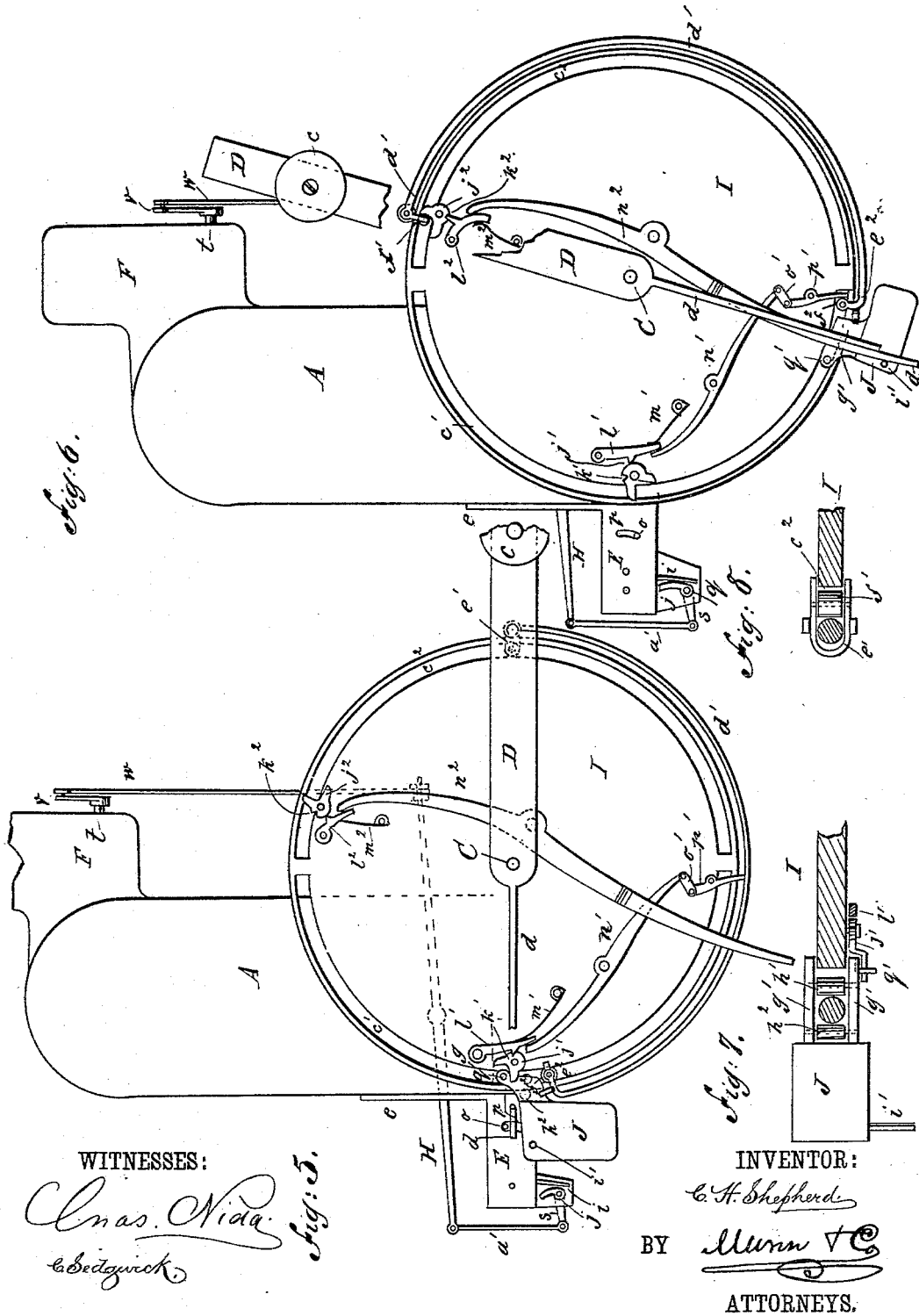
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UNITED STATES PATENT OFFICE.

CHARLES H. SHEPHERD, OF NEW YORK, N. Y.

VALVE MECHANISM FOR SEWERAGE SYSTEMS.

SPECIFICATION forming part of Letters Patent No. 384,396, dated June 12, 1888.

Application filed August 9, 1887. Serial No. 246,512. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. SHEPHERD, of the city, county, and State of New York, have invented a new and Improved Valve Mechanism for Sewerage Systems, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a plan view. Fig. 2 is a horizontal section taken on line *xx* in Fig. 3. Fig. 3 is a side elevation, partly in section, the section being taken on line *yy* in Fig. 1. Fig. 4 is an enlarged longitudinal section of the locking mechanism. Fig. 5 is a front elevation showing the valve-holding mechanism with the valve closed. Fig. 6 is a front elevation showing the valve mechanism with the valve open. Fig. 7 is a plan view of the valve-retarding weight, and Fig. 8 is a plan view of the rod-guide.

Similar letters of reference indicate corresponding parts in all the figures.

The object of my present invention is to improve the sewerage system for which Letters Patent No. 361,456 were granted to me April 19, 1887.

My present invention is designed to provide devices for retarding the closing of the valve at the end of the sewage pipe, to give the contents of the pipe time to escape before the valve closes.

My invention consists in the combination, with a counterweighted valve, of a locking device for holding the valve closed, a float for releasing the locking device, an auxiliary weight adapted to be thrown upon the valve-lever, and locking mechanism for releasing the weight and valve-lever in succession, all as hereinafter more fully described.

To the downwardly-turned end of the sewage-pipe A is fitted the valve B, which is connected by arms *a* with the rock-shaft C, journaled in ears *b* projecting from the side of the sewage-pipe. To the rock-shaft C is secured a lever, D, carrying an adjustable weight, *e*, and provided with an arm, *d*, extending beyond the shaft C.

To the side of the sewage pipe A, opposite the ears *b*, is attached a case, E, by the strap *e*. In the case E is pivoted a latch, *f*, which projects through a slot in the end of the case

in position to engage the edge of the valve B. The inner end of the latch *f* is prolonged beyond its pivot *g* and provided with a notch, *h*. In the case E is pivoted a catch-lever, *i*, the upper end of which engages the notch *h* in the inner end of the latch *f*, while the lower end projects through a slot in the bottom of the case in position to be engaged by the cam *j*. The upper end of the catch-lever *i* is thrown into engagement with the said latch by means of the spring *k*, secured to the end of the casing and bearing upon the upper end of the catch lever. The latch *f* is provided upon one of its sides with a triangular projection, *l*, which is engaged by a triangular projection, *m*, on the upper end of the spring *n*, secured in the casing. A pin, *o*, projects from the side of the latch *f* through a curved slot, *p*, in the side of the casing, in position to be engaged by the arm *d* of the lever D in the manner presently to be described. The cam *j* is secured to one end of a shaft, *q*, journaled in an arm, *r*, projecting downward from the casing E, and to the opposite end of the shaft is secured an arm, *s*, at right angles to the cam *j*.

At the side of the sewage-pipe A, near the angle thereof, is formed a chamber, F, in which is journaled a rock-shaft, *t*, provided with an arm, *u*, carrying a float, G. One end of the shaft extends through the wall of the chamber F and is provided with an arm, *v*. The arm *v* is connected by a rod, *w*, with one end of a lever, H, fulcrumed on the back of the extremity of the sewage-pipe, the opposite end of the said lever H being connected by a rod, *a'*, with the arm *s*.

To the journal-box *b'* of the shaft C is secured a disk, I, provided with curved slots *c' c'*, which are arranged upon opposite sides of a vertical diametrical line of the disk I. To the lever D is attached the curved rod *d'*, which extends half-way around the periphery of the disk and is provided at the end adjoining the lever with a fork, *e'*, in which is journaled a roller, *f'*, placed in the slot *c'*. Upon the opposite end of the curved rod *d'* is secured a similar fork, *e''*, carrying a roller, *f''*, within the slot *c'*.

The movable weight J is provided with ears *g'*, between which are journaled the rollers *h' h'*, the roller *h'* being arranged within the slot

c' , and the roller h^2 being arranged to roll upon the periphery of the disk I. The weight J is provided with a pin, i' , projecting from the face thereof.

- 5 To the face of the disk I, on a level with the shaft C, is pivoted a forked lever, j' , provided with a notch, k' , and to the face of the said disk, near the lever j' , is pivoted a catch-lever, l' , adapted to engage the notch k' in the lever
- 10 j' , the said catch-lever being pressed by a spring, m' , also attached to the face of the disk. A lever, n' , pivoted to the face of the disk I, engages the inner surface of the end of the catch-lever l' , and is connected by a link, o' ,
- 15 with a trigger-lever, p' , pivoted to the face of the disk I and projecting into the path of the fork e^2 . To the face of the disk I, above the shaft C, is pivoted a forked lever, j^2 , provided with a notch, k^2 , and near the lever j^2 a catch-
- 20 lever, l^2 , similar to that already described, is pivoted, the said lever being acted upon by the spring m^2 and arranged to be moved by a lever, n^2 , pivoted to the face of the disk I and extending downward into the path of the arm
- 25 d of the lever D, and also into the path of the pin i' of the weight J.

The operation of my improved valve mechanism is as follows: The valve B being closed, when the lower end of the sewage-pipe A be-
 30 comes filled so as to lift the float G, the movement of the float is transferred through the shaft t , arm v , rod w , lever H, rod a' , arm s , shaft g , and cam j to the catch-lever i , thus releasing the latch f , which is moved down-
 35 ward by the weight of the valve B and the superimposed sewage until the apex of the triangular projection l on the latch f passes the apex of the triangular end of the spring m , when the inclined side of the end of the
 40 spring, acting upon the side of the triangular projection l , will cause the latch to drop into its lowest position. The valve B being released, the weight of the sewage turns the valve against the pressure of the weight c
 45 and causes the rod d' to strike the trigger p' , moving the lever n' , which withdraws the catch-lever l' from the forked lever j' , releasing the pin q' , projecting from the weight
 50 J, allowing the said weight to fall in a curved line, the movement of the weight being controlled by the curved slot c' in the periphery of the disk I. When the pin q' reaches the lower end of the lever n^2 , the said lever n^2 is turned on its pivot, removing the catch-lever
 55 l^2 from the forked lever j^2 , thus releasing the fork e' on the end of the curved rod d' adjoining the lever D, allowing the weighted end of the said lever to descend as soon as the sewage has been discharged from the pipe A; but the

descent of the weighted end of the lever D is 60 retarded by the engagement of the pin i' , projecting from the weight J, with the forked lever j' , thereby causing the slow closing of the valve B and allowing time for the complete discharge 65 of the sewage-pipe. When the weight J reaches the forked lever j' , it engages the fork of the lever and turns the said lever until the notch k' is engaged by the catch-lever l' , thereby holding the weight in readiness for another opening 70 of the valve B and a repetition of the operation just described.

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

1. The combination, with the discharge-pipe 75 provided with a float-chamber and the valve of the sewerage system, of a catch for holding the valve closed, a float placed in the float-chamber for releasing the catch, and mechanism 80 for retarding the closing of the valve, substantially as specified.

2. The combination, in a sewerage system, of the discharge-pipe A, provided with the float-chamber F, the valve B, hinged to the open end of the said pipe and adapted to close 85 it, the latch f , provided with the double-acting spring n , the catch-lever i , cam j , the float G, shaft t , arm v , rod w , lever H, rod a' , and arm S, intermediate between the said float and the cam-lever j , substantially as specified. 90

3. The combination, with the valve B and counterweighted arm D, secured to the pivot of the said valve, of an auxiliary retarding-weight, J, the catch k' , pawl l' , catch k^2 , pawl 95 l^2 , and the levers n' , p' , and n^2 , substantially as described.

4. The combination, with the valve B and weighted lever D, connected therewith, of the slotted disk I, curved rod d' , carrying rollers 100 f' f^2 in the slots of the disk I, the weight J, provided with the pin i' and rollers h' h^2 , the forked levers j' j^2 , spring-pressed catch-levers l' l^2 , the lever n' and trigger p' , and the lever n^2 , substantially as specified.

5. In a sewerage system, the combination, 105 with the pipe A and valve B, of the latch f , provided with the stud o , the weighted lever D, attached to the pivot of the valve B and provided with the arm d , the slotted disk I, curved rod d' , carried by the arm D and provided 110 with rollers f' f^2 , the auxiliary weight J, the catch k' , pawl l' , lever n' , trigger p' , catch k^2 , pawl l^2 , and lever n^2 , substantially as specified.

CHARLES H. SHEPHERD.

Witnesses:

EDGAR TATE,

WM. W. LUYSER.