(No Model.) 2 Sheets—Sheet 1.

G. S. PIERSON.

APPARATUS FOR THE INTERMITTENT DISCHARGE OF SEWAGE, &c.

No. 316,567. Patented Apr. 28, 1885.

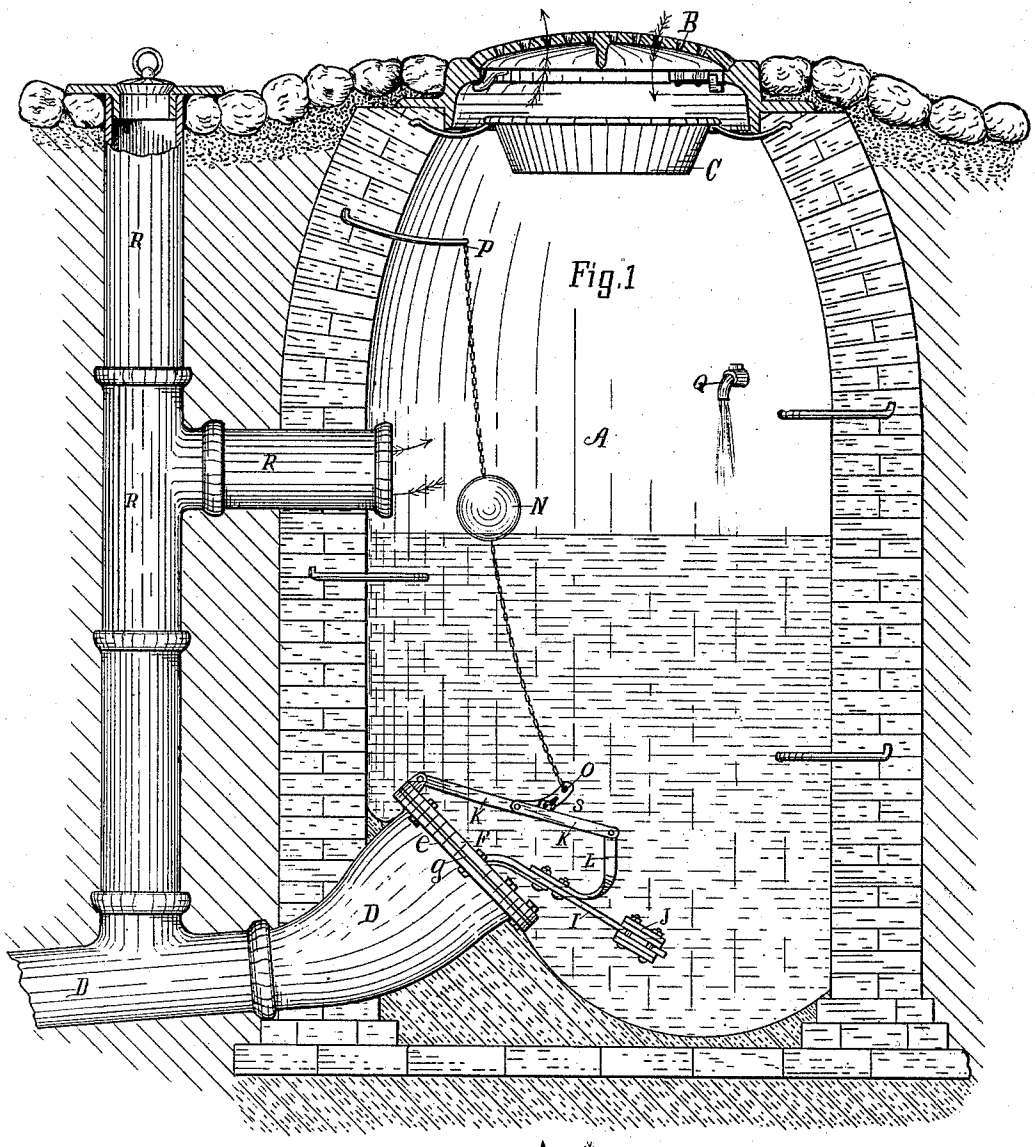


Fig. 1

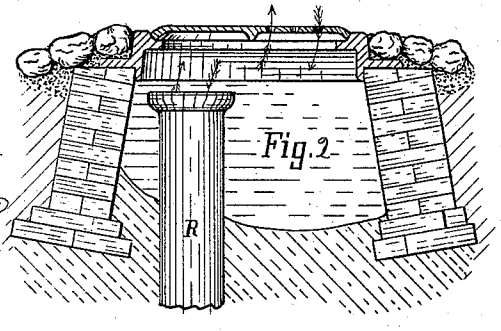


Fig. 2

Witnesses.
John C. Perkins.
Francis Strong

Inventor
Geo. S. Pierson

N. PETERS. Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

G. S. PIERSON.

APPARATUS FOR THE INTERMITTENT DISCHARGE OF SEWAGE, &c.

No. 316,567. Patented Apr. 28, 1885.

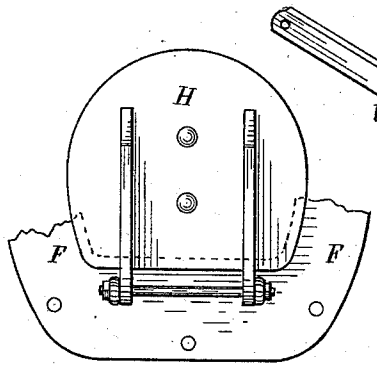


Fig. 5

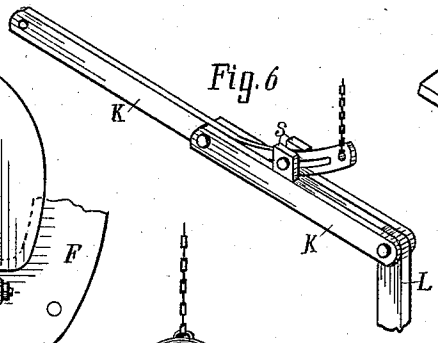


Fig. 6

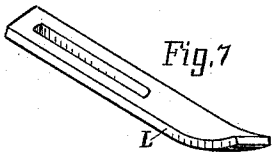
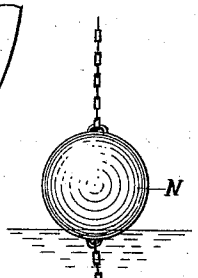


Fig. 7



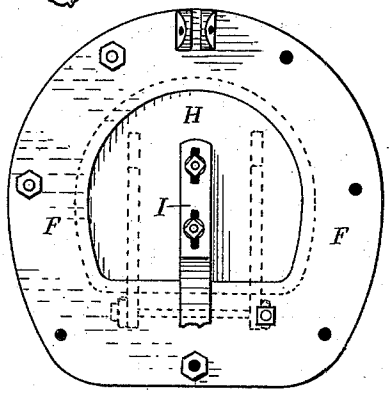


Fig. 4

Fig. 3

Fig. 8

Witnesses.

John C. Perkins.

Lawrence Strong

Inventor.

Geo. S. Pierson

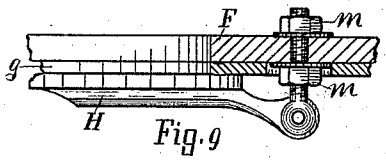


Fig. 9

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

GEORGE S. PIERSON, OF KALAMAZOO, MICHIGAN.

APPARATUS FOR THE INTERMITTENT DISCHARGE OF SEWAGE, &c.

SPECIFICATION forming part of Letters Patent No. 316,567, dated April 28, 1885.

Application filed July 26, 1884. (No model.)

To all whom it may concern:

Be it known that I, GEORGE S. PIERSON, a citizen of the United States, residing at Kalamazoo, in the county of Kalamazoo and State of Michigan, have invented a new and useful Apparatus for the Intermittent Discharge of Sewage and other Liquids, which invention has not been patented to myself or to others with my consent or knowledge in any country, of which the following is a specification.

My invention relates to improvements in apparatus whereby sewage or other liquid is collected and intermittently discharged; and the objects of my invention are, first, to provide a valve or gate and accessory mechanism by which the liquid may be intermittently discharged; second, to provide for a free passage of air at all times between the discharging tank or vessel, the sewer or receptacle into which the liquid is discharged, and the outer air, each and all; third, to provide an overflow independent of the valve or gate. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a view of the apparatus in vertical section and elevation; Fig. 2, a section of the ventilating-pipe and inclosing-basin; Fig. 3, an enlarged sectional view of the discharge-valve and accessory mechanism; Figs. 4 and 5, exterior and interior views of the valve and its seat; Figs. 6, 7, 8, and 9, views in detail of the accessory mechanism.

Similar letters refer to similar parts throughout the several views.

A is a tank situated at the head of a sewer, or at any point where the intermittent discharge of a liquid is desired. It is provided at the top with a cover, B, perforated to allow the passage of gases, and under the perforations of which may be hung a dust-pan, C. The tank A is provided at the bottom with a funnel-shaped discharge-pipe, D, having a flange, *e*, to which is bolted a ring, F, having formed on its interior surface, in connection with the gasket *g*, inserted between the flange and ring, a seat for the valve or gate H, to which gate is rigidly bolted the arm I, carrying the counterpoise J, adjustable on the arm. The arm I is connected with a system of locking-levers, K, (to which may also be applied a poise,) forming, when in the position shown by the full lines, a rigid brace holding the valve or gate tightly closed by the bar L, which is adjustable in position on the arm I to adapt it to the locking-levers K. The valve or gate H is hinged to its seat F by hinges capable of adjustment to gaskets of different thickness by means of the opposing nuts *m*.

N is a float suspended at the level at which it is desired to have the liquid at the time of discharge from the points *o* and *p*.

Q is a cock connecting with a supply-pipe.

R is a pipe or passage connecting the discharge-pipe with the interior of the tank A independently of the valve H. A branch may also be extended upward and closed by a cover suitable for allowing inspection, or it may terminate in a basin covered by a ventilating-plate, as shown in Fig. 2, or be carried above the roof of a building, or to any desired point, in which case the perforations in the cover B may be dispensed with. The pipe R may also be within the tank.

The funnel-shaped discharge-pipe D, ring F, and valve H, with its accessory mechanism, are constructed preferably of metal. The valve seat and face may be cast with a slightly-raised projection, which may be formed in a lathe or otherwise to truly-opposing surfaces properly compressing the gasket, which is preferably of rubber. The adjustable stop *s*, controlling the position of the central pivot in the locking-levers to form a rigid brace with the least depression of the central pivot below a right line joining the extreme pivots, is preferably constructed as shown, having a bolt adjustable in a slot oblique to the direction of strain, as allowing a more accurate and permanent adjustment.

The tank A, pipe R, and discharge-pipe D being in position, I apply the gasket *g* to the interior face of the ring F, and by means of the mechanism hereinbefore described adjust the several accessory parts truly in their relative position on the ring F, which I then bolt to the flange *e* and suspend the float in the position desired.

Referring now to Fig. 1, the operation of the device is as follows: The several parts being in the position shown by full lines, the liquid is admitted as desired, and accumulates in the tank up to the level of the float. The brace K, though rigid longitudinally, readily

yields laterally in the direction of the float, and buckles. The valve H being released is opened by the pressure on its face, and assumes the position shown by the dotted lines. The poise J having been so adjusted on the arm as to barely overbalance the valve in this position, causes it to close when the liquid stops running over it, and the several parts assume their first position. Should the mechanism fail to act from any cause, the liquid overflows through the pipe R and passes to the discharge-pipe. The tank may be discharged by the hand at any time desired.

The pipe R, in connection with the perforated cover B, or the extension of its branch, serves also as a ventilating-pipe, allowing a free back draft in the discharge-pipe independent of the valve, and upon the tank being emptied and the valve closed a free inflow of the atmosphere following the liquid in its discharge, which is thus greatly accelerated. It also, in the case of a tank and sewer, by connecting the interior of the tank and sewer, tends to prevent freezing in the tank.

Though preferring the arrangement and form of the various parts here shown, I do not limit myself to them in construction, except where especially referred to in the claims.

I propose in some cases to use an ordinary lift-valve, in which case I propose to abandon the arm I and to connect the levers more directly with the valve by a flexible joint. I also propose in some cases to combine the float and the overbalancing weight.

It is obvious that the apparatus as shown, though it may be cheaply constructed, can be adjusted with the utmost accuracy in all its working parts, and can be readily readjusted without removing the ring; or, if desired, the whole may be readily removed, fitted, and replaced.

I am aware that prior to my invention tanks or vessels for the intermittent discharge of sewage or other liquids have been supplied with valves acting automatically, and that such valves have been internally located in the discharge-pipe of the tank and actuated by an outwardly-projected weighted arm. I therefore do not claim such combination, broadly; but—

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. The improved apparatus herein described, consisting, essentially, of a tank in combination with a valve and its actuating mechanism adapted to discharge the contents of the tank intermittingly, and air-passages connecting the interior of the tank, its outlet, and the outer air, each and all.

2. In combination with a tank, the improved valve and actuating mechanism adapted to discharge the contents of the tank intermittingly, the same consisting in a valve opening outwardly and actuated by an overbalancing weight, and a system of levers adapted to be held in equilibrium by a stop upon slightly passing the point of greatest compression of the valve upon its closing.

3. The combination, with a tank, of a valve adapted to be automatically actuated by an overbalancing weight, a float, and a system of levers adjusted to be held in equilibrium after slightly passing, in their closing motion, the point of greatest compression of the valve, and also adjusted to release the valve through the action of a float.

4. In the herein-described apparatus, the combination, with a discharging-valve, of an air-passage from the interior of the tank terminating in a basin having a perforated cover, substantially as in Fig. 2.

5. In the improved apparatus herein described, the combination, with a discharging-valve, of an untrapped air-passage connecting the interior of the tank, its outlet, and the outer air.

6. The combination of the actuating and locking levers, the outwardly-opening valve, and the stop arresting the closing motion of the levers.

7. In a valve or seat for the intermittent discharge of liquids, the combination, with a balancing weighted arm, of a hinge adjustable with reference to the contact of the valve and seat.

8. The mutual adjustment of the actuating and locking levers, the stop arresting their closing motion, and the outwardly-opening valve.

9. The combination, with an outwardly-opening valve, of an adjustable hinge adapting the valve to its seat.

10. The combination of a valve, an adjustable valve-hinge, and an overbalancing weight, for the purposes specified.

11. In a valve for the intermittent discharge of liquids, the combination, with a system of locking levers, of an adjustable hinge adapting the valve to its seat.

12. The combination of a valve opening in the direction of pressure, and a system of locking-levers, substantially as and for the purpose specified.

13. In combination with a tank and automatic discharging-valve, an overflow-pipe connecting the interior of the tank and its outlet independently of the valve.

14. The combination of the tank with a valve and its accessory actuating mechanism adjustably and detachably connected to the tank, substantially as and for the purposes set forth.

GEO. S. PIERSON.

Witnesses:
JOHN C. PERKINS,
CHAUNCEY STRONG.