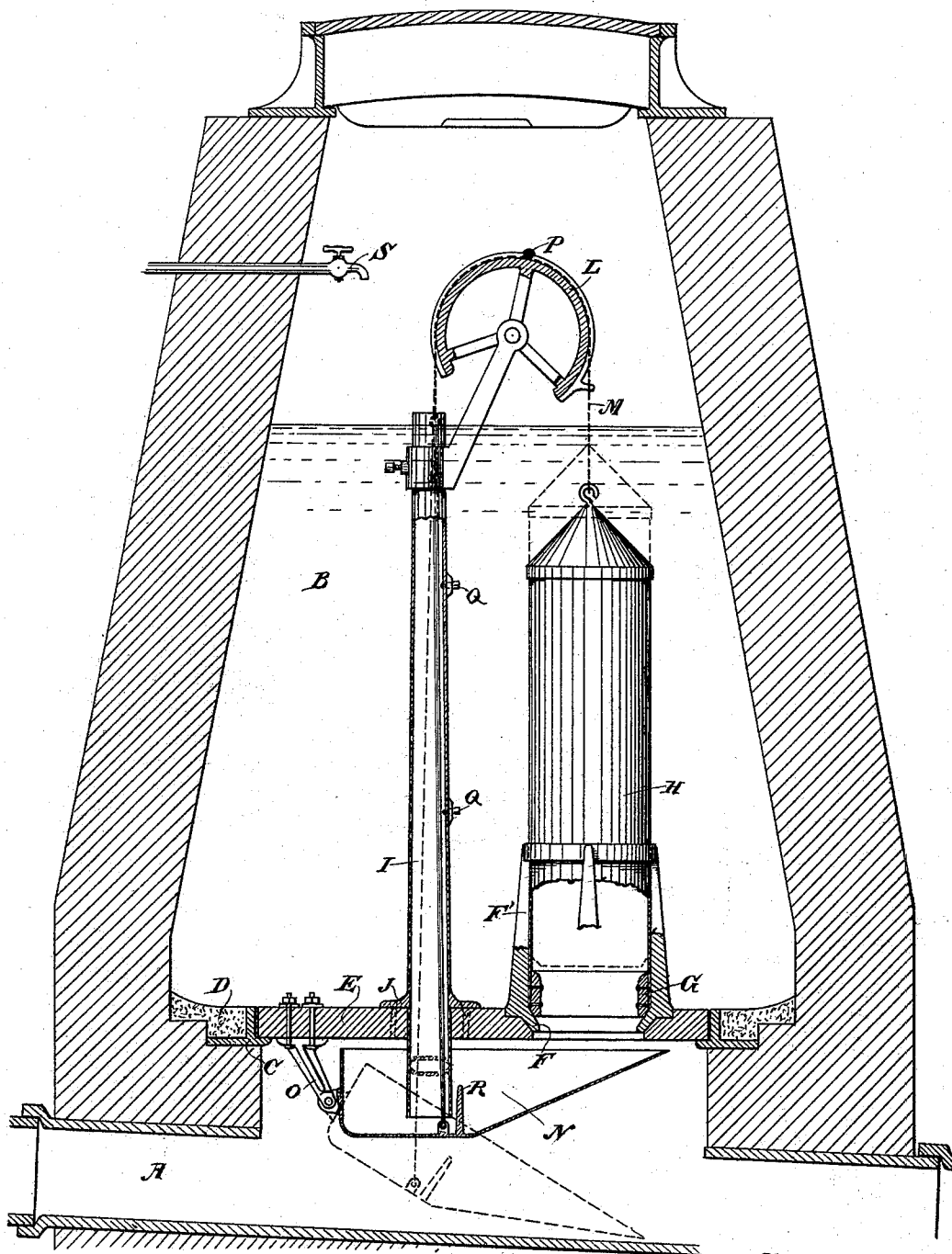


(No Model.)

P. B. DONAHOO.
AUTOMATIC SEWER FLUSHER.

No. 535,322.

Patented Mar. 5, 1895.



Witnesses,

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UNITED STATES PATENT OFFICE.

PETER B. DONAHOO, OF OAKLAND, CALIFORNIA.

AUTOMATIC SEWER-FLUSHER.

SPECIFICATION forming part of Letters Patent No. 535,322, dated March 5, 1895.

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To all whom it may concern:

Be it known that I, PETER B. DONAHOO, a citizen of the United States, residing in Oakland, Alameda county, State of California, have invented an Improvement in Automatic Sewer-Flushers; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to a device for periodically and automatically flushing and washing out sewers, or other discharge pipes. It consists in certain details of construction which will be more fully explained by reference to the accompanying drawing, in which the figure is a section of a sewer man-hole, showing my apparatus in position.

The object of my invention is to provide a means for periodically and automatically flushing and washing out sewers, or other discharge pipes, with a novel means for utilizing the man-hole well as a reservoir for the collection of water for flushing purposes, and discharging said water in a body so as to produce a strong flow through the sewer.

A is a sewer and B is the man-hole well, which is built up of masonry, and has an opening made in the bottom to connect with the sewer.

The man-hole is made in the usual manner converging from the bottom toward the top having a removable cover. The opening in the bottom is made of considerable size to allow for the introduction of an apparatus for the purpose of dragging and cleansing the sewer when necessary. Around this opening I fit an iron frame C which is set in cement as shown at D, and has a shoulder formed all around the inner edge as shown. When this iron frame has been permanently set, it remains as a part of the sewer connection and forms a perfectly tight joint, and the cement which surrounds and holds it is flush with the top of the upwardly projecting flange, and curves slightly upward toward the sides of the well, thus making a smooth and permanent bottom and a tight joint. Inside this frame is fitted the base E which I have preferably made of wood, but it may be made of any suitable or convenient material. This base supports the automatic flushing apparatus, and is removable at any time for the purpose of obtaining access to the sewer. It

fits upon the ledge or shoulder within the frame, and forms a nearly or quite tight joint. The joint may be insured by calking around the edges with oakum or any suitable calking material. Near one end of the base a large opening is made into which is set a valve seat F having upwardly extending guides F'.

The valve seat is of any suitable form or construction. In the present case I have shown it as beveled, and these parts are preferably made of brass or other metal not easily corroded. Into this seat fits a valve G which is secured to the lower end of a cylinder H, and the cylinder moves between the guides F' so as to have a vertical rise and fall and be properly guided to its seat when it closes. Toward the opposite end of the base is made another opening through which passes a tube I. This tube has a flange J cast upon or fixed to it, and adapted to rest and be secured upon the top of the base. The tube extends through the base and a short distance below it. I have preferably made this tube rectangular in cross section, of greater length than width, so as to leave space for the operation of a connecting chain, rod or rope which is movable within it for a purpose to be hereinafter described, and the major axis of the tube is greater at the base than at the top so as to allow for some movement of the connecting chain.

Above the top of the tube is journaled a wheel or segment L around which passes a rope M, one end of which connects with the top of the cylinder H which carries the valve, and the other end connects with the connecting rod or chain passing down through the tube as before described. The lower end of this rod or chain is connected with the bottom of the bucket N which is in the form of a rectangular scoop having the bottom of the front portion inclined upward so that it terminates about on a level with the top sides of the bucket. The rear end of the bucket is hinged to a bracket fastened to the base plate as shown at O, so that it is allowed to tilt about this hinge point. The rope which passes around the pulley or segment is prevented from slipping thereon by means of a pin P around which it makes a turn, or if a chain be used, the pin may pass through an

eye or link of the chain for that purpose. The cylinder H is weighted sufficiently to overcome the weight of the bucket and its connecting parts, and the valve G will normally close upon the seat F and make a tight joint. The bucket will then stand in a horizontal position as shown in the full lines, and its bottom will be approximately level with or above the top of the sewer A so as to present no obstruction to the free flow through the sewer.

A water pipe S opens into the man-hole at some suitable point, and has a cock by which the flow of water is regulated.

If it is desired to flush the sewer every day, the flow will be so adjusted that the water will rise to a point where it will overflow into the tube I, so as to fill the bucket below during that interval. If it be desired to have it flushed once a week, or once a month, the flow of water will be correspondingly regulated. If it is desired to use a smaller quantity of water, it may be done by either shortening the tube I, or by making openings in its side with stoppers as shown at Q, and by means of these, any suitable or desired amount of water may be accumulated for flushing purposes.

When the water rises to the point where it can enter the tube, it flows down and gradually fills the bucket until the weight of water in the bucket overcomes the weight of the counterbalance H. It then acts through the rod and rope or chain to raise the valve G, the bucket being depressed until its open or scoop end rests upon the bottom of the sewer. The water will then flow out in large volume through the valve opening F, and striking upon the point of the bucket will retain the latter upon the bottom of the sewer until the whole amount of water within the man-hole has been discharged.

The position of the bucket is such that it acts as a dam to prevent the water from running back up the sewer and it acts as a guide to direct it down the sewer. The bucket, itself, is also emptied by being tilted, and as soon as the flow of water which retains it in its depressed condition has ceased, the weighted cylinder H will immediately act to raise the bucket into its normal position, and close the valve when the accumulation of water within the man-hole will again commence, as all the openings and joints connecting it with the sewer are perfectly tight.

In order to form a trap and cover the lower end of the pipe, I have shown a partition R extending across the bucket and to a short distance above the bottom of the pipe I where it dips into the bucket. This partition retains a portion of the water in the rear end of the bucket which never passes out, and when the bucket again assumes its normal horizontal position, this water covers the end of the pipe and forms a trap to prevent the escape of any gases from the sewer. The apparatus thus becomes automatic and provides

for the discharge of a large quantity of water at intervals, so as to keep the sewer constantly flush and clean without any attention. If, for any reason, it becomes necessary to drag the sewer to clean it out, the base plate is easily lifted out of the surrounding frame, thus leaving a large clear opening for the introduction of the dragging apparatus into the sewer.

The overflow pipe I is important because it discharges first, all oil, grease, and substances of a like nature, which a siphon would discharge last, and which, in such a case, would be liable in time to clog and choke the apparatus.

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

1. A sewer, a man-hole and well connected therewith by an opening, a flanged frame set in cement surrounding the opening, a base removably fitted into the frame having an opening and valve seat formed near one end and a valve adapted to close the opening, a bucket hinged near the opposite end below the base adapted to tilt about its hinge, a tube extending through the base above the bucket to deliver water therein, and a rope or chain connected with the bucket and with the valve, and a pulley or segment over which the rope or chain passes whereby a downward movement of the bucket raises the valve.

2. A sewer, a man-hole, and well connected at the bottom with the sewer, a base fitting the opening having an opening and valve seat near one end, a bucket hinged below the base having its rear hinged near the opposite end below the base, so that its front portion extends beneath the valve opening and is adapted to tilt downward into the sewer, a pipe extending upwardly between the valve and the bucket hinge and adapted to conduct water into the bucket, a valve adapted to close the valve opening and a counterbalance connected therewith movable in guides to direct the valve, a rope or chain connecting with the counterbalance and valve at one end and with the bucket at the opposite end, and an intermediate pulley or segment over which the rope or chain passes whereby the depression of the bucket opens the valve, and the closing of the valve raises the bucket into its normal position.

3. A sewer, a man-hole and well having an opening in the bottom connecting with the sewer, a base adapted to fit and close said opening, a bucket having its rear end hinged beneath the base, so that it may tilt within the opening into the sewer, a pipe extending upwardly having an opening or openings through which water may enter it from the man-hole and be delivered into the bucket, an opening and valve seat near the opposite end of the base, a valve and counterweight movable in guides so as to normally close said opening which is in line above the outer and tilting end of the bucket, a pulley or seg-

ment journaled above the counterweight and water supply tube, a rope or chain connected at one end with the counterweight, passing around said pulley or segment and thence
5 down through the tube and connected with the bucket so that when the bucket is filled with water its weight will overbalance that of the valve and will open the latter whereby the water collecting in the man-hole well will
10 be discharged into the sewer.

4. The sewer, the man-hole and well having an opening connecting with the sewer, a bucket having its rear end hinged below the base and its front adapted to tilt downward
15 into the sewer, a valve opening situated above the tilting end of the bucket, guides and a counterweight connected with the valve, a rope or chain connecting at one end with the bucket and at the other with a counterweight,
20 passing over a pulley or segment whereby the bucket and valve operate in unison, the valve being open when the bucket is depressed and closed when the bucket is raised, and a partition extending across the bucket in front of
25 the point where the supply pipe enters the bucket whereby the latter is covered with water when the bucket is in its horizontal position and a trap formed.

5. A sewer flushing apparatus consisting of

a tilting bucket hinged at its rear end having
30 the front adapted to tilt downward into the sewer, an overflow supply pipe by which water is delivered into the rear end of the bucket until it is filled, an opening in line above the front end of the bucket with a valve by which
35 it is normally closed, connection between the valve and the bucket whereby the depression of the bucket opens the valve to discharge the contents of the chamber within which the
flushing apparatus is located and the flow of
40 water through the valve opening acts to retain the front of the bucket in its depressed condition and the valve opened until the water is discharged.

6. The combination, with a sewer, and a
45 means for flushing the same, of a tilting bucket in the plane of the discharge of the flushing devices, said bucket having a transverse partition for retaining a portion of the water in the bucket to form a trap, and a vertical over-
50 flow pipe whereby the bucket is filled.

In witness whereof I have hereunto set my hand.

PETER B. DONAHOO.

Witnesses:

S. H. NOURSE,

H. F. ASCHECK.