

(No Model.)

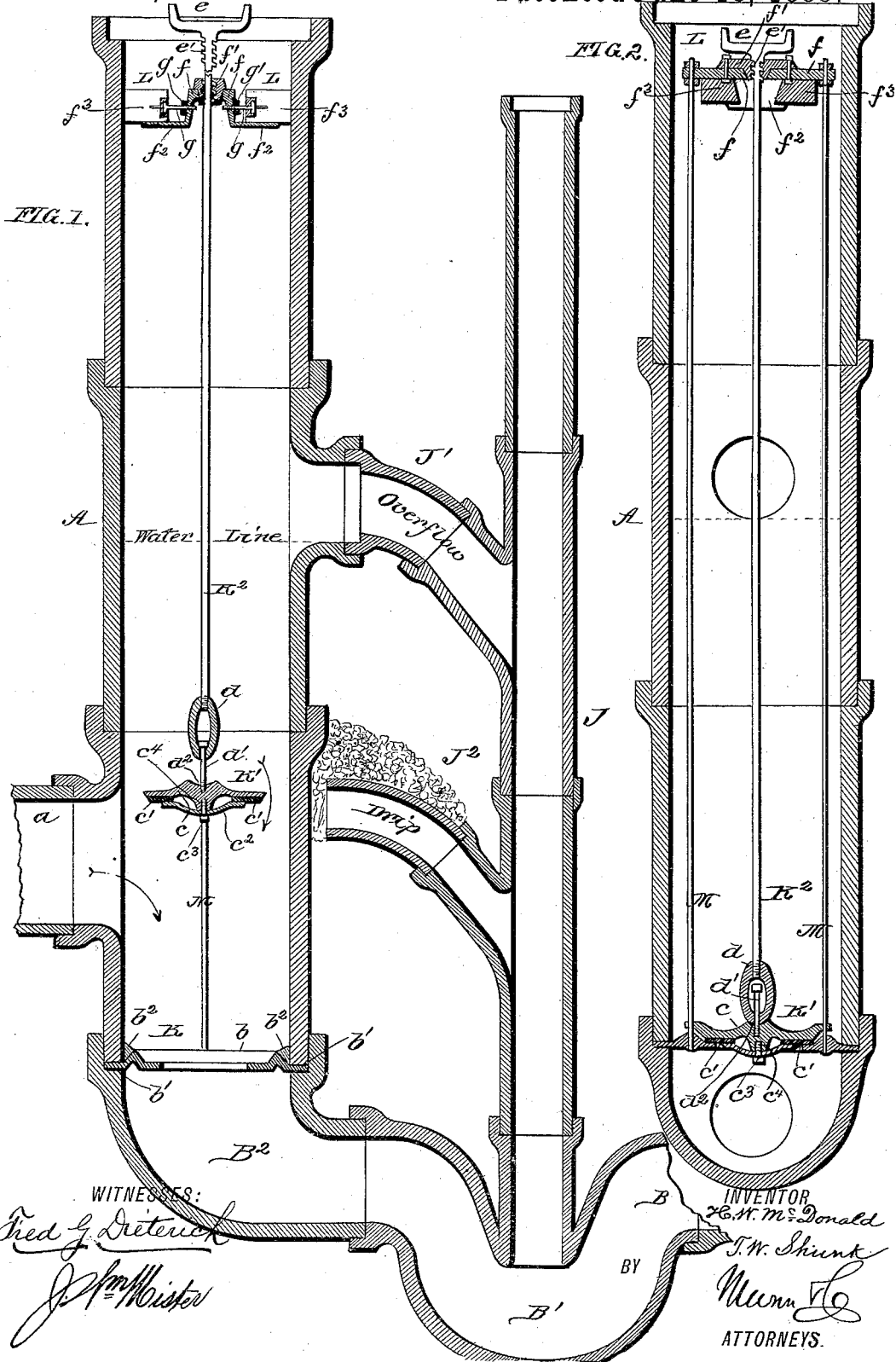
2 Sheets—Sheet 1.

H. W. McDONALD & T. W. SHUNK.

FLUSHING SYSTEM FOR DRAINS AND SEWERS.

No. 405,587.

Patented June 18, 1889.



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FIG. 3.

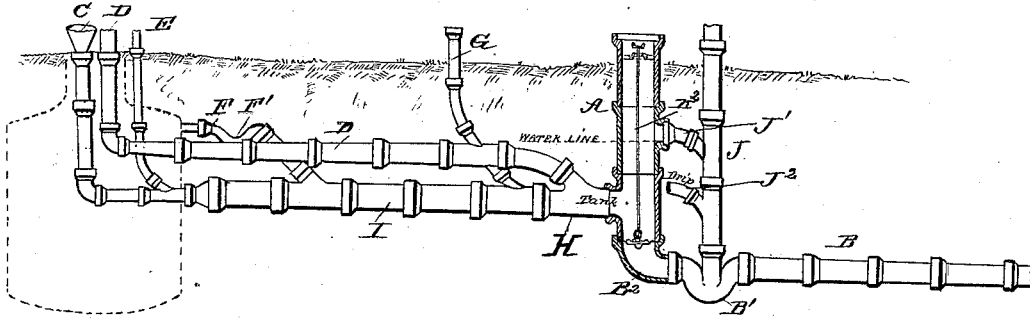
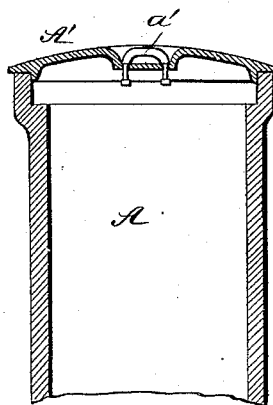


FIG. 4.



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# UNITED STATES PATENT OFFICE.

HIRAM W. McDONALD AND THOMAS W. SHUNK, OF BUCYRUS, OHIO.

## FLUSHING SYSTEM FOR DRAINS AND SEWERS.

SPECIFICATION forming part of Letters Patent No. 405,587, dated June 18, 1889.

Application filed July 26, 1888. Serial No. 281,144. (No model.)

### *To all whom it may concern:*

Be it known that we, HIRAM W. McDONALD and THOMAS W. SHUNK, of Bucyrus, in the county of Crawford and State of Ohio, have invented a new and useful Improvement in Flushing Systems for Drains and Sewers, of which the following is a specification.

This invention contemplates certain improvements in flushing systems for drains and sewers, having for its object to utilize the waste water from the various water-receptacles throughout a building or house, as also from any point upon and around or outside the building—as, for instance, a cistern or well—for cleaning out the drains and sewers; and to these ends the nature of the invention consists of a system of waste-water pipes leading to a common tank or receptacle which is adapted to permit its accumulated water or contents to be instantaneously discharged, and in certain details of construction, substantially as hereinafter more fully set forth, and pointed out in the claims.

In the embodiment of our invention we employ a tank or receptacle A, suitably disposed, say, at the head of the drain-pipe B, into which, at a common point *a*, is received the waste water from the waste-water pipes C, D, E, F, and G, connecting with the various water-receptacles throughout a building or house and with a cistern or well, or a conductor from roof of building or veranda. The connection between said tank or receptacle A and said pipes is effected, however, by means of a trunk-like pipe H, with one branch of which connects the pipe D, while with the main arm of which connects a similar but greater lengthened trunk-like pipe I. With the trunk-like pipe I connect the pipes C, F, and G, the cistern overflow-pipe F' having a trap F', while with the pipe C connects the pipe E. The connection between the tank or receptacle A and the drain-pipe B is made by means of a trap-pipe B' and a coupling B<sup>2</sup>, and with the trap-pipe B' connects a relief-pipe J, which may connect with the roof of the house.

The tank or receptacle A has connection above the water-line with the pipe J by an

overflow-pipe J', while with the same pipe J connection is also made for a drip-pipe J<sup>2</sup> for carrying off water from around the pipe J to prevent the displacement of the latter, as would occur from the action of frost that would form if no provision were made to carry off water at this point.

The tank or receptacle A is provided with a valve-seat K, which is formed with an annular conical ridge or elevation *b* adjacent to its outer edge or flange *b'*, which is received between the lower end of the tank or receptacle and the upper end of the coupling B<sup>2</sup>. This construction of valve-seat provides more especially for the water-tight packing of the joint formed by the connection of the valve-seat with the tank and coupling, in that between the ridge or elevation *b* of said valve-seat and the tank or receptacle A is furnished a space, which is filled in with a cement or other packing *b*<sup>2</sup>.

K' is a valve, which is arranged within the tank or receptacle A, and is adapted to rest upon the seat K. This valve consists of a plate *c*, upon the under side of which is held a gasket or packing *c'* by means of a spring disk or plate *c*<sup>2</sup>, which is held or adjusted in place by a screw *c*<sup>3</sup>, passing through said plate *c*<sup>2</sup> and entering a central pendant *c*<sup>4</sup> of the plate *c*. The valve K' is provided with a stem or rod K<sup>2</sup>, which is connected thereto by a turn-buckle or swivel *d*. It consists of an elongated or elliptical frame or coupling, into the upper central portion of which is screwed the lower end of the stem K<sup>2</sup>, while its lower central portion has an aperture, through which loosely passes a headed pin *d'*, which is screwed centrally in a concavity *d*<sup>2</sup> in the upper surface of the plate *c* of the valve K'. The valve stem or rod K<sup>2</sup> is provided with a handle *e* for its convenient manipulation, while immediately below the latter it is provided with a screw-threaded surface, as at *e'*, the purpose of which will appear farther on.

In the upper part, near the top of the tank or receptacle A, is arranged a bracket or spider L, which is constructed as follows: *f* is a cross piece or plate, which is provided with apertures—one at each end—through which pass and to which are fastened by nuts the upper

threaded ends of guide-rods M M, the lower ends of which are screwed into the valve-seat K, while they pass bodily through apertures in the valve K' to permit of the guiding of the latter thereby. Seated in and bolted to the center of the plate or cross-piece *f* is a bushing-like block *f'*, the aperture of which is screw-threaded to permit of the engagement therewith of the screw-threaded surface *e'* of the valve rod or stem K<sup>2</sup>.

The plate or cross-piece *f* in a plane at right angles to the points of connection of the rods M therewith is stepped, as at *f*<sup>2</sup>, and upon its stepped portions carries segmental clamp-blocks *f*<sup>3</sup> *f*<sup>3</sup>, which have swiveled thereto screw-bolts *g g*, screwing or working in the vertical portions of the plate *f*. Upon the screw-bolts *g g* are fitted nuts *g' g'*, by properly manipulating which the segmental clamp-blocks *f*<sup>3</sup> *f*<sup>3</sup> are thrown outward and caused to impinge against the inner side of the tank or receptacle A, and thus secure the bracket L in place. By reversing the movement of the nuts *g' g'* the clamp-blocks *f*<sup>3</sup> *f*<sup>3</sup> are withdrawn from the inner side of the tank or receptacle A, and then, by taking off the nuts at the upper ends of the rods M, the bracket L, together with the valve K' and its stem or rod K<sup>2</sup>, can be removed, as is required in repairing or cleaning the parts.

The tank or receptacle A is fitted with a suitable cover A', which is provided with a hand-hold *a'*, adapted to be let into a depression in said cover out of the way when not in use.

In operation it will be seen that upon the accumulation in the tank or receptacle A of the waste water conducted from the various points, as above designated, thereto by unscrewing the valve rod or stem from the bracket L, which, when accomplished, will lift the coupling or frame *d* of the swivel or turnbuckle to the head of the pin *d'* and permit of the subsequent sudden lifting or raising of the valve, and then by pulling upward the valve rod or stem the required extent the water in said tank or receptacle is suddenly and bodily discharged below, permitting it to pass into and flush out the drain-pipe. It necessarily follows as the water rushes on through and carries out all filth from the drain-pipe it will enter the sewer with great force and volume, and by its action also clean out the sewer, and thus keep both the drain and sewer in good sanitary condition. In case of the failure to timely open the valve in the event of a rain or of the rising of the water above the water-line in said tank or receptacle provision is made for carrying off the overflow by the overflow-pipe J', emptying into the pipe J, which will thus prevent the backing up of the water in the waste-water pipes.

It will of course be understood that the tank or receptacle A has a greater holding

capacity than the drain-pipe, being constructed of pipe sufficiently large (if not supplied by length of pipe-line) to have the required holding capacity and about twice the area or diameter of the latter, having obviously in view the letting into the drain-pipe at once upon the opening of the valve of the tank or receptacle (also in diameter about half that of the tank or receptacle) a volume of water greatly in excess of the area or cross-section of the drain-pipe, whereby the water is caused to enter the latter under a great head of pressure, and thus do its work with great efficiency and expedition.

Having thus fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a flushing system for drains and sewers, the combination of the waste-water pipes, a tank or receptacle connecting with the drain-pipe, and a relief-pipe, also connecting with the drain-pipe and having an overflow-pipe connection with the tank or receptacle, as also a drip-pipe, substantially as set forth.

2. In a flushing system for drains and sewers, the combination of the tank or receptacle A, the flanged coupling B<sup>2</sup>, and the valve-seat K, secured between the lower end of the receptacle and the coupling and provided with the annular conical ridge *b* adjacent to the outer edge or flange *b'* of the valve-seat and of slightly less diameter than the receptacle, substantially as described, whereby a packing-seat is formed between the ridge and the inner surface of the receptacle, as set forth.

3. In a flushing system for drains and sewers, the combination, with the waste-water pipes and drain-pipe, of the tank or receptacle provided with a valve and guide-rods, said guide-rods passing through apertures in said valve and connecting with the valve-seat and a bracket in said tank or receptacle, substantially as set forth.

4. In a flushing system for drains and sewers, the combination, with the waste-water pipes and drain-pipe, of the tank or receptacle provided with a valve having its stem or rod passing through and having a screw-threaded connection with a bracket provided with segmental clamp-blocks adjustable to and from the inner side of the tank or receptacle, substantially as set forth.

5. In a flushing system for drains and sewers, the combination, with the waste-water pipes and drain-pipe, of the tank or receptacle provided with the valve, the stem or rod of which passes through a bracket having a plate provided with stepped portions upon which are supported segmental clamp-blocks, screws having swiveled connection with said blocks and stepped portions of the bracket, and nuts working upon said screws, substantially as described.

6. In a flushing system for drains and sew-

ers, the combination, with the tank or recep-  
tacle, of the bracket consisting of a plate  
provided with a central bushing-like block  
and with stepped-like portions, segmental  
5 clamp-blocks supported upon said stepped  
portions of the plate; and screws swiveled to  
said blocks and working in said stepped por-

tions of the plate, and nuts fitted upon said  
screws, substantially as specified.

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