

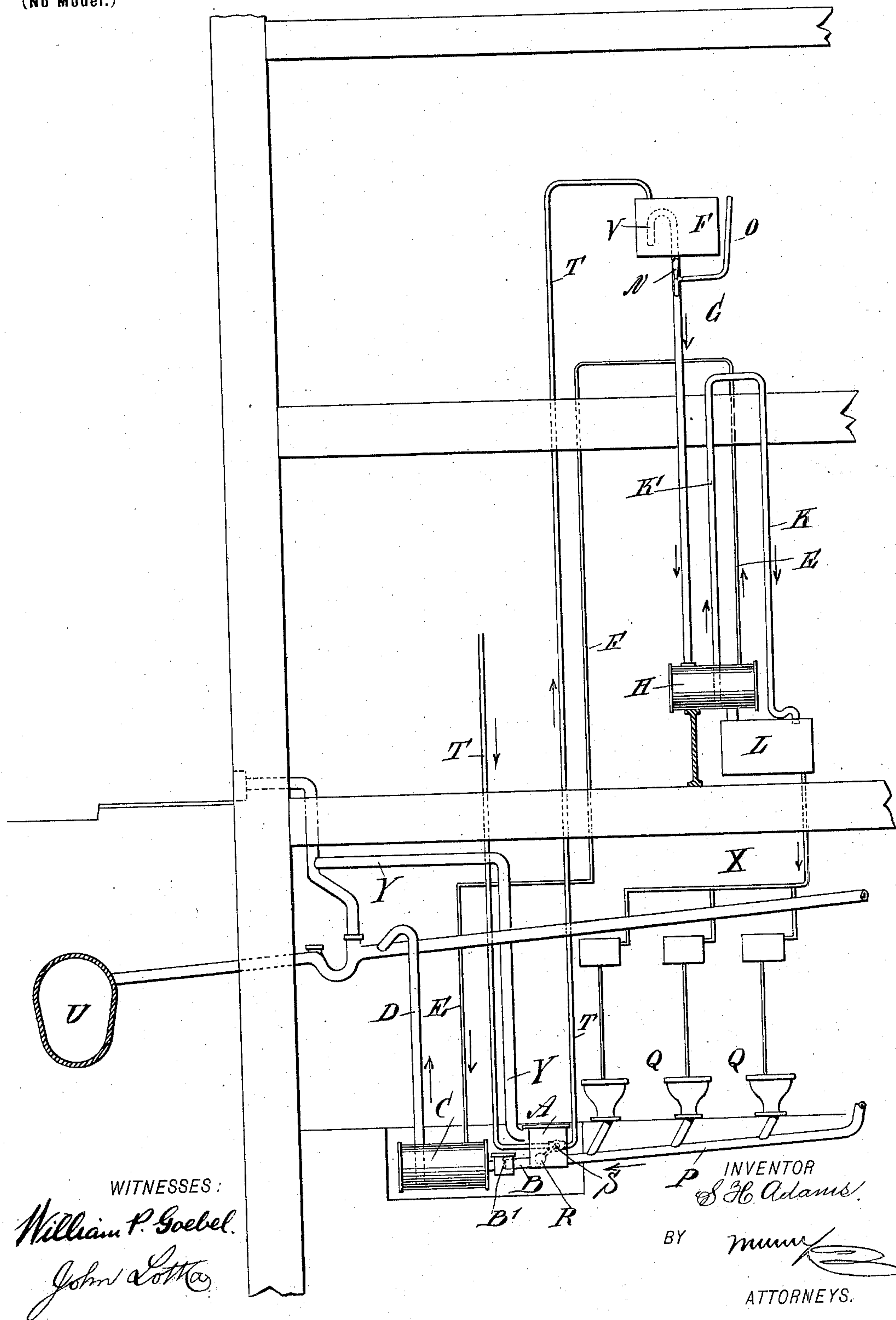
No. 609,321.

Patented Aug. 16, 1898.

S. H. ADAMS.  
APPARATUS FOR RAISING SEWAGE.

(Application filed May 3, 1897.)

(No Model.)





# UNITED STATES PATENT OFFICE.

SAMUEL HENRY ADAMS, OF LONDON, ENGLAND.

## APPARATUS FOR RAISING SEWAGE.

SPECIFICATION forming part of Letters Patent No. 609,321, dated August 16, 1898.

Application filed May 3, 1897. Serial No. 634,893. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL HENRY ADAMS, of London, England, have invented a new and useful Improvement in Apparatus for Raising Sewage, of which the following is a full, clear, and exact description.

My invention relates to apparatus for raising sewage, and has for its object to provide an apparatus of this class which will be simple and efficient and which will work economically.

The invention has special reference to the raising of sewage from the basement of buildings to the level of the sewer in the street; and it consists in the novel construction and arrangement of parts hereinafter described and claimed.

Reference is to be had to the accompanying drawing, which is a diagrammatic elevation of my improved sewage-raising device.

The apparatus comprises a sewage-receiver A, into which leads the pipe P, carrying the sewage from the water-closets Q or from any other source. The receiver A connects with a forcing-cylinder C by means of a pipe B, in which I arrange a valve B', preferably a flap-valve, opening outwardly—that is, toward the cylinder C. The forcing-cylinder also forms a sewage-receptacle. In the sewage-receiver A is located a float R, whose movement controls a cock or valve S in the water-supply pipe T, which is connected to the water-mains and leads to a flush-tank F, generally arranged at a considerably higher level than the sewer U, to which the forcing-cylinder C is connected by means of the discharge-pipe D.

In the flush-tank F is located a siphon V, forming the upper end of a pressure-pipe G, whose lower end is connected to an air-cylinder H. Into said cylinder H dips one leg K' of a withdrawing-siphon, the outlet or discharge leg K of said siphon leading to the storage-tank L, from which water is supplied through pipes X to the tanks of the water-closets Q or to any other place where the water is used for flushing or other purposes. An air-pipe E leads from the air-cylinder H to the forcing-cylinder C. In the pressure-pipe G, I arrange a cone N, and adjacent thereto I connect a vent-pipe or air-pipe O, extending to or beyond the level of the top

of the flush-tank, the cone being intended to act on the injector principle, so that the water flowing therethrough will draw in a corresponding amount of air through the vent-pipe O.

The operation of my improved apparatus is as follows: The sewage discharged into the pipe P rises in the receiver A and in the forcing-cylinder C, opening the valve B' on its way to said cylinder. The float R rises with the inflowing sewage and at a predetermined level opens the valve or cock S. Water then passes from the main through the pipe T to the flush-tank F, whence it proceeds through the siphon V and pressure-pipe G to the air-cylinder H. On its passage through the pipe G the water, as hereinbefore mentioned, draws in a supply of air through the vent-pipe O. The air contained in the cylinder H is compressed and the vent-pipe O is provided for the purpose of drawing in a supplementary supply of air, and thus compensating wholly or in part for the loss of air volume due to compression, so that the falling water will practically raise its own weight or volume of sewage. The air passes through the air-pipe E to the forcing-cylinder C, raising the sewage therein to the level of the sewer through the discharge-pipe D, it being understood that the back pressure closes the valve B' to prevent the sewage from being forced back into the pipe P. The water used at each operation and flowing into the air-cylinder H is discharged into the storage-tank through the siphon-pipe K K', the water being used subsequently for flushing the water-closets Q or for a like purpose. It will be seen that in this case I make use for raising the sewage of the same water that would be used in any event for flushing purposes. I therefore have no additional consumption of water for raising the sewage—that is, the operation of the sewage-raising part of the apparatus costs practically nothing. This economical working I consider an important advantage of my invention. Of course as soon as the sewage has been raised from the forcing-cylinder C the valve B' will open and the level of the sewage sinking in the receiver A the float R will fall, closing the valve S, and thus interrupting the raising operation. The apparatus will therefore op-



erate automatically to raise the sewage when there is any to be raised and will stop likewise automatically when all the sewage has been forced up the discharge-pipe D, so that  
5 the working of the apparatus will be as economical as possible.

It will be advantageous to place the flush-tank F as high above the air-cylinder H as possible, since the raising action and the  
10 amount of air induced depend upon the fall of the water through the pressure-pipe G. In some cases I provide two or more superposed cones or air-inducers N, with corresponding vent-pipes O, so as to supply a sufficient quantity of air.  
15

I prefer to make the sewage-receptacle C and the air-receptacle H cylindrical in order to obtain the greatest capacity with the least possible depth.

20 Various modifications may be made within the scope of the appended claims. The valve B' might be placed where the pipe P enters the receiver A, and in that case the receiver and the forcing-cylinder might be combined  
25 into one receptacle.

The receiver A has a lid which is screwed down air-tight. Ventilation is provided to this receiver by the vent-pipe Y.

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

1. The combination with the receptacle for the sewage or other matter, of a float in said receptacle, a water-supply pipe having a  
35 valve controlled by said float, an air-receptacle connected to said water-supply pipe, an air-pipe leading from the air-receptacle to the sewage-receptacle, and a discharge-pipe con-

nected to the sewage-receptacle, substantially as described. 40

2. The combination of an automatic flushing-tank, a valve controlling the water-supply to said tank, a receptacle in which said valve is operated by the sewage to be raised, an air-receptacle, a forcing-receptacle, an air-  
45 pipe connecting them, a connection from the air-receptacle to the flushing-tank, and another connection from the sewage-receptacle to the forcing-receptacle, substantially as described. 50

3. The combination with the sewage-collecting pipe and the sewage-receptacle, of the forcing-receptacle having a valved connection with the sewage-collecting pipe and also having a discharge-pipe connected to the sewer,  
55 a float in the sewage-receptacle, a water-supply pipe having a cock or valve controlled by said float, a flush-tank connected to said water-supply pipe, a pressure-pipe having a siphon connection to said flush-tank, and provided below the flush-tank with an air-inlet  
60 and a vent-pipe extending therefrom to a level higher than that of the siphon, an air-receptacle to which is connected the lower end of said pressure-pipe, an air-pipe leading  
65 from the air-receptacle to the forcing-receptacle, a withdrawing-pipe for carrying the water away from the air-receptacle, flushing or other devices connected to the withdrawing-pipe, and a connection from said flushing  
70 devices to the sewage-collecting pipe, substantially as described.

SAMUEL HENRY ADAMS.

Witnesses:

EVERARD BOLTON MARSHALL,  
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