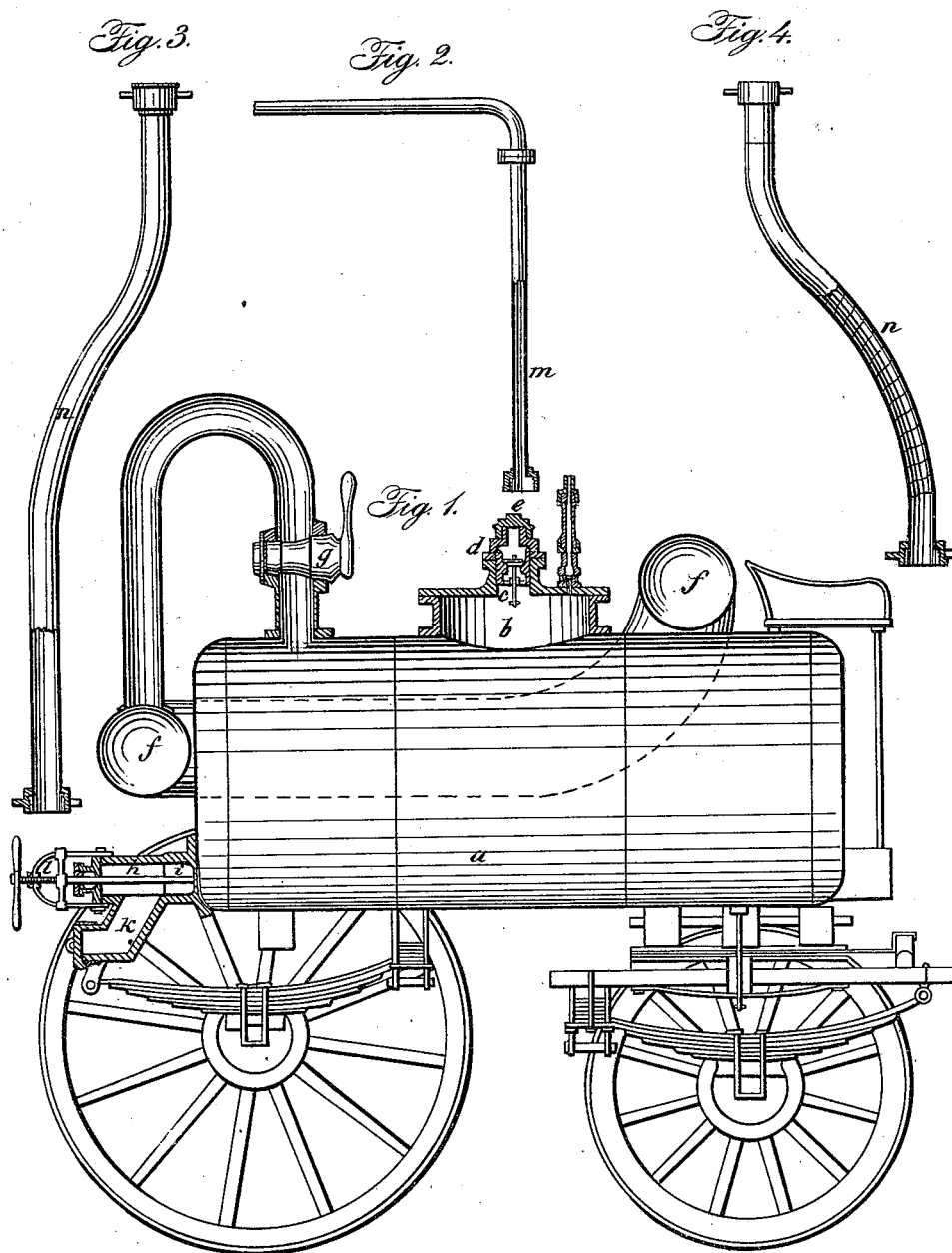


F. DATICHY.
Privy Excavator.

No. 7,834.

Patented Dec. 17, 1850.



UNITED STATES PATENT OFFICE.

FLORIMOND DATICHIZ, OF NEW YORK, N. Y.

APPARATUS FOR EMPTING PRIVIES.

Specification of Letters Patent No. 7,834, dated December 17, 1850.

To all whom it may concern:

Be it known that I, FLORIMOND DATICHIZ, of New York, in the county of New York and State of New York, have invented certain Improvements in Machinery for Emptying Privies by Atmospheric Pressure, and that the following is a full, clear, and exact description of the principle or character which distinguishes them from all other things before known and of the usual manner of making, modifying and using the same reference being had to the accompanying drawings, of which—

Figure 1 is a longitudinal section of the receiver, &c. Fig. 2 the air pump suction pipe, and Figs. 3 and 4, the flexible suction hose.

My improvements consist in the addition of a chamber or gasometer to the receiver of the apparatus for emptying vaults of privies by atmospheric pressure; the object being to allow space for the gases contained in the suction pipes and those arising from the fecal matter, without their occupying a part of the receiver itself, and the gasometer being separated from the receiver and communicating with it only by a small passage, the matter (which entirely fills the receiver in consequence of the additional space provided for the gases) has but a small portion of its surface exposed to the gases, and is thus prevented from becoming mixed with them.

The apparatus for effecting the above mentioned purpose of emptying vaults of privies consists of a cylindrical receiver (a Fig. 1) which is of metal, made perfectly air tight and capable of sustaining either internal or external pressure. The receiver is mounted on wheels to facilitate its transportation from place to place, by hoses. On the upper side of it is a short cylinder (b) in the cover of which is inserted the exhaustion valve (c) which opens outward. The opening of the valve box (d) is closed by a screw cap (e). (f) is a chamber or gasometer having a pipe communicating with the receiver, which communication can be closed by a stop cock (g). The gasometer is in the form of a tube disposed around the receiver, which form has the advantage of bringing the weight of it lower down. At the lower back end of the receiver, is the piece (h), which is truly bored internally and has a piston valve (i) which slides air tight therein. A short pipe (k) proceeds

from the under side of the piece (h) having its end closed by the screw cap. The rod of the piston valve projects through a stuffing box in the piece (h) and is jointed by a lever, to a handle at the side of the receiver. To secure the valve in its closed position, a screw (l) is provided, which presses on the end of the piston valve wa, and prevents it from opening from internal pressure. The receiver is also provided with a glass tube, similar to those used in locomotive boilers for ascertaining the height of the liquid contents.

The operation is as follows: The receiver (a) is connected with a powerful air pump, (worked by a steam engine or other power,) by the suction pipe (m Fig. 2) which screws on to the opening of the valve box (d), after removing the screw cap (e). The receiver (a) and the gasometer (f) are then exhausted by the air pump, and the degree of exhaustion is shown by a vacuum gauge or manometer in connection with the suction pipe of the pump. When a vacuum as near perfect as possible has been attained, the suction pipe (m) is removed, and the screw cap (e) replaced, the air being prevented from reëntering by the valve (c). The exhausted receiver is then drawn to the vicinity of the vault to be emptied. The cap is unscrewed from the short pipe (k) and a flexible suction hose (n) of any length is screwed on in its place, the end of which leads to the bottom of the vault. All being ready, the piston valve (i) is drawn back, by means of the lever handles, and the passage to the receiver being thus opened, the contents of the vault are forced by the pressure of the atmosphere through the hose (n) into the exhausted receiver with immense velocity. When the receiver is full the piston valve (i) is closed, and secured by the pressure screw (l), and the hose (n) detached, and the receiver then drawn away to the place of discharge. During the transportation the fermentation of the contents and the agitation of the vehicle, cause a large quantity of gas to be disengaged, which accumulates with considerable pressure in the gasometer (f). Upon arriving at the place where the fecal matter is to be discharged, the piston valve is again opened, and the receiver is emptied of its contents, with the same rapidity with which they entered, by the expansion of the gas from the gasometer pressing on the surface of the

matter. The apparatus is then taken back to the air pump to be again exhausted so as to receive another load. The use of the gasometer is to increase the capacity of the receiver, so that the latter may be entirely filled with matter, and the gases which unavoidably enter at the commencement of the operation from the suction hose, find space, without occupying a portion of the receiver itself. The effect of having these gases contained in the receiver in contact with a large surface of the fecal matter, as in machines hitherto used, is that by the motion of the carriage the gases become mixed with the matter, and froth up, so that it is impossible to expel the whole when arrived at the place of discharge, as a large portion of the compressed gas escapes with the matter. By having the part which contains the gases, a separate vessel or tubes connected with the receiver, only by a smaller tube, which can be closed if necessary by a stop cock, this mixing and frothing are effectually prevented and the gas and fecal matter kept distinct; and besides, by having the receiver entirely filled, the swing of the contents in going over rough roads is prevented.

In order to raise matter from vaults which average from 12 to 15 feet deep, a suction pipe of considerable length and capacity must be used. The pipe at the commencement of the operation, necessarily contains air, and this air expanding under the reduced pressure, when admitted to the exhausted receiver, upon opening the valve (i) occupies an increased space; and at the depth above mentioned there is a column of fluid in the suction pipe during the operation equal to nearly half an atmosphere in pressure acting against the pressure of the atmosphere on the contents of the vault, which causes the gases in the pipes to expand to about twice their former bulk upon admis-

sion into the apparatus. On this account it is necessary to provide a large space for the reception of the gases, and for the reasons before mentioned it is necessary to have them contained in a receptacle, separated from the receiver, excepting by a narrow passage. As these gases with others disengaged during the transportation are afterwards required for the purpose of expelling the matter from the receiver, it is necessary that they should be kept separate and distinct from the fecal matter or the same agitation which causes their production, would cause them to become mechanically mixed with the matter, forming a froth of light specific gravity, which would occupy the space which should be filled with the matter in a condensed form; and much of the condensed air would escape with the matter when the discharge valve is opened, and there would not be air enough left to drive out the whole of the matter; beside which the frothy matter would rise into and obstruct the action of the valves. These difficulties occur when the gases are contained in contact with a large surface of fecal matter, but are entirely obviated by the use of the separate gasometer, as described.

Having thus fully described my apparatus, what I claim as new therein and which I desire to secure by Letters Patent is—

The gasometer connected with the receiver as described, for the purpose of keeping the gases separated from the fecal matter, and preventing their mixture as set forth, and serving also as a reservoir for the compressed gases from which the power for expelling the contents of the receiver is obtained.

FLORIMOND DATICHIZ.

Witnesses:

EDWARD EVERETT,
GEO. BOMMER.