

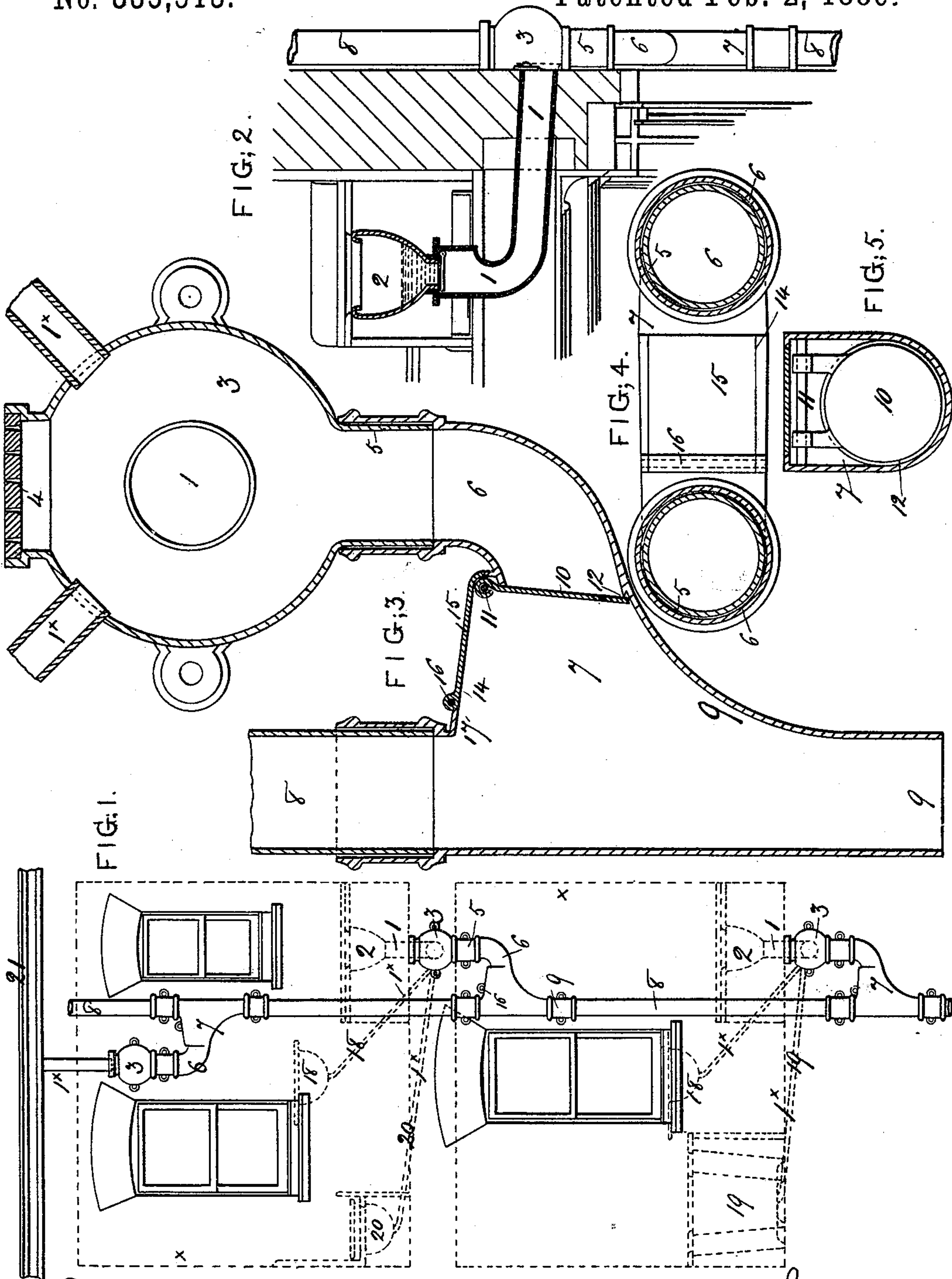
(No Model.)

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MEANS FOR CONNECTING WATER APPARATUS WITH SOIL PIPES

No. 335,513.

Patented Feb. 2, 1886.



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# UNITED STATES PATENT OFFICE.

THOMAS DURRANS, OF LONDON, ENGLAND.

## MEANS FOR CONNECTING WATER APPARATUS WITH SOIL-PIPES.

SPECIFICATION forming part of Letters Patent No. 335,513, dated February 2, 1886.

Application filed June 10, 1884. Serial No. 134,400. (No model.) Patented in England April 8, 1884, No. 6,127, and in France May 9, 1884, No. 162,013.

*To all whom it may concern:*

Be it known that I, THOMAS DURRANS, a subject of the Queen of Great Britain and Ireland, and a resident of London, in the county of Middlesex, England, have invented certain Improvements in or relating to the Means of Connecting Water-Closets and other Waste-Water Apparatus with Soil-Pipes, (for which I have obtained British Patent No. 6,127, dated April 8, 1884, and French Patent No. 162,013, dated May 9, 1884,) of which the following is a specification.

This invention has reference to certain improvements in or relating to the means of connecting water-closets and other waste-water apparatus with ventilated or other soil-pipes. Special objects of the improvements are to avoid the use of siphon or like forms of traps or trapped pipes, which are generally used in effecting this connection directly from the closet to the soil-pipe; to obviate the disadvantages attendant upon the use of such means of effecting such connection; to provide improved means of connection in which the water-closet is disconnected from or not in direct connection with the soil-pipe, so as to wholly prevent the return of any sewer-gas from the soil-pipe through the closet, which there is great difficulty in preventing with the present means of connection, and to avoid any necessity for the use of a separate pipe or pipes other than the soil-pipe for carrying away the other waste waters from a house or building.

Siphon or like forms of traps or trapped pipes hitherto used in effecting the connection of water-closets directly with soil-pipes are subject, by reason of their conformation, to retain portions of the soil as it passes from the closet to the soil-pipe, and a deposit of soil accumulating therein gradually chokes or impedes the passage-way of the trap, preventing its proper action, corroding its substance, and causing its eventual decay and destruction. Thus repairs and renewal of the connection are more frequently needed than will be with the improved arrangement herein described, and which has been specially designed to prevent any deposit of the soil in its passage from the closet to the soil-pipe.

On the accompanying drawings, Figure 1 represents a front elevation of a part of a

house illustrating a system of closets connected with a ventilated soil-pipe common to all of them by the improved means herein described, and also representing the improved system of carrying away the other waste waters from the different rooms or parts of a house or building by means of such improved connections. Fig. 2 is a sectional elevation on a larger scale, more clearly showing the connections from the closet to the independent receiver leading direct into the soil-pipe; and Figs. 3, 4, and 5 are detail views on a still larger scale, and respectively representing a sectional elevation, a sectional plan, and a transverse section of such receiver, showing the connection thereof with the soil-pipe, and the provision made for the immediate fall of the soil and for preventing the return of any sewer-gas through the apparatus.

In connecting one or a series of closets with a soil-pipe in accordance with the present invention the outlet-connection 1 from each closet 2 is led with a direct fall as great as may be obtainable, and without any upward or siphon bend or trap, into an independent cast-iron, lead, or other head or receiver, 3, which at its highest part is open to the atmosphere, and is in connection with the soil-pipe, and is trapped therefrom, as hereinafter described. The head 3 may be of a spherical or any other suitable conformation; but its top part is preferably contracted and provided with a grating, 4, which permits of free ventilation, but prevents the entrance of any foreign matter. The head 3 is socketed, as at 5, or is otherwise suitably connected, either directly or by means of intervening piping, with a tubular extension, 6, branching from a valved casting or receptacle, 7, which is socketed and inserted between the different lengths of the soil-pipe 8, or is otherwise connected with such soil-pipe, and has a direct fall thereinto, as shown at 9, without having any siphon or like form of bend. The outlet 12 from the extension or connection 6, between the open head 3 and the soil-pipe 8, is closed by means of a flap or valve, 10, (or by a metallic or elastic ball or any equivalent means,) which is so set and centered at 11, or elsewhere convenient, as to yield to any slight downward pressure, in order to allow of the immediate escape into the



soil-pipe of any matter which may fall or be led by the connection 1 from the closet into the head, and so as to close against such outlet immediately after the passage of the soil, 5 in order to close off the open head from through connection with the soil-pipe. The outlet-aperture from the extension 6 is preferably formed with a knife-edge at its lower part, and at its lowest point it or the lower part of the 10 clack or valve is, or both are or may be, nicked or filed to allow of the escape of every drop of water which may fall from the head, to prevent the possibility of the flap or valve getting set by frost.

15 The application of the clack or valve 10 to the soil-pipe, and of a connection from a receiver independent from the closet and ventilated at its highest part in the manner herein described, forms an important feature of the 20 present improvements.

Immediately above or adjacent to the flap or valve 10 there is formed in the valved casting an opening, 14, which is closed by a tightly-fitting door or flap, 15, hinged at 16, or by a 25 screw-cap and lining, or by other suitable means, and by means of which access can be had to the flap or valve for placing it, or for removing, inspecting, and replacing it at any time. The upper part, 17, of the valved casting 30 is inclined, to prevent any stagnation of foul air therein, and its lower part, 9, has an unimpeded fall into the soil-pipe. It will thus be seen that the present improved means of connection provide every facility for an unimpeded escape of the sewer-gases up ventilated soil-pipes, and that access of such gases 35 to the open heads is cut off by means, the action of which is not liable to be stopped by frost, as the present trapped form of connection 10 is; hence the present improvements permit, with very great advantage, of the lavatory waste 18, the bath-waste 19, the slop-sink waste 20, and other refuse or waste waters—such as the rain-water from a gutter, 21, from 40 a roof, being led by piping 1<sup>x</sup> directly into the open head 3, either at the top or side thereof, as shown in Figs. 1 and 3—and this provides still further means of keeping the connection 6 quite clean and well flushed, 45 and of preventing any possibility of deposit between the open head and soil-pipe, and dispenses with any necessity for the separate pipe or pipes hitherto used for carrying away such waters, saving much expense, and rendering 50 buildings more sightly. The improved

means thus effect the total disconnection of the closet from the soil-pipe, prevent the return of foul air from the soil-pipe, and ventilate the connection at the highest part.

The invention is susceptible of the following 6c modifications: There may be a separate ventilated head or receiver and valved casting provided for each closet, or the connections from more than one closet may be led into each ventilated head, or two or more of the 65 ventilated heads may lead into one valved casting. The ventilated heads may be of any suitable shape, and may be connected with the valved castings directly, as hereinbefore described, or by means of intervening piping; 70 and the valved castings may be connected with the soil-pipe directly or by means of intervening piping, and at the same or opposite sides, and at different parts of its length, depending, principally, upon the relative positions of the 75 closets or other parts to be connected.

I am aware that it has been proposed to effect the object of the present improvements by leading a continuous pipe directly from the bottom of the closet into the soil-pipe, adjacent 80 to its junction with which the said continuous pipe was formed as an open channel-pipe.

I am also aware that it is not new to combine with waste-pipes receptacles having outlets at their upper ends to carry off the gases, but so 85 far as I am aware all such devices have been provided with traps or water-seals in some part of their connections.

It is the special object of my invention to dispense entirely with water seals or traps, as 90 they are objectionable in exposed situations on account of their liability to freeze or become clogged.

I claim as my invention—

The combination of a receiver, 3, having a 95 ventilating-opening at its upper end and a discharge-outlet at its lower end, with sections of soil-pipe 8, and a union-casting, 7, containing a flap-valve, 10, and a direct fall, 9, into the soil pipe without water seal or trap, sub- 100 stantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOS. DURRANS.

Witnesses:

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