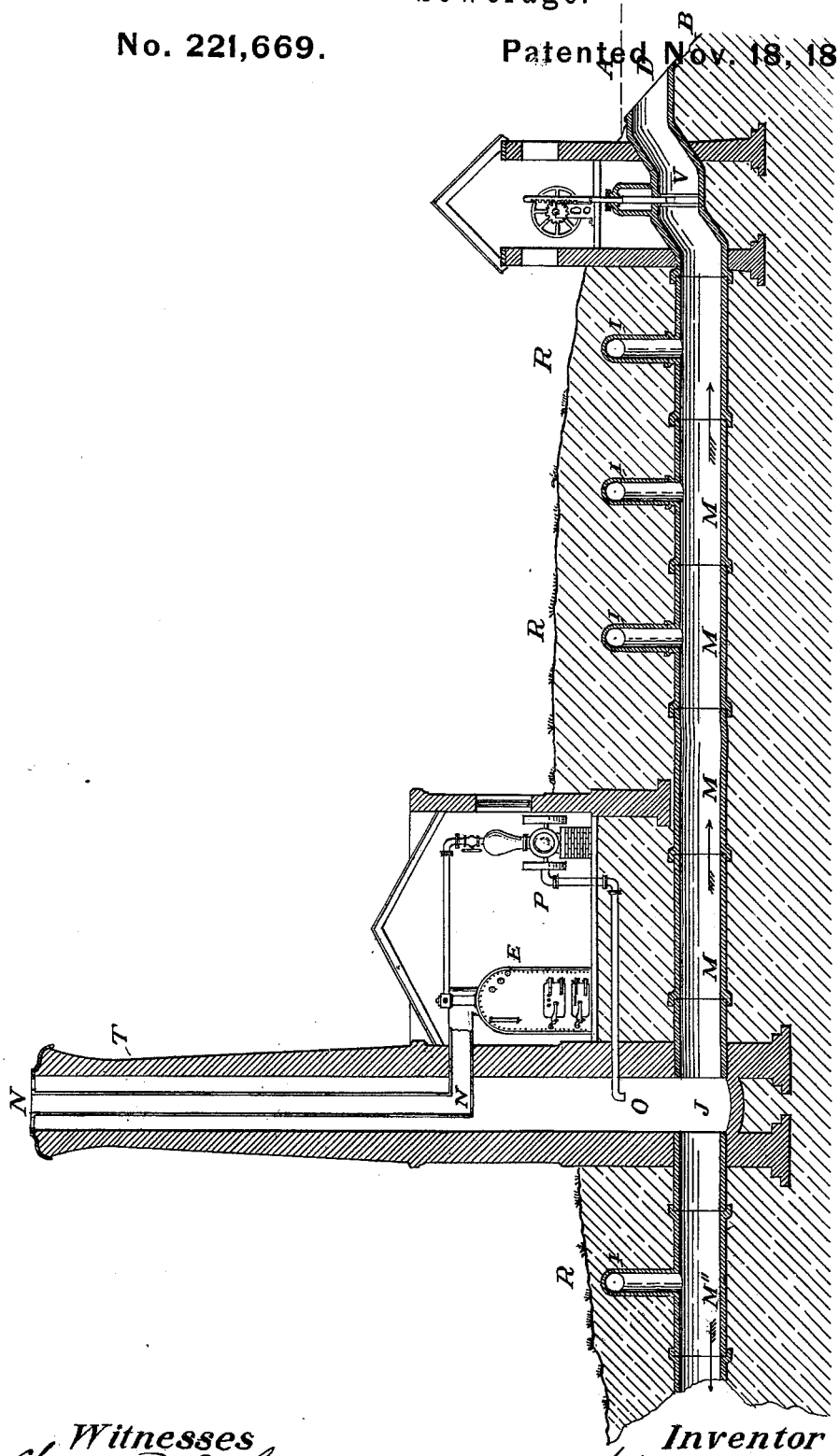
J. W. CRANE.

Sewerage.

No. 221,669. Patented Nov. 18, 1879.



Witnesses
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UNITED STATES PATENT OFFICE.

JOHN W. CRANE, OF SARATOGA SPRINGS, ASSIGNOR OF ONE-HALF OF HIS RIGHT TO CHARLES A. McLEOD, OF TROY, NEW YORK.

IMPROVEMENT IN SEWERAGE.

Specification forming part of Letters Patent No. **221,669**, dated November 18, 1879; application filed August 29, 1879.

To all whom it may concern:

Be it known that I, JOHN W. CRANE, of the village of Saratoga Springs, county of Saratoga and State of New York, have invented a new and useful System of Sewerage for seashore localities, and of which the following is a specification.

My invention relates to a sewerage system more particularly designed to remove from hotels and other habitations the offensive deposits produced by human occupancy, where the location of such buildings is but slightly above the ocean or adjacent water-level, and where a forced system of flushing is necessitated to carry the sewer-collections into the removing influence of an oceanward-tending tidal current.

My invention consists in arranging and combining, with a sewer-pipe sufficiently below the surface of the beach or ground to receive and contain the water-closet and drain deposits which would accumulate between the periodic occurrences of flood-tide or high water, a stop valve or gate at or near the terminal egress end of the pipe, and a ventilating-tower connecting with the sewer-pipe at its base and receiving a flushing-supply of water from a pump and actuating engine or from a reservoir, the egress-opening of the sewer-pipe being arranged with reference to the tidal flow of the ocean so that the former shall be below the surface of the water at high water. The object is to have the sewer-pipe act as a receptacle for the water-closet and drain deposits at such times as their discharge into the ocean or river from the motion of the tidal currents would carry them into the vicinity of inhabited localities, and to provide a means for their discharge from the sewer-pipe into the water when the tidal currents are moving oceanward and away from human dwellings.

In the accompanying drawing a single illustration designates all the means employed to constitute my invention, and the factors which co-operate to make it operative are thus described.

At M M M M M there is shown a sewer-pipe, sunk below the level of the beach or ground R R R R R, and having the inlet-connections for water-closet or sink connections I I I I. At T there is designated a ventilating-tower, connecting with the sewer-pipe at J, and at V a stop valve or gate, which opens or closes the egress or discharge end of the sewer-pipe. (Shown at D.) The position of the latter is shown as below the high-water mark, (designated at A,) the low-water mark being shown at B. The letter P designates the pump, E the engine and boiler, and N a hot-air flue passing up through and out of the tower T. At O the pump-discharge is shown, and from which the water is forced into the tower-base, from which it passes to and through the sewer-pipe when the gate or egress-valve is opened. At M″ the sewer-pipe is shown as broken off to illustrate an extension of the sewer-pipe when it is desired to have two discharge-openings, and both formed with reference to the tower and pump like the one shown. When but one egress-opening is employed this one is stopped up.

The operation of the combined parts is as follows: When the tide is out and the discharge of the sewer contents into the water would, by the influence of the entering current, carry them up into the bays and neighboring rivers along city fronts, then the valve or gate is closed, and the pipe or sewer acts as a receptacle to retain the matter passing into it. When the tide is in then the valve V is opened. The pumping-engine, by means of the flushing-pump P, forces water into the tower-base J. This causes a current through the sewer-pipe M, and this carries with it and through the outlet D all the material which has accumulated in the sewer while the gate or valve was closed, and, when discharged, this is carried by the receding tide oceanward.

The vertical hot-air flue N, arranged within the tower, not only serves to establish a moving ventilating-current, but it heats the gases evolved from the sewer and causes them to ascend after leaving the tower to altitudes where their presence is harmless.

While I have shown a flue arranged within the tower, if desired, a separate flue may be dispensed with, and the waste heat and products of combustion, after leaving the boiler-flues, may pass directly into the tower.

Any form of steam-engine, boiler, and water-pump may be employed, and any suitable kind of valve or gate may be used to close the

egress-opening of the pipe, for my invention consists in the manner of combining the factors employed, and not in the factors separately considered.

I am aware that a ventilating-tower provided with means for forcing the draft, as forming a part of a sewerage system, is old; and I am also aware that it is old to store sewerage in reservoirs or enlarged sewers between the intervals of outgoing tides.

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

A sewer-pipe located below the surface of the sea-beach or the ground at a sufficient depth to receive and contain sewerage material discharged into it during the periods of high tide, and provided with a stop-valve at its egress end, with the latter arranged to be below the surface of the river or ocean at high tide, in combination with a ventilating-tower connecting at its base with the sewer-pipe and serving the purpose of a flushing-cistern, and a forcing flushing-pump or flushing-supply of water, by which a current of water may be forced through the sewer-pipe when the egress-valve is opened, for the purposes herein described and set forth.

JOHN W. CRANE.

Witnesses:
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