

Specification of Thomas Stevens : treating sewage, &c.;

Contributors

Stevens, Thomas.

Publication/Creation

London : Great Seal Patent Office, 1876 (London : George E. Eyre and William Spottiswoode)

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A.D. 1875, 11th August.

N^o 2829.

S P E C I F I C A T I O N

OF

THOMAS STEVENS.

—
TREATING SEWAGE, &c.
—

LONDON:

PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,

PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY:

PUBLISHED AT THE GREAT SEAL PATENT OFFICE,

25, SOUTHAMPTON BUILDINGS, HOLBORN.

Price 4d.

1876.





A.D. 1875, 11th AUGUST. N° 2829.

Treating Sewage, &c.

(This Invention received Provisional Protection only.)

PROVISIONAL SPECIFICATION left by Thomas Stevens at the Office of the Commissioners of Patents, with his Petition, on the 11th August 1875.

I, THOMAS STEVENS, at present residing at May Villa, Chirnside, in the County of Berwick, North Britain, Civil Engineer, do hereby declare the nature of the said Invention for "IMPROVEMENTS IN THE TREATMENT OR PURIFICATION OF THE WASTE LIQUIDS DISCHARGED FROM PAPER MILLS AND OTHER WORKS, AS WELL AS THE SEWAGE OF TOWNS, AND IN THE MODES AND MEANS EMPLOYED THEREFOR," to be as follows:—

10 This Invention relates to the purification and defecation of the discharge water or liquids from paper mills and other works, as well as the sewage of towns, in order to separate the organic and inorganic matters held in suspension before the discharge water or sewage reaches or pollutes the rivers.

15 And the nature and novelty of the Invention consist in using a purifying agent or compound of a non-injurious nature, composed of sulphate of lime and chloride of sodium commingled or mixed together in the dry state in about equal proportions, which rapidly defecates and

Stevens' Improvements in Treating Sewage, &c.

precipitates the matters held in suspension in the discharge liquid or sewage, leaving an effluent water.

The compound or agent is placed in a contiguous cistern or hopper, and is allowed to fall regularly in a continuous stream through suitable connections or tubes into the pipe (or pipes), in which the discharge 5 water is conducted from the mill or other work to a settling tank (or tanks); the proportion admitted being about two gallons of the agent or compound for every thousand gallons of discharge liquid, and as they flow on towards the settling tank they become thoroughly mixed and incorporated, and at the outflow end of the pipe a proportion of the 10 common agent, "milk of lime," of about two gallons to every thousand gallons of discharge water is admitted, the whole passing through a small wheel in the pipe (which may actuate the stirrer or agitator in the lime cistern above) thoroughly amalgamating the several ingredients with the water as it flows into the first compartment of the tank. 15

The tanks are divided into three compartments by walls or divisions with sluices in them, and into the first compartment about $\frac{7}{8}$ ths (seven eighths) of the matter held in suspension in the water is deposited, and as the water rises to the top of the first division wall, it flows over into the second compartment in a thin stream, and therein deposits the 20 remaining matter held in suspension, and the water having next filled this compartment flows over the second division wall into the third compartment which it fills to the height of several feet, and then flows down through a vertical filter into a small chamber, and thence through pipes to the river. 25

The precipitated matter is pumped out at intervals by a chain pump and engine into another tank, and therein drained of any superfluous water remaining; and the precipitate or sludge is then mixed with a sufficient or desired quantity of the sulphate of lime to convert it into a valuable manure. 30

The foregoing process is quite sufficient for the purification of the usual discharge water from the washing engines of paper mills, but to treat and utilize all the water passing from the mill, such as the "coolings," the "lees," and the water from the "paper machine," which hold chloride of lime in solution, it is desirable to add a small 35 proportion of sulphuric acid to the before mentioned purifying agent, but any poison it may contain after passing through the filter is destroyed by the common filtering medium.

Stevens' Improvements in Treating Sewage, &c.

The foregoing process as well as the modes and means employed for carrying it out in practice, are equally adapted for treating the sewage of cities and towns, and the precipitate or sedimentary matter is converted into a valuable manure, the effluent water from the sewage being well adapted for irrigating land, but in treating sewage the proportions of the purifying or defecating compound relatively with the nature or fluidity of the sewage, may in many cases have to be varied to some extent.

LONDON :

Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1876.

THE HISTORY OF THE UNITED STATES

The following pages are devoted to the history of the United States from 1845 to 1846. The principal events of the year are the annexation of Texas and the discovery of gold in California. The year is marked by the beginning of the Mexican War and the discovery of gold in California.

Printed by the American Book Company, New York.