(No Model.) 2 Sheets—Sheet 1.

A. ENGLE.

FURNACE FOR NIGHT SOIL.

No. 315,397. Patented Apr. 7, 1885.

Fig. 1

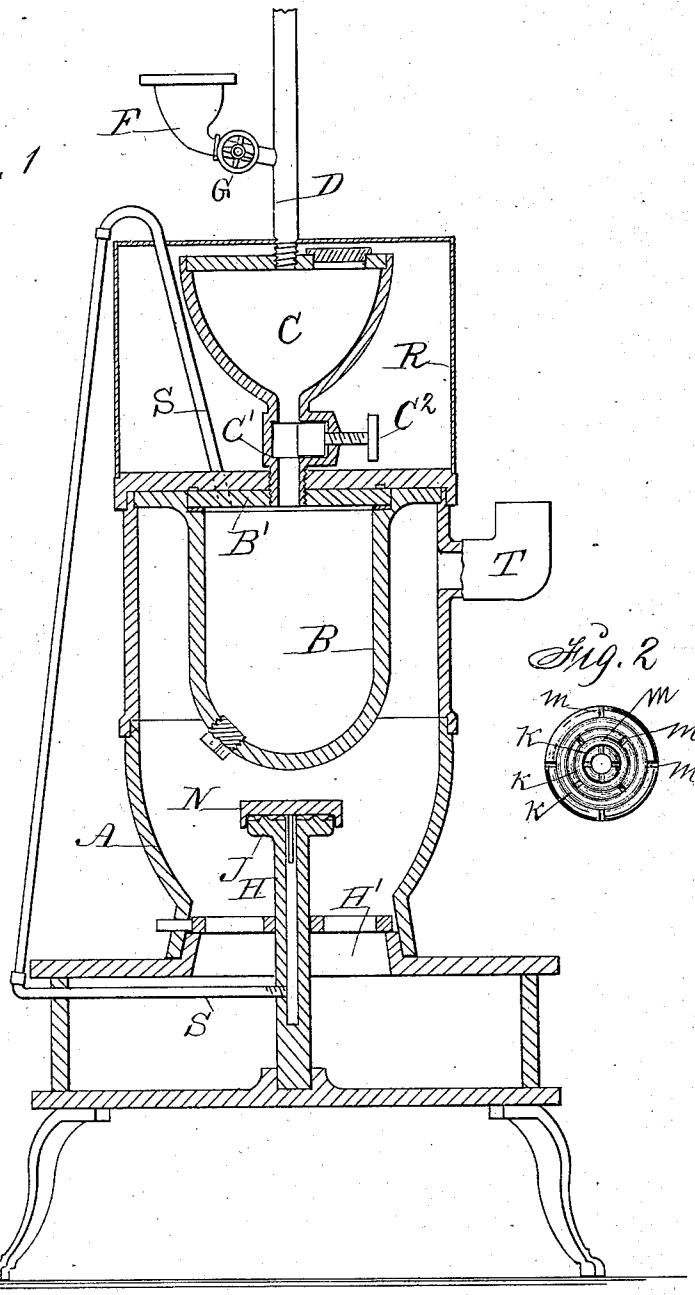

Fig. 2

Witnesses:
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W. V. Anderson

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N. PETERS. Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

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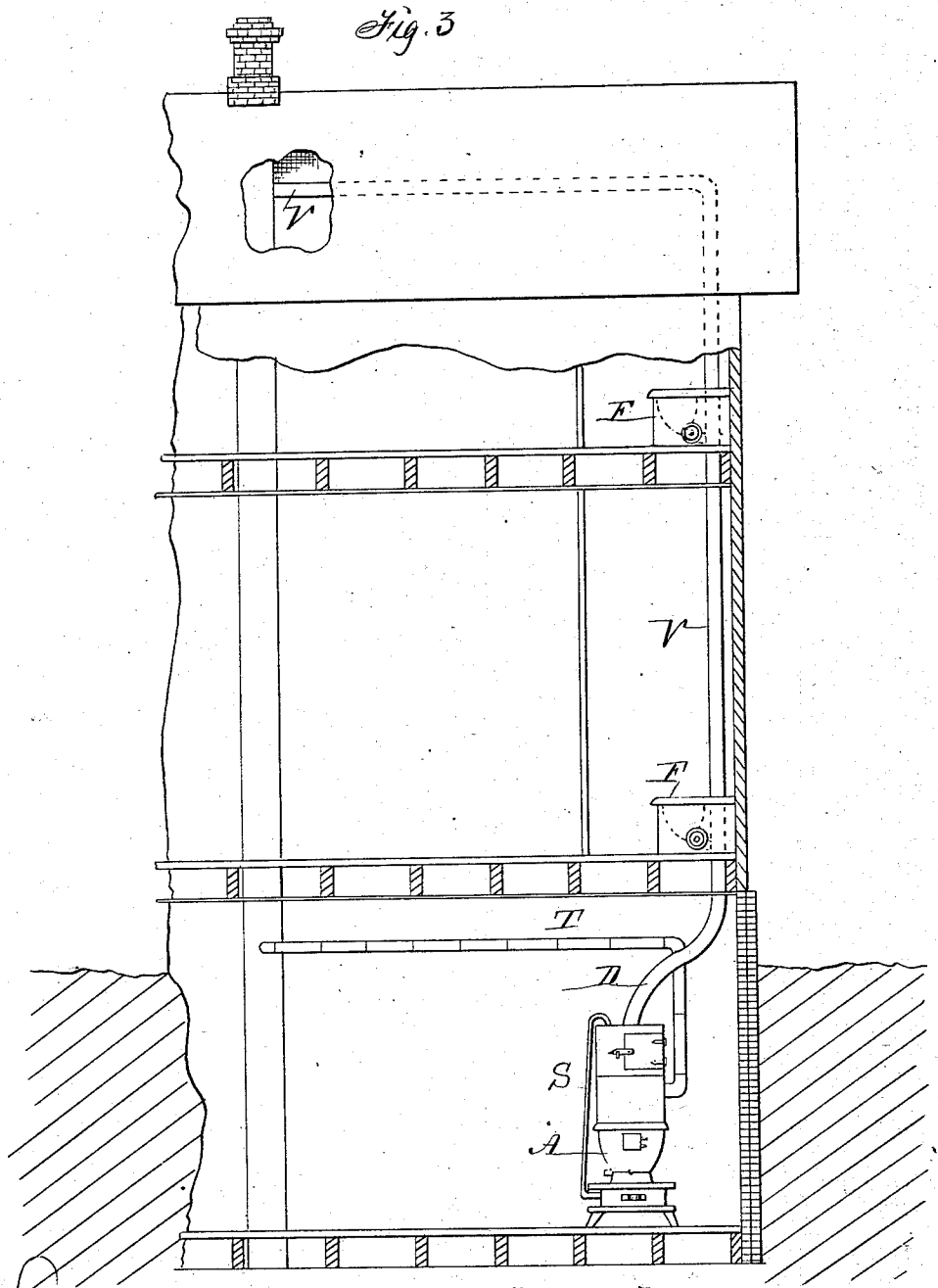
Fig. 3



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UNITED STATES PATENT OFFICE.

ANDREW ENGLE, OF METZ, IOWA.

FURNACE FOR NIGHT-SOIL.

SPECIFICATION forming part of Letters Patent No. 315,397, dated April 7, 1885.

Application filed March 3, 1884. (No model.)

To all whom it may concern:

Be it known that I, ANDREW ENGLE, of Metz, in the county of Jasper and State of Iowa, have invented an Apparatus for Consuming and Utilizing Human Excrement and other Sewage Matter, of which the following is a specification.

My object is to prevent the corruption of streams and lakes of water with sewage matter, to dispense with sewers for the purpose of carrying off human excrement and other foul matter, and to avoid the annoyances and dangers and costs incident to having water-closets in dwellings connected with sewers.

My invention consists in the construction and co-operation of a furnace, a retort, a reservoir, a superheater, and gas-burner, and one or more water-closets, as hereinafter fully set forth, in such a manner that urine and other matter can be conveyed in tubes to the reservoir, and from the reservoir to the retort to be converted into gas and charcoal, and utilized as combustibles to aid in generating heat in the furnace, or for any of the uses for which combustible gas and charcoal are adapted.

Figure 1 of my accompanying drawings is a vertical sectional view of a furnace, superheater, retort, reservoir, and privy-seat combined. Fig. 3 is a section of a building, showing my apparatus in position for practical use. Fig. 2 is a detail view of the uncovered top of my superheater. Jointly considered these figures clearly illustrate the construction, application, and operation of my complete invention.

A represents a furnace that may vary in form and size as desired.

B represents a retort suspended from the top of the furnace.

B′ is a steam-tight cover fitted to the top of the furnace and over the closed retort.

C is a reservoir connected with the retort by means of a tube, C′.

C^2 represents a steam-tight gate or cut-off combined with the tube C′ to let the contents of the reservoir drop into the retort whenever desired, and to prevent gas generated in the retort from entering the reservoir C.

D is a tube extending upward from the reservoir C.

F represents a urinal or the bowl or basin of a water-closet under a seat connected with the tube and conveyer D.

G represents a valve that is adapted to let the contents of the basin F pass downward and to prevent gas and odors from ascending. To operate the valve automatically, I connect it with a platform in such a manner that when a person steps upon the platform in front of the seat the valve will be opened by the weight of the person, and when the person leaves the platform it will be closed by the force of a spring or suspended weight, or in any suitable way.

H represents a superheater and gas-burner in the furnace. It is composed of a tube, H′, that is fixed in a vertical and central position in such a manner that it will extend upward through the furnace-grate and into the combustion-chamber.

J is an annular flange or circular plate, formed on or fixed to the top of the tube H. It is provided with concentric grooves K in its top side and intersecting transverse grooves *m* in such a manner that gas rising through the tube will be distributed and superheated in the grooves and discharged and consumed therefrom within the combustion-chamber to aid in promoting the combustion of fuel upon the furnace-grate and the production of heat under and around the retort suspended in the top of the furnace.

N represents a cover fitted on top of the flange or plate J to close the grooves K and *m*, and to confine gas therein until it reaches the circumference of the complete burner, where it is allowed to escape through suitable openings.

R represents a jacket or cylinder fixed on top of the furnace and around the reservoir C.

S represents a tube connected with the top portion of the retort B and the lower portion of the superheater and gas-burner H to convey the gas generated in the retort into the superheater and burner.

T is a furnace smoke-flue connected with the lower portion of a chimney in a building.

V is a ventilating-flue connected with the tube D and the top portion of the same chimney, as shown in Fig. 2.

In the practical use of my invention the deposits made in the water-closets will, by force

of gravity, descend into the reservoir C, (or a series of reservoirs,) from which the matter can be readily dropped into the retort B (or a series of retorts) by operating the valve or cut-off C^2 once each day, or as often as necessary, to be decomposed or cremated, and the niter and other valuable gas-producing substances contained therein extracted by means of a fire and heat maintained in the furnace and around the retort by burning coal or other fuel in the furnace in a common way, and the residuum and non-volatile matter reduced to charcoal. As gas is thus generated in a retort it will pass through the tube S or series of tubes into the superheater H, or a series of superheaters in one or more furnace-chambers, to be superheated and consumed as it escapes from the burner or burners connected with the superheater, and to aid in promoting the combustion of fuel in the furnace and in the production of heat for operating the retort, for warming a building, or for any purpose for which artificial heat can be utilized.

To remove charcoal formed in a retort, I simply provide an opening that can be closed with a screw-plug, as shown in Fig. 1, or in any suitable way, so that the plug can be withdrawn and the charcoal scraped out into the furnace-chamber to be used as fuel in the furnace, or taken out and used for any of the common purposes for which charcoal is adapted to be used.

I claim as my invention—

1. An apparatus for utilizing night-soil and sewage and dispensing with sewer-gas in dwellings, towns, and cities, composed of the following elements, to wit: a bowl or basin and tube adapted to receive and convey sewage, a reservoir adapted to receive and retain sewage, having a valve or gate for discharging its contents, a retort and furnace combined and adapted to cremate sewage in the retort and convert it into gas and charcoal, and a tube, superheater, or burner adapted to convey and consume the gas generated in the retort.

2. The combination of a furnace, retort having one or more gas-conveying tubes attached, a reservoir having a discharge-valve or cut-off, and one or more privy-bowls or basins, to operate in the manner set forth, for the purposes specified.

3. The combination of a furnace, a retort having an opening adapted for removing charcoal therefrom, a reservoir having a valve or cut-off adapted for emptying the contents into the retort, one or more privy bowls or basins in position to discharge their contents into the reservoir, a tube to convey gas from the retort, and a superheater to receive and distribute gas within the furnace, for the purposes specified.

4. A superheater and gas-burner composed of a tube having a closed bottom and an annular flange or plate at its top provided with concentric grooves and intersecting transverse grooves in its top face, and a cover adapted to close the grooves and to cause gas to be distributed from the circumference of the burner, substantially as shown and described.

5. The combination of one or more furnaces, one or more retorts, one or more reservoirs having discharge-valves or gates, one or more privy bowls or basins, one or more gas-superheaters and burners, one or more furnace-flues, and one or more ventilating-flues above the privies with or without a chimney in a building, to operate in the manner set forth, for the purposes stated.

ANDREW ENGLE.

Witnesses:
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P. J. CALLISON.