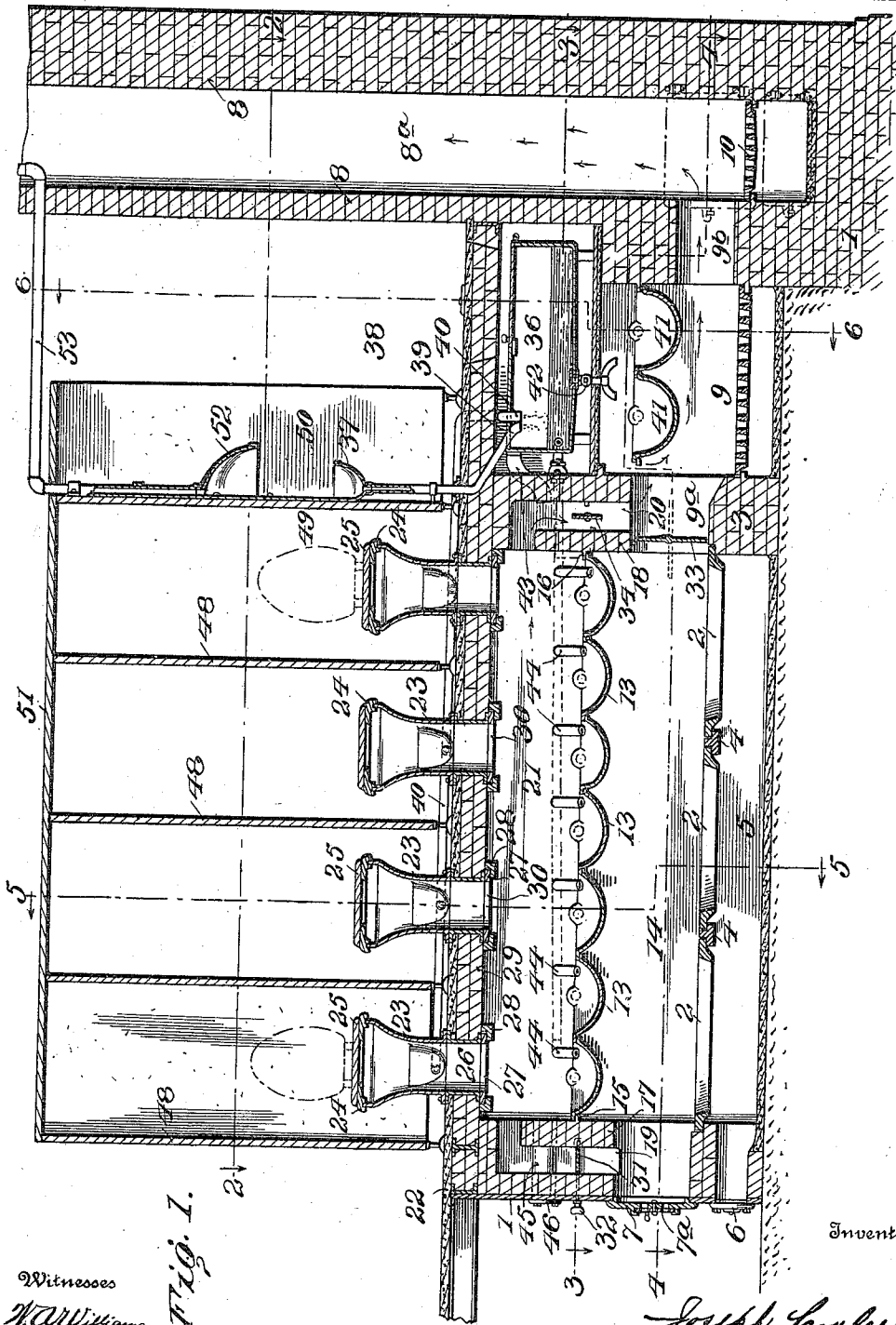


985,567.

J. CONLEY.
LATRINE INCINERATOR.
APPLICATION FILED NOV. 11, 1909.

Patented Feb. 28, 1911.

5 SHEETS—SHEET 1.

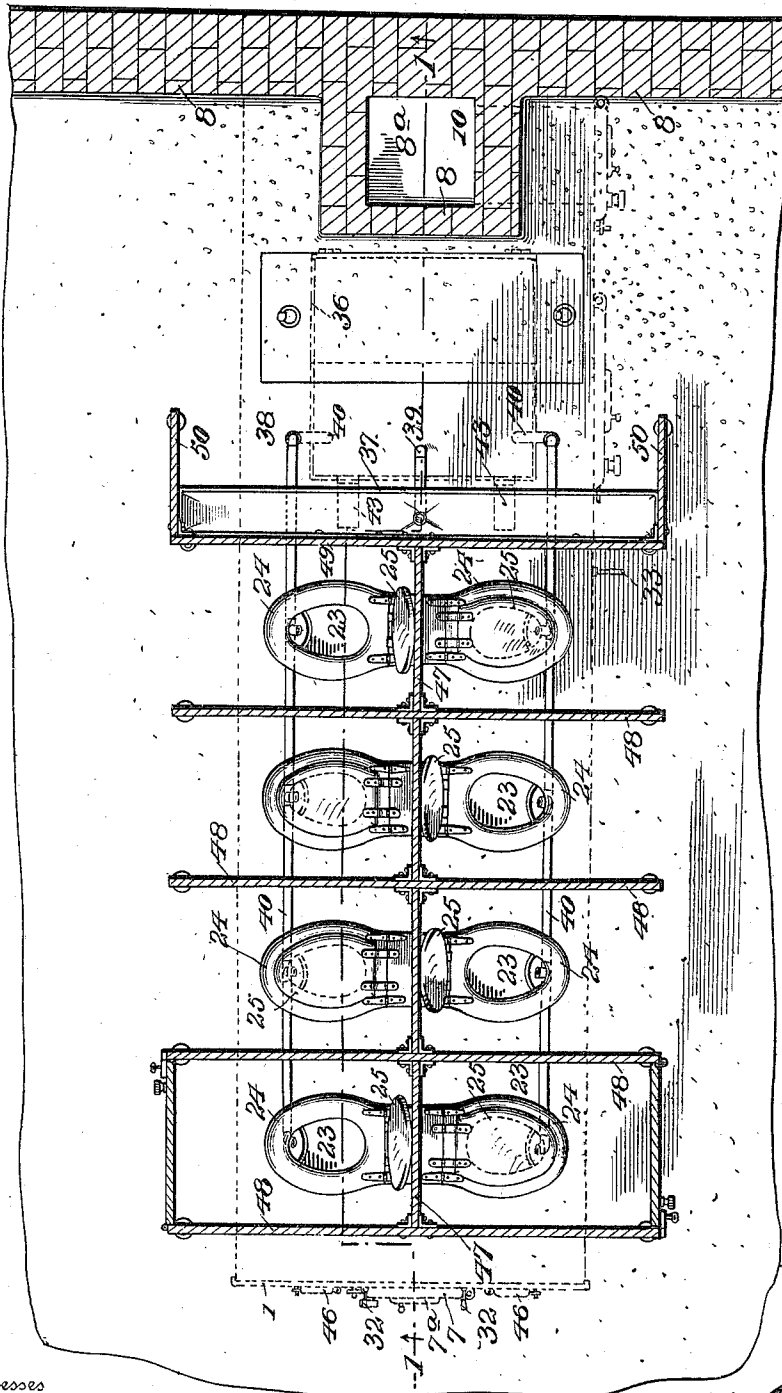


Witnesses
W. W. Williams
R. P. Baker

Fig. 1.

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Fig. 2.



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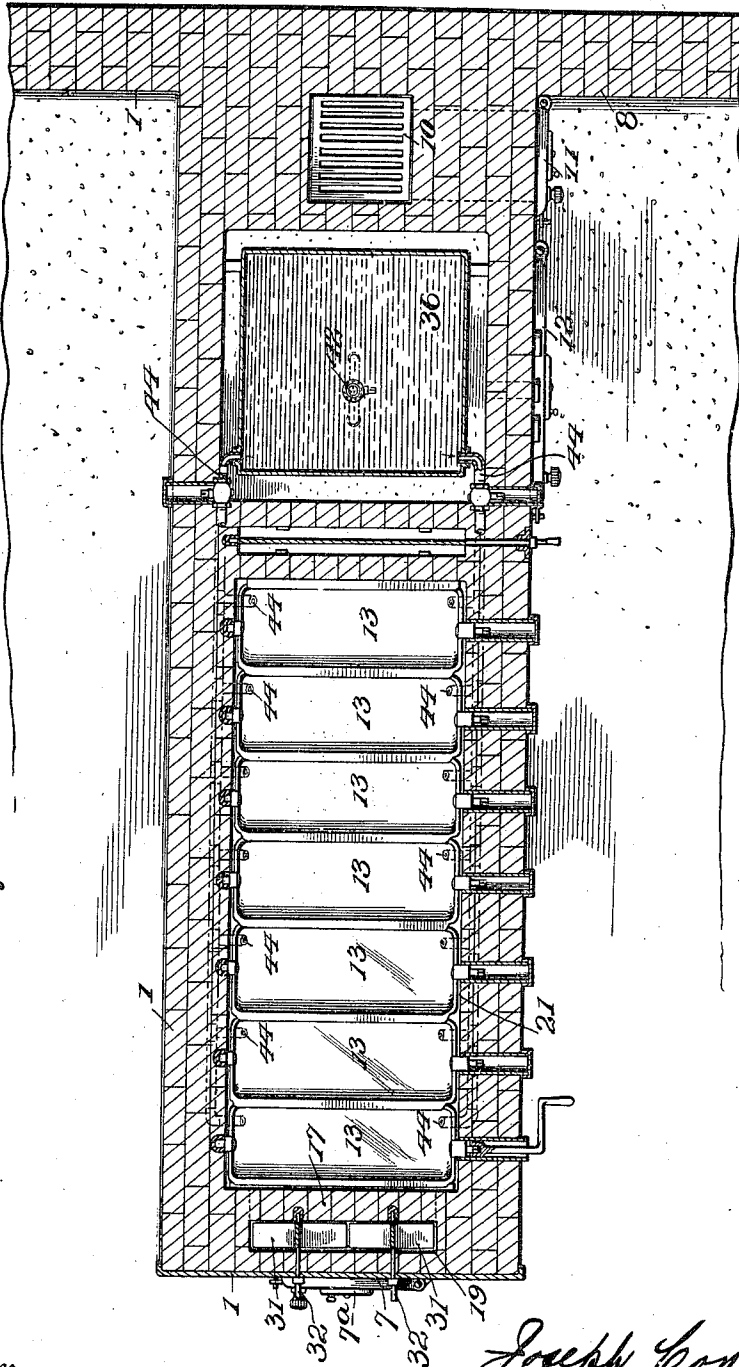
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5 SHEETS—SHEET 3.

Fig. 3.



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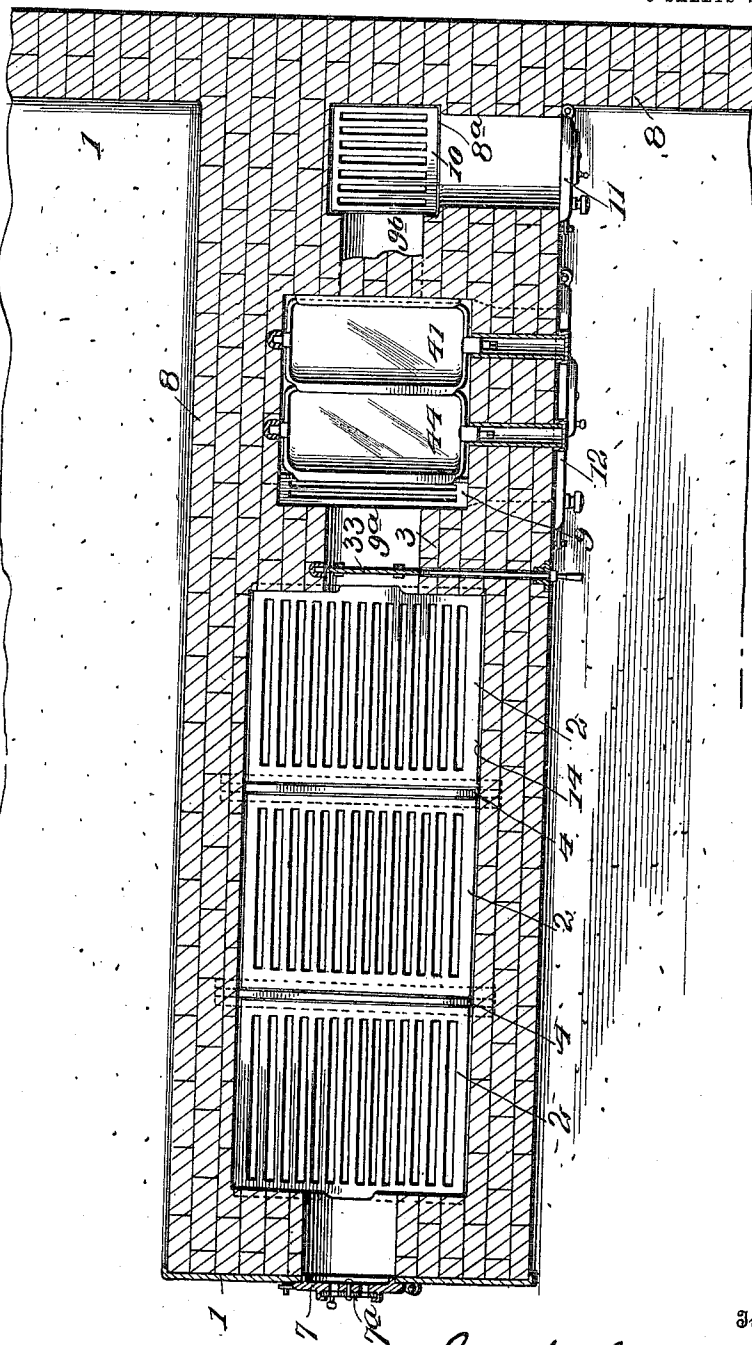
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5 SHEETS—SHEET 4.

Fig. 4.



Witnesses

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5 SHEETS—SHEET 5.

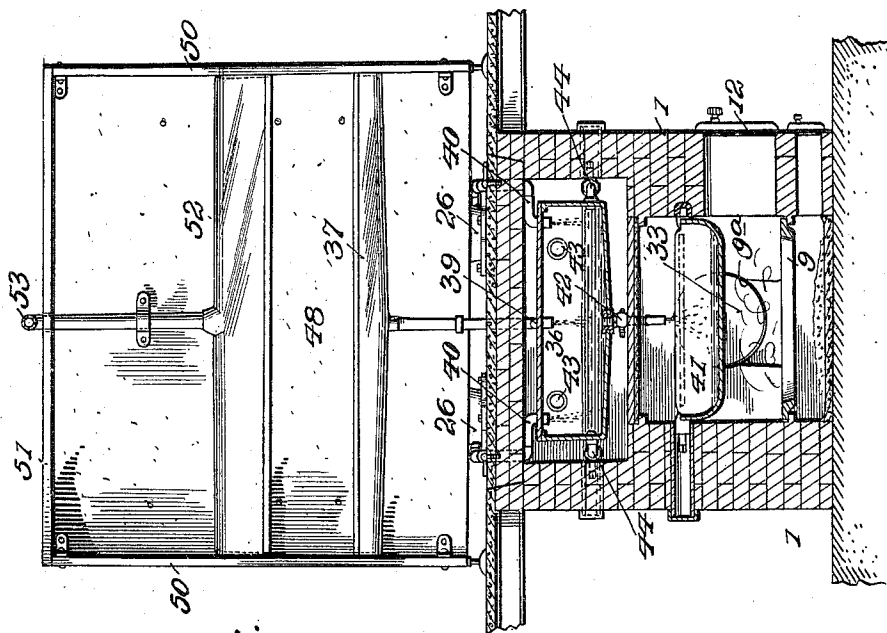


Fig. 6.

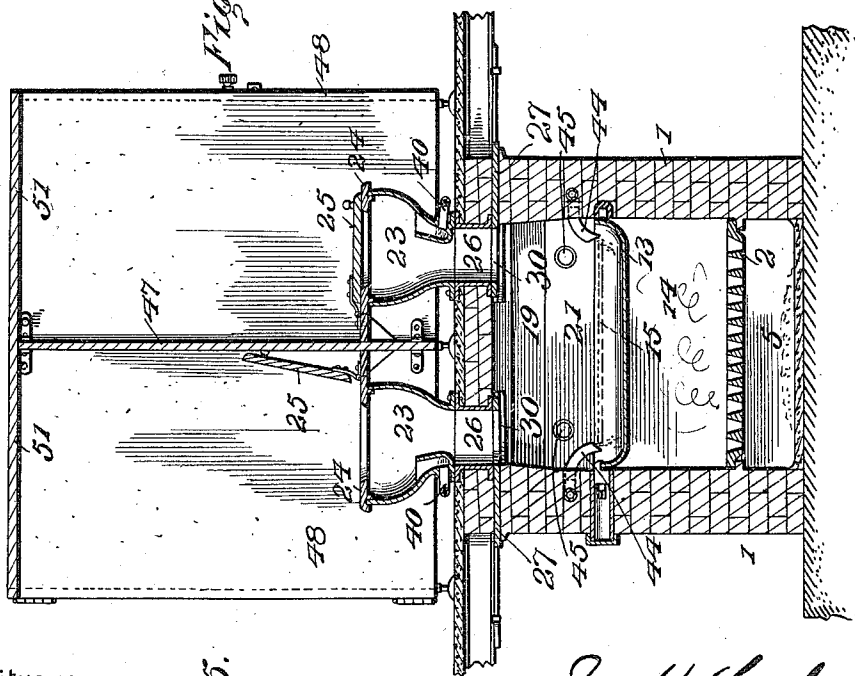


Fig. 5.

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UNITED STATES PATENT OFFICE.

JOSEPH CONLEY, OF ANADARKO, OKLAHOMA.

LATRINE-INCINERATOR.

985,567.

Specification of Letters Patent. Patented Feb. 28, 1911.

Application filed November 11, 1909. Serial No. 527,388.

To all whom it may concern:

Be it known that I, JOSEPH CONLEY, a citizen of the United States, residing at Anadarko, in the county of Caddo and State of Oklahoma, have invented certain new and useful Improvements in Latrine-Incinerators, of which the following is a specification.

This invention relates to latrine incinerators, being designed more particularly to improve upon the construction and operation of the apparatus shown and described in my U. S. Letters Patent No. 926100, dated June 29, 1909.

One object of my present invention is to maintain a constant down draft of fresh air through the bowls into and through the drying chamber above the receiving pans, and thence through one or the other of the valved flues at the opposite ends of a group of pans, to and through a furnace which serves to consume the gases passing to the stack.

A further object of the invention is to maintain a constant evaporation or vaporization of liquid from the liquid tank, and a constant draft from the vaporizing pans through a furnace which consumes the fumes and vapors on their way to the stack.

A further object of the invention is to subject, when necessary, the material in the group or series of pans to the heat given out by the products of combustion of the main or incinerating furnace, both beneath and above said pans.

With these and minor objects in view my invention consists in certain constructions, combinations and arrangements of parts the preferred form of which will be first described in connection with the accompanying drawings, and then the invention particularly pointed out in the appended claims.

Referring to the accompanying drawings wherein the same part is designated by the same reference numeral wherever it occurs in the several figures, Figure 1 is a vertical longitudinal section of an apparatus embodying my improvements, taken on line 1—1 of Fig. 2. Fig. 2 is a horizontal section of the same taken on line 2—2 of Fig. 1. Fig. 3 is a horizontal section of the same, taken on line 3—3 of Fig. 1, and Fig. 4 is a horizontal section of the same, taken on line 4—4 of Fig. 1. Fig. 5 is a vertical section on line 5—5 of Fig. 1. Fig. 6 is a vertical section on line 6—6, Fig. 1.

While the improvements to be described are well adapted for embodiment in a portable apparatus, such as shown in my patent hereinbefore referred to, they are here shown as embodied in a stationary structure 1 of masonry or other suitable material, containing the operative parts of the apparatus.

At the base of the structure is arranged a main or incinerating furnace comprising grate bars 2 supported at front by the walls 1 of the structure, at rear upon a bridge wall 3, and at intervals of the length of the furnace, by cross struts 4 supported at their ends in the walls of the structure. Beneath the grate is an ash pit 5 bounded at the rear by the bridge wall 3, and provided at the front with a door 6 through which access may be had to the pit to draw the ashes. The furnace is provided at front with a door 7, one or more, through which fuel may be fed to the grates 2, said doors 6 and 7 being provided with registers or dampers 6^a and 7^a to admit of regulating the admission of air, as is usual in such devices.

Beneath the incinerating furnace and the stack 8 are the grate bars 9 of a secondary furnace within which a fire is to be constantly maintained, for purposes hereinafter explained. A small furnace having a grate 10 is also arranged at the base of the stack 8, to cause an up-draft through the stack flue 8^a, and also to give ample assurance of the thorough consumption of the gases before escaping from said flue at the top of the stack. The secondary and stack furnaces and their ash pits are accessible, respectively, through doors 12 and 11, see Fig. 4, and should each be provided with the usual dampers or registers (not shown) to regulate the admission of air above or below the grates.

Communication from the main furnace through the secondary furnace is had through a somewhat narrowed throat 9^a formed by the bridge wall and overhanging partitions presently to be described, and a flue 9^b affords communication from the secondary furnace to the stack.

Above the incinerating furnace pans or containers 13 are arranged, each of said pans extending transversely of the incinerating furnace with its ends secured to trunnions pivoted in the sides of the structure 1, these pans being shown as substantially similar to those described in detail in my prior U. S. Patent No. 905,500, dated December 1, 1908.

The pans and their overlapping edges constitute in effect, a horizontal partition, when the parts are positioned as in Fig. 1, above the incinerating furnace, thus forming above the grates of said furnace, a chamber 14 which I shall term the incinerating chamber. The edge flanges of the first and last of the pans 13 abut upon stop-bars 15 and 16 carried by the partition walls 17 and 18, located adjacent the front and rear walls of the apparatus, one forming a flue 19 affording communication at front between the spaces above and beneath the pans, and the other a flue 20 affording communication between the space 21 above the pans (and which I shall hereinafter term the drying chamber) and the secondary furnace 9 and the stack. Above the pans is a suitable flooring 22 supporting bowls or hoppers 23, provided at top with apertured seats 24, and hinged lids 25.

It is important that at times the communication between the drying chamber 21 and the bowls 23 be tightly sealed, and this is conveniently accomplished by seating the lower ends of the hoppers or bowls in sleeves 26 flanged at their lower ends to make tight joint with damper-plates 27 seated and adapted to slide upon the flanges of I-beams 28 extending transversely of the drying chamber 21, and supported at their ends by channel irons 29 carried by the walls of the structure, as shown in Figs. 1 and 2. These damper-plates are provided with apertures 30 of a diameter equaling that of the lower ends of the bowls, so that in one position of adjustment there will be unobstructed passage from the bowls to the pans within the drying chamber, and in the opposite position of adjustment the apertures 30 will be moved from beneath the sleeves 26 of the bowls, thus preventing the passage of gases from the drying chamber to the hoppers, and the stalls containing them. The valve plates may be operated by any suitable pull rods or levers (not shown) accessible to the attendant, and in an apparatus where two or more pairs of bowls are used, I prefer to connect the several damper-plates with a single operating handle, in order that they may be moved simultaneously.

The flue 19, connecting the incinerating and drying chambers, 14 and 21, is controlled by a slide or damper 31, operated by a rod and handle 32, and the passage or throat 9^a from the incinerating chamber 14 to the stack is controlled by a valve or gate 33, whereby draft from the chamber 14 may be directed through the flue 19, chamber 21, flue 20, and through the secondary furnace 9 to the stack, or by closing damper 34 in flue 20, and opening dampers 31 and 33 the movement of the current of gases will be from the rear end of the drying chamber 21 forward, thence downward through flue 19,

and thence through the incinerating chamber and through the secondary furnace 9 to the stack.

Forming the rear wall of the flue 20 is a partition 35, to rear of which, and in plane with the drying chamber 21, is a liquid tank 36 arranged beneath the flooring of the structure. This tank receives the liquids deposited in the urinal 37 arranged in a compartment 38 at the rear of the structure, through pipe 39, there being also an inclined pipe 40 leading from the front of the several bowls 23, through which liquid may be conducted to said tank.

Beneath the tank 36, and above the secondary furnace 9, are arranged two evaporating pans 41 to receive liquid from the tank from time to time through a suitable pipe or pipes controlled by a valve 42, said pipe being branched at the discharge end, beyond the valve, so that liquid may flow into both of the evaporating pans. As a fire is constantly maintained on the grate of the secondary furnace beneath these pans, it will be seen that evaporation of the contents of the pans and hence of the tank 36 may be maintained without regard to the pans or containers 13.

To guard against accident through failure to operate valve 42, an overflow pipe 43 leads from near the top of the tank 36 forward and is provided at points opposite the pans 13, with nozzles 44 designed to discharge into said pans 13, in order that vaporization may be taking place.

The front wall of the drying chamber 21 is provided with ventilating openings 45 controlled by a damper 46, in order to admit air from the exterior in greater or less volume, or to close said openings against the passage of air or gases in either direction.

The spaces containing the opposite series of bowls or hoppers are separated by a longitudinal partition 47, and those containing the bowls of a series are separated by partitions 48 supported somewhat above the floor for circulation of air and facility in cleansing, and extending to the top of the partition 47. A partition 49, also supported above the floor and having wings 50, separates the compartments containing the bowls from the one 38 above the liquid tank 36. As shown a ceiling 51 is arranged above the rows or series of stalls.

Above the trough 37, in compartment 38, I secure a ventilating hood 52 to collect any gases that may arise from the trough 17, said hood being connected with the stack 8, by a pipe 53, thus providing a constant up-draft of air through said hood and pipe.

It will be seen that the apparatus described affords exceptional facility for adaption to particular needs, as for instance, it may, for use in households, contain but one pan 13 and pair of stalls containing

bowls 23, or the device shown may be readily enlarged in capacity by the addition of one or more pairs of bowls at the front of the structure, a grate section being, of course, added at the front of the incinerating furnace.

In the description and claims of this specification, the term "incinerate" is used in its true sense of reducing to ashes. Therefore the primary and secondary incinerating chambers are for the purpose of reducing to ashes the solid, semi-solid and liquid substances first desiccated in their respective drying chambers. The fire in the base of the stack serves, as above stated, to create an up draft in the stack and incidentally to consume any unburned gases escaping from the incinerating chambers. The fireplace in the stack does not constitute an incinerating chamber of the latrine incinerator.

In operation, the damper 34 at rear of the drying chamber 21 will be opened, and the damper 33 above the bridge-wall will be closed, fires being maintained upon the grates 9 and 10, as stated, and the stalls will be used until the pans 13 have received sufficient accumulation to be dumped or discharged. A strong draft will be maintained in stack 8, due to the fires on grates 9 and 10, thus drawing air down through the seats and hoppers into the drying chamber, and across the tops of the pans. If required damper 46 may be opened more or less to admit more air across the pans, and this continuing serves to carry off the gases from the drying chamber, through flue 20, and over the grates 9 and 10, where they are consumed and rendered innocuous before escaping into the air at the top of the stack. In case it is found that the pans at the front of the drying chamber are not drying out as rapidly as those to rear, the damper 34 will be closed, and dampers 31 and 33 opened, thus changing the current of air from the rear toward the front of the drying chamber, and so down through flue 19 and through the incinerating chamber (which is now cold) through the fires on the grates 9 and 10, as before described. In this case the damper 46 will ordinarily be closed. When the pans have received sufficient accumulation, the damper 33 will be closed and the dampers 31 and 34 opened, and the dampers 27 closed so that no fumes can arise through the bowls, and a fire started on the grates 2 beneath the incinerating chamber 14, which will serve to thoroughly dry out and partly incinerate the material in the pans, as they receive the direct heat from the furnace beneath them, and the hot blast rising through flue 19 and traversing the drying chamber from front to rear. In case the deposit in the pans toward the front of the apparatus is tardy in drying, the front pan may be turned to a vertical position, thus permit-

ting a strong hot blast to pass upward on either side of said pan into the drying chamber, and so back to flue 20, as before described. When the material in the pans is sufficiently dried out, and indeed partly reduced to ash, the pans will be reversed, discharging their contents upon the fire of the incinerating furnace, and at this time the damper 34 is closed and the dampers 27 opened to a greater or less extent, so that air will pass from the rear to the front of the drying chamber 21, and down through flue 19, fresh air being drawn in through the bowls and dampers 27 to supply the gases with oxygen, and at this time the damper 46 may be opened to a greater or less extent, for the same purpose, if need be. The fire is maintained on grates 2 until the material deposited thereon is consumed, or converted into gases which are consumed in the several furnaces, and ash may be drawn out through the ash pit. The pans 13 will remain inverted until thoroughly burned out and sterilized, when they may be returned to their original positions, and the apparatus will be again ready for use when sufficiently cooled, this being facilitated by closing damper 33, and opening all the other dampers so that fresh air will be drawn in, and pass forward beneath the pans, then rearward above them, and so down through flue 20 to the stack.

It will be seen from the foregoing that the apparatus here described may be used in part should the requirements of a school, hotel, or the like, warrant, as for instance, in the apparatus shown, the stalls marked *x* and *y* may be locked, and the same procedure continued, as the fire in the remaining furnace need then be only made beneath the three rearward pans 13, and these when sufficiently dry may be reversed. In this instance, the updraft from the main furnace to the drying chamber could be had by only partially reversing the foremost pan in use.

I claim—

1. In a latrine incinerator, the combination with the inclosing structure having a main incinerating chamber in its lower forward part, a drying chamber above said incinerating chamber and fixed bowls arranged above said drying chamber and communicating directly therewith, of a secondary incinerating chamber in the rear part of said structure, a stack to which the secondary incinerating chamber is connected, and means causing a draft downward through the bowls thence rearward through the drying chamber and thence directly into and through the secondary incinerating chamber to the stack.

2. In a latrine incinerator, the combination with an inclosing structure having a main incinerating chamber, a drying chamber above the main incinerating chamber and

bowls above said drying chamber and communicating directly therewith, of a secondary incinerating chamber, a stack connected laterally with the secondary incinerating chamber, and a flue leading from the drying chamber directly to said secondary chamber.

3. In a latrine incinerator, the combination with the inclosing structure having a main incinerating chamber in its lower forward part, a drying chamber above said incinerating chamber and bowls arranged above said drying chamber and communicating directly therewith, of a secondary incinerating chamber, a stack to which the secondary incinerating chamber is connected, and means causing a draft forward through the main incinerating chamber to a flue, thence rearward through the drying chamber to a flue, thence directly to and through the secondary incinerating chamber to the stack.

4. In a latrine incinerator, the combination with the inclosing structure having a main incinerating chamber in its lower forward part, a drying chamber above said incinerating chamber and bowls arranged above said drying chamber and communicating directly therewith, of a secondary incinerating chamber, a stack to which said secondary incinerating chamber is connected, and means causing a draft downward through the bowls thence rearward through the secondary incinerating chamber to the stack, or downward through the bowls, thence forward through the drying chamber, thence through the main incinerating chamber and the secondary incinerating chamber to the stack.

5. In a latrine incinerator, the combination with an inclosing furnace structure, of a main incinerating chamber in its lower forward part, a drying chamber above the main incinerating chamber, pans normally separating said chambers, a secondary incinerating chamber, a stack connected with said secondary incinerating chamber, dampered flues one connecting the main incinerating chamber through said drying chamber and the secondary incinerating chamber with the stack and another connecting said drying chamber through the secondary incinerating chamber to the stack, bowls or hoppers supported by flooring above said drying chamber, slide dampers between said bowls and said drying chamber, and a damper between the main and secondary incinerating chambers.

6. In a latrine incinerator, the combination with an inclosing furnace structure, of a main incinerating chamber in its lower forward part, a drying chamber, reversible pans normally separating said chambers, bowls or hoppers supported on flooring above the drying chamber and communicating directly therewith, a secondary incin-

erating chamber in rear of the main incinerating chamber, a stack connected by flue with the secondary incinerating chamber, and a flue leading from the rear of the drying chamber to the forward part of the secondary incinerating chamber.

7. In a latrine incinerator, the combination with an inclosing furnace structure, of a main incinerating chamber in its lower forward part, a drying chamber, reversible pans separating the said chambers, and bowls arranged above said drying chamber, a secondary incinerating chamber in rear of the main one, a liquid tank above said secondary chamber, reversible pans between the tank and said secondary incinerating chamber, a compartment above the tank, means connecting the compartment with the tank, and a valved pipe leading from tank to the pans below it, passages or flues leading from said latter pans and from said chamber to the secondary incinerating chamber, and a stack connected with the secondary incinerating chamber.

8. In a latrine incinerator, the combination with an inclosing furnace structure, of a main incinerating chamber in the lower forward part, a drying chamber, reversible pans separating said chambers, bowls arranged above said drying chamber, a secondary incinerating chamber in rear of the main one, a liquid tank above said secondary incinerating chamber, reversible pans between the tank and said secondary incinerating chamber, a compartment above the tank, means connecting said compartment with the tank, a valved pipe leading from the tank to the pans below it, overflow pipes leading from the tank to points in the drying chamber above its pans, passages or flues leading from the pans above said secondary chamber and from the drying chamber to the secondary chamber, and a stack connected with the secondary chamber by a flue.

9. In a latrine incinerator, a main incinerating chamber, a drying chamber above said incinerating chamber, bowls above said drying chamber, a secondary incinerating chamber, a stack to which said secondary chamber is connected, a flue connecting one end of the drying chamber with the main incinerating chamber, a flue connecting the main incinerating chamber with said secondary one, and a flue connecting the drying chamber with the last named flue.

10. In a latrine incinerator, a main incinerating chamber, a drying chamber above it, bowls above the drying chamber, a secondary incinerating chamber, a stack into which the secondary incinerating chamber opens laterally, a flue connecting one end of the drying chamber with the like end of the main incinerating chamber, a flue connecting the other end of the main incinerating chamber with the secondary incinerating

chamber, a damper in the last named flue, and a flue connecting the drying chamber with the secondary incinerating chamber.

11. In a latrine incinerator, a main incinerating chamber, a drying chamber above it, bowls above the drying chamber, a secondary incinerating chamber, a stack, a furnace in the base of the stack into which said secondary chamber opens, a flue connecting one end of said main chamber with the like end of the drying chamber, a flue connecting the other end of said main chamber with

the secondary incinerating chamber, a damper in the last named flue, a flue connecting the drying chamber with said secondary chamber, and a damper in said last named flue. 15

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH CONLEY.

Witnesses:

W. H. STARKWEATHER,
DYKE BALLINGER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
