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Fig. 2.

by

Inventor:
Herbert J. Harris,
Chamberlins Breidenreich
Attys

H. I. HARRIS.

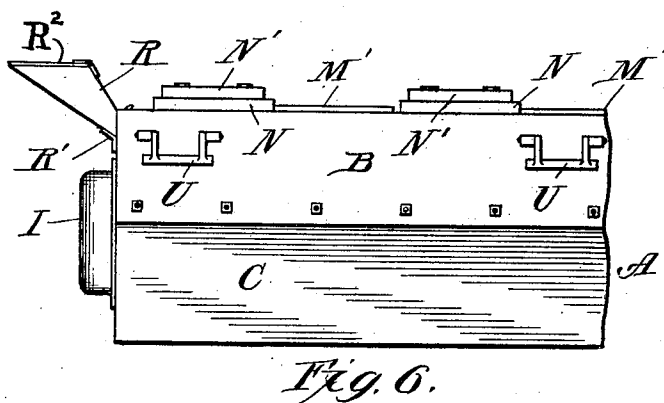
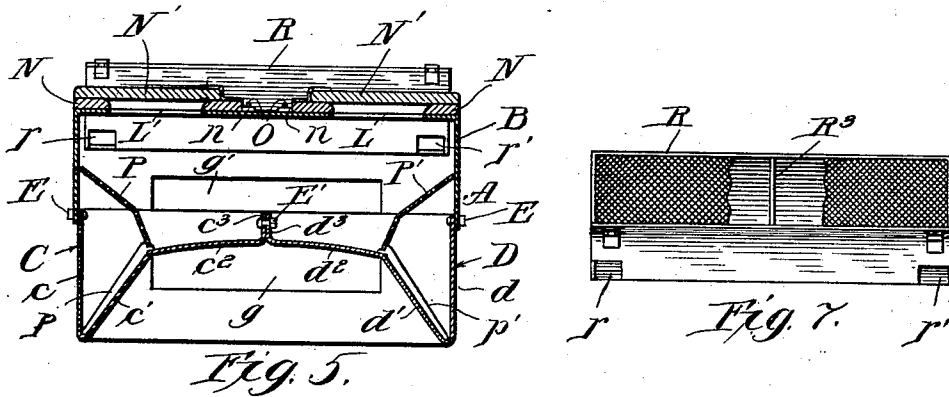
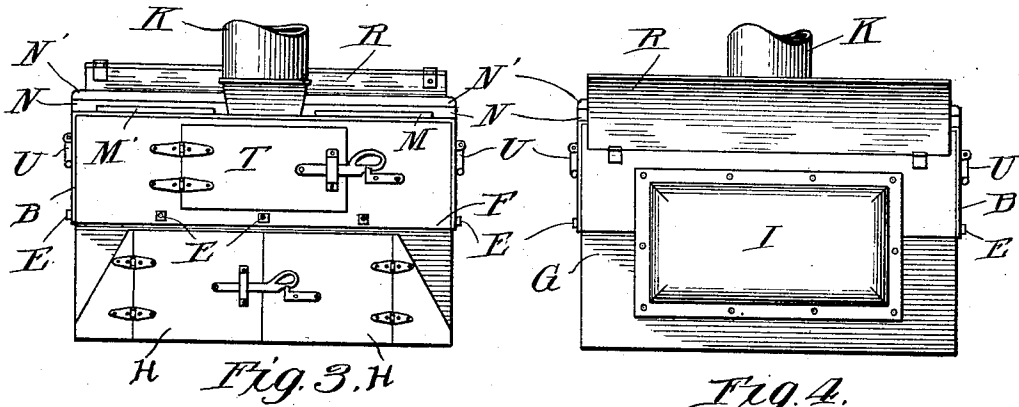
INCINERATOR.

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2 SHEETS—SHEET 2.



Witnesses:

Harry S. Gaither
Ruby V. Byrdges

Inventor:

Herbert I. Harris,

by Chamberline & Breidenreich
attys

UNITED STATES PATENT OFFICE.

HERBERT I. HARRIS, OF ROCHESTER, NEW YORK.

INCINERATOR.

1,000,170.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HERBERT I. HARRIS, a citizen of the United States, residing at Rochester, county of Monroe, State of New York, have invented a certain new and useful Improvement in Incinerators, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

One of the grave army problems is the disposal of human excrement from camps containing large bodies of men, the failure properly to dispose of the excrement producing discomfort, sickness and death. The problem is a serious one even when it is possible to shift camp frequently, and it is vital where a stationary camp must be maintained for a considerable length of time. The most effective way of disposing of the excrement is to burn it; but, owing to the peculiar nature of armies, an apparatus which would be entirely satisfactory for use in a permanent location would not answer for army use. Thus an army is not intended to remain permanently in one place, and an incinerating apparatus, to be serviceable, must be capable of being moved and carried about as part of the camp equipment; it must therefore be light and still have great capacity; and it must be easy to set up and take down. Such an apparatus must also be simple in operation so as not to require skilled attendants and it must be so constructed and arranged that no preliminary handling or treatment of the excrement is necessary before incineration.

My invention relates particularly to the problem just stated and has for its primary object to produce an efficient portable incinerating latrine which shall be simple in construction and operation and which shall combine great capacity with small weight.

The various features of novelty whereby my invention is characterized will hereinafter be pointed out with particularity in the claims; but for a full understanding of my invention and of its objects and advantages, reference may be had to the following detailed description taken in connection with the accompanying drawings, wherein:

Figure 1 is a plan view of a preferred

form of apparatus embodying my invention; Fig. 2 is a section on line 2—2 of Fig. 1; Figs. 3 and 4 are elevations of the two ends; Fig. 5 is a section on line 5—5 of Fig. 1; Fig. 6 is a side elevation of a portion of the apparatus; and Fig. 7 is a top view of the detachable trough.

Referring to the drawings, A represents a long low box preferably rectangular in section, preferably made of thick sheet iron or steel, such as light boiler plate, and adapted to rest upon the ground on the lower edges of its side and end walls. The bottom of the box is raised above the lower edges of the side walls and is connected to the lower edges of the side walls by downwardly and outwardly inclined portions which, together with the lower portions of the side walls, form gutters running longitudinally along the bottom of the box at the sides thereof. I prefer to make the box, except the ends thereof, of three sheets, one sheet, B, forming the top and the upper portions of the sides; and two other sheets, C and D, each forming a part of one side and a part of the bottom. The sheets C and D are secured to the depending portions of the top sheet in any suitable manner, preferably by means of bolts, E, or other detachable fastening means which will permit a worn sheet to be detached and replaced by a new one without making it necessary to cut away old rivets and form new ones. The sheets C and D are bent so as to form side pieces c and d , upwardly and inwardly-extending gutter members c' and d' , and laterally-extending bottom members c^2 and d^2 . The members c^2 and d^2 are preferably arched somewhat so as to make them higher at their meeting edges than at points nearer the gutters, this permitting the fluid content of excrement deposited thereon to drain off into the gutters. The free edges of the members c^2 and d^2 are preferably bent up as at c^3 and d^3 , bolts E' passing through the upturned portions to fasten them together. It will be seen that the members c^3 and d^3 form a low longitudinal partition down the center of the box which will prevent matter deposited in the box on one side from flowing over to the other side and also prevent leakage at the joint.

The members c' , c^2 , d' and d^2 form with the end walls F and G a fire box of which they are the crown sheet. In the end wall

F are fuel-receiving doors H, H, lying beneath the bottom members c^2 and d^2 . At the other end of the box is a conduit or hood I which places the fire box in communication with the interior of the box by means of openings g and g' cut in the end wall G below and above the bottom wall, respectively. K is a detachable chimney opening out of the top of the box adjacent to the end containing the fuel-receiving doors.

In the top of the box are two series of seat openings, L and L', each series being distributed along one side of the box. In the arrangement shown there are eight of these openings, four in each series, the apparatus being designed to afford accommodations for a full company of soldiers and to form a part of the camp equipment of one company; but it will of course be understood that the number of openings may be varied, increasing or decreasing the size of the unit. Flat metal covers M and M' are provided for closing the seat openings, these covers being preferably mounted on the top of the box in some manner which will make them permanent attachments while permitting them to be moved readily into either the covering position or in the position in which the openings are left uncovered. This may conveniently be accomplished by providing each cover with an ear, as indicated at m and m' and passing a bolt or rivet E² through each ear and through the top of the box at the side of the corresponding seat opening. In this way the covers are held flat on the box and are prevented from swinging up and down and making a clattering noise during transportation.

Since the box is made of metal, forming of itself an uncomfortable seat, I prefer to provide detachable seats of wood, fiber or other suitable material which may be set over the seat openings during the time the apparatus is in use as a repository. In the arrangement shown, each seat opening is provided with a detachable seat, N, having the usual lid or cover N'. The seats may be alined properly by providing the top of the box with projections or pins O in rear of the seat openings, and placing on the seats perforated ears n which slip down over the pins and projections.

Within the box are longitudinal inclined gratings P and P' each of which overlies one of the gutters at the sides of the box and prevents solid matter from dropping into the gutters, such matter traveling down across the gratings and coming upon the elevated portion of the bottom of the box. Liquids pass freely through the gratings and into the gutters. Similarly, any liquid which reaches the raised portion of the bottom is free to drain therefrom into the gutters so as to leave the solid matter in a comparatively dry state. The gratings may be

simply long strips of sheet metal provided with numerous perforations. In the arrangement shown, the gratings bear at their upper edges against the side walls of the box and rest at their lower edges upon the raised portion of the bottom. Each grating is provided with depending legs, indicated at p and p' , extending from the lower end into the adjacent gutter and resting at their lower ends on the bottom thereof. The gratings are thus held against displacement without requiring any special fastening devices.

In the end walls G is a narrow horizontal slot Q which preferably, though not necessarily, extends entirely across the same near the top of the box.

R is a V-shaped trough or urinal having its smaller end projecting into the slot and provided with openings r and r' in that portion extending into the box, these openings being preferably directly above the gutters at the sides of the box. The trough may be provided with a stop or shoulder R' for limiting the movement into the slot. One or more pins S may be inserted through the top of the box and the adjacent wall of the trough to hold it in place.

R² is a lid on the trough to close the same when desired. I prefer to provide the trough with a transverse partition R³ at the center so as to divide the trough into two parts each of which can discharge into only one side of the box, thus preventing one of the gutters from receiving an excess of liquid in case the box does not stand quite level.

T is a door in the end wall F of the box, opening into the space above the bottom wall.

U represents handles on the sides of the box for carrying it about.

When the apparatus is to be transported, the chimney, the trough and the detachable seats are removed and are placed inside of the box through the door T so that the apparatus takes the appearance of a simple elongated rectangular box having one side concaved. When camp is reached the detachable parts are taken out of the box and placed in their working positions, the chimney, if desired, being left off and the chimney opening covered by a suitable lid. The human excrement is deposited in the box and all openings are normally kept covered so as to confine the odors. It will be seen that the liquid excrement is separated from the solid and flows into the gutters, the solid portion remaining on the elevated portion of the bottom. Furthermore all of the matter, whether solid or liquid, which is deposited on one side, remains there and cannot shift over to the other side so as to produce an unequal disposition of the contents. Furthermore, the liquid received by the

trough does not come in contact with the solid matter in the box but flows directly into the gutters.

When the box has a sufficient charge, or
 5 at the allotted time, the chimney having been put in place, the detachable seats removed and the metal covers placed over the seat-openings; a fire is built in the fire box, the crown sheet becomes heated, and
 10 the flame and hot combustion gases pass along under the crown sheet, through the hood at the rear end, through the interior of the box, and then through the chimney at the front end. In this way the contents
 15 of the box, both solid and liquid, are heated from above and below; the solid matter being first dried and then consumed; and the separated liquid being evaporated and passing in the form of vapors out of the chimney without having to pass through any
 20 portion of the mass of solid matter. Therefore, if the solid matter dries before the liquid in the gutters has evaporated, the solid matter serves as additional fuel which,
 25 while burning, aids in evaporating the liquid. After the contents of the box have been completely consumed and evaporated, the ash may be withdrawn through the door T, and, after cooling, the apparatus is ready
 30 to receive further discharges upon placing the detachable seats in position.

It will thus be seen that I have provided a simple and compact incinerator which collects the excrement, houses it so as to render
 35 it inoffensive, and then permits it to be consumed in an efficient and sanitary manner. It will furthermore be seen that an apparatus of great capacity can be made without being either large, unwieldy or
 40 heavy, so that the matter of transportation is simple. Furthermore, no considerable skill is required to set up the apparatus, operate it, and remove it, so that any one having the degree of intelligence necessary
 45 in a soldier can be intrusted with its care. By constructing the apparatus so as to compel the combustion gases from the fire to pass beneath the crown sheet and then return across the top, the heat units of the
 50 fuel are utilized to best advantage so that only a minimum amount of fuel is required. By causing the excrement to be deposited in the apparatus while the latter is cold, the excrement is gradually heated when a fire
 55 is started and the disagreeable odors, which result from depositing excrement on a highly heated surface, are avoided. Furthermore, by bringing the hot combustion gases and some of the flame into the incinerating chamber and causing them to
 60 flow the whole length of the chamber, most of the odorous gases are consumed so that there will be little odor during the process of incineration even when a moderate fire
 65 is employed.

While I have illustrated and described with particularity only a single form of my invention I do not desire to be limited to the specific details so illustrated and described; but intend covering all constructions and arrangements which fall within
 70 the terms employed in the definitions of my invention constituting the appended claims.

What I claim is:

1. In an incinerator, a long closed box
 75 having its bottom raised above the bottom edges of the side and end walls and connected with one of the side walls by a downwardly and outwardly extending portion which forms with the side wall a gutter
 80 running lengthwise of the box, a grating extending downwardly and inwardly from said side wall over the gutter and into proximity to the bottom, there being a plurality
 85 of seat openings in the top of the box above said grating, said box having a fuel receiving opening at one end beneath the bottom, a chimney leading from the interior of the box at the latter end, and there being
 90 a conduit at the other end connecting the space beneath the box with the interior of the box.

2. In an incinerator, an elongated rectangular closed sheet metal box, the bottom wall being a continuation of the side walls and
 95 comprising a central elevated portion connected to the lower ends of the side walls by downwardly and outwardly extending portions which form gutters with the side walls, one end of the box having a fuel-receiving
 100 opening below the elevated portion of the bottom wall, a chimney at said end of the housing leading from the interior thereof, a conduit at the other end of the housing connecting the space beneath the housing with
 105 the interior thereof, there being seat openings in the top of the box along each side, and gratings extending from the side walls downwardly and inwardly across the gutters and into proximity to the bottom wall.
 110

3. In an incinerator, an elongated rectangular closed sheet metal box, the bottom wall being a continuation of the side walls and comprising a central elevated portion connected to the lower ends of the side walls
 115 by downwardly and outwardly extending portions which form gutters with the side walls, one end of the box having a fuel-receiving opening below the elevated portion of the bottom wall, a chimney at said end of
 120 the housing leading from the interior thereof, a conduit at the other end of the housing connecting the space beneath the housing with the interior thereof, there being seat openings in the top of the box along each
 125 side, gratings extending from the side walls downwardly and inwardly across the gutters and into proximity to the bottom wall, and movable metal covers mounted on said box to close said seat openings.
 130

4. In an incinerator, an elongated closed box having a portion of its bottom raised so as to form an elevated drying table and a gutter extending lengthwise of the box adjacent to one side thereof, said box having a plurality of seat openings in the top wall along said side, a grating lying above said gutter and extending diagonally upwardly from the bottom wall of the box to the afore-
 10 said side, there being a fuel-receiving opening in one end of the box below the bottom wall, a conduit at the other end of the box connecting the interior of the housing with the space beneath the bottom wall, and a
 15 chimney leading from the interior of the box at the end having the fuel-receiving opening.

5. In an incinerator, an elongated closed metal box having a portion of its bottom raised so as to form an elevated drying table together with a gutter running longitudinally of the box along one side thereof, an inclined grating extending downwardly from said side across the gutter and into proximity to the driving table, the top of the
 20 box having a plurality of seat holes along said side thereof, metal covers for said holes each pivotally secured to the top of the box at one side of one of the holes, there being a fuel-receiving opening in one end of the
 30 box below the raised portion of the bottom wall, a chimney leading from the interior of the box at the said end, and a conduit at the other end of the box connecting the interior thereof with the space below the bottom wall.

6. In an incinerator, a long closed box having its bottom wall raised so as to form a fire-box beneath the same, said bottom wall being connected with the lower end of the
 40 side walls by a downwardly and outwardly inclined portion so as to form a gutter at one side of the box, a flue at one end of the box connecting the space beneath the bottom wall with the interior of the box, a chimney
 45 leading from the other end of the box, there being a fuel-receiving opening through the end wall of the box at the latter end and beneath the bottom wall, a detachable grating resting in an inclined position over the
 50 gutter against said side and bottom walls, and there being a plurality of seat openings through the top wall adjacent to said side wall.

7. In an incinerator, a long closed metal
 55 box, the bottom of the box comprising continuations of the sides bent upwardly to form gutters and then bent laterally toward the center, the meeting ends of the members of the bottom wall being bent upwardly and
 60 fastened together to form a shallow partition extending longitudinally of the box along the center, the top of the box having a plurality of seat openings along each side thereof, means connecting the space beneath
 65 the box with the interior thereof, and a

chimney leading from the interior of the box.

8. In an incinerator, a housing having an incinerating chamber provided with gutters at the sides thereof, one of the end walls of
 70 the housing having a long narrow slot extending horizontally across the same above the plane of the gutters, and a trough V-shaped in cross section resting with its small
 75 end in said slot, said trough having holes in its small end at points above the gutters.

9. In an incinerator, a housing having an incinerating chamber provided with gutters at the sides thereof, one of the end walls of
 80 the housing having a long narrow slot extending horizontally across the same above the plane of the gutters, a trough V-shaped in cross section resting with its small end in said slot, said trough having holes in its
 85 small end at points above the gutters, said trough having a transverse partition through its middle to prevent the contents in one side from flowing out at the other side.

10. In an incinerator, an elongated rectangular closed sheet metal box, the bottom
 90 wall forming a continuation of the side walls and being bent upwardly at the center so as to form a combustion chamber therebelow and central elevated drying
 95 table having gutters extending longitudinally of the same along the sides of the box, said box being adapted to be supported by having the lower edges of its side walls resting upon the ground, one end of the box
 100 having a fuel-receiving opening below the elevated portion of the bottom wall, a chimney at said end of the box leading from the interior thereof, a conduit at the other end
 105 of the box connecting the space beneath the same with the interior thereof, there being a plurality of openings in the top of the box along each side thereof, and movable metal
 covers for closing said openings.

11. In an incinerator, a long closed metal
 110 box, the long sides of the box being divided along a horizontal plane, means for securing together the members of each of said sides of the box, the lowermost members of said
 115 sides being bent inwardly and upwardly to form gutters and then laterally toward the center, the meeting ends of the laterally-bent portions being bent upwardly and fastened together to form a shallow partition
 120 extending longitudinally of the box along the center and reaching approximately to said horizontal plane, the top of the box having a plurality of seat openings along
 125 each side thereof, means connecting the space beneath the box with the interior thereof, and a chimney leading from the interior of the box.

12. In an incinerator, a long closed box made of sheet metal, the bottom of the box
 130 extending from the lower edges of the side walls and being curved upwardly at the

center so as to form a combustion chamber therebelow and longitudinal gutters at the sides of and within the box and an elevated drying table along the center of the box, said box being adapted to be supported by having the lower edges of its side walls resting upon the ground, the top of the box having a plurality of charge-receiving openings along each side, a chimney leading from the interior of the box at one end thereof, there being a fuel-receiving opening in the end wall at the chimney end and at a point beneath the bottom wall, and a conduit at the other end of the box connecting the space beneath the box with the interior of the box.

13. In an incinerator, a long closed box having its bottom raised above the lower edges of the side and end walls and being connected with the lower edges of the side walls by downwardly and outwardly inclined portions, the top of the box having a plurality of seat openings along each side, a chimney leading from the interior of the box at one end thereof, there being a fuel-receiving opening in the end wall at the chimney end and at a point beneath the bottom of the box, a conduit at the other end of the box connecting the space beneath

the box with the interior of the box, and deflectors extending inwardly and downwardly from the sides of the box beneath the seat openings.

14. In an incinerator, a closed sheet metal box, the bottom wall forming a continuation of the side walls and being bent upwardly at the center so as to form a combustion chamber therebelow and a central elevated drying table having gutters at the sides along the lower edges of the side walls, said box being adapted to be supported by having the lower edges of its side walls resting on the ground, one end of the box having a fuel-receiving opening leading into the combustion chamber, a chimney at the latter end of the box leading from the interior thereof, a conduit at the opposite end of the box connecting the combustion chamber with the interior of the box, one or more charge-receiving openings in the top of the box and a movable metal cover for each of said openings.

In testimony whereof, I sign this specification in the presence of two witnesses.

HERBERT I. HARRIS.

Witnesses:

WM. F. FREUDENREICH,
RUBY BRYDGES.