The invention described herein, if patented, may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

This invention relates to a portable chamber for fumigating operations, particularly for disinfecting the clothing and other equipment of troops in the field.

Experience during the first world war resulted in the development of portable steam disinfecting chambers which were transported from place to place on trucks or other wheeled vehicles. The disadvantages of this type of disinfecting apparatus are obvious, since the weight of the equipment, its fuel requirements and the time required for processing a single batch of clothing or other material were too great, and other disadvantages and danger accompanied the operation. The high pressure chambers employed in the steam disinfecting also required quantities of metals not readily available at the present time. The problem of maintaining the clothing and bedding of soldiers in theaters of operation free from lice, not only to promote the comfort of the soldiers but also to prevent the spread of louse-borne diseases such as typhus, has resulted in the development of the disinfecting chamber forming the subject matter of the present invention.

It is an object of the present invention to provide a knockdown disinfecting chamber of light weight and simple construction adapted for the use of gas at atmospheric pressure as the fumigating agent.

It is a further object of the invention to provide a light weight building constructed of separate panels, one of which constitutes a door for the chamber and another of which carries apparatus for receiving a gas container and dispensing the contents thereof through the chamber.

Further objects of the invention will be apparent from a consideration of the ensuing specification taken in connection with the accompanying drawings in which:

Fig. 1 is a rear view of the assembled chamber showing the operating motor also.

Fig. 2 is a transverse section on the line 2—2 of Figure 1 showing the gas dispensing fan and duct.

Fig. 3 is a perspective view of a front corner of the assembled chamber.

Fig. 4 is a sectional view on the line 4—4 of Fig. 3.

Fig. 5 is a perspective view of the assembled disinfecting chamber.

Fig. 6 is a sectional view on the line 6—6 of Fig. 5 and

Fig. 7 is a sectional view on the line 7—7 of Fig. 6.

As shown in the drawings, the invention comprises a chamber formed of six separable panels, a bottom forming panel 18, side panels 11, top panel 12, a front door forming panel 13, and a rear panel 14. Each panel is composed of sheet material 15, either sheet metal or some other suitable material that is impervious to gas. As shown in Fig. 4, the sheet material 15 is composed of a sheet 16 of steel ¼ inch thick and a sheet 17 of plywood ½ inch thick. This construction is light in weight and has the necessary strength and impermeability. A frame 18 surrounds the panel on its outer face and suitable gasketing material 19 are distributed across the face of the panels in such a manner as to strengthen the panels and make the chamber formed from the panels sufficiently rigid to withstand the use intended.

The bottom, side, top and rear panels are secured together by a type of joint which forms a gas tight connection between the panels but which is easily disconnected when the chamber is to be disassembled for transportation from one place to another. The joint is formed by providing aligned grooves 20 in the edges of the projecting frame members 18 of adjacent panels and securing a swinging bolt 21 in the grooves. To form the joint between the side and top panels, for example, vertical grooves 23 are formed in the side frame 18 of the side panel 11 and vertical grooves 20 in the edge of the frame 18 of the top panel 12, the pairs of grooves in the two panels being aligned. To the lower edge of the frame 18 of the side panel there are secured two angular brackets 22 in slightly spaced relation. Each bracket 22 is provided with a circular opening 23, the two openings being in alignment, and the two brackets 22 form a bearing for the circular head 24 of the screw bolt 21 which is supported thereby. The bolt 21 is threaded at the opposite end and carries a wing nut 25, and when the bolt is swung into the aligned grooves 20 and the nut 25 is tightened against the top of the upper frame member 18, the two panels are pressed firmly together. The bolts 21 are spaced sufficiently close along the entire extent of the joints between the aforementioned panels to form a gas-tight joint, especially if caulked during assembly, and provide an easy means for assembling and disassembling the panels.

The front panel 13 is secured in place by swing
cam latches 25 which are mounted in recesses 27 in the frame 16 of the front panel and engage notches in the inner faces of the adjacent panel members. The end panel 13 is thus removable from the chamber to provide a door for loading and unloading the charge of material to be disinfested, and at the same time the stability of the structure is not affected. The front panel 13 may also carry smaller doors 28 and 29, either sliding or hinged, for inspection of the contents or access to the interior for any reason not requiring removal of the entire end panel 13, and to admit air to the chamber when the gas is being pumped out.

The interior of the chamber is provided with a series of indentations 30 extending in rows along each of the side panels 11 for the purpose of supporting bars 31 while forming the support for the clothing and bedding being disinfested. Bars 31 are easily placed and removed from the recesses 30 and at the same time form desirable supports for the material being treated because they allow free circulation of the gas employed and complete penetration of the material being treated. The rear panel 14 carries the chamber 32, duct 33, and fan 34 forming the circulating system for the disinfesting gas. A gas suitable for the purposes of this invention is methyl bromide, which is available in liquid form in sealed containers. A container of methyl bromide is placed in the chamber 32 and is opened by a suitable cutting tool (not shown) within the chamber. The chamber 32 is in communication with the duct 33, and the methyl bromide vaporized and infused into the duct. Near the top of the duct 33 an opening 35 is provided through the panel into the main chamber. The opening 35 is provided with a door 36 suspended from a hinge at the top and operated by a crank 37 having a screw threaded relation to the rear wall of the duct at 38. A damper 39 is also provided in the duct wall and panel 14 between the lower part of the duct and the fumigation chamber. The fan 34 is provided with a pulley 40 and is operated by a suitable gasoline or other motor 41 thru the belt 42.

In operation, after the chamber is charged with the material to be treated, the upper vent 35 is opened and the closure 36 thereof drawn back until its lower edge is in contact with the opposite wall of the duct, thereby closing the open upper end of the duct to the atmosphere. A can of methyl bromide is placed in the receiving chamber and punctured, the vapor escaping at once into the chamber and then into the duct. The fan is operated, driving the gas into the disinfecting chamber and recirculating it through the chamber, lower vent and duct. A period of thirty minutes suffices for treatment of a charge of clothing, after which the upper opening into the main chamber is closed, the upper end of duct being opened at the same time. The operation of the fan is continued, thus evacuating the gas from the chamber through the lower vent and the open upper end of the duct. After ten minutes the main chamber may be opened, the treated clothing removed, and the chamber reloaded for another disinfestation.

In assembling the chamber, the joints should have a sealing compound applied to the contacting surfaces before they are secured by the swinging bolts. If desired, the exhaust from the motor may be conducted through the flexible conduit 43, whereby it aids in the vaporization of the methyl bromide.

Having thus described my invention what I claim is:

1. A portable gas disinfester comprising a chamber having four sides and a top and bottom of reinforced panel construction, said panels being detachably secured together around their edges, the front panel being separable from the assembly independently of the attachment of the adjacent sides, top, and bottom to one another in the manner of a door, the side panels carrying rows of bars constituting shelves, and a circulating system carried entirely by the rear panel and comprising a duct having openings into the chamber adjacent the top and bottom of the panel, fumigator receiving means and a fan.

2. In a portable gas disinfester, a chamber having four sides and a top and bottom each comprising a single panel member reinforced by a frame at the margins, the front panel being detachably secured within the opening formed by the top, bottom, and adjacent side panels of the chamber by means independent of the means for securing said panels to one another and forming a door, means for securing the remaining panels together at their edges, and said means comprising aligned grooves in the adjacent panel reinforcing frames and swinging bolts carried by one frame and adapted to lie in the grooves and wing nuts on the bolts adapted to be tightened against the other frame to draw the frames together in gas-tight relation.

3. A portable gas disinfesting chamber having six panel walls, each comprising a sheet of material having a thicker frame, one of which walls is secured to the adjacent walls by means independent of the means for securing the remaining walls together, thereby forming a removable door, and a circulating system for filling the chamber with gas and evacuating the gas, said system being carried entirely by one wall of the chamber, and means for securing the adjacent edges of some of the panel walls together comprising pairs of aligned grooves in the frames of adjacent panel walls and a swinging bolt secured to the inner edge of one frame adjacent each pair of the grooves, extending through the grooves and having a wing nut engaging the opposite edge of the other frame.

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