

M. W. R. SEIPP.
STOVE FOR DISINFECTING AND CONSUMING EXCREMENT AND REFUSE.
No. 541,016. Patented June 11, 1895.

Fig. 1.

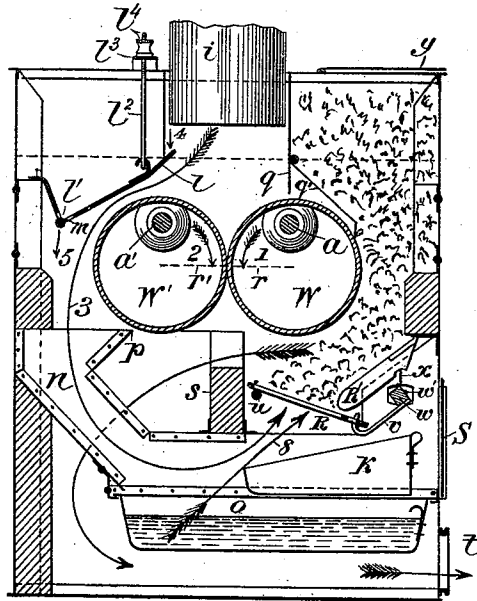
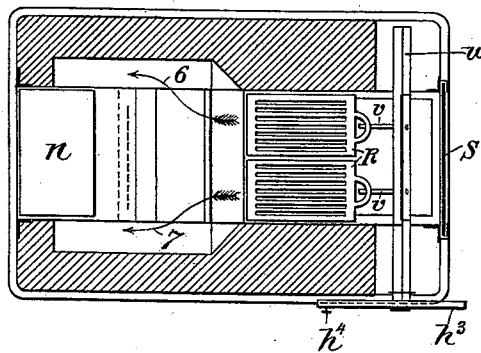


Fig. 2.



Witnesses:

Am. Song
Alex. Scott

Inventor

Maximilian W. R. Seipp,
B. Houson & Houson,
his Attys.

(No Model.)

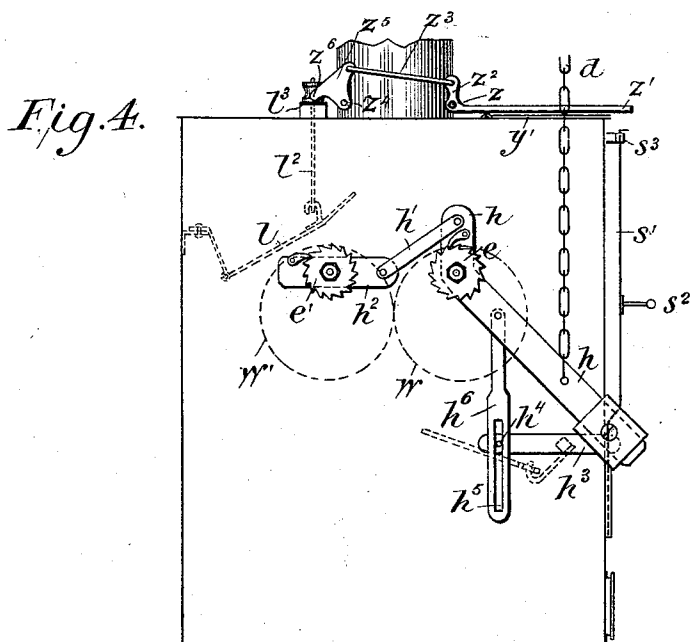
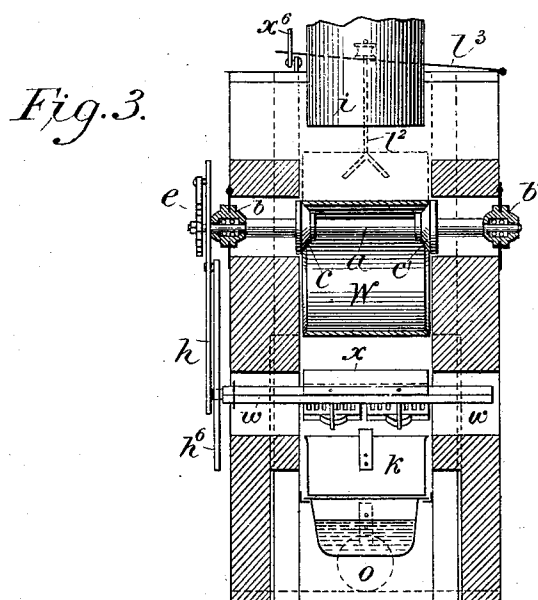
2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

MAXIMILIAN WILHELM REINHARDT SEIPP, OF BERLIN, GERMANY.

STOVE FOR DISINFECTING AND CONSUMING EXCREMENT AND REFUSE.

SPECIFICATION forming part of Letters Patent No. 541,016, dated June 11, 1895.

Application filed May 19, 1894. Serial No. 511,810. (No model.)

To all whom it may concern:

Be it known that I, MAXIMILIAN WILHELM REINHARDT SEIPP, of Berlin, German Empire, have invented new and useful Improvements in Stoves for Disinfecting and Consuming Excrement and Household Refuse, of which the following is a specification.

This invention relates to a stove combined with a closet for disinfecting and burning excrement and household refuse, with the object of entirely preventing any possibility of the same exerting a deleterious influence on health. It also has this important advantage that the air necessary for combustion is drawn from the closet chamber through the waste pipe, and thereby bad smells and deleterious fumes are entirely prevented from rising into the closet chamber, and further that the urine arising from the use of the closet is simultaneously evaporated by the gases of combustion, and the vapor resulting therefrom is also drawn through the fire and thus made thoroughly harmless.

The essential arrangement of the stove consists of two hollow rollers on which the excrement or household refuse falls, and between which, by the rotation of the rollers, the same is conveyed into the actual combustion chamber. The rollers are loosely supported on two shafts revolving intermittently, the distance between the axes of said shafts being somewhat less than half the distance across the two hollow rollers so that the latter may separate laterally to any suitable extent for the passage of the excrement, and thus a stoppage can never take place, while, at the same time, by the tendency of the rollers to constantly return into the position of equilibrium, a tight joint is always automatically formed between the rollers, and thus a reliable shutting-off of the furnace gases from the closet chamber is uninterruptedly obtained. This shutting off is the more effectively produced by the co-action of the excrement itself, as the latter each time the closet is used, is ground between the rollers by their rotation which then takes place, and evenly distributed over the whole length of the rollers, and the excrementitious matter thus acts precisely as a means for forming the joint.

This improved stove is shown on the accompanying drawings.

Figure 1 is a vertical section through the rollers; Fig. 2, a horizontal section above the grate, and Fig. 3 a vertical section in the longitudinal direction of the rollers. Fig. 4 is an outside view looking from the left toward Fig. 3.

The two shafts a and a' (Fig. 1) on which the hollow rollers W W' hang, run in ball bearings b b' (Fig. 3) which are fastened in slots in the sheet iron outer wall of the stove. Each of the two shafts a and a' has, at a distance from the fireclay lining of the stove, two blocks c c' which are turned off conically on the inner side, as may be seen in Fig. 3. On this conical surface, the hollow rollers W W' hang with their edges, which are also suitably conically turned off. The shafts a a' are supported in such a way that the distance between the two axes of the shafts is somewhat less than the distance rr' , Fig. 1, which is half the length across the two rollers W W' . This has the effect of imparting to the rollers a tendency to constantly close the passage for the excrement.

The lever bars h h' and h^2 (Fig. 4) which are connected with the closet door by means of a draw chain d are operated each time the door is opened, and thus both shafts a and a' are revolved by means of the ratchet mechanism e and e' in such a way that the two rollers W W' are moved in the direction indicated by the arrows 1 and 2 in Fig. 1. The connection, hereinbefore mentioned, of the rollers and the blocks c and c' on the shafts, by means of the conical surfaces, causes the rollers to be carried around with certainty. If necessary, the rollers may be provided with teeth on their inner surfaces in which suitable gearing, arranged on the blocks c and c' engage. By this rotation of the rollers W W' , the excrement lying between the same is ground up and simultaneously distributed over the length of the rollers, so that the latter are coated with a moist layer of excrement which on the further rotation of the rollers, in the case of the roller W , which lies over the grate R , is gradually brought more and more within range of the fire, and is thus first dried, and then falls from off the roller in the form of a scale and is finally burned. The ashes fall on the grate R , or through the same into the ashpan k (Fig. 1). The roller W' is so cooled by

the current of fresh air passing over the same, in the direction of the arrow 3 (Fig. 1) that the layer of excrement adhering thereto will always contain some moisture and remain sticky. This in combination with the considerably stronger heating of the roller W, has the advantageous effect, that, first, the fresh falling excrement adheres almost exclusively to the roller W and thus is brought within reach of the intense fire and thereby consumed, and, secondly, it prevents a caking together of the two rollers, and, thirdly, constantly produces a tight joint between the rollers and thus exactly, at this very important place, causes the certain shutting off of the combustion chamber from the waste pipe *i* of the closet.

If, as frequently may be the case with household refuse, larger and harder articles fall onto the rollers, they cause a correspondingly greater lateral separation of the rollers. As soon, however, as the articles have passed the rollers, the rollers immediately again swing together by their own weight and thus close the passage.

Only a small portion of the urine reaches the rollers. The main portion flows down the front of the tube *i* and is received at the arrow 4 (Fig. 1) by a plate *l*, which conveys the urine to a slot *m* through which it falls in the direction of the arrow 5 into a passage *n* constructed in the stove, which passage conveys it into a collecting vessel *o* arranged beneath the ashpan with its edges resting on projecting flanges of the sheet metal walls which are here built in. This collecting vessel closes the passage *n* at the bottom and may, when the ashpan has been removed, also be lifted out.

The air necessary for combustion is also simultaneously drawn through the passage *n* in the direction of the arrow 3. In consequence of the waste pipe *i* being built with a tight joint into the stove, and the shutting off of the roller W' on the inner upper edge *p* of the passage *n* as well as the shutting off of the roller W against the partition *q* which is arranged over the same and which extends to the top of the stove, this air can only be drawn through the closet pipe *i*. In this manner the rising of fumes to the closet chamber is entirely prevented and all such fumes and vapors are on the other hand immediately and constantly drawn off and conveyed through the fire which is maintained on the grate R. The gases of combustion pass away over the fire bridge *s* at both sides of the passage *n* (Fig. 2, arrows 6 and 7) and this produces a preliminary heating of the fresh air and then pass over the bottom and the sides of the collecting vessel *o* (Fig. 1) so that the urine contained therein is evaporated. The vapor hereby produced is carried along with the draft of fresh air and conveyed in the direction of the arrow 8 through the grate R into the fire, so that this vapor is rendered entirely harmless, and is drawn off with the gases from the fire through the draft pipe

connected with the opening *t* to the chimney. The lever bar arrangement *h*, *h'* and *h''* by means of which the intermittent rotation of the rollers is produced, also serves for shaking up the grate R. For this purpose the grate, which according to the size of the stove consists of one, two or more fire plates (Fig. 2), placed side by side, rests at one end on a bar *u* (Fig. 1), while the other end of each grate bar is held by a hook *v* (Fig. 1, 2 and 3) all of these hooks being fastened in a rectangular bar *w*, which is placed in a larger slot *w'* (Fig. 1) of the sheet metal plates, which are built into the stove, and at the same time form the sides of the passage *n*, and which carries a fixed lever *h''* on the end which projects through the outer wall of the stove. This lever *h''* engages, by means of a pin *h'* (Fig. 2) in the slotted eyelet *h''* (Fig. 4) of a bar *h'* movably attached to the lever *h*, so that toward the end of the movement of the lever *h*, which takes place on the opening of the closet door, the bar *h'* lifts somewhat the pin *h'*, and thereby produces a small outward movement of the lever *h''* and with it of the rod *w* with the hooks *v*, and thus causes a shaking up and freeing from cinders of the grate R.

A pin or bar *x* (Fig. 1) is fastened on the rectangular bar *w*, which bar *x* serves as a point of support for the upper grate R', so that, on the movement of the bar *w*, this upper grate also undergoes a shaking up, and thereby a suitable downward movement of the fuel contained in the charging hopper *y* is produced. It may also be noted, that the lateral separation of the rollers, which takes place on the passage of the excrement between them, also causes a shaking up of the fuel, which produces a slipping down of the same. This takes place by means of the roller W which is in contact with this fuel, and this shaking up of the fuel requires a certain amount of attention, as the above named lateral separation, or displacement is almost exclusively performed by means of this roller W, while in order to prevent smoke passing between the roller W' and the side *p* (Fig. 1) of the passage *n*, this second roller W' must be so arranged that there is constantly maintained as reliable a tight joint as possible along this side *p*, even when the roller is clean.

In order to partially relieve the roller W from the pressure of the fuel lying above the same, a hinged flap *q'* (Fig. 1) may be arranged on the inner partition *q* of the fuel chamber or chute, which flap rubs with its under edge on the roller W, and thus also serves to clean this roller. As the flap *q'* is also turned on its pivot when the roller W undergoes a lateral movement, the fuel resting on the flap also experiences a certain amount of shaking up.

A partition firmly built into the oven may of course be arranged instead of the flap *q'*, which would require to stand off in any case all the way down as well as at the lower edge, so far from the roller W that the latter may

move laterally without hinderance to any desired extent. In this case the partition q must, as shown in Fig. 1, reach close to the roller W , in order to produce as tight a shutting-off as possible of the fuel hopper or chute from the closet pipe i , to allow of a through draft through the passage n , while by the arrangement of a flap such as q' which rubs on the roller W , this close fitting of the partition q to the roller W , is not necessary.

In order to prevent any escape of smoke from the charging chute y , when the same is opened for the purpose of inserting fresh fuel, the following arrangement is made: The plate l , which serves for carrying off the urine, is movable on hinges l' (Fig. 1) and hangs on a bar l^2 , which is held by means of a spring l^3 , (Figs. 1, 3 and 4) which is attached to the lid of the stove by one end, and projects with the other end. The hanging bar l^2 is provided at its upper end with a screw thread so that by means of a screw nut l^4 , the bar, and therewith the plate l , may be adjusted according to requirements. Further on the lid of the stove, an elbow lever is movably arranged on a pivot z (Fig. 4), the longer arm z' of which lever lies on the lid y' of the charging chute or hopper, so that, when the lid y' is opened, the elbow lever makes a corresponding movement outward. By this means a second lever z^5 , which is movable on a pivot z^4 also fastened on the lid of the stove, is caused to make an outward movement by means of a bar z^3 , hinged to the shorter arm z^2 of the elbow lever. This second lever z^5 then presses down by means of a projection z^6 the above mentioned spring l^3 , so that the point of suspension of the bar l^2 descends in such a way that the plate l rests on the roller W and thus entirely shuts off the draft of air passing through the passage n .

The draft exerted on the fire from the chimney can then only cause the in-draft of fresh air through the open fuel chute, and thus, on the opening of the lid y' of the latter, any escape of smoke is entirely prevented. In order, however, that when the ashpan k (Fig. 1) is drawn out, as well also as the urine holder o for the purpose of emptying the same, the flame on the pushing up of the sliding door S (Figs. 1 and 2) which gives access to these parts, shall not emerge through the opening exposed. A bar s' is attached to the sliding door and carries a handle s^2 (Fig. 2), which bar s' fits into a socket s^3 attached to the wall of the stove, and, on the door being pushed up, immediately strikes on the projecting longer arm z' of the above named elbow lever, which arm z' projects over the edge of the lid y and forces the workman attending to the stove to first adjust this elbow lever and thus to shut off the draft of air passing through the passage n in the manner hereinbefore described, so that when the sliding door S is subsequently pushed up, the air for the combustion is drawn in through the opening thus caused. The thoroughly sterilized residue,

which remains in the vessel o after the evaporation of the urine, forms a valuable substance, by far the largest part of which consists of salts very suitable for manurial purposes.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. A stove for consuming refuse, comprising a combustion chamber provided with a grate, an inlet pipe for the refuse and an air passage leading from the inlet pipe to below the grate, in combination with two rollers below the inlet pipe and closing the passage between the inlet pipe and the combustion chamber, rotatable shafts carrying the said rollers, the distance between the axes of the said shafts being less than half the distance across the two rollers, whereby the two rollers constantly tend to close together and thereby shut off the combustion chamber from the inlet pipe, substantially as set forth.

2. In a stove for consuming refuse, the combination of a combustion chamber provided with a grate, an inlet pipe for the refuse, two rollers below the inlet pipe and closing the passage between the inlet pipe and the combustion chamber, shafts carrying the two rollers, with a system of levers connected to the said shafts and to the grate to be actuated from outside the stove and adapted to intermittently rotate the said shafts and to shake the grate, all substantially as and for the purposes set forth.

3. In a stove for consuming refuse, the combination of a combustion chamber, an inlet pipe for the refuse, and rotatable rollers below the inlet pipe and closing the passage between the inlet pipe and the combustion chamber, with a plate extending below the front part of the inlet pipe, and a collecting and evaporating vessel around which the gases of combustion are caused to pass, all substantially as and for the purposes set forth.

4. In a stove for consuming refuse, the combination of a combustion chamber provided with a grate and a charging chute, an inlet pipe for the refuse, and an air passage leading from the inlet pipe to below the grate, and rotating rollers below the inlet pipe and closing the passage between the inlet pipe and the combustion chamber, with a pivoted plate extending below the front part of the inlet pipe and means for automatically moving the said plate to close the air passage when the lid of the charging chute is raised, substantially as and for the purposes set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MAXIMILIAN WILHELM REINHARDT SEIPP.

Witnesses;

EMIL T. HOFFMANN,
W. HAUPT.