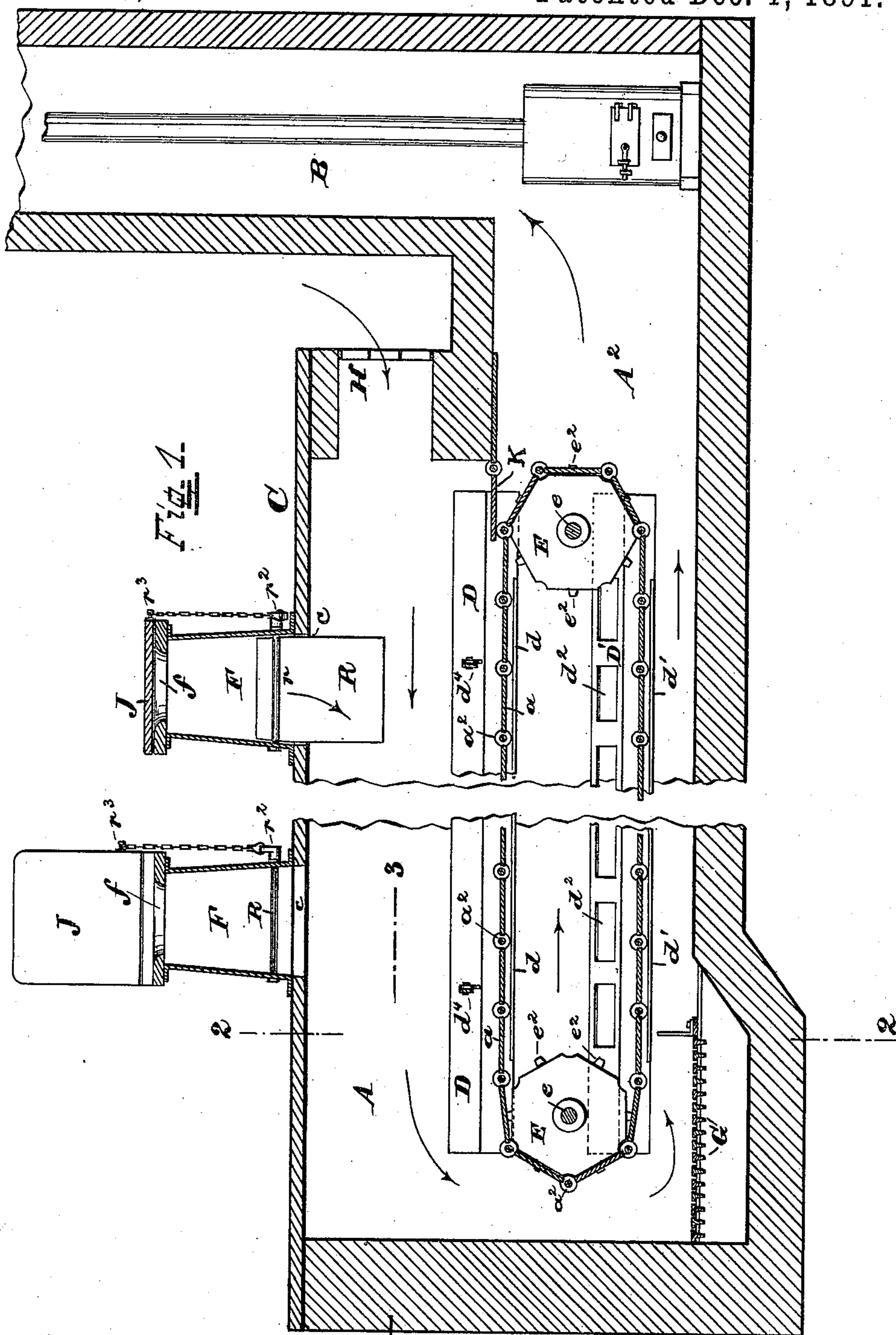


O. A. LANPHEAR.  
DRY AIR CLOSET.

No. 464,197.

Patented Dec. 1, 1891.



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Wilson B. Brice,  
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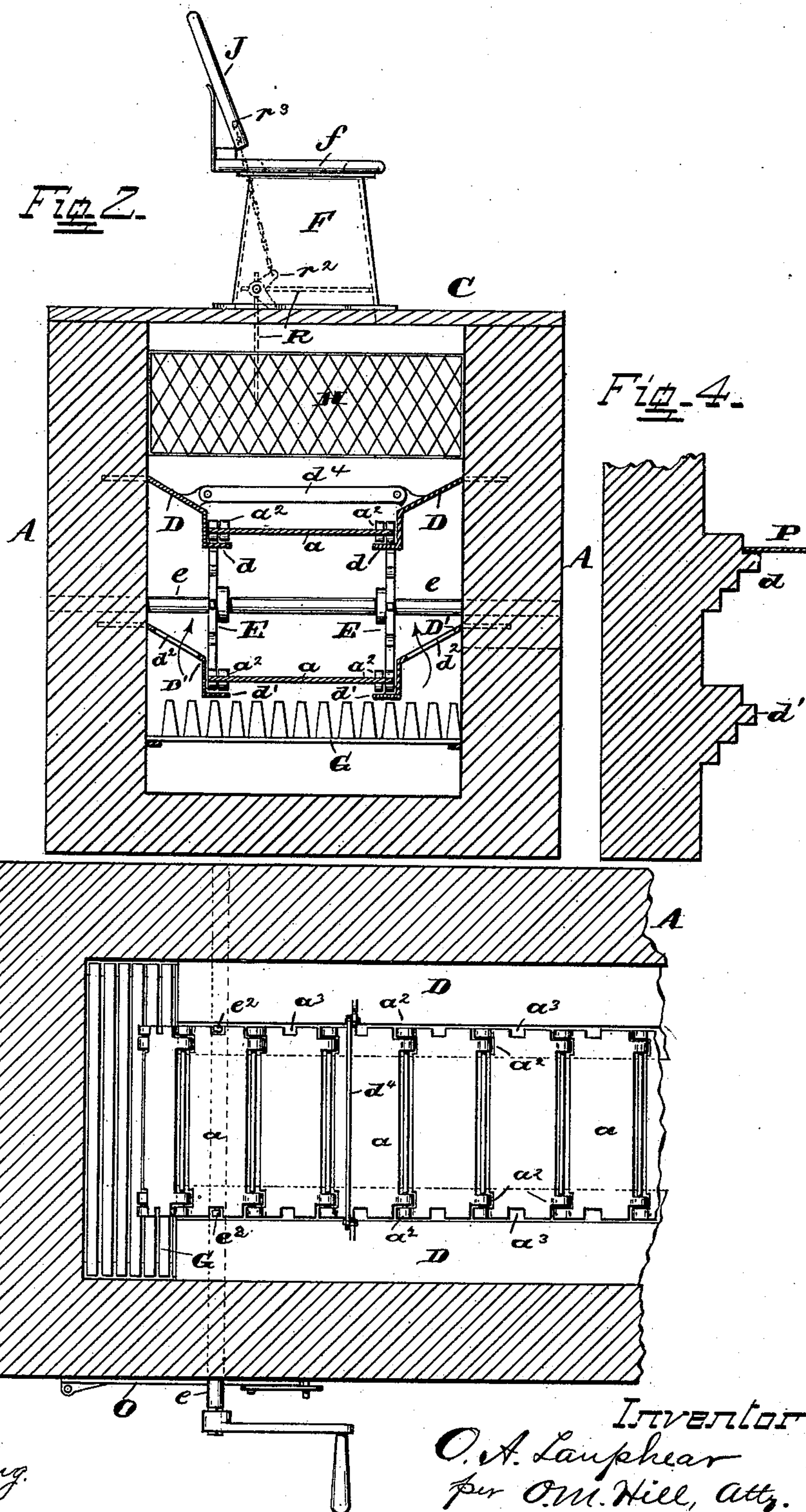
(No Model.)

2 Sheets—Sheet 2.

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# UNITED STATES PATENT OFFICE.

OSCAR A. LANPHEAR, OF CINCINNATI, OHIO.

## DRY-AIR CLOSET.

SPECIFICATION forming part of Letters Patent No. 464,197, dated December 1, 1891.

Application filed May 15, 1891. Serial No. 392,938. (No model.)

*To all whom it may concern:*

Be it known that I, OSCAR A. LANPHEAR, a citizen of the United States, residing at Cincinnati, in the county of Hamilton, State of Ohio, have invented certain new and useful Improvements in Dry-Air Closets, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to that class of closets in which provision is made for a constant flow of air through the vault thereof; and it consists, primarily, of the means hereinafter set forth for drawing the solid fecal matter to a convenient portion of the vault to be burned or removed, and also of the means hereinafter specified for wholly or partially cutting off the draft of air through the seat-opening while the closet is being used.

In the accompanying drawings, Figure 1 is a vertical longitudinal section through the vault and hoppers of a closet embodying my invention, said view being broken away centrally to economize space, showing one form of operative device for receiving and carrying the solid excrement to the front portion of the vault, also one form of device for cutting off the flow of air through the seat-opening when its cover or lid is elevated. Fig. 2 is a vertical cross-section on the dotted line 2 2 of Fig. 1, looking toward the right hand in said figure. Fig. 3 is a transverse section taken on the dotted line 3 3 of Fig. 1. Fig. 4 is a vertical section of one of the side walls of the vault, showing a modification of the device or means for supporting the carrier.

My improved closet is designed more especially for public buildings or other places where it is desired to provide a number of seat-openings in a row, the walls A of the vault being preferably constructed of brick-work, the rear of said vault communicating with a suitable shaft or flue B for drawing a constant flow of air through said vault. This shaft may be provided with any suitable heating device or suction device for accomplishing this circulation of air through the vault, the latter having a suitable cover C.

Within and to the side walls of the vault are connected suitable bracket-supports D and D', which latter act as a support and guide for the excrement-carrier. These supports may be formed in any desired opera-

tive manner. When constructed as shown in Figs. 1, 2, and 3, said supports consist of suitable metallic plates embedded in the walls, said plates being preferably of the configuration shown in Fig. 2 and terminating in the lateral flanges *d* and *d'*, as shown. If desired, said supports may be formed with outward-projecting brick, as shown in Fig. 4.

Near each end of the vault are secured the sprocket-wheels E, mounted on shafts *e*, the latter being suitably journaled in the side walls and projecting through the latter at one side of the vault, as shown in Fig. 3, to the end of which shafts may be secured a suitable crank for rotating said sprocket-wheels, the object of which latter is to afford a means for operating the excrement-carrier, which will now be described. It is evident that this carrier might be constructed in a variety of ways; but that shown is preferred, which consists of a series of plates *a*, having the embossed lugs *a*<sup>2</sup> at each end thereof, said lugs having openings therein, and so arranged that a rod may be passed through said lugs on adjacent plates, and in this manner said plates are hinged together, forming an endless hinged excrement-carrier. In the outer edge of said plates *a* are formed the openings *a*<sup>3</sup>, in which the teeth *e*<sup>2</sup> on the sprocket-wheels E engage. The lugs *a*<sup>2</sup> rest on the flanges *d'* and *d* of supports D and D' and slide thereon when the sprocket-wheels E are rotated.

As shown in Fig. 3, the top supporting-plates D and the excrement-carrier occupy all the space between the side walls of the vault, thus dividing the latter into an upper and lower compartment, in which the air circulates, as indicated by arrows in Fig. 1. It is preferred that the lower supporting plate or ledge D' have openings *d*<sup>2</sup> therein in its angular portion, as shown in Figs. 1 and 2, in order that air may enter within said carrier to assist in drying the excrement on the top portion thereof and also to carry off the foul gases which might otherwise be retained therein.

The excrement-carrier, when constructed as aforesaid, is located directly beneath the hoppers F, so that all excrement will fall on the carrier-plates *a*.

At the front of the vault it is preferred to



employ the grate-bars G, which latter may be connected to the sides of the same in any desired manner, the object being to provide a means for burning the excrement when so desired. It is also preferred to secure a number of cross-bars  $d^4$  to the side supports D in such a manner as that said bars may extend across the carrier a slight distance above its top surface in order to spread out the excrement as the carrier is operated beneath said bars, as will presently appear.

When it is desired to secure an extra strong current of air within the vault, it is preferred to provide a screened opening H at the rear upper portion thereof, as shown, which opening may be of any desired dimensions, which latter is regulated by the size and amount of draft or suction in the exit-shaft B; but, if desired, the air may be drawn from the closet-room through the seat-openings  $f$ , in which latter case the lids J do not fit said openings perfectly air-tight, sufficient space intervening between said seat and its lid to admit of air entering between them and then circulating through the vault and passing off through the exit-shaft.

It will be seen that the rear portion  $A^2$  of the vault is decreased in depth to about on a plane with the top portion of the excrement-carrier, a plate K being suitably hinged to the offset of the vault in such a manner as that said plate at its free edge may lie loosely upon said carrier as the latter is carried forward. The object of this arrangement is to render the upper compartment of the vault comparatively air-tight except at its front portion, and by this means the air is carried forward over the excrement on the carrier in order to quickly dry and desiccate said excrement, and is then carried the full length of the lower compartment to take up and carry off the noxious gases contained in any liquid matter therein and also to evaporate the latter.

The operation of the aforescribed construction is as follows: The excrement falls on the carrier directly beneath each hopper and is there exposed to the full current of air passing over the top surface thereof and is readily and quickly desiccated. The accumulation of excrement can be readily spread out on the carrier by giving the sprocket-wheels E a slight turn forward, which movement will cause the carrier and its accumulated excrement to be carried forward, bringing said excrement into contact with the cross-bars  $d^4$ , thus evening and spreading out said excrement to the action of the air-current. When it is desired to burn or remove the excrement, all that is required is to turn the crank on shaft  $e$  toward the front end of the vault, which will cause the dried excrement to fall on the grate-bars G, at which point said excrement can be readily and quickly burned (when so desired) or removed through the opening covered by the door O. (Shown in Fig. 3.) By this means all excrement can be

readily and quickly destroyed or removed. As the carrier moves forward the excrement is unloaded therefrom and the lower part of the carrier is brought up to receive the fresh deposits of excrement.

One objection to dry-air closets in which the air is drawn into the vault through the seat-openings is that at the time said seat is in use the suction or draft of air around the person using the same is very disagreeable and is especially dangerous in cold weather. This fact is patent when the closets are used by small children, as in school-houses and other places where children congregate. To remedy this dangerous defect, I have provided a plate R, rotatably connected within the hopper F, which plate is designed to rotate within or over the opening  $c$  in the cover C, as shown. In order to insure the proper working of this plate at the proper time, it is preferred that its connecting and operating mechanism be connected to the lid J in such a manner as that the elevating of said lid shall operate the plate R to partially or wholly cut off the draft of air through the hopper while said lid is elevated and the seat-opening is being used. When constructed as shown, this plate R has a rod  $r$  rigidly connected thereto, said rod being suitably journaled in the sides of the hopper F or other convenient point, as shown in Fig. 1, said rod having on one of its outer ends a crank  $r^2$ , the free end of which is suitably connected to the lid J, as shown at  $r^3$ . It will be seen that when the lid J is lowered, as shown at the right hand in Fig. 1, the plate R hangs down within the opening  $c$  in the vault-cover C; but when said lid is elevated this plate will rotate upward within or over said opening and remain in that position so long as the lid is elevated and the closet in use, the excrement falling on said plate. As soon as the person is through using the closet the lid is lowered, which will cause the plate R to fall or rotate in a vertical position, thus permitting the excrement to fall off said plate into the vault on the carrier. It is preferred that this plate be slightly smaller than the opening  $c$  in order that a slight current of air shall pass through the hopper while in use to carry off any offensive gases that might otherwise return into the closet-room. This plate R may be otherwise suitably connected to the hopper or cover of the vault for the purpose of partially closing the opening  $c$ , and by this means the draft of air in the vault is not broken.

The advantages of my improved closet are apparent. The means herein set forth for carrying the excrement to a convenient part of the vault to be burned or removed are very convenient and reliable in operation. The excrement can be readily and quickly spread to dry by simply giving the sprocket-wheels a slight turn in the manner hereinbefore set forth. The provision for a circulation of air within the carrier greatly assists in desiccating the excrement and purifying the closet of



offensive gases. The double excrement-carrier will admit of the liquid matter being quickly taken up and evaporated.

5 The rotatable plate within the vault-opening *c* to partially shut off the draft of air through the hopper when the seat-lid is elevated is another valuable feature of my invention, and by this means I am enabled to keep up a constant steady flow of air in the  
10 vault without breaking the current, and thus am enabled to keep up said current with less draft in the exit shaft or chimney.

What I claim as new, and desire to secure by Letters Patent, is—

15 1. In a dry-air closet having a vault, seat-opening, and exit-shaft, substantially as set forth, the angular-shaped plates *D* and *D'*, connected to the sides of the vault, said plates having the flanges *d* and *d'*, an endless excrement-carrier mounted and adapted to travel

20 on said flanges beneath said seat-opening, and suitable means for operating said carrier, for the purposes specified.

2. In a dry-air closet having a vault, seat-opening, and exit-shaft, substantially as set  
25 forth, the plates *D* and *D'*, connected to the sides of said vault and having the inner flanges *d* and *d'*, the lower plates *D'* having openings *d<sup>2</sup>* therein, an endless carrier mounted and adapted to travel on said flanges, and  
30 spreaders *d<sup>4</sup>*, located above said carrier, in combination with suitable means for operating said carrier, for the purposes specified.

OSCAR A. LANPHEAR.

Witnesses:

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WILSON B. BRICE.