

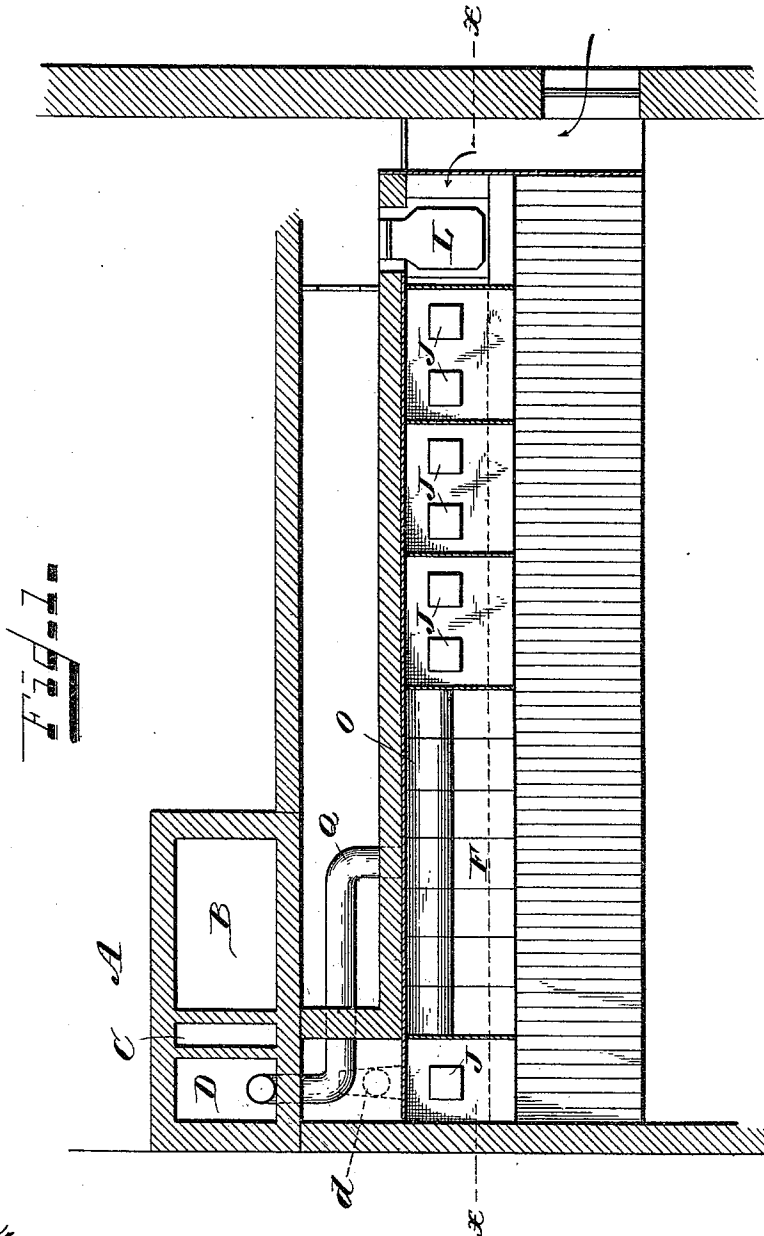
(No Model.)

4 Sheets—Sheet 1.

W. W. ENSIGN.
DRY CLOSET AND URINAL SYSTEM.

No. 525,808.

Patented Sept. 11, 1894.



Witnesses.
J. Thomson Cross.
Bernard J. Krausfeld

Inventor:
William H. Ensign
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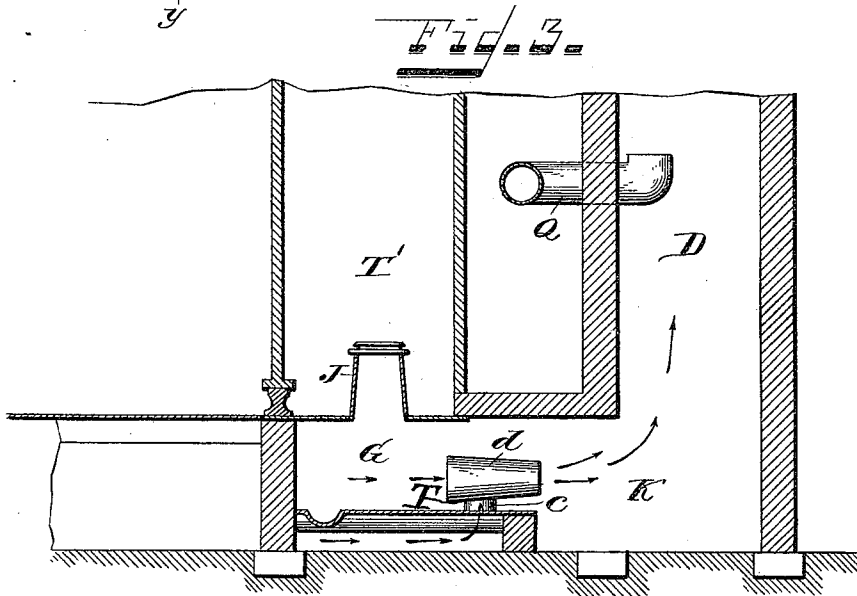
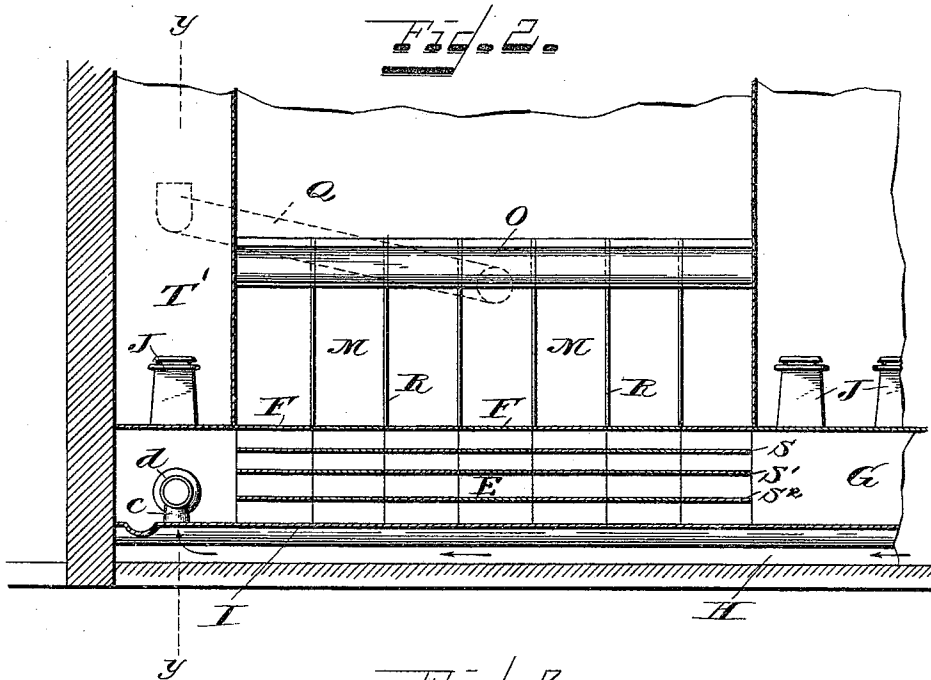
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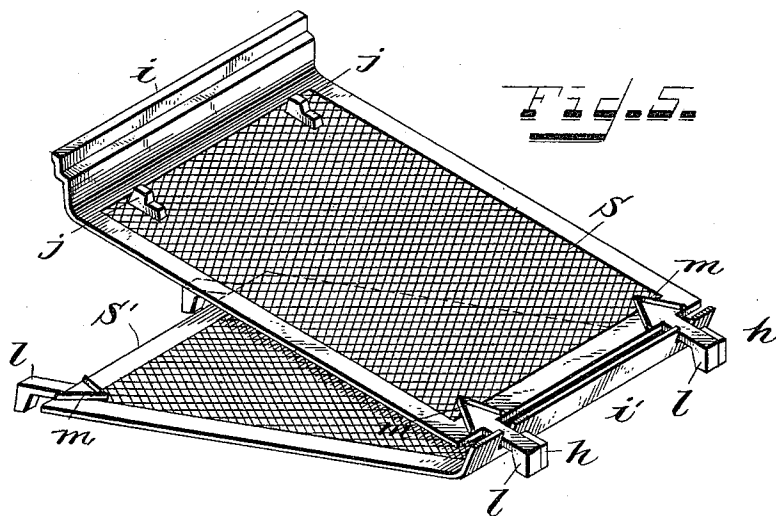
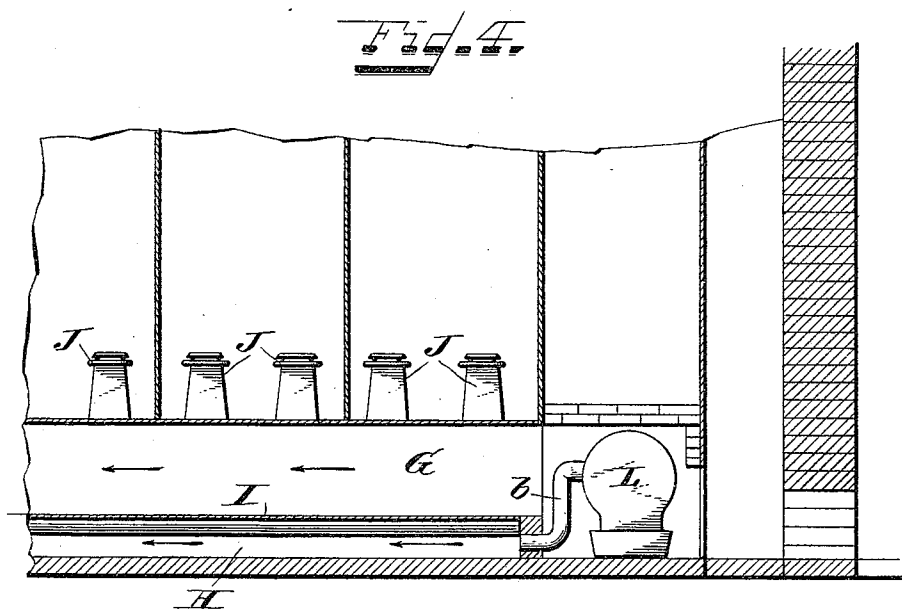
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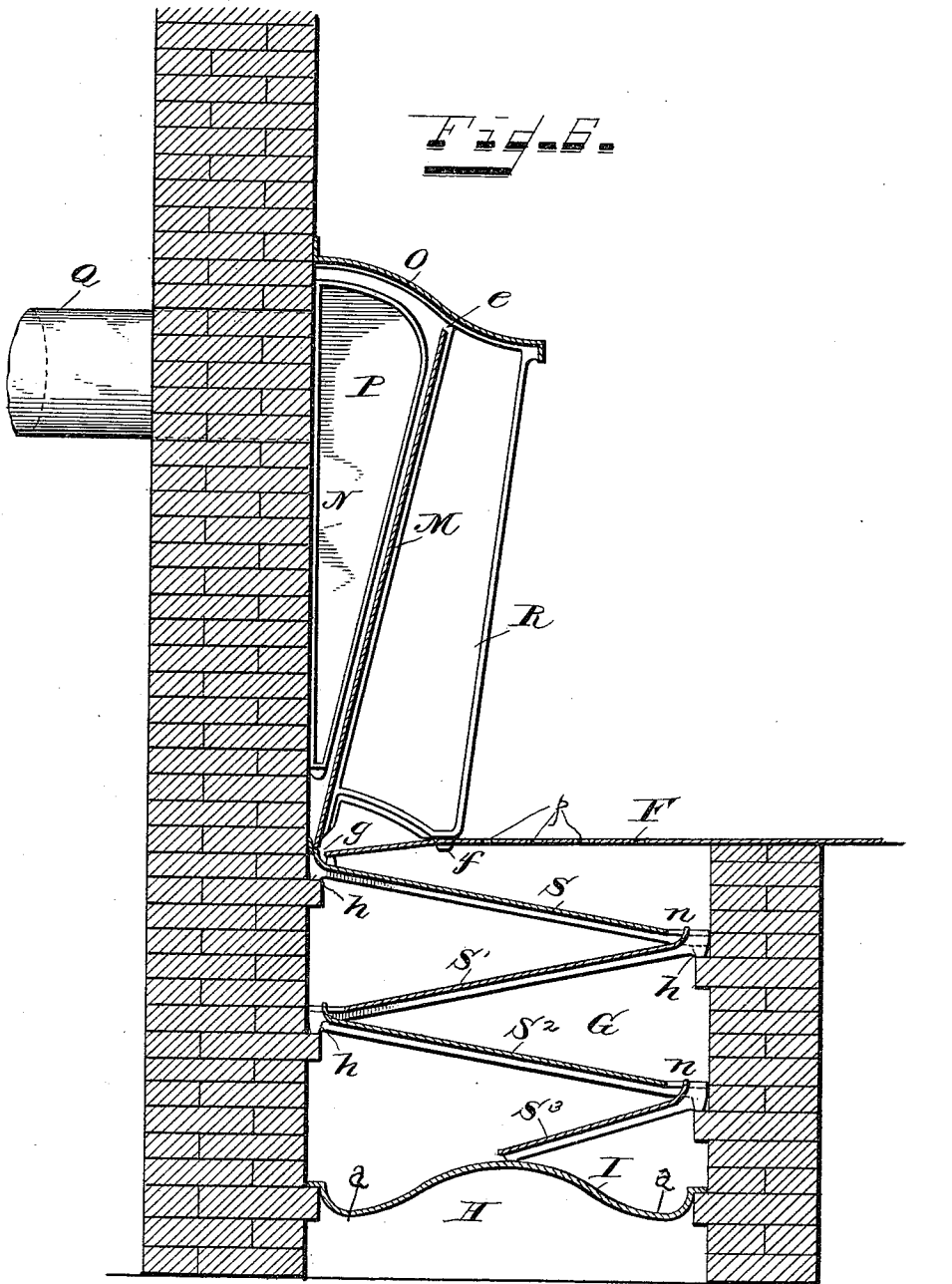
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4 Sheets—Sheet 4.

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UNITED STATES PATENT OFFICE.

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DRY CLOSET AND URINAL SYSTEM.

SPECIFICATION forming part of Letters Patent No. 525,808, dated September 11, 1894.

Application filed March 12, 1894. Serial No. 503,295. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. ENSIGN, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Dry Closet and Urinal Systems, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to that system of dry closets and urinals used in public buildings and schools, and it has for its object the improved construction of the same whereby the fecal matter is more rapidly dried and rendered odorless and innocuous and whereby the system of ventilation is rendered more perfect thereby increasing the sanitary condition of the building and especially the room containing the closets.

It also has for its object improvements in the construction of certain parts, whereby they can be easily and readily applied and become interlocked without the use of bolts or special fastenings.

The novelty of my invention will be hereinafter set forth and specifically pointed out in the claims.

In the accompanying drawings:—Figure 1, Sheet 1, is a plan view of a closet room embodying my invention. Fig. 2, Sheet 2, is a sectional front elevation, enlarged, of the left half of Fig. 1 on the dotted lines X—X. Fig. 3, Sheet 2, is a sectional side elevation on the dotted line Y—Y Fig. 2. Fig. 4, Sheet 3, is a sectional front elevation, enlarged, of the right half of Fig. 1 on the dotted line X—X. Fig. 5, Sheet 3, is an enlarged perspective view of two of the urinal plates. Fig. 6, Sheet 4, is an enlarged sectional side elevation through the urinal.

The same letters of reference are used to indicate identical parts in all the figures.

Referring to Fig. 1, I would begin by saying that my system of closets is designed especially for buildings having a stack A extending from the basement up through the roof, and with three separate, but adjacent flues B, C, D, of which B is the ventilating shaft receiving at its base the foul air gathered from the various rooms of the building

in a manner well known and having no communication with the closet. C is the smoke flue of the heating furnace of the building, and D is the closet vent shaft. The smoke flue C is between the other two so that the heat of its walls aids in creating a strong up draft through the flues B, D, though if desired independent stack heaters may be placed in the base of these flues for that purpose.

In the basement is located the elongated closet vault E covered by the closet floor F, whose construction will be hereinafter described, and divided into two horizontal ducts G, H, Figs. 2, 3 and 4, by a metal plate I, arched up at its middle for its entire length, Fig. 6, and having gutters *a* at its sides slightly inclined to carry off at one end next to the flue D any liquid that may have escaped evaporation. This plate rests on corbels and is bricked up at its ends to inclose the duct H, as seen in Figs. 3 and 4. The closet hoppers J, Figs. 1 and 4, are so placed that the fecal deposits fall directly upon the highest part of the arched drying plate I. There is a free opening K, Fig. 3, between the end of the duct G and the base of the flue and at the opposite end of said duct there is a vault heater L, Figs. 1 and 4, in an inclosed space or chamber into which said duct G opens. The smoke pipe *b* of the heater, is bent down and enters an aperture in the end wall of the duct H, as clearly shown in Fig. 4. At the opposite end of the arched drying plate, near the opening K, see Fig. 3, is an aperture to receive, what I term, an eduction-T, constructed of a short pipe *c* inserted into the aperture just referred to in the arched drying plate and opening into and carrying a horizontal flaring pipe *d*, with open ends and with its smaller end pointing toward the opening K.

The closet hoppers J are provided with lids held slightly open by rubber cushions, so that the draft of the flue B not only draws the heated air from the chamber of the heater L through the duct G to dry the fecal matter within, but it also draws air from the closet room down through the hoppers and prevents the escape of odors into the closet room. The products of combustion from the heater

L are drawn through the duct H and up through the eduction-T into the flue D, the passage of the heated air through the duct G aiding the draft of the flue D to accomplish this result. As the plate I is arched, as shown, the smoke and hot gases from the heater L in passing through the duct H naturally travel directly under the arch and heat the plate I thereby materially assisting in rapidly drying the fecal deposits thereon, as will be readily understood.

Between the closet hoppers and the flue D, is located the urinal, Figs. 1, 2 and 6, over the duct G. This is composed of an inclined back plate M leaning forward at its upper end from the wall and having inclosing end plates N and a covering hood O, thus forming an air chamber P behind the plate from which a vent pipe Q extends and inclining upward has its opposite end opening with an upturned elbow in the flue D. There is a slight opening at *e* between the top of the back plate extending its entire length and the hood so that by the draft of the flue D, air is drawn through the pipe Q from the chamber P, inducing a current of air from the closet room through the opening at *e* thus affording top ventilation to the urinal stalls and carrying off their odors. The stalls are formed by division plates R, in front of the back plate M covered and secured at their upper ends by the hood O and supported and held in place at their lower ends by lugs *f* thereon entering slots or openings in the floor plates F. These floor plates, as seen in Fig. 1, are just the width of the stalls, and within the stall, as seen in Fig. 6, they are inclined downward and with an opening at *g* to permit the urine to flow into the duct G and over a series of inclined metal drying plates arranged zig-zag within the duct G, as presently explained, and over and under which the hot air from the heater L passes freely without obstruction on its way to the flue D. The two uppermost of these plates are shown in perspective in Fig. 5 and they are of the same width as the floor plates F with their edges closely abutting. The top plate S has at its upper end lugs *h* Fig. 6, resting on corbels in the duct G and it has an upturned flange *i* extending slightly up behind the plate R. It also has lugs *j* on its upper side engaged by interlocking lugs *k* on the under side of the floor plates just over it, and by means of which that end of the floor plate is supported and upheld, its opposite end resting on the masonry of the duct G as shown.

The plate S at its opposite lower end has projecting lugs *l* resting on corbels on that side of the duct wall. Just above the lugs *l* are V-shaped ridges *m* Fig. 5, to prevent the urine from flowing onto the lugs *l* and getting to the wall of the duct. The next lower plate S' is a counterpart of the plate S except that its position is reversed and its flange *i* is notched or cut out to permit the passage of the lugs *l* and to permit the top of the flange *i'*

to come slightly above the level of the floor of plate S, as shown. By this construction, an opening or slot *n* is left between the lower edge of the plate S and the flange *i* of plate S' to permit the flow of urine from the former plate to the latter. The plate S' at its lower end is similarly supported and connected to a similar subjacent and oppositely inclined plate S² and the latter in turn is simultaneously supported and connected to an oppositely inclined plate S³, which, at its lower end rests on the arch of the drying plate I so as to deliver its contents to the rear side of the arch and into the gutter of the plate I on the rear side. Of course it is understood that the plates S, S', S² and S³ are in abutting series extending the entire width of the urinal as shown in Fig. 2 and by the above construction it will be observed that the masonry is entirely protected from the urine so as not to become soaked therewith and offensive. Should the urine not be entirely evaporated in its passage over the plates, that which passes to the gutter of the arched drying plate is conducted to the end thereof and deposited on the sanded floor at the base of the flue D and there dries, its odors being carried up the flue.

While I have thus shown and described one application of my system to a building, it is to be understood that the same can be varied by architects and builders to all classes of buildings to suit the peculiar architecture of the same, the only essentials being that the ducts G and H be continuous though not necessarily in a straight line. For instance they may occupy two or even three sides of a room. Indeed, in the plan illustrated, I have shown a short elbow between the urinal and the flue D and have placed a teacher's closet T' at the bend. Arrangements of this sort are of course arbitrary, as will be readily understood, as also the location of the urinal in the duct G. It may be next to the heater or next to the flue D or at any intermediate point.

As seen in Fig. 6, I have provided perforations *p* in the urinal floor plates so that air is drawn down through the same into the duct G to remove any odors from splashings on said plates. At intervals, when sufficiently accumulated, the dried fecal deposits may be burned directly on the plate I or may be removed and carried away, as preferred.

Having thus fully described my invention, I claim—

1. In a dry closet vault, having at one end a vault heater and at its opposite end a ventilating flue, and a guttered metal arched drying plate, separating said vault into two horizontal ducts, the lower one of which is closed at its ends and receives the products of combustion, and the upper one of which receives the fecal deposits and conducts through it the hot air from the heater to the flue, the combination with said flue and arched drying plate, of an eduction-T, the latter opening into the upper duct, substantially as described.

2. In a dry closet vault, having at one end a vault heater and at its opposite end a ventilating flue, the combination of a guttered metal arched drying plate, separating said vault into two horizontal ducts, the upper one of which receives the fecal deposits and conducts the hot air from the heater to the flue and the lower one of which conducts the products of combustion from the heater to the flue, and a urinal discharge into the upper duct composed of a series of zig-zag drying plates in said duct extending from the top to the bottom of the same, substantially as described.

3. In a dry closet system, having at one end a vault heater and at its opposite end a ventilating flue, the combination of a guttered metal arched drying plate, separating said vault into an upper duct for the fecal deposits and the passage of hot air, and a lower duct for the passage of the products of combustion, a urinal discharging into said upper duct, a series of zig-zag drying plates for the

urinal discharge in the upper duct, a ventilating chamber for said urinal and having communication therewith, and a duct connecting said ventilating chamber and flue, substantially as described.

4. In a dry closet system, the metal urinal drying plates S, S', S^2, S^3 , provided with lugs l, h and flanges i whereby they can be set in zig-zag order and supported on corbels in a vault, substantially as described.

5. In a closet system, the combination with the vault divided by the metal arched drying plate communicating at one end with a vault heater in the manner described and at the opposite end with a ventilating flue, of the education- T in the arched metal drying plate composed of the short pipe c and flaring pipe d , substantially in the manner and for the purpose specified.

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