

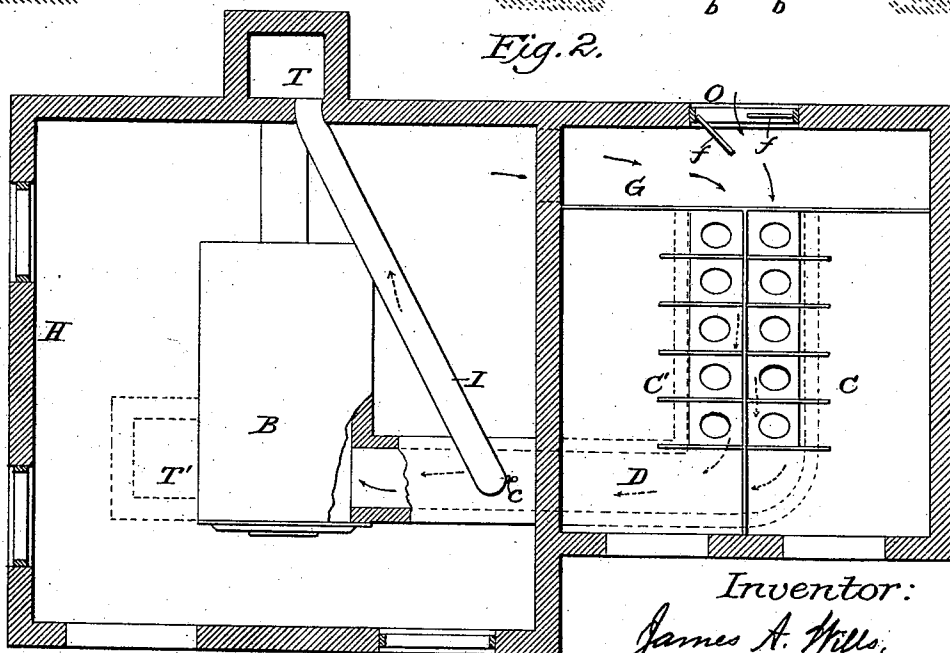
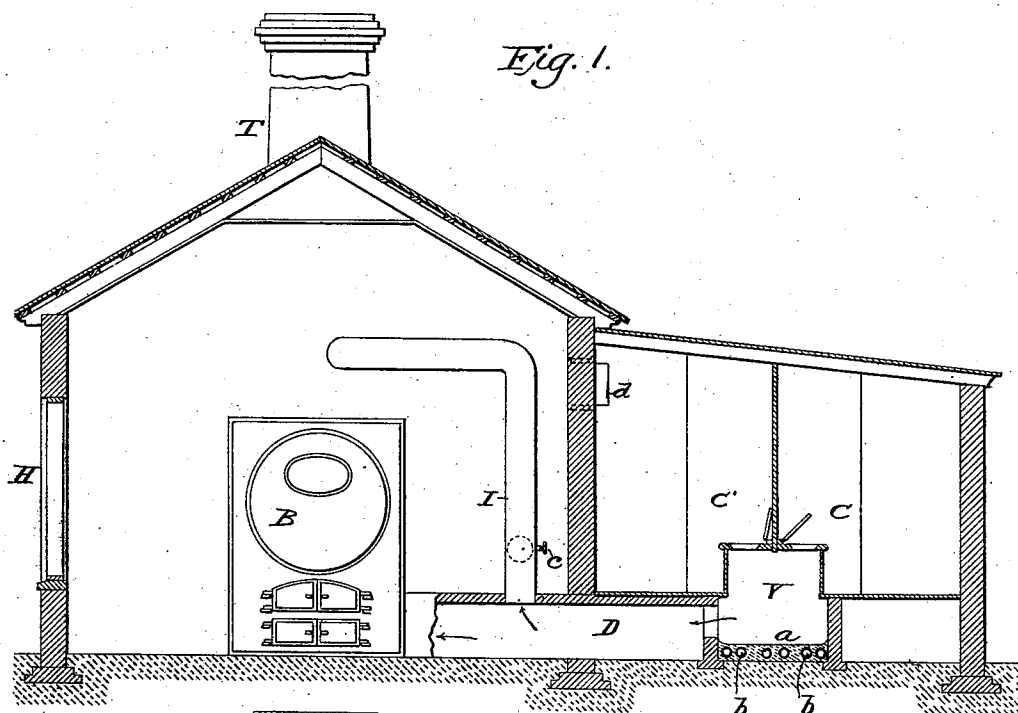
(No Model.)

2 Sheets—Sheet 1.

J. A. WILLS.
DESICCATING CLOSET.

No. 469,764.

Patented Mar. 1, 1892.



Witnesses:

James T. Duhamel
Horace A. Dodge.

Inventor:
James A. Wills,
by Dodge & Sons
Attys

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

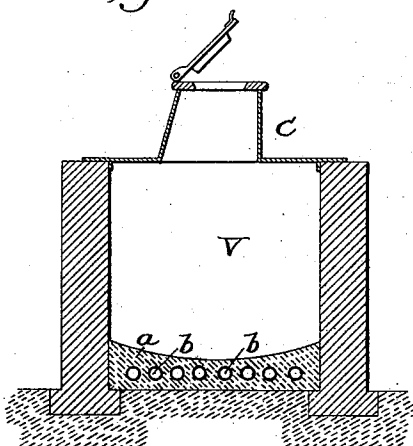


Fig. 4.

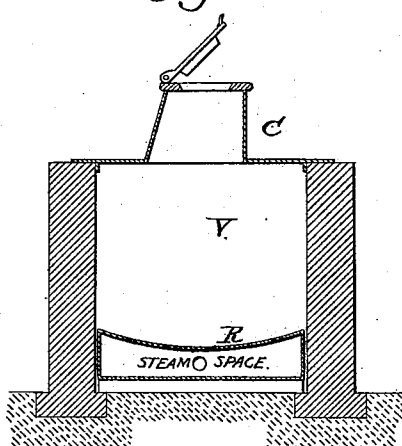


Fig. 5.

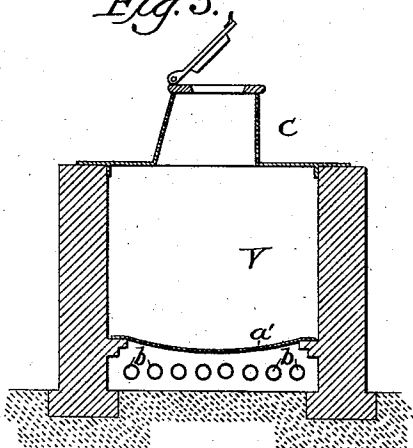
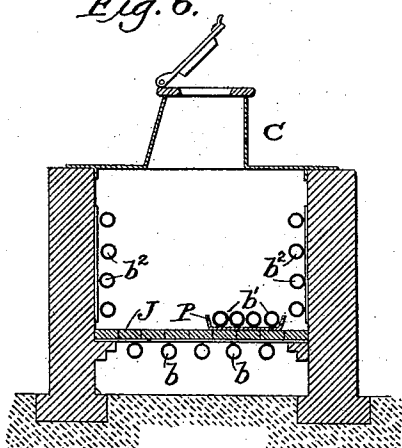


Fig. 6.



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UNITED STATES PATENT OFFICE.

JAMES A. WILLS, OF PHILADELPHIA, PENNSYLVANIA.

DESICCATING-CLOSET.

SPECIFICATION forming part of Letters Patent No. 469,764, dated March 1, 1892.

Application filed October 25, 1890. Serial No. 369,319. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. WILLS, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Desiccating-Closets, of which the following is a specification.

My invention relates to closets of that class known as "desiccating" or "air" closets; and it consists, primarily, in providing means by which steam can be used in connection with the closets and also in means for conveying the air and odors from the closets into the furnace of a steam-boiler, all as hereinafter more fully set forth.

Figure 1 is a sectional elevation of a boiler-house and closet embodying my invention, and Fig. 2 is a sectional plan view of the same. Figs. 3, 4, 5, and 6 are transverse vertical sections of the closet, showing modifications of the manner of applying the steam, with certain other details.

The object of my present invention is to provide closets for factories or buildings of any kind in which steam is used, so arranged that the desiccation of the deposits in the vaults can be effected by the utilization of the exhaust or waste steam or by live steam, when desired, and also pass the air and odors from the vaults into the fire under the boiler or boilers for the twofold purpose of neutralizing or destroying the odors and also to destroy any germs that may exist or be generated in or about the vaults of the closets.

As is well known, factories where a large number of operatives is employed require large closet facilities, and that the closets in and about such establishments are frequently in a very unsanitary condition and productive of the generation and spread of serious illness among the operatives, as well as in the region around. Again, as the usual custom is to depend on water (where a water service exists) for the removal of the deposits the streams into which such deposits are conveyed are thereby rendered foul and are thus themselves made a vehicle for the spread of disease. Not unfrequently factories are located where there is no water service or no stream of sufficient capacity to convey away

the deposits, in which case the danger is rendered still greater. It is to remedy or prevent these and similar evils or dangers that my present invention is designed, and which I will now proceed to explain.

Referring to accompanying drawings, H represents a boiler-house having one or more steam-boilers B located therein and connected to a smoke-stack T in the usual manner. Adjoining this boiler-house I erect the closets, Figs. 1 and 2, showing two sets of closets C and C' arranged back to back over a common vault V, through which a current of air is to be passed, the same as in the well-known Smead dry closets. The air for the vault may be taken from the boiler-house through a doorway *d* (indicated by dotted lines in Figs. 1 and 2) into what may be termed the "air-gathering room" G, which, as shown in Fig. 2, connects directly with one end of the vault V. It is preferred to locate the door *d* near the top, so as to take the warmest air from the boiler-room and thus keep the latter more cool and pleasant, especially in hot weather, though this is not essential to the operation of the closets. I also provide another opening O in the outer wall, as shown in Fig. 2, through which the air may be taken from the outside, when desired for any reason, this opening like the other being provided with a door or doors *f*, so that it can be closed when the air is to be drawn from the boiler-room, it being optional to take the air from either source. The opposite end of the closet-vault I connect by a duct D with the ash-pit of the furnace under the boiler B, as shown in Figs. 1 and 2, the result being that a strong current of air is constantly drawn through the vault into the ash-pit under the furnace-grate, and as all odors which may arise from the deposits in the vault and the germs which may exist, if any, will be carried along with the air into and through the fire on the grate it will be seen that all odors and germs will be entirely destroyed or neutralized. The air thus drawn through the vault is designed to furnish all the air needed for combustion in the furnace, though where there are several boilers and furnaces it is obvious that some air may be admitted at the furnace or ash-pit doors, which will otherwise be kept closed in order

to insure a continuous and strong draft of air through the vault.

In order to prevent a cessation of the draft through the vault when the furnace-doors are opened for replenishing the fuel or when the ash-pit doors are opened for the removal of ashes or any other purpose, I connect the vault directly with the smoke-stack in such a manner as to convey the air passing through the vault directly into the smoke-stack or into any other flue or stack which will keep up the flow of air through the vault. This may be done in various ways, and to illustrate this idea I have shown in Figs. 1 and 2 a pipe I, leading from the duct D, which connects the vault with the furnace direct to the smoke-stack, this pipe being provided with a valve or damper c, which the engineer or fireman will open before opening the furnace or ash-pit doors, and which will be closed again as soon as the furnace-doors are closed, so as to insure the passage of the air from the vault into the furnace. The advantages of this method of disposing of the air drawn through the vault of the closet as a sanitary measure are that it destroys the offensive odors which are sometimes objectionable in the immediate vicinity if allowed to pass directly out to the atmosphere through a vent-stack, more especially when the deposits in the vault are burned therein, as is now the custom in this style of closets, and which is still more offensive if the deposits are in a more or less green or undried condition, as is sometimes the case where the closets are used by a large number of persons. In addition to this it insures absolutely the destruction of all disease-germs in case there should be any.

In order to increase the evaporative and desiccating process, I arrange within the vault of the closet means for heating it by steam. This may be done in various ways, one of the simplest methods being that shown in Fig. 1 and on a larger scale in Fig. 3, and which consists in embedding in the cement bottom a of the vault a series of pipes b, through which the exhaust-steam from the engine is passed, thereby heating the bed or bottom of the vault. These pipes may be arranged in the form of an ordinary coil or in any of the known forms of a manifold, as is customary in steam heating or condensing apparatus, they being connected in any convenient manner with the escape-pipe of the engine at their inlet end and with a sewer or with a tank at their opposite end for the reception of the water of condensation in case it be desired to re-use the water, or the steam, in case it is not all condensed, may be allowed to escape outside.

In Fig. 4 I have shown the bottom of the vault as composed of a metal pan R, made concave on top to receive and retain the deposits and fluid, this pan being provided with a chamber underneath into which the steam is conveyed, so as to keep it filled with steam, thereby keeping it hot and causing it to rap-

idly evaporate the fluids and dry or desiccate the deposits.

In Fig. 5 I have shown a concave metal receiver a' , supported at its sides by the walls of the vault, with a series or coil of steam-pipes arranged under it, which will operate in the same manner.

In Fig. 6 I have shown the vault as being provided with the transverse partition J, now generally used in the Smead dry closets.

Within the vault I arrange a pan P, preferably made of copper, in such a position as to receive the urine and retain it separate from the fecal deposits, which fall upon the transverse partition J, this pan having a coil of steam-pipe b' arranged therein, as shown, to hasten the evaporation of its liquid contents. This pan may rest upon the partition J at or near its front side, as shown, or it may be elevated to any height desired within the vault, the only requisite being that it be so located as to catch the urine as it falls. I also arrange a steam-coil or series of steam-pipes b under the partition J, as shown, for the purpose of hastening the drying of the deposits thereon, and in case it be desired or necessary to heat the air passing through the vault, as it may be when the air is taken from outside of the building, I arrange another series of steam-pipes b^2 on opposite sides of the vault, as shown. With this plan or method of heating the vault by steam the desiccation may be so rapid and thorough as to avoid the necessity of passing the air from the vault into the furnace, in which case it may be passed into an ordinary vent-stack, the same as in the well-known Smead closets, such vent-stack being indicated by dotted lines at T', Fig. 2; but as a general rule I prefer to conduct it to the furnace.

While I have shown the boiler-house and closets as being outside of or separate from the factory-building, it is obvious that where the boilers are located within the factory-building the closets may also be built therein or adjoining the same, as may be preferred or most convenient. So, too, while I have spoken of the use of the waste or exhaust steam in the vault, it is obvious that live steam direct from the boiler may be used instead, and in some cases where the exhaust-steam is used for other purposes live steam will necessarily be used. A separate boiler may be used to supply steam for the vaults and thus have a small steam-plant for the closets separate and apart from the general steam-plant of the factory; but such arrangement will not be desirable, except in cases where all the steam from the general plant is required for other purposes or in connection with establishments which use hydraulic, electric, or other than steam power.

In the erection of new factories where it is desired to apply this system of closets provision will of course be made for them; but where it is desired to apply this system of

closets to existing structures their location and arrangement must of course depend upon the varying conditions of the different buildings; but the principle and mode of operation are so clearly illustrated and described herein

5 that any engineer or person skilled in such matters can readily apply them in connection with any building. I have already applied them to factories with most gratifying results.

10 I do not claim as of my invention a desiccating-closet, broadly, as I am aware that the same has been patented to I. D. Smead; neither do I claim, broadly, the idea of destroying the odors, &c., by passing the air

15 used to desiccate the deposits through a fire, as I am aware that said Smead has invented a crematory-closet in which that is done.

I am also aware that a patent has been granted for a dry closet having an opening

20 at one end only of the vault and in which a pipe, with laterally-projecting bars, is located directly under the seat-openings and near the top of the vault for retaining the solids and permitting the fluids to separate therefrom

25 and drop to the bottom of the vault, and I make no claim to such a device or arrangement; but,

Having thus fully described my invention, what I claim is—

1. In combination with a steam boiler and furnace, a desiccating-closet provided with a vault or duct open at one end for the admission of a current of air and having the opposite end of said vault or duct connected with the ash-pit of the boiler-furnace, substantially as and for the purpose set forth. 30 35

2. In combination with a boiler and furnace, a desiccating-closet having its air duct or vault connected with the ash-pit of the boiler-furnace and a pipe or duct provided with a damper or valve, said pipe or duct having one end connected with the air-passage at a point between the closet and the ash-pit of the furnace and its opposite end connected with the smoke-stack or similar vent-flue to prevent a cessation of the draft through the closet vault or duct when the furnace or ash-pit doors are opened, substantially as described. 40 45

In witness whereof I have hereunto set my hand in the presence of two witnesses.

JAMES A. WILLS.

Witnesses:

E. A. M. L'ETANG,
M. A. MURPHY.