Septic Tank for Sewage Disposal.

We are building a new house, and we would like a little information on the subject of water-closet and sink drain. If we put in water closet with septic pool, can we let all the wash water and sink slops run into the pool, or would so much water spoil the working of the pool? A few words in "The Farmer's Advocate" on the working and construction of pool would be welcomed by "Homebuilder." A. T. M.

Ans.—Apparently the correspondent has somewhat confused the ideas of "cesspool" and "septic tank," as he uses the expression "septic pool."

CESSPOOL.

The cesspool is a large excavation, about 12 feet in diameter, and 10 feet deep, "stoned" or "bricked" up inside, into which the sewage flows through a sewer pipe, having a fall of at least four inches in ten feet. It should be situated at least one hundred feet from the house for good sanitation. There is no outlet from the pool, the water passing away by soakage through the lower layers of the soil. This system is not satisfactory unless these layers are of a porous nature. In very heavy clay the water would not soak away fast enough, and the pool would overflow, making the ground wet and emitting a foul odor. Wash water might overtax this system in some cases.

SEPTIC TANK.

The septic tank, however, will work, even though the sub-strata are impervious to water, as the contents of the tank are discharged into tile laid within a foot or eighteen inches of the surface, being thus in the porous surface soil. Figures one and two give a general idea of the septic-tank system.

Method of Construction.—In Figure 1 is shown an elevation of a complete system built on level ground, with the tank placed close to the wall of the building—where, in fact, the large majority of those now in use are located. The tank should be built of brick or stone, laid in and lined with cement, or of solid concrete, the main object being to have it impervious to moisture.

It will be noticed that the tank is divided into two compartments, an overflow pipe (F) being built into the dividing wall, the mouth of the said overflow being within about ten inches of the bottom of the tank, and being covered with a wire screen about the size of an ordinary pail, the mesh of said screen not exceeding three-quarters of an inch.

The main soil pipe is represented by E, and should be directly connected with the closet, bath, sink, etc. It extends from the same compartment in which the overflow is placed to a point two or three feet above the roof, this pipe acting not only as a conductor of sewage to the tank, but also as a channel by which any gases in excess of those in solution may pass out to the atmosphere at a height which renders it impossible for them to inconvenience the occupants of the building.

J, in the second compartment, admits fresh air, which passes freely over the center partition—spaces being left in the top of the latter for the purpose—and up through the soil pipe to the roof.

In the center of the second compartment is placed an automatic valve, C, which is caulked into a four-inch cast-iron bend, as ordinarily used by plumbers, and which is securely built into the bottom of the tank during its construction. The top of the hub of the bend is usually left slightly lower than the level of the floor of the tank.

From this iron bend is run a line of glazed tile pipe, four inches in diameter, having a connection with the fresh-air pipe, for the purpose of ventilation, and a number of openings placed at intervals of two feet or more, from which are run branches of four-inch field tile, with loosely-butted joints.

How to Lay Tile.—Figure 2 shows a plan of the whole system, and illustrates one way in which the tile may be laid, though, as will be manifest, they would do equally well if all run from one side of the main carrier in any number of branches, of any length, providing a sufficient number in the aggregate are laid, and the rows are not placed closer together than two feet in light soil, and a somewhat greater distance in heavy soil.

The field tile should not be placed more than one foot below the surface, and must be perfectly level, for the reason that, if given a fall, the earth surrounding the low ends of the system would receive more than its share of liquid sewage, and will in a short time become fouled, while, if level, the earth surrounding every tile will have an equal amount of work to do, and will produce most satisfactory results.

The operation of the system is as follows: The sewage from the building enters through soil pipe (E), filling the first compartment, in which all solid matter is retained until it is reduced by the contained bacteria, which multiply and develop very rapidly. In a liquid form, it is allowed to enter the second compartment through overflow (F), which is turned down because of the presence of the bulk of the organic matter in suspension on or near the surface.

When the liquid has risen in the second compartment to the height at which the unlocking float on the valve has been set, the valve automatically opens, and discharges the contents of that compartment, be it fifty or a thousand gallons, into the system of field tiles, through which it percolates into the surrounding earth, to be taken care of by nature, as already described.

As the tank takes from 12 to 24 hours to fill, it will be obvious that there will be abundance of time in which the water in the tiles may soak away before a discharge again takes place.

To prevent the gases of decomposition escaping through other than the proper channel the tank must be covered first with rough planks, and then with five or six inches of earth, which, in turn, if desired, may be sodded over.

SIZE OF TANK.

In figuring out the size of tank necessary, the following may be taken as a safe rule: For every occupant of a private house or hotel allow three cubic feet of space in each compartment, the valve compartment not to be more than three feet, nor less than two and one-half feet deep; while, for a school or factory, as in the case of a house, nothing but toilet sewage is to be treated, one-third less space will be sufficient, and for every cubic foot in the compartment for one-half the tanks lay thirteen feet of four-inch field tile.

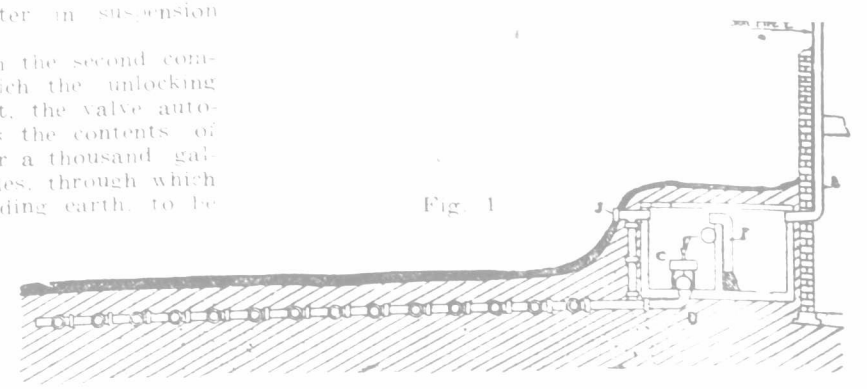
It will be obvious that, as in the case of ordinary stable manure, human excreta, if deposited in its solid state just below the surface of the earth, would entirely disappear in a very short time, and the system just described is merely a most convenient and sanitary way of automatically accomplishing that very desirable result, with the accompanying advantage of not only depositing it in the earth partially treated, but in a much more favorable condition to receive final treatment than could possibly obtain if the former method were adopted.

DISPOSAL OF EFFLUENT.

Anticipating the difficulty which will be encountered where there is a considerable fall in the ground surrounding the building to be drained, I refer to Fig. 3, which shows a number of terraces, each receiving a portion of the effluent from the tank. It will be noticed that the end of the glazed tile is turned up a few inches on the brow of each terrace, the obvious result of which is that all the field tiles at that level must be filled before the sewage can rise and overflow to the tiles on the next lower level, where the same operation takes place, and so on for any number of terraces, and as will be apparent, the sewage passing into the tiles on a higher level cannot possibly escape to those lower down, so that the earth surrounding every tile will have its full complement of work to perform.

Figure 4 the last [illegible] scale of which is somewhat exaggerated, [illegible] from the tank to the [illegible] have to be placed [illegible] that on which the [illegible] it will be evident [illegible] the high level [illegible]

Fig. 1



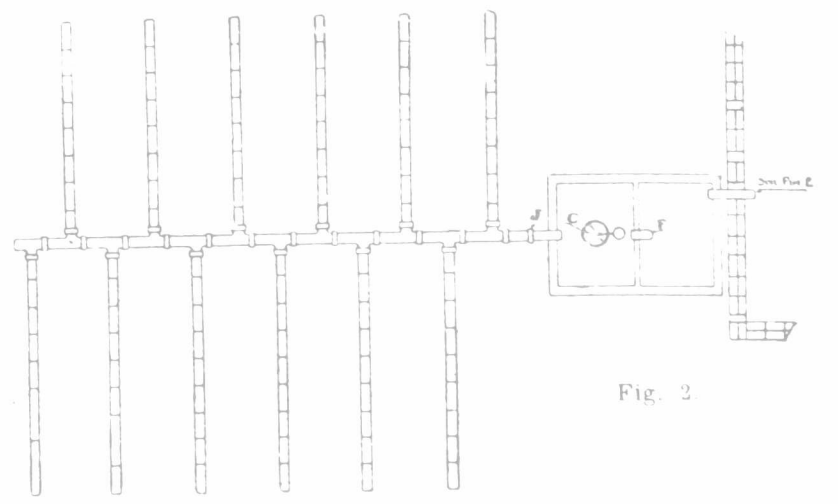


Fig. 2

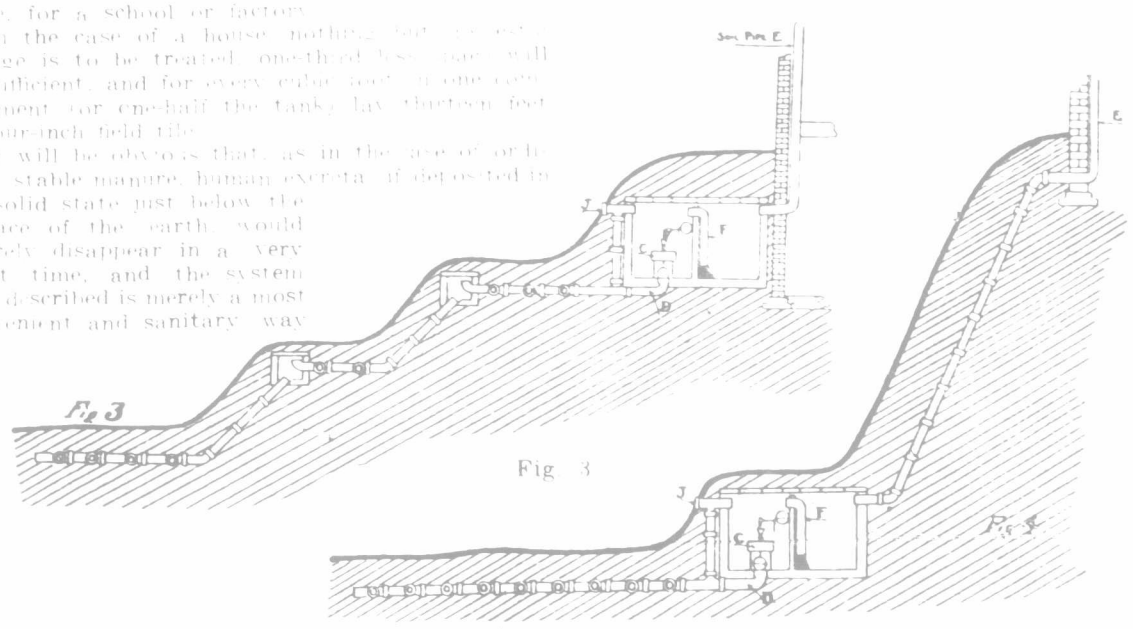


Fig 3

Fig 5.

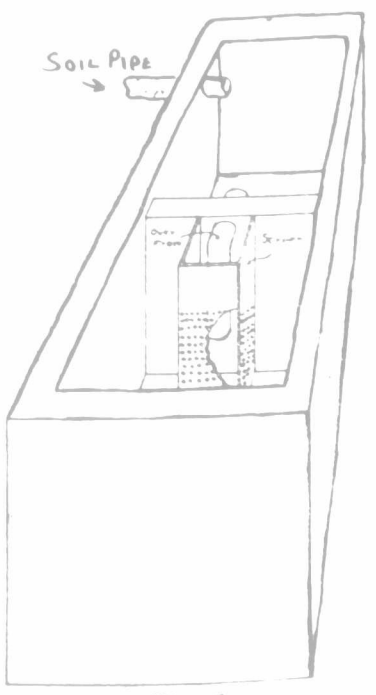


Fig. 6.