

### MAKING CONCRETE SEPTIC TANKS

Description of a Sanitary Method of Sewage Disposal Where the Advantages of a Modern City or Town Sewerage System Are Not Available

AS THERE must be some way of disposing of the house wastes from the dwelling equipped with modern plumbing appointments, where a town or city sewerage system is not available, the septic tank has been developed, as an approved means of meeting requirements under certain conditions.

In disposing of sewage from a dwelling that cannot be connected with a city sewerage system there

disposed of to prevent them from being a possible source of disease.

As usually constructed, the septic tank is built in two compartments, as shown in Figure 1. Slight modifications of this design are often made, none of which, however, departs from the fundamental principles shown. The house wastes, after they leave the house plumbing, enter the first compartment. In this compartment the action of the bacteria spoken of

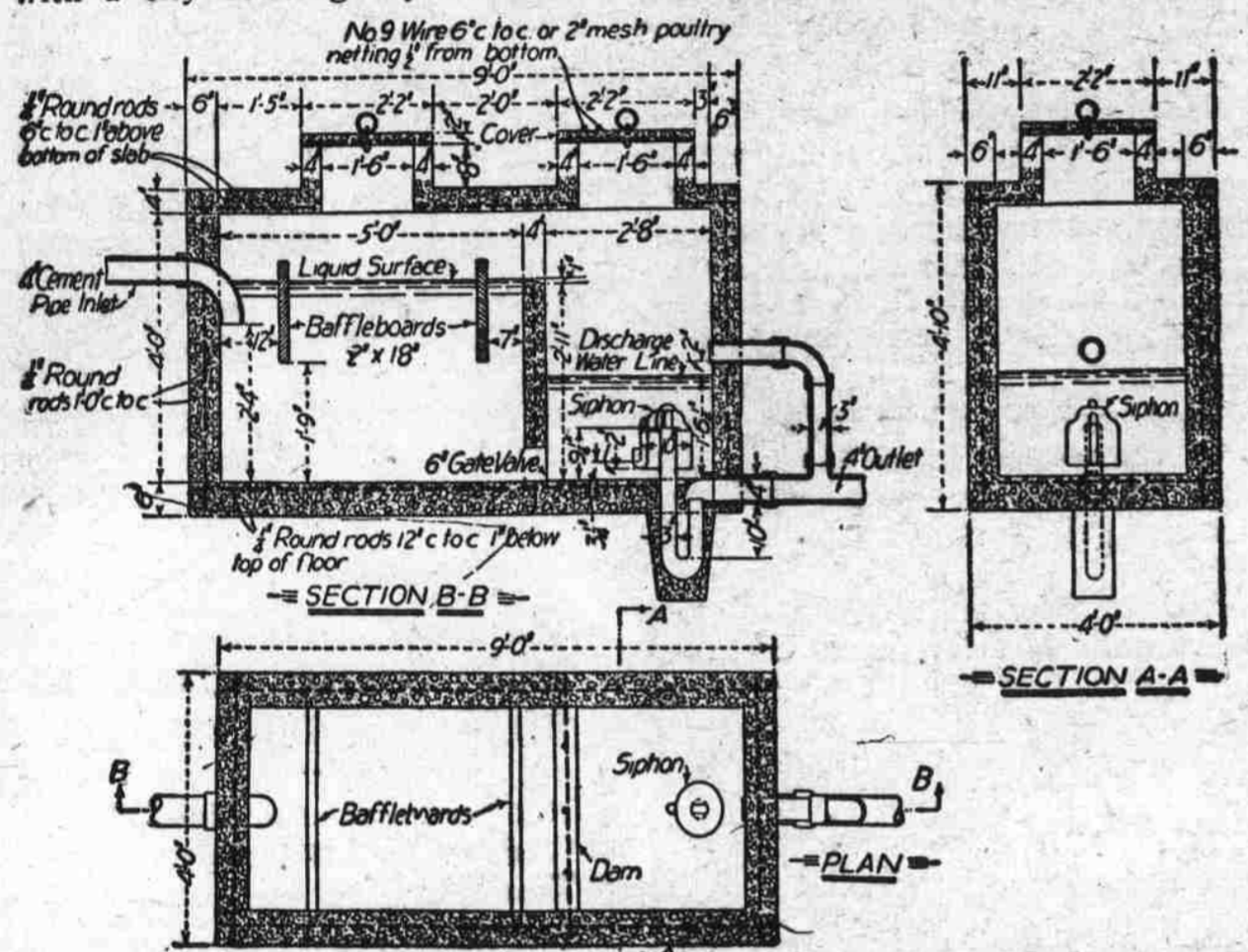


Figure 1. Longitudinal and cross-sectional views, also plan of an efficient type of septic tank. The upper left-hand view shows the tank as it would appear if cut away at its center along a line following its length. To the right of this view is a section of the siphon chamber.

are several problems to be taken into consideration. House wastes consist of a combination of liquid and solid or semi-solid matter, and the solids must in some way be "digested" or separated from the liquid matter. After this has been done, proper arrangements must be made to dispose of the liquids.

Experience has proved that the solid matter in ordinary domestic sewage will, if confined in a suitable compartment, practically airtight and away from light, undergo a rotting or decomposition as a re-

takes place and the solids and semi-solids are digested, so to speak, by this bacterial action.

The second compartment is frequently referred to as the "siphon chamber." It will be noticed that there is a device built into the floor of this compartment and connected to an outlet pipe. This device is called a siphon and automatically empties the contents of the compartment when they have reached a certain level by overflow from the first compartment. These siphons are not expensive and can be obtained from any one of a number of firms.

After having remained in the first

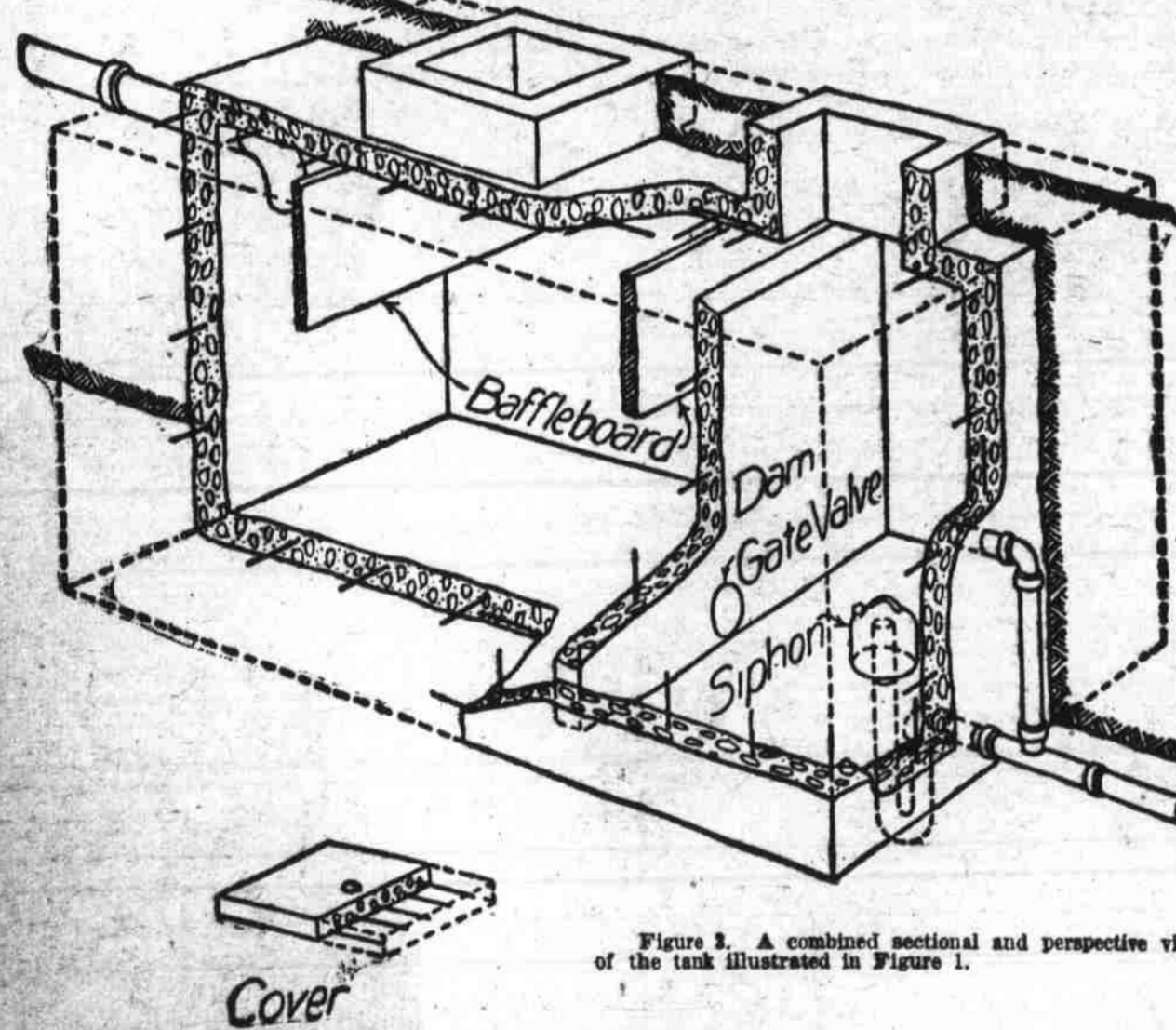


Figure 2. A combined sectional and perspective view of the tank illustrated in Figure 1.

sult of the development of certain bacteria which might be referred to as Nature's scavengers. These bacteria feed, so to speak, upon the solids and semi-solids in the sewage, thus converting them into gas and relatively harmless compounds. It must not be understood, however, that this action is by any means likely to destroy disease germs that may be present, since the processes taking place in the septic tank are not chemical ones and the discharges after this "breaking down" process of the sewage must still be properly

disposed of to prevent them from being a possible source of disease. As usually constructed, the septic tank is built in two compartments, as shown in Figure 1. Slight modifications of this design are often made, none of which, however, departs from the fundamental principles shown.

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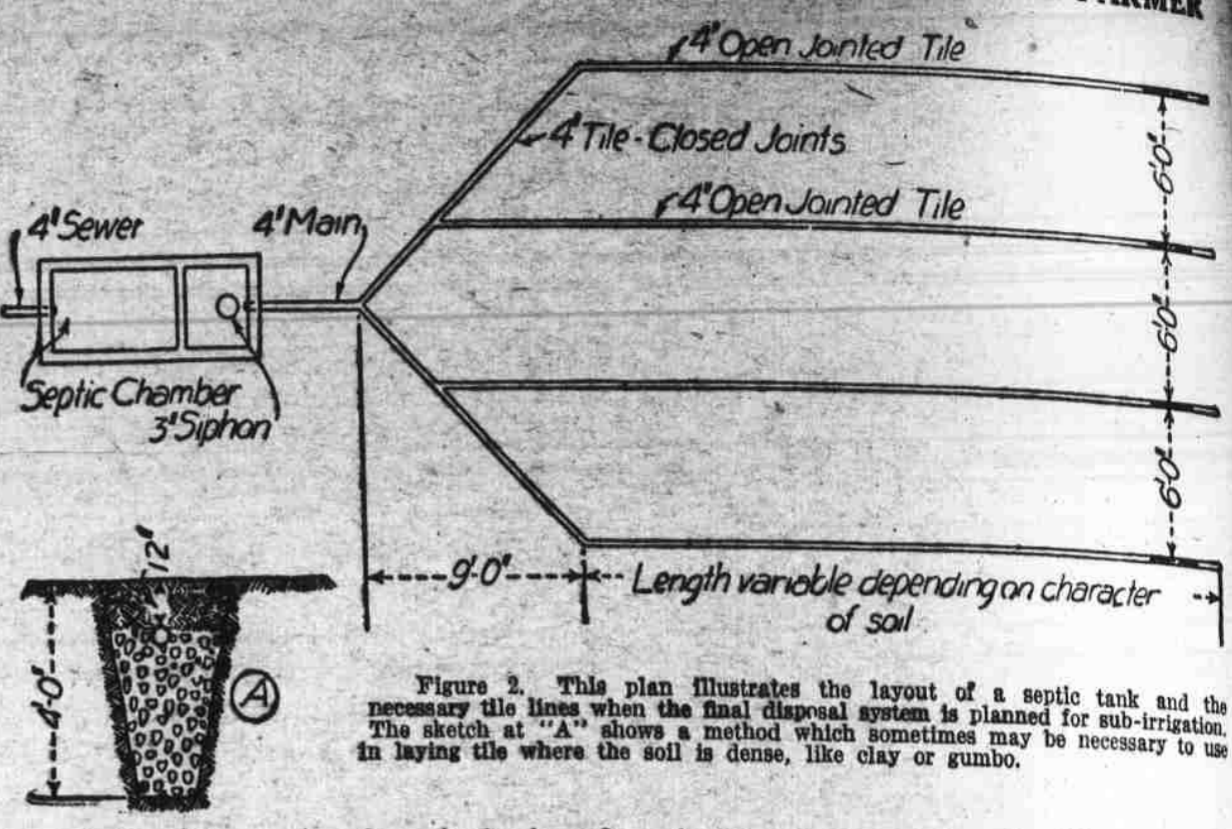


Figure 3. This plan illustrates the layout of a septic tank and the necessary tile lines when the final disposal system is planned for sub-irrigation. The sketch at "A" shows a method which sometimes may be necessary to use in laying tile where the soil is dense, like clay or gumbo.

forms in this tank after it is in effective operation. This scum must not be disturbed nor be allowed to flow out of this compartment, because it is the home of the bacteria which do the first work towards changing the nature of the sewage: namely, destroying the solid and semi-solid substances which are carried into the tank along with the liquids.

Two methods are commonly depended upon to dispose of the discharges from the frequent emptying of this compartment due to the automatic operation of the siphon. Wherever the nature of the surroundings is such that a certain area of ground

about 6 feet apart and with sufficient grade so that the fluids will quickly and easily spread over the whole area. This will prevent the soil at that portion of the field near the outlet from becoming clogged up, as would happen if a small area of the field had to receive and dispose of all the tank discharges. Where the volume of sewage exceeds a certain quantity, that is, more than results from the average household, it is sometimes advisable to arrange for two disposal fields that can be used alternately, thus allowing one to "rest" at intervals.

Another method of final disposal which is frequently practiced consists of what is called subsurface ir-

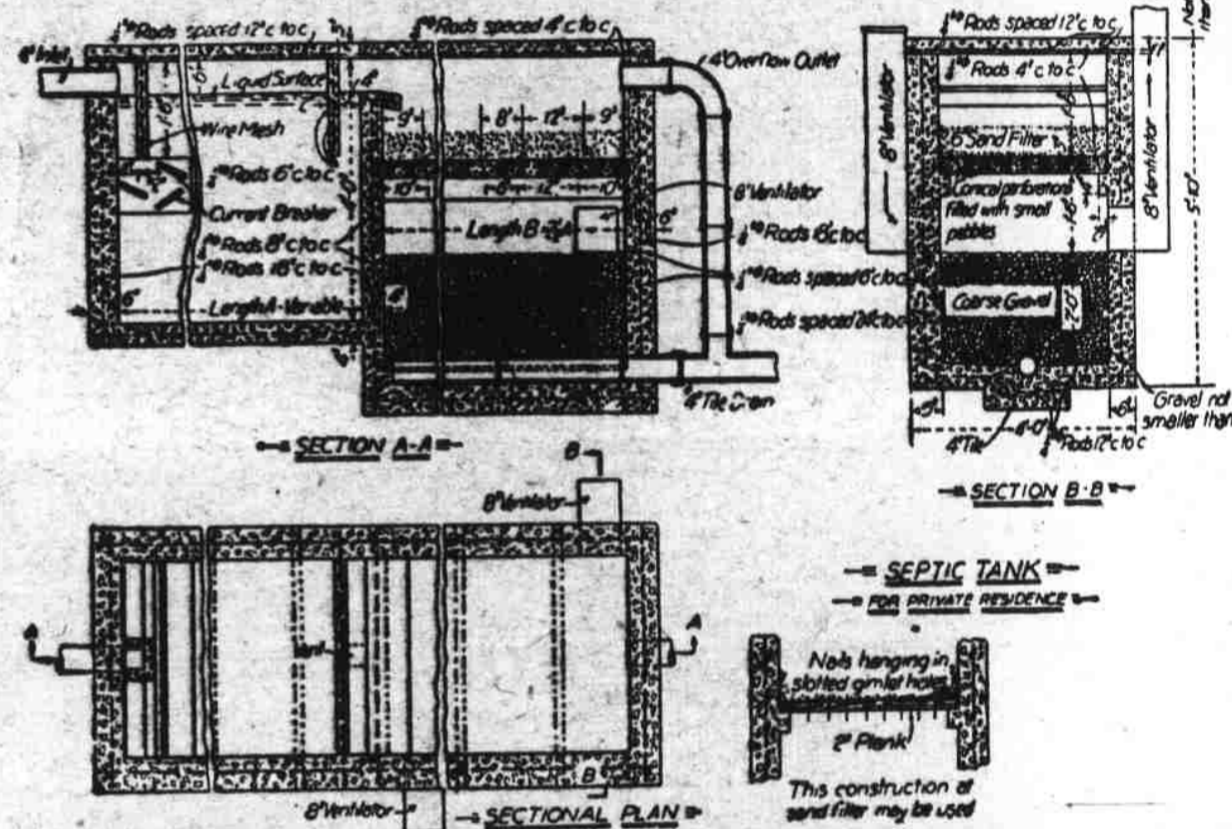


Figure 4. Two sectional views, plan and alternative filter floor for a type of tank that is sometimes used where final disposal by broad irrigation must be practiced. This view shows the tank as if cut away along a line following its length at the center and a similar sectional view of the filter compartment.

can be set aside for the purpose, surface, or broad irrigation, as it is called, is satisfactory. This means allowing the wastes delivered from the siphon compartment to flow upon the land where they spread over the ground and are acted upon by sun and certain bacteria which live in the upper layers or portion of the soil.

In the final disposal of sewage by broad irrigation, it is of course necessary to select a field, or disposal bed as it is sometimes called, where the wastes will not be immediately washed into some nearby stream, thus contaminating the water. Fluids thus disposed of should be carried to the disposal field through a tile line leading from the siphon connection, these tile being dense, non-porous and laid with sealed joints. The outlet should discharge into an open ditch, say about 12 inches wide by 6 inches deep; with laterals or side ditches at right angles to the main one, dug

rigation. This means discharging the tank contents into lines of four-inch drain tile, laid with open joints so that fluids may leach out of these joints and filter into and through the soil. Such a tile line should be laid with a grade not greater than 2 inches per 100 feet. To prevent soil from entering the tile line through open joints and thus clogging it up, the joints may be covered with flat stones or pieces of broken tile of larger diameter. All connections between the house and septic tank and from the septic tank to the disposal field should be made with tight joints. This means that in the subsurface disposal system there should be at least 200 feet of tile laid from the siphon chamber before the open-joint laterals are laid.

Figure 2 shows the general scheme of laying tile lines where subsurface disposal is employed. As a rule final (Concluded on page 22, this issue)

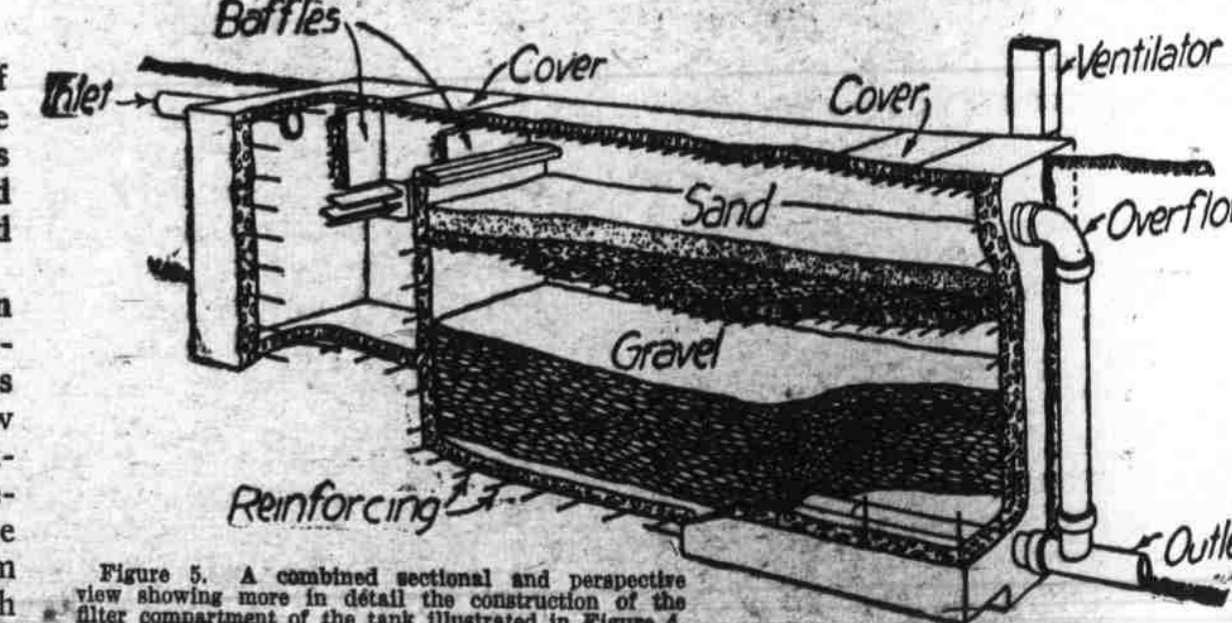


Figure 5. A combined sectional and perspective view showing more in detail the construction of the filter compartment of the tank illustrated in Figure 4.