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SEPTIC TANK CLEAR WATER DISCHARGE SYSTEM

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Fig. 1

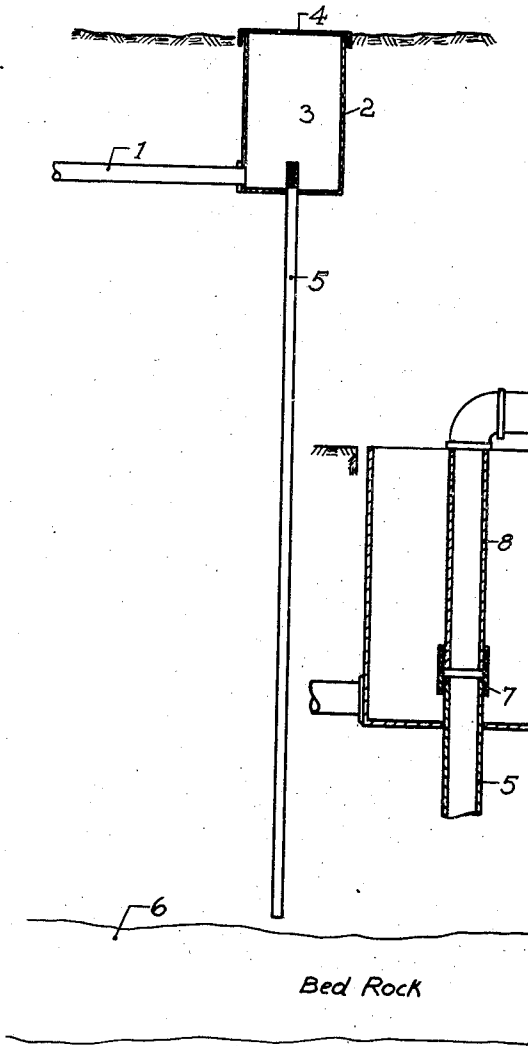
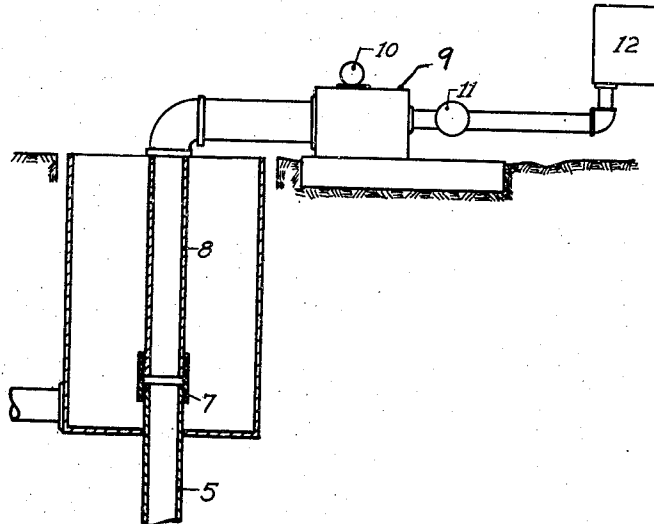


Fig. 2



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## UNITED STATES PATENT OFFICE

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SEPTIC TANK CLEAR WATER DISCHARGE  
SYSTEM

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3 Claims. (Cl. 61-11)

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This invention relates to the drainage of the clear water discharge from septic systems.

It has been proposed heretofore to provide a drainage arrangement for the clear water discharge from a septic system by driving a pipe deeply into the ground and using explosives to break up the earth at the lower end of the pipe for drainage purposes. The provision of pipe drainage arrangement of this character has a number of objections among which may be mentioned: first, it involves an explosive hazard; second, it requires the use of a pipe large enough to permit the handling of the explosive and such pipe is, as a rule, substantially larger than the average drainage requirements necessitate; and third, it results in an arrangement which must be used over a period of time before its operativeness can be definitely ascertained. Because of these disadvantages, the practice, at the present time, is to employ dry wells and drainage tiles for the disposal of the clear water discharge. But these arrangements are relatively expensive to install and, while they usually work well enough when first installed, many of them become sufficiently clogged, after varying periods of use, to be exceedingly troublesome. When they become clogged, it is often impossible to restore them to a satisfactory operating condition without undergoing the relatively heavy expense of, and the extreme nuisance involved in, supplementing or replacing them with a new drainage system.

The present invention relates to a clear water discharge of the pipe drainage type and has, as its principal object, the provision of a novel and simple method for quickly and inexpensively establishing an effective and long enduring system of drainage channels in the earth at the lower end of the pipe and for quickly and inexpensively restoring such system of channels to a highly satisfactory operating condition in the event they become clogged during use.

Another important object is to provide a method, of establishing a system of drainage channels in the earth at the bottom of the pipe, which enables the operator to determine the effectiveness of the channels at the time they are established.

A further object is to provide a novel pipe drainage arrangement.

In the drawing:

Figure 1 illustrates a pipe drainage arrangement installed in accordance with my method; and

Figure 2 is a fragmentary view showing the

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drainage pipe connected to a source of water supply.

The arrangement shown in Figure 1 comprises: a gravity feed pipe 1 leading from the clear water discharge of a septic tank not shown; an upper pipe 2 providing an overflow chamber 3 of sufficient capacity to accommodate surges in the rate of clear water discharge received from pipe 1 to which it is connected; a removable lid 4 over the top of pipe 2; and a drainage pipe 5 leading downwardly through the earth from the bottom of the overflow chamber 3. While the size of the drainage pipe will depend upon the capacity of the installation, a half-inch pipe is large enough to accommodate the capacity required by 4 to 6 households; hence large enough for the bulk of all installations.

In installing the pipe 5, a site should be chosen having a bed rock base 6 providing natural drainage areas. The pipe is installed in a conventional way by forcing the pipe downwardly into the earth one foot or more, at a time, and drilling out the debris which accumulates within the pipe. Normally I prefer, after the pipe is well launched into the ground, to drill about one foot ahead of the pipe since this makes it easier to drive the pipe and often avoids driving it into stone with sufficient force to bend it. The drill is used to locate the bed rock depth and the pipe is finally driven to a position in which its lower end is spaced upwardly from bed rock a relatively short distance, say one inch more or less. It is highly desirable to bring the lower end of the pipe close to and yet spaced from bed rock, since this provides sufficient clearance for water flow purposes and yet avoids the tendency of the earth around the lower end of the pipe to collapse and thus block drainage which often occurs with larger spacing. Heretofore drainage pipes have not been located with particular reference to the bed rock base.

When the pipe 5 is installed with its lower end properly positioned relatively to the bed rock base and before the pipe 2 is provided, the upper end of the pipe 5 is connected to a suitable source of water pressure. For this purpose, I connect the projecting upper end of pipe 5, which is threaded, through a conventional coupling device 7 such as a screw coupling, and a pipe 8 to a pressure tank 9, having a pressure gauge 10, and connected through pump 11 to a suitable source of water supply 12. Placing this arrangement in operation, water under pressure is fed into drainage pipe 5 and seeks to escape through the earth at the lower end of the pipe. I have obtained ex-

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cellent results using pressures ranging upwardly from 60 pounds per square inch, but I prefer the use of higher pressures ranging from 100 to 500 pounds per square inch or even higher. But even with 60 pounds of pressure, the water will, in the space of thirty to forty minutes, force its way to the natural drainage areas surrounding the lower end of the pipe and, in doing so, create an effective system of one or more drainage channels. The water pressure is maintained until a steady and adequate flow of water is created through the earth at a lower end of the pipe. The rate of this flow is, of course, a measure of the effectiveness of the drainage system; hence, when an adequate rate is achieved, the drainage system can be placed in use with the assurance that it will work in a highly satisfactory manner.

The installation cost will of course vary with the conditions encountered but, generally speaking, this type of drainage is substantially less expensive than the dry well or drainage tile arrangement. On an average I estimate that the installation cost approximates  $\frac{1}{2}$  the cost of a dry well for example. Aside from its inexpensiveness, it is effective. I have found that the bulk of these systems when properly operated, give highly satisfactory service over long periods of time and seldom clog or otherwise give trouble. However, if the system should become clogged, it is a simple matter to reconnect the drainage pipe to a source of water pressure, and use such pressure to restore the system to an operating condition equal to or even better than its original condition. Often city water pressure, if available, will be sufficient for this purpose.

Occasionally the site chosen will be such that effective drainage is not possible even with a lengthy application of water pressure. In this event, another site should be chosen and another pipe sunk. The advantage of the present method, however, is that the failure of the system is determined during the installation period; hence, can be overcome without creating a nuisance. Where drainage is provided by means of ex-

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plosives, for example, the system may not work, but the discovery of its inoperativeness requires a period of use and thus results in a nuisance, and a constant source of annoyance, during the period required for its correction.

This application is a continuation in part of my application Serial No. 535,845, filed May 16, 1944.

Having described my invention, I claim:

1. A method of providing a drainage arrangement for the clear water discharge of a septic system in a locality having a bed rock base substantially below the surface of the earth and natural drainage areas in the vicinity of the base comprising: sinking a drainage pipe into the earth to a position in which its lower end is spaced slightly from the bed rock base but sufficiently to provide clearance for water flow purposes; feeding water under pressure into the pipe to force water from the lower end of the pipe into the earth; and maintaining the pressure until the water creates open drainage channels through the earth leading from the lower end of said pipe to said natural drainage areas.

2. A clear water discharge system for a septic tank in a locality having a bed rock base substantially below the surface of the earth and natural drainage areas in the vicinity of the base comprising: a clear water drainage pipe extending into the earth to a position in which its lower end is spaced slightly from the bed rock base but sufficiently to provide clearance for water flow purposes; and a system of drainage channels leading from the lower end of said pipe to said natural drainage areas.

3. The method of claim 1 wherein: the pipe sinking step involves the operation of drilling axially through and ahead of the pipe to remove debris from within the pipe, to form an opening through the earth in advance of the pipe which facilitates the sinking of the pipe, and to locate the bed rock base before the pipe is sunk to its final position.

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