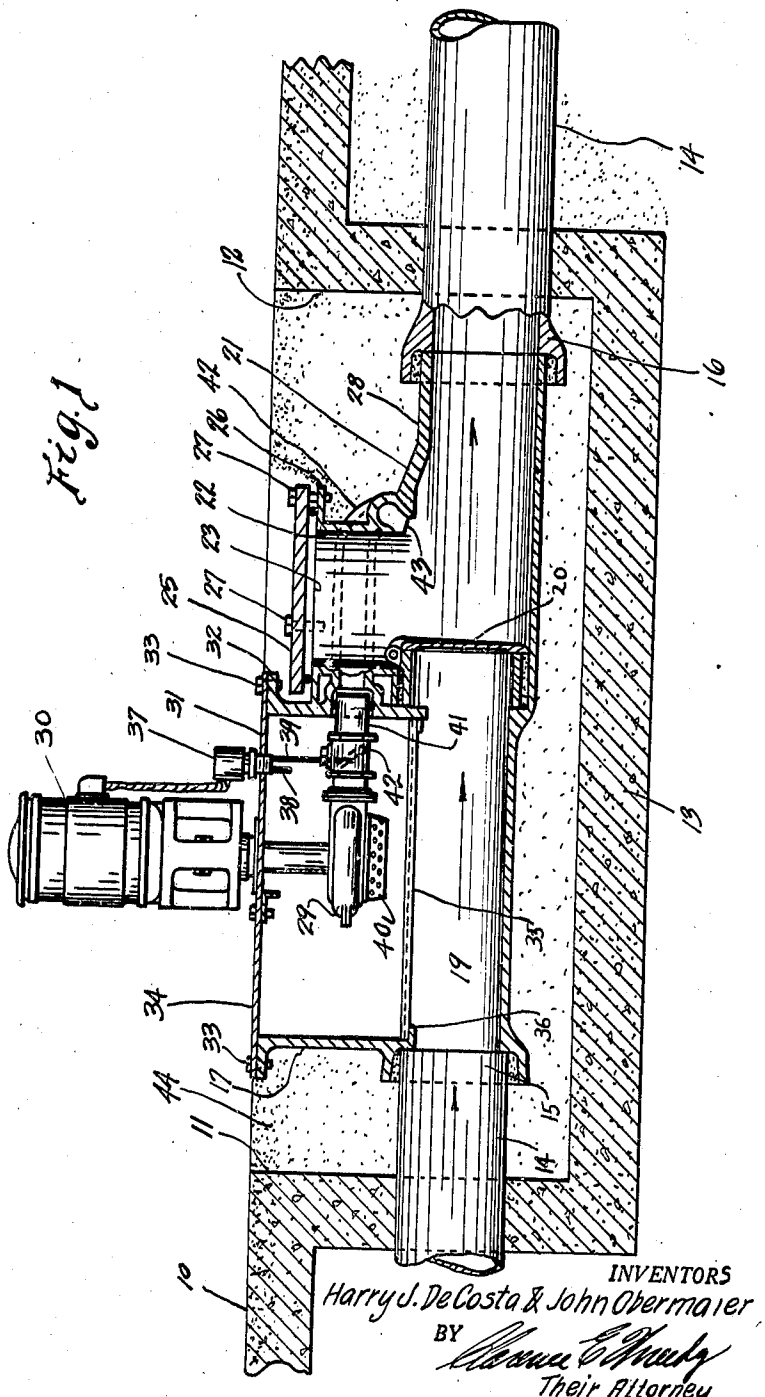
April 25, 1944. H. J. DE COSTA ET AL 2,347,544

FLOOD CONTROL MEANS

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Fig. 1



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Fig. 2

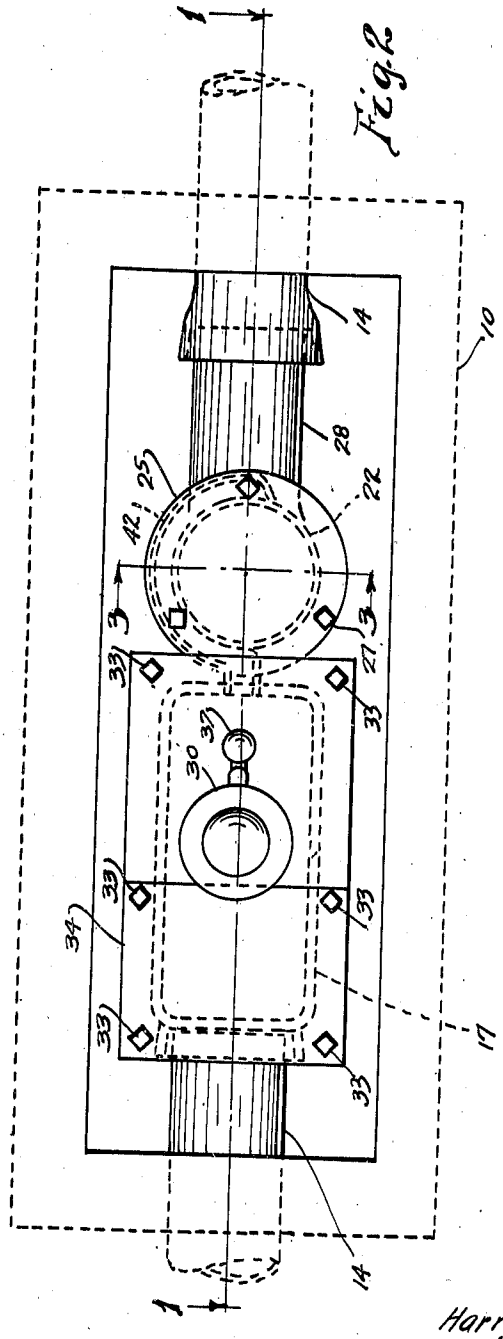
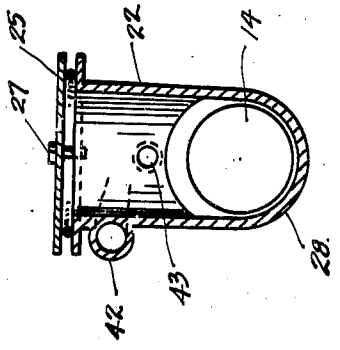


Fig. 3



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FLOOD CONTROL MEANS

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Chicago, Ill.

Application October 25, 1943, Serial No. 507,562

6 Claims. (Cl. 182—1)

This invention relates to certain new and useful improvements in flood control means and more especially to a device for preventing basements and other low levels from being flooded by reason of a backing up of the drainage system, and has for its principal object the provision of a unitary structure which will be highly efficient in use, economical in manufacture, and one which may be installed without disturbing the old drainage installation or removing any of the fixtures therefrom such as the wash bowl and closet bowl.

Among the salient objects of the invention is the provision in such a system of a sump pump automatic in its operation for removing the overflow of sewage and water from a sewage trough to a point of ejection for passage out through the main sewer or drain pipe, and in which the sump pump is protected from gathering debris or other matter normally passing through the sewerage or drain.

A still further object of the invention is the provision in a sewage trough of a removable screen which protects the passage of debris or other matter to the sump pump and in which such screen is self-cleaning by the water receding after the sewerage or drainage conduits have returned to their normal operations.

In flood control devices with which we are familiar, it is the normal practice to discharge the sewage when the water is caused to back up through the sewerage or drain pipes at a point beyond the back water valve in the direction of flow of the sewage.

While our present invention accomplishes this purpose, we also bring about the added advantageous feature of directing the discharge of the sewage from the sump pump directly toward the back water valve instead of in a direction against the back-up pressure in the sewerage or drain conduit during the backing up of the sewage therein.

Flood control means with which we are familiar, prior to our present invention, require in their installation the abandonment of the old sewerage system and the installation of a new system connecting with the various fixtures of the building, such as sinks, wash stands, closet bowls, and the like. Obviously, this adds considerably to the expense of installation. In installing our flood control means, it is not necessary to abandon the old sewerage system. The installation is incorporated in the present or old sewerage system, thus greatly adding to the many advantages resulting from our invention, including the cost of installation and manufacture.

Other objects will appear hereinafter.

The invention consists in the novel combination and arrangement of parts to be hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings showing the preferred form of construction, and in which:

Fig. 1 is a longitudinal vertical sectional detail view of our invention taken substantially on line 1—1 of Fig. 2;

Fig. 2 is a plan view of the same with the filler material hereinafter referred to, removed; and

Fig. 3 is a fragmentary sectional detail view taken substantially on line 3—3 of Fig. 1.

In carrying out the various objects of the invention, some of which have been hereinbefore stated, there is provided in the basement floor 10 at a suitable and convenient point, usually within the exposure of the drainage or sewerage system, a well 11 preferably defined by walls 12 and a bottom 13. Through this well passes the sewerage or drainage conduit 14 which, for example, may have been previously installed in the building, if the building has been constructed prior to the installation of our invention. A section of this drainage system within the confines of the well 11 is removed, leaving exposed into the well the ends 15 and 16 of the conduits 14, it being pointed out that the direction of flow through these conduits 14 is as indicated by the arrows, Fig. 1.

A sewage trough 17 is provided, and this trough 17 comprises an upper chamber 18 and a lower chamber 19, the lower chamber or compartment 19 being connected at one end in communication with the end portion 15 of the conduit 14, as shown in Fig. 1. The opposite end of the lower chamber 19 is closed by a back water valve 20, commonly referred to as a "check valve," which in the present instance may automatically open under water pressure in one direction, but which affords an effective seal when the water or sewage backs up in the direction opposite to that indicated by the arrows shown in Fig. 1.

This check valve is arranged in a clean-out duct 21 comprising a neck portion 22 having an open end 23 normally closed by a seal-tight cap 25 secured to flanges 26 through the medium of bolts 27. This duct 21 has an extension 28 which communicates with the end 16 of the conduit 14.

In the normal operation of the sewerage drain, the sewage or water passes to the lower compartment 19 through the conduit 14, but should for

any reason the sewage or water back up or flow in the direction opposite to that indicated by the arrows, Fig. 1, the check valve will be automatically closed under pressure of the back flowing sewage or water and seal passage of the sewage from entrance into the lower compartment 19. Obviously, any sewage disposal must, under these conditions, be conveyed away. To accomplish this, we provide in the upper chamber or compartment 19 the nozzle or inlet 29 of a sump pump 30. This sump pump 30 is supported by a fixed closure 31 constituting the top wall of the compartment 18 and is secured to flanges 32 by means of bolts 33 or the like. A section 34 of this cover may be removed to allow manual access into the sewage trough 17. The compartments 18 and 19 are divided by a suitable screen structure 35 supported as at 36 within the trough 17.

A control switch 37 of a conventional type is provided for controlling the electric circuit (not shown) to the pump 30. This control switch 37 preferably includes two electrodes 38 and 39, the electrode 38 being of a short length, whereas the electrode 39 is of a substantial length; and the arrangement is such that when the water rises from the compartment 19 into the compartment 18, the pump 30 will be automatically operated when the water submerges both of the electrodes 38 and 39. When these electrodes are thus submerged in the water, the automatic switch 37 is caused to function in a well known manner (which switch and manner of operation constitute no part of the present invention) to cause the operation of the pump 30.

In the present instance, I have shown (although it may be dispensed with) a screen head 40 associated with the nozzle or inlet end portion of the pump. The sewage drawn into the pump nozzle 29 is ejected through a conduit 41 comprising a check valve 42. From this conduit 41 the sewage passes into a discharge manifold 42 which encircles the neck 22 and has its outlet 43 positioned in a direction toward the check valve 20 so that the sewage ejected from the sewage trough 17 through this discharge manifold will be directed against or in the direction of the check valve 20, as distinguished from in a direction against the back up flow of the water or sewage.

To complete the installation, a filler 44, such as earth or cinders or the like, may be placed in the well 11. In this manner only a few parts of the flood control means constituting our invention are exposed above the surface of the floor 10.

Normally during a heavy rain or by virtue of the location of the sewage drain of a building, the sewage and water are caused to temporarily back up through the drainage system. If no means is provided for preventing this backing up of the sewage drain as well as taking care of the drainage during this momentary abnormal situation, it is obvious that the sewage will flood the basement or other low level. With our installation, as soon as this condition takes place, that is, the backing up of the sewage in the sewage drain, the check valve 20 under pressure of the back-flowing sewage and water will be closed, shutting off the back-up flow into the compartment 19. The discharge from the sewage drain then continues to empty into the compartment 19 and thence into the compartment 18 of the sewage trough, the large particles of sewage or other debris being retained in the compartment 19 by the screen 35. As the level rises it will eventually submerge the electrodes 38 and 39. When this takes place the switch 37 will be automatically operated in a well-known manner, causing the pump 30 to automatically operate. Operation of this sump pump 30 will pump water from the compartments 18 and 19 and eject the same from the manifold 42 into the duct 21 where it will eventually flow under the pressure of the pump opposite the back-up flow. When the sewage flow returns to normal condition, as the water recedes from the compartment 18, any particles of sewage clinging to the screen 35 will be washed therefrom and pass out through the conduit 19 into the conduit 14.

In this manner we provide a flood control means which is simple and automatic in its operation, occupies a minimum space, and is effective for its intended purpose, and may be installed without disturbing the old installation where the sewerage installation has been previously installed in the building or the like.

While we have illustrated and described the preferred form of construction for carrying our invention into effect, this is capable of variation and modification without departing from the spirit of the invention. We, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail ourselves of such variations and modifications as come within the scope of the appended claims.

Having thus described our invention, what we claim as new and desire to protect by Letters Patent is:

1. A flood control means in which the means is confined in a well provided in the floor of a structure through which sewage drain conduits pass, comprising a sewage trough having communication with said conduits and comprising an upper and a lower compartment, a drainage section having communication with the lower compartment and with said sewage drain conduits, pump means arranged in the upper compartment of the sewage trough, a discharge manifold having communication with said pump means and said section, and a check valve in said section and operative to obstruct the flow of sewage from said section into said lower compartment but free to permit flow of said sewage from said lower compartment into said section.

2. A flood control means in which the means is confined in a well provided in the floor of a structure through which sewage drain conduits pass, comprising a sewage trough having communication with said conduits and comprising an upper and a lower compartment, a drainage section having communication with the lower compartment and with said sewage drain conduits, pump means arranged in the upper compartment of the sewage trough, a discharge manifold having communication with said pump means and said section, a check valve in said section and operative to obstruct the flow of sewage from said section into said lower compartment but free to permit flow of said sewage from said lower compartment into said section, and a screen dividing said compartments.

3. Flood control means comprising, in combination with a sewage drain conduit, a structure comprising a section of said conduit and including a sewage trough, a section between said trough and one end of said conduit, communicating means between said section and said sewage trough, means for ejecting sewage from said sewage trough through said communicating means into said section, and a check valve in

said section and operative to prevent the flow of sewage from said section into said sewage trough but free to permit flow of sewage from said sewage trough into said section.

4. Flood control means comprising, in combination with a sewage drain conduit, a structure comprising a section of said conduit and including a sewage trough, a section between said trough and one end of said conduit, communicating means between said section and said sewage trough, means for ejecting sewage from said sewage trough through said communicating means into said section, a check valve in said section and operative to prevent the flow of sewage from said section into said sewage trough but free to permit flow of sewage from said sewage trough into said section, and a screen dividing said sewage trough into upper and lower compartments, said lower compartment having communication with said section and said conduit for passage of sewage therethrough from said conduit into said section.

5. A flood control device comprising a drain conduit, control means constituting a section of said drain conduit and comprising an overflow trough, a clean-out duct, a sump pump in said trough, a discharge manifold providing communication between the trough and the duct, a check valve including a gate in said clean-out duct and operable to close communication between the clean-out duct and the trough when the sewage backs up in said drain conduit but otherwise free to permit open communication between said trough and said duct, said manifold having an outlet disposed with respect to said gate such that sewage discharged from the discharge manifold will be directed toward the gate when in closed position by the backing up of said sewage in said conduit.

6. In combination with a drain conduit, a flood control device constituting a section of said drain conduit and comprising a trough divided into an upper and a lower compartment, a sump pump having communication with the upper compartment, a clean-out duct, means providing communication between the sump pump and the clean-out duct, a check valve for controlling communication between the lower compartment and the clean-out duct, said means having a discharge outlet disposed with respect to the check valve in a manner such that discharge therefrom will be directed toward said check valve, and a screen dividing said trough into said upper and lower compartments.

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