E. STEUER.

PLANT FOR PURIFYING WATER.

APPLICATION FILED FEB. 26, 1910.

1,069,040. Patented July 29, 1913.

Fig. 1.

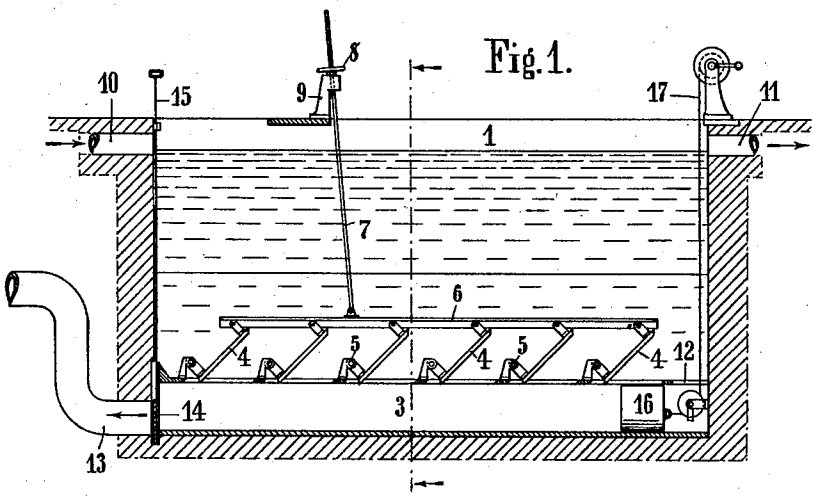


Fig. 2.

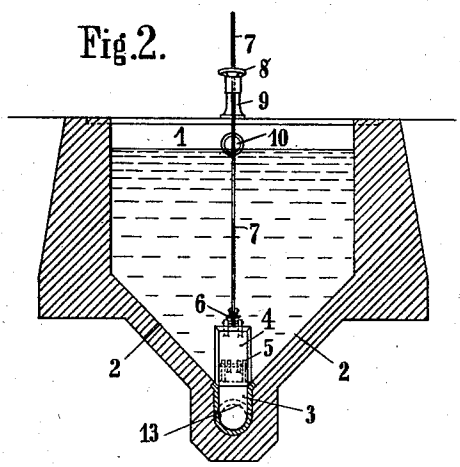


Fig. 3.

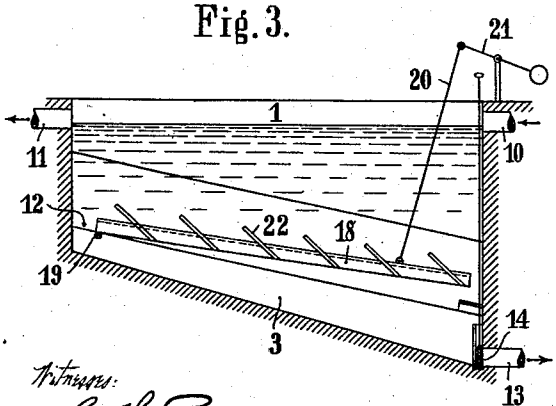
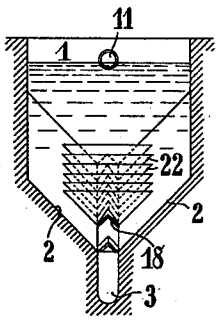


Fig. 4.



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PLANT FOR PURIFYING WATER.

1,069,040. Specification of Letters Patent. Patented July 29, 1913.

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To all whom it may concern:

Be it known that I, EUGEN STEUER, a citizen of the German Empire, and resident of Neustadt-on-the-Hardt, Germany, have invented certain new and useful Improvements in and Relating to Plants for Purifying Water, of which the following is a specification.

My invention relates to plants for purifying water and has for its object an improved and simple construction of settling tanks which allows the removal of the deposit without interrupting the operation of the tank, the deposit being in highly concentrated condition when being removed from the tank.

My invention is illustrated on the accompanying drawing.

Figures 1 and 2 show an embodiment of a deposit tank in accordance with the invention in longitudinal section and in cross section, and Figs. 3 and 4 show likewise in longitudinal section and in cross section a further embodiment of a settling tank construction.

Referring more particularly to Figs. 1 and 2 of the drawing the settling tank 1 is shown as provided with inclined bottom surfaces 2, the lower edges of which form the top edges of a bottom channel 3 of the tank. A closing device is provided for closing the top opening of channel 3. In the embodiment of the construction illustrated in Figs. 1 and 2 this closing device is formed by a plurality of closing flaps 4 forming a jalousie, said closing flaps being rotatable about axles crossing the channel 3, pivots of said flaps being indicated on the drawing at 5. The flaps 4 are provided with a common actuating member 6 which is connected to a rod 7 which is screw-threaded at its upper end and provided with a hand wheel 8 for raising and lowering said rod. 9 is a bracket supporting said hand wheel 8. 10 is a conduit for introducing the water into the tank 1 and 11 is an exit at the end of the tank 1 which is opposite the end provided with the inlet 10. 12 is an opening at the top side of channel 3 through which channel 3 is permanently in free communication with the tank notwithstanding the closing of flaps 4. 13 is an exit for the deposit within channel 3, 14 is a valve controlling the exit end of channel 3 actuated by rod 15. 16 is a piston-like member within channel 3 and 17 a cord connected to said member 16.

The operation of the device is as follows: Sewage or other turbid water is introduced through conduit 10 and leaves the tank 1 by conduit 11. The sediments contained within the water are deposited by gravity and are guided through inclined bottom surfaces 2 and flaps 4 into channel 3. The inclined arrangement of bottom surfaces 2 allows a compact and cheap construction for the channel closing device. When sufficient deposit is accumulated within the channel 3 the channel 3 is closed by lowering rod 7 to such an extent that the flaps 4 form a substantially continuous surface. After closing of channel 3 the pressure of the water contained within the tank drives the piston like body 16 toward the exit 13 of channel 3 after opening of valve 14. In this way the deposit is removed from the tank without being mixed again with the water which is used for the removal of the deposit from the channel. The piston like body forms during such removing of the deposit a wall member which prevents the water behind the piston from mixing with the sludge in front of the piston. After removal of the deposit from the channel the rod 7 is again raised and flaps 4 elevated whereafter the piston 16 may easily be returned to its initial position by drawing the cord 17.

Relating to the embodiment of the construction shown in Figs. 3 and 4 it is to be stated that in this instance the tank is again designated 1 and the inclined bottom surfaces of same with the letter 2. 3 is again the bottom channel. 10 is the inlet conduit and 11 the exit of the water. 13 is the exit for the sludge, 14 the valve controlling said exit. The closing device for channel 3 con-

sists in this instance of a roof-like member 18 hinged at 19 to the bottom of the tank and connected near its free end to a cord 20 operatable by lever 21. 22 are inclined plates firmly connected to said roof-like closing member for channel 3.

The operation of collecting the sludge in channel 3 is substantially the same as that described in connection with the embodiment of construction illustrated in Figs. 1 and 2. The removal of the sludge from channel 3 is however different in that, after closing of the channel 3 by lowering the free end of the roof-like member 18 and opening the valve 14 at the exit end of the channel, the water contained in the tank 1 which again is in free communication with the one end of channel 3 through opening 12 presses the sludge toward the exit; the inclination of the channel toward its exit assists at the same time the removal of the sludge by gravity action. The function of the plates 22 consists in preventing the flowing water within the tank above the roof-like member 18 from disturbing the deposit within channel 3.

I claim:

1. In a plant for purifying water, a settling tank provided with orifices for introducing and for emitting water, an inclined bottom surface within said tank, a bottom channel so positioned with relation to said inclined bottom surface that the latter is adapted to guide deposits into said channel and adapted to communicate with the tank substantially in the whole of its length, a closing device for the top of said bottom channel disposed within the tank above the channel, a deposit-exit at one end of said channel, and a valve for controlling the exit.

2. In a plant for purifying water, a settling tank provided with orifices for introducing and for emitting water, an inclined bottom surface within said tank, an inclined bottom channel so positioned with relation to said inclined bottom surface that the latter is adapted to guide deposits into said channel and adapted to communicate with the tank substantially in the whole of its length, a closing device for the top of said bottom channel disposed within the tank above the channel, a deposit-exit at one end of said channel, and a valve for controlling the exit.

3. In a plant for purifying water a settling tank provided with orifices for introducing and for emitting water, an inclined bottom surface within said tank, a bottom channel so positioned with relation to said inclined bottom surface that the latter is adapted to guide deposits into said channel, a closing device for said bottom channel comprising a plurality of flaps rotatable about axles crossing said bottom channel, a deposit exit at one end of the latter and a valve for controlling said exit.

4. In a plant for purifying water a settling tank provided with orifices for introducing and for emitting water, an inclined bottom surface within said tank, a bottom channel so positioned with relation to said inclined bottom surface that the latter is adapted to guide deposits into said channel, a closing device for said bottom channel comprising a plurality of flaps rotatable about axles crossing said bottom channel, a common actuating member for said bottom channel closing flaps a deposit exit at one end of said channel and a valve for controlling said exit.

5. In a plant for purifying water a settling tank provided with orifices for introducing and for emitting water, an inclined bottom surface within said tank, a bottom channel so positioned with relation to said inclined bottom surface that the lattter is adapted to guide deposits into said channel, a closing device for the bottom channel leaving open communication even in closing position between said channel and said tank at one end of the channel, a deposit exit and a valve for controlling same.

6. In a plant for purifying water a settling tank provided with orifices for introducing and for emitting water, an inclined bottom surface within said tank, a bottom channel so positioned with relation to said inclined bottom surface that the latter is adapted to guide deposits into said channel, a closing device for said bottom channel, a deposit-exit at one end of same a valve for controlling said exit and a movable wall member within said channel adapted to prevent free access of water to the mass of the deposit within the channel during the emptying of the channel.

7. A settling tank for purifying liquids, provided with inlet and outlet orifices, an inclined bottom for said tank, a deposit-collecting channel beneath said inclined bottom, and arranged to be maintained open to the liquid during the settling process, a valve adapted to close the deposit-exit of the channel, and means within said channel for expelling the deposit.

8. A settling tank for purifying liquids, provided with inlet and outlet orifices, an inclined bottom for said tank, a deposit-collecting channel beneath said inclined bottom, and arranged to be maintained open to the liquid during the settling process, a valve adapted to close the deposit-exit of the channel, and means comprising a plunger for expelling the deposit.

9. A settling tank for purifying liquids, provided with inlet and outlet orifices, an inclined bottom for said tank, a deposit-col-

lecting channel beneath said inclined bottom, and arranged to be maintained open to the liquid during the settling process, a valve adapted to close the deposit-exit of the channel, and means comprising a plunger actuated by the liquid in said tank for expelling the deposit.

In testimony whereof, I affix my signature in presence of two witnesses.

EUGEN STEUER.

Witnesses:
HENRY HASPER,
WOLDEMAR HAUPT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."