June 20, 1944. L. F. SATTELE ET AL 2,351,712

SCREEN

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FIG. 1.

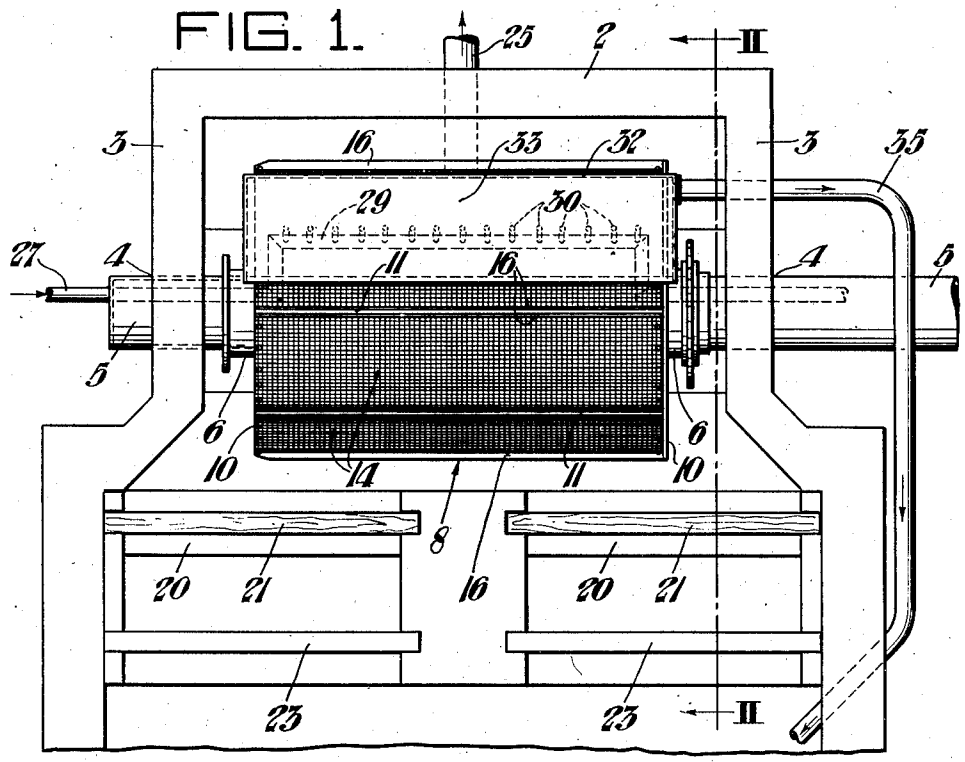
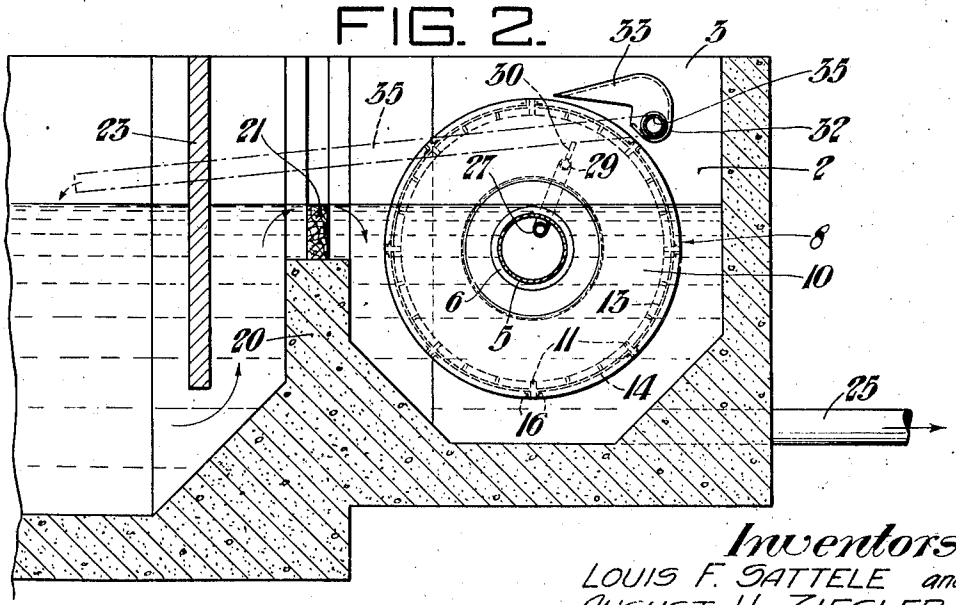


FIG. 2.



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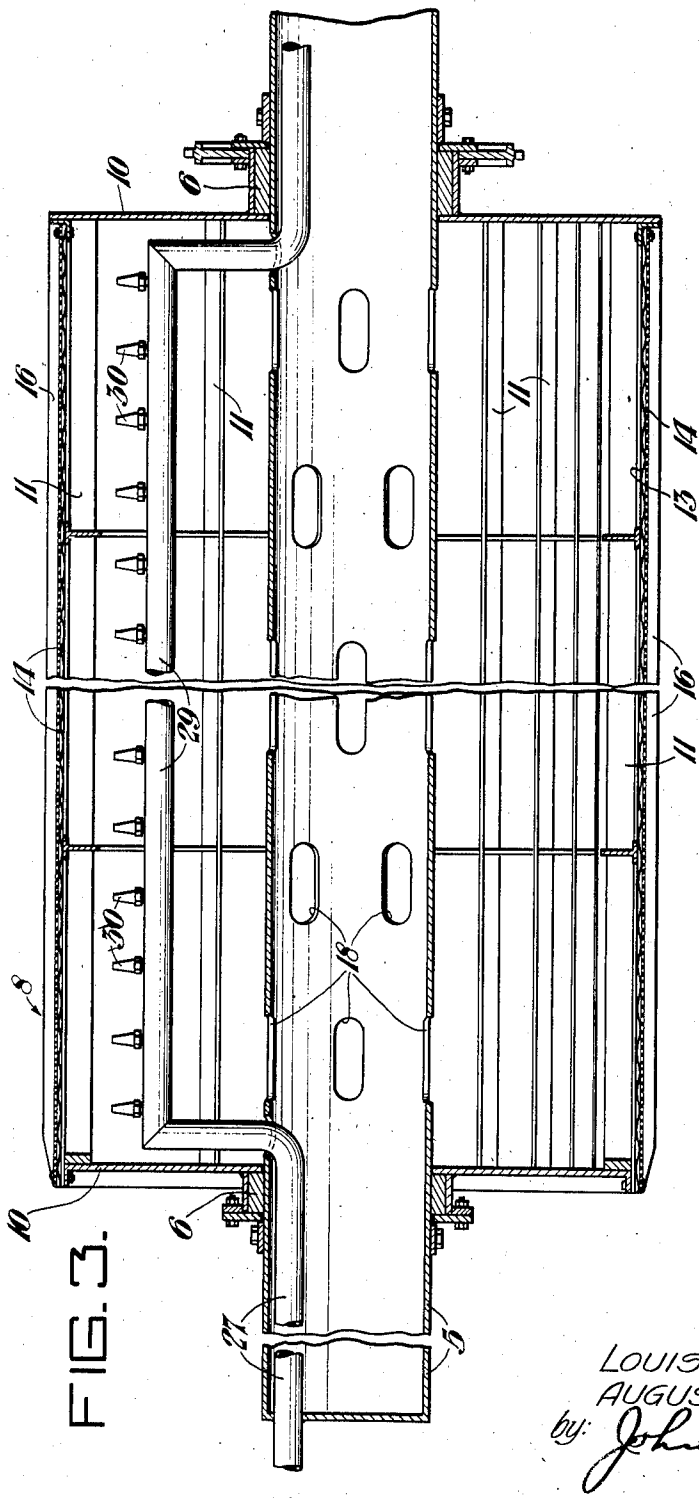


FIG. 3.

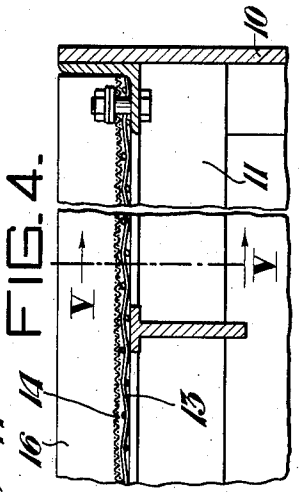


FIG. 4.

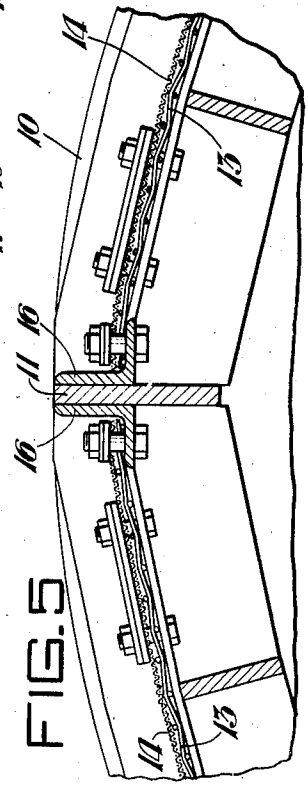


FIG. 5

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SCREEN

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Application April 7, 1941, Serial No. 387,320

2 Claims. (Cl. 210—199)

This invention relates to screens, and more particularly to those which are used to separate floating and suspended particles of slag from bodies of water, although not limited thereto.

It is among the objects of the present invention to provide a relatively inexpensive apparatus which is susceptible of rough usage such as that mentioned immediately hereinbefore.

Another object is the provision of an apparatus of the class described which is self-cleaning.

The foregoing and other objects will be apparent after referring to the drawings, in which:

Figure 1 is a fragmentary plan of an apparatus made in accordance with the teachings of the present invention.

Figure 2 is a sectional view on the line II—II of Figure 1.

Figure 3 is an enlarged sectional elevation of the screen element per se, which is shown as being drum-shaped.

Figure 4 is an enlarged fragmentary view illustrating a portion of the screen element and its supporting instrumentalities in section.

Figure 5 is a sectional view on the line V—V of Figure 4.

Referring more particularly to the drawings, wherein there is illustrated a preferred embodiment of an apparatus embodying the teachings of the present invention, the reference numeral 2 generally designates a tank containing the liquid from which the solids are to be strained. As shown more clearly in Figure 1, the tank 2 comprises a pair of end walls 3 through which there extends a pair of aligned apertures 4. A pipe 5 extends through the aligned apertures 4. Within the tank 2 the pipe 5 carries a pair of aligned bearings 6 to each of which there is secured one end of a drum generally designated at 8. This drum 8 comprises a pair of end plates 10, and longitudinal connecting members 11 around which there is disposed a large mesh cloth 13 having superposed thereon a finer mesh cloth 14. If desired, the mesh cloth 13 and/or the mesh cloth 14 may be arranged in sections. In the present instance the end plates 10 and longitudinal members 11 define a cylindrical drum, but it will be understood that the same may be polygonal in cross section. It should, however, be drum-shaped. Disposed on the exterior of the fine mesh cloth 14 which is superposed on the large mesh cloth 13 on the periphery of the drum 8 is a series of angle irons 16 each of which is L-shaped in section with the foot portion thereof lying against the periphery of the drum, whereby the said angle irons may function as buckets, to carry media to be strained in a manner which will appear more fully hereinafter.

The mid-portion of the pipe 5, viz, that part thereof which lies interiorly of the drum 8, is provided with a plurality of apertures, as shown at 18, and one end of the pipe 5 (the right-hand end in Figure 1) communicates with a sewer.

Referring to Figure 1, the tank 2 has formed therein a pair of aligned walls 20 which extend from the sides of the tank parallel to the pipe 5, and terminate in spaced relationship, each of the walls 20 being provided along its upper edge with a weir 21. Extending parallel with each of the walls 20 and on the side thereof which is opposite the pipe 5, the tank 2 is provided with a baffle 23 which depends downwardly from a point above the level of liquid in the tank and terminates in spaced relation with respect to the bottom thereof.

In operation, the tank 2 is supplied with water or other liquid to a level which is at or above the axis of the pipe 5, whereupon water containing floating and suspended particles such as slag will flow from a settling basin on the sides of the walls 20 which are opposite those facing the pipe 5, progress under the baffles 23, over the weirs 21, move through the fine and large mesh cloths 14 and 13 respectively, through the apertures 18 in the pipe 5, and out of the latter and into the sewer with which it is connected.

According to the foregoing construction and arrangement of instrumentalities, the larger particles of medium being filtered (i. e., slag) will settle into that portion of the tank 2 which is beneath the drum 8, and be permitted to flow therefrom through a suitable drain, as indicated at 25.

It is essential that clogging of the interstices of the mesh cloths 13 and 14 be eliminated, and to this end the teachings of the present invention comprise means for accomplishing the same in a continuous manner. Accordingly there is extended into the pipe 5 from the left-hand end thereof (see Figure 1) a smaller pipe 27 which communicates with a manifold 29 disposed exteriorly of the pipe 5 but interiorly of the drum 8. This manifold 29 is provided at suitably spaced positions with a series of spray nozzles 30 which extend into adjacency with the drum at a position near the top portion thereof. This construction permits of the removal of slag adhering to the mesh cloth 14 and buckets 16 when the said adherent slag comes into contact with the line of multiple high-pressure water sprays supplied by the nozzles 30 which are in

turn connected to the manifold 29, the latter of which is in communication with the pipe 27 which runs through the stationary pipe 5.

It is among the objects of the present invention to provide for the collection of the slag which is washed from the mesh cloth 14 by the sprays issuing from the nozzles 30, and there is provided at a point opposite the latter a trough 32. This trough 32 is disposed beneath, and offset from, a deflecting shield 33. The slag which is washed from the mesh cloth 14 by the sprays issuing from the nozzles 30, strikes the deflecting shield 33, drops into the trough 32, and is recovered by being moved through a pipe 35 to the settling basin.

While we have shown and described one specific embodiment of the present invention, it will be seen that we do not wish to be limited exactly thereto, since various modifications may be made without departing from the scope of the invention as defined by the following claims.

We claim:

1. In a strainer, the combination of a tank adapted to contain the liquid to be strained, a settling basin adjacent said tank, a weir between said basin and said tank over which the liquid to be strained passes, a stationary tube disposed in said tank, a hollow strainer rotatably mounted on said tube, said strainer having a screen periphery located to immerse its lower portion in the liquid in said tank, means to rotate said strainer, said tube having apertures therein for delivering the strained liquid from the interior of said strainer, an outlet in said tube for discharging the strained liquid from said tank, means inside of said strainer to blow fluid through the screen to dislodge matter adhering to its outer surface, a receptacle for collecting said dislodged matter, and blades on said strainer projecting outwardly beyond said screen to engage particles in the liquid and carry them to the top of the screen and into adjacency with respect to said last-named means.

2. In a strainer, the combination of a tank adapted to contain the liquid to be strained, a settling basin adjacent said tank, a weir between said basin and said tank over which the liquid to be strained passes, a stationary tube disposed in said tank, a hollow strainer rotatably mounted on said tube, said strainer having a screen periphery located to immerse its lower portion in the liquid in said tank, means to rotate said strainer, said tube having apertures therein for delivering the strained liquid from the interior of said strainer, an outlet in said tube for discharging the strained liquid from said tank, means inside of said strainer to blow fluid through the screen to dislodge matter adhering to its outer surface, a receptacle for collecting said dislodged matter, blades on said strainer projecting outwardly beyond said screen to engage particles in the liquid and carry them to the top of the screen and into adjacency with respect to said last-named means, and means for returning said dislodged matter to said settling basin.

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