

Nov. 11, 1924.

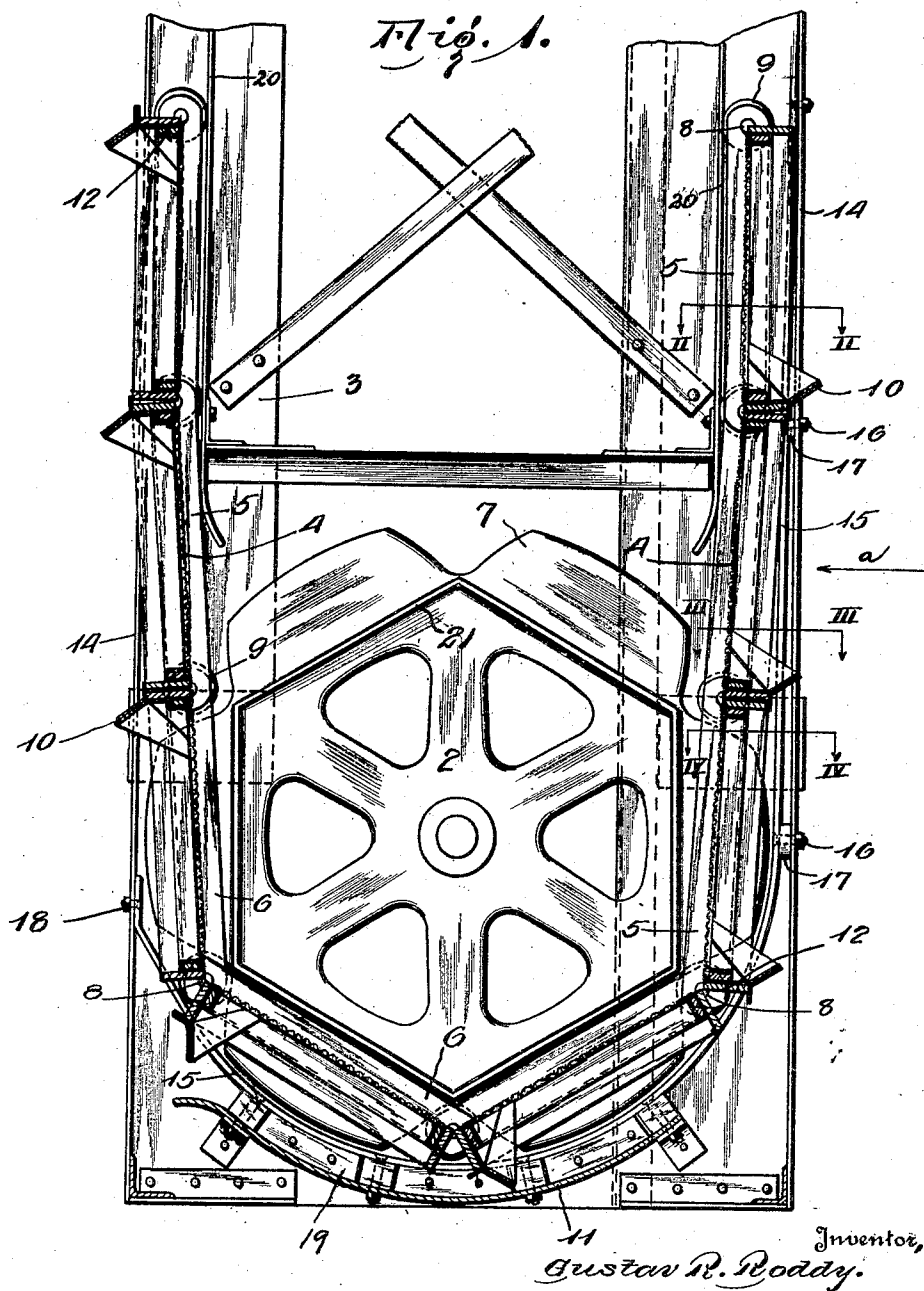
G. R. RODDY

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FLUME SCREEN

Filed Oct. 5, 1922

2 Sheets-Sheet 1



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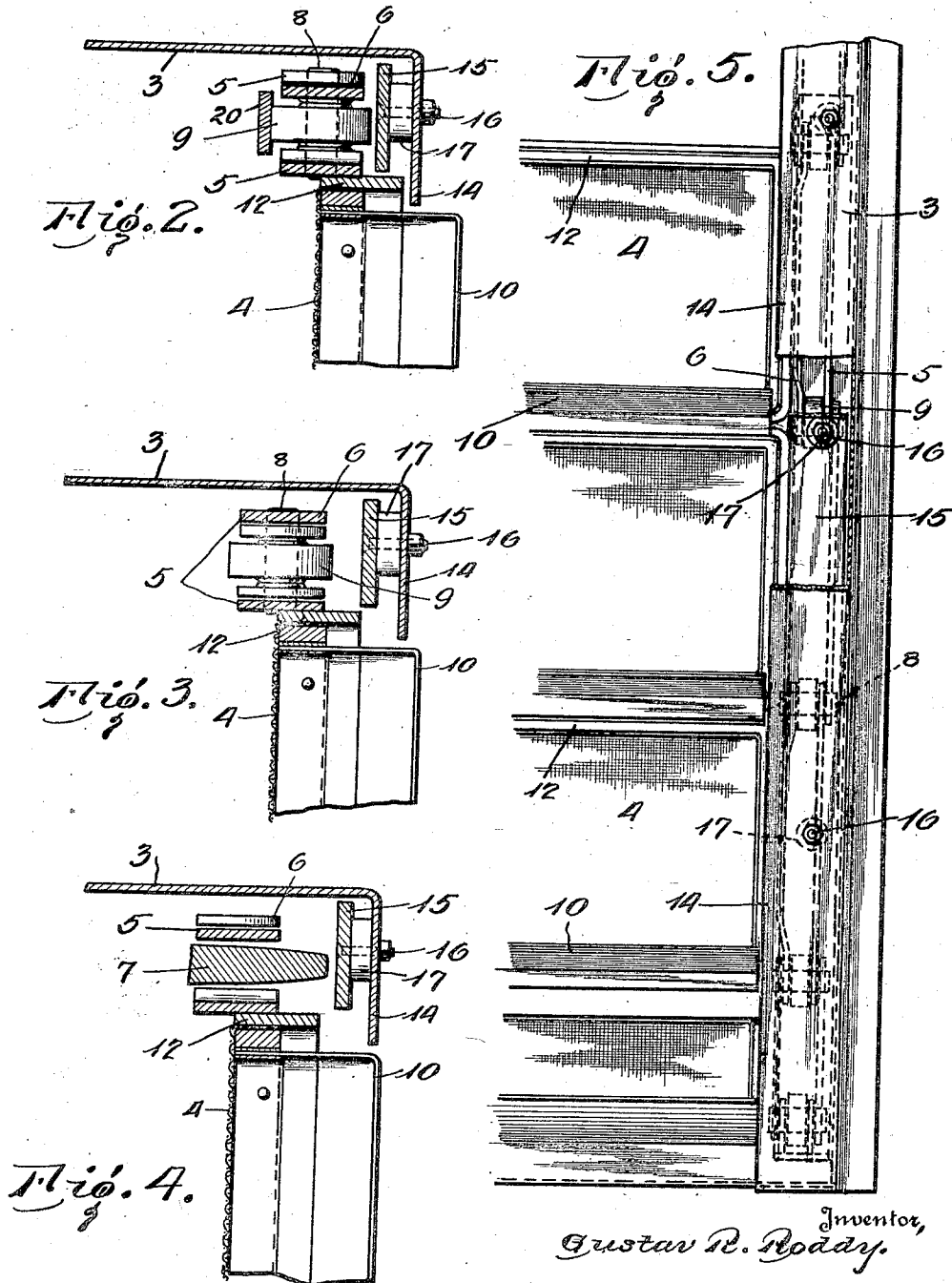
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2 Sheets-Sheet 2



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FLUME SCREEN.

Application filed October 5, 1922. Serial No. 592,508.

To all whom it may concern:

Be it known that I, GUSTAV R. RODDY, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Flume Screens, of which the following is a specification.

This invention relates to flume screens such as are used to remove from sewage and waters used for industrial purposes the larger particles of solid material found therein. It has for its object to improve the apparatus employed in such screens in such way as to reduce to a minimum the leakage of water, that is, the passage thereof around the screen rather than through it.

In Patent 1,208,655, issued to Chain Belt Company of Milwaukee, as assignee of B. S. Reynolds, dated December 12, 1916, there is shown a flume screen having many features in common with the one illustrated in the accompanying drawings as embodying the present invention. The screen shown in that patent, which is of the endless, traveling type, comprises a series of separate screen sections rectangular in outline, secured at their edges to endless sprocket chains. The links of these chains are each preferably formed of parallel and spaced-apart side bars connected at the joints of the chain by pintles or cross pins. In the use of such screens it has been found that there is some leakage of the unscreened liquid past the submerged ends thereof even when provided with the means illustrated and described in the aforesaid patent for preventing such leakage. The present invention has for its object to further improve the mechanism of the screen so that the relative amount of such leakage is very much reduced.

In the accompanying drawings—

Figure 1 is a vertical sectional view of the lower portion of a flume screen embodying the improvements which comprise the invention of the present case.

Fig. 2 is a transverse sectional view through one of the drive chains and of the parts of the apparatus immediately adjacent to such chain, taken on the line II—II of Fig. 1.

Fig. 3 is a similar sectional view taken on the line III—III of Fig. 1, and Fig. 4

another sectional view taken on the line IV—IV of Fig. 1.

Fig. 5 is an elevation of the screen apparatus shown in Fig. 1, parts being broken away leaving only one side of the screen and adjacent parts of the framework to be illustrated.

In the accompanying drawings 2 indicates one of the large sprocket wheels supported in the lower end of the screen framework, 3, about which the endless screen turns, and by which it is supported. The screen is formed of a series of separate articulated sections 4, 4, connected at their opposite edges to chains 5 which engage with the sprocket wheels 2. It is to be understood that the lower portions of the screen, including the wheels 2, are immersed in the liquid which the screen is treating, and the direction of the flow of such liquid is represented in Fig. 1 by the arrow *a*.

The links of the chains 5 are preferably formed of side bars 6, the ends of which are pivotally united by the pintles or connecting pins 8, on which are mounted, between the side bars 6, the rollers 9. The screen sections 4 are supported by rectangular frames 12 which are secured at their opposite ends to the chains 5. Each screen section is represented as being provided with a basket lip 10 arranged to receive material that has been collected by the screen section and which may fall therefrom as the section leaves the surface of the liquid on its upward movement.

The parts thus far described are well known in the art and need not be here described in detail, for a specific description and illustration thereof is found in the aforesaid Patent 1,208,655.

Below the sprocket wheel 2 is a curved guard 11, extending the full width of the screen, and in proximity to which the screen sections move as they make their turn about the sprocket wheel. This guard serves to prevent the passage of unscreened liquid below the screen, as described in the aforesaid patent. 14, 14 represent the guards carried by the framework 3 and extending over the chains and the extreme side edges of the screen sections, and between which lie the basket lips 10, these parts being substantially the same as the corresponding parts illustrated in the aforesaid patent.

As has been suggested, even when the guards 14 are employed some of the unfiltered water will pass between their edges and the screen sections, when it will find free passage between the side bars 6 of the chain links above the sprocket wheels 2, thus escaping the filter or screen. In order to reduce this possibility, bars 15 are supported directly opposite the edges of the chains 5, and as close to these as good working conditions will permit. These bars are carried by the guards 14, being secured thereto by bolts 16 and held in proper position by the spacing pieces 17. It has been found in actual practice that these bars very materially reduce the tendency of the liquid to pass around the edges of the screen, since they materially restrict and make tortuous the passage that must be followed by any liquid escaping the screen by the course indicated.

It will be seen by reference to the drawings, particularly Figs. 2 to 5, inclusive, that the guards 14 extend inward sufficiently far to overlap slightly the screen sections as they pass, while the bars 15 are located entirely outside of the screen sections, lying opposite the outer edges of the sprocket chains 5, this arrangement permitting the bars 15 to be brought closer to the edges of the chains than it is possible to locate the guards 14.

As will be seen by reference to Fig. 1 the sprocket teeth 7 of the wheels 2 are of a size to substantially fill the open spaces between the side bars 6 and the rollers 9. The lower, submerged, sprocket wheels 2 are formed with outwardly projecting flanges 21 at the bases of the teeth 7 upon which the side bars 6 of the links of the sprocket chains may rest as they pass about said wheels. The edges of said flanges 21 may also run very close to the side walls of the boot in which the lower end of the screen is mounted, when such a boot is employed, as is frequently the case. This arrangement practically closes the open spaces through the links after the chains engage with the wheels 2 and, since the sprocket teeth project beyond the outer faces of the links and run close to the inner faces of the bars 15 as the chains and screen sections make their lower turn, there is very little flow of unfiltered liquid outside the screen.

The bars 15 extend upward on that side of the screen where the water enters sufficiently far to guard and protect the chains 5 until they engage with the track bars 20, which are located on the inner sides of the chains and as close thereto as is permitted by reason of the engagement therewith of the rollers 9 of the chain. These track bars serve to prevent free transverse flow of liquid through the chain. The bars 15, from their upper ends opposite the track bars 20,

extend thence downward and under the wheels 2, concentric with the lower segments thereof, and to some convenient point on the flow side of the screen, where they are secured, as at 18, to the supporting framework. Filling blocks 19, preferably of wood, are interposed between the bars 15 and the lower guard 11.

What I claim is:—

1. In a flume screen of the endless, traveling type, comprising screen sections and sprocket chains to which the ends of the screen sections are secured, the combination with the submerged end of the screen and the means that cause it to make the lower turn, of means arranged to cover the lateral edges of the screen and the chains to restrict the flow of unscreened water around the side edges of the screen, and guards inside the said restricting means arranged close to and opposite the outer edges of the supporting chains arranged to restrict the passage of unfiltered water that may escape around the edges of the screen through the chains.

2. The combination stated in claim 1 having the guards secured to and supported by the said covering means.

3. In a flume screen of the endless, traveling type, the combination with supporting sprocket wheels adapted to be submerged in the liquid to be screened, sprocket chains engaging with the said wheels with open spaces through them for the teeth of the sprocket wheels such teeth being of a size to practically fill the open spaces through the chain links when the latter engage therewith and to project beyond the outer edges thereof and the sprocket wheels being formed with outwardly extending flanges across the bases of the teeth, and screen sections carried by the chains, of guards for restricting the passage of unfiltered water that may escape around the edges of the screen through the chains, which guards are arranged opposite the outer edges of the chains on the side of the screen where the water enters to be filtered, and as close thereto as working conditions permit, the guards extending around the submerged sprocket wheels in position to have the portions of the sprocket teeth of the wheel move close to the inner faces of the guards as the chains make their turn about the wheels.

4. In a flume screen of the endless, traveling type, comprising screen sections and sprocket chains to which the ends of the screen sections are secured, the combination with the submerged end of the screen and the lower sprocket wheels with which the chains engage, the screen sections being provided with lips for carrying upward material taken from the liquid by the screen which may drop from the latter as they leave the liquid, of a curved guard arranged below the submerged end of the screen close

to the inner face of which the edges of the carrying lips move as the screen makes the lower turn, guards arranged close to and opposite the outer edges of the chains to restrict the passage of unfiltered water through the chains, the guards extending from the side of the screen where the un- filtered water enters around the submerged lower end concentric with the said curved guard, and filling blocks between the curved guard and the lower portions of the guards for the chains. 10

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