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ADJUSTABLE OVERFLOW LIP FOR SEDIMENTATION APPARATUS

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Fig. 1.

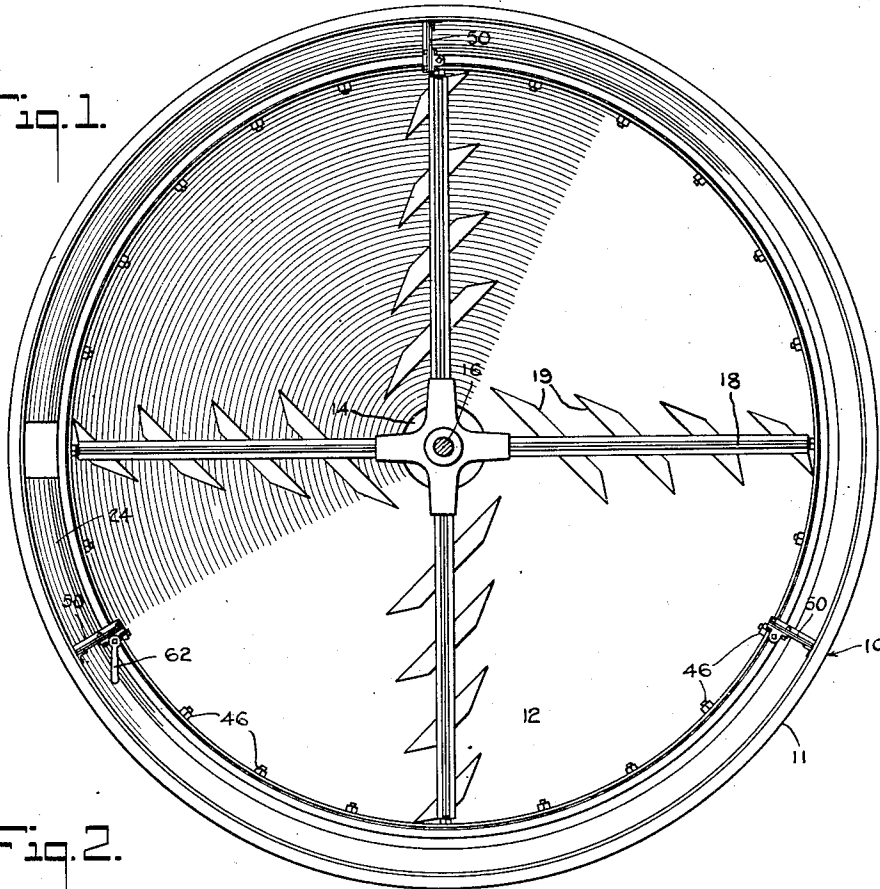
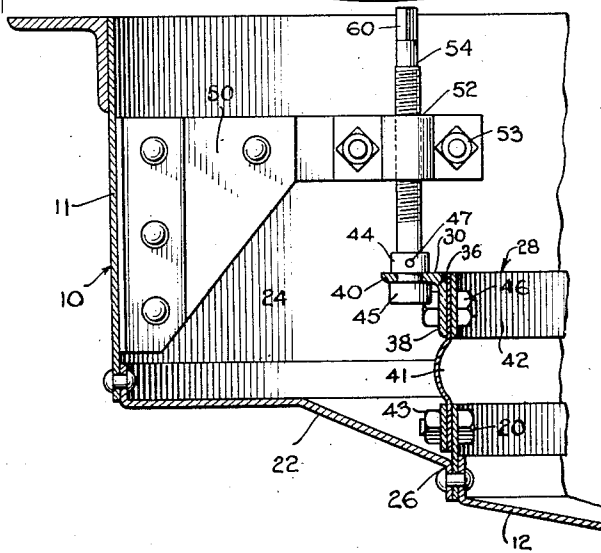


Fig. 2.



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ADJUSTABLE OVERFLOW LIP FOR SEDIMENTATION APPARATUS

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This invention relates to a device for regulating and adjusting the height and inclination of the peripheral edge or overflow lip of a sedimentation tank wherein suspended coarse solids are settled and removed while the finer solids are discharged over the edge of the overflow lip of the tank into the launder.

The invention is particularly adapted for use in connection with sedimentation apparatus of the type disclosed in the patent to J. V. N. Dorr, No. 867,958, patented October 15, 1907, for a decanting apparatus and of the type disclosed in the patent to A. L. Blomfield, No. 1,292,237, patented January 21, 1919, and with similar sedimentation apparatus wherein sedimentation is effected by the settling of solids and the decantation of liquid into the overflow launder.

In installing sedimentation apparatus of this type it is important that the discharge of fluid together with the suspended solids contained therein be substantially uniform around the margin of the tank in order that an even overflow into the launder may be effected to preserve substantially equal distribution of fluid fed into the tank throughout the area of the same.

In the installation of large apparatus it is practically impossible to install the sedimentation tank with such accuracy that when completed the overflow launder is absolutely level. For example in large sedimentation tanks having diameters of 100 feet or more it very often happens that measurements after final construction will reveal the fact that the overflow lip is lower at one side than it is at the other. Furthermore, even with accurate installation, it often happens that after installation by virtue of the great weight of the apparatus the sedimentation tank settles on its own foundation to an inclined position wherein one side of the overflow lip assumes a position below the other side of the same. When either of these conditions occur, an undue volume of liquid overflows at the lower side of the lip and prevents an even overflow into the launder thereby necessitating leveling of the entire

apparatus with an increase in the cost of installation.

Under certain operating conditions, as for example in dredging operations where the sedimentation apparatus is mounted upon a floating barge, it frequently happens that the weight of the sedimentation apparatus being unevenly distributed on the barge imparts to the same a decided list with the result that after the apparatus is installed on the barge and ready for operation it is found that the sedimentation tank is tilted with the same result, namely, that the overflow lip is uneven thereby producing the condition outlined above. Previous methods of remedying this condition where the apparatus is installed on a floating barge have proven unsatisfactory as these methods involve either the leveling of the apparatus on the barge or of leveling the barge with ballast or the like, the former of these methods being costly and the latter resulting in undue submergence of the barge.

It is an object of the present invention to remedy any of the unsatisfactory conditions outlined above in a simple and effective manner without making costly adjustments to the apparatus or to its foundation whatever it may be.

Accordingly this invention contemplates the provision of an adjustable overflow lip, means being provided whereby the height of the lip at any particular point may be adjusted to insure substantially even overflow of the fluid over the lip in the event that the sedimentation tank due to any cause assumes an uneven position.

The invention is simple in its nature and briefly comprises a movable overflow lip adjustably suspended above the inner margin of the overflow launder and corresponding in shape to the same. Provision is made for a flexible all around connection between the overflow lip and the margin of the tank to prevent egress of fluid into the discharge launder except over the adjustable lip forming a part of the tank. Provision is made for adjustably supporting the overflow lip above the margin of the tank at a plurality of different points whereby the same is universally

adjustable to accommodate tilting of the apparatus in any direction.

Rigidity of construction, convenience of arrangement of parts and comparatively low expense of manufacture are further desirable features that have been borne in mind in the production and development of this invention.

With these and many other objects in view which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts shown in the accompanying drawing in which

Fig. 1 is a plan view of the preferred form of the invention, and

Fig. 2 is an enlarged sectional fragmentary view taken transversely through one edge of the sedimentation apparatus and showing the method of adjustably supporting the overflow lip.

In the above described views like characters of reference are employed to designate like parts throughout, and the device involves in its general organization a tank 10 which is shown as being constructed of a suitable material such as sheet metal. The tank is provided with a wall 11 which in this particular instance is shown as being circular. A bottom 12 is provided, which bottom is preferably formed with slight slope towards a central opening 14 to facilitate moving of the settled solids to a discharge. The central discharge opening 14 may communicate with a suitable sludge discharge pipe, or if desired may communicate with a lower compartment for classification or further treatment of the discharge material.

In the form illustrated the tank is circular in shape and the mechanism for moving settled solids to a discharge is of the rotary type adapted to circular tanks. However, it will be apparent that the invention is not restricted to this arrangement, since other types of mechanism, particularly those adapted for tanks non-circular in shape are known and may be employed if desired.

In the present form of the invention the mechanism, which is not shown in full, may be supported in any suitable manner and comprises a central shaft 16 extending to the bottom of the tank and including rake arms 18 mounted on the central shaft and carrying rakes 19. These rakes are inclined at an angle to the rake arms in the well known manner in order that the settled solids may be moved inwardly of the tank to the central discharge opening 14.

The above mentioned parts are purely conventional in their design and no claim is laid to the novelty of the same, the invention residing rather in the novel construction and arrangement of the adjustable overflow lip to be more fully described.

Referring now to Fig. 2, it will be seen that the margin of the sedimentation tank is provided with an upstanding annular wall 20. This wall may be constructed in any suitable manner, but in the present instance it is shown as being in the form of a circular ring secured between the bottom 22 of the overflow launder 24 and the bottom 12 in any suitable manner as by means of rivets 26, to provide a watertight connection between these sections of the tank. Suspended above the wall 20 in spaced relationship thereto, is a vertically adjustable overflow lip member 28 having an upper edge or overflow lip 30 over which the liquid may flow into the launder 24. The adjustable lip member is in the form of an annular angle iron 36 having a vertical flange 38 and a horizontal flange 40. Secured to the wall 20 and to the vertical flange 38 of the angle member is an annular canvas strip 41. This strip may be secured to the wall 20 and to the annular angle member in any suitable manner. In the present instance it is shown as being secured to these two elements by means of clamping rings 42 and 43 respectively, which are bolted to the respective surfaces of these members by means of thru bolts 46 to provide a watertight joint preventing liquid from passing into the launder except over the lip 30 as clearly shown in Fig. 1.

The member 28 is supported at a plurality of equally spaced points around the periphery of the tank by brackets 50. These brackets are secured to the wall 11 of the tank by welding, bolting, riveting or the like and extend inwardly and are provided with two-part bearings 52 having clamping bolts 53 and through which are threaded supporting bolts 54. The lower end of these bolts extend through apertures in the horizontal wall 40 of the annular member 36 and are provided with heads 45 upon which the annular member is supported. A suitable retaining collar 44 is mounted on each supporting bolt 54 as by pin 47 to prevent upward movement of the overflow lip at this point of support. The upper end of each supporting bolt is preferably squared as at 60 to permit the insertion of a handle member 62 over the same for the purpose of raising or lowering the supporting bolt.

In the present instance the adjustable overflow lip is shown as being supported at three equi-distant points around the circumference of the tank. This construction is deemed to be the most preferable one as it is the least expensive to manufacture, while at the same time universal adjustment of the overflow into the launder is permitted. It will be seen that by adjusting any one or two of the threaded supporting bolts the overflow lip may be accurately adjusted to conform to the level of the fluid in the tank. It is distinctly understood, however, that any number of sup-

porting members may be provided on the periphery of the lip. However, provision of more than three supporting members considerably complicates any adjustments that are made to the lip and in addition the increased expense of manufacture, except in certain cases, is a needless one. However, irrespective of these details of manufacture, the essential features of the invention are always preserved.

I claim:

1. A decanting apparatus comprising a sedimentation tank, said tank being provided with a peripheral launder having a wall over which liquid is adapted to flow into the launder, a plurality of brackets supported on the tank in spaced relationship and extending inwardly, bolts movably mounted on said brackets and having depending heads and adjustable overflow lip assembly supported on said heads, said assembly including a flexible section forming a part of the wall of the launder.

2. A decanting apparatus comprising a sedimentation tank having a peripheral wall over which liquids are decanted, said wall comprising a lower rigid section and an upper rigid section providing an overflow lip, a flexible section connecting said rigid sections and means engaging the upper rigid section for adjustably supporting the same from the tank.

3. A decanting apparatus comprising a sedimentation tank having a peripheral wall over which liquid is decanted, said wall including a lower rigid section and an upper rigid section, said latter section providing an overflow lip, a flexible web connecting said sections and means for adjustably supporting said upper rigid section from the tank at a plurality of different points around the circumference of the same to vary the level of the same to increase or decrease the height of the same and maintaining substantially equal distribution of fluid fed to said settling tank.

In testimony whereof, I affix my signature.

JOHN A. BAKER.