To all whom it may concern:

Be it known that I, William W. Nugent, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Oil-Sediment Removers, of which the following is a specification.

My invention relates to sediment removing mechanism and has for one of its objects the provision of simple and efficient means for removing sediment from oil, and the like.

A further object is the provision of a tank with a sediment gatherer of material adapted to receive sediments deposited by gravity or otherwise onto such gathering member, together with means for removing this sediment from the gathering member.

Other objects will appear hereinafter.

Embodiments of my invention are shown in the accompanying drawing, forming a part of this specification, and in which—

Fig. 1 is an end view of the device embodying my invention with portions broken away to show underlying parts;

Fig. 2 is a side view of the same showing a portion broken away to show internal parts;

Fig. 3 is a view similar to Fig. 1, except showing a modified form of my invention; and

Fig. 4 is a view similar to Fig. 1, except showing a modified form of my invention.

In Figs. 1 and 2 I have shown a settling tank 5 V-shaped in cross-section, although it will be apparent that the settling tank may be formed in other desirable shapes. The V-form is convenient since it gives a considerable surface for depositing sediments from the oil and other substances. Near the bottom of tank 5 is an oil inlet 6 and near the top is an oil outlet 7. Dirty oil in passage from opening 6 to 7 in the tank tends to free the foreign materials which are heavier than the oil, permitting such foreign materials to fall to the bottom. Disposed on the inclined walls 8 of the tank 5 I provide a web 9 which may be of felt, fabrics, or many other flexible substances. In the form shown in Figs. 1 and 2 I have indicated the end portions of the web 9 extending over rollers 10 at the top side edges of tank 5 and wound on windlasses or rollers 11 outside of tank 5. It will be apparent that by turning either windlass the web 9 will be moved toward such windlass so as to present new surfaces to the interior of tank 5. Between each roller 10 and windlass 11 I provide a plate or blade 12 which is adapted to engage the web 9 with sufficient pressure to scrape off the sediment which has been deposited on such web. The plate 12 may be connected to the side walls 17, as shown in Fig. 2, to form a chute, as shown in Figs. 1 and 3. The sediment falls down into a receptacle or container 13 under the windlass 11, and below a hole 14 in said container may be placed a pail 15, or any other means for collecting these foreign materials.

To hold the web 9 near the bottom of the tank I provide a roller 16 which is preferably journaled in the ends of the tank 5 so that the web passes under such roller keeping the web in close contact with the inclined sides 8 of the tank.

The rollers 10 and 11 are mounted in any desirable manner on the outside of tank 5, such as by extending the side walls 17 and journaling the rollers in such extensions. These extension also help form the receptacle 13.

In Fig. 3 I have shown a slightly modified form of the invention in which the tank 5 is formed much deeper and narrower than the form shown in Fig. 1. This increases the amount of web 9 exposed to the oil in the tank and thereby increases the capacity of the apparatus in removing sediment from the oil. From this it will be apparent that the shapes and sizes of the tanks 5 may be varied greatly. In the form of Fig. 3 I have indicated the web 9 as being attached at 9' to one of the side walls 8 and passing over a roller 10 at another top edge of the tank. The web 9 then passes by a scraper 12 and is attached to a windlass 11 similar to that already described. The tank 5 is also provided with one receptacle 13 with its opening 14 above a bucket 15 for catching the sediment removed from the web 9. In this form I have indicated the roller 16 as being a free metal weight and resting on the web 9 so that when the web is wound up on windlass 11 the roller 16 is raised from its full position to the top of the tank, as indicated by the dotted line position.

In Fig. 4 I have shown another form of my invention in which the tank is indicated...
as being rectangular in cross-section. The tank is provided with the intake 6 and discharge 7, as already described. On the rectangular bottom of the tank in this form I provide a frame 18 which may be a piece of sheet metal with its edges 19 turned over a flat rectangular piece of fabric, felt, or other suitable sediment gathering material 20. The edges 19 hold the member 20 in position on frame 18. The member 20 may be omitted and in such case the edges 19 would form the sides of a pan to retain material on said frame 18. A cord or cable 21 is secured substantially centrally of the frame 18 and passed over pulleys 22 and 28 at the top of the tank and wound on a windlass 24. In the operation of this form of the device the element 18—19—20 is raised to the top of the tank, such as indicated in dotted lines 25 in Fig. 4, where the sediment may be scraped off with a knife, hoe, or other suitable scraper, not shown. A receptacle 13 is preferably provided at one side of the tank with a pail or bucket 15 under the opening 14, as before described. In this connection it will be apparent that when the web 9 in Fig. 3 is drawn to its uppermost dotted line position 9' a knife or other implement, not shown, may be used for scraping materials from the web over the side of the tank into receptacle 13 just as is done in the device illustrated in Fig. 4. In fact to clean the part of the web in Fig. 3 between the pulley 10 and the point 9 where it is secured, the use of some implement for scraping the sediment from the top over into receptacle 13 is required. Also, in the form shown in Fig. 1 a hoe-like implement, not shown, might be used to scrape the web on the inclined walls, drawing the materials up over the pulleys 10 for depositing in receptacles 13.

As the oil passes upwardly from opening 6 to the opening 7 the sediment settles by gravity on to the web or sediment gathering member and to remove this sediment in the device of Fig. 1 one of the windlasses 11 is rotated which draws the web up over pulley 10 past scraper 12 onto said windlass. As the web passes under the scraper 12 it scrapes off the sediment which slides over the scraper into the receptacle 13. It will be apparent that either of the windlasses 11 may be operated so that the web may be moved either to one side or the other to position new portions of the web in the tank 5.

In the device of Fig. 3 there is but one windlass 11 and therefore the web can be wound in but one direction, the weight roller 18 serving to hold the web to position it in the bottom of the tank when unwound. It will also be apparent that without disturbing the web at all a hoe-like or other implement, not shown, can be used to scrape the sediment up the sides of the tank over into receptacle 13.

1. In a liquid sediment remover, the combination with a portable settling tank, of a flexible gathering member in said tank, means for exerting a pull on one end of said member to effect elevation of the portion thereof in the tank, and means elevated together with said flexible member for automatically restoring said member toward the bottom of said tank when said member is released.

2. In combination, a portable settling tank, a sediment gathering member spanning opposite vertical walls in said tank in position to collect sediment from liquid therein, and means for moving said gathering member vertically while spanning such opposite walls in position where all portions thereof are removed from said tank for the purpose of cleaning the same.

3. In combination, a settling tank having an intake opening at its lower portion and a discharge opening at its upper portion, a flexible sediment gathering belt in said tank spanning opposite walls thereof and adapted to occupy a normal position with the intake opening above the lower end portion of said belt, a compartment outside of said tank, winding mechanism for elevating said belt above the intake opening and toward said discharge opening, and a scraper in position for removing sediment from said belt as it is wound up by said winding mechanism and directing the scraped off sediment into said outside compartment.

4. In apparatus for removing sediment from liquid, the combination with a settling tank having an intake opening at its lower portion and a discharge opening at its upper portion, of a depending flexible sediment gathering member spanning opposite walls of said tank and normally occupying a position with its lower portion below said intake opening, and means for elevating said flexible sediment gathering member to the upper portion of said tank for ready access to and removal of the sediment collected on said gathering member.

5. In combination, a settling tank V-shaped in cross-section and having a greater depth than the width of its upper end, a flexible sediment gathering web spanning the opposite vertical flat walls of the tank and resting against the opposite inclined walls in position to collect sediment from liquid in said tank, and means for elevating said web to the upper portion of said tank for access to and removal of the sediment gathered on said web.

6. In combination, a tank, a flexible sediment removing belt in said tank, a rolling weight in said tank in a loop of said
belt to hold it stretched out in sediment gathering position, and means for moving said belt into position for cleaning.

7. In combination, a settling tank, sediment collecting means spanning opposite walls of said tank, mechanism for elevating said sediment collecting means along said walls from the lower portion of the tank to the upper portion thereof for access to and removal of the sediment gathered on said sediment collecting means, and mechanism for automatically restoring said sediment collecting means toward the lower portion of the tank along such opposite walls when said elevating mechanism is released.

8. In combination, a tank; a web connected at one end to the upper portion of one side of the tank and extending over the opposite side of said tank, a rolling weight on the web in the tank, and means for scraping the sediment collected on said web.

9. In combination, a settling tank, a pulley at one top edge of the tank, a web attached to one top edge of the tank and passing over said pulley, a rolling weight on the web in the tank, a scraper at one side of the tank, means for drawing the web over the pulley against the scraper for cleaning the web, and means for collecting materials scraped from the web.

10. In combination, a portable settling tank, a sediment gatherer therein in position to receive sediment vertically above the same in said tank while spanning opposite walls thereof, and means for exerting a pull on said gatherer for moving the same as a whole away from the bottom toward the top of the tank for cleaning while said gatherer remains in such spanning position.

11. In combination, a V-shaped tank relatively deep and narrow, a sediment gathering member in said tank spanning the opposite vertical walls thereof and adapted to lie against the opposite inner inclined walls of said tank, means for holding said sediment gathering member adjacent said opposite inclined walls, and means for moving the gathering member away from such opposite inclined walls to the upper portion of said tank for access to and removal of the sediment collected on said gathering member.

12. In combination, a settling tank having inner opposite walls upwardly and outwardly inclined in diverging relation, a flexible gathering member adapted to rest against such opposite inclined walls in position to receive sediment from liquid in said tank vertically above said gathering member, and means for moving said flexible gathering member away from the said opposite walls and from the bottom of the tank to the upper portion thereof into position for removal of the sediment from said gathering member.

13. In combination, a settling tank, a sediment gathering member in said tank in position to span opposite walls thereof to gather sediment from oil in said tank vertically above said member, an intake opening near the bottom of said tank but above said sediment gathering member when the latter is in its lowermost position, a discharge opening near the upper portion of said tank, and means for moving the gathering member while spanning such opposite walls to the upper portion of the tank into position to facilitate removal of sediment from said gathering member.

14. In combination, a tank substantially V-shaped in cross-section and having an intake opening adjacent its lower angular part and a discharge opening at its upper portion, a flexible collector spanning the opposite upright vertical walls of the tank and adapted to rest against the opposite inclined walls of the tank with its lower loop below the said intake opening, and means for scraping sediment from the flexible sediment collector.

15. In apparatus for removing sediment from oil, the combination with an oil tank with passages for circulation of oil through said tank; a flexible sediment gathering belt in said tank, means for holding the belt down in V-shaped formation, and winding mechanism for pulling said belt to the upper portion of the tank to gradually enlarge the angle between the upwardly extending lengths of the belt toward a plane surface when stretched across the upper portion of the tank.

16. In apparatus for removing sediment from liquid, the combination with a tank, of a flexible sediment gathering device in said tank in position to receive sediment from the liquid vertically, mechanism in said tank in position to engage said flexible gathering device at the lower loop portion thereof to effect holding of the latter in said position when a pull is exerted on said flexible gathering device, a sediment compartment connected to the outside of said tank, winding mechanism for exerting a pull on said gathering device to remove the same from the interior of the tank, and means for scraping sediment from said gathering device and directing such sediment into said sediment compartment.

17. In apparatus for removing sediment from liquid, the combination with a tank, of a flexible sediment gathering belt extending from one side to the upper portion of the tank toward the lower portion of the tank and thence upward toward the upper portion of the opposite side of the tank, and mechanism variable in elevation but in position in said tank to engage the lower loop
portion of the belt to hold the latter taut and its upwardly extending lengths straightened out in position to receive sediment from the liquid vertically above such upwardly extending lengths.

18. In combination, a portable tank, a sediment collecting device variable in elevation in said tank and spanning opposite walls thereof, a weight in said tank associated with said collecting device to hold the latter down while in the tank, and means for exerting a pull on said collecting device to elevate the same together with said weight in the tank while said collecting device spans opposite walls of said tank.

19. In combination, a tank, a sediment collecting belt extending into said tank, a rolling weight suspended in a loop of said belt to hold the same in V-shaped formation, and means for removing the sediment collected on said belt.

20. In combination, a settling tank, a sediment collecting belt extending into said tank from the upper portion of one side thereof and extending out of said tank to the upper portion of the opposite side thereof, means variable in elevation in said tank and in position to engage the loop of said belt to hold the same in V-shaped formation, winding mechanism for the belt, a scraper associated with the belt, and means for receiving sediment scraped from the belt.

In the testimony whereof I have signed my name to this specification on this 6th day of January A.D. 1920.

WILLIAM W. NUGENT.