Nov. 23, 1965 R. P. MOORE 3,219,189

APPARATUS FOR SCUM REMOVAL

Filed Aug. 28, 1962 2 Sheets-Sheet 1

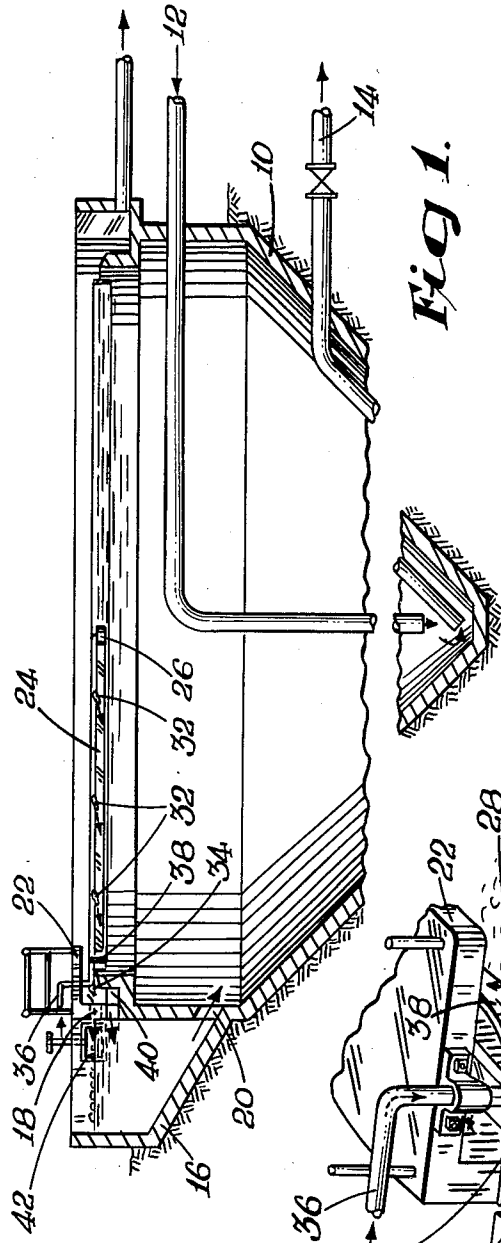


Fig 1.

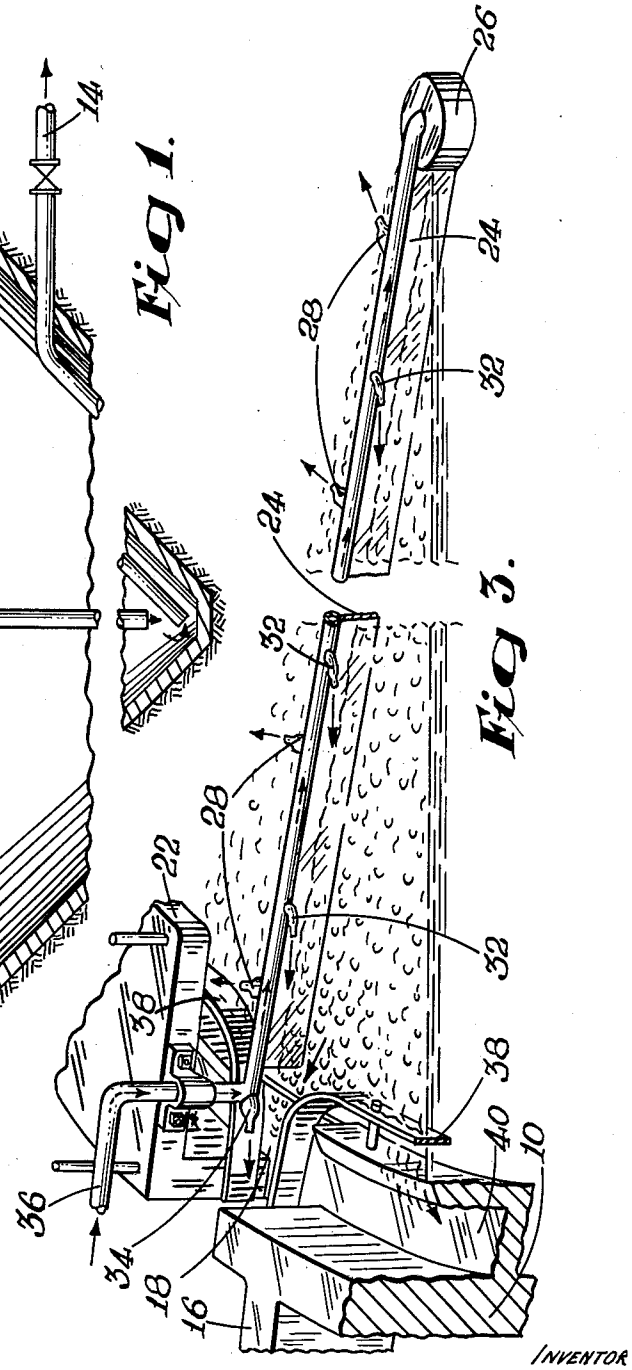


Fig 3.

INVENTOR
RICHARD P. MOORE
BY Irwin N. Thompson
ATTY.

Nov. 23, 1965 R. P. MOORE 3,219,189

APPARATUS FOR SCUM REMOVAL

Filed Aug. 28, 1962 2 Sheets-Sheet 2

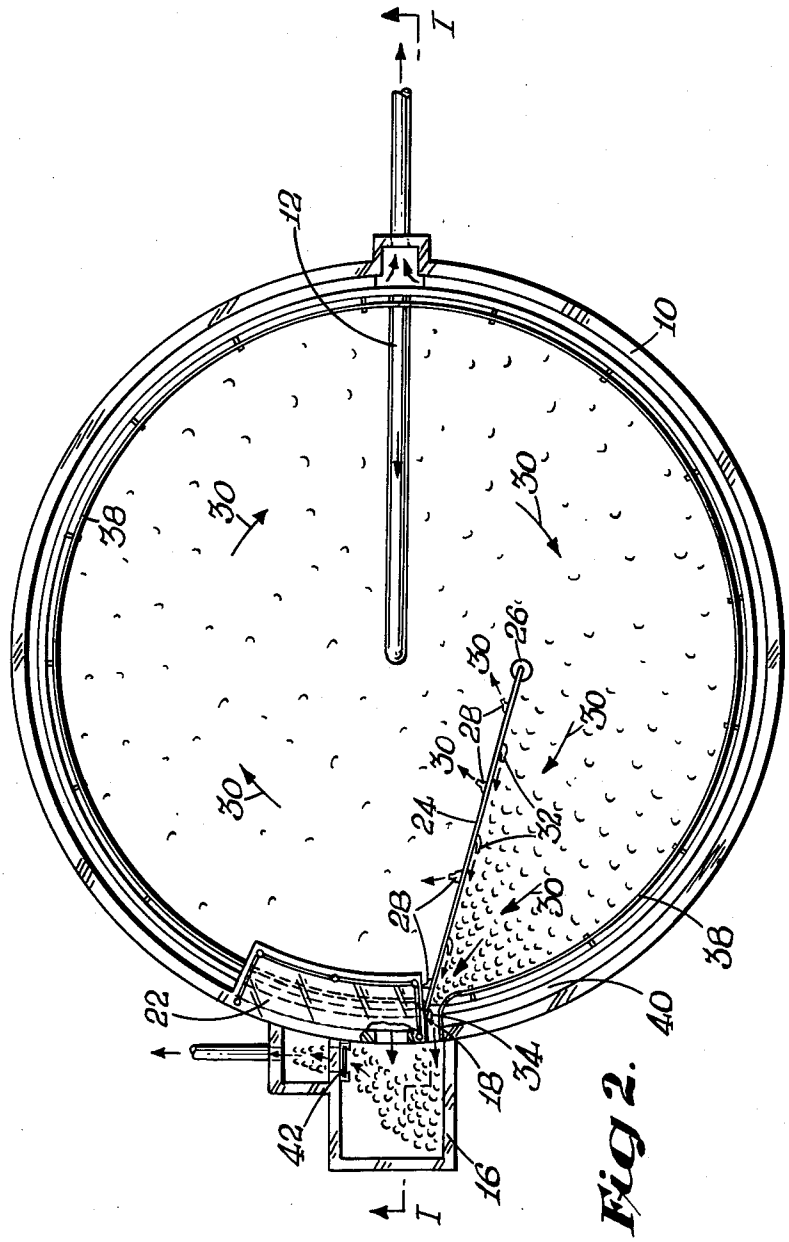


Fig 2.

INVENTOR

RICHARD P. MOORE

BY Irwin S. Thompson

ATTY.

United States Patent Office 3,219,189
Patented Nov. 23, 1965

3,219,189

APPARATUS FOR SCUM REMOVAL

Richard P. Moore, Argosy House, Spilsbury St., Germiston, Transvaal, Republic of South Africa

Filed Aug. 28, 1962, Ser. No. 219,877
Claims priority, application Republic of South Africa, Aug. 29, 1961, R 1,311/61
2 Claims. (Cl. 210—195)

This invention relates to means for removing the scum from the surface of settling tanks and the like.

Systems in use for this purpose include moveable scum blades which urge the scum to a withdrawal point from which it enters a removal trough; or fixed blades against which the scum is induced to collect by means of currents or jets, and is then removed from the tank by means of a weir gate, gravitating some of the liquid with the scum from the tank.

The latter system has the advantage of requiring no moving parts, but suffers from the disadvantage that it is difficult to collect and retain the scum in a concentrated area and further to move it along the blade to the withdrawal point, and unless concentrated, liquid loss with scum withdrawal is excessive.

An object of the invention is to provide a simplified scum removal system, in which the shortcomings of the abovementioned systems are considerably minimized and the scum is positively collected in a concentrated area.

According to the present invention apparatus for removing scum from a tank includes a blade on the surface of the liquid in the tank, jets adapted to urge the scum to collect at the blade and to be forced through an opening in the tank to a second tank, draw-off means for the scum in the second tank and a passage from the second tank, below the opening, to the first tank.

In this apparatus, liquid is returned from the second tank to the first, while the scum collecting in the second tank is withdrawn. The passage from the second tank to the first is located at sufficient depth to ensure that the scum cannot pass back again into the first tank.

Further according to the invention an induced flow is provided from the surface of the liquid in the first tank through the opening to the second tank. This flow may be provided by means of a jet located at or in the opening.

Still further according to the invention jets are provided along the length of the blade. Thus, the front side of the blade is provided with jets spaced apart and adapted to motivate the scum in a substantially circular movement to the rear of the blade. Additional jets may be provided on the rear of the blade and directed parallel thereto to force the scum into the opening to the second tank. An additional jet or jets may be located in the opening further to urge the scum into the second tank.

According still further to the invention, the outer extremity of the blade is provided with a float.

Removal of the scum from the second tank may be effected by means of a small weir or the like or may be removed manually by skimming or the like or automatically by a suitably controlled gate or scoop.

It will be appreciated that the scum may be readily concentrated to a considerable degree in the second tank, and this prevents it from dispersing, so that its removal is effected very economically with a maximum solids to water ratio.

It will also be realized that the second tank may serve a number of main tanks; it may also be located inside a settling tank or the like.

An embodiment of the invention is described below with reference to the accompanying drawings, in which

FIGURE 1 is a sectional side view of apparatus according to the invention, and is a vertical section along the line 1—1 of FIGURE 2,

FIGURE 2 is a plan view of the apparatus, and

FIGURE 3 is a fragmentary perspective view of a blade, showing also the opening from the first tank into the second tank.

In the figures a settling tank **10** has an inlet **12** for liquid to be settled and an outlet **14** for withdrawal of the sludge which settles to the bottom.

Adjacent the tank **10** is a second tank or pocket **16** which communicates with the tank **10** through an opening **18** and also through a passage **20** located at a lower level than opening **18**. Reference **22** is an observation platform.

A blade **24** is fixed at the opening **18** and extends along the surface of the liquid in tank **10**. A float **26** is provided at the outer extremity of the blade **24**. Preferably the blade should be three-quarters submerged.

Jets **28** are provided along the front surface of the blade **24**. The angles which these jets make with the blade are chosen to induce the scum around the surface of the liquid as indicated by arrows **30**. The scum therefore moves around to the rear or collecting surface of the blade, which is provided with jets **32**, parallel to the blade and which urge the collected scum along the blade through the opening **18**. A jet **34** is located in the opening to assist the flow of scum into the second tank **16**.

Jets **28**, **32** and **34** may all be served by pipe **36** which communicates with a suitable source of liquid.

A scum board **38** and channel **40** are also provided.

The scum together with a quantity of liquid passes through the opening **18** into tank **16**, which has an outlet **42** for withdrawing the concentrated scum. Liquid reenters tank **10** through passage **20**.

I claim:

1. In a tank having side walls and an opening in a said side wall for the discharge of scum floating on the surface of liquid in the tank; the improvement comprising blade means extending from adjacent said side wall and adjacent said opening a substantial distance across the tank and being partially submerged in the liquid in the tank, jets on one side of the blade means and directed away from the blade means thereby to move scum toward the opposite side of the blade means, and jets on said opposite side of the blade means parallel thereto and directed toward said opening to move scum toward said opening.

2. Apparatus as claimed in claim **1**, and a second tank, said opening communicating between the said first-named tank and said second tank, draw-off means for the scum in the second tank, and means defining a passage from the second tank, below said opening, into the first tank.

References Cited by the Examiner

UNITED STATES PATENTS

838,626	12/1906	Kirby	210—221 X
2,090,384	8/1937	Durdin	210—197
2,095,394	10/1937	Morehead	210—242
2,975,791	3/1961	Pansini	210—169 X
3,152,076	10/1964	Kreutzer	210—242 X

REUBEN FRIEDMAN, *Primary Examiner.*
ROBERT E. BURNETT, *Examiner.*