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[54] AUTOMATIC SWIMMING POOL SKIMMER
2 Claims, 2 Drawing Figs.

[52]	U.S. Cl.....	210/121, 210/DIG. 21, 210/169
[51]	Int. Cl.....	B01d 17/00
[50]	Field of Search.....	210/DIG. 21, 169, 242, 121, 94

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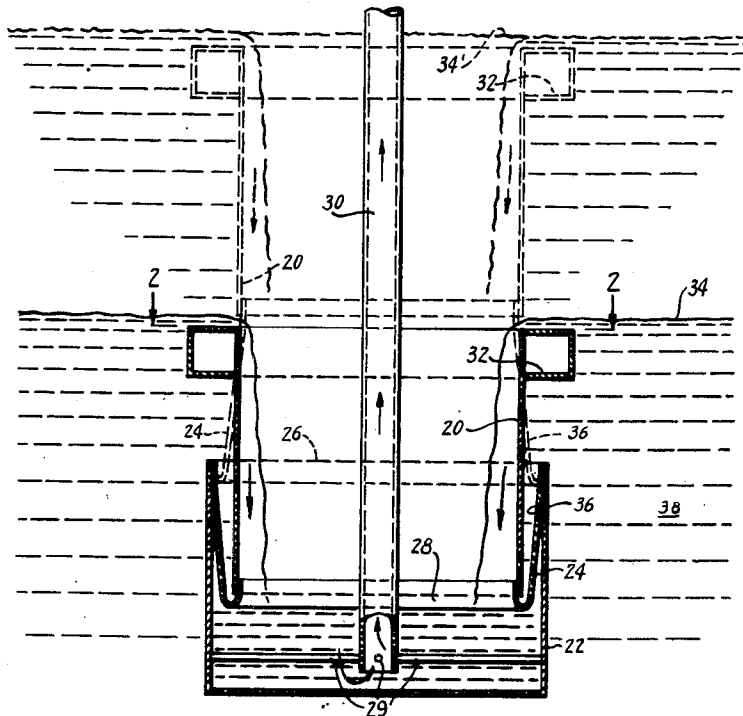
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ABSTRACT: An upper cylinder and a lower cylinder attached to each other by means of a tapered rolled membrane, a tube connected to the lower cylinder for pumping out water, and a flotation collar secured to the upper cylinder for automatically pumping water which is skimmed from the surface of a swimming pool to a filter while adjusting to any variation in the swimming pool water level.



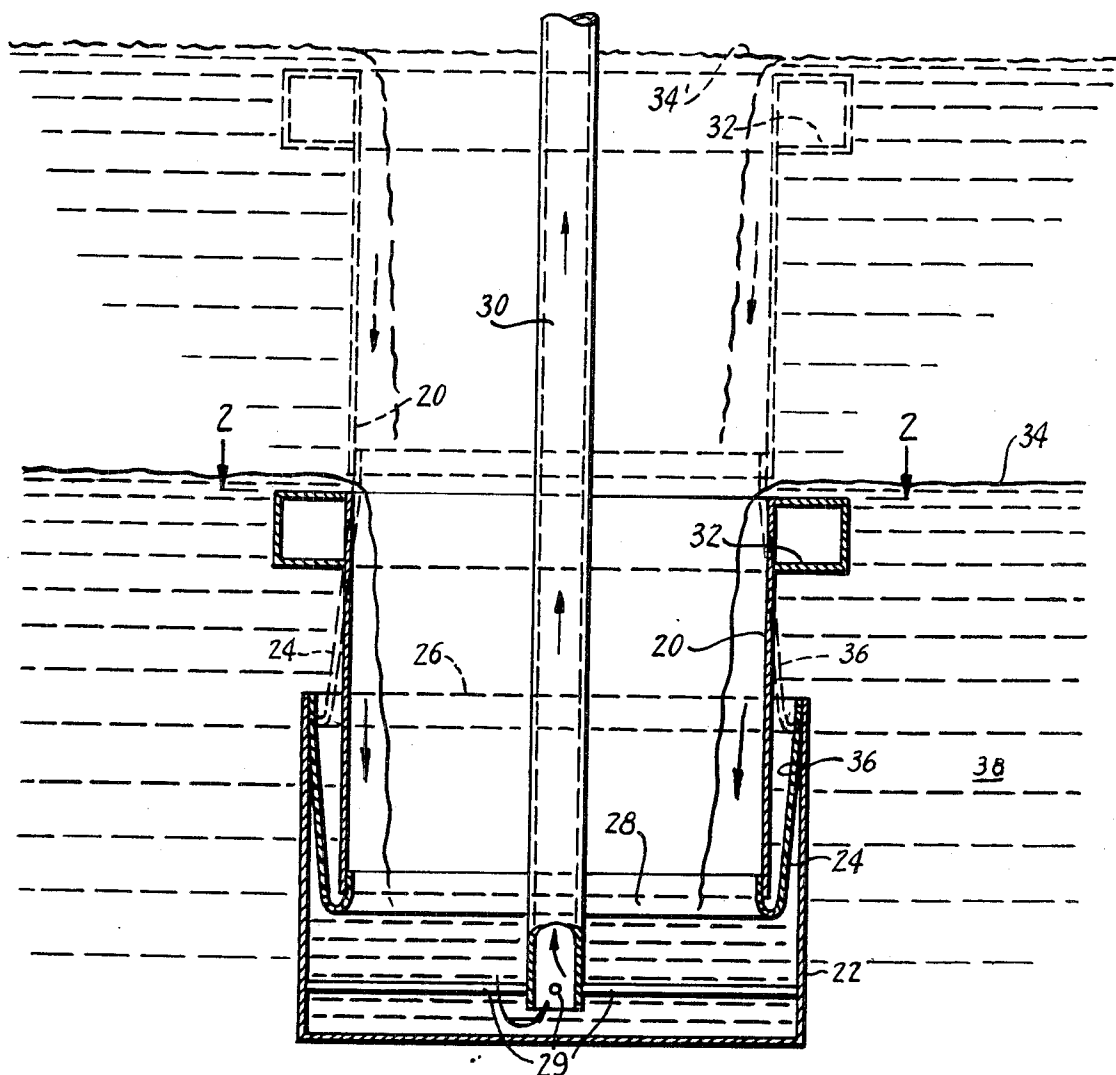


FIG. 1

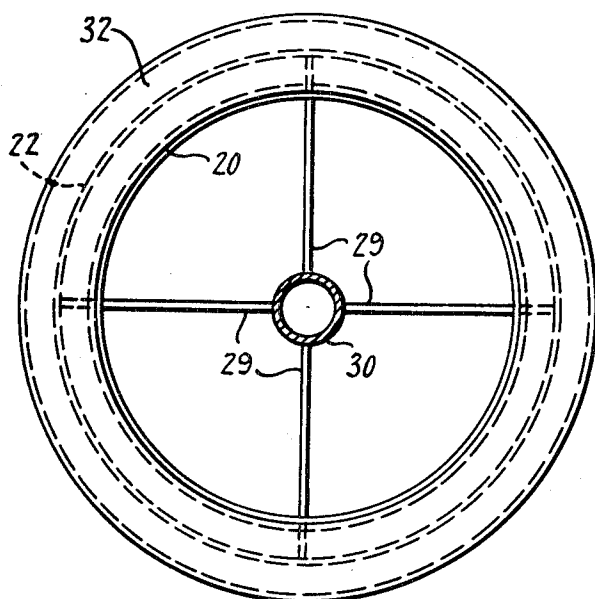


FIG. 2

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AUTOMATIC SWIMMING POOL SKIMMER

This invention relates to a simple but efficient device for skimming the surface of a body of water for such diverse purposes as cleaning a swimming pool, removing oil from a body of water, separation of different density fluids and chemicals, etc.

A primary object of this invention is a skimmer which automatically adjusts to any change in water level of the body of water being skimmed.

Another object of this invention is a skimmer which automatically adjusts to any change in rate that the skimmed water is pumped from the skimmer.

The above and other objects of the invention will become apparent to those skilled in the art after a consideration of the following detailed description of the preferred embodiment of this invention taken together with the accompanying drawings in which:

FIG. 1 is a cross-sectional view of the skimmer; and

FIG. 2 is a sectional view taken on line 2—2 of FIG. 1.

Referring in detail to the drawing, there is shown in FIGS. 1 and 2 an inner cylinder 20, a lower cylinder 22, and a rubber or vinyl membrane 24 connected between the opening 26 of cylinder 22 and bottom opening 28 of cylinder 20, membrane 24 being tapered to fit between the different sized openings 26 and 28 for a watertight fit. Cylinder 22 is connected by means of a web 29 to a pipe 30 which allows water to be pumped out of the skimmer and directed to a filter or other apparatus for further treatment and usage depending upon what is being skimmed. A flotation collar 32 is attached about the upper end of inner cylinder 20. Lower cylinder 22 is fixed rigidly in place due to pipe 30, and membrane 24 allows upper cylinder 20 to move freely in and out of lower cylinder 22 in order to adjust for water level and pumping rate changes.

Due to its taper, membrane 24 rolls through itself without stretching during relative movement between cylinders 22 and 20. When the level 34 of the body of water 36 rises to level 34', flotation collar 32 forces inner cylinder 20 upward and tapered membrane 24 upward also. Flotation collar 32 does not lift cylinder 20 above level 34 or 34' due to water pressure against the top surface 36 of the membrane 24.

In addition to adjusting to the level of a body of water, the skimmer also adjusts to the pumping rate of the skimmed water which is directly proportional to the amount of water inside the skimmer. Thus, when the water within cylinders 22 and 20 is as high inside the skimmer as outside, differential pressure is zero on membrane 24 and the only force on inner cylinder 20 is provided by flotation collar 32 which lifts inner cylinder 20 above level 34 in order to cut off the flow of water into the skimmer and prevent the skimmed water from mixing with body 38. As the pumped capacity is increased, the head

height of water in the skimmer falls and differential pressure on membrane 24 increases in the downward direction pulling inner cylinder 20 down and allowing water to be skimmed.

While the preferred embodiment of this invention has been illustrated and described, it will be understood by those skilled in the art that modifications and changes may be resorted to without departing from the spirit and scope of the invention.

I claim:

1. A fluid skimmer, comprising a pair of cylinders having different diameters, one of said cylinders having a closed bottom and an open top, the other of said cylinders having both ends open, a tapered membrane connected between the open end of one of said cylinders and the open bottom end of the other of said cylinders forming a watertight fit with said cylinders and allowing said cylinders to slidably overlap with each other, a collar attached to the outer surface of said other cylinder near the upper end thereof, and a pipe extending below the level of a body of fluid and connected at the bottom of said pipe to said one of said cylinders, said other of said cylinders being positioned to overlap with the top portion of said one of said cylinders, said one of said cylinders being held at a uniform depth above the ground level of the body of fluid without regard to variations in the surface level of the body of fluid, the fluid pressure forcing said membrane to roll in one direction thereby moving said other of said cylinders in the same direction relative to the stationary said one of said cylinders, and said collar forcing said other of said cylinders in a direction opposite that produced by fluid pressure for keeping the upper open end of said other of said cylinders just below the surface level of the fluid body, the counterbalancing forces of the collar and the fluid pressure on said membrane in conjunction with the slidable connection between said cylinders allow said other of said cylinders to move up and down in the alternative in relation to said one of said cylinders for automatically adjusting the top opening of said other of said cylinders to a position just below the surface level of a body of fluid as it varies in depth, and said pipe allowing the skimmed fluid to be pumped out of said cylinders.

2. The device of claim 1, wherein said other of said cylinders has a smaller diameter than said one of said cylinders and said collar is a flotation element causing said other of said cylinders to rise above the surface level of the body of fluid when the level of the skimmed fluid within said cylinders is the same as the surface level of the fluid body for automatically preventing the mixing of the skimmed fluid with the fluid body obviating the need for surveillance of the device and automatically allowing the skimmed fluid to be pumped from said cylinders by means of said pipe to reduce the skimmed fluid level prior to the lowering of said other of said cylinders below the body fluid level.

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