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[54] **UNDERDRAIN ASSEMBLY FOR POOL-TYPE**
FILTER
6 Claims, 7 Drawing Figs.

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[50] Field of Search **239/350;**
169/31; 285/DIG. 22; 210/232, 288, 279, 289, 291

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ABSTRACT: An underdrain assembly for a swimming pool-type filter, involving a hub mounted on the lower end of a central return flow column, and having a plurality of slotted radial arms, each of which is made up of one or more similar snap on sections and terminating in a snap on slotted terminal component. The slots enlarge inwardly to avoid clogging.

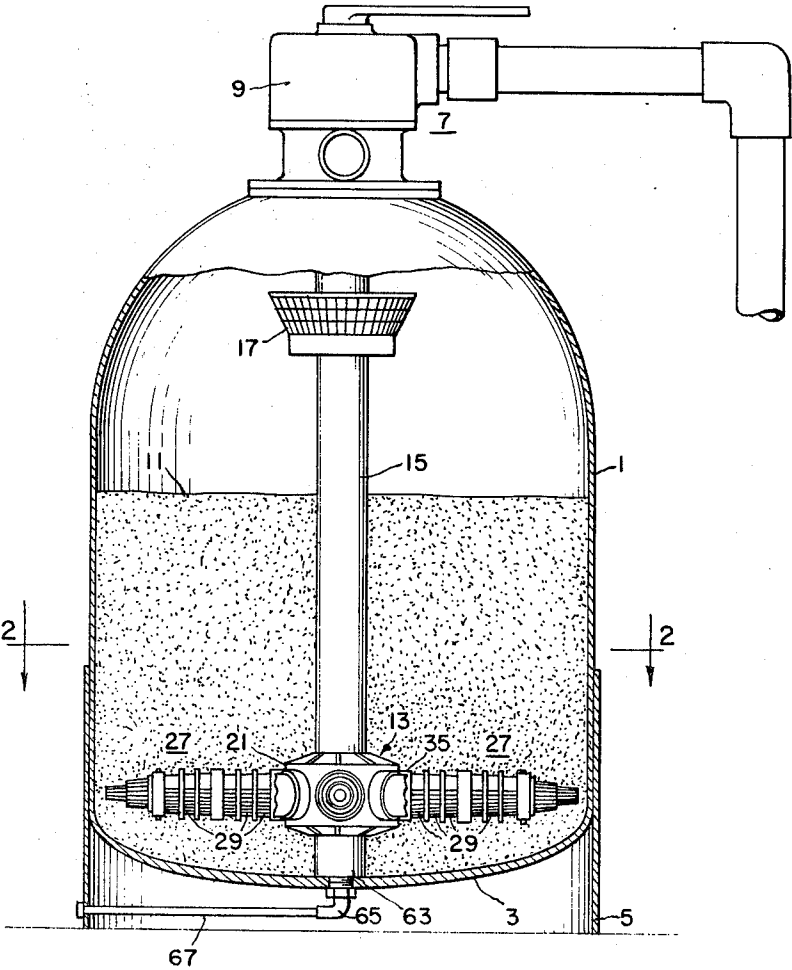


FIG. 1

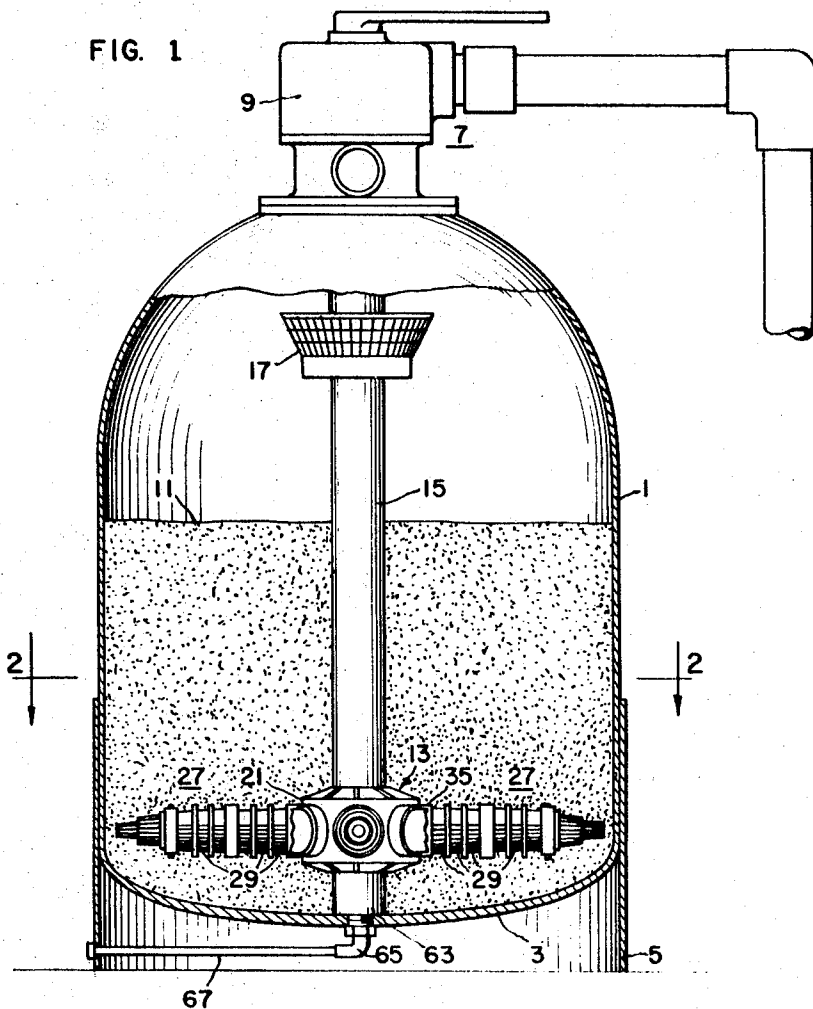
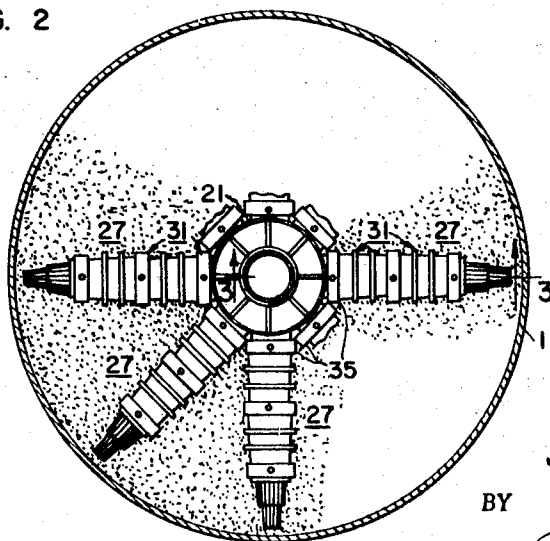


FIG. 2

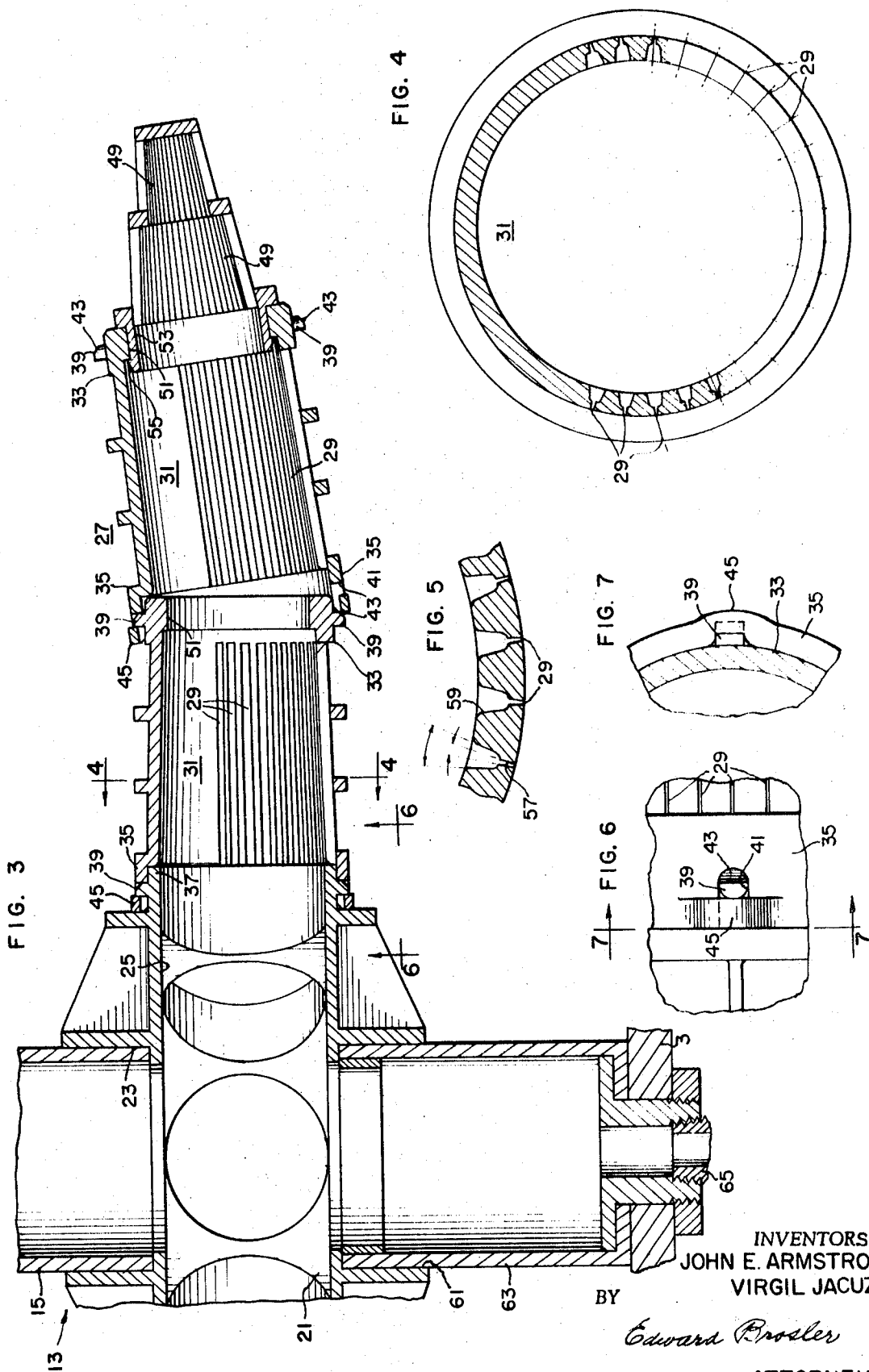


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UNDERDRAIN ASSEMBLY FOR POOL-TYPE FILTER

Our invention relates to a swimming pool-type filter having a central return flow column, and more particularly to an underdrain assembly for such type of filter.

Among the objects of our invention are,

1. To provide a novel and improved underdrain assembly for a pool type filter,
2. To provide a novel and improved underdrain assembly which is self cleaning and not likely to clog during use,
3. To provide a novel and improved underdrain assembly formed of standardized component parts, so as to enable fabrication of an underdrain assembly of a desired capacity to satisfy the requirements of a given size filter,
4. To provide a novel and improved underdrain of light weight, noncorrosive material such as plastic.

Additional objects of our invention will be brought out in the following description of a preferred embodiment of the same, taken in conjunction with the accompanying drawings wherein

FIG. 1 is a view, partly in section, of a pool-type filter to which the present invention is directed, and illustrates an underdrain assembly of the present invention installed therein,

FIG. 2 is a fragmentary view, taken in the plane 2—2 of FIG. 1,

FIG. 3 is an enlarged view in section, taken in the plane 3—3 of FIG. 2 and illustrating the manner of assembling the underdrain of the present invention,

FIG. 4 is a view in section, taken in the plane 4—4 of FIG. 3, FIG. 5 is a magnified view in section, of a small portion of the structure depicted in FIG. 4,

FIG. 6 is a plan view illustrating a locking means employed in assembling the component parts of the underdrain assembly of the present invention, and

FIG. 7 is a view taken in the plane 7—7 of FIG. 6.

Referring to the drawings for details of our invention in its preferred form, the same relates to a pool-type filter involving a housing 1, supported with its bottom 3 above ground level by a skirt 5 encircling the lower end of the housing and affixed thereto. All filter system flow connections 7 are mounted at the top of the housing, and these include a position selector valve assembly 9. In one position, the valve assembly provides for flow to a filter bed 11, of water pumped from a pool for filtering, such water, after filtering, entering an underdrain 13 for return to the valve assembly 9 through a central return flow column 15, for discharge to the pool from which the water was initially drawn. A stabilizing grid basket 17 mounted on the return flow column, above the level of the filter bed, serves to uniformly distribute the incoming water to the filter bed, thus to stabilize the filter material against mounding.

The present invention relates particularly to the underdrain assembly 13 which, in accordance with the present invention, basically involves a hollow hub 21 having a central opening passage 23 for flow attachment to the lower end of the return flow column 15, and a plurality of radially located opening passages 25 for flow attachment to the hub, of a plurality of hollow, radially directed arms 27, each of which is closed at its extreme end, and provided with a plurality of narrow longitudinal slots 29, from one end to the other, all such slots permitting inflow of filtered water for return through the return flow column, and ultimately back to the pool. Both the return flow column and the underdrain may be fabricated of plastic whereby the hub may be cemented to the return flow column by a suitable plastic bonding agent.

Each arm of the underdrain, except for the exposed end portion, is formed of one or more standardized components 31 capable of being assembled end to end, to any desired length, with provision for assembling of the first of such components, to its position on the hub.

Accordingly, each of the standardized components preferably terminates at one end in a rather wide shallow rib 33 while at its other end, it is provided with an expanded collar 35 adapted to snugly receive the corresponding end rib 33 of another of such standardized components whereby to enable

an assembly of a plurality of such components in end to end telescoping relationship.

- 20 To permit assembling of such arm to the hub, each radial opening passage 25 in the hub is defined in part by an external ring 37 adapted to telescope into the end collar of the initial component of the arm assembly.

To secure these components in their final assembled position, each end rib 33 has integrally formed thereon, at least one teat 39, and preferably two at diametrically opposite locations, while each end collar 35 is provided with correspondingly located holes 41 (FIG. 3) adapted to snugly receive such teats, to thereby lock adjacent components against separation.

- 25 As a means to facilitate such assembly of the components, each of the teats has a beveled front edge 43 while the edge of each collar 35 at the location of each hole, is formed to include an arch 45, thereby enabling each component to be snapped into locking engagement with the adjacent component, the flexibility and resiliency of the components being such as to permit of the necessary distortion to effect such assembly.

Similar beveled teats formed on each ring 37 of the hub, provide for attachment to the hub, of the first component of an arm assembly in like manner.

- 30 Each arm is finished off by the addition of a hollow terminal component of tapered design which is closed at its small end, and like the previous components 31, this terminal component will be provided with a plurality of slots 49. However, these may be distributed about the complete circumference of the component.

To enable snap on attachment of such end component, each standard component 31 is formed with an inwardly directed shallow rib 51 while the terminal component is molded with a base collar 53 having an outer peripheral groove adapted to accommodate the inwardly directed rib 51, whereby to lock the terminal component in its assembled position.

To facilitate such assembly of the terminal component, the free or advancing edge 55 of the collar is beveled.

- 40 The slots in each component 31 are preferably predominantly located on the underside thereof, in an area extending approximately 3/5ths of the circumference of the component, thereby inhibiting entrance of filter medium particles, and causing the water being filtered to penetrate deeper through the filter bed before gaining access to the underdrain.

Aside from the general nature of the underdrain as described above, a feature of the invention resides in the specific character of the slots 29 and 49, to discourage probable clogging thereof by such grains of the filter medium as may penetrate the slots.

- 45 In the first place, the entrance to the slots in the outer surface of each of the arm components, as such slots would be exposed to the filter medium, is quite narrow and preferably smaller in width than the average grain thickness of the material forming the filter bed.

Each such slot as it passes through the wall of the component, gradually enlarges, and in the specific embodiment of the preferred form as illustrated in the drawings, each slot expands in two stages 57, 59, the first stage 57 at an angle of the order of 10°, with the second stage enlarging at an angle of the order of 20°. Thus, not only is the resistance to flow of water reduced as the water gains access to the underdrain, but should any grains of the filter material gain access to the narrow entrance of a slot, it will readily become apparent, that such grains will enjoy freedom of movement with the inflowing water, and thus cannot become trapped to accumulate and clog the underdrain.

- 50 For draining purposes, the hub may be provided with a central lower opening passageway 61 adapted to receive a supporting sleeve 63 extending down to and resting on the floor 3 of the housing, and adapted to receive a drain fitting 65 extending through and sealed in such floor, and to which is connected a drain pipe 67 extending through the skirt 5, in which it is supported.

From the foregoing description of our invention, it will be apparent that the same fulfills all the objects thereof, and while we have illustrated and described the same in its preferred form, it will be further apparent that the same is subject to alteration and modification without departing from the underlying principles involved, and we accordingly do not desire to be limited in our protection of the specific details illustrated and described, except as may be necessitated by the appended claims.

I claim:

1. An underdrain assembly for a pool-type filter or the like having a central flow column, comprising a hollow hub having a central opening for flow attachment to such column, and a plurality of hollow arms connected to said hub in flow communication with said central opening, each of said arms including a plurality of elongated similar component parts, each of said similar component parts having a plurality of small openings in its sidewall to communicate the interior with the exterior thereof with one end of each of said component parts constructed and arranged to telescope with the proximate end of an adjacent component part, to snap locking means associated with the ends of the component parts for locking each component part to an adjacent part and for locking each arm to said hub to inhibit withdrawal of one from the other and enable assembling of said arms to varying desired lengths to match the capacity of the filter for which intended.

2. An underdrain assembly in accordance with claim 1, characterized by said snap locking means for locking each

component part to the other, said locking means including at least one teat at a location on one of said telescoping component parts and a hole in the other in matching location when said component parts are in telescoping relationship, said hole being of a size to snugly receive said teat.

3. An underdrain assembly in accordance with claim 2, characterized by each of said teats having a beveled edge and that portion of the component part in advance of said hole being formed to include an arch to receive and guide the bevelled teat of an adjacent component to the proximate hole for locking purposes.

4. An underdrain assembly in accordance with claim 3, characterized by each of said similar component parts being of plastic and having an outside diameter at one end substantially equal to the inside diameter at its other end with the teat located at said outside diameter end and with the hole at said inside diameter end.

5. An underdrain assembly in accordance with claim 4, characterized by a second teat located diametrically opposite the first teat, and a second hole diametrically opposite the first hole.

6. An underdrain assembly in accordance with claim 2, characterized by each of said similar component parts being of plastic and having an outside diameter at one end substantially equal to the inside diameter at its other end with the teat located at said outside diameter end and with the hole at said inside diameter end.

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