

July 28, 1953

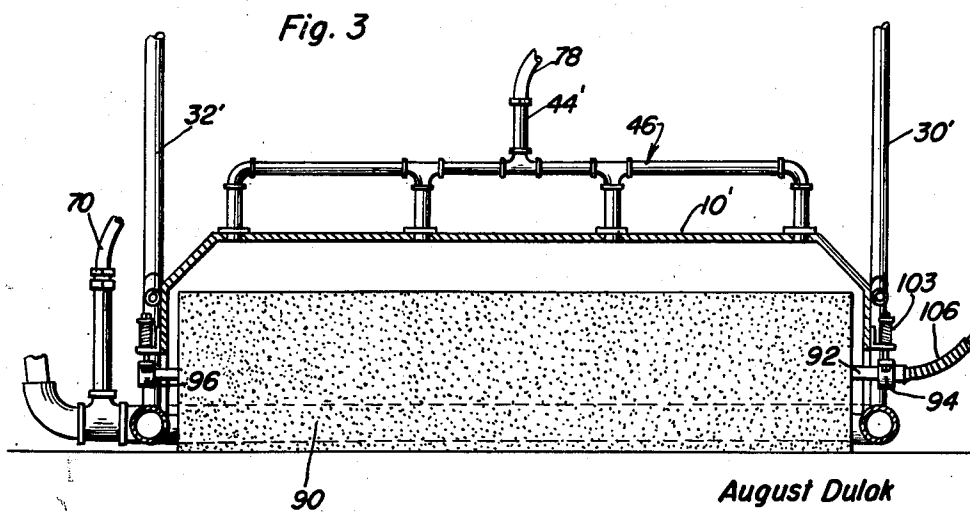
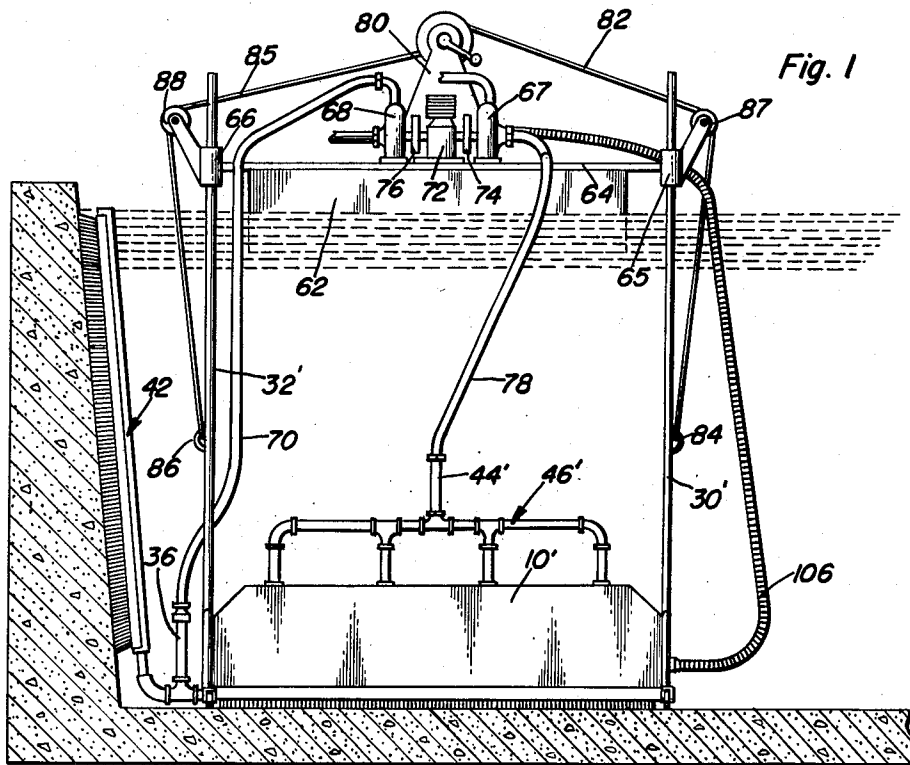
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2,646,889

SWIMMING POOL CLEANING DEVICE

Filed Feb. 15, 1950

3 Sheets-Sheet 1.



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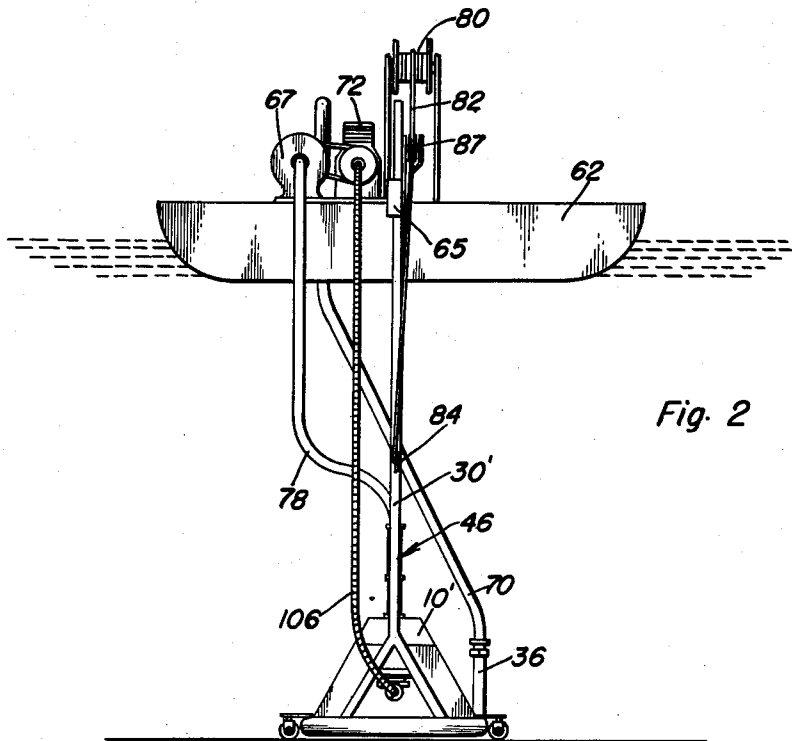


Fig. 2

Fig. 5

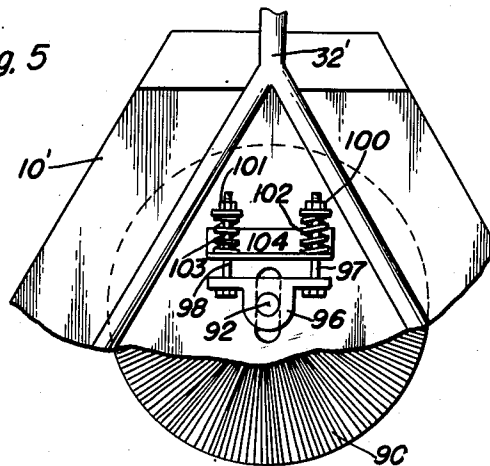
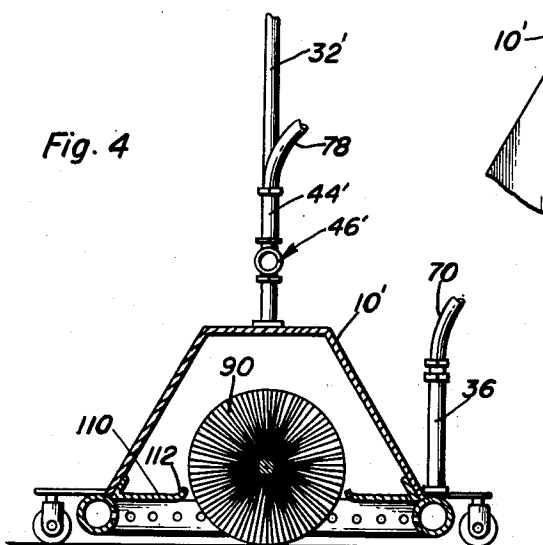


Fig. 4



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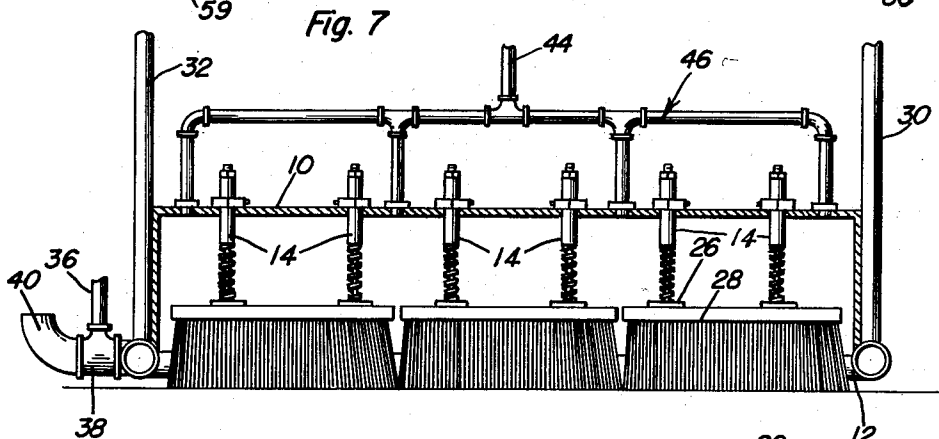
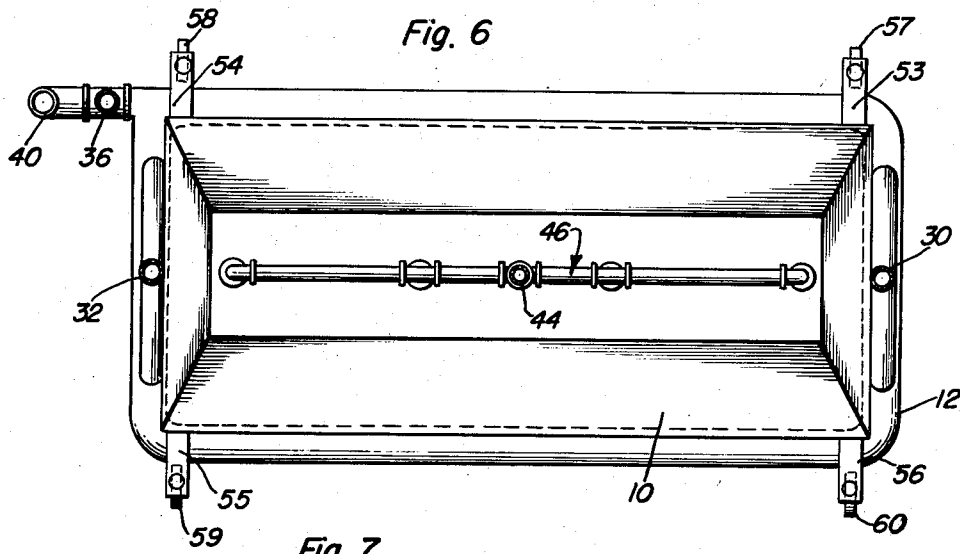


**Fig. 8**

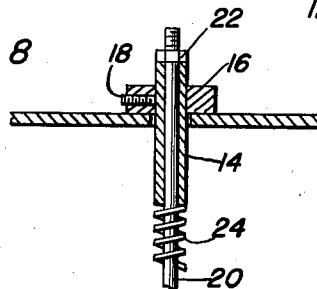
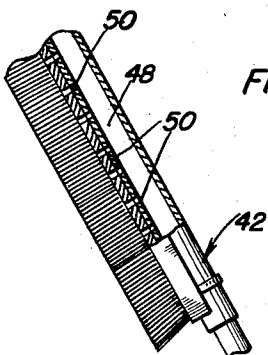


**Fig. 9**



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## UNITED STATES PATENT OFFICE

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## SWIMMING POOL CLEANING DEVICE

August Dulak, West, Tex.

Application February 15, 1950; Serial No. 144,321

6 Claims. (Cl. 210-207)

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This invention relates to improvements in devices for cleaning the interior of a swimming pool.

An object of this invention is to brush the bottom and sides of a pool and at the same time spray water under pressure in the region which is being brushed so that the sediment and other foreign matter which clings to the inside surfaces of the pool may be loosened.

Another object of this invention is to draw the loosened foreign matter from the region of the brushes by means of a suction pump which is carried by a float, said suction pump being connected by means of a network of lines with a bonnet or housing which accommodates the brushes or brush.

Another object of this invention is to raise and lower the brush or brushes and housing together with the other pertinent structure in accordance with the depth of the pool.

Ancillary objects and features, such as simplicity of structure, will become apparent in following the description of the illustrated forms of the invention.

In the drawings:

Figure 1 is a front view of one form of the invention;

Figure 2 is a side view of the mechanism shown in Figure 1;

Figure 3 is a longitudinal sectional view of the housing and other mechanism forming the cleaning head;

Figure 4 is a transverse view of the structure shown in Figure 3;

Figure 5 is a fragmentary end view of the mechanism of Figure 3;

Figure 6 is a top view of the device with portions omitted;

Figure 7 is a longitudinal sectional view of a modification of the invention;

Figure 8 is an enlarged sectional detail of construction showing the means of floatingly mounting the brushes in the housing of the embodiment of Figure 7; and

Figure 9 is a fragmentary detail of construction showing the internal makeup of the swimming pool side cleaning brush.

The instant invention is primarily designed for the purpose of cleaning the bottom and sides of a swimming pool while the water is therein. Although the water of a swimming pool is constantly treated, some water exhausting and new chemical-laden water placed therein, periodic cleaning of the pool is necessary.

By utility of the instant device, the walls and bottom of the pool may be scoured and cleaned

without emptying the pool. Reference is first made to Figures 7 and 8 wherein one form of the invention is illustrated in part. There is a housing 10 which opens downwardly and which has a substantially rectangular pipe structure at the lower edges thereof. This pipe structure forms a water manifold 12, which serves as a spray head, and consists of four lengths of pipe connected together at their ends by means of elbows. A number of holes are provided in each pipe forming this manifold so that the water may be emitted forcibly. By turning the various pipes in the elbows, the angle at which the spray is emitted through the holes may be adjusted or regulated.

At spaced places along the top of the housing 10 there are sleeves 14 (Figure 8) held in place by means of collars 16 which are adjustably fixed, as by set screws 18, to the sleeves. A rod 20 is passed through the bore of the sleeve and has a stop nut 22 at the threaded upper portion thereof. A spring 24 is disposed in concentric relation with the rod 20 and engages the lower edge of the sleeve 14. The lower part of said spring 24 rests on a block 26 which is fixed to the upper surface of a brush 28. Two of these assemblies are provided for each brush. There are three brushes illustrated in Figure 7. However, any number which is deemed practical may be employed. By this construction, the brushes are capable of floating movement. They are also capable of being raised and lowered, depending upon the amount of bristles which are desired exposed through the lower open end of the housing 10.

A pair of vertical guide rods 30 and 32, respectively, rise from the sides of the water manifold 12 and are passed through bearings, identical to those shown in Figure 1. The purpose of the guide rods is the same as the guide rods in the embodiment of Figure 1 and will be detailed in describing that embodiment.

A water inlet line 36 is secured in communication with a conventional fitting 38, which in turn communicates with the interior of the water manifold 12. A pipe fitting 40 which is of conventional description also extends from the fitting 38 in order to releasably connect with a swimming pool side cleaning brush 42.

A suction line 44 is connected with the network of pipes generally indicated at 46 and which terminate with the upper part of the interior of the housing 10. The suction line is to draw the foreign matter from the region within and around the housing as the device is operative.

The brush 42 has a passage 48 in the body

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thereof and a number of small orifices 50 communicate the passage with the bristles. This brush is adapted to connect at its lower end to the fitting 40 so that the water under pressure from the inlet 36 passes therethrough.

If it is found necessary to support the brush 42, an adjustable brace may be secured to the brush body and to one of the bearings 65.

Brackets 53, 54, 55, and 56 extend from the four corners of the housing 10 and have wheels 51, 58, 59 and 60, respectively, carried thereby. These wheels are for the purpose of riding on the floor of the swimming pool to constantly space the bottom of the housing and the water manifold therefrom. The wheels may be of the adjustable type, that is, the type which are carried on a single post which is vertically adjustable.

Reference is now made to the embodiment of Figure 1, wherein a large amount of the structure involved therein will be used in connection with the embodiment of Figure 7. The brush 42 is an optional equipment to be used with both or neither of the embodiments. The float 62 is to be employed with both forms of the invention. This float has an upper plate 64 disposed thereon which supports brackets having bearings 65 and 66. These bearings accommodate the vertical posts 30 and 32 and also accommodate the vertical posts 30' and 32' of the embodiment of Figure 1. A suction pump 67 is disposed on the float, as is a pressure pump 68. The pressure pump has a conduit 70 extending therefrom which is connected with the liquid inlet line 36. A motor 72 is mounted on the float and operates the pump 68 as well as the pump 67 through a pair of clutches 74 and 75. Said pump 67 has a suction line or pipe 78 connected therewith which is secured in communication with the line 44' which is identical in structure and function to the line 44. The network of pipes 46' communicates with the interior of the housing 10', as does the network 46 communicate with the housing 10.

A winch 80 is disposed on the float and is of the manually operable type. The cable 82 is secured at one end to an eye 84 which is secured to the guide rod 30'. The cable 85 is secured to the eye 86 which is fixed to the guide rod 32'. Idler pulleys 87 and 88 which are carried by the brackets have the cables 82 and 85 entrained therearound. Upon operation of the winch, the guide rods are raised and lowered, thereby lifting the entire assembly of cleaning head from the bottom of the pool. This identical structure and operation takes place in connection with the first embodiment of the invention.

The embodiment of Figure 1 differs from that of Figure 7 in the specific structure shown best in Figures 3-5. In lieu of a number of brushes, there is one rotary brush 90 having an axle 92 passed therethrough. The ends of the axle pass through slots (unnumbered) in the sides of the housing 10' and are carried by pillow blocks 94 and 96. These pillow blocks are suspended on bolts 97 and 98 (Figure 5) having nut assemblies 100 and 101 which react on springs 102 and 103. These springs are carried by an angle bracket 104, thereby floatingly mounting one end of the brush 90. Each end of the brush is floatingly mounted in this manner.

When this embodiment of the invention is put into use, the rotary brush is operated by means of a flexible cable 106 which is actuated by the motor 72 through a suitable gearing arrangement.

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The cable 106 is simply fastened to one end of the shaft or axle 92.

Reference to Figure 4 shows that a pan 110 is disposed around the rotary brush 90 and on the interior of the housing 10'. This pan has an upturned lip 112 adjacent the brush, thereby forming a collector for refuse and other foreign matter and also tending to keep the bristles of the brush clean.

One of the advantages of the described devices is that the housings may be made any practical size, for example, 4, 6, 8 feet or even wider, whereby a large area is cleaned at one time. Moreover, the pool being cleaned need not be a swimming pool. It may be a well, tank, cistern, or other liquid retaining body, as an earthen tank found in pastures. Accordingly, the manifold need not necessarily be rectangular when the device is to be used primarily for cleaning circular or other shaped liquid receptacles. The manifold and other pertinent structure may be circular, elliptical, oblong, or any other shape, depending on the particular shape of the liquid receptacle which is to be most frequently cleaned.

Having described the invention, what is claimed as new is:

1. In a cleaning apparatus for a swimming pool, a housing having an open bottom, a float having brackets secured thereto, guide rods secured to said housing and bearings secured to said brackets, said rods being vertically slidable in said bearings, a spray head secured to said housing to loosen sediment from the pool, means for supplying liquid under pressure to said spray head, a brush, means resiliently and rotatably securing said brush to and within said housing, a motor disposed on said float, suction means to discharge sediment from said housing, means drivingly connecting said motor and said brush, a winch disposed on said float and cables wound on said winch and secured to said guide rods for raising said housing when said winch is operated.

2. In a cleaning apparatus for a swimming pool, a housing having an open bottom, a float having brackets secured thereto, guide rods secured to said housing and bearings secured to said brackets, said rods being vertically slidable in said bearings, a spray head secured to said housing to loosen sediment from the pool, means for supplying liquid under pressure to said spray head, a brush, means resiliently and rotatably securing said brush to and within said housing, a motor disposed on said float, suction means to discharge sediment from said housing, means drivingly connecting said motor and said brush, a winch disposed on said float and cables wound on said winch and secured to said guide rods for raising said housing when said winch is operated, a pool side cleaning brush having a water passage therethrough and a plurality of dispensing orifices communicating with said passage, and means connecting said side cleaning brush to said spray head in angulated relation thereto so that said passage communicates with the interior of said spray head.

3. In a cleaning apparatus for a swimming pool, a float having a motor thereon, a suction pump disposed on said float and a pressure pump disposed on said float, means drivingly connecting said motor with said suction pump and said pressure pump, a housing having an open bottom, means slidably fastening said housing to said float, a brush disposed in said housing, a spray head connected

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to said housing, means interconnecting said pressure pump and said spray head to supply water under pressure to said spray head, said spray head having a plurality of orifices therein for forcibly emitting water therethrough, a pipe

connecting said suction pump and said housing to withdraw foreign matter from said housing when such matter has been loosened by the combined action of said brush and the water emitted from the spray head.

4. The combination of claim 3 and said means connecting said housing and said float including a pair of rods, bearings carried by said float, said rods passing through said bearings and connecting said housing to said float, and means

on said float connected to said rods for raising and lowering the housing in the pool.

5. The combination of claim 4, said means on said float connected to said rods including a winch having cables secured to said rods.

6. In a cleaning apparatus for a swimming pool, a float having a motor thereon, a suction pump and a pressure pump disposed on said float, means drivingly connecting said motor with said suction pump and said pressure pump, a housing having an open bottom, means slidably fastening said housing to said float, a brush disposed in said housing, a spray head connected to said housing, a conduit interconnecting said

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pressure pump and said spray head to forcibly emit water through said spray head, a pipe interconnecting said suction pump and said housing to draw sediment from the housing after such sediment has been loosened by the combined action of the brush and the water emitted from the spray head, a side cleaning brush having a passage therein and a plurality of orifices communicating with said passage, and means connecting said side cleaning brush to said spray head in angulated relation thereto so that said passage communicates with the interior of said spray head.

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