

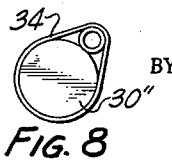
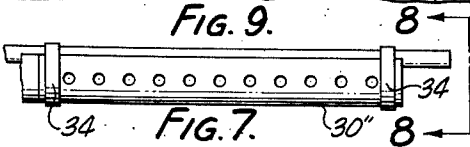
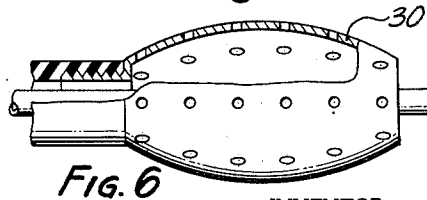
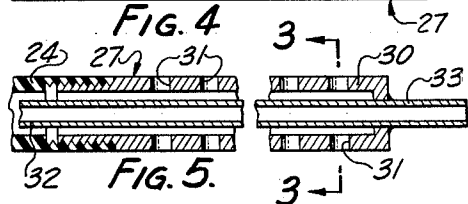
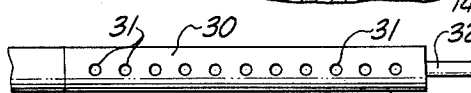
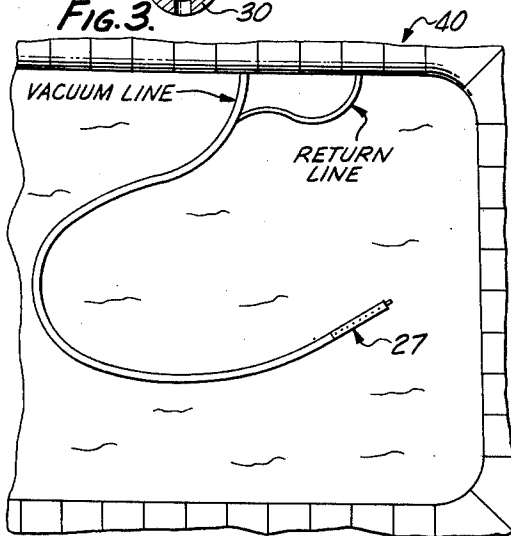
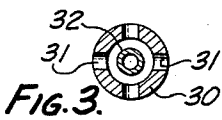
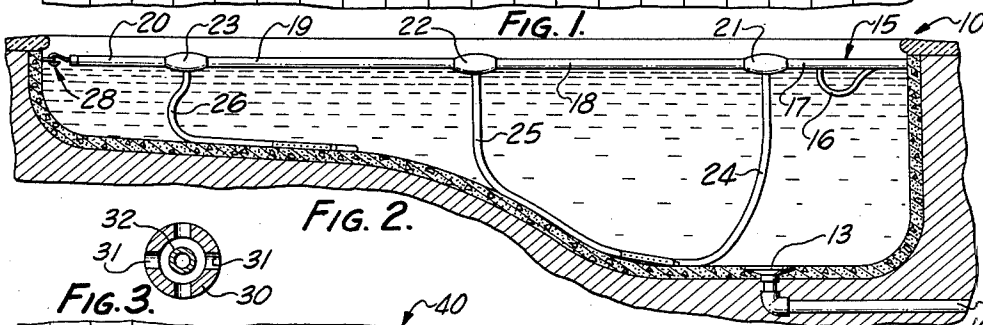
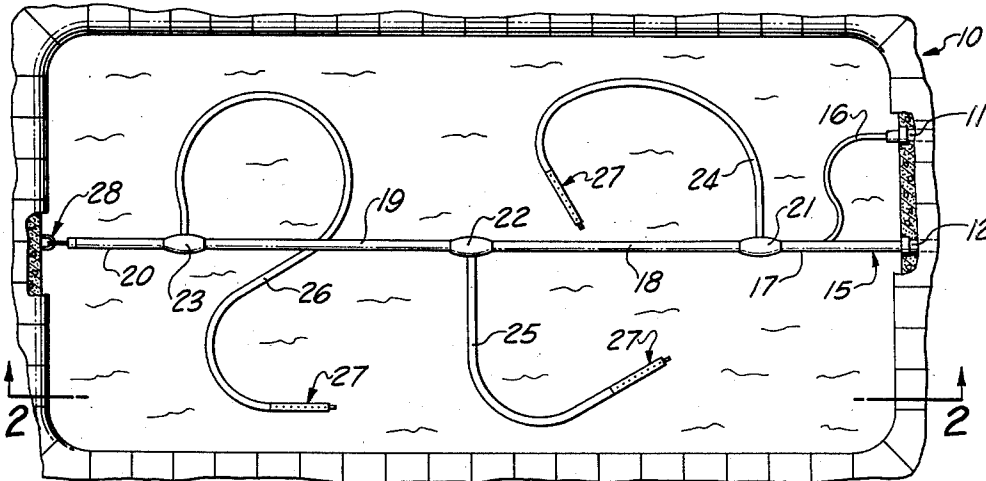
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CLEANING DEVICE FOR SWIMMING POOLS

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CLEANING DEVICE FOR SWIMMING POOLS

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 7 Claims. (Cl. 134-167)

This invention relates to a device for cleaning swimming pools and more particularly relates to a device for vacuum cleaning dirt, scum and other sediment from a swimming pool.

The two major methods currently employed to remove the scum and dirt which collects on the walls of swimming pools both require considerable manual labor. One method is to manually brush the walls and floor of the pool downwardly towards the main drain which will pick up a portion of the dirt and deposit it in the filter, and the other involves manually vacuuming the pool with a suction device that is connected directly to the filtering unit. These methods are time-consuming and generally considered onerous by present and prospective owners of residential swimming pools. It is therefore an object of the present invention to provide a device that automatically loosens the dirt and scum collected on the walls and bottom of a swimming pool and directly removes them from the pool.

It is another object of the present invention to provide such a device in which a dirt loosening nozzle has a suction removal head located immediately adjacent to it.

It is another object of the present invention to provide such a device in which the nozzle and the suction head are mounted on the end of a flexible hose, the force of the water escaping from the nozzle causing the nozzle and suction head to move along the side and bottom of the pool as well as loosening the dirt and scum collected thereon.

These and other objects and advantages of the present invention will become more apparent upon reference to the accompanying description and drawings in which:

FIGURE 1 is a top plan view of a swimming pool provided with a cleaning device according to a first embodiment of the present invention;

FIGURE 2 is a sectional elevation taken along lines 2-2 of FIGURE 1;

FIGURE 3 is a sectional view taken along lines 3-3 of FIGURE 5;

FIGURE 4 is a side elevation of a first embodiment of a combined nozzle and suction head according to the present invention;

FIGURE 5 is an enlarged cross-sectional view of the apparatus of FIGURE 4;

FIGURE 6 is a side elevation, partly in section, of a second embodiment of a combined nozzle and suction head according to the present invention;

FIGURE 7 is a third embodiment of a combined nozzle and suction head according to the present invention;

FIGURE 8 is an end view of the apparatus of FIGURE 7 taken along lines 8-8; and

FIGURE 9 is a top plan view showing a second manner in which the cleaning device of the present invention may be installed.

Referring now to FIGURES 1 and 2 there is shown a swimming pool 10 having a return supply and/or surge line 11 and a vacuum line 12 as is conventional in most swimming pools. A drain 13 is located at the deepest point in the pool and is connected to an outlet pipe 14. A coaxial conduit 15 has its outer flow passageway inserted into the vacuum line 12 and its inner flow passageway connected to the return supply and/or surge

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line 11 by a flexible conduit 16. The coaxial conduit 15 is constructed of four relatively rigid or flexible sections 17, 18, 19 and 20 joined together by couplings 21, 22 and 23, the couplings 21, 22 and 23 each containing a double T which connects the coaxial conduit 15 with one of a plurality of flexible coaxial conduits 24, 25 and 26, each of which is provided with a combined nozzle and suction head 27. The conduit section 20 is supported in any suitable manner, such as by a conventional hook and eye bolt device 28, and is sealed at its outer end.

FIGURES 3, 4 and 5 show the structural details of the combined nozzles and suction heads 27 shown in FIGURES 1 and 2. As can be seen from FIGURE 5, the end of the outer conduit of the flexible coaxial conduit 24 is provided with internal threads which cooperate with the external threads formed on the suction head 30 which has the same diameter as the conduit 24 and is provided with a plurality of radial passageways 31. The inner conduit 32 of the coaxial conduit 24 extends through the suction head 30 and protrudes through the end thereof as shown at 33. This protrusion 33 is preferably bonded to the end of the suction head 30.

In operation, the pressure in the return supply and/or surge line 11 causes a jet of water to be expelled from the conduit 32 resulting in a whip effect in each of the flexible conduits, causing these conduits to snake back and forth and around the pool carrying the vacuum head 30 with them. As the jet of water emerging from the conduit 32 washes the walls and floor of the pool and loosens the dirt and scum therefrom, the vacuum head 30 is collecting, through the passageway 31, the dirt, scum and the like and drawing it back to the filter. The intensity of movement of the various units 27 can be controlled by a valve or other flow control device which allows a selected amount of water to go through the surge line, thereby allowing the unit to work slowly, moderately or quickly so that proper cleaning can be effected.

The combined nozzle and suction head unit shown in FIGURE 6 is similar in construction to that shown in FIGURE 5 except that the suction head 30' has a greater diameter and is barrel shaped so that the head rolls more easily over pool walls and presents a greater area to them so that the wear on any one portion of the head is reduced. The unit shown in FIGURES 7 and 8 utilizes a pair of conduits mounted side by side rather than coaxially. Thus, the return supply and/or surge line 32'' is connected to the suction head 30'' by straps 34. When this unit is used, of course, it is not necessary to use coaxial conduits for the conduits 15, 24, 25 and 26.

FIGURE 9 shows a pool 40 in which the operating units are connected directly to the vacuum line and the return supply and/or surge line, there being no need of an intermediate coaxial conduit. The operation of the device is in all other respects similar to that described in connection with FIGURES 1 and 2.

From the foregoing description, it can be seen that a simple and inexpensive device has been provided for automatically loosening dirt and scum from the walls of a swimming pool and removing them from the pool. The device utilizes the already present return supply and/or surge line and vacuum line and thus may be easily installed in existing pools. The suction heads may be constructed of either metal or a suitable plastic depending on the wear and anti-corrosive characteristic needed.

The invention may be embodied in other specific forms not departing from the spirit or central characteristics thereof. The present embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing

description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

I claim:

1. A device for automatically removing the sediment collected on the walls of a swimming pool having a vacuum outlet and a pressurized inlet, comprising a flexible hose including a first line and a second line, said first line having one end connected to said pressurized inlet so that water under pressure is discharged from its other end, said second line having one end connected to said vacuum outlet, a suction head connected to the other end of said second line, said suction head being immediately adjacent said first line and having a plurality of differently directed radial holes therein for exhausting water from said pool, said first line extending beyond said suction head so that the water discharging from said first line causes said first line and said suction head to move over the walls and floor of said pool whereby the sediment loosened from said walls and floor by said discharging water is removed from the region of the pool surrounding said suction head through the passageways thereof.

2. A device for automatically removing the sediment collected on the walls of a swimming pool having a vacuum outlet and a pressurized inlet, comprising a flexible hose having a first line and a second line coaxial with said first line, said first line having one end connected to said pressurized inlet so that water under pressure is discharged from its other end, said second line having one end connected to said vacuum outlet, a suction head connected to the other end of said second line, said suction head having a closed end and a plurality of radial holes therein for exhausting water from said pool, said first line passing through the interior of said suction head and the closed end thereof and extending beyond said closed end so that the water discharging from said first line causes said first line and said suction head to move over the walls and floor of said pool whereby the sediment loosened from said walls and floor by said discharging water is removed from the pool through the passageways in said suction head.

3. The device of claim 2 wherein the external diameter of said suction head is substantially equal to the external diameter of said second line.

4. The device of claim 2 wherein said suction head is barrel shaped with a maximum external diameter substantially greater than the external diameter of said second line.

5. The device of claim 1 wherein said first line and said second line are adjacent each other and secured together by strap means.

6. A device for automatically removing the sediment collected on the walls and floor of a swimming pool having a vacuum outlet and a pressurized inlet comprising a coaxial conduit having a first flow passage connected to said pressurized inlet and a second flow passage connected to said vacuum outlet, said conduit including a plurality of T-sections having flow passages connected to each of said first and second flow passages, a flexible hose connected to each of said T-sections, each of said flexible hoses having a first line and a second line coaxial with said first line, said first line having one end connected to said pressurized inlet so that water under pressure is discharged from its other end, said second line having one end connected to said vacuum outlet, a suction head connected to the other end of said second line, said suction head having a closed end and a plurality of radial holes therein for exhausting water from said pool, said first line passing through the interior of said suction head and the closed end thereof and extending beyond said closed end so that the water discharging from said first line causes said first line and said suction head to move over the walls and floor of said pool whereby the sediment loosened from said walls and floor by said discharging water is removed from the pool through the passageways in said suction head.

7. The device of claim 6 wherein the end of said coaxial conduit remote from said pressurized inlet is removably secured to one of the walls of the pool above the water line.

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