# United States Patent [19]

**Blumenfeld et al.**

[11] **3,839,749**

[45] **Oct. 8, 1974**


[54] **SWIMMING POOL LEAF TRAP**


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[52] **U.S. Cl.** ..... **4/172,** 4/293, 210/166, 210/169, 210/235, 210/237, 210/244

[51] **Int. Cl.** ..... **E04h 3/20,** B01d 23/00

[58] **Field of Search** ..... 210/235, 237, 240, 244, 210/246, 247, 166, 169, 163, 464, 430; 4/172, 173, 293



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[57] **ABSTRACT**

A leaf trap adapted to fit over a drain in the floor of a swimming pool includes a basket shaped to cover the drain. The bottom of the basket has openings through it to strain out leaves and permit water to flow through the basket and into the pool drain. A movable cover is disposed over the basket, and provided with means responsive to the position of the trap with respect to the pool floor for moving the cover to open and close the trap.


**10 Claims, 4 Drawing Figures**

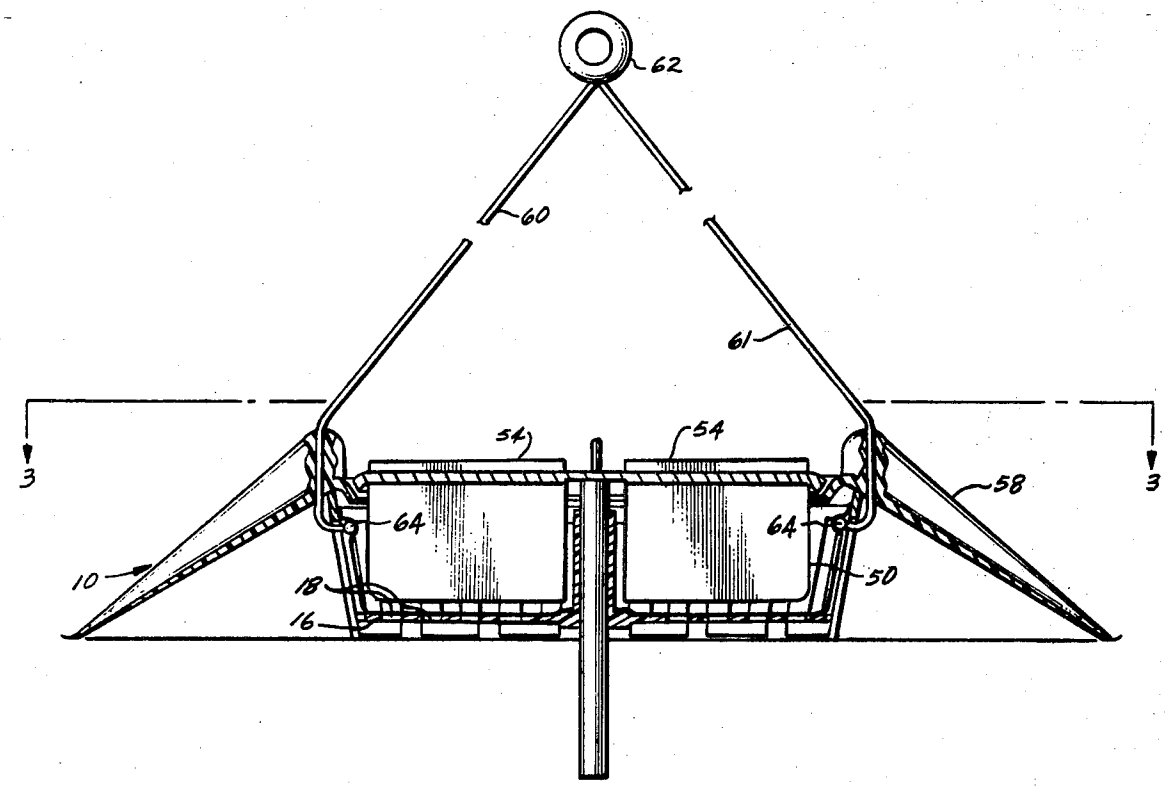


Fig. 1

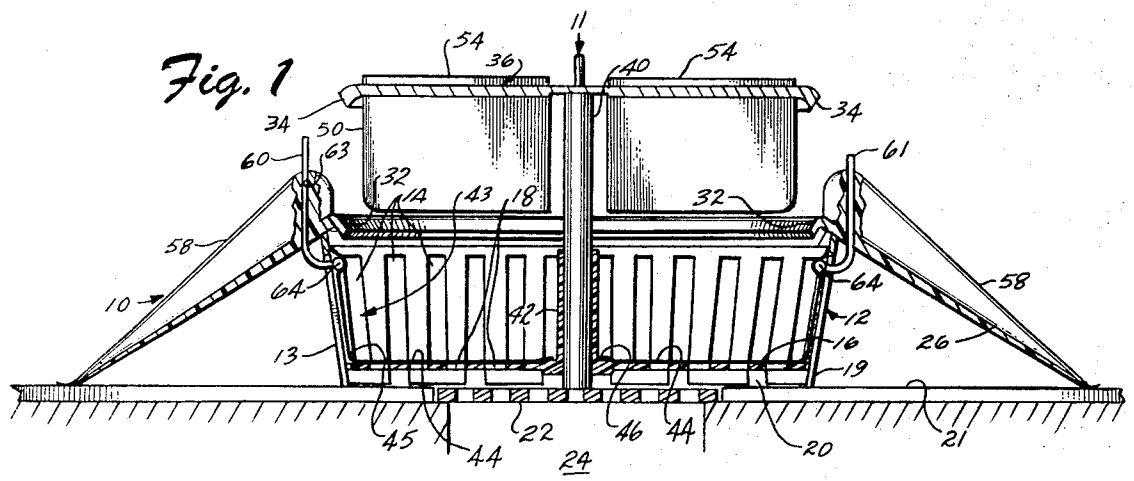

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Fig. 2

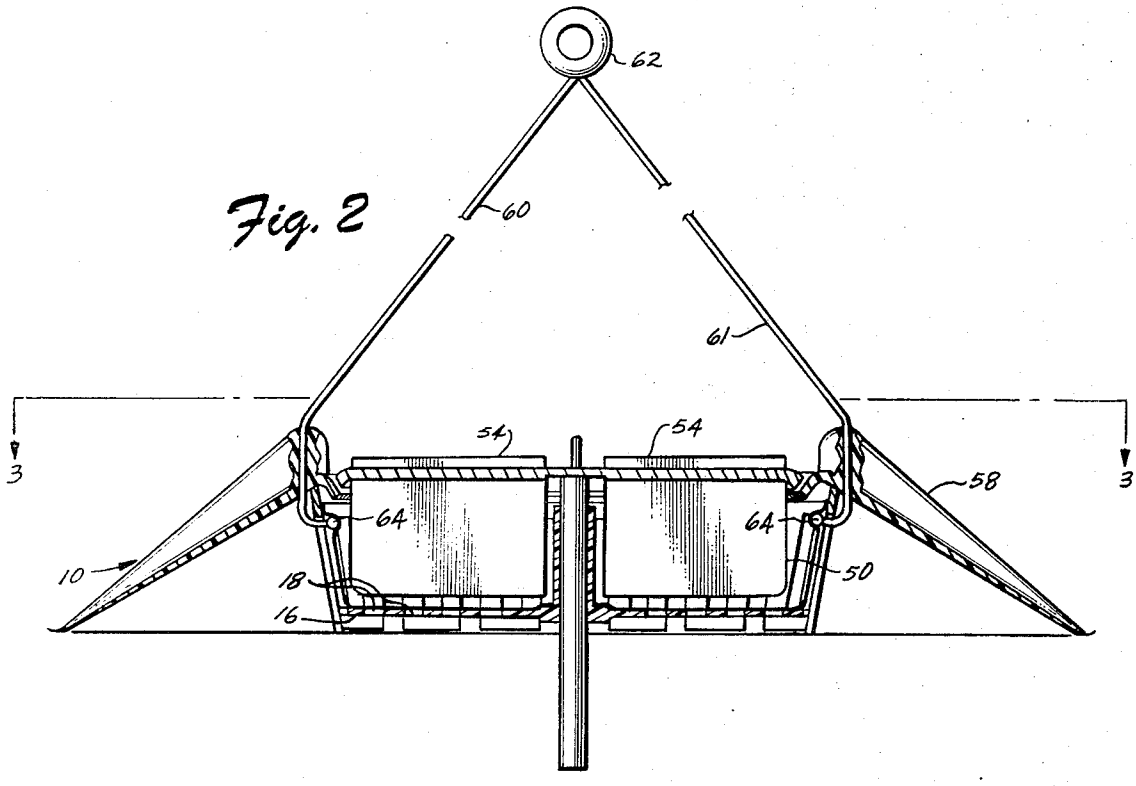

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Fig. 3

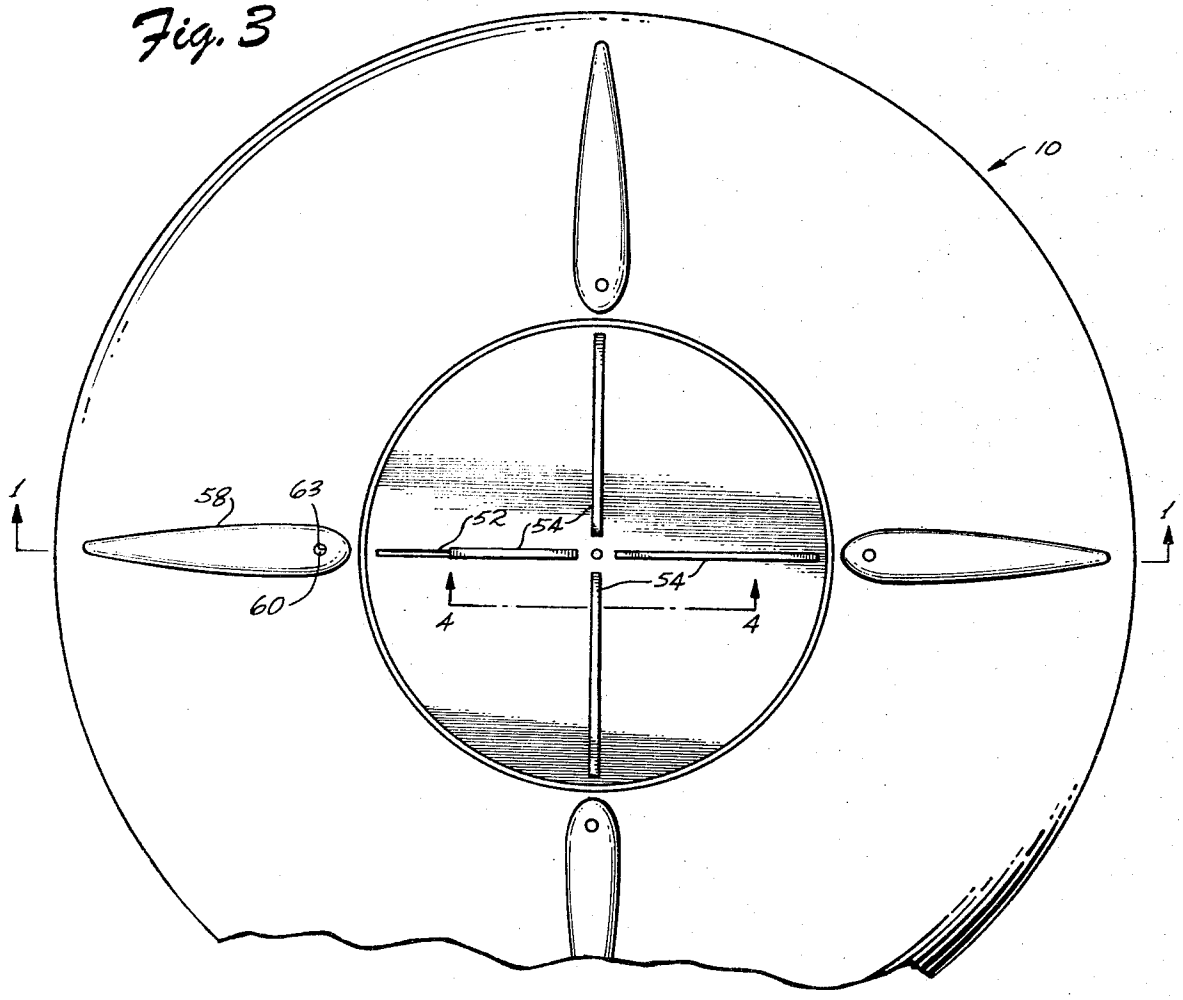
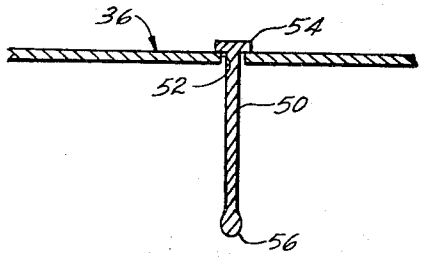



Fig. 4



# SWIMMING POOL LEAF TRAP

## BACKGROUND OF THE INVENTION

This invention relates to equipment for the maintenance of a swimming pool, and more particularly to a trap for removing leaves and other debris which settle in the pool.

Automatic swimming pool cleaners of the recirculation type are becoming widely used. An example of an automatic cleaner for swimming pools is shown in my U.S. Pat. No. 2,919,027. In such a cleaner, a flexible cleaning hose extends down to the pool floor, and is supplied water under relatively high pressure. The water jets out of the lower end of the cleaning hose, causing it to "snake" about and stir up sediment, leaves, and other debris. For the proper operation of such a cleaner it is important that the debris not block the pool drain, which must remain open so that water with stirred-up sediment can be removed from the swimming pool, filtered, and returned to the pool. To prevent clogging of the drain, traps have been devised to strain out leaves and other debris before water with stirred-up sediment reaches the drain. Leaf traps available prior to our invention have the disadvantage that when they are lifted from the pool for emptying, much of the trapped debris is lost back into the pool, making the leaf trap operation relatively inefficient.

## SUMMARY OF THE INVENTION

This invention provides a trap for collecting and retaining leaves and other sediment when placed on the swimming pool floor over the pool drain. The trap includes a basket with a cover which automatically opens when the trap is set in place over the pool drain, and automatically closes when the trap is lifted from the pool floor for emptying. Once the trap is removed from the pool, the cover is readily removed, permitting easy emptying and cleaning of the trap.

## DESCRIPTION OF THE DRAWINGS

The invention will be more fully understood from the following detail description and the accompanying drawings in which:

FIG. **1** is a sectional elevation taken on line **1—1** of FIG. **3** of a leaf trap constructed in accordance with the present invention, and set over the drain in the floor of a swimming pool;

FIG. **2** is a fragmentary side elevation of the trap shown in FIG. **1** being lifted from the pool;

FIG. **3** is a fragmentary plan view taken on line **3—3** of FIG. **2**; and

FIG. **4** is a fragmentary view taken on line **4—4** of FIG. **3**.

## DESCRIPTION OF THE ILLUSTRATED EMBODIMENT

Referring to the drawings, a leaf trap **10** includes a basket **12** with an annular upwardly and outwardly extending frusto-conical wall **13** having downwardly opening slits **14** extending from the lower edge of the basket wall to adjacent the upper edge of the wall. The basket has a horizontal bottom **16** with perforations **18** so that water with stirred-up sediment can flow into the basket and out the bottom. An annular skirt **19** with downwardly opening notches **20** is an integral part of the bottom edge of the basket wall, and extends a short distance below the basket bottom to rest on the floor



**21** of a swimming pool (not shown) over a grate **22** disposed in the drain **24** of the pool. The skirt spaces the basket bottom slightly above the outlet plate so that when the basket bottom is blocked with leaves, water with stirred-up sediment can flow into the top of the basket, out through the side wall, through the notches in the skirt, and into the drain until the basket is full of leaves or other debris.

An annular, outwardly and downwardly extending frusto-conical apron **26** of flexible material, such as rubber or plastic, is bonded adjacent its inner periphery to the upper edge of the basket wall. An inwardly and downwardly extending annular flange **30** formed integrally with the inner periphery of the apron provides an inwardly and downwardly extending annular seat **32** shaped to receive an annular face **34** on the periphery of a circular cover **36** disposed over the basket.

A downwardly extending rod **40**, having a length about twice the depth of the basket, is secured at its upper end to the central part of the cover. The lower end of the rod makes a sliding fit in a vertical sleeve **42** formed integrally with the center of the basket bottom. The lower end of the sleeve is open so that the rod can project below the basket bottom as shown in FIG. **2**. The basket cover and rod have a specific gravity greater than water so that the cover normally tends to seat in the closed position shown in FIG. **2**.

A removable screen liner **43** made of Nylon mesh fits snugly inside the basket over the bottom and slots in the side wall of the basket. The liner includes a circular bottom **44** substantially coextensive with the inside dimension of the basket bottom. An annular upwardly and outwardly extending frusto-conical wall **45** of the liner is substantially coextensive with the basket wall. A hole **46** in the center of the liner is slightly larger than the downwardly extending rod so the liner can be slipped down over the rod into the position shown in FIGS. **1** and **2**.

A knob **11** is secured to the upper end of the rod to facilitate lifting the cover from the trap after it is removed from the pool.

Four vertical radially extending movable baffles **50** are mounted at equal intervals in respective radial slots **52** in the basket cover. Each baffle extends in a horizontal direction for a distance slightly less than the radius of the basket, and vertically for a distance slightly less than the depth of the basket.

The detail of the mounting for the movable baffles in their respective slots is shown in FIG. **4**. The upper edge of each baffle includes an integral, outwardly extending flange **54** which rests on the cover adjacent the slot **52**. An elongated bead **56** is formed integrally with the lower edge of each baffle, and is slightly wider than the slot in which it is mounted to prevent the plate from leaving the slot. The movable baffles are molded from rubber or plastic, which is sufficiently flexible to permit the baffle to be inserted or removed from the slot with moderate force. Gravity normally keeps the movable baffles hanging from their flanges as shown in FIGS. **1**, **2**, and **4**, because the baffles have a specific gravity greater than water.

Four vertical and radially extending stationary baffles **58** are formed integrally with the top surface of the apron at equally spaced intervals, and are tapered downwardly and outwardly to a minimum height at the outer periphery of the apron. The baffles on the apron and cover prevent leaves and other debris from being

washed past the leaf trap when it is set on the pool floor as shown in FIG. 1.

The cross-sectional area of the apron decreases from the inner to the outer periphery so that the outer periphery of the apron is relatively flexible to make a close fit against the pool bottom. The respective ends of four separate plastic buoyant cords **60** (FIG. 2) are secured to a buoyant plastic ring **62.** The lower end of each cord extends down through a respective vertical channel **63** through the inner end of each baffle and through a respective slit in the basket wall. A knot **64** on the lower end of each cord anchors the cord to the basket wall so the basket can be lifted by the plastic ring and cords. The buoyancy of the cords and ring hold them in an upright position to facilitate picking up the trap.

In operation, the trap is placed on the pool floor over the drain with a long-handled brush or hook (not shown) slipped through the plastic loop attached to the cords. When the trap is so suspended in air and then in water, gravity causes the cover to move down so that the rod **40** slides down through the sleeve until the face on the cover rests in the annular seat on the basket rim as shown in FIG. 2. As the trap is placed on the pool floor over the drain, the lower end of the rod stops when it contacts the drain and holds the cover up as the basket is lowered into the final position over the pool drain as shown in FIG. 1. The trap is now open to receive the leaves and other debris swept toward the drain by an automatic pool cleaner (not shown). The outer periphery of the apron is sufficiently flexible to conform to the contour of the pool floor, and minimizes direct access of water to the drain except for passing through the basket.

As the pool cleaner stirs up sediment, leaves, and other debris and sweeps it toward the pool drain, the leaves and stirred-up sediment enter the trap through the open top of the basket. Water with stirred-up sediment passes through the screen liner, and the apertures in the bottom of the basket permit water with stirred-up sediment to flow into the pool drain. The screen liner strains out larger debris, such as threads, hair, seed fragments, leaves and similar material too large to pass through the screen mesh. This decreases the frequency of backwashing needed for the conventional swimming pool filter, and the frequency of pump-strainer cleaning, thereby conserving water, chemicals, filter material (sand or diatomaceous earth), electric power, and time. The liner conforms to the shape of the basket, is flexible, and is easily removed for cleaning or replacement. The baffles on the apron and the cover guide sediment and leaves into the basket. Even after the bottom of the basket is effectively blocked by leaves, water with stirred-up sediment can still flow into the drain through the screen and openings in the side of the basket, thus giving the trap a capacity substantially greater than that provided by the basket bottom above.

After the basket is full of leaves, the buoyant loop is engaged by a long-handled brush or hook, and the trap is lifted from the pool floor. As the trap is raised, the cover moves down by gravity and the force of movement upward through the water until the cover face rests on the bevelled annular seat at the upper edge of the basket. If the basket is substantially full, the movable baffles on the cover slide upwardly through their respective slots, permitting the cover to seat properly and close the basket. Thus, with the trap securely closed, it can be removed from the pool without the annoying and undesirable loss of some of the trapped contents back into the pool during the removal of the trap. Once the trap is taken from the pool, the cover is readily removed, permitting easy emptying and cleaning of the trap before the cover is replaced so that the trap can be relocated over the grate for further use.

We claim:

**1.** A movable leaf trap constructed and arranged to rest on the floor around a drain in the floor of a swimming pool, the trap comprising a basket shaped to rest on the pool floor over the drain, suspension means secured to the basket for raising and lowering the trap, the basket including a bottom with openings through it to permit water to flow into the basket and out the bottom into the pool drain, a movable cover disposed over the basket, a member secured to the basket to move downwardly relative to the basket and project below the basket when the basket is moved out of contact with the pool floor and to contact the pool floor so the basket moves downwardly relative to the member as the basket is lowered to rest on the pool floor, and means connecting the member to the cover to move the cover away from the basket to open the trap when the basket is moved into contact with the pool floor and to move the cover toward the basket and close the trap when the basket is moved away from the pool floor.

**2.** A trap according to claim **1** in which the basket includes an upright wall which has apertures through it, and a means for supporting the basket bottom above the pool floor to let water flow through the basket wall and into the drain.

**3.** A trap according to claim **1** in which the removable cover includes at least one downwardly extending baffle.

**4.** A trap according to claim **3** in which the baffle is movable up and down with respect to the cover.

**5.** A trap according to claim **4** in which the cover includes a slot, and a movable baffle is mounted to slide in the slot.

**6.** A trap according to claim **5** which includes stop means for preventing the baffle from sliding out of the slot.

**7.** A trap according to claim **1** which includes an annular flexible apron disposed around the basket to extend downwardly and outwardly to fit against the pool floor.

**8.** A trap according to claim **7** which includes at least one upwardly and radially extending baffle mounted on the top surface of the apron.

**9.** A trap according to claim **1** which includes means for removably securing the cover to the basket.

**10.** A trap according to claim **1** which includes an upwardly extending sleeve secured to the basket bottom, and a downwardly extending rod secured to the cover and disposed in the sleeve to slide longitudinally and project below the basket bottom when the basket cover is in the closed position.

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