ABSTRACT

A portable jet stream device for swimming pools, comprising a housing in which a propeller is arranged which is driven by a drive motor, with the jet stream device having a holder for detachable positioning in the pool, said holder having a pedestal-like supporting foot which can be positioned on the floor of the pool and with which the housing is connected in a swivelable manner via at least one first holding strut. The supporting foot is formed by a base plate parallel to the floor of the swimming pool, with preferably the bottom side of the base plate being arranged to be planar and with a closed surface.
PORTABLE JET STREAM DEVICE

FIELD OF THE INVENTION

[0001] The invention relates to a portable jet stream device for swimming pools, comprising a housing in which a propeller is arranged which is driven by a drive motor, with the jet stream device having a holder for detachable positioning in the swimming pool, said holder having a pedestal-like supporting foot which can be positioned on the floor of the swimming pool and with which the housing is connected in a swivellable manner via at least one first holding strut.

DESCRIPTION OF RELATED ART

[0002] Jet stream devices are used for swimming pools in order to produce a continuous water flow in the swimming pool against the swimming direction of a swimming person. There are permanently installed jet stream devices which produce a water flow in the swimming pool by means of a powerful water pump via a permanently installed wall nozzle, and portable jet stream devices which are fastened to the swimming pool or the edge of the swimming pool as required.

[0003] DE 21 25 770 A discloses a portable jet stream device for a swimming pool with a housing in which a drive motor is arranged. The jet stream device comprises a holder with a pedestal-like supporting foot for detachable positioning in the swimming pool. In order to ensure a reasonably stable positioning, the foot needs to have a relatively high own weight. A support on the wall is still necessary.

[0004] A jet stream installation for swimming pools is known from U.S. Pat. No. 4,352,215 A, with the drive motor and a propeller rotating about a vertical axis are arranged in a housing. The housing positioned in the region of the edge of the swimming pool can be swivelled with the propeller about a horizontal axis, through which the outflow direction can be varied.

[0005] U.S. Pat. No. 5,298,003 A describes a jet stream installation for a swimming pool, comprising a propeller which is operated by a drive motor beneath the water surface and which produces a water flow in the region of the water surface. The drive motor of the portably arranged jet stream installation is operated by batteries. The jet stream installation is arranged to be fastened to the edge of the swimming pool. The arrangement is relatively complex.

[0006] A removable floating jet stream installation for a swimming pool is also known from U.S. Pat. No. 6,780,278 B2 which comprises a propeller which is arranged in a housing and is driven by an electric motor. The housing comprises floating bodies and rests on the wall of the swimming pool via bumpers. The floating arrangement comes with the disadvantage that changes in position occur easily with movements of water in the swimming pool.

[0007] FR 2 886 662 A1 discloses a portable jet stream installation for swimming pools which is suspended into the pool on the edge of the swimming pool and is fastened via suction cups to the wall of the swimming pool and the edge outside of the swimming pool. Not all swimming pools are suitable for such a positioning of the jet stream device on the edge of the swimming pool, especially swimming pools erected above the ground. Moreover, there is likelihood in the case of powerful jet stream devices close to the surface that surface air is sucked in, thus strongly reducing the generated water flow.

[0008] A jet stream installation with a support frame is further known from JP 08-260 740 A, through which the jet stream installation can be supported on the floor and the wall of the swimming pool. The support frame comprises length-adjustable legs for changing in the height of the installation position of the jet stream installation in the swimming pool. In order to stabilize the installation it is necessary to fasten the frame additionally to the wall of the swimming pool via anchoring elements in the region of the edge. The disadvantageous aspect is that additional bores are required which damage the surface of the swimming pool. The required fixed anchoring elements also make a change in the position of jet stream installation more difficult.

SUMMARY OF THE PRESENT INVENTION

[0009] It is the object of the invention to avoid such disadvantages and provide a portable jet stream device which can be installed easily without any mounting work and can be used in any swimming pool.

[0010] This is achieved in accordance with the invention in such a way that the supporting foot is formed by a base plate parallel to the floor of the swimming pool, with preferably the bottom side of the base plate being arranged to be planar and with a closed surface. The pedestal-like supporting foot ensures secure footing.

[0011] The base plate can be square, rectangular, triangular, trapezoid, circular or elliptical. Other geometric shapes are also possible. In the case of a smooth floor of the swimming pool and smooth and sealed bottom side of the base plate, the hydrostatic forces and the own weight are sufficient in the case of a base plate disposed flat on the floor of the swimming pool in order to ensure secure footing of the supporting foot and to prevent tilting of the jet stream installation, even in the case of movements of the water.

[0012] When the hydrostatic pressing forces and the own weight during operation are insufficient, additional lateral supports may be advantageous. In a simple embodiment, the supporting foot can have a support bracket normally to the floor of the swimming pool on the side facing the wall of the swimming pool. As an alternative or in addition to this, the base plate can have a straight supporting edge on the side averted from the flow, which edge rests on the wall of the swimming pool.

[0013] According to a preferred embodiment of the invention, a second holding strut is provided for the lateral support of the first holding strut or the housing, with a first end of the second holding strut being connected with the housing or the first holding strut, preferably in an articulated manner. For example, it can be provided that the second holding strut can be connected in a detachable manner, preferably loose, with the wall of the swimming pool.

[0014] The device is fixed during operation by dividing the forces in the direction of the wall and floor of the pool.

[0015] An especially stable standing of the jet stream device is achieved when the first and second holding struts open up a plane which contains the main flow axis at the outlet of the housing.

[0016] In order to achieve secure footing independent from the wall of the pool, it is provided in an especially preferred embodiment of the invention that the second holding strut is connected with a second end in a preferably articulated manner with the standing foot. An especially stable construction can be achieved when the first and second holding struts form a triangular support together with the supporting foot.
Tilting of the holder in operation can be reliably prevented when an extension of the main flow axis intersects the base plate in one point at the outlet of the housing. In order to prevent tilting even in the case of a flatly set flow angle, it may be advantageous when, as seen in the direction of flow and in a plane view, the center of gravity of the jet stream device is arranged downstream of the center of the surface of the supporting foot, with preferably the housing protruding beyond the base plate in the direction of flow.

Secure standing can further be achieved when the standing foot can be fastened in a detachable manner with at least one suction cup to the floor of the pool.

In order to produce a water flow that is directed in an upwardly inclined manner, it can be provided in an embodiment in accordance with the invention that the housing is held in an articulated manner about a swiveling axis normally to the rotational axis of the propeller, with preferably an angle between the main flow axis at the outlet of the housing and the water surface being adjustable, which is $>0^\circ$, preferably $>5^\circ$, more preferably $>10^\circ$.

In order to enable adjustment to height and position, it is advantageous when the first and/or second holding strut is length-adjustable. It can further be provided that at least one articulation point of the first and/or second holding strut on the standing foot or the housing and/or one articulation point of the first holding strut on the second holding strut is adjustable.

The invention will now be explained below in closer detail by reference to the drawings, which show schematically:

FIG. 1 shows a jet stream device in accordance with the invention in a side view in a first embodiment;

FIG. 2 shows a jet stream device in accordance with the invention in a side view in a second embodiment;

FIG. 3 shows a jet stream device in accordance with the invention in a side view in a third embodiment, and

FIG. 4 shows a jet stream device in accordance with the invention in a side view in a fourth embodiment.

DESCRIPTION OF PREFERRED EMBODIMENTS

Parts with the same function are provided with the same reference numerals.

A portable jet stream device 4 is arranged in a swimming pool 1, whose wall is designated with reference numeral 2 and its floor with reference numeral 3, which jet stream device comprises a propeller driven by a drive motor in a housing 5. The propeller, which is not shown in closer detail, produces an upwardly inclined water flow 6, the main flow axis 6a of which encloses an angle $\alpha$ with $25^\circ$, with the surface 12 of the water. A person swimming in the water of the pool 1 is hit by a flow coming from below in an inclined manner, through which the full effect of the jet stream device 4 is applied.

The jet stream device 4 can optionally be fastened in a detachable manner via a suction cup to the floor 3 of the pool 1.

Reference numeral 16 designates an electric lead which is connected for example with a rechargeable battery 17. It is also possible to integrate the battery in the housing 10 of the jet stream device 4. It would also be possible to operate the device via another low-voltage source.

The housing 5 of the jet stream device 4 can be positioned via a holder 6 in the pool 1 at any desired position. The holder 6 comprises a pedestal-like standing foot 7 which is arranged in the embodiments as a base plate 7a or as a support frame for the jet stream device 4.

The housing 5 is connected via a first holding strut 8 with the housing 6. The holding foot 8 is preferably a swiveling support about a swiveling axis 9 and is pivotable about a swiveling axis 9 normally to the axis of rotation of the propeller. The jet stream device 4 can thus be adjusted to the needs of the swimming person.

In order to achieve a stable footing, the bottom side of the base plate 7a can be planar and have a closed surface, which means it is arranged without any bores or the like. When the base plate 7a rests flatly on the floor 3 of the pool, the hydrostatic forces acting alone on the base plate 7a and the own weight ensure a stable footing of the holder 6.

For the purpose of additional support, a support bracket 10 which is fixedly connected with the base plate 7a and rests on the pool wall 2 (FIG. 2) can be provided. Alternatively or in addition, the base plate 7a can have a straight support edge 10a on the side averted from the floor.

As an alternative to this, a second holding strut 11 which is connected with the first holding strut 8 or the housing 5 can be used for support on the pool wall 2, as shown in FIG. 1.

FIG. 3 shows an embodiment in which a first and second holding strut 11 is connected with the first holding strut 8 on the one hand and with the base plate 7a on the other hand, with the first holding strut 8, the second holding strut 11 and the base plate 7a forming a triangular support. The articulation point 8 of the second holding strut 11 can be arranged to be displaceable on the support strut 8, e.g. by a fixable sliding sleeve. The articulation points 8 and 11 of the first and second holding strut 8, 11 on the base plate 7a can be adjustable. Alternatively or in addition, the first or second holding strut 8, 11 can be length-adjustable in order to enable a change in height of the jet stream device.

Stable footing in operation is achieved especially when the extension of the main flow axis 6a of the flow 6 on the housing outlet 5a intersects with the base plate 7a in a point P, as is shown in FIG. 4. In order to ensure stable footing of the holder when the housing 5 is swivelled and with flat angle $\alpha$ between the main flow axis 6a and the water surface 12, it is advantageous when, as seen in the direction of flow, the center M of the surface of the base plate 7a is disposed before the center of gravity S of the jet stream device 4. The distance between the center M of the surface and the center of gravity S is designated with a. It is thus achieved that the reaction force of the propeller exerts additional pressure on the base plate 7a and presses the same against the floor of the pool. In accordance with FIG. 4, the housing 5 can also be arranged to be suspended in a swivelable manner on the first holding strut 8, which allows an especially compact and stable arrangement.

The flow 6 aimed upwardly towards the surface of the water comes with the advantage, in addition to the effect of increasing the footing force, that the jet stream device 4 is arranged in a powerful way on the one hand and can be positioned deep enough under the surface 8 of the water on the other hand so that no air is sucked in from the surface of the water. An optimal water flow 6 can thus be produced.
1. A portable jet stream device for swimming pools, comprising a housing in which a propeller is arranged which is driven by a drive motor, with the jet stream device having a holder for detachable positioning in the pool, said holder having a pedestal-like supporting foot which can be positioned on a floor of the pool and with which the housing is connected in a swivelable manner via at least one first holding strut, wherein the supporting foot is formed by a base plate parallel to the floor of the swimming pool.

2. The jet stream device according to claim 1, wherein a bottom side of the base plate is arranged to be planar and with a closed surface.

3. The jet stream device according to claim 1, wherein for lateral support the supporting foot comprises a support bracket on a side facing the wall of the pool, with the support bracket being arranged normally to the floor of the pool.

4. The jet stream device according to claim 1, wherein for lateral support the supporting foot comprises a straight support edge on the side facing the wall of the pool.

5. The jet stream device according to claim 1, wherein a second holding strut is provided for the lateral support of the first holding strut or the housing, with a first end of the second holding strut being connected with the housing or the first holding strut in an articulated manner.

6. The jet stream device according to claim 5, wherein the first and second holding struts open up a plane which contains a main flow axis at an outlet of the housing.

7. The jet stream device according to claim 6, wherein the second holding strut is connected with a second end in a articulated manner with the standing foot.

8. The jet stream device according to claim 7, wherein the first and second holding struts form a triangular support together with the supporting foot.

9. The jet stream device according to claim 6, wherein the second holding strut can be connected in a detachable manner with the wall of the swimming pool.

10. The jet stream device according to one of the claim 1, wherein the first holding strut is length-adjustable.

11. The jet stream device according to one of the claim 5, wherein the second holding strut is length-adjustable.

12. The jet stream device according to claim 1, wherein at least one articulation point of the first holding strut is adjustable on the standing foot.

13. The jet stream device according to claim 5, wherein the second holding strut is adjustable on the standing foot.

14. The jet stream device according to claim 5, wherein one articulation point of the second holding strut is adjustable on the first holding strut, with the articulation point being displaceable along the first holding strut.

15. The jet stream device according to claim 1, wherein the housing is held on the first holding strut in a swivelable manner about a swiveling axis normally to the rotational axis of the propeller, with an angle being adjustable between a main flow axis on a housing outlet and a water surface which is >0°.

16. The jet stream device according to claim 1, wherein the housing is held on the first holding strut in a swivelable manner about a swiveling axis normally to the rotational axis of the propeller, with an angle being adjustable between a main flow axis on a housing outlet and a water surface which is >10°.

17. The jet stream device according to claim 1, wherein the housing is held on the first holding strut in a swivelable manner about a swiveling axis normally to the rotational axis of the propeller, with an angle being adjustable between a main flow axis on a housing outlet and a water surface which is >10°.

18. The jet stream device according to claim 1, wherein at least in one position of the housing a main flow axis intersects the standing foot in one point in a region of a housing outlet.

19. The jet stream device according to claim 1, wherein the housing protrudes beyond the base plate in a direction of flow.

20. The jet stream device according to claim 1, wherein, as seen in a direction of flow and in a plan view, a center of gravity of the jet stream device is arranged downstream of a center of a surface of the supporting foot.

21. The jet stream device according to claim 1, wherein the standing foot can be detachably fastened at least with a suction cup to the floor of the pool.

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