GUIDING APPARATUS FOR OPERATING A POOL CLEANER

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ABSTRACT

This invention provides a guiding apparatus 10 for use in operating a pool cleaner. The apparatus 10 includes a housing configured for connection to a hose of the pool cleaner. The housing has front and rear parts 12, 14 configured to pivot in relation to each other about a zone of contact between the front and rear parts 12, 14. The apparatus 10 also includes a driven member having a ratchet 20 and an arm 22 housed within the housing and arranged to be driven by the to and fro motion of the hose. The apparatus 10 further includes a transducer housed within the housing, connected to the driven member, and adapted to transduce motion of the driven member to motion to be imparted to pivot the front and rear parts 12, 14 in relation to each other in order to influence movement of the body of the pool cleaner.
GUIDING APPARATUS FOR OPERATING A POOL CLEANER

FIELD OF THE INVENTION

[0001] This invention relates in general to pool cleaners. In particular, this invention relates to a method of operating a pool cleaner, and to a guiding apparatus for operating a pool cleaner.

BACKGROUND TO THE INVENTION

[0002] Pool cleaners, such as pool cleaners widely in use to clean swimming pools, pass water from a head in a pool cleaner body via a hose into and through a pump system of the pool. The flow stream of water is cyclically interrupted in the pool cleaner body which causes a corresponding, cyclic stop-start motion in the body and in turn causes a cyclic water hammer action and a cyclic to and fro motion in the hose. This hose is at least slightly resilient in a longitudinal direction such that its end, remote from the pool cleaner body, can be fixed to a rigid connecting member of a pump system. Said stop-start motion causes a pool cleaner body to move generally along the line of the hose portion proximate the body. Various ways and means are provided to cause the pool cleaner body to follow a random path and not a pattern such that the whole of the submerged pool surface is covered.

[0003] However, the Inventor has identified two problems in the kind of pool cleaner described. Firstly, the movement of the body is not in practice entirely random and follows a pattern which may be caused by a specific pool layout such that some portions of the submerged surface are covered excessively while other portions are neglected or not covered at all. Secondly, it does happen that a steady state condition comes about, especially when the body is in a corner of the pool, and the body gets stuck in one position.

[0004] The Inventor is aware of International Patent Application PCT/US98/10626 published under WO 98/53164. However, the apparatus described by this patent suffers from the disadvantages of being relatively flimsy and unnecessarily bulky. Furthermore, this apparatus has parts of the working mechanism thereof uncovered which is not only aesthetically displeasing but may be dangerous to users of the pool and may also lead to a reduced working lifetime of the apparatus. Yet further, this apparatus must be anchored to a weir of the pool in order to operate.

SUMMARY OF THE INVENTION

[0005] According to a first aspect of the invention there is provided a method of operating a pool cleaner which pool cleaner, in use, passes water from a head in a pool cleaner body via a hose into and through a pump system of a pool, the flow stream of water being cyclically interrupted in the pool cleaner body to cause a stop-start motion in the body and a cyclic water hammer action and a to and fro motion in the hose, the method including the steps of:

[0006] connecting a housing to the hose of the pool cleaner so that front and rear parts of the housing are arranged substantially in line with each other in substantially the direction in which the hose is received by the housing; and

[0007] mechanically, continually or continuously pivoting the front and rear parts in relation to each other in order to influence movement of the body of the pool cleaner accordingly.

[0008] By “mechanically” is meant that the step is effected “non-manually”.

[0009] The pivoting of the front and rear parts in relation to each other may occur in a cyclical oscillating manner.

[0010] The pivoting of the front and rear parts in relation to each other may occur in a substantially sideways manner.

[0011] The method may include the step of harnessing the to and fro motion of the hose in order to pivot the front and rear parts in relation to each other.

[0012] According to a second aspect of the invention there is provided a guiding apparatus for use in operating a pool cleaner which pool cleaner, in use, passes water from a head in a pool cleaner body via a hose into and through a pump system of a pool, the flow stream of water being cyclically interrupted in the pool cleaner body to cause a stop-start motion in the body and a cyclic water hammer action and a to and fro motion in the hose, the apparatus including:

[0013] a housing configured for connection to the hose of the pool cleaner, the housing including front and rear parts configured to pivot, in use, in relation to each other;

[0014] a driven member housed within the housing and arranged to be driven by the to and fro motion of the hose; and

[0015] a transducer housed within the housing, connected to the driven member, and adapted to transduce motion of the driven member to motion to be imparted to pivot the front and rear parts in relation to each other.

[0016] The apparatus may be configured to receive the hose of the pool cleaner through the housing. The housing may include outer connection means for connection to an outer surface of the hose of the pool cleaner.

[0017] Otherwise the apparatus may include a flexible pipe configured for connection to an end of the hose of the pool cleaner, the end of the hose being an end opposite the body of the pool cleaner. The pipe may be configured for connection to the pump system of the pool so that the pipe is able to pass water from the hose of the pool cleaner into and through the pump system of the pool.

[0018] The front and rear parts may be configured to pivot, in use, in relation to each other about a zone of contact between the front and rear parts.

[0019] The driven member may include a ratchet and an arm, a first end of the arm being connected to the ratchet to drive the ratchet. The arm may be configured to hang, in use, under the influence of gravity from the ratchet so that the to and fro motion of the hose, in use, causes the arm to rotate the ratchet thereby driving the ratchet.

[0020] A lower portion of the arm opposite the first end of the arm may be weighted so that, in use, the to and fro motion of the hose causes the ratchet to move to and fro while a free end of the lower portion remains relatively still which in turn causes the arm to rotate the ratchet thereby driving the ratchet. The arm may be in the form of a cradle.
hanging from the ratchet, a lower portion of the cradle being weighted so as to remain relatively still during the to and fro motion of the hose.

[0021] The ratchet may include a releasable connection device adapted to releasably connect to the first end of the arm in order to turn the ratchet in one direction when motion of the arm is in a first direction, and to disconnect the arm from the ratchet when motion of the arm is in a second direction opposed to the first direction.

[0022] The ratchet may include a releasable check device arranged to allow turning of the ratchet in said one direction only and to check the ratchet against rotation in a direction opposed to said one direction.

[0023] The transducer may include

[0024] an axle for the ratchet, the axle being connected in a fixed manner to the ratchet so that the ratchet, in use, drives the axle; and

[0025] a driven wheel having an axle, the driven wheel and the ratchet axle being configured so that the ratchet axle rotates the driven wheel about the driven wheel axle when the ratchet axle is driven by the ratchet.

[0026] The wheel may be a cog wheel and the ratchet axle may include a worm gear which co-operates with the cog wheel in order to rotate, in use, the cog wheel about the driven wheel axle.

[0027] In a first embodiment of the invention, the driven wheel may include a protrusion from a side surface of the driven wheel, the protrusion extending substantially parallel to the driven wheel axle and spaced a predetermined distance from the driven wheel axle.

[0028] Either one of the front or rear parts may include a slot extending substantially longitudinally within such part, the slot being shaped and configured for receiving the protrusion of the driven wheel thereby limiting movement of the protrusion to to and fro movement within the slot so that rotation of the driven wheel about the driven wheel axle causes the front and rear parts to pivot in relation to each other.

[0029] It is to be appreciated that rotation of the driven wheel about the driven wheel axle causes the protrusion to exert a cyclical, oscillating, lateral force to said front or rear part by way of the slot which in turn causes the front and rear parts to pivot in relation to each other.

[0030] The housing may be shaped and configured so as to receive the hose of a pool cleaner, or a flexible pipe connectable to an end of the hose of a pool cleaner, there through.

[0031] The housing is typically elongate in shape.

[0032] The housing may comprise

[0033] a mounting member on which the driven member and the transducer are mounted; and

[0034] an outer casing.

[0035] The mounting member and outer casing may be connected to each other by way of at least one hinge.

[0036] The outer casing may be configured to allow for pivoting of the front and rear parts in relation to each other.

[0037] The outer casing may include

[0038] front, middle, and rear portions which are made from a rigid material; and

[0039] two intermediate flexible portions located intermediate the front and middle portions of the casing and the middle and rear portions of the casing, respectively, so that the front and rear portions of the casing are able to pivot in relation to each other.

[0040] In a second embodiment of the invention, the transducer may include a hinged elongate member, wherein

[0041] a first end of the elongate member is connected to a part of the outer casing associated with the front part of the housing, the connection being made at a pre-selected distance from a first hinge connecting the mounting member to the part of the outer casing associated with the front part of the housing;

[0042] a second end of the elongate member is connected to a part of the outer casing associated with the rear part of the housing, the connection being made at a pre-selected distance from a second hinge connecting the mounting member to the part of the outer casing associated with the rear part of the housing; and

[0043] the hinge of the elongate member is connected to the driven wheel at a predetermined distance from the driven wheel axle, so that, in use, rotation of the driven wheel is translated to substantially longitudinal to and fro motion of the elongate member resulting in pivoting of the part of the outer casing associated with the front part of the housing in relation to the part of the outer casing associated with the rear part of the housing.

[0044] The elongate member may include at least one transversely extending indent allowing resilient bending of the elongate member about the indent. This feature allows the elongate member to absorb at least a part of an impact applied to the guiding apparatus thereby reducing damage resulting from such impact.

[0045] The transducer may include at least one intermediate wheel configured intermediate the driven member and the driven wheel, the at least one intermediate wheel being driven by the driven member and being configured to in turn drive the driven wheel at a slower rate than if the driven member were to drive the driven wheel directly. The at least one intermediate wheel may be cogged. The at least one intermediate wheel may be configured so that the front and rear parts pivot in relation to each other at a period of about 50 minutes.

[0046] It is to be appreciated that rotation of the driven wheel about the driven wheel axle causes the elongate member to exert a cyclical, oscillating, torsion force between the part of the outer casing to which the first end of the elongate member is connected and the mounting member about the first hinge as well as a cyclical, oscillating, torsion force between the part of the outer casing to which the second end of the elongate member is connected and the
mounting member about the second hinge which in turn causes the part of the outer casing associated with the front part of the housing to pivot in relation to the part of the outer casing associated with the rear part of the housing.

0047] The apparatus may include a rigid guiding member having one part pivotally connected to the rear part of the housing and another part configured for pivotal connection to a weir of the pool, which rigid guiding member aids in influencing the movement of the body of the pool cleaner so as to reduce the possibility of the body of the pool cleaner getting stuck in a corner of the pool. The rigid guiding member may be V-shaped having the point thereof configured for pivotal connection to the weir of the pool and the two ends thereof pivotally connected to opposite sides of the rear part of the housing.

DETAILED DESCRIPTION OF THE INVENTION

0048] The invention will now be described, by way of non-limiting example, with reference to the accompanying diagrammatic drawings wherein

0049] FIG. 1 shows, in sectioned side view, a first embodiment of a guiding apparatus in accordance with the invention;

0050] FIGS. 2 and 3 show an isometric, partially transparent view of the guiding apparatus of FIG. 1;

0051] FIG. 4 shows an isometric, partially transparent view of the guiding apparatus of FIGS. 1 to 3 when provided with a flexible pipe;

0052] FIG. 5 shows, in isometric view, the guiding apparatus of FIGS. 1 to 4 when enclosed by a flexible outer casing;

0053] FIG. 6 shows, in isometric view, a second embodiment of a guiding apparatus in accordance with the invention;

0054] FIG. 7 shows an exploded view of the guiding apparatus of FIG. 6;

0055] FIG. 8 shows, in isometric view, the guiding apparatus of FIGS. 6 and 7 when housed within a lower portion of an outer casing;

0056] FIG. 9 shows, in isometric view, the guiding apparatus of FIGS. 6 and 7 when completely enclosed within an entire outer casing; and

0057] FIG. 10 shows an exploded view of the casing of FIG. 9.

0058] With particular reference to FIGS. 1 to 5, reference numeral 10 generally indicates a guiding apparatus. The apparatus 10 is for use in operating a pool cleaner which, in use, passes water from a head in a pool cleaner body via a hose into and through a pump system of the pool. The flow of water is cyclically interrupted in the pool cleaner body to cause a stop-start motion in the body and a cyclic water hammer action and longitudinal to and fro motion in the hose.

0059] The apparatus 10 includes an elongate housing configured for connection to the hose of the pool cleaner at a position remote from the body of the pool cleaner. The housing has front and rear parts 12, 14 arranged substantially in line with each other in the direction in which the hose is received. The front and rear parts 12, 14 are configured to pivot in relation to each other about a zone of contact between the front and rear parts 12, 14. In this embodiment of the invention, the zone of contact is defined by cooperating teeth 16, 18 of the front and rear parts 12, 14 respectively.

0060] The apparatus 10 also includes a driven member housed within the housing and arranged to be driven by the to and fro motion of the hose. The driven member includes a ratchet 20 and an arm 22. A first end of the arm 22 is connected to the ratchet 20 to drive the ratchet 20. The arm 22 is configured to hang under the influence of gravity from the ratchet 20 so that the to and fro motion of the hose causes the arm 22 to rotate the ratchet 20. A free end of the arm 22 opposite the first end of the arm 22 is weighted so that, in use, the to and fro motion of the hose causes the ratchet 20 to move to and fro while the free end of the arm 22 remains relatively still which causes the arm 22 to rotate the ratchet 20 thereby driving the ratchet 20.

0061] The arm 22 is typically in the form of a cradle hanging from the ratchet 20, a lower portion of the cradle being made from lead so as to weight the free end of the arm 22 to remain relatively still during the to and fro motion of the hose.

0062] The ratchet 20 includes a releasable connection device adapted to releasably connect to the first end of the arm 22 in order to turn the ratchet 20 in one direction when motion of the arm 22 is in a first direction, and to disconnect the arm 22 from the ratchet 20 when motion of the arm 22 is in a second direction opposed to the first direction. The ratchet 20 also includes a releasable check device arranged to allow turning of the ratchet 20 in said one direction only and to check the ratchet 20 against rotation in a direction opposed to said one direction.

0063] The apparatus 10 further includes a transducer housed within the housing, connected to the driven member, and adapted to transduce motion of the driven member to motion to be imparted to pivot the front and rear parts 12, 14 in relation to each other.

0064] The transducer includes an axle 24 for the ratchet 20. The ratchet axle 24 is connected in a fixed manner to the ratchet 20 so that the ratchet 20 drives the ratchet axle 24. The transducer also includes a driven wheel 26 having a driven wheel axle (not shown in FIGS. 1 to 5). The wheel 26 and the ratchet axle 24 are configured so that the ratchet axle 24 rotates the wheel 26 about the driven wheel axle when the ratchet axle 24 is driven by the ratchet 20. The wheel 26 is typically in the form of a cog wheel and the ratchet axle 24 typically includes a worm gear (not shown) which cooperates with the wheel 26 in order to rotate the wheel 26 about the driven wheel axle.

0065] In the embodiment of the invention shown in FIGS. 1 to 5, the wheel 26 includes a protrusion 28 from a side surface of the wheel 26. The protrusion 28 extends substantially parallel to the driven wheel axle and is spaced a predetermined distance from the driven wheel axle. The rear part 14 includes a slot 30 extending substantially longitudinally within the rear part 14 substantially in the direction in which the hose is received. The slot 30 is shaped and configured for receiving the protrusion 28 thereby limiting movement of the protrusion 28 to to and fro movement within the slot 30.
The ratchet axle 24 is connected to a holding member 52 in a manner which allows axial rotation of the ratchet axle 24 in relation to the holding member 52. The holding member 52 is configured to receive and hold the hose of the pool cleaner and in this way the to and fro motion of the hose is translated to the ratchet 20 thereby driving the ratchet 20 as described above. The holding member 52 is rigidly mounted to a mounting member 54 which is in turn connected to the front and rear parts 12, 14 of the housing by way of hinges 58. This enables the front and rear parts 12, 14 to pivot in relation to each other.

It is accordingly to be appreciated that rotation of the wheel 26 about the wheel axle causes the protrusion 28 to rotate about the wheel axle. As the longitudinal component of such rotation of the protrusion 28 is taken up by the slot 30, the lateral component of such rotation exerts a cyclical, oscillating, lateral force to the rear part 14 by way of the slot 30. This causes the front and rear parts 12, 14 to pivot in relation to each other about the co-operating teeth 16, 18.

With particular reference to FIGS. 4 and 5, the apparatus 10 optionally includes a flexible pipe 32 which extends through the housing. The pipe 32 is configured for connection, by way of connector 34, to an end of the hose of the pool cleaner, the end of the hose being an end opposite the body of the pool cleaner. The pipe 32 is also configured for connection, by way of connector 36, to the pump system of the pool so that the pipe 32 is able to pass water from the hose of the pool cleaner into and through the pump system of the pool.

However, it is to be appreciated that, in embodiments of the invention where the pipe 32 is not provided with the apparatus 10, the apparatus 10 is typically configured to receive the hose of the pool cleaner through the housing. The housing then typically includes outer connection means (not shown) for connection to an outer surface of the hose of the pool cleaner.

With particular reference to FIG. 5, the housing also includes a flexible outer casing 40. The casing 40 includes front, middle, and rear portions 42, 44, 46. The rear portion 46 is preferably locked to the pipe 32. The casing 40 also includes two rubber boots 48 aiding in holding the front, middle, and rear portions 42, 44, 46 together.

FIG. 5 also shows a rigid guiding member 90 of the apparatus 10, typically made from a rigid plastics material. The guiding member 90 is V-shaped and the point thereof is configured for pivotal connection to the weir of the pool and the two ends thereof are pivotally connected to opposite sides of the rear part 14 of the housing. The rigid guiding member 90 aids in influencing the movement of the body of the pool cleaner so as to reduce the possibility of the body of the pool cleaner getting stuck in a corner of the pool. It is to be appreciated that the rigid guiding member 90 also finds ready application in embodiments of the invention where the pipe 32 is not provided with the apparatus 10.

FIGS. 6 to 10 show a second, and preferred, embodiment of the invention incorporating many of the features shown in FIGS. 1 to 5. Accordingly, like reference numerals are used to indicate like or similar features.

In this embodiment of the invention, the protrusion 28 and slot 30 mechanism of the transducer shown in FIGS. 1 to 5 has essentially been replaced by an elongate hinged mechanism which works on the outer casing 40 as described hereafter. It is to be appreciated that other changes have also been made to the guiding apparatus 10 in order to facilitate the proper working of such elongate hinged mechanism.

Accordingly, in this embodiment of the invention, the transducer includes a hinged elongate member 60. A first end 62 of the elongate member 60 is connected via a hinge (not shown) to a part of the outer casing 40 (shown in FIGS. 8 to 10) associated with the front part 12 of the housing. This connection is made at a pre-selected, substantially transverse, distance from a first hinge 64 connecting the mounting member 54 to the part of the outer casing 40 associated with the front part 12 of the housing.

A second end 66 of the elongate member 60 is connected to a part of the outer casing 40 associated with the rear part 14 of the housing. This connection is made at a pre-selected, substantially transverse, distance from a second hinge 68 connecting the mounting member 54 to the part of the outer casing 40 associated with the rear part 14 of the housing. The hinge 70 of the elongate member 60 is connected to the driven wheel 26 at a predetermined distance from the driven wheel axle (indicated by reference numeral 72 in FIGS. 6 to 8), so that, in use, rotation of the driven wheel 26 is translated to substantially longitudinal to and fro motion of the elongate member 60 resulting in pivoting of the part of the outer casing 40 associated with the front part 12 of the housing in relation to the part of the outer casing 40 associated with the rear part 14 of the housing.

The elongate member 60 includes two transversely opposing transversely extending indents 74, 76 allowing resilient bending of the elongate member 60 about the indents 74, 76. This feature allows the elongate member 60 to absorb at least a part of an impact applied to the guiding apparatus 10 thereby reducing damage resulting from such impact.

Furthermore, the transducer optionally includes first and second coggled intermediate wheels 78, 80 configured intermediate the driven member and the driven wheel 26. The first intermediate wheel 78 is driven, in use, by the driven member via the axle 24. The first wheel intermediate wheel 78 in turn drives the second intermediate wheel 80 which in turn drives the driven wheel 26. It is to be appreciated that the first and second intermediate wheels 78, 80 are configured to drive the driven wheel 26 at a slower rate than if the driven member were to drive the driven wheel 26 directly. The first and second intermediate wheels 78, 80 are typically configured so that the front 12 and rear 14 parts pivot in relation to each other at a period of about 30 minutes.

It is to be appreciated that rotation of the driven wheel 26 about the driven wheel axle 72 causes the elongate member 60 to exert a cyclical, oscillating, torsion force
between the part of the outer casing 40 to which the first end 62 of the elongate member 60 is connected and the mounting member 54 about the first hinge 64 as well as a cyclical, oscillating, torsion force between the part of the outer casing 40 to which the second end 66 of the elongate member 60 is connected and the mounting member 54 about the second hinge 68 which in turn causes the part of the outer casing 40 associated with the front part 12 of the housing to pivot in relation to the part of the outer casing 40 associated with the rear part 14 of the housing. With particular reference to FIG. 8, the apparatus 10 also includes an outer elongate casing 40 for the housing. It is to be appreciated that FIG. 8 only shows a lower portion of the casing 40.

[0080] The casing 40 includes front, middle, and rear portions 42, 44, 46 which are made from a rigid plastics material. The casing 40 also includes two intermediate flexible portions 56, 58 made from a flexible plastics material. The portions 56, 58 are located intermediate the front and middle portions 42, 44, and the middle and rear portions 44, 46, respectively.

[0081] The intermediate flexible portions 56, 58 allow the front and rear portions 42, 46 to pivot in relation to each other. As the first end 62 of the elongate member 60 is connected to portion 56 and the second end 66 of the elongate member 60 is connected to portion 58, it is to be appreciated that this effectively facilitates pivoting of the front and rear parts 12, 14 of the housing in relation to each other.

[0082] FIGS. 9 and 10 show an entire casing 40 wherein the lower portion of the casing 40 shown in FIG. 8 has been connected to a like upper portion to form an entire casing 40.

[0083] It is further to be appreciated that the housing of the embodiment of the invention shown in FIGS. 6 to 10 is shaped and configured so as to receive the hose of a pool cleaner thereto through. The housing also includes two connection means (not shown), each located at opposite ends of the housing, for connection to the hose of the pool cleaner.

[0084] Each connection means includes a clip shaped and configured for clipping to a grooved outer surface of the hose.

[0085] It is to be appreciated that the invention is not limited to the precise constructional details as herein exemplified. In particular, it is to be appreciated certain features shown in combination with other features in one drawing can also be extended to other embodiments where these features can be combined with further features shown in other drawings.

[0086] The Inventor believes that the invention is advantageous in that it provides a compact, simple, neat, aesthetically pleasing, user-friendly, impact-absorbent and relatively inexpensive apparatus for guiding a pool cleaner body within a pool to reduce the possibility of the pool cleaner body omitting to clean certain portions of the submerged surface of the pool and to reduce the possibility of the pool cleaner body getting stuck in one position in a corner of the pool. Furthermore, the Inventor believes that the apparatus (excluding the flexible pipe in embodiments where the flexible pipe is provided with the apparatus) is versatile in that it need not be connected to the weir of the pool and can be connected to the hose (or the flexible pipe in embodiments where the flexible pipe is provided with the apparatus) anywhere between the weir and the pool cleaner body.

[0087] According to the Inventor, it is yet a further advantage that the apparatus is driven by means of energy associated with the pumping of water by means of the existing pool pumping system. Thus, in the embodiments illustrated, it will not be necessary to provide a dedicated power or energy source. It is however possible, still in accordance with the invention, to provide a dedicated power or energy source to drive the apparatus.

1. A method of operating a pool cleaner which pool cleaner, in use, passes water from a head in a pool cleaner body via a hose into and through a pump system of a pool, the flow stream of water being cyclically interrupted in the pool cleaner body to cause a stop-start motion in the body and a cyclic water hammer action and to and fro motion in the hose, the method including the steps of:

   connecting a housing to the hose of the pool cleaner so that front and rear parts of the housing are arranged substantially in line with each other in substantially the direction in which the hose is received by the housing; and

   mechanically, continually or continuously pivoting the front and rear parts in relation to each other in order to influence movement of the body of the pool cleaner accordingly.

2. A method as claimed in claim 1, wherein the pivoting of the front and rear parts in relation to each other occurs in a cyclical oscillating manner.

3. A method as claimed in claim 1, which includes the step of harnessing the to and fro motion of the hose in order to pivot the front and rear parts in relation to each other.

4. A guiding apparatus for use in operating a pool cleaner which pool cleaner, in use, passes water from a head in a pool cleaner body via a hose into and through a pump system of a pool, the flow stream of water being cyclically interrupted in the pool cleaner body to cause a stop-start motion in the body and a cyclic water hammer action and to and fro motion in the hose, the apparatus including

   a housing configured for connection to the hose of the pool cleaner, the housing including front and rear parts configured to pivot, in use, in relation to each other;

   a driven member housed within the housing and arranged to be driven by the to and fro motion of the hose; and

   a transducer housed within the housing, connected to the driven member, and adapted to transduce motion of the driven member to motion to be imparted to pivot the front and rear parts in relation to each other.

5. An apparatus as claimed in claim 4, which is configured to receive the hose of the pool cleaner through the housing.

6. An apparatus as claimed in claim 5, wherein the housing includes outer connection means for connection to an outer surface of the hose of the pool cleaner.

7. An apparatus as claimed in claim 4, which includes a flexible pipe configured for connection to an end of the hose of the pool cleaner, the end of the hose being an end opposite the body of the pool cleaner.

8. An apparatus as claimed in claim 7, wherein the pipe is configured for connection to the pump system of the pool so that the pipe is able to pass water from the hose of the pool cleaner into and through the pump system of the pool.
9. An apparatus as claimed in claim 4, wherein the housing comprises
a mounting member on which the driven member and the transducer are mounted; and
an outer casing connected to the mounting member by a way of at least one hinge, the outer casing being configured to allow for pivoting of the front and rear parts in relation to each other.

10. An apparatus as claimed in claim 9, wherein the outer casing includes
front, middle, and rear portions which are made from a rigid material; and
two intermediate flexible portions located intermediate the front and middle portions of the casing and the middle and rear portions of the casing, respectively, so that the front and rear portions of the casing are able to pivot in relation to each other.

11. An apparatus as claimed in claim 9, wherein the driven member includes a ratchet and arm, a first end of the arm being connected to the ratchet to drive the ratchet.

12. An apparatus as claimed in claim 11, wherein the arm is configured to hang in use, under the influence of gravity from the ratchet so that the to and fro motion of the hose, in use, causes the arm to rotate the ratchet thereby driving the ratchet.

13. An apparatus as claimed in claim 12, wherein a lower portion of the arm opposite the first end of the arm is weighted so that, in use, the to and fro motion of the hose causes the ratchet to move to and fro while a free end of the lower portion remains relatively still which in turn causes the arm to rotate the ratchet thereby driving the ratchet.

14. An apparatus as claimed in claim 13, wherein the arm is in the form of a cradle hanging from the ratchet, a lower portion of the cradle being weighted so as to remain relatively still during the to and fro motion of the hose.

15. An apparatus as claimed in claim 11, wherein the transducer includes
an axle for the ratchet, the axle being connected in a fixed manner to the ratchet so that the ratchet, in use, drives the axle; and
a driven wheel having an axle, the driven wheel and the ratchet axle being configured so that the ratchet axle rotates the driven wheel about the driven wheel axle when the ratchet axle is driven by the ratchet.

16. An apparatus as claimed in claim 15, wherein the wheel is a cog wheel and the ratchet axle includes a worm gear which co-operates with the cog wheel in order to rotate, in use, the cog wheel about the driven wheel axle.

17. An apparatus as claimed in claim 15, wherein the driven wheel includes a protrusion from a side surface of the driven wheel, the protrusion extending substantially parallel to the driven wheel axle and spaced a predetermined distance from the driven wheel axle.

18. An apparatus as claimed in claim 17, wherein either one of the front or rear parts includes a slot extending substantially longitudinally within such part, the slot being shaped and configured for receiving the protrusion of the driven wheel thereby limiting movement of the protrusion to and fro movement within the slot so that rotation of the driven wheel about the driven wheel axle causes the front and rear parts to pivot in relation to each other.

19. An apparatus as claimed in claim 15, wherein the transducer includes a hinged elongate member, wherein
a first end of the elongate member is connected to a part of the outer casing associated with the front part of the housing, the connection being made at a pre-selected distance from a first hinge connecting the mounting member to the part of the outer casing associated with the front part of the housing;
a second end of the elongate member is connected to a part of the outer casing associated with the rear part of the housing, the connection being made at a pre-selected distance from a second hinge connecting the mounting member to the part of the outer casing associated with the rear part of the housing; and
the hinge of the elongate member is connected to the driven wheel at a predetermined distance from the driven wheel axle, so that, in use, rotation of the driven wheel is translated to substantially longitudinal to and fro motion of the elongate member resulting in pivoting of the part of the outer casing associated with the front part of the housing in relation to the part of the outer casing associated with the rear part of the housing.

20. An apparatus as claimed in claim 19, wherein the elongate member includes at least one transversely extending indenter allowing resilient bending of the elongate member about the indenter.

21. An apparatus as claimed in claim 19, wherein the transducer includes at least one intermediate wheel configured intermediate the driven member and the driven wheel, the at least one intermediate wheel being driven by the driven member and being configured to in turn drive the driven wheel at a slower rate than if the driven member were to drive the driven wheel directly.

22. An apparatus as claimed in claim 4, which includes a rigid guiding member having one part pivotally connected to the rear part of the housing and another part configured for pivotal connection to a weir of the pool, which rigid guiding member aids in influencing the movement of the body of the pool cleaner so as to reduce the possibility of the body of the pool cleaner getting stuck in a corner of the pool.

23. An apparatus as claimed in claim 22, wherein the rigid guiding member is V-shaped having the point thereof configured for pivotal connection to the weir of the pool and the two ends thereof pivotally connected to opposite sides of the rear part of the housing.

24. (canceled)

25. (canceled)