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FIG. 1

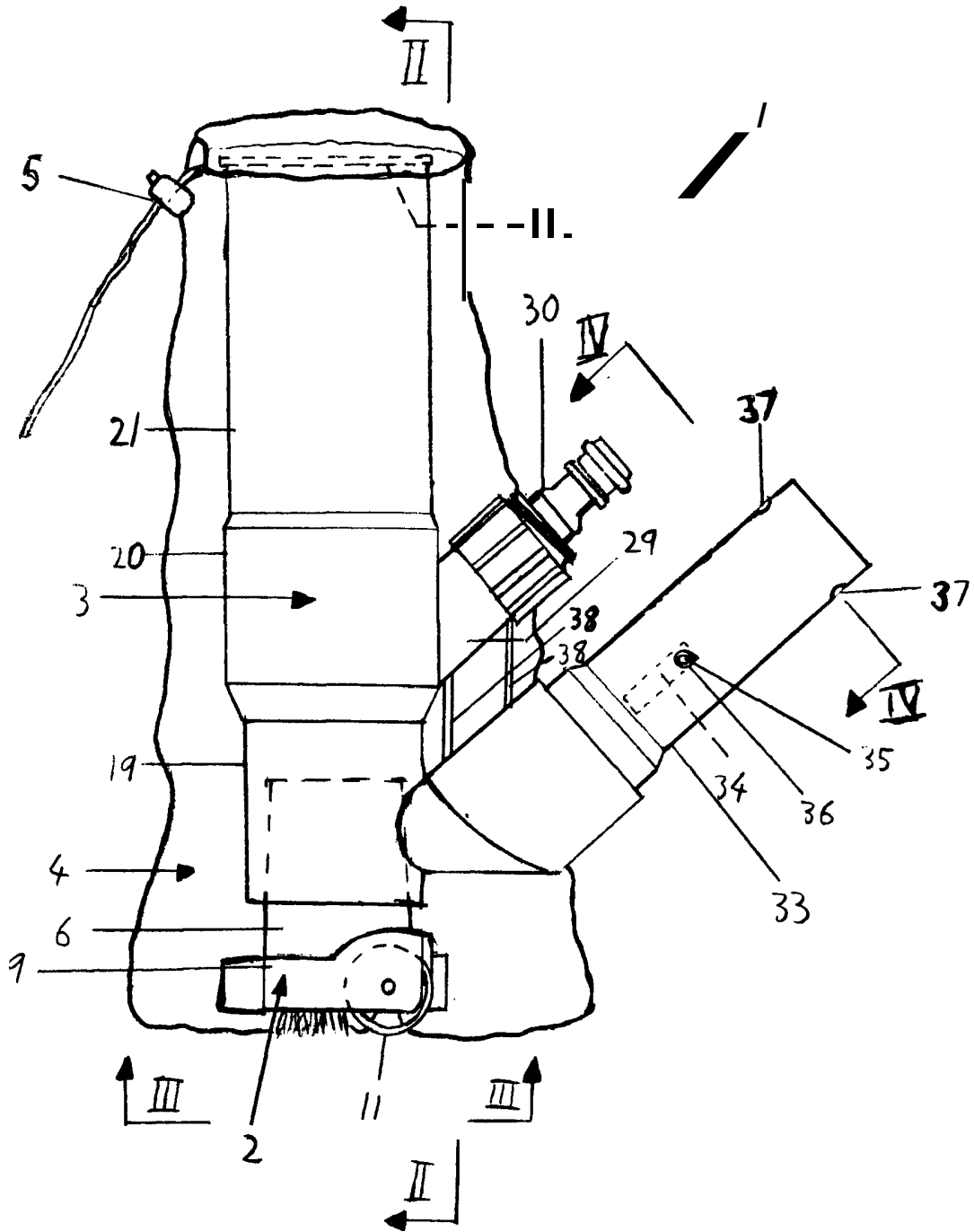


FIG. 2

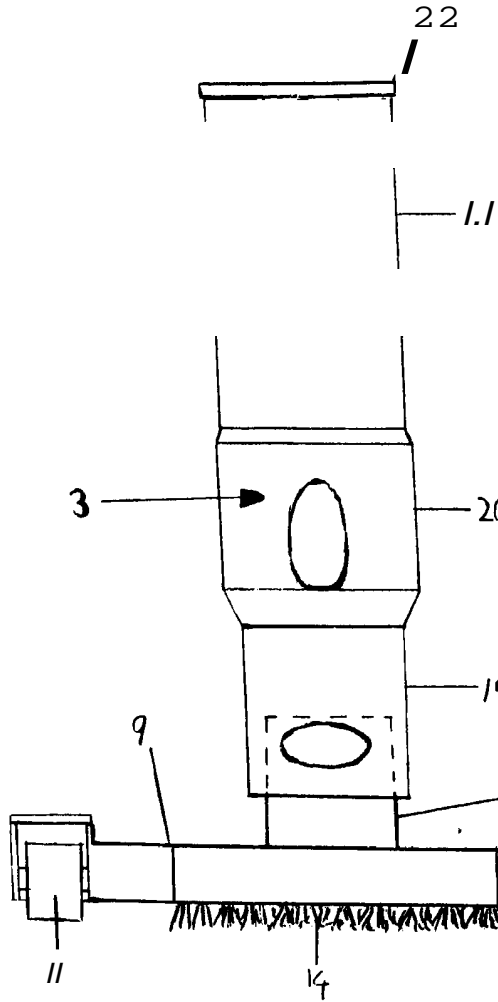


FIG. 4

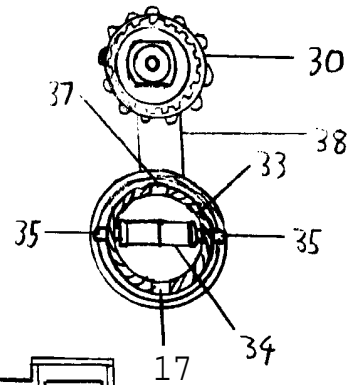


FIG. 3

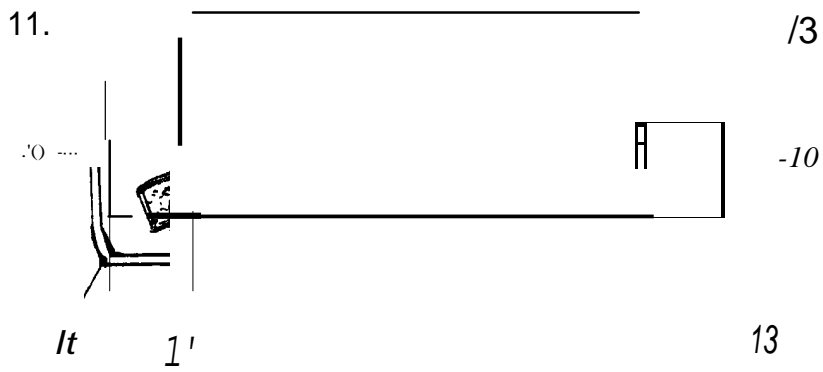


FIG. 5

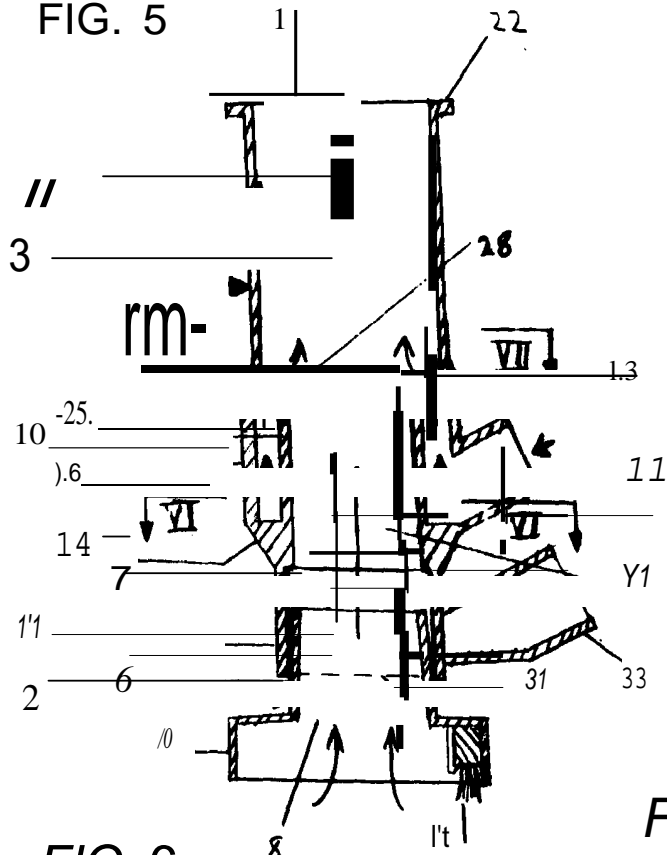


FIG. 6

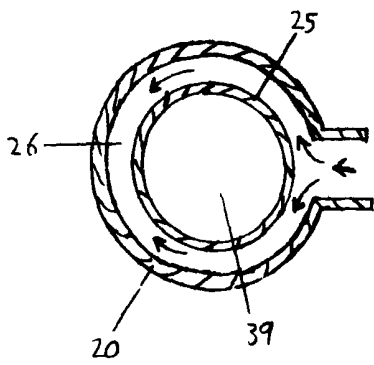
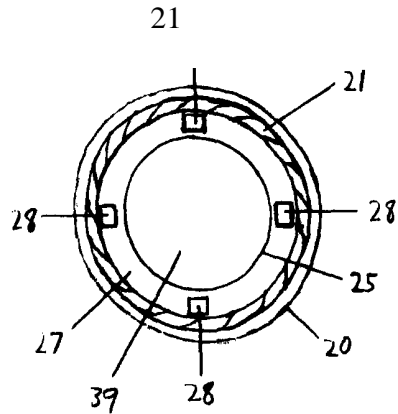


FIG. 7



DEVICE FOR CLEANING PONDS

The present invention relates to a device for cleaning ponds, pools or other bodies of water and, more particularly, garden ponds.

Garden ponds collect debris such as leaves and this debris should be regularly removed.

A known pond cleaning device is described in GB-A-2264043 wherein air is pumped by a compressor into a vacuum pipe which causes debris to be sucked up from the pond and EP-A-1188881 describes a suction device for pond cleaning that requires a pump. These devices require a motor to drive the compressor/pump which needs a readily available power source. Also, the motor has many parts which may require maintenance or replacing.

DE-A-19810236 describes a hand operated sludge removal pump for a garden pond which would be hard work to use and time consuming. If the pond is not small than the operator would have difficulty in operating the pump from the edge of the pond.

US-A-5542142 describes a pond cleaning device which has a covered air hole at an outlet. When the air hole is uncovered water and debris are drawn into a chamber, and the water and debris can be removed from the chamber when the device is taken from the pond to a disposal area. The device would be weighed down with water when it is taken from the pond and would thus be unwieldy.

An object of the present invention is to provide a device for cleaning ponds which alleviates at least one of the above-mentioned problems.

According to the present invention there is provided a cleaning device for removing debris from a body of water, comprising a hollow passage for receiving water and debris, having an inlet for water and debris and an outlet for passing said debris to collecting means, an annular chamber surrounding

the passage between the inlet and outlet, from which a plurality of restricted apertures open into the passage, and means for injecting water through the annular chamber and the restricted openings into the passage in a direction towards the outlet, to draw water and debris through the passage from the inlet to the outlet, the device including an elongated handle for lowering the device into the water and moving it along the bottom of the body of water and one or more brushes adjacent the inlet for dislodging debris from the bottom of the body of water.

The water injection means can be supplied simply by an outdoor tap which is connected to the device by a garden hose. No hand or motor driven pumps are required and consequently no motor power source is required.

The apertures are preferably located in an otherwise closed, downstream end of the chamber and are preferably spaced circumferentially around said closed end of the chamber. The passage and surrounding annular chamber may suitably be cylindrical.

The device may include means for collecting any debris in the water leaving the outlet from the passage and the debris collecting means may be removable from the device. The debris collecting means may comprise a water-permeable bag, for example a gauze bag. Virtually all water in the device will leave the device via the inlet and the water-permeable bag when it is removed from the pond and so the device will not be weighed down by water.

The ~~brushes dislodged~~~~device debris by~~ ~~may include one or more brushes for~~ brushing the bottom of the pond. The device may have at least one wheel or roller for rolling the device along the bottom of the pond. These items may be mounted on a removable fitting having an aperture which is connectable to the inlet to the passage.

An embodiment of the present invention will now be described, by way of example only, with reference to the accompanying drawings, in which:-

Figure 1 is a side elevational view of a device in accordance with one embodiment of the invention;

Figures 2 and 3 are a rear elevational view and a bottom view of the device, respectively, with a gauze bag of the device omitted.

Figure 4 is a sectional view of the device taken along lines IV-IV of Figure 1;

Figure 5 is a cross-sectional view of the device; and

Figures 6 and 7 are sectional views of the device taken along lines VI-VI and VII-VII of Figure 5, respectively.

Referring to Figure 1 of the accompanying drawings, a device 1 for cleaning a pond comprises a base section 2, a debris drawing section 3 and a gauze bag 4 with a pull string 5.

The base section 2 or fitting shown in Figures 1 to 3 is a rolling brush attachment similar to that of a conventional vacuum cleaner. The base section 2 has a hollow pipe 6 open at both ends 7,8 (see Fig. 5) and extending upwards from a substantially rectangular base 9. The pipe 6 is frusto-conical having a slightly smaller outer diameter at the end 7 furthest from the base 9. The base 9 has a skirting 10 and is supported by a pair of rollers 11 or wheels on two corners 12,13 of a length of the base 9. An arrangement of brushes 14,15,16 is clipped to the underside of the base 9 and extend beneath the skirting 10. One brush 14 is located between the rollers 11 and adjacent the skirting and two other brushes 15,16 are symmetrically located on either side of the lower opening 8 of the pipe 6 and are inclined away from the brush 14 so that their ends distal from the lower opening are adjacent the corners 17,18 opposite the corners 12,13 having the rollers 11.

Referring to Figures 5 to 7, the debris drawing section 3 comprises lower, middle and upper cylindrical tubes 19,20,21 defining a passage 39 from a debris inlet 31 at the lower end of the lower tube 19 to a debris outlet 32 at the top of the upper tube 21. The top of the upper tube 21 has an outwardly flanged rim 22 and the lower end portion 23 of the upper tube 21 is fixed within the middle tube 20. The middle tube 20 has a greater outer diameter than the lower tube 19 and has a tapered connection 24 to the lower tube 19.

The middle tube 20 surrounds an inner cylindrical tube 25 which extends from the tapered connection 24 between the middle and lower tubes 20,19 and

the inner tube 25 defines part of the passage 39. An annular chamber 26 is formed between the middle and inner tubes 20,25 and has a closed top 27 apart from a series of four square apertures 28 spaced circumferentially around the closed top 27. The annular chamber 26 has a water supply inlet 29 from the outside of the middle tube 20. The supply inlet 29 is inclined upwardly away from the middle tube 20 and has a conventional hose fitting 30 at its distal end as illustrated in Figures 1 and 4.

The lower tube 19 of the debris drawing section 3 has an internal diameter which is slightly larger than the outer diameter of the distal end of the pipe 6 of the base section 2. The lower tube 19 has a socket 33 on its outside which is inclined upwardly away from the tube 19 and struts 38 extend from the socket 33 to support the supply inlet 29 above. The socket 33 contains a V-shaped clip 34 illustrated in Figures 1 and 4 which is held within the socket 33 by a protrusion 35 extending from each distal top end of the V-shaped clip 34 through corresponding apertures 36 in the socket 33. The socket 33 also has a pair of opposing circular apertures 37 close to the distal open end of the socket 33.

To assemble the device 1, the frusta-conical pipe 6 of the base section 2 is pushed into the inlet 31 at the lower end of the lower tube 19 of the debris drawing section 3 until a firm connection is made between the two. The mouth of the gauze bag 4 is placed over the outwardly flanged rim 22 of the upper tube 21 of the debris drawing section 3 and the pull string 5 is pulled tight to attach the bag 4 to the debris drawing section 3. A hose is connected to the water supply and to the hose fitting 30 and a pole is inserted into the socket 33 until the end of the pole engages the clip 34. The device 1 is then lowered into a pond.

In use, the water supply is turned on and the device 1 is rolled along the bottom of the pond by the pole in the socket 33 with the brushes 14,15,16 brushing the bottom. Water from the water supply enters the chamber 26 via the supply inlet 29 and leaves the chamber 26 via the square apertures 28. The

apertures 28 form a restricted outlet so that the water leaving the chamber 26 is forced upwards creating a venturi effect similar to that of a laboratory aspirator. This injection of water from the chamber 26 draws pond water and debris into the passage 39 via the pipe 6 of the base section 2 inserted into the inlet 31.

5 The hose water and pond water leave the device 1 via the outlet 32 and the water is filtered by the gauze bag 4 which collects the debris. When the gauze bag 4 is full of debris, the water supply is turned off and the bag is removed from the device 1 and emptied. The bag 4 is then replaced on the device 1 and the above procedure can be repeated until the pond is cleared of debris.

10 Whilst a particular embodiment has been described, it will be understood that various modifications may be made without departing from the scope of the invention.

CLAIMS

1. A cleaning device for removing debris from a body of water, comprising a hollow passage for receiving water and debris, having an inlet for water and debris and an outlet for passing said debris to collecting means, an annular chamber surrounding the passage between the inlet and outlet, from which a plurality of restricted apertures open into the passage, and means for injecting water through the annular chamber and the restricted openings into the passage in a direction towards the outlet, to draw water and debris through the passage from the inlet to the outlet, the device including an elongated handle for lowering the device into the water and moving it along the bottom of the body of water.—and

~~2. A cleaning device according to claim 1 wherein means~~
are one or more brushes provided adjacent the inlet for dislodging debris from the bottom of the body of water.

23. A cleaning device according to claim 1 ~~or claim 2~~ wherein four said apertures are equally spaced around said passage.

34. A cleaning device according to claim 1 ~~or claim 2~~ wherein said restricted openings are positioned in an otherwise closed end of the annular chamber remote from the inlet.

45. A cleaning device according to claim ~~23~~ or claim 34 wherein the annular chamber ~~s~~ bears a fitting for the water supply.

56. A cleaning device according to claim 45 wherein the fitting is inclined upwardly away from the inlet end of the passage.

67. A cleaning device according to claim ~~45~~ or claim 56 wherein the fitting is provided with a clip to secure the water supply.

78. A cleaning device according to any preceding claim wherein the means for collecting the debris comprises a water permeable bag connected to the outlet.

89. A cleaning device according to claim ~~78~~ wherein the means for attachment of the water permeable bag is in the form of an outwardly projecting flanged rim surrounding the outlet.

9 10. A cleaning device according to any preceding claim ~~including one or more wherein said brush or~~ brushes is/are mounted on a removable fitting having an aperture which is connectable to the inlet to the passage.

1011. A cleaning device according to claim 910 wherein the removable fitting comprises a base section with a hollow pipe, open at both ends, for attachment to the inlet, a skirting at the lower end of the pipe and an arrangement of brushes on the underside of the base within the skirting.

1112. A cleaning device according to any preceding claim wherein a socket is provided on the outside of the passage for attachment of the elongated handle.

1213. A cleaning device according to claim 1112 wherein the socket is provided with a pair of circular apertures close to the distal open end of the socket for securing the elongated handle.

1314. A cleaning device according to claim 1112 or claim 1213 as dependent on any one of claims 5 to 7 wherein struts are provided between the water supply fitting and the socket to support the fitting.

1415. A cleaning device substantially as herein described with reference to the accompanying drawings.