forming mandrel, in the form of a conventional two-part die. Alternatively, the vane can be formed without a forming die whereby the cylindrical wall **54** of the pump casing is employed in the manner of a mandrel and, with the flat vane-forming ring R tightly received about the wall **54**, the split ends **62** and **64** of the ring R (which become the end edges of the vane **26**) are forced apart in opposite directions longitudinally along the wall **54** until the ring assumes the shape of the completed vane **26**.

The inside edge **56** of the ring tends to forcibly hug the wall **54** of the pump casing as it slides along the surface thereof, while at the same time the sheet metal of the ring progressively and automatically assumes a certain amount of slant or tilt shown in FIG. **2** without requiring any external force other than that which is inherently applied to it as the split ends of the ring are forcibly spread apart. Stated otherwise, the desired tilt angle is, to some extent, attained partially by longitudinally spreading the split ends **62** and **64** of the ring apart while the inside edge of the ring continues to hug the outer surface of the cylindrical wall **54**. Although it is possible that the flat sheet metal of the ring R may tilt in either direction during the stretching operation just described, if, at the commencement of the stretching operation, a slight impetus is imparted to the metal, it will continue to lean or tilt in the desired proper direction. When the ring R which is preferrably of heavy sheet metal, has attained the desired inclination as well as the desired longitudinal extent, the inside edge **56** may be welded in position on the cylindrical wall **54** and the assembly of the vane **26** will be complete.

For purpose of balance, two oppositely disposed vanes are secured to the cylindrical wall **54**. Since two vanes are employed and arranged 180° apart on the wall **54**, the assembly is effected by placing two of the split rings R on the wall **54** and then interlocking them in chain link fashion by opening up the slit **62** in either or both of the rings. Thereafter, the rings may be stretched in the manner described above, either successively or simultaneously, care being taken to maintain the rings in their opposed 180° relationship on opposite sides of the wall **54** which, as aforesaid, is employed as a mandrel to assist in the stretching operation. When the inside edges **56** are welded in position on the wall **54**, the assembly is complete.

From the above description it is believed that the nature and functioning of the aerating apparatus **10** will be fully understood and that the efficiency of the method by means of which it is constructed will be appreciated.

The invention is not to be limited to the exact arrangement of parts shown in the accompanying drawings or described in this specification as various changes in the details of construction may be resorted to without departing from the scope of the invention. For example, although the invention has been described in connection with the treatment of natural outdoor bodies or ponds of stagnant water, it is contemplated that the aeration apparatus **10** may, with or without modification as required, be employed for the purification of swimming pools, whether outdoors or indoors. In such an instance it may be found expedient to dispense with the entire outrigger support by journalling the distal end of assembly on a far wall of the pool. Alternatively, if the assembly is sufficiently short, the distal end thereof will require no support whatsoever. Additionally, if an increase in cost is not a factor, the vanes **26***a* and **26***b* may be individually fashioned on a mandrel and then subsequently applied to the cylindrical wall **54** of the pump casing, or they may be individually fashioned in suitable forming or pressing dies and subsequently removed therefrom, slipped over the wall **54** endwise, and finally welded in position along their inner edges **56**. Therefore, only insofar as the invention has particularly been pointed out in the accompanying claims is the same to be limited.

The disclosed apparatus also illustrates that efficient and effective conveying of fluids, whether liquid or granular form, can be obtained by means of a rotating helical screw, if the blades of the helix are pitched or canted at an angle, preferably 15 degrees, but with varying degrees of effectiveness, from 1 degree to 45 degrees, with respect to the normal to the concentric axis of rotation of the helix.

I claim:

1. Apparatus for aerating an unclean body of water comprising:

a hollow cylindrical casing including means for rotation at a substantially high speed, one end of said cylindrical casing being provided with an enlarged diameter portion having a cylindrical wall and which is submerged beneath the surface of the body of water, and an opposite end of said cylindrical casing disposed above the surface of the body of water,

said cylindrical wall being formed with a plurality of air outlet openings arranged therein in a helical row,

water impelling vane means secured to said cylindrical wall of said enlarged diameter portion for submersion beneath the surface of the body of water,

said vane means comprise at least one helical blade including one helix turn and having its inner edge continuously secured to said cylindrical wall along helix lines which follow the contour of said helical row of air outlet openings and which is spaced from such row by a slight distance,

said at least one helical blade being inclined throughout its entire length toward the opposite end of said cylindrical casing, at an acute angle with respect to the normal to the longitudinal axis of said cylindrical casing, and overlapping said row of air outlet openings,

the inner edge of said at least one helical blade having a diameter equal to the outside diameter of said cylindrical wall of said enlarged diameter portion, and the outer edge of said at least one helical blade having throughout its entire length the same outside diameter thereof, and

air inlet means disposed at the opposite end of said cylindrical casing for admitting air to the interior of said cylindrical casing for subsequent discharge through said air outlet openings.

2. Apparatus as claimed in claim **2** wherein said vane means comprises one or more helical blades inclined throughout its length at an angle of 15° to the longitudinal axis of the casing.

3. Apparatus as claimed in claim **1** wherein the angle of inclination of said helical blade is between 1° and 45°.

4. Apparatus as claimed in claim **1** comprising:

motor means for rotatably driving said cylindrical casing.

5. Apparatus as claimed in claim **4** comprising a mounting base for said motor means and