A Novel Design of W-Shaped Pipe-Climbing Robot

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Pipes that have tight structures can often be found in our daily lives but are difficult for human inspection and reparation. Therefore, the solution of using pipe-climbing robots is a more efficient way of solving the issue. However, not all robots are suitable for repairing pipes as pipes often vary in size. These different sizes make it challenging for normal pipe climbing robots, thus requiring robots that can adjust their size. This article presents a new type of self-adjusting pipe-climbing robots that is shaped in a “W”. This W-shaped robot is capable adjusting to a vibe range of pipe diameters, turning freely, and climbing vertically. It contains four joints connected through springs that are adjustable, allowing it to stretch and compress to adjust to the diameter of the pipe. Other features such as self-rotation by utilizing 3D printed silicon omni-wheels is also achieved, letting it to deliberately turn in the pipes. Through Bluetooth and WIFI connection, this robot can be navigated. This product can be is highly applicable in daily lives. Keywords: Pipe-climbing robot, pipe inspection, self-adjusting robot, climbing robot

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