AMENDED CLAIMS
in accordance with Art. 19 PCT

Claims

1. A climbing robot for travelling over adhesive surfaces with endless traction mechanisms (14) and, fastened to them at a distance, controllable adhesive feet (21) that circulate with the endless traction mechanisms (14) along guides (17) in the travel plane, by means of which the adhesive sides of their adhesive elements (15) always point towards the travel surface and wherein the adhesive elements (15) that support and move the climbing robot are switched "ON" and lowered onto the adhesive surface and all of the other adhesive elements (15) are switched "OFF" and raised from the adhesive surface, wherein the climbing robot has square running gear (11), **characterized in that** one foot plate (13) each with a guide (17) running around the edges for a multitude of adhesive feet (21) driven by traction mechanisms is arranged in two diagonally opposite corner areas (18) of the running gear (11), wherein the foot plates (13) are attached to a support bar (12) of the running gear (11) so as to be able to tilt, and that the adhesive feet (21) and therefore their adhesive elements (15) are routed through the guide (17) in such a way that they run in each case at a right angle around their corner area (18) of the square running gear (11) and along an arc (19) connecting the ends of this corner area (18), wherein both of the arcs (19) are on an inner circle enclosed by the square of the running gear (11) and the support bar (12) is designed as a crossbar with two symmetrical ends (16) to which the foot plates (13) are linked with the ability to tilt in such a way that the center of the support bar (12) coincides with the center of the imaginary inner circle.

2. Climbing robot according to Claim 1, **characterized in that** all of the adhesive elements (15) located in the sections of the guides (17) with the same direction as the direction of travel are switched "ON" and lowered for straightaway travel of the climbing robot and the endless traction mechanisms (14) move the adhesive elements (15) in the same direction (FORWARDS or BACKWARDS), all of the adhesive elements (15) located in the inner-circle sections of the guides (17) are switched "ON" and lowered for a rotary movement of the climbing robot and the endless traction mechanisms (14) move the adhesive elements (15) in the same direction (CLOCKWISE or COUNTERCLOCKWISE) and all of the adhesive elements (15) located in the sections of the guides (17) at a 90° angle to the direction of travel are switched "ON" and lowered for a travel to the right or to the left and the endless traction mechanisms (14) move the adhesive elements (15) in the same direction (RIGHT or LEFT).

3. Climbing robot according to Claim 1 or Claim 2, **characterized in that** the adhesive elements (15) are suction cups or switching magnets and every adhesive element (15) is at the end of a lifting cylinder (31) of a piston cylinder unit (30, 31) of an adhesive foot (21) that can be routed on a holder (20) around the foot plate (13) and that can be driven by the endless traction mechanism (14).

4. Climbing robot according to Claim 3, **characterized in that** the piston cylinder units (30, 31) and adhesive elements (15) are pneumatically and/or electromagnetically actuated and controlled by a higher-level control unit.

5. Climbing robot according to one of the above claims, **characterized in that** the support bar (12) carries a cover (1) for the climbing robot.

6. Climbing robot according to Claim 5, **characterized in that** the cover (1) supports an adapter (3) for an exchangeable work device (4).

7. Climbing robot according to Claim 1 or Claim 5, **characterized in that** the support bar (12) or the cover (1) supports a vertical, rotating or fixed shaft (22) for a device arm (23) of an optical inspection device (24).

8. Climbing robot according to one of the above claims, **characterized in that** the climbing robot carries a cleaning device (4) or an inspection device (24).

9. Climbing robot according to Claim 8, **characterized in that** the climbing robot, the cleaning device (4) and the inspection device (24) are capable of remote control.

Claims

1. A climbing robot for travelling over adhesive surfaces with endless traction mechanisms (14) and, fastened to them at a distance, controllable adhesive feet (21) that circulate with the endless traction mechanisms (14) along guides (17) in the travel plane, by means of which the adhesive sides of their adhesive elements (15) always point towards the travel surface and wherein the adhesive elements (15) that support and move the climbing robot are switched "ON" and lowered onto the adhesive surface and all of the other adhesive elements (15) are switched "OFF" and raised from the adhesive surface, wherein the climbing robot has square running gear (11), **characterized in that** the robot only has two foot plates (13), each with a guide (17) running around the edges for a multitude of adhesive feet (21) driven by traction mechanisms, wherein each foot plate is arranged in two diagonally opposite corner areas (18) of the running gear (11) and wherein the foot plates (13) are attached to a support bar (12) of the running gear (11) so as to be able to tilt, and that the adhesive feet (21) and therefore their adhesive elements (15) are routed through the guide (17) in such a way that they run in each case at a right angle around their corner area (18) of the square running gear (11) and along an arc (19) connecting the ends of this corner area (18), wherein both of the arcs (19) are on an inner circle enclosed by the square of the running gear (11) and the support bar (12) is designed as a crossbar with two symmetrical ends (16) to which the foot plates (13) are linked with the ability to tilt in such a way that the center of the support bar (12) coincides with the center of the imaginary inner circle.

2. Climbing robot according to Claim 1, **characterized in that** all of the adhesive elements (15) located in the sections of the guides (17) with the same direction as the direction of travel are switched "ON" and lowered for straightaway travel of the climbing robot and the endless traction mechanisms (14) move the adhesive elements (15) in the same direction (FORWARDS or BACKWARDS), all of the adhesive elements (15) located in the inner-circle sections of the guides (17) are switched "ON" and lowered for a rotary movement of the climbing robot and the endless traction mechanisms (14) move the adhesive elements (15) in the same direction (CLOCKWISE or COUNTERCLOCKWISE) and all of the adhesive elements (15) located in the sections of the guides (17) at a 90° angle to the direction of travel are switched "ON" and lowered for a travel to the right or to the left and the endless traction mechanisms (14) move the adhesive elements (15) in the same direction (RIGHT or LEFT).

3. Climbing robot according to Claim 1 or Claim 2, **characterized in that** the adhesive elements (15) are suction cups or switching magnets and every adhesive element (15) is at the end of a lifting cylinder (31) of a piston cylinder unit (30, 31) of an adhesive foot (21) that can be routed on a holder (20) around the foot plate (13) and that can be driven by the endless traction mechanism (14).

4. Climbing robot according to Claim 3, **characterized in that** the piston cylinder units (30, 31) and adhesive elements (15) are pneumatically and/or electromagnetically actuated and controlled by a higher-level control unit.

5. Climbing robot according to one of the above claims, **characterized in that** the support bar (12) carries a cover (1) for the climbing robot.

6. Climbing robot according to Claim 5, **characterized in that** the cover (1) supports an adapter (3) for an exchangeable work device (4).

7. Climbing robot according to Claim 1 or Claim 5, **characterized in that** the support bar (12) or the cover (1) supports a vertical, rotating or fixed shaft (22) for a device arm (23) of an optical inspection device (24).

8. Climbing robot according to one of the above claims, **characterized in that** the climbing robot carries a cleaning device (4) or an inspection device (24).

9. Climbing robot according to Claim 8, **characterized in that** the climbing robot, the cleaning device (4) and the inspection device (24) are capable of remote control.