DRILLING AND GROUTING METHOD AND APPARATUS

FIELD OF THE DISCLOSURE

The present disclosure generally relates to the field of ground drilling and grouting, and more particularly to reverse circulation rotary drilling.

More specifically, the present disclosure concerns a drilling and grouting device, a drilling and grouting machine comprising such drilling and grouting device, and a drilling and grouting method using such machine.

The apparatus and method according to the present disclosure are particularly intended to improve poor-quality ground to facilitate tunnelling or excavating. The apparatus and method may also be used in dam rehabilitation or remedial work on or around dams among other things. Due to its versatility, the apparatus can be utilized when drilling directly from ground level or from a barge on off shore applications.

BACKGROUND OF THE DISCLOSURE

Reverse Circulation rotary drilling, also known as "RC Drilling" or "Dual Wall Drilling", has been used to sink boreholes into the ground for example, for mineral exploration.

Figure 13 shows an exemplary device for such Reverse Circulation rotary drilling, employing a dual wall pipe 122 comprising an outer drill rod 124 with an inner rod 126 located inside said outer drill rod 124 and provided with a drill bit 140 at its distal end.

A drilling fluid, which may be high pressure air or water, is passed in the outer flow path defined between the outer and inner rods 124, 126, down to the drill bit 140. Once the drilling fluid hits said drill bit, the cuttings mixed with the said fluid are forced up to the center of the bit and back up the inner tube 126. Cuttings are so returned to the surface and collected for later use.

This kind of tooling, however, is not appropriate for grouting operations.