

(54) Title of the invention : A rock drilling equipment for transverse drilling in a tunnel

(51) International classification :E21B0007020000, H01L0051520000, E21D0021000000, G01N0029440000, E21B0033080000 (86) International Application No :NA Filing Date :NA (87) International Publication No : NA (61) Patent of Addition to Application Number :NA Filing Date :NA (62) Divisional to Application Number :NA Filing Date :NA		(71)Name of Applicant : 1)INDIAN INSTITUTE OF TECHNOLOGY (INDIAN SCHOOL OF MINES), DHANBAD Address of Applicant :Dhanbad - 826004, Jharkhand, India Dhanbad ----- ----- Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)Dr. Vivek Bajpai Address of Applicant :Department of Mechanical Engineering, Indian Institute of Technology (Indian School of Mines), Dhanbad, Dhanbad - 826004, Jharkhand, India Dhanbad ----- 2)Mr. Dhiraj Bajpai Address of Applicant :Department of Mechanical Engineering, Indian Institute of Technology (Indian School of Mines), Dhanbad, Dhanbad - 826004, Jharkhand, India Dhanbad ----- 3)Mr. Prince Anand Address of Applicant :Department of Mechanical Engineering, Indian Institute of Technology (Indian School of Mines), Dhanbad, Dhanbad - 826004, Jharkhand, India Dhanbad ----- 4)Prof. Rabindra Kumar Sinha Address of Applicant :Department of Mining Engineering, Indian Institute of Technology (Indian School of Mines), Dhanbad, Dhanbad - 826004, Jharkhand, India Dhanbad -----
--	--	--

(57) Abstract :
The present invention relates to a rock drilling equipment (100) for transverse drilling in a tunnel. The introduces a lightweight, electric-operated drill equipment with a unique drilling head (102) mounted on a vibration isolation padding (104). The uniqueness of the present invention lies in the incorporation of ultrasonic wave technology via an ultrasonic wave generator (103) connected to the drilling head (102). This generator (103) emits high-frequency waves that propagate through the drilling head (102) into the rock (101), inducing controlled micro cracks and fractures. This head (102) vibrates at various frequencies, creating micro cracks that lead to rock fractures without direct force. The isolation padding (104) absorbs vibrations, reducing load on the base plate (107), and allowing a low-powered hydraulic system to drive the drilling rod assembly. This portable equipment (100), manageable by two to four individuals, can navigate complex tunnel sections, offering a practical and cost-effective drilling solution. [figure 1]

No. of Pages : 14 No. of Claims : 2