(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :08/04/2025

(21) Application No.202531034319 A

(43) Publication Date : 18/04/2025

(54) Title of the invention : Specialized fixture for enhanced precision and stability in Friction Stir Welding operations

(51) International classification :B23K0020120000, B23K0037040000, B23K0031120000, B25B0005000000, F21S0008020000

(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)Brainware University, Kolkata
Address of Applicant :398, Ramkrishnapur Rd, Near Jagadighata Market, Barasat, Kolkata, West Bengal 700125 ---------- ----------
Name of Applicant : NA
Address of Applicant : NA
(72)**Name of Inventor :**
1)Mr. Sayon Dey
Address of Applicant :Assistant Professor, Mechanical Engineering, Brainware University, 398 Ramkrisnapur Road, Barasat, Pincode- 700125 ---------- ----------
2)Dr. Rayapati Subbarao
Address of Applicant :Associate Professor, Mechanical Engineering, National Institute of Technical Teachers' Training and Research, Kolkata, Pincode- 700106 ---------- ----------

(57) Abstract :
The present invention relates to a specialized fixture designed to enhance precision and stability in Friction Stir Welding (FSW) operations. The fixture includes a robust backing plate (220 mm × 220 mm × 12 mm) that provides structural support and improves heat dissipation during the welding process. A unique clamping mechanism comprises three plates: two fixed plates (Plate 1 and Plate 3) for lateral support and a slidable plate (Plate 2) for adjustable positioning of the weld plates. This design ensures precise alignment, minimizes movement, and prevents misalignment during welding. The fixture is adaptable to various weld plate sizes and thicknesses, offering flexibility for different materials, including aluminum, magnesium, and copper. Fasteners and wing nuts allow for quick assembly and removal, reducing setup time. The invention improves weld quality, reduces defects, and enhances overall operational efficiency in precision welding applications. .
Accompanied Drawings [Fig. 1-6]

No. of Pages : 23 No. of Claims : 10