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(57) Abstract :
[027] The invention presents a tungsten-carbide tool to reduce consumption of workpieces in friction stir welding (FSW). The present invention comprising of a Tungsten-carbide is incorporated on its functional surfaces, delivering elevated hardness, resistance to wear, and diminished workpiece utilization in the welding process, a specific arrangement of tungsten-carbide elements intended to curtail material consumption in the friction stir welding procedure, ensuring effectiveness and eco-friendly operation and an adaptable lubrication system that responds to welding conditions, delivering efficient cooling and mitigating wear caused by friction on both the tool and workpieces. The FSW tool, enhances heat dissipation during welding, thereby reducing wear on both the tool and workpieces. The FSW tool provides flexibility in tungsten-carbide grades across various sections of its structure, enabling customized hardness and wear resistance in specific areas and further diminishing workpiece consumption. Accompanied Drawing [FIG. 1-2]

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