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Sheet Metal/Rod Bending, Grinding and Grill Design Machine

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Abstract: *In small-scale industries and workshops, multiple machines are often required for various mechanical operations, leading to increased costs, energy consumption, and space utilization. This project introduces a fully manual multipurpose machine that can perform rod bending, grinding, and grill design operations simultaneously without requiring external power. The machine operates through a foot-pedal-driven chain, cycle, and sprocket mechanism, ensuring efficient power transmission while maintaining ease of use. The design focuses on cost-effectiveness, portability, and eco-friendliness, making it a viable solution for small workshops, rural areas, and on-site applications where electricity is limited or unavailable. The paper discusses the design, working mechanism, advantages, and potential applications of this innovative machine, highlighting its benefits in reducing operational costs and promoting sustainable mechanical operations.*

Keywords: Multipurpose machine, manual operation, rod bending, grinding, grill design, foot pedal, chain drive, sprocket mechanism, cost-effective, eco-friendly, small workshops, sustainable manufacturing