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Fabrication of a Cradle-Based Water Lifting Mechanism

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Abstract: *Water lifting equipment has long been essential for home, commercial, and agricultural applications. In this research project, a cradle-based reciprocating pump-operated water lifting mechanism that combines oscillatory motion and mechanical leverage is designed, built, and its performance evaluated. Because the system is designed to provide an efficient, cost-effective, and energy-independent alternative to conventional water pumps, it is particularly well-suited for off-grid and rural areas with restricted access to fuel-driven systems or power. The mechanism makes it possible for a reciprocating pump to operate with minimal physical effort by utilising the concepts of mechanical advantage, counterbalancing, and gravitational force. The constructed prototype is put through testing to evaluate its operational stability, sustainability, and pumping efficiency. The usage of cradles for water lifting in irrigation, gardens, and schools is covered in this essay. The most important agricultural requirement is irrigation. Centrifugal pumps are used in daily life to give water to the garden, wasting electricity. In a similar vein, people and kids use cradles for reading newspapers and relaxing, respectively, which causes energy waste when swinging in a cradle. In order to raise water in communities, gardens and schools, we connect this energy waste to reciprocating plunger-style pumps. In these projects, we utilise pumps of the plunger type to suction water up from the water supply through inlets, and then we discharge the water into the garden through outlets.*

Keywords: Reciprocating Pump, Cradle, Connecting Link, Swinging, Water lifting

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