PROTOTYPE DESIGN COLLECTION

SERIES 4

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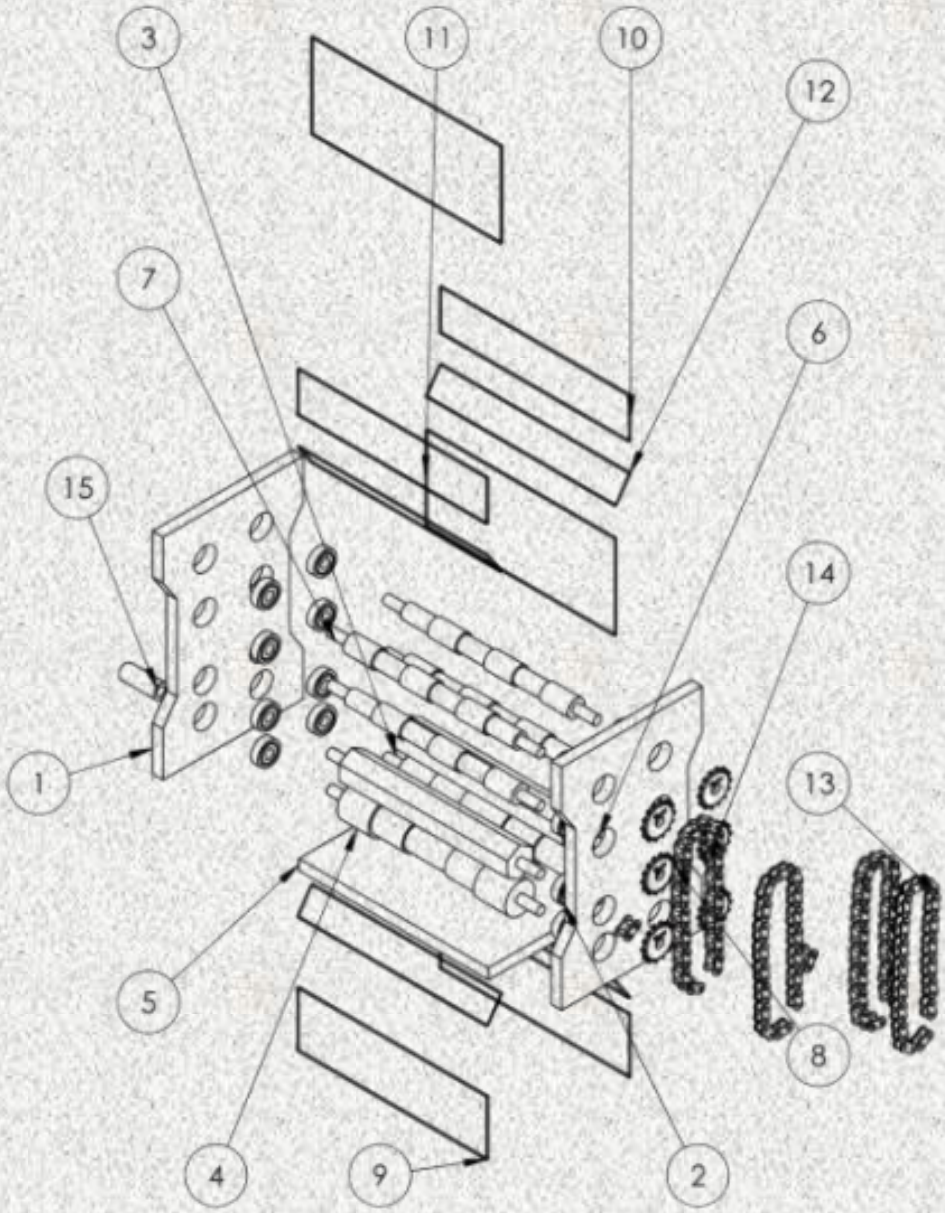
Prototype Design Collection

Series 4



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FOREWORD

This digital book on Prototype Design Collection Series 4 (PDC Series 4) is published as a reference design for mechanical engineering students. The designs presented experience a few phases of analysis before fabrication of prototype. Each project summarises the project description, prototype, figures, and design parameter. The design products vary in tools or equipment for household, workshop, entrepreneur, etc. Suggested material and detail of prototype dimension are also mentioned in this book.

It is hoped that this book will assist the students to have more ideas on innovation design products in the future.

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CHAPTER 18

Design and Fabrication of 2-in-1 Sand Sieving Machine

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PROJECT DESCRIPTION

Sand sieving is a crucial process in construction, manufacturing, and other industrial applications where fine and coarse particles must be separated to ensure optimum material used. Conventional sieving methods, which often rely on manual labor, are time-consuming, inefficient, and physically demanding. Thus, this project aims to design and fabricate a 2-in-1 sand sieving machine, which integrates both manual and motorized operations to enhance efficiency and flexibility. The combination of manual and automated sieving mechanisms makes the system cost-effective, reducing labor thus improving productivity. This machine operates using a roller sieving mechanism, where a rotating cylindrical sieve filters sand particles based on size. As the roller rotates, finer sand particles pass through the mesh while larger impurities are separated, ensuring high-quality sieved sand. In manual mode, the user rotates the roller by hand, while in motorized mode, an electric motor drives the roller, automating the sieving process for improved efficiency and reduced labor effort. For the fabrication part, the process involves designing the product, selecting raw materials, and shaping them through machining and forming.

Keywords: *Sand Sieving, Sieving*

PROTOTYPE

DESIGN PARAMETER