

UNIVERSITI TEKNOLOGI MARA

**DESIGN AND FABRICATION OF
STAIR CLIMBING TROLLEY**

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ABSTRACT

This project describes the design and construction of a stair-climbing trolley to improve the movement of products over uneven terrain, notably staircases. The growing need for effective logistics solutions in the residential, commercial, and industrial sectors demands the creation of novel instruments that decrease physical strain and increase mobility. The trolley is designed with a unique wheel layout that allows it to easily ascend and descend stairs. It has a lightweight yet durable frame made of high-strength materials, assuring longevity and convenience of use. The design has a simple user interface that allows for straightforward use even by persons with limited physical strength.

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TABLE OF CONTENTS

	Page
CONFIRMATION BY SUPERVISOR	ii
AUTHOR'S DECLARATION	iii
ABSTRACT	iv
ACKNOWLEDGEMENT	v
TABLE OF CONTENTS	vi
LIST OF TABLES	viii
LIST OF FIGURES	ix
LIST OF ABBREVIATIONS	xi
CHAPTER ONE : INTRODUCTION	1
1.1 Background of Study	1
1.2 Problem Statement	2
1.3 Objectives	2
1.4 Scope of Study	2
1.5 Significance of Study	3
CHAPTER TWO : LITERATURE REVIEW	4
2.1 Benchmarking/Comparison with Available Products	4
2.2 Review of Related Manufacturing Process	7
2.3 Patent and Intellectual Properties	8
2.4 Summary of Literature	10
CHAPTER THREE : METHODOLOGY	11
3.1 Overall Process Flow	11
3.2 Detail Drawing	13
3.3 Engineering Calculation and Analysis	22
3.4 Bill of Materials and Costing	26
3.5 Fabrication Process	27

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

A trolley is a small wheeled vehicle designed for transporting items by being pushed or pulled. They are often utilized to move heavy loads with minimal effort from the user. Push trolleys, also called push carts or hand trucks, are common tools across various industries and locations, facilitating the easy movement of goods. However, while push trolleys enhance mobility and efficiency, they do have some drawbacks. One significant disadvantage is the physical effort required to operate them effectively. Transporting large or bulky items over long distances or uneven surfaces can be physically demanding, leading to fatigue and strain for the operator. Unlike climbing trolleys, push trolleys depend solely on human strength, making them less suitable for tasks that involve heavy or constant lifting. As a result, their capacity to transport items is limited; larger loads may necessitate multiple trips or additional equipment. Moreover, push trolleys can encounter accessibility challenges in tight spaces or confined areas, restricting their usability in certain situations. In response to these issues, stair-climbing trolleys present an effective solution. Their importance lies in their ability to enhance productivity, safety, and accessibility across different environments. Whether used by delivery personnel transporting packages, maintenance workers carrying tools, or individuals with mobility challenges accessing public areas, these trolleys offer a versatile and user-friendly option for overcoming stair-related obstacles. [1][2]