

**UNIVERSITI TEKNOLOGI MARA**

**DESIGN AND FABRICATION OF A  
MULTIPURPOSE TROLLEY**

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## **ABSTRACT**

Carrying heavy materials from one place to another is always challenging especially if it involves going up a set of stairs. To eliminate this difficulty, 3-wheel stair trolley will be designed to reduce the amount of work done by a person to carry the load up the staircase. This multifunctional trolley can also be used to get to high places. It is also easy to keep it in storage as it can be folded and will consume less space if u compare it to a normal trolley. The main structure of this trolley is the tri wheels that is connected to a connecting rod which enable us to carry the load up and down the steps and help lessen our energy used. Besides that, it also eases the movement of trolley when going on irregular surfaces such as holes, bumps, etc. This trolley contains 6 wheels, 3 on each side which are set in a triangular pattern. The uppermost wheel rests on the upper step while the other 2 wheels set on the lower step. This allows you to apply leverage as you pull the trolley up the stairs.

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# TABLE OF CONTENTS

	<b>Page</b>
<b>CONFIRMATION BY SUPERVISOR</b>	<b>ii</b>
<b>AUTHOR'S DECLARATION</b>	<b>iii</b>
<b>ABSTRACT</b>	<b>iv</b>
<b>ACKNOWLEDGEMENT</b>	<b>v</b>
<b>TABLE OF CONTENTS</b>	<b>vi</b>
<b>LIST OF TABLES</b>	<b>vii</b>
<b>LIST OF FIGURES</b>	<b>ix</b>
<b>LIST OF ABBREVIATIONS</b>	<b>x</b>
<b>CHAPTER ONE : INTRODUCTION</b>	<b>1</b>
1.1 Background of Study	1
1.2 Problem Statement	1
1.3 Objectives	2
1.4 Scope of Study	2
1.5 Significance of Study	3
<b>CHAPTER TWO : LITERATURE REVIEW</b>	<b>4</b>
2.1 Benchmarking/Comparison with Available Products	4
2.2 Related Manufacturing Process	7
2.3 Sustainability/Ergonomic Related Items	8
2.4 Patent and Intellectual Properties	9
2.5 Summary of Literature	10
<b>CHAPTER THREE : METHODOLOGY</b>	<b>12</b>
3.1 Overall Process Flow	12
3.2 Detail Drawing	15
3.3 Engineering Calculation and Analysis	24
3.4 Bill of Materials	32

# **CHAPTER ONE**

## **INTRODUCTION**

### **1.1 Background of Study**

Trolley is equipment used to move heavy loads from one place to another. It can reduce the human burden in their daily lives. This device is commonly used by industries and families to transport physical products. Trolleys are often used by those who organize and stock merchandise in retail stores and by those who want to move stuff in their houses. When used properly, trolley can protect people from having back injuries and other health problems that can result from lifting and carrying heavy loads.

### **1.2 Problem Statement**

Lifting heavy objects to upper stories from the ground are not painless jobs, especially where there are no lifting facilities (elevator, conveyer, etc.). Most of the buildings are structurally congested and do not have elevators or escalators. This project can introduce a new option for the transportation of loads over the stairs. The stair climbing hand trolley can play an important role in those areas to lift loads over a short height. Lifting objects, loads such as books, food, grains etc. To store above the ground level, or even patients to move upper level from ground is not easy job, especially where there are no lifting facilities (elevator, conveyer, etc.) Moreover, in most of the buildings in the world does not have elevators or escalators. In this case human labours are the only solution. Labour is becoming costly as well as time consuming in the developed countries, where growth rate is getting negative. This problem can be solved if a vehicle can lift loads while traveling through stairs. The project introduces a new option for the transportation of the loads over the stairs.