

Introduction

The Tri wheel stair climber can climb a stepped path (like stairs) with its modified wheel structure. Not only on the stairs but can also move with load over flat or rocky surface.

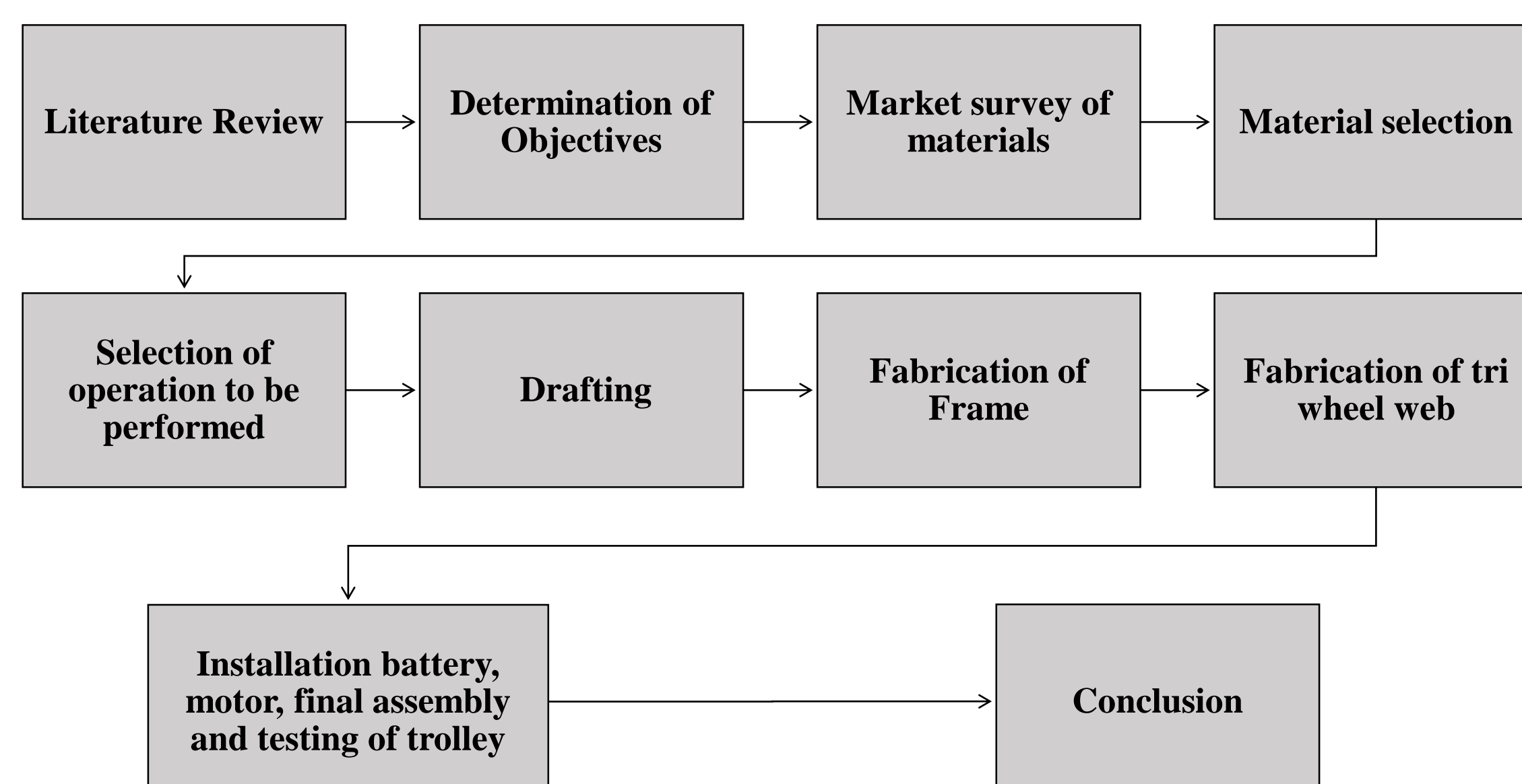
Most of the buildings of the country are structurally congested and unavailing of elevator facility in construction area.

Project Objectives

After the fabrication of Tri wheel stair climber will be able:

- To lift the load on upstairs with less effort.
- To run smoothly on uneven surfaces.
- To operate safely.
- To be ergonomic and easy for use.

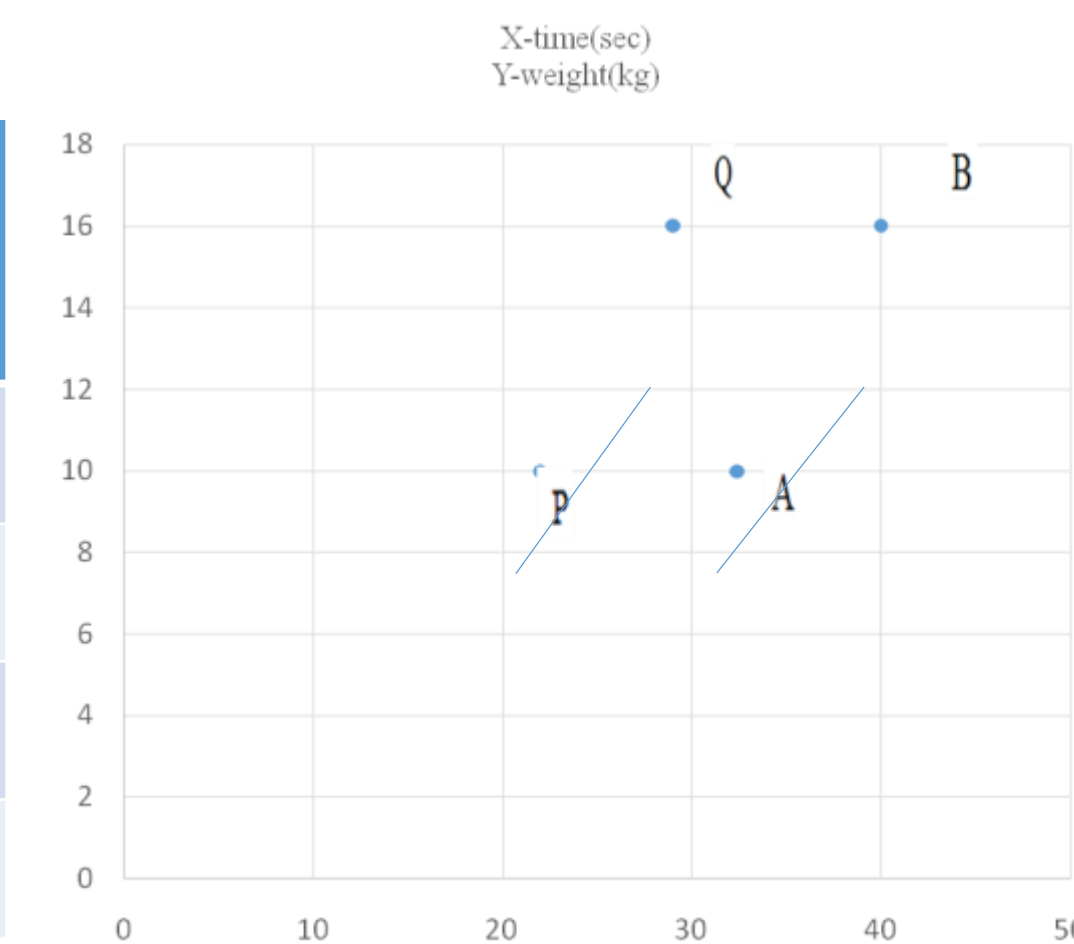
Methodology



Results and Discussion

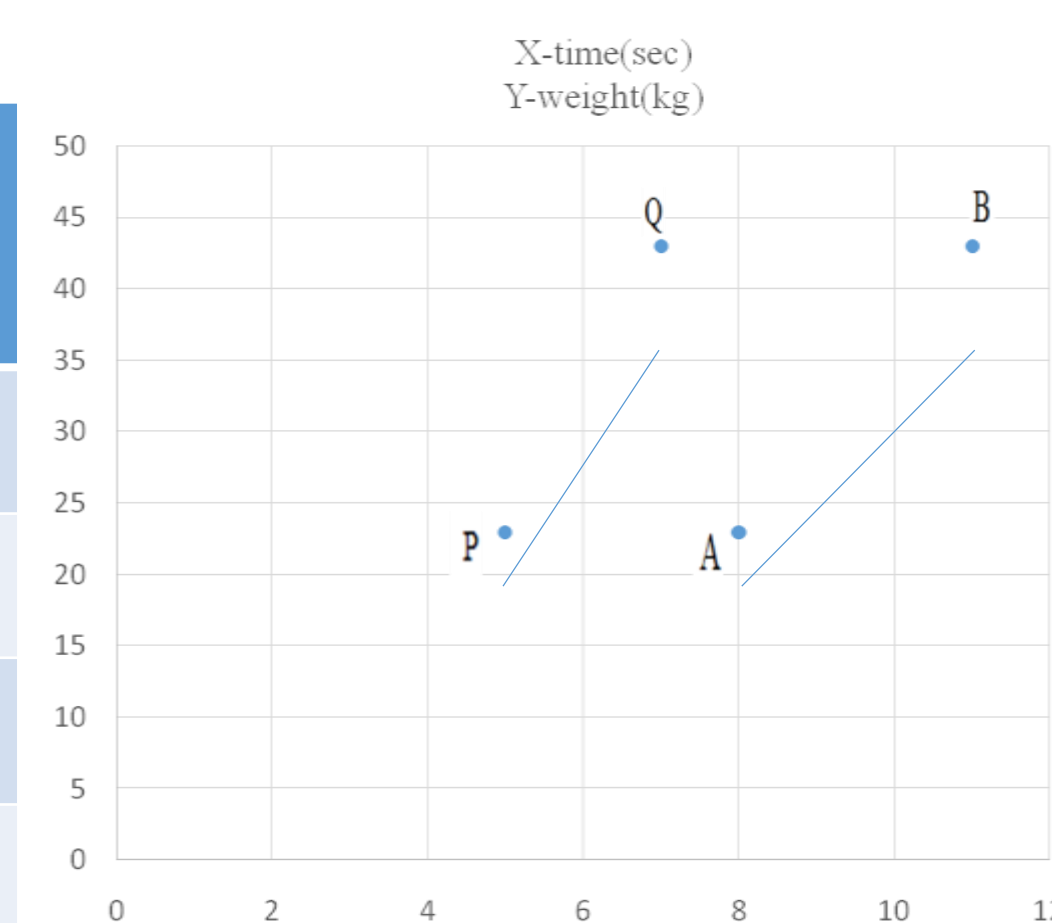
First motor (12 V, 4.5 rpm)

Condition	Steps	Average length of steps(in m)	Load	Time (in sec)
Step up	4	1.2	16	40
	4	1.2	10	32.4
Step down	4	1.2	16	29
	4	1.2	10	22



Second motor(12V,28rpm)

Condi on	Steps	Average length of steps(in m)	load	Time(in sec)
Step up	4	1.2	43	11
	4	1.2	23	8
Step down	4	1.2	43	7
	4	1.2	23	5



Result discussion

1 ST DC MOTOR	2 ND DC MOTOR
RPM: 4.3	RPM: 28
12 VOLT	12 VOLT
WEIGHT: 700gm	WEIGHT: 1kg
CAPACITY : 20kg	CAPACITY: MORE THAN 43 KG
LOW POWER	HIGH POWER
STEP UP TIME: 40sec	STEP UP TIME: 11sec
STEP DOWN TIME: 29sec	STEP DOWN TIME: 7sec

- During testing second motor(12V,28rpm) is able to bear greater load and taking lesser time than the first motor(12V,4.3rpm).

-During step down the time is less as compared to step up because we are working with the gravity in step down and working against in step up condition.

Images



Side view

Front view

Conclusions

- The main aim of the stair climber project is to decrease the human effort which is effectively achieved.
- The climber is able to run smoothly on uneven surfaces.
- The climber is ergonomic and easy to use.
- Doing better work with lessor effort has been the main objectives of human beings in any field.

References

- Nafis A.H, Chowdhury, Linda R.I., and Akhtar S.,(2010),Design and Manufacturing of a Stair Climbing Vehicle
- P.jey Praveen Raj, P.M. Mohamed Fuge,R Paul Caleb,G Natarajan,(2016), Design And Fabrication of Stair Cimbing Trolley,Vol 3, PP 89-102

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