DESIGN AND FABRICATION OF ECONOMIC PATIENT BED ATTACHMENT

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SUPERVISOR DECLARATION

"I hereby declare that I have read this thesis and in my opinion this report is suffiecient in term of scope and quality for the award of the degree of Bachelor of Mechanical Engineering (Design and Innovation)."

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This report is submitted in
fulfillment of the requirements for the award of
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DECLARATION

"I hereby declare that the work in this thesis is my own research except for summaries and quotations which have been duly acknowledged."

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DEDICATION

To my beloved parents

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ABSTRACT

Home health care is important for patients that being discharged from the hospital. The position of the patient is one of the aspects that need to be considered during the home health care. The position of the patient is based on how he or she lying on the bed. Hospital bed is needed during the home health care for recovery process of the patient but the price of the hospital bed is expensive. The hospital bed cannot be afforded by poor or average family. In order to solve this problem, economic patient bed attachment is going to be developed. This economic patient bed attachment can be attached on the standard single bed, so it is means that the patient does not need to buy the whole hospital bed. The function of the economic patient bed attachment is to give the comfortable position to the patient that is helpful in recovery process of the patient. Besides that, the angle of the economic patient bed attachment can be adjusted. In order to redesign the economic patient bed attachment, there are several characteristics that need to be considered such as cost, strength, safety, weight of the product and lifetime of the product. Other than that, the analysis on the economic patient bed is carried out using SOLIDWORK software to make sure that the design is safe to use for the patient. Lastly, a lot of research will be carried out in order to make sure that the economic patient bed attachment will be low in cost but high in safety factor.

ABSTRAK

Penjagaan lanjutan dirumah adalah penting bagi pesakit-pesakit yang telah keluar dari hospital. Semasa penjagaan lanjutan di rumah dilakukan, posisi pesakit merupakan aspek yang perlu diambil kira. Posisi pesakit adalah bergantung kepada cara mereka baring di atas katil. Semasa penjagaan lanjutan di rumah dilakukan, katil hospital diperlukan tetapi harganya adalah mahal. Katil hospital tidak mampu dimiliki oleh keluarga yang kurang berkemampuan dan miskin. Oleh yang demikian, bagi menyelesaikan masalah tersebut, penyandar katil yang ekonomik akan dibuat atau direka. Penyandar katil ini boleh diletakkan di katil bujang dan ini bermaksud pesakit tidak perlu membeli katil hospital. Fungsi utama penyandar katil ini ialah untuk memberi keselesaan posisi kepada pesakit yang mana posisi ini akan membantu dalam prosess pemulihan. Selain itu, penyandar katil ini juga boleh berubah-ubah sudut mengikut keselesaan pesakit. Di dalam membina atau merekabentuk penyandar katil ini, beberapa factor perlu diambil kira seperti kos, kekuatan, keselamatan, berat penyandar katil dan jangka hayat penyandar katil. Selain itu, analisis terhadap penyandar katil juga dijalankan menggunakan software SOLIDWORK untuk memastikan rekaan penyandar katil ini selamat digunakan oleh pesakit. Pelbagai kajian akan dijalankan dalam memastikan penyandar katil ini berharga murah tetapi mempunyai tahap keselamatan yang tinggi.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

In this chapter, the background of the project is being explained. The problem statement of the project is being identified. Other than that, the objectives and the scopes of the project are briefly explained. This chapter was explained briefly in order to make people understand what this project all about.

1.2 BACKGROUND

Hospital bed or patient bed is designed for hospitalized patients and health care purpose. The hospital bed or patient bed consists of several features which are adjustable bed height, adjustable head elevator, adjustable feet elevator, adjustable side rails and buttons.

The function of the adjustable bed height is to increase or decrease the height of the bed according to patient's comfort. Besides, the adjustable head elevator is function to change the position of the head elevator from 0 degree angle up to 90 degree angle. By using this adjustable head elevator, patients do not need to put so much effort to change the position. Other than that, the adjustable feet elevator is function to increase and decrease the height of the feet elevator. Side rails are function to avoid the patient from fall from the bed. The buttons feature is function to move the adjustable bed height, adjustable head elevator and adjustable feet elevator automatically.

1.3 PROBLEM STATEMENT

The cost of the hospital bed or patient bed is expensive and it cannot be afforded by average and poor families while the standard single bed is not suitable for home health care because of its position that cannot be adjusted. Due to high cost of the hospital bed or patient bed, the standard single bed is going to be modified by attaching the portable economic patient bed attachment. By doing this modification, patients will undergo home health care process on the standard single bed without need to buy an expensive hospital bed or patient bed. The research will be carried out in order to ensure the safety and to reduce the cost.

1.4 OBJECTIVES

The main objective of this project is to redesign an economic patient bed attachment. Besides that, the objective is to analyse the structure of the economic patient bed attachment. Lastly, the objective of this project is to fabricate economic patient bed attachment.

1.5 SCOPES

Every project has their own scopes and this project also has its own scopes. There are a few scopes of this project. The scope of this project is to study the strength of the economic patient bed attachment by doing structural analysis by using SOLIDWORK or ANSYS software. Besides that, the scope of this project is to study on how to design high quality product. Other than that, study on the manufacturing process of the product to undergo fabrication process is also one of the scopes. Lastly, the scope is to study the mechanism of the economic patient bed attachment.