Redesigning and Fabrication of Multi Tree Climber

INTRODUCTION

In olden some humans are naturally able to climb the trees without the help of any equipment because the foot is like the monkey foot. And then the rope is used to climb the tree. But not all the humans have the ability to climb the tree with the help of the rope. Even the professional climber are can't able to climb the tree safely, because human life is more important than any other things. So the need of safety and less human fatigue and even the common people can also use with the help of this project.

The project is on redesigning and fabrication of multi tree climber. This project will definitely ensure the tree climber safety. Redesigning is based on the ergonomic considerations which reduce human fatigue while working with the multi tree climber. Normally the professional climbers can only able to climb the trees. But with the help of this device the common people can able to climb the tree with the high level of safetiness. Generally skilled workers are able to climb the tall trees to harvest the coconut or palm without any safety device. Falling from high trees is common in India. The workers employed to more amount of musculoskeletal disorders .As human life is the greatest concern which ensures safety would have more value addition in the field of engineering. Initially there are numerous concept proposed on this multi tree climber.

Various designs with various concepts have been proposed in this multi tree climber. Each one have different designs: one with standing designs and the other with sitting design. The sitting design has three different models. Each of the models is different from one another. One model is based on both the frames are made up of metal. The other one is made up of ropes. The third one is made up of chain instead of ropes. In the first model the top frame is made up of beam which is used to hold the tree. In the next two models the ropes and chains are used to hold the tree.

There is another model which is standing type is also used to climb the tree. The multi tree climbing device is now the promising device which is very useful to many of the common people. On olden days only the professional climbers are able to climb the tree so we have to hire them for climbing the tree. Only the less amount of coconut can be able to pluck from their coconut tree, because the traditional method will ask greater human effort and thus leads to the human fatigue. So only a minimal period of time we can able to work with the traditional method.

It is not only for the purpose of coconut. There are so many byproducts from the coconut like

coir, foam, coconut oil etc. This is also used to check the condition of the tree like ALB insect. So for that purpose also the multi tree cliber can be used. Multi tree climbers are used for these many purposes.

But with the help of multi tree climbing device we can can achieve all these requirements. It will not cause any human fatigue during working it. So a large period of time we can work with this multi tree climber.

SCOPE

With the help of this multi tree climber the one can increase the rate of production. An average human can climb as many trees as possible with this instrument. Compared to traditional climbing methods this will increase the rate of production of coconut so that the farmer or the one who uses it can increase their income. This will also ensure safety to the climbers and also reduce their fatigue.

OBJECTIVES

The main objective is to make multi tree climber of following features

- Less weight

  The product must be of lesser weight for easy carrying purpose. Light weight is very suitable for lifting it while using it on the tree.

- Less cost

  The manufacturing cost should be reduced so that there will be reduce in cost with same profit.

- Reliable strength

  The product must be of reliable strength as this is mainly regarding human life. The capacity of this climber to withstand load is to be improved.

- Ergonomically suitable

  This will give more comfort to the users which reduces their fatigue and musculoskeletal disorders.

PROBLEM STATEMENT

The main aim is to redesign the multi tree climber that will improve it more ergonomically which reduces human fatigue and also add more safety to the users.

As far as the human survey we have taken the common problem which is proposed by the people is the bar which is used to sit on it is of like elliptical structure which cause irritation and pain during the long period of sitting and working on the beam. An additional safety is added to this climber to ensure the safetiness of the climber

LITERATURE SURVEY

The literature survey has been studied for the need of multi tree climber. Various design has been proposed according to the needs and comfort. This shows the increase in demand of tree climber which will give more safety and high production rate.

CONCEPTUAL DESIGN

The design for the multi tree climber has to be drawn using cad software.It consists of two frames top frame and bottom frame .The top frame has to be redesigned with the seat to give more comfort to the users. The additional safety is achieved by locking between the two frames. The locking has been done with the help of locking mechanisms. The safety is added to keep the top and bottom frames in control with it.

ANALYSIS

After the completion of conceptual design, the design has to be analyzed by applying loads to the frame. This will gives the information about how much load the frame can able to withstand and also the failure point. It is used to analyze the load capacity of the frame. The analysis can be done with the help of ANSYS.

ERGONOMIC ANALYSIS

In this the design has to be imported in the CATIA software. The software is selected according to the use and the accuracy of the simulation. This can be done by RULA analysis. RULA (Rapid Upper Limb Assessment) is performed and the rule score is predicted by the software. According to the score, the tree climber can be assessed. The RULA score will give you how

much the design is good for the human usage. If the RULA score is very less the design is good.

FABRICATION

After the conceptual design, analysis and ergonomical consideration of th multi tree climber has been done the fabrication of it can be carried out.