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Design and Fabrication of Coconut Tree Climber

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Abstract- Primary goal of the study is to design a coconut tree climbing device for farmers and residents. It is very difficult to climb on coconut tree manually due to the constant cylindrical structure and single stem. In other type of trees there will be branches for holding and to support the climber. A professional climber with proper training only could able to climb coconut tree. As the educational background of Indian youth is increasing, most of the people may hesitate to come in climbing profession. Final concept was selected by customer preference. A working prototype of final concept has made to validate the concept. The result of final model is checked by the customer to validate the usability issues, safety measures and its function. The proposed concept is lighter than those existing by about 30% and is expected to be of lower cost on account of aluminium used in its construction in lieu of steel.

Keywords: - climbing device, cylindrical structure and single stem, aluminium etc.

I. INTRODUCTION

In olden days most of the activities were done manually. Nowadays most of the activities which include human efforts are either replaced or automated by the use of machines or other kind of equipment's. One such approach is being given in the area of Cultivation and Harvesting of Coconuts

The coconut palm is essentially a tropical crop. Appropriately referred as "The Tree of Life" by villagers, every part of the coconut is utilized in one or the other way.

Tender coconut water is a delicious and healthy drink Systematic efforts to evaluate agronomical harvesting practice of coconut climbing of labors by manual climbing and machine climbing methods is necessary.

Therefore, to make the coconut tree climbing equipment suitable for the workers, due attention needs to be given to their capabilities and limitations while designing.

Therefore, certain attempts have been made by us to do the same by designing the tree climber.

II. WORKING AND DESIGN

It has got mainly two assemblies of similar construction. The user has to co-ordinate these two assemblies simultaneously by using hands and legs to climb on coconut tree.

In this construction, the user has to stand and operate the device. Initially the steel rope wires of both top and bottom assembly has to be looped with the tree and has to be locked.

Then the user can stand by placing foot on both assemblies and has to hold on the handles provided. As the user lift the assembly by foot and raise the either assembly by hand the steel rope will get loosen and when he push back with foot after reaching to a particular height it will get tighten. By this process the user can climb to the tree easily.

A design is a plan or specification for the construction of an object or system or for the implementation of an activity or process, or the result of that plan or specification the form of a prototype, product or process. The verb to design expresses the process of developing a design.

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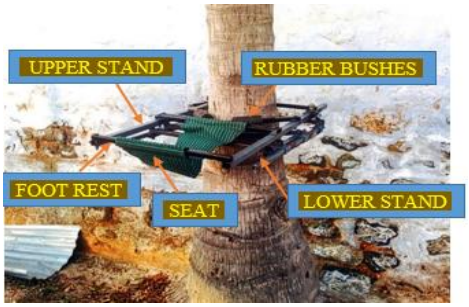

Fig 1. **Text Here Fig Title.**


Fig 2. **Text Here Fig Title.**


Fig 3. **Text Here Fig Title.**

III. MATERIALS AND METHODS

The developed tree climbing device must ensure the following requirements. It should withstand enough loads exerted by climber. It should accommodate all kinds of climber. It should provide effective gripping over a wide range of tree diameters. It should conform to the shape of the tree trunk as much as possible for effective gripping. It should distribute the gripping forces uniformly over the tree surface to prevent damage to the tree surface and to prevent wear and tear of the gripping aids. It should grip the tree securely without any possibility of accidental failure.

The climbing device was working as first class lever type principle. The important parameters that are associated with the design of tree climbing devices are crop parameter (tree trunk diameter) and climbing device parameter (anthropometric data of climber).

IV. CONCLUSION

The machine is built by following the natural phenomena present before us. Machine works on timely gripping and release of the tree by the two metal wire ropes locked to the moving frame. By this design, the structure is able to carry a load of 100kg and anyone can use it easily.

At the beginning it is time consuming but with continuous use and practice it will reduced the time required for the Climbing. It is flexible to change the height of the equipment up to 100mm according to the requirement of the user. It has easy maintenance. This structure will be beneficial for middle class family with its affordable cost.

The design and erection of this equipment involved a great deal of effort to make the project successful and useful. Comparing to the other coconut and palm tree climbing equipment's, we are additionally given safety belt, wooden seat &rubber gripper for the user safety purpose.

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