DESIGN AND FABRICATION OF AUTOMATIC RUBBER TAPPING MACHINE

PROJECT REPORT

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ABSTRACT

In India there is a huge demand for rubber as it is used in the manufacturing many products. This latex rubber is harvested from trees through a process called “rubber tapping”. A helical cut is made in the tree, approximately four feet from the ground and circling about half the tree. Every day a worker goes to hundreds of trees in the early morning and scrapes away the caked latex and a thin layer of bark. The latex flows down the spiral into a cup for two hours before the sap hardens and closes the cut in the tree.

Currently the largest problem with tapping rubber trees is due to the care that must be taken to avoid damaging the tree. Workers are trained for six months before learning the proper technique and a poor tapper can kill many valuable trees. The process of carefully cutting hundreds of trees is also physically taxing. Improving this process would allow for excess market demand to be met by tapping more trees.

To improve this process we developed a new rubber tapping tool. Our tool contains a blade guard to limit the depth of cut, allowing for a controlled cut with little training. A more ergonomic design reduces worker fatigue. Through all of this the design is kept simple to keep reliability high and cost low. Tests in our region have provided valuable information for iterating the tool design. Currently we have produced a tool capable of tapping a tree, though further refinement is necessary to reduce the effort required and improve the ease of use of the tool.

Demand for tappers has increased their daily wages to them. In our project is fixed to the rubber tree with the help of belt arrangement. The battery power is used to operate this machine. In our project, the Permanent Magnet D.C motor is used to tapping the rubber tree automatically with the help of Rack and Pinion arrangement. The knife is fixed on this movement of D.C motor so that the rubber tree to be tapped quickly. The motor direction is controlled by the forward and reverse switch. The depth of cutting is adjusted by the knife with the help of bolt and nut arrangement.