

Nutmeg Mace Separator

Eldhose Paul¹, Akhilesh Balachandran², Jameskutty Michael³, Melbin Sibi⁴, Sreerag Shaji⁵

^{2,3,4,5}Student, Department of Mechanical Engineering, Viswajyothi College of Engineering and Technology Vazhakulam, Kerala.

¹Assistant Professor, Department of Mechanical Engineering, Viswajyothi College of Engineering and Technology Vazhakulam, Kerala.

Submitted: 01-07-2021

Revised: 13-07-2021

Accepted: 16-07-2021

ABSTRACT: Nutmeg mace separator is a machine used for separating mace from the nutmeg. The normal separating methods are not economical and are time consuming so by using this machine we can reduce the human effort and also the time consumption. The machine mainly consists of cutting blade and cutting tool which is used to separate the mace safely from the nutmeg without any damages as a whole unbroken flower shape, thereby helping the farmers to obtain a maximum price for the mace.

KEYWORDS: Nutmeg, Mace, Cutting blade, cutting tool

I. INTRODUCTION

This project is mainly focused on simplifying the post-harvesting operation of detaching the red seed coat of the nutmeg (mace). Nutmeg contains two different spices, namely nutmeg and mace. Mace is the red colored structures of the nutmeg seed. It is a highly useful spice. The mace is separated without any damage and at a quicker rate. A major advantage of this method is that a person without any prerequisites or skill can use this without anyone's help. The disadvantage of this product is that it is not automatic. It requires manual help.

II. METHODOLOGY

As the name suggests, nutmeg mace separator separates the mace from the nutmeg safely without any damage as an unbroken flower. Thus the farmer will get premium price for the mace in the market.

The main components of the machine are:

1.1 Cutting tool

It contains a sharp circular end, which will come in contact with the sap of the nutmeg. Thus it will remove the sap and also push the nutmeg through the cutting blades.



Fig 2.1. Cutting tool

1.2 Cutting blades

They have soft edges so as it comes in contact with the nutmeg it will detach the mace safely along by the pushing force. Here there are eight cutting blades and are arranged in a circular shape so the space at the centre is a correct fit for the nutmeg.



Fig 2.2. Cutting blades

1.3 Lever

It is used to lift and push the cutting tool.



Fig 2.3. Lever

1.4 Compression Springs

It is used to give specific tension to cutting blade and cutting tool.



Fig 2.4. Compression Springs

1.5 Switch

It is used to activate and deactivate electromagnet as when the lever reaches the bottom position it will press the switch and make it to the ON position and when the lever is lifted up the switch will get OFF and deactivates the electromagnet, so the cutting blades will come to the initial position for the next cycle.

1.6 Electromagnet

A circular type of electromagnet is placed below the cutting blades so it will attracts the blades when it gets activated and increases the space at the centre position so the separated mace and nutmeg will fall easily to the collecting tray.

III. MODELLING

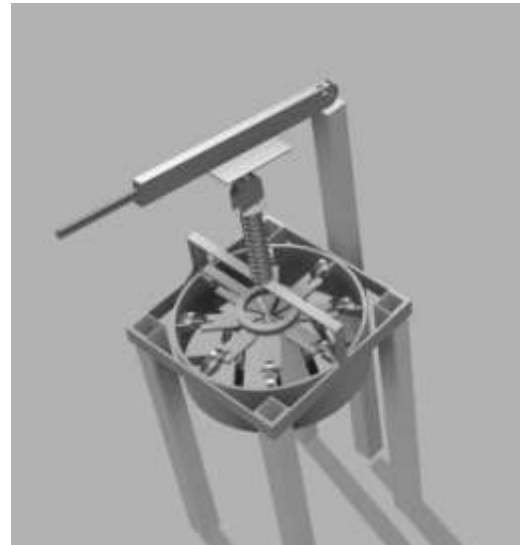


Fig 3.1. Fusion 360 Model



Fig 3.2. Fabricated Model

IV. RESULT

The project Nutmeg mace separating machine was able to successfully separate mace without any damages as a fully unbroken flower.

V. CONCLUSION

The easy nutmeg mace separator is a manually operated product made with objective of separation of nutmeg mace from its seed. The product was made with intention to save time of farmers in mace separation and to increase the profit of the farmers. The main idea project started with identification of product in agriculture area.

On the basis of various criteria, products were analyzed. Then, various problems in agriculture sector was identified and we sorted out the best problem. The problem identified was inefficiency in the ordinary methods of nutmeg mace separation. Process of separation with hand was studied in detail. Different materials were taken into consideration. The right choice of material and right allocation of them according to the requirement led to the successful completion of the project.

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