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POMEGRANATE DE-SEEDER

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ABSTRACT

Pomegranate is a commonly used fruit in our day-to-day life. They are used for juice making in various fruit stalls and one of the value added ingredients in food and have great medical value. The main objective of the project is to automate the process of deseeding the fruit. The manual process of deseeding the fruit is a time consuming one for the extraction of seeds. The proposed system is automatic deseeded, which consist of Drum in which pulsator connected to Electric Motor placed on fabricated frame. When we put pomegranate fruit inside the drum, and starts motor, pulsator start rotating and due to centrifugal action and pomegranate fruit collides on drum walls and seeds are extracted, and collected to the tray at bottom. The maintenance of the system is less and it is a onetime investment.

Keywords: pulsator, drum, motor

I.INTRODUCTION

One of the oldest known fruits, found in writings and artefacts of many cultures and religions, the pomegranate is an original native of Persia. This nutrient dense, antioxidant rich fruit has been revered as a symbol of health, fertility and eternal life. It is used for juice making in various fruit stalls and for preparing salads and one of the value added ingredients in food. The fruit also have great medical value. Manual deseeding of the fruit is still prevalent, in hostels of educational institutions, marriage catering services and even in restaurants, which can cater to a whole set of varying customer tastes and preferences.

The amount of fruit to be used for the dishes always remains higher than actually what's consumed. The associated difficulties like time constraint, contamination, etc. make it pretty difficult for any person handling the job. Therein, arose a need to automate the process of deseeding, and here with a proposal, which can aid in easing the load off the people associated with it.

II. OBJECTIVES

Objective of this system is to:-

i. Low cost of deseeding and easy to maintain

ii. It is well-suited for domestic purpose

iii. The machine consumes less power

iv. It is compact and occupies less floor space

v. No skill required to operate.

vi. Speed can be varied

vii. Does not contaminate the fruit.

III. BASIC PARTS TO BE USED

i.Electric motor:

We used motor of washing machine having specification, 30w and 1400rpm.

ii.Pulsator:

Here we used pulsator disc present in washing machine for the platform for pomegranate fruit. It is connected to AC motor.

iii.Drum:

For making drum we used sheet metal and rolled it into circle to form drum.

iv.Tray:

It is present at bottom to collect seeds extracted. It is made up of sheet metal.

v.Fabricated frame:

Frame structure made up of mild steel tubings and rods. It is used to hold motor and drum appropriately and also used as base.

IV. FABRICATION PROCESS

In fabrication process we have used welding process to build frame. The setup consist of steel frame divided in two parts and one funnel to give direction to seeds and tray for collection of seeds.

For the frame we used steel tubings. They are cut in to specific dimensions and are arc welded. And we also used steel rods to make and some flat m.s. plates for mounting purpose.

V. ELECTRICAL SECTION

In electrical section we made controller to control the speed and rotation direction of motor. The rating of dimmer/regulator is 40W .Wiring harness is made up of copper, separate earthing is provided to the complete system for safety purpose , Two buttons are provided for control , one foe on/off and another for nature of rotation.

VI. PRODUCT DESCRIPTION

6.1 Working principle

It works on Centrifugal principle. In Newtonian mechanics, the centrifugal force is an intial force (also called a “fictitious” or “pseudo” force) directed away from the axis of rotation that appears to act on all objects when viewed in a rotating frame of reference. When machine is turned on pulsator start rotating and fruit also start moving and centrifugal force acted on the fruit and fruit will hit the wall of drum due to which they get loosen and separated from membrane of fruit and the seeds are seperated.

6.2 Product function

When the machine is switched ON, the pomegranate fruit sliced in two will be dropped into the disc from the upper opening, when the slices land on the rotating disc the slice will experience centrifugal force which will direct the slice away from the centre , and then slice will hit wall of drum and force will loosen the eatable seeds and that's how seeds are separated.

VII. FIGURES

Fig1.drum

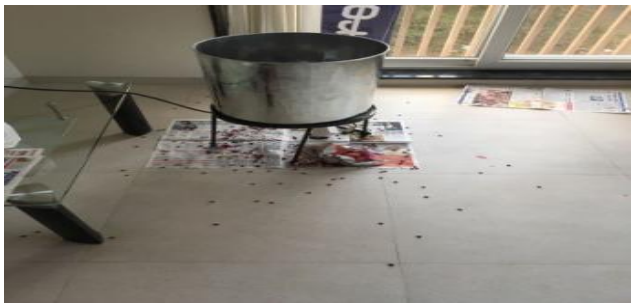

Fig2. Complete structure

Fig3. Setup in exhibition

VIII. CONCLUSION

Pomegranate de-seeder is a cost effective way to de seed the pomegranate, there is no complications in the working, the setup is easy to carry and take away. Anyone can use this system for their business purpose.

. Low cost of deseeding and easy to maintain. It is well-suited for domestic purpose. The machine consumes less power. It is compact and occupies less floor space .No skill required to operate. Speed can be varied. Does not contaminate the fruit.

This machine or the contraption can take load of about 10-15 pomegranate pods at once

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