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Green Banana Peeling Machine

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Abstract : *In the proposed project an automatic banana peeling and slicing machine will designed and fabricated using mechanical means and methods. With this project the aim is to reduce the amount of time consumed to peel and slice the banana in banana chips industries. As an additional feature the slicer is provided which will slice the banana into thin and perfect slices which can be directly used in oil to make banana chips.*

Keywords : *Unripe Banana, Peeling , Peeled Banana, Slicing, Solid Work Design*

I. INTRODUCTION

The project is based on the user defined problem faced by the local Banana chips makers and house wives round ankleshwer, GIDC, Valia. Netrarang.

Banana peeling is primary and most important operation in banana processing. Manual peeling is relatively slow operation and involves much more labour when a large number of peeled bananas are desired, so power operated banana peeling machine is required for small scale processing unit. Changing the peeling technique has changed the kind of merits and demerits but problem is still unsolved and up gradation is require.

Among the current peeling methods, mechanical methods can attract the satisfaction of consumers as these methods possess some important benefits of the ideal methods such as freshness of the peeled product and shape of chips. As the view of consumer is important to the food processing industries researchers are encouraged to continue the search for mechanical peeling methods that are close to the ideal peeling.



Figure 1 : Unripe Banana

Banana is cultivated over 130 countries, one of the most widely grown tropical fruits. India with diverse soil and climate comprising several economical regions provides ample opportunity to grow a variety of vegetables and fruits. *Musa sapientum* which is commonly called banana is herbaceous plant of the family Musaceae. They are the most important and widely used as the sources of energy in the diet of people living in tropical humid regions like India.

According to a report of FAO (Food and Agriculture Organization) 2009, Banana is the second largest produced fruit after citrus, contributing about 16% of the world's total fruit production. India is the largest producer of banana. India is contributing 27% of world's production. Major states are Kerala, Maharashtra, Tamilnadu, Bihar, Gujarat, West Bengal, Assam, Andrapradesh and Karnataka. In India banana cultivation and production reported as 27,575 MT in year 2016-2017.



Figure 2 : Cross section of unripe banana



Figure 3 : Hand peeler used by local chip makers

II. LITERATURE SURVEY

- 1) Pawar Krantidip Rajaram ^[1]et By considering the physical and engineering properties of banana, the machine components were design and developed.
- 2) Edwin Rodriguez ^[2]et The object is to provide a green banana and plantain peeler that is a hand held tool used to remove the skin from the fruit in smoother and cleaner manner.
- 3) Robert E. Leavens ^[3]et An object of the invention is to provide designed for use in removing the peeling from bananas and similar fruits.

III. EXISTING PEELER

These hand peelers are less efficient and skill worker is needed. It is risky operation if large amount of peeled banana is desired.



Figure 4 : peeler used by local chips makers

SR NO.	PROPERTIES	DWAEF CAVENDISH	NENDRAN
1	Dia.(without peel, Max)	23.24mm	37.08mm
2	Length (max)	137.00mm	194.50mm
3	Width (max)	60.50mm	50.50mm
4	Peel thickness	3.65mm	2.95mm
5	Single fruit weight	97.84gm	201.43gm
6	Load required to cut	22.40N	28.20N
7	Cutting Load per unit width	0.754N	0.821N

Table 1 : Recorded Parameters regarding Project

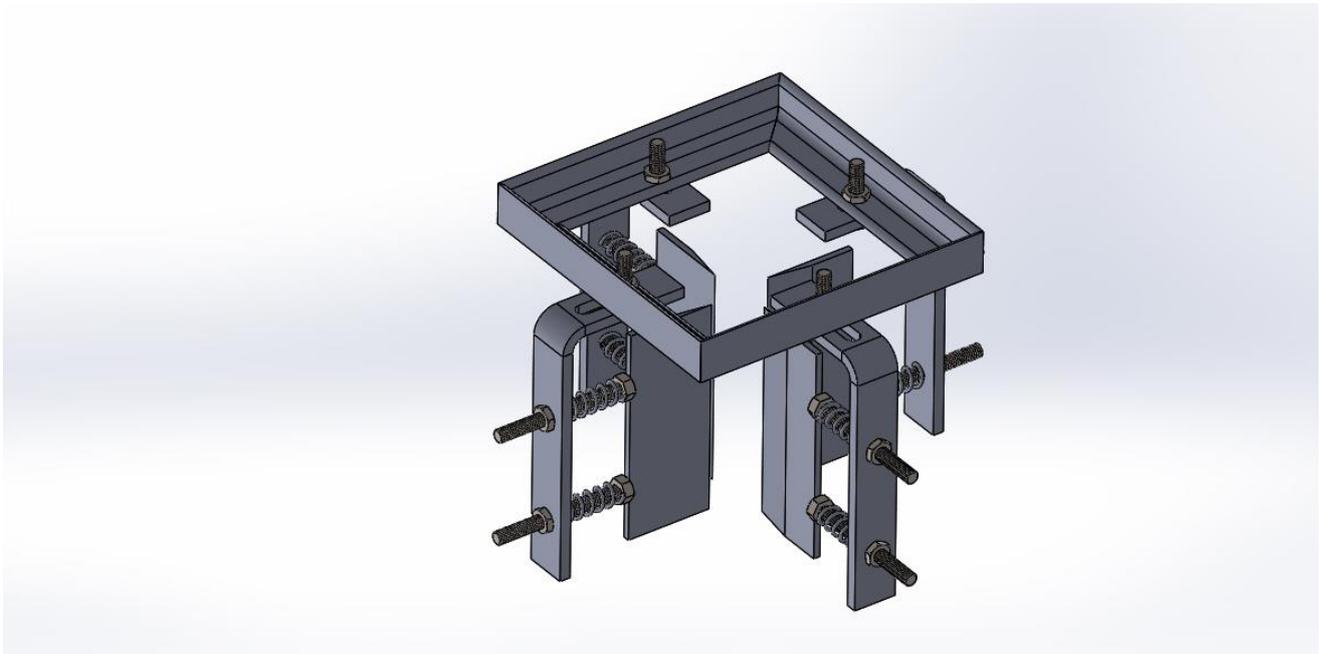


Figure 6 : Modelling of trial model(peel cutting)

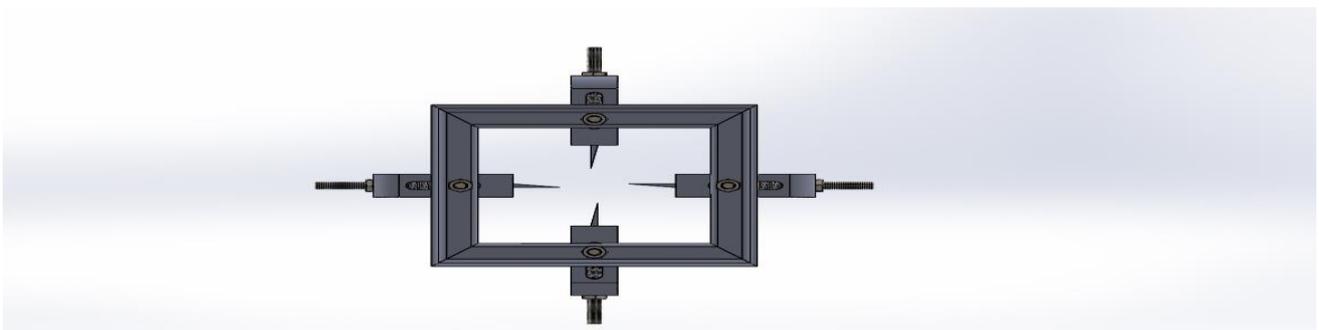


Figure 7 : Modelling of trial model top view

IV. FABRICATION WORK

For Fabrication work we used mild steel material for making frame and for blade 6c27 grade S.S C-0.32 and Cr-13.7



Figure 8: Frame fabrication



Figure 9 : Blade Holder Fabrication

V. ASSEMBLY WORK



Figure 10: assembly

VI. CONCLUSION

From above research it is concluded that Performance of trail model 1 is much more better than commercial peeler used by local chips makers. It is concluded that our trial model peeler can pull out green banana skin much more faster and smoother than commercial peeler. In future it may be used by house wives.

VII. REFERENCE

1. Pawar Krantidip Rajaram, "Design and development of banana peeling machine." , 2009
2. Edwin Rodriguez , , " Hand operated green banana peeler" , 1996
3. Robert E Leavena, , " Banana peeler" ,1936