

Penute Shell Removing Machine

Siddhesh Gawas¹, Atharv Naik², Babaji Mestry³, Kiran Adarkar⁴, Avanti Gawas⁵,
Sachin Lanjekar⁶

^{1,2,3,4,5} Students, Department of Mechanical Engineering, YBIT College of Sawantwadi, Maharashtra, India

⁶ Mr Sachin Lanjekar, Lecturer, Department of Mechanical, Engineering, Yashwantrao Bhonsale Institute Of Technology, Maharashtra, India

¹ gawassiddhesh117@gmail.com, ² samirmestry45@gmail.com, ³ kiranadarkar444@gmail.com

ABSTRACT

The peanut shell removing machine, also known as a groundnut sheller, is an important agricultural machine used to separate peanut kernels from their shells efficiently. In many rural areas, peanuts are still shelled manually, which is time-consuming and requires significant labor. The peanut shelling machine reduces human effort and increases productivity in peanut processing industries. The machine works by applying mechanical forces such as impact, rubbing, and squeezing to break the shell while keeping the kernel intact. Modern machines also include cleaning systems such as fans and sieves to separate shells and impurities from the kernels. The development of peanut shelling machines has improved the efficiency of peanut production and processing. This research paper discusses the design, working principle, components, advantages, and applications of the peanut shell

.Keywords— Peanut shelling, agricultural machinery, shell separator, productivity enhancement.

I. INTRODUCTION

Peanut is one of the most widely cultivated oilseed crops in the world and is used for food products, oil extraction, and animal feed. After harvesting, peanuts are enclosed in shells which must be removed before processing or consumption. Traditionally, shell removal was done manually, which is labor-intensive and inefficient. With the advancement of agricultural machinery, peanut shell removing machines have been developed to automate the process. These machines increase productivity, reduce labor costs, and improve the quality of peanut kernels. Peanut shellers are widely used in farms, food processing industries, and agricultural processing units. The machine operates by using mechanical force to crack the shell and separate it from the kernel.

I. PROBLEM STATEMENT

1. Manual shell removing process requires more labor.
2. Low Efficiency of Manual Shelling
3. Time required are more for Penute Shell Removing
4. Farmers need a low-cost mechanized solution.

The Peanut Shell Removing Machine helps overcome these problems.

III. OBJECTIVES

1. Design Automatic Penute Shell Remover Machine
2. Fabricate portable groundnut Sheller machine.
3. To reduce the human effort required to operate the machine automatically
4. To provide a uniform and clean peanut suitable for further processing

IV. FABRICATION PROCESS

1. Cutting – Cutting metal plates to required size.
2. Grinding – Removing sharp edges and making smooth surfaces.
3. Drilling – Making holes for bolts and shafts.
4. Welding – Joining metal parts together.
5. Assembly – Connecting all components to make the final machine.

V. WORKING PRINCIPLE

Working Principle of Peanut Shell Removing Machine

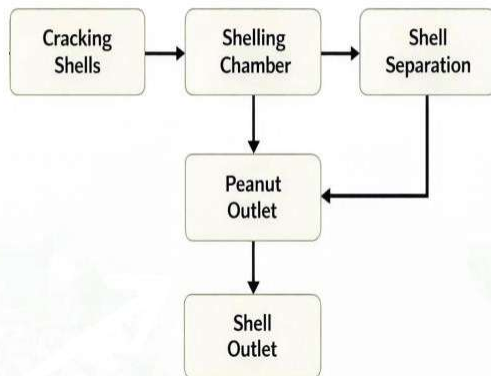


Fig no 1. Working Principle

VI. Model



Fig no 2. Model

The diagram shows a penute shell removing machine working principle

1. Cracking Shell

In this stage, peanuts pass through rollers or a cracking mechanism. The outer shells are broken without damaging the peanut kernels.

2. Shelling Chamber

The shelling chamber is where the cracked peanuts are further processed. The machine separates the kernels from the broken shells through mechanical movement.

3. Shell Separation:

This stage separates the lighter shells from the heavier peanut kernels. Air blowers or vibrating sieves are often used to improve separation efficiency.

4. Penute Output

After separation, the clean peanut kernels move to the peanut outlet. The peanuts are collected here for further processing or packaging.

5. Shell Output:

The broken shells and waste materials exit through the shell outlet. These shells can be collected separately and sometimes used as fuel or animal feed.

VII. Advantages

1. Reduces manual labor.
2. Saves time in peanut processing.
3. High shelling efficiency.
4. Reduces kernel breakage.
5. Suitable for small and large scale industries.
6. Improves productivity and profitability.

VIII. RESULTS AND DISCUSSION

The results and discussion of the peanut shell removing machine show that the machine performs efficient shelling with a capacity of around 30 kg per hour under normal operating conditions. The shelling efficiency is observed to be high, with most peanuts separated cleanly from their shells, reducing manual labor significantly. Minimal kernel breakage occurs when the machine is operated at an optimal speed, indicating good design balance between force and handling. The machine also demonstrates consistent performance over continuous operation, making it suitable for small to medium-scale farmers. However, slight losses and incomplete shelling may occur if the peanuts are of uneven size or moisture content.

IX. FUTURE SCOPE

The future scope of a peanut shell removing machine is very promising due to increasing demand for efficient agricultural processing. With technological advancements, these machines can be improved by integrating automation and smart sensors to enhance accuracy and reduce grain damage. The use of renewable energy sources like solar power can make the machine more eco-friendly and suitable for rural areas. Future designs may focus on portability and low-cost production.

X. PREPARE YOUR PAPER BEFORE STYLING

Before starting the styling of a Peanut Shell Removing Machine research paper, proper preparation is essential to ensure clarity and professionalism. First, organize all collected data, including design details, working principles, calculations, and results. Make sure the content is accurate, relevant, and written in simple technical language. Next, arrange the paper into standard sections such as abstract, introduction, methodology, results, and conclusion. Check grammar, spelling, and formatting consistency throughout the document. Use proper headings, subheadings, and numbering for better readability. Ensure all diagrams, tables, and figures are clearly labeled and properly placed. Follow the required formatting style, such as font size, margins, and citation rules. Finally, review the entire paper to remove errors and improve overall presentation before applying final styling.

XI. ACKNOWLEDGEMENT

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XII. APPENDIX A: AN EXAMPLE APPENDIX

Appendix A provides additional technical details and supporting information related to the peanut shell removing machine used in this project. It includes the specifications of major components such as the electric motor, pulley system, shaft, and sieving mechanism. The appendix also presents a detailed list of materials used for fabrication, including iron frame, rubber sheet, and mesh screen. Furthermore, it contains calculated values of speed, torque, and power required for efficient operation of the machine. Diagrams and labeled sketches are included to enhance understanding of the machine's structure and working principle. The appendix also highlights safety precautions to be followed during operation and maintenance. Performance observations such as shelling efficiency and output capacity are briefly summarized. Maintenance guidelines and troubleshooting tips are provided for smooth functioning.

Overall, this appendix supports the main report by offering detailed technical insights and reference data.

XIII. CONCLUSION

The Peanut Shell Removing Machine is an important agricultural machine used to separate peanut shells. It helps farmers and small industries reduce manual labor and save time. The machine works using mechanical components like a motor, pulley, belt, and shelling drum. It increases productivity and improves the quality of peanut processing. By removing shells quickly, it helps in large-scale peanut production. The machine is simple in design and easy to operate and maintain. It is also cost-effective for farmers and small businesses. Overall, the peanut shell removing machine plays a vital role in modern agricultural processing.

XIV. REFERENCES

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