Design and Fabrication of Pneumatic Paneer Cutting Machine

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Abstract- *This research paper deals with problems of manual paneer cutting in industry. The manufacturing process is now continuously in process. After manufacturing, the paneer pieces should be cut in the required sizes, as the manual interference is involved, the cutting operation creating problem. Also it is time consuming. Moreover when the pieces get cut, it should be of the required weight. So, there is scope for some improvement as it affects quality & production rate. For that the main purpose is to concentrate on paneer cutting. Hence, the purpose of this project is to design of a semi-automatic low cost paneer cutting machine for small scale industry.*

I. INTRODUCTION

Industries nowadays are trying hard to improve machine efficiencies to maximize outputs. The higher the efficiencies the more amounts of energy and cost are reduced. Hence, this will directly increase the profit. [4] A pneumatic system is a system that uses compressed air to transmit and control energy. The use of pneumatic systems in automatic technology is always up-to-date, which is documented by their large application in productive, as well as non-productive sector. Production, assembling and packing machines are operated worldwide with electro-pneumatic control. Changes of the requirements and technical progress have considerably modified the ways of control [3]. The primary objectives, upon which, the present work is based are providing an alternative to the existing manual cutting system mainly, targeting the initial investment factor, and thereby eliminating the associated difficulties of manual Paneer cutting. [2].

II. OBJECTIVE

- To increase production rate
- To eliminates power fluctuation
- Simple in construction
- Continuous operation is possible without stopping
- To reduce the wastage of human energy

III. CONSTRUCTION

Aim is to cut paneer pieces into 200 gms from a 5 kg piece. Now the equipment is based on pneumatic system. It is a vertical platform having a box like arrangement at the bottom. The pneumatic system will lift that box up & down causing the vertical movement. Now the main purpose of this mechanism is to cut paneer pieces. For that a frame is attached in the box at bottom. The frame carries thin wires separated at a specific distance. As the mechanism moves up & down, the frame carrying the wires cuts the paneer into the required sizes. Thus, the required sizes of paneer are obtained.

3.1 Size of machine

- Base – 35cm X 30cm
- Vertical Platform – 90cm X 35cm
- Wire Cage – 32cm X 28cm

3.2 Material selection

As the material plays important role while working of a system. It may not affect the paneer properties. Hence material selected for the wire is galvanized stainless steel. [5] The information about component with material is given in the following table:

Sr. No.	Component	Material
1	Cylinder	Mild steel
2	Piston	Mild steel
3	Support Bar	Cast Iron
4	Wire cage	Galvanized stainless steel
5	Base /Bed	Cast Iron

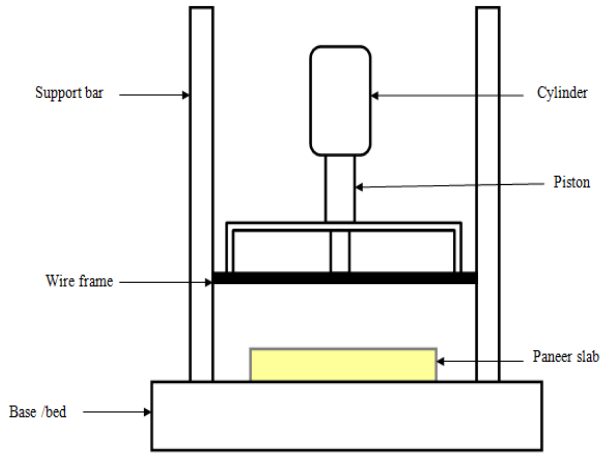

Fig 1. Schematic diagram of pneumatic paneer cutting machine

III. CONCLUSION

Thus, this work provides an alternative to the existing manually paneer cutting, in terms of automating the paneer entry into the cutting apparatus, eliminates power fluctuation and lesser initial investment. Time consumption is less when compared to manual cutting. This work provides the desired output and the variety of the cuts is done by use of different cutting grid.

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