Design And Fabrication of Weighing And Packing System

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Abstract- *The concept of fabrication of weighing-packing machine for industrial application is designed for the higher end manufactures were exports and imports packing should be done for the each and every boxes. The concept can be implemented where the Automatic or Semi automatic process should be carried out. Our model consists of a motor and worm gear arrangement and roller setup. In most of the small industries, the material packing is done by manually. This process takes more time and large human labours. There are number of packing machines are available in market. The cost of those machines is very high. Now the project has mainly concentrated on this difficulty, and hence a suitable electronic control unit has been designed such that the material can be packing in proper condition. The fabrication part of it has been considered with almost case for its simplicity and economy, such that this can be accommodated as one of the essential tools on Industrial Applications.*

Keywords- Packing, Food Materials, Adruino, Spur Gear,Digital Weighing.

I. INTRODUCTION

This is an aera of automation where it is broadly defined as replacement of manual effort by mechanical power in all degrees of automation. The operation remains an essential part of the system although with changing demands on physical input as the degree of mechanization is increased. Degrees of automation are of two types, viz.

- Full Automation
- Semi Automation

In semi automation a combination of manual effort and mechanical power is required whereas in full automation human participation is very negligible.

II. PACKAGING

Mass production of the product, the machining operations decide the sequence of machining. The machines designed for producing a particular product are called transfer machines. The components must be moved automatically from the bins to various machines sequentially and the final component can be placed separately for packaging. Materials can also be repeatedly transferred from the moving conveyors to the work place and vice versa. The moving conveyor is used to laminate the work piece automatically.

III. OBJECTIVES

1. To design and Fabricate the weighing and packing machine
2. To analysis the efficiency of the weighing and packing machine
3. To compare the efficiency of weighing and packing machine with Manual packing method.
4. To analyze the estimation of weighing and packing.

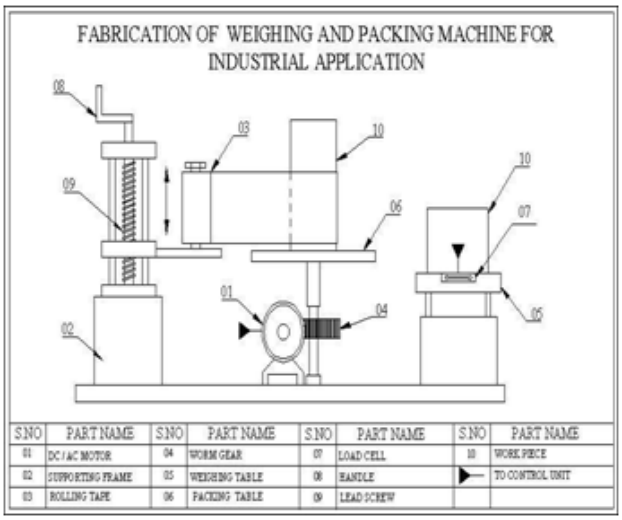
IV. METHODOLOGY

V. DESIGN AND ANALYSIS

We design weighing and packing system to perform continuous process of weighing and packing system for reduce to inspection time and fatigue.

In weighing and packing process, they required more labor's to complete the work . It takes more time to weighing and packing by humans. For that we design weighing and packing machine. In this design, we introduce that time to

weighing and packing system that works continuously by one labor.



S.NO	PART NAME	S.NO	PART NAME	S.NO	PART NAME	S.NO	PART NAME
01	DC / AC MOTOR	04	WORM GEAR	07	LOAD CELL	10	WORK PIECE
02	SUPPORTING FRAME	05	WEIGHING TABLE	08	HANDLE		TO CONTROL UNIT
03	ROLLING TAPE	06	PACKING TABLE	09	LEAD SCREW		

1. Dc motor

Type = pmdc
Speed = 30 rpm
Power = 18w
Volts = 12volts

Quantity = 1
Material = CI

2.GEAR

Type = spur gear

MAX DIAMETER

Max dia of gear = 60mm = 60 X 10-^{3} N/mm^{2} Id of gear = 16mm = 16 X 10^{-3} N/mm^{2} No of teeth = 48no

MIN DIAMETER

Min dia of gear = 30mm = 30 X 10^{-3} N/mm^{2} No of teeth = 24no
Thickness = 10mm = 10 X 10^{-3} N/mm^{2}

3.BASE

Length of base = 430mm = 430 X 10^{-3} N/mm^{2}
Breath of the base = 430mm = 430 X 10^{-3} N/mm^{2}
Height of the base = 50mm = 50 X 10^{-3} N/mm^{2}

4. SPINDLE

Length of the spindle = 320mm = 320 X 10^{-3} N/mm^{2} Dia of the spindle = 15mm = 15 X 10^{-3} N/mm^{2}

5.COLUMN

Length of the column = 450mm = 450 X 10^{-3} N/mm^{2} dia of column = 48mm = 48 10^{-3} N/mm^{2}

6. Tap Holder

Height of holder = 60mm
Dia of holder = 75mm

VI. LITERATURE REVIEW

KIT L. YAM, PAUL T. TAKHISTOV, AND JOSEPH MILTZ et.al., (2005*)* Including Barcode Labels, Radio Frequency Identification Tags, Time-Temperature Indicators, Gas Indicators, And Biosensors Are Reviewed. The Applications Of The Conceptual Framework To Hazard Analysis Critical Control Points And Microwave Ovens Are Illustrated.

From this literature; It does not consist of barcode labels,time temperature indicators, and biosensor.

HAN,QIAN, AND YANG et.al., (2017) entitled as **"FOOD PACKAGING-A COMPREHENSIVE REVIEW AND FUTURE TRENDS".**

Innovations in food packaging systems will help meet the evolving needs of the market, such as consumer preference for "healthy" and high-quality food products and reduction of the negative environmental impacts of food packaging. Emerging concepts of active and intelligent packaging technologies provide numerous innovative solutions for prolonging shelf-life and improving the quality and safety of food products.

From this literature; we had the concept to increase the shelf life of the product by packing with this machine.

DANIEL I et.al., (2020) entitled as **"RECENT ADVANCES IN REDUCING FOOD LOSSES IN THE AGRICULTURE PRODUCE".**

Fruits and vegetables are highly nutritious agricultural produce with tremendous human health benefits. They are also highly perishable and as such are easily

susceptible to spoilage, leading to a reduction in quality attributes and induced food loss. Cold chain technologies have over the years been employed to reduce the quality loss of fruits and vegetables from farm to fork. However, a high amount of losses (≈50%) still occur during the packaging, pre-cooling, transportation, and storage of these fresh agricultural produce.

From this literature; The quality of food products will be extended and losses can be controlled by packing by it weights.

VII. PROPOSED DESIGN

The project carried out by us made an impressing task in the field of packing and department stores. It is very usefully for the workers to packing the items very easy. This project has also reduced the cost involved in the concern. Project has been designed to perform the entire requirement task which has also been provided.

VIII. RESULT&DISCUSSION

Our project initial stage was centered around the design and fabrication of Weighing and packaging machine. Using techniques such as cutting, and welding, we created a model successfully. Our subsequent step is to test the functionality of the Weighing and packing machine. We aim to observe its performance and efficiency, with the goal of developing a cost- effective and time saving mechanism that perfectly packs. Generally packing by manual takes more by our project we can pack it easily .The use of the packing machine can greatly enchance the speed and effectiveness of the Weighing and packing process.

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X. CONCLUSION

The Fabrication of Weighing and Packing will reduce the time management while comparing with human effort. And also increase the rate of production in the field of stores. Our project is done by using Arduino and Dc motor used for packing. Load Cell is used to detect the weight of product for accurate packing.

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