Impact Factor (SJIF): 5.301

International Journal of Advance Research in Engineering, Science & Technology

e-ISSN: 2393-9877, p-ISSN: 2394-2444

Volume 5, Issue 12, December-2018

Conceptual model of filler machine

Harinkumar N. Prajapati, Pandya Harsh, Raval Bhavesh N., Shingadiya Rahul D., Pandya Yogesh C.

Mechanical, Amiraj College Of Engineering And Technology, Ahmadabad, hod.mechancial@amirajcollege.in
Mechanical, Amiraj College Of Engineering And Technology, Ahmadabad, pandyahg98@gmail.com
Mechanical, Amiraj College Of Engineering And Technology, Ahmadabad, bhaveshraval02@gmail.com
Mechanical, Amiraj College Of Engineering And Technology, Ahmadabad, shingadiyarahul110@gmail.com
Mechanical, Amiraj College Of Engineering And Technology, Ahmadabad, pandyayogesh05@gmail.com

Abstract *—This mechanical device is a conceptual model of filler machine. This is filler machine works manually and increases the work efficiency of the person. This machine is easy manual operating machine. This machine reduces the packaging and handling cost of the product. This machine is mainly used for food products, beverages, grain, sand, cement and other products.*

Keywords- *Manual machine, Hopper, Supports, Wheels, Filling, Agricultural products, Architectural products.*

I. INTRODUCTION

Many food shortages being encounterd in developing countries are lack of effective packaging problems which results into food loss situations. Packaging machiners are manufactured and developed in the countries are highly automated which make them incompitable with the capacity handled in developing countries. Some of the uprising entrepreneurs arefacing limitations on their goal fulfilment of starting the business of packaging due to high cost and packaging itself. Farmers are experincing the loss of transporting their crops from farms to cities and towns for sell to large packaging companies. The automated machines are higly effective but they are costly and requires huge place to setup and requires the skillfull operators to operate it. On otherside the manual machines are not that costly but their prices are also high. The small scale companies, entreprenuers, and the farmers can not afford this machines. Also these machine requires high maintenance and operating costs.

Features of the project:
This machine is manually operated.
Low cost and effective machine.
It consumes less time then manual filling.
It can be easily transported and it is low weight machine.
It can be operated on both even and uneven surfaces easily and smoothly.
It is multiutility project. It do work as a filler machine as well as it is also used to transport the material from one place to another.
The main purpose of this project is to help the farmers and small scale industries for filling and packaging of the agricultural products like grains, corn, wheat etc. and for architectural site or constructional site to pack the material like cement, sand, etc.

1.1. Motivation for this project

Motivation for this project is generated from the farm of Bhavesh Raval. The time for filling the bags with the hand takes more time and reduces the efficiency of the person. To reduce this time loss and to make this process effective and efficient we got this idea.

I. DATA COLLECTION

Literature Review:

Literature review or data collection is the reference taken by us to make this project or to modify this project. The data collection from the reference paper is helps us to make project better and more efficient. This literature review is based on the sand filling machine. Presented herein is a sand bag filling machine having a hopper mounted to a frame. An upper table is moveably beneath the hopper. The upper table has a plurality of holes that align with a bottom opening on the hopper as the table moves from a first position to a second position. When the table is in either the first position or the second position , the table blocks the flow of sand from the hopper. Below the upper table is a holding apparatus for suspending the bags from the upper table while allowing sand to flow from the hopper and into the bags. In one embodiment, a lower table catches the filled sand bags. The lower table can be pivotal about an axis facilitating removal of the sand bags. [1]

This review is based on feather collecting machine. A filling machine for separating feathers and down supplied in bulk, measuring a finite quantity there for and delivering same to a pocket defined in a garment or other article for the filling of the pocket. [2]

This literature is based on both sand and agriculture product filling machine. A portable or fixed apparatus and method for the rapid and easy filling of bags and other containers with predetermined quantities of sand or other granular filling material and with reduced machine wear, maintenance and operator efforts. [3]

This is review is based on grain filling machine.

The present invention relates to a grain input hopper attached to a grain input hopper of agricultural machinery such as a grain sorter, a rice grinder, or a grain to apply vibrations to the hopper. When grains stored in a hopper are into a processing space of a corresponding machine for sorting, polishing, and grinding, the vibrator attached to the hopper vibrates the hopper to prevent the grains from being jammed in a grain outlet formed in the center of the hopper, and thus, since the grains in the hopper are smoothly discharged through the outlet and continuously putted into the processing space, the present invention is capable of enabling targeted grain processing to go smoothly. [4]

This review is based on wheat filling and cleaning machine. The utility model discloses a wheat sack filling machine with purification performance, including absorbing the head, absorb the head through wired hose and first return bend fixed connection, the lower extreme of first return bend runs through buffer memory case upper end, the lower extreme movable mounting of buffer memory case has the baffle, the lower part of baffle is provided with the braided bad. The outside and the frame fixed mounting of buffer memory case, the upper portion of frame is provided with the fan, the left side fixedly connected with second return bend of fan, the lower extreme of the second return bend runs through buffer memory case upper end, the right-hand member fixedly connected with three-way pipe of fan, the right part of three-way pipe is provided with main air outlet, the lower part fixed mounting of three-way pipe has the plastic tubing. The left end of plastic tubing sets up to vice air outlet, the right side fixed mounting of frame has the control box, the outside of control box is provided with operating button. The utility model discloses simple structure, convenient and practical alleviates peasant's intensity of labor has improved the cleanliness of wheat. [5]

II. PROCESS PLANNING

Base in the black color is the main part of the body. It provides support to the other parts and it is a stand to put the object. It is square shape thick hollow body which supports all other parts of the machine. There are 2 supporters mounted on the base. 2 handles are also attached at the end of the supporters. These base, supporters and handles, makes the half body of the project.

Hopper which is the main part or we can say it is other part of the body. Hopper is attached in front of the supporters. The push and pull handle is welded on the hopper. The push and pull handle reduces the effort of the person. By pushing and pulling handle the filling of the material become easy and smooth. For the movement of the whole body there are 2 wheels connected under the base, by which the transportation of the project is done easily. The wheels are made of the high quality rubber which provide them strength and it can run on even and uneven surfaces easily.

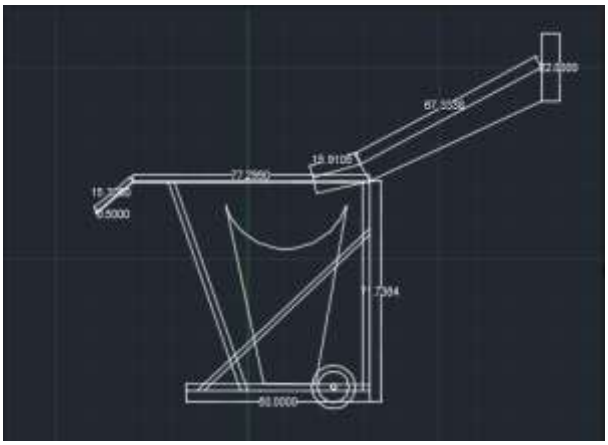

Fig 1. 2d model of the project in Auto Cad

III. MANUFACTURING

Manufacturing is the main process of the project. The assembly of the all parts at the proper place is known as the manufacturing. The manufacturing of the different parts of the project is described below. Which kind of material used, material's properties, its strength, reliability are as below. Material plays the important role in manufacturing. Choice of the correct material makes manufacturing easy and effortless..

Hopper Manufacturing: Hopper is the other half of the project. Hopper is made of 18 gauge steel sheet. The steel sheet has thickness of 1/20 in inch in fraction, by decimal part of inch it is 0.05 inch, and in mm it is 1.27 mm. it weights 0.9072 kilogram/square foot. Gauge is standard thickness of the sheet metal.

Fig 2. Hopper

Base Manufacturing: Base is the part on which all other parts of the project are located. It is square shape part of the project which is made of the hollow rectangular cross sections. Hollow rectangular cross sections made it light weight and easy to transport. It have 6 foot length and 1.6 foot width. The gunny is placed on the base.

Fig 3. Base

Support Manufacturing: Supports are made of iron and welded on the base. The supporters support the hopper and at the end of supporters handles are attached. The supporters are made of hollow pipes which have high strength can carry heavy load easily.

Fig 4. Supporters.

IV. CONCLUSION

In this semester we have prepared a model which is operated manually. It is easy to use, easy to transport because of the light weight of the model. It is multi utility project by which we can pack, fill and transport the material from one to another place. This project can be used in agricultural fields, architectural fields, construction sites and in farms. It becomes beneficial to entrepreneurs and small scale companies.

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