



PLASTIC STRIP MAKING MACHINE - A DESIGN AND DEVELOPMENT PROSPECTIVES

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Abstract: - Plastic is severe pollutant to environment so we must recycle it. The abstract is about the design of plastic recycling which would help to Convert the plastic bottle into plastic strips and their by help in waste management. This project is like the plastic Bottle crushing machine, where we convert a plastic container into plastic strips It would moreover help in reducing the volume of waste created and will along these lines help in compelling waste administration. Accordingly, this undertaking will end up being a helpful resource from various perspectives.

Keywords: PET bottles, Cutting, Design, Machine, Environment, Plastic waste, Packaging, recycling.

I. INTRODUCTION

THE Present Paper Describe the Research and Analysis of cutting machine for the reusing plastic strip. In the plastic industry for making the plastic strip for packing material and box strapping. This type of plastic strip is made by using hot air gun but if there is any impurity in the plastic material then the plastic strip making process is cut-off and there is some misuse of the plastic material as strip. For reusing of the wastage plastic strip commonly the softening cycle is utilized. But it is economical and more time-consuming process. The effort of the machine is to make strips of plastic bottles of the plastic from waste of plastic material in short span of time with less cost. In this type of machine by using pressure rollers, blades, hot air gun, etc. the wastage plastic strip can be easily transferred to the roller. We chose to make this machine since plastic isn't a climate free material and it is squandered all that anyone could need. So, with the assist it with canning limited up to certain and explicit cut-off. Along these lines this undertaking will end up being a valuable resource from various perspectives. Watchwords: plastic bottle, shaper edge, plastic strip, reusing, family use. A potential reuse of PET water bottles is the change into strips. The methodology paper is identified with cutting the PET bottles into strip. PET container are utilized and arranged on a huge Scale and might be mechanically reused. The methodology configuration em-power contain to be cut and promptly utilized as prime material for an assortment of employments as strips. The Strip in this way acquired assists with tackling homegrown issues, substituting prime materials for use as wires, Strings or harmonies, or modern issues like lashes for bundling. The strip is valuable for manual work for the most part did with strings and might be applied to measures for making crates, tangles and sewing with needles or weaving with a loom. Different cycles might be done after the cutting interaction, for example, heat-framing for deleting the plastic memory of its previous shape, giving it new shapes and specialized highlights and widening its potential as prime material for new uses and articles.

II. PROBLEM IDENTIFICATION

From most of the machine are not completely solve the plastic bottle waste management. The current plastic bottle strip cutter machine has limited functionality, for example, making the portion of same size bottle diameter and extracting same width of strip. The issue with the current bottle strip cutter utilized plan won't take into adjustment to be made in the size of them plastic strip made and isn't set up for various sized plastic bottle. The as of now different organizations of plastic water bottles are accessible and they have one of a kind design. The current design not accomplished the eliminating of strips from this bottle. cutting bottles into strands of plastic is important on the grounds that the strips would then be able to be woven to make things like seats, green houses, and more. These items can produce pay to improve the existences of individuals living in neediness. Moreover, in improving this plan we can diminish the measure of plastic Trash gathering by repurposing it to make attractive products.

III. RESEARCH METHODOLOGY

A. LITERATURE REVIEW

T.M Coelho, J.A.Gobbo Jr.(2011). "PET containers in Brazil: Opportunities and challenges of a logistics model for post-consumer waste recycling." ResourcesConservation and Recycling.

This paper describes the opportunities and challenges of the logistics model for post-consumer PET bottle recycling in Brazil, while providing knowledge of its practices along the recycling chain. The Results describe the need to educate those directly and indirectly involved in the process; to reduce consumption in order to reduce the amount of waste generated.

B. STUDY AND PRINCIPLE OF WORKING

Garbage of plastic and waste administration is the two primary difficulties. The PET container is one of them. Different machines are produced for the reusing refuse of plastic bottles. Plastic bottle smasher machine, destroying machine, and so on thus they have restricted usefulness, for example to pound the water bottle into little volume and use it for reusing measure. This isn't the legitimate answer for the administration of plastic bottle. We need to reuse the plastic container before them going for the reusing interaction. Our methodology is going to plan of plastic reusing which would assist with changing over the plastic container into plastic strip and their by helps in squander the executives. A plastic bottle strip shaper is utilizing plastic bottle squander while likewise delivering crude material for clients to make new items for money age.

C. NEED OF PROJECT

There are many wastes in environment increasing day by Day which need to be reduced that are harm to the human life. PET bottle are used and disposed on a large scale and may be industrially recycled. The current project enables plastic bottle to be cut into strip and immediately used as a prime material for verity of uses. The strips thus obtained helps to solve domestic problem. We are making the machine inside this social economic content to give elective reaction to this issue. The need is to give suitable technologic response that will enhance activities concerning collection and sell of domestic trash and /or to the necessities of other socially vulnerable sector (unemployed, disables, base community undertaking etc.)By generating economically sustainable micro businesses.

IV. DESIGN OF STRIP MAKER

A. CAD MODEL

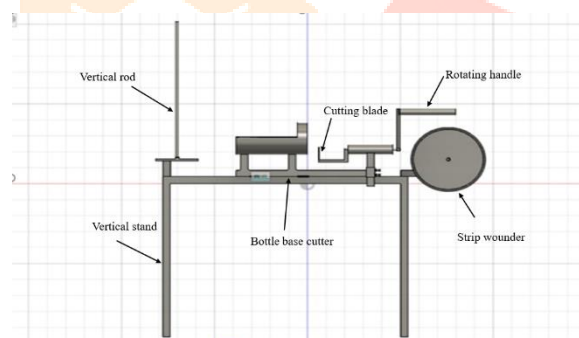


Figure 1 Front View

B. FRAME

A frame with a flat top and four legs, used as a surface for working and carry the load of components. Frame is simply made up of square iron bar. The main adjective of frame used is that it work as an base for plastic bottle strip making machine, so as to assemble all the components on frame at specific distance

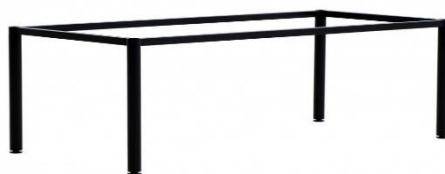


Figure 2 Frame

C. CUTTER BLADE

A blade is the portion of a tool, weapon with an edge that is designed to chop, slice and scrape surfaces or any materials. Blades are made from material that are stronger than those they are to used. Historically, humans have made blades from stone such as shiny and made from various metal such as copper and iron. now a days blades are made of steel. Blades are one of humanity oldest tool, and continue to be used for food preparation, and other purpose. Blades work by concentrating power on the sharp edge.



Figure 3 Blade

D. HOT AIR GUN

A heat air gun is a device used to produce a stream of hot air, at temperatures between 100 °C and 500 °C (200-932 °F) which can be held by hand. Heat air guns have the form of elongated body pointing at what is to be heated, with a handle is fixed to it right angle and trigger, in the same normal layout as a handgun. A lighter duty heat air gun is similar to a portable Hair dryers.

Figure 4 Heat Gun



E. BEVEL GEAR

Bevel gears are gearing the axes of the shafts and both intersect each other and the tooth bearing faces of the gears by them are conically designed. Bevel gears are mounted on shafts that are 90 degrees apart, but it can be designed as to work at other angles as well. The pitch surface of the bevel gear is a cone. It is applicable in differential drives, which can transmit power to two axes spinning at both are in different speeds. Bevel gears are used as the mainly used in hand drill.



Figure 5 Bevel Gear

F. STRIP WOUNDER

A cable reel is a circular, drum shape object such as spool used to carry different types of wires. Cable reels, which can also be called as drums, have been used from many years to transport electric cables, fiber cables and wire product, using as a strip wounder for collecting plastic strips in it.



Figure 6 Woulder

G. GEARED MOTOR

A DC motor is a type of rotary electrical motors which converts direct current electric energy into mechanical energy. The very common types depend on the forces produced by magnetic fields. generally, all types of DC motors have few internal mechanisms, either electro-mechanical or electronic, change the direction of current in part of the motor. Used as to give rotary motion to wounder and pressure rollers.



Figure 6 Motor

V. PROPOSED IDEA

The plastic bottle strip shaper machine is the development rendition of existing strip shaper machine that conquer the whole issue brought up in that plan. It is made of the vertical shaft in which the container is embedded with extra weight which gives tension on bottle to eliminate strip while turning. At the lower part of shaft having a flat shaper sharp edge fixed by nut and screw. The distance of the sharp edge from lower part of fixed place of edge is change by fixing the nut and has spring inside it. The shaper cutting edge is somewhat making a point to even this will straightforwardness to cut strip from bottle. The client needed to cut the lower part of the bottle and addition in the vertical shaft and put the extra weight over it. Pivots the bottle to pull the piece of strip from shaper sharp edge. The beginning finish of strip pull and tight to opposite end where the pulley and engine game plan in which all bottle strips is wound. As the engine turn over pivoting the pulley twisted all strip eliminate from bottle. This plan permits delivering diverse size of container that are formed with changing measurement. The right now bottles accessible in the market are having changing breadth with complex shape can be effectively cut by this container strip shaper machine. The width of strip can be change from 5mm to 15mm simply by fixing and spoil the nut on the cutting edge. Subsequently the outcomes are predictable, the plan permits distinctive plastic strip sizes, obliges diverse bottle sizes with changing width, capacity to supplant the shaper sharp edge, easy to deal with, less man work contribution and above all, it is protected to utilize.

VI. ADVANTAGES

- low cost required to manufacture.
- No or negligible maintenance is required.
- very easy to operate.
- It is lighter in weight.
- Less power consumption.
- Less number of mechanical moving parts, hence less friction and gives higher accuracy.
- Converting waste polluting plastic bottles in useful product.

VII. DISADVANTAGES

- It required external power supply to work.
- Initially manpower is required to cut bottle base.
- Careful while strips cut by operator initially.
- No other raw material is used rather than plastic bottle.

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