

WORK DONE ON PAPER POUCH MAKING MACHINE

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ABSTRACT

The harmful effects of plastic bags on the environment are well known. It is now appropriate to use alternative materials for manufacturing bags and in packaging industries. The disposal and recycling of plastic pouch has created destructive and danger to the environment. Suitable solution to come out of this difficulty is to replace, wherever possible, plastic Pouch with other bio-degradable materials such as paper Pouch. Paper bag is closest economical alternative to the plastic bag. In this paper, we try to address the several issues that makes paper bag production economically incompetent with plastic bags. We believe the system can play an important role in making paper bag production costs comparable to plastic bags. The system is semi-automatic which is capable of producing a paper bag from a drawing sheets. The system can be implemented in a small scale industry for producing paper bags and it will automatically minimize the trend of plastic bags.

Keywords:-harmful; plastic bags; manufacturing bags; recycling; destructive; environment; bio-degradable; incompetent; comparable;

1.Introduction

In this 21st century, with increasing population, markets and industries, and large production, usage of plastic bags has rapidly increased. On the counter side, plastic is non-biodegradable and is toxic. Further, people dump plastic bags at many places which results in environmental degradation. These bags are sometimes consumed by domestic animals, leading to their death. . An alternate solution to this problem is the deployment of paper bags, in place of plastic bags. However, existing paper bag machines are expensive (INR 3, 00,000) and even are the paper used for making the bag. Further the existing machine technology occupies large space, as big as a hall and it is even very difficult to shift it from place to place. So, in this paper, we have come up with a solution: A portable low-cost paper-bag machine that uses news-paper to build paper-bag. The news-paper will be fed into the machine via human assistance. For folding, bar mechanism is used. The arrangement of bar is such that When paper is pass through conveyor it fold automatically and to maintain the pressure roller bearing are used. Being controlled by the AC motor paper pouch is created. This paper is structured as follows: Section II describes the block diagram, Section III describes working, and Section IV describes Tools review, Section V describes Results and Conclusion, Section VI future improvements and Section VII lists out references.

2.BLOCK DIAGRAM:

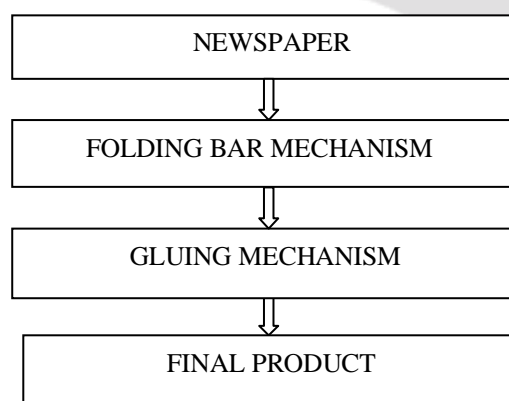


Fig.1. Block diagram of proposed system

3D-Model

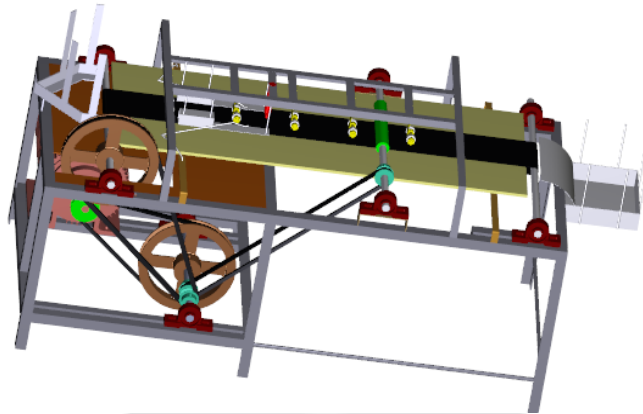


Fig-2

A BRIEF DESCRIPTION OF EACH BLOCK:

1. News-paper:



Fig-3

Here we are deploying local daily “Lokmat” newspaper of 20cmX20cm dimensions to make paper bag.

2. AC motor:



Fig-4

- AC motors convert electrical energy to mechanical energy.
- AC motor works on the principle of
- 1 HP Motor is used having speed of 1440 rpm which is reduced to 80 rpm.

3. Pulley and V-Belt drive:



Fig-5

For speed reduction, Pulley and V-Belt drive mechanism is used.

- We use three pulleys of diameter 5.08 cm, two pulleys of diameter 25.4 cm & one pulley of diameter 7 cm.

4. Pedestal bearing:



Fig-6

- Pedestal bearing is also known as Plummer block bearing.
- Pedestal bearing is used to support the rotating shaft with the help of compatible bearings.
- The fundamental application of pedestal bearing is to mount a bearing safely enabling its outer ring to be stationary while allowing rotation of the inner ring.

5. Roller bearing:



Fig-7

- Roller bearings have a roller as the rolling element & are used to provide smooth, low friction motion.
- Roller bearing is also used for maintaining the pressure on conveyor belt.
- Roller bearing consists of an inner and outer ring, rollers, and usually a cage or roller separator.

3.DEVELOPMENT AND WORKING

The system is a semi-automatic one, requiring one human every time. In existing paper-bag making systems, all sensors and actuators are fixed and the paper is moved. This increases the machine size to as big as a classroom or a hall of 15 foot X 20 foot or even more. In our system, the paper is feed and with the help of conveyor belt paper moves in forward direction. Thus we have reduced the system size to 4foot X 5foot. The system is divided into three mechanisms: Speed-Reduction mechanism, feeding mechanism, folding mechanism, pasting mechanism.

4.WORKING

1. Speed-Reduction Mechanism:

The shaft that turns a machine does not always match the speed available from any motor. Belt and pulley systems can be used for speed reduction. 1 HP Motor is used having speed of 1440 rpm which is reduced to 80 rpm using speed reduction mechanism.

2. Feeding:

A belt conveyor is the connecting link in an automatic feed supply system whether for short or long distance. In feeding, we feed 22 X 22 cm paper as a raw material.

3. Folding Mechanism:

After feeding mechanism, Paper moves in forward Direction. For folding operation bar mechanism is used. The arrangement of bar is such that when paper passes through conveyor belt it fold automatically and to maintain the pressure roller bearings are used.

4. Pasting Mechanism:

First of all two sides of paper get folded. At the time of folding, glue is apply on one side of paper and one side is stick over another side. After all one side is remaining, that one side is folded by using break type mechanism. When paper is pass

through conveyor, when pedal is applied, then that side is folded and glue is also apply at the time of folding. and we get a final product.

5.RESULTS AND CONCLUSION:

Thus, we have come up with a low-cost semi-automatic paper bag making machine. Since we have used conveyor belt for moving paper in forward direction, the total system cost is INR 50000. Currently the system can produce 60 paper-bag per minute. This is because of the 1 HP barrier AC motor used in entire system. Also glue needs to be replaced frequently. Further one human assistance is required. However, the machine can be deployed in small scale industries, homes, etc. and the paper-bag can be used in medical shops for carrying medicines.

6. REFERENCE

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