Automatic Packing Control Machine

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Abstract— This paper presents an automation of packaging control machine using microcontroller The idea is to automate the process of placing the material on the paper sheet, detecting items and folding simple mechanism. The purpose of doing this project is to reduce human effort. Decreasing machine cost is also advantages of our design. This machine design is based on simple mechanism and can easily install. An experimental prototype is produced to fully automate the system. It is found out that the system decreases time and manpower requirements for every station as compared with traditional manual system. About 90% of full automation without humanism specified also in the system.

Key words: Packaging, Microcontroller, stepper motor

I. INTRODUCTION

Now a days, automation in the industry becomes the global trending manufacturing and with the success of the Japanese and European industries in terms of production; more and more companies are switching to automation. Different factories packages soaps in boxes. Procedure – folding, putting soap in the box, and pasting the edges.

It increases the speed of packaging and decrease its cost .Trying to automate there process as much as possible in order to reduce the number of paid workers. Designing of automated machine to fulfill the requirements .A study on computer aided design (CAD makes it possible to transmit designs directly to machine. That will follow them continuously.

The main & full purpose of this paper is to design automated packaging .Another purpose is also to help companies planning to switch from traditional way of product packaging into a more productive and automated packaging system in the assembly line using controller.

This research is useful as the controls of the machine for a specific job, or a task are processed by the computers. The computer can also be programmed depending on the operator's (human) decision to perform automatic actions or not.

It can also be useful for the future related researches in conducting advance research on industrial automation using microcontroller or the artificial intelligence methods. The company shall benefit with the safe operating system, more efficient factory, faster response time, and less number of workers also on the actual production line.

This paper is focused on automation of packaging. Electro-pneumatic and motor control is used for the entire process. The whole system executes the following processing automation using the microcontroller and packaging. Designing of machine fulfill the requirement.

II. RELATED RESEARCH

In this survey paper we are going to discuss procedure of automatic packing control machine with the help of microcontroller, related algorithm, their advantages and disadvantages have been studied.

Various algorithms for automatic packing control machine are as follows:

A. Algorithm

1) Folded carton or paper will be kept on conveyor belt 1.
2) Soap is kept on paper or carton.
3) It will get folded on stage 1.
4) Upper portion will get folded on stage 1.
5) Soap is kept on conveyor belt 2.
6) Side flaps are get folded.
7) Product is out of the conveyor line.

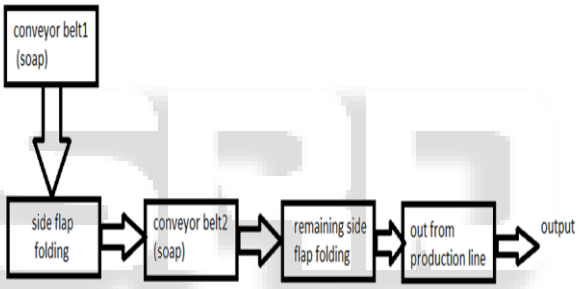

Fig. 1: Block Diagram

III. WORKING METHODOLOGY

Our project will work according to these flowchart. Soap will pass from conveyor belt1. As soon as soap passes through conveyor belt1.Where creezed box sheet already placed there at initial belt position from these point folding operation will be started.As box sheet goes further both side flap will be pulled up. Next step will be top left flap will flap will cover top portion on this portion glue will be spread with the help of small pin holed pipe. The same procedure will be follow for top right flap. The next stage is this soap will be fall on conveyor belt 2 .Then soap will be pushed on inclined surface where remaining side flap folding operation will be done. The mechanism used for these operation is same as first folding operation.

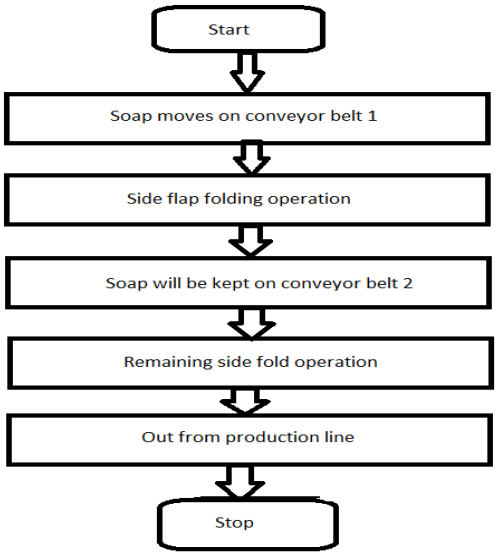

Fig. 2: Flowchart of Automatic Packing Control Machine

IV. CAD MODEL

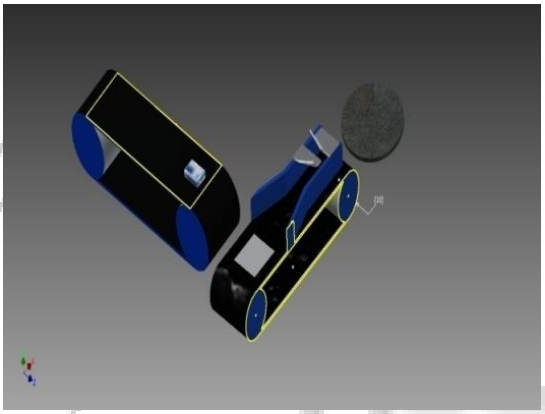

Fig. 3: CAD Model of Proposed Machine

V. CONCLUSION

Though our team initially set out to design and manufacture a prototype of the automated packaging machine, we quickly found that the time we had in Wuhan would not be sufficient. However, we are very pleased with the results of our work. We now have a solid conceptual design of the automated packaging machine and have built a strong foundation for further development of this project. While time did not permit the thorough analysis necessary to properly select materials and build the prototype, we achieved results in the form of an animated CAD model of the entire machine. We studied our process and pinpointed several of the most likely modes of failure in our machine as well. The single most likely mode of failure for all stages of our machine depends on material selection. Material selection will be the paramount concern for anyone who chooses to develop this project further. Because of the multitude of small parts working in a common space, any bending or fracture during the machine's operation could cause part interference or even failure. A strong, lightweight material should be selected.

To determine if our design is good, we will compare the efficiency of our design and the preexisting packaging/loading method. The efficiency is comprised of cost, speed, reliability, and size.Unless our machine is repeatable. This should not be discouraging because we feel this process is perfect for automation because of its0 series of repeated actions and motions. With continued work on our design to increase the speed, thorough analysis of the stresses each component experiences, and determination of the modes of failure of our machine, we could revolutionize the loading/packaging industry. Our machine's small size and its ability to complete packaging operations of this complexity without the assistance of a human are unprecedented in the commercial world.

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