

## Smart Bin Compactors

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**Abstract**— To design the efficient bins capable to hold garbage 4 to 5 times its capacity and help avoiding overflow of waste and keep the area clean. In this paper benefits of installing smart bins compactors in the city are performed. The bin we are designing will compress tin cans, plastic bottles, card boxes. Also it is capable to keep animals away from garbage in turn reducing hovoc created by them. Accurate motion of lead screw through tool guidance and adequate compaction force to compress the waste without damaging the bin is essential functioning of the smart bin compactor. The bin is motor operated when the switch is pressed by the people on requirement.

**Key words:** Smart Bins Compactors

### I. INTRODUCTION

This Invention is directed towards compactor for crushing trash or recyclables. This allows the trash compactors to be emptied less often. The mechanism runs on AC power supply with plug given with bin. A removable bin allows easy removal of the compacted trash. Our aim is to limit overflowing of dustbin in cities, parks etc. It prevents from the transport cost offend due filling of bin. It prevent from littering of trash on road. Most important application is that is can utilize full space of dust bin.

#### A. Theory and Concept:



#### B. Definition:

**SMART BINS:** It can be defined as active mechanical bin which compress the trash increasing its waste carrying capacity there by avoiding overflowing.

#### 1) Application:

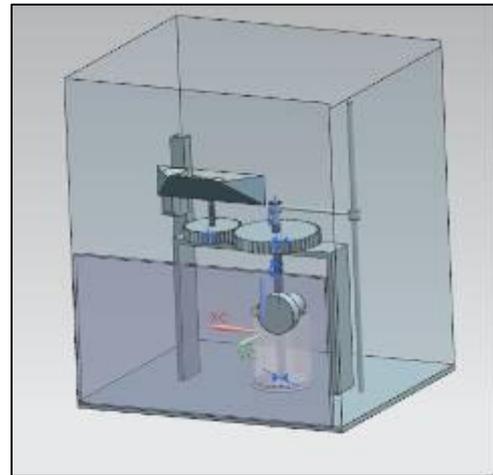
Smart bins have major applications:

- 1) Hold large volume of trash compared to regular bin.
- 2) The garbage is enclosed in a transparent acrylic sheet avoid contact with environment.
- 3) Safe from animals munching on trash.
- 4) Avoid overflow of trash.

- 5) Less time spend by sanitation personal to remove the trash because of its large capacity there is no need to be emptied often.

#### 2) Concept of Smart Bin:

#### C. Compactor Design:

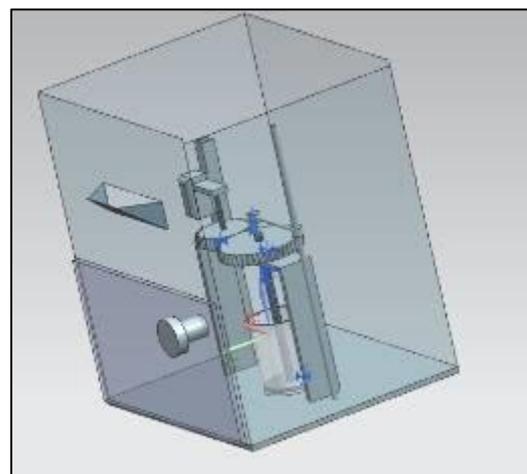


The concept is to use lead screw and gear mechanism to properly compact the trash on pushing the switch made available on the bin and come back to its original place when compaction is complete, thereby making more place for the trash to be filled in. The model was generated in solid works.

### II. MACHINE DETAILS

**Working of machine:** This bin exploits the compaction cycle on pressing the push button readily available on the bin enclosure by the user. The button (red) should be kept pressed until you want to compress the trash and then push the other button (green) to bring it back. These designs increase the trash carrying capacity of the bins.

### III. MACHINE AND DESIGN SPECIFICATION



- 1) **MOTOR SPECIFICATION:** J 'Star motor industrial limited.

Model: JS18-B 40048L-TM15-011

INPUT: 110/220V AC- 50/60Hz

BUILT-IN CAPACITOR

BUILT-IN SENSOR

BUILT-IN POTENTIOMETER

2) Fabrication material: Mild Steel

3) Lead screw: 18 inch lead screw

Pitch:- 5mm

11 inch thread is provided

Lead screw shaft dia:- 26mm

4) GEAR:

No. of teeth on big gear = 86 teeth

No. of teeth on small gear = 48 teeth

Load applied =200-300kg

#### IV. LITERATURE REVIEW

We have got the idea of making such a dustbin from the “Big Belly” company who manufacture the dustbin known as “Big Belly Bin”. They have totally used an automatic system in their bin which cost 1, 20,000Rs in our currency which is high in cost for the park bin only, if it has to be made for large dust bin then it will cost more. So we are making a project in order to make a “Smart Bin” in low in cost as much as possible.

#### V. CONCLUSION

Compacting general waste in this bins are designed for cities, parks and not for Compacting industrial waste. It consists mainly of structure for supporting motor Lead screw guiding mechanism for compaction.

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