

# DESIGN AND FABRICATION OF GLUING MACHINE

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**Abstract** - Glues (or) adhesives are one of the prime solutions to paste different kind of materials in surface phenomenon according to necessary application. Existing glues are made with use of hard chemicals. Which may harmful to workers while handling such type of glue. This paper title "FABRICATION OF GLUING MACHINE" uses green glue paste the materials which are eco-friendly to environment. This machine is simple in construction and economical which may fulfill the need of small scale industry. It has parts such as machine, frame, drive, feeder, storage tank, etc. The gluing machine may finds application in areas viz, wood joining, sticking wall papers and labeling stickers on carton and also adhere bottle labels.

**Key Words:** Gluing, Green materials, adhesive, small scale industry, eco-friendly.

## 1. INTRODUCTION

The aim of this machine is enhance the awareness related to green chemistry. In a move towards that, we have made the green glue mainly with minimum and harmless ingredients. Although the conventional glue has very good properties, it is not safe to environment and to the manufacturers, consumers in the long run. This gluing machine uses green glue in place of conventional glue in the roller type gluing machine.

## 2. CONSTRUCTION

The gluing machine consists of the following components.

Frame, (Base), Driver (Motor), Roller, Trough, Pulley, Gears.

### 2.1 Frame

Frame is also called as base. It supports all the parts of the machine viz, Rollers, Motor and trough, Gear assembly. The base is made of material, 'L' Angle of size 1" x 1".

### 2.2 Driver (Motor)

The driver in the machine is motor with the following specifications. It drives the driver roller and gear assembly the other roller rotates.



Fig. 1 – Motor.

Power – 0.25Hp AC

Maximum Speed - 1420 rpm

Phase – Single phase.

### 2.3 Roller

Following are the various rollers in used in the machine. The rollers are Lower roller, Driver roller and upper roller. The rollers are made of the material steel and of Lower roller, Driver roller and Upper roller diameters 65mm, 65mm and 50mm respectively.



Fig. 2 – Roller.

### 2.4 Storage Tank (Trough)

The trough is made up of sheet metal and of size 650x280x52mm. the trough is used to store the green glue. From the trough the roller gets absorbs the glue.



Fig. 3 – Storage Tank

### 2.5 Pulley

The pulley is made of the material Cast Iron. It is of size minimum diameter, maximum diameter is 17mm, 80mm respectively.



Fig. 4 – Pulley.

### 2.6 Gear

The gear is made of the material is steel

- Type - Spur gear
- No. of teeth - 37 teeth
- Outer diameter - 65mm
- Inner diameter - 17mm
- Pitch - 1.5mm



Fig. 5 – Gear.

Table -1: Specification of parts

Sl. No.	Description	Specification & Dimension
1	Storage Tank (Trough)	Length - 650mm
		Width - 280 mm
		Height - 52 mm
2	Supporting Plate	Length - 410mm
		Height - 620 mm
		Thickness - 3 mm
3	Lower Roller, driven Roller	Length - 600 mm Diameter - 65 mm
4	Upper Roller	Length - 600 mm Diameter - 65 mm
5	Pulleys	Min diameter - 17 mm Max. diameter - 80mm
6	Belt	Length - 300 mm
7	Gear - 1	Diameter - 65 mm
8	Gear - 2	Diameter - 61 mm
9	L angle	Size - 1" x 1"
10	Bearing	Inner diameter - 17mm
		Outer diameter - 80 mm
11	Motor	Type - AC(0.25 HP)
		Speed - 1420 rpm

### 3. DRAWING

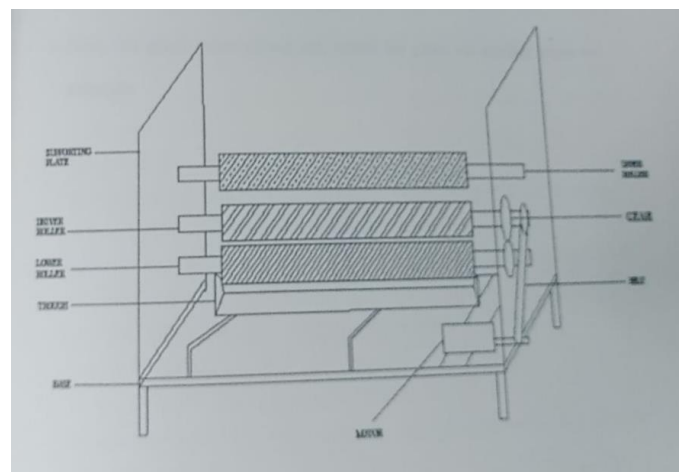


Fig. 6 – Elevation of gluing machine.

### 4. WORKING PRINCIPLE

The paper is inserted between the two rollers. The lower roller takes the green glue from the trough Then the glue is applied on the inserted paper or card board. Now, the glued paper comes out, which we place on another paper to laminate.

## 5. PREPARATION OF GREEN GLUE

Add 30 ml (2 table spoon) of powder milk to the 9 ounce cup. Measure 60 ml of hot water. Add this water to the powder milk and stir until dissolved. Add 15ml of vinegar to the mixture and stir. The milk will separate into solid white chunks (curd) and a yellowish thin liquid (whey). Stir with speen until the milk is well separated (add more vinegar or heat if the milk does not separate well, separation work best when the milk is hot). Remove the curd from the whey. Place the curd onto two coffee filters and squeeze some of the liquid back in to the cup. Use a paper towel to finish drying curd. While drying, dispose of the whey in waste bowel provide (dispose of whey collectively when section has entered). After the cup is empty, drop the lump of curd back in. Add 1 table spoon of hot water. Add 4 pinches of baking soda. Mix thoroughly that you should see some forming continue mixing the curd. The glue is made.

## 6. ADVANTAGES

### ADVANTAGES OF GLUING MACHINE

1. The cost of the machine is economical.
2. Less maintenance and suits well in small business / small scale industries.
3. Gives good output, since the green glue has good sticking characteristics.
4. Less skilled person can operate the machine.

### ADVANTAGES OF GLUING MACHINE

1. The raw materials needed to make green glu are easily available.
2. Safety & environmental responsible.
3. Have good damping characteristics.
4. The glue is odourless.
5. The glue has good adhesive property.

## 7. CONCLUSION

The proposed gluing machine uses green glue in the place of conventional glue, to turn the application process towards green chemistry. In future, the further improvement of glue machine will find more application in many fields.