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Manufacturing of Runner Grinding Machine (Crusher Machine)

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ABSTRACT — *A plastic is a material that can change the environment healthy very badly. Mostly plastic is called polymers. Polymers are long chain of atom bonded to each other. Plastic have advantages as well as disadvantages. In industry about 25 kg consumption of plastic material occur while manufacturing of request material, due to the plastic moldings process there is a loss of material also take places. In industry about 3kg of plastic material remains. The main and most important one is we can save up to 1000rs loss per day of labor. We will take a look towards the Advantages of plastic is light in weight. Plastic possess very good strength and toughness. Strong good and cheap produces. Plastic can be reused and restored again and again by Recycling it. Now let's take a look on Disadvantages of Plastic is of a non-renewable resource. Plastic is hazard to wildlife animals if they are not disposed properly. Due to plastic bags Clogs roadsides drains can occurs which could cause the flooding of street during heavy rainfall.*

Keywords-*Plastic, Decompose, Shredding Machine, Waste Management.*

I. INTRODUCTION

Now a day as the population is increasing day by day human needs are rapidly increasing. Today our world is facing a huge problem of plastic. Plastic is very harmful for the environment, as it does not decompose in the soil, and alloplastic is the most used material in the world wide. Our Project is based on cutting and making small pieces of plastic, in the form of waste management easier. Our Project model is of Recycling of plastic wastage which is occurs in the industries. Now a day the available machine which are present in the industries are mostly very much costly. Recycling helps in the maintenance of our environment. A small helping hand to make our environment free from plastic as it does not decompose in soil. Our model is based on Recycling in minimum amount and affordable, reasonably price.

II. OBJECTIVE

1. To design the machine as per aesthetics and ergonomics.
2. To design the machine as possible as in compact size.
3. To identify different parts of plastic shredding machine.
4. To design all component.
5. To validate the design of cutter in software.
6. To manufacture all the parts as per design.
7. To assemble all manufacturing parts.

III.REVIEW

Our paper focuses on the reviews of Industrial (Market) Machine and Our model machine. Market machine is very much costly rather than our Model machine. Market machine grinds thick and much bigger partial of the (Plastic Nylon Grade 66). Our model machine grinds smallest and fine particles which can be a minimum diameter inside of the (Plastic Nylon Grade 66). Mostly Market machine (SETUP) occupies much and more place. Our machine (SETUP) required very less place. Market machine have very complicated structures as well as complicated interface. Our machine is simple and easy to used and have very simple interface. In Market or Industrial machines skilled full workers are needed. Our machine is fully AUTOMATIC MACHINE; no need of worker is required. Market machine is very much costly and have high maintenance. Our model machine is in affordable price easy to carry and having affordable maintenance, (Even a new startup company can have afforded our model machine) In market machine high power motor is required which is not as compulsory as needed in the machine. Our machine model having low power motor which can work properly in every type of material which we pour in the machine. Industrial (Market) machine always needs an under supervision. As we all know our model machine is fully automatic so no need of supervision is required. Once we pour the material (NYLON GRADE 66) automatically the processing carried out properly and we get the fine and best result in the form of "CRUSHED PARTICLES. "

IV.RUNNER GRINDING MACHINE (CRUSHER)

The main and the most important feature of our machine is, the crusher machine is movable. Our model machine can easily

movable in anywhere, it's very easy to use. Our model machine is very easy to carry in every Tourist Places, Railway Stations, Airports and even in the Historical places. In short our model machine Is easy to carry and save to use in every phases. In other way our machine can CRUSHED the plastic which can help in the damage if our Nature

V. DESIGN

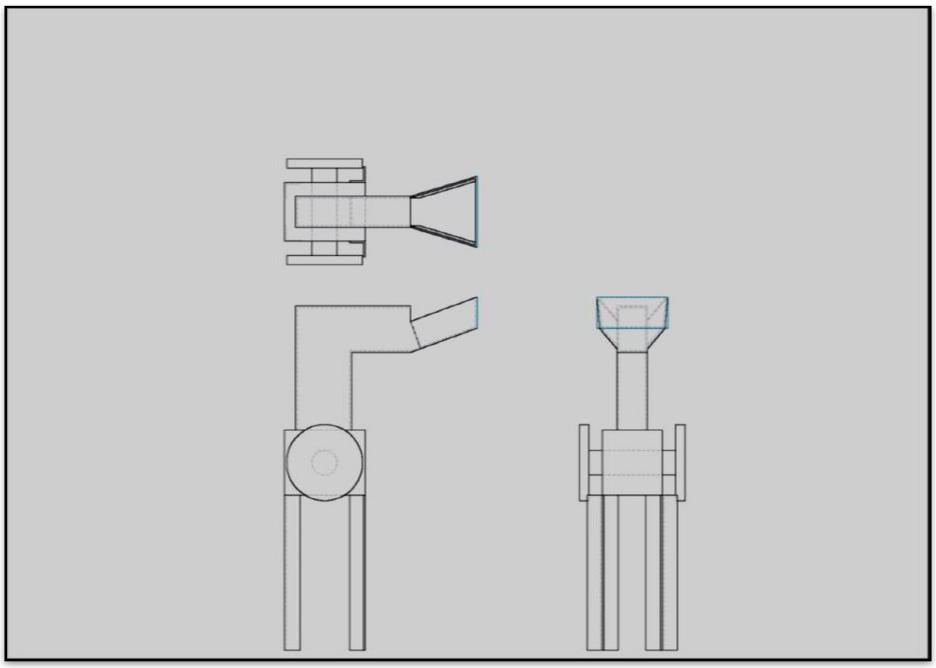

Figure 1. 3rd Angle Method of Runner Grinding Machine

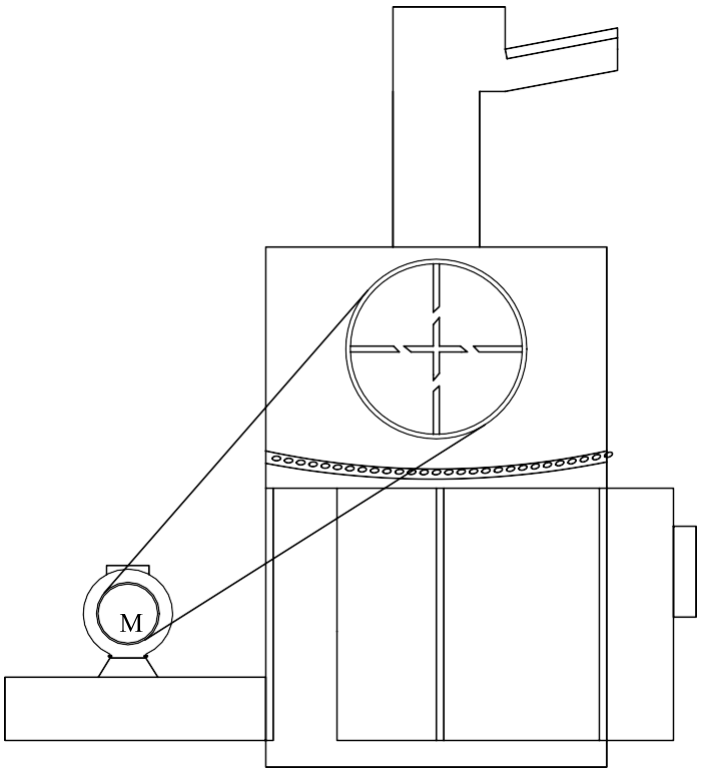

Figure 2. 2D Design of Runner Grinding Machine

Figure 3. Runner Grinding Machine

Table 1. Part List

Sr. No.	Part Name	Material	Quantity
1	Hopper	Mild steel	1
2	Electric motor	2 HP	1
3	Belt	Leather	2
4	Bearing	Stainless steel	2
5	Shaft	Mild steel	3
6	Flywheel	Mild steel	2
7	Casing	Mild steel	1
8	Blades	WPS	3
9	Nuts & Bolts	M.S.	14

VI. WORKING

First of all, our Project Name is: - DESIGNING AND MANUFACTURING OF RUNNER GRINDINGMACHINE. Our runner grinding machine (MODEL) is made up of Aluminum &Mild steel (MS) Metal. Our model is affordable in price as well as easy to carry and very easy for use. Crusher Machine is very essential need in Today's World. Due to increase in the amount of population, human needs are rapidly increasing so as the waste material, domestic waste, plastic are increasing more rapidly in the world. Our model is compact in size it will not take much place, it is adjustable in small place also. Model elements are as follows which Is used in the machine. First of all, starting the machine with the help of

power supply. The machine gets start by the motor present in the model. Motor is of 2HP (1440RPM), the motor is placed in the backside of model with the help of bottom support which is given by an Aluminum (SQUARE SHAPED RODES), Fabrication. Motor is attached which the V-Belt, v-belt plays an important role in overall machine. V-Belt is attached with Moving Blade and Stationary Blade which are present in both the side of the machine. (YELLOW COLOR WHEELS LIKE STRUCTURE) are called as Flywheel which are at the side of right and left side. Inside the Moving blade and Stationary Blade presence of Bearing is placed properly for the process. Accurately downward the Moving blade and Stationary blade presence of NET LATTIC is placed. Same as the following Collection bin is placed properly. This is all over parts present in the machine and we are finally moving toward the working of machine. As soon as we switch on the supply of power to machine Motor gets started. With the help of motor, the v- belt which is attached to the motor starts rotating around the two blade which are placed in upward direction of machine. Flywheel which are present at both side of machine runner and due to the motion of running the inner two blades starts rotating. Material (NYLON GRADE 66) Plastic material pour with the help of "HOPPER" in the machine. Due to the rotation of blades vacuum is created inside the chamber and due to the vacuum the plastic material directly moves downwards direction through the hopper. After the material is placed downwards direction the material starts strikes on blades, as the blades are sharp and fine the material starts getting into smaller pieces, that is the plastic size decreases rapidly. After getting cut by small size the plastic material which we needed gets collect in the (LATTICE FORMAT NET) which we have placed just below the blades. If possible/if we need the material size in diameter, we can place the diameter net, so when we achieved the plastic material which we want. We can also separate plastic material is collection bin which is places below the Lattice format bin. And finally the product which we want gets collected in the (LATTICE NET &COLLECTIONBIN).

VII. COSTING

Table 2. Costing Table

		Hopper	Shaft	Blade	Flywheel	Casing	Collection bin	Netting	Motor	V-Belt	
Material		M.S.	EN 31	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.		
Weight (kg.) / Qty		7	2	1	14	14	8	1		2 meter	
Material cost (kg)		60	100	150	60	60	60	60	2hp, 1440 rpm	Rubber	
Nuts & Bolts (Qty)				M8×2	M12 × 1	M12×4 M10×4 M6×6					
Machining time	Lathe	-	-	-	-	-					
	Milling	-	1:00	3:00	3:00	3:00					
	Slotting	-	0:30	0:30	1:00	-		3:00			
	Cutting	3:00	0:30	-	-	1:00	0:30				
	Bending	1:00	-	-	-	2:00	1:00	0:30			
	Welding	0.30	-	-	-	2:00	0:30	0:30			
	Grinding	-	-	-	-	4:00	-	-			
	Threading		3:00								
Machining Rate	Lathe	120	120	120	120	120	120	120			
	Milling	150	150	150	150	150	150	150			
	Slotting	120	120	120	120	120	120	120			
	Cutting	120	120	120	120	120	120	120			
	Bending	140	140	140	140	140	140	140			
	Welding	180	180	180	180	180	180	180			
	Grinding	140	140	140	140	140	140	140			
	Threading	160	160	160	160	160	160	160			**TOTAL**
Total		1010	950	960	1410	2610	770	580	6500	1500	**16290**

VIII. SUMMARY

The plastic crushing machine help to reduces the percentage of plastic wastage which is dump unnecessary around the world. Recycling of plastic which will help in preserving of Environmental and Saving your Earth Mother form getting damaged by undecomposed plastic. Recycling plastic gets decreasing the number of Plastic Production.

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