

Design and Fabrication of Soccer Shooting Machine

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Abstract - This paper deals with design and Fabrication of Soccer Shooting Machine. Soccer is one of the most played and most loved sport on the world. But soccer playing requires more practices. The following Practices such as goal posts, receiving short passes, receiving long shots, getting ball throws for header practice and so on. Actually, one coach needs to train eleven players and each player needs ball practices. So here we design a machine that can shoot soccer balls with high speed and high accuracy for efficient soccer practice. Our machine makes use of two numbers of high torque motors with pulleys for throwing a ball. Both motors are rotated in opposite directions so as to drive the ball in same direction with dual speed. These motors are powered by a battery in order to deliver high power output. This setup of rotating motors is mounted on a trolley with a stepper-based arrangement. This machine also allows the user to adjust vertical angle of the ball shooter. This system mounted on a trolley with castor wheels which allows for easy movement over the ground. Also, the castor wheel-based trolley allows for easy 360-degree movement for changing shooting direction at any instant. The soccer ball holder allows for holding two balls in queue at a time. A trigger is which controls the ball to be shot using a servo-based arrangement. Thus, this soccer ball shooter utilizes a mechanical system to shoot soccer balls with variable settings on the soccer field.

Key Words: Soccer, Castor Wheel, Goal Post, 360-degree, Shooter

1. INTRODUCTION

Football launcher is invented by Christian gutter in Germany 2006. After it was recreated in Borussia Dortmund Germany football club in 2012 Ball delivery system are already widely used for many sports across the globe. These Has similar traits in small function and purpose. But many lack user and capabilities Interaction and customizations. The main design provided for independent movement Loading or unloading balls, while player tracking motion and automatic has been provided a strong basis. It is very nearby culture background an automatic system will have great potential for youth goal programmer.

2. DESCRIPTION OF COMPONENTS

2.1 AC Electric Motor

An electric motor is an electrical machine that converts electrical covert into mechanical energy. Most electric motor

operates through interaction between motor magnetic field in a wire winding to generate force in form torque applied on motor.



Fig 2.1 AC Electric Motor

Power	2HP
Phase	Single phase.
Speed	1500rpm.
Watt	160 W

Table 2.1 Specifications of Motor

2.2 Connecting MS Rod

Mild steel is a type of carbon with low amount of carbon. Although ranges vary depending on the source. The amount of carbon typically found in mild steel is 0.05% to 0.25% by Weight.

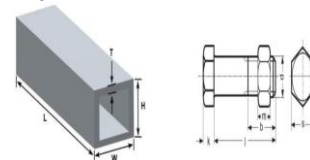


Fig 2.2 Connecting MS Rod

2.3 Castor Wheel

The castor is an un driven wheels that is design to be attached bottom of larger object to move. Ex: shopping carts, materials handling equipment.



Fig 2.3 Castor Wheel

2.4 Ball feet chute

A chute or passage through which ammunition is guided into breech mechanism of like machine gun. A feed chute at transition chamber at rotary kiln inlet end. A ball feed system, collect ball into ball feed chute and moves towards a ball gutter.



Fig 2.4 Ball feed chute

2.5 Motor mount & Cup

Mount made of high-Quality materials, durable and practical. It easily installs which convenient to use specification of material to protect motor windings. Conventional brushless Ac motor constructed with permanent magnet rotor located wound stator and rotates internal stator with windings.



Fig 2.5 Motor mount and Cup

2.6 Wheels

In the simplest terms it is a machine to reduce effort to lift or transport objects. Wheels along with axle holds up Load so moving force and angle of the transverse and not carrying the actual load. A pair of wheels is connected in axle this mounted under frame with bearing support.



Fig 2.6 Wheels

2.7 Foot Ball

Varying weight can also be explainable due to ball's skin. If you want to get some match balls, they are designed to be thick, with 4 layers of skin. They can be kicked around all day without any trouble. Training and promotional balls have a thinner skin, meaning that they are less durable, but are a cheaper investment.

Football	Std size
Circumference	685-695
Diameter (mm)	218-219

Table 2.2 Specifications of Foot ball



Fig 2.7 Foot ball

2.8 Power Chords & Wires

A power cables is an electric cable; it will assemble of one or more electrical conductor usually held together with over all sheath. The assembly is used for transmission of electrical power cables. It may be installed as permanent as wiring with in building as over ground or exposure etc.



Fig 2.8 Power Chords & Wires

3. DRAWING

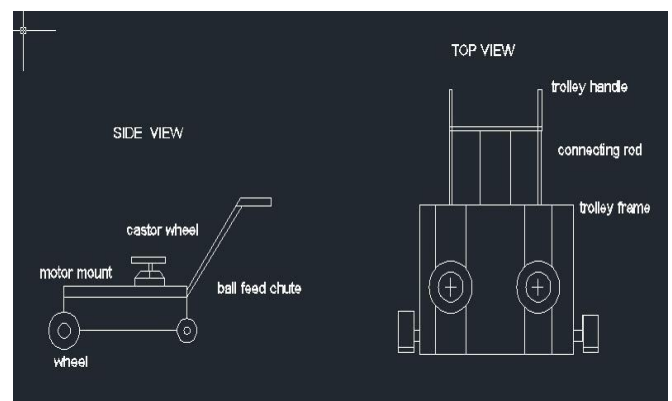


Fig 3.1 2D Drawing

4. CONSTRUCTION

Ac motor is placed in the upper surface of the supporting frame. Trolley frame and handle is connected to each other. Two Castor wheels are connected with top surface of motor. Two wheels are supporting at two sides of supporting frame. Ball feed chute is connected to connecting rod. Wheel's setup arrangement motor is fitted in frame center

5. WORKING PRINCIPLE

Before the launcher was designed. first, we understand. How ball behaves and moves one launched through the air. In sport characteristics. Must consider for that incorporate a ball. An aerodynamic of the balls are critical. Prediction and trajectory and study. To describe phenomena associated

withfoot. Ball travelling the air. The Reynold number must be considered. When switch is on Ac supply, electric motor power transmitted. A castor wheels rotated with help Ac high torque electric motor. Balls are comfortably sitting uponball feed chute. Automatically ball will be Shotted.

6. APPLICATIONS

- It is used for short and long practice.
- It more useful for goal keeper.
- Open field work
- To use at any time without limitation

7. ADVANTAGES

- Easy to move.
- It is electronic control ability.
- Trays carry easily two to three balls.
- Maintenance easy.
- Dismantling and assembling simple.

8. BILL OF MATERIAL

S. No	Name	Material	Quantity
1	Ac electric motor	-----	2
2	MS connecting rod	MS	2
3	Nuts and bolts	Alloy	As Required
4	Castor wheel	Plastic	2
5	Ball feed chute	Mild Steel	1
6	Mount &cup	-----	4
7	Wheels	Plastic	2
8	Football	-----	1
9	Power chord &wires	Copper	As Required

Table 8.1 Bill of Materials

9. COST ESTIMATION

S. No	Name	Amount (RS)
1	Ac electric motor	3500
2	MS connecting rod	400
3	Nuts and bolts	50
4	Castor wheel	450
5	Ball feed chute	300
6	Mount &cup	300
7	Wheels	450

8	Football	500
9	Power chord &wires	150
Total		Rs.6800

Table 9.1 Cost Estimation

Direct Material Cost = Rs 6800

Direct labour Cost = Rs1500

Other Expenses = RS 700

Direct Cost = Direct Material cost + Direct Labour Cost
= Rs 6800+Rs 1500 = Rs 8300

Total Cost = Direct Cost + Other Expenses
= Rs 8300 + 700 = Rs 9000

FABRICATED MODEL



CONCLUSION

We have replaced of the electric motor, requires less Effort will easilyavailable anywhere. The objective of this project is to run machine also it Will worked by manualeffort. The ball shooting is continually at low maintenance Requiring machine.

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