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## Design & Fabrication of Portable Table Saw For Small Wood Working Project & Workshop

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**Abstract :** In this fabrication of project, we will mainly focusing on problems facing by the many operators is that they have to use larger machine to manufacture a small wood work piece, which consume more electricity and expensive. Which in turn increase the cost of work piece, due to it size less space remain vacant and annually worldwide 30,000 incidents take places injury related mainly include hand and fingers. To overcome all this problem mention above we have discuss and fabricating the portable table saw which can almost solve all the problem mention earlier. As it will be smaller in size so it will not take large space so it can be adjust at many shelves, This project will uses a dc motor of 12 v which consume less electricity which will solve the problem of high electricity consumption. The operators will afford this table saw as it supporting frame will made from wood and will sustain considerable amount of weight and we will make as compact as possible. This machine will increase the productivity as it is easy to operate. This machine is beneficial and will be affordable to all who will perform wood operation. This machine will also reduce the risk factor as it will be much safer if use properly.

**Keywords** – Portable Saw, Light Weight, Table Saw, Cost Effective.

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### I. INTRODUCTION

A table saw is a wood cutting tool consisting of a circular saw blade mounted on an arbour that is driven by an electric motor (either directly or by belt or by gear). The blade propagates through the top of the table, which provide a support for the work piece being cut. It also known as saw bench. The table saw mainly used for cutting wooden work piece, but sometime metal sheet are also cut by using it. The first table saw was invented in 18<sup>th</sup> century. It was invented by Samuel Miller from South Hampton in England in 1777. The wood tool has a fixed arbour and table. You have to move the table in up and down movement to cut the work piece at different height. To cut the work piece you had two option either to clamp it in the wise or hold the part you need to cut on the blade and start the motor for the blade to rotate in a circular motion and cut it. The main disadvantage of Miller Medal was that it was having no option to controlled the depth and direction of cut and it was too bulky model

### II. PROJECT BACKGROUND

The main reason behind choosing the design and fabrication of portable table saw machine is to provide a machine that will be affordable to people who can't afford expensive table saw machine this will give them an opportunity to work on there project or operation at low cost. Due to low weight of the machine and minimum size will be carried out at any working sites without any difficulties. Portable table saw machine will be much cheaper than larger machine in much aspect such as a) It will consume low electricity compared to large machine b) As it will be light in weight which reduces the price of machine. This portable machine will be works with the same efficiency as that of large table saw machine. It will be much more compact machine so you don't have to think about the space requirement for this machine. You can keep it anywhere u want . One of

the important reason behind the project is that the machine will be increase the productivity and save time. While using such a large table saw you have risk of injury and that can be fatal ,but due to it small size here injury can't be fatal and will avoid injury if use properly.

### III. PROBLEM DEFINITION

The current problem facing by many small workshop owner and local carpenter Is that in order to cut single piece of wood they have to use bigger expensive table saw. Which in turn consume more electricity and acquired more space. In order to tackle those problem we will fabricating a small portable table saw which will require less space and consume low electricity and provide same efficiency as those of large table saw to cut small piece of wooden work piece.

The Objective of this paper is to

- To perform essential cut quickly, safely, efficiently
- To cut work piece precisely in required dimension
- To reduce the power consumption of electricity

### IV. METHODOLOGY

In this paper a design for a machine here we will take a long wooden board of dimension 30x20x05 inches. At the centre of board we will add 3x3 inches small block of wood to raise the level of motor from the ground. Then we will fix the motor holder on to the wooden block. Using screw, we will be attach the motor with motor holder. After fixing the motor, will add external shaft to the motor to hold saw blade tightly. As we will using a 12 volt DC motor will required a power supply of 12 volt 20A. Then we will mount the power supplier at the corner of wooden block and doing the necessary connection. Later we will add a switch button to supplier to control it from single point. Now we will make a lid with the wooden board of dimension (30x20x05) inches and close it from the top of the box. The blade will protrudes up 2cm upward while operating by cutting the board. At end we will adding a measuring scale and fences (if required) to guide the work piece accordingly.

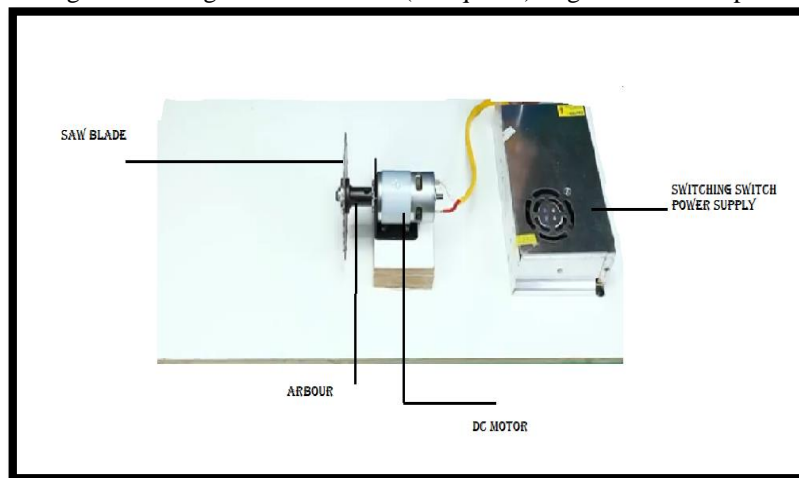


Fig. 1

TABLE 1

Sr. No	Components	Objective	Quantity
1.	Dc Motor 775	Power transmission to shaft	1
2.	Switching Power Supply	Convert 240v to required Volt	1
3.	Saw Blade	To cut the work piece	1
4.	Saw Blade Holder	To hold the saw blade	1
5.	Dc Motor Holder	To hold the motor	1
6.	5mm Shaft	Transmit power to saw	1
7.	Plywood with 6mm thickness	Sustain weight of machine or base of project	1
8.	Switch Button	Enable power to motor	1
9.	Super Glue	To stick Wood en frame	1
10.	Wire	To Connect Motor power Supplier	2

## V. CONCLUSION

The portable table saw machine is proposed by keeping in mind the two critical factor while manufacturing, the accuracy and the cost. The machine which we will make works with the same accuracy as that of large table saw with cost effectiveness. The machine prototype will be simple for cutting variety of wooden work pieces with varying length and dimension. This machine will cut the work piece at 90<sup>0</sup> angle. It will also reduces the risk factor while working. The machine will be provide with measuring scale (if required) to cut the work piece at required length. To guide the work piece we will add fences parallel to the cutting blade, The machine will be provide a good provision for the replacement of the cutter in case of accident and damage.

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