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DEVELOPMENT OF WALL GROOVING MACHINE

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Abstract: Generally, Slot in a wall can be done through a cutter machine with the help of cutter tool which cuts only two lines and then as per requirement slot can be created through tool and hammer. As this method is more time consuming also inaccurate, it needs to develop a machine which will make a very accurate slot in wall directly in less time and less effort.

I. INTRODUCTION

The various wall grooving process in manufacturing industries, construction, electrical fittings are carried out by separate processes. It need more time with high expenses and less effective work. Developing the wall grooving machine is a new concept specially meant to reduce the work time and save the cost. Therefore, we have designed the wall grooving machine to create the accurate and clean cuts to the walls. In construction sites for concealed electrical fittings, water pipelines fittings the chases cut in the wall is done with the help of hand tools like hammer, chisel, grinders, demolition hammer which is very tedious work. Aim of designing this wall grooving machine is making groove in the wall in single operation only without using any hand tools.

II. WALL GROOVING MACHINE

Introduction

The wall groove machine is define as the machine which will make a very accurate slot in wall directly in less time and less effort. The wall grooving machine are light and versatile, robust and reliable equipment. The machine are works on building materials including hollow and solid clay bricks, mortar rendering walls , cement blocks.

Component of Machine

- Motor
- Cutter Blade
- Cutter Casing
- Rollers
- Carbon Brush
- Wires
- Switch
- Extra accessory

Motor :

Figure 3.2 Universal Motor

An electric motor is an electrical machine that converts electrical energy into mechanical energy. A universal motor is a special type of motor which is designed to run on either DC or Single phase AC supply. In normal motoring mode, most electric motor operate through the interaction between an electric motor's magnetic field and winding currents to generate force within the motor.

Factors To be Consider In Selecting Electric Motors :

The Load Characteristic Needed : - The most important task should be perform is to determine the load characteristic that will drive the motor speed, that it is the torque and speed versus time, for motors must produce adequate starting torque to start the load.

The Motor Mounting : - Motor must be securely mounted to the drive a piece of equipment, safety, adequately and efficiently.

The Motor Enclosure : - Motor must be able to operate in all types of environment.

The Motor Drive : - To select a drive, one must consider the operating speed of equipment and the size of the drive.

Cutter Blade :

Figure 3.3 Cutter Blade

Carbon brush:

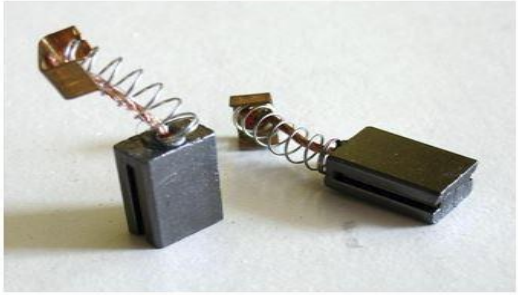

Figure 3.4 Carbon Brush

A brush is a device which conducts current between stationary wires and moving part, most commonly in rotating shaft. Typical application include electric motors, alternators and electric generators.

Roller Wheel :

Figure 3.5 Roller Wheel

Roller working principal is based on vibration, impact loading, kneading and by applying direct pressure on the respective layer.

Wire :

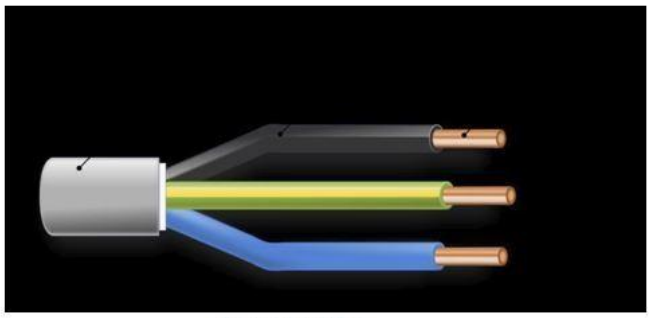

Figure 3.6 Wire

Wires are necessary to make a complete electrical circuit. A wire allows the electricity path to travel through it, based on the difference in potential between the component.

Multiple Solution
Based on single blade cutter :
These type of blade can effectively reduce noise and protect the environment. These product can be widely used on various power machine and environments.

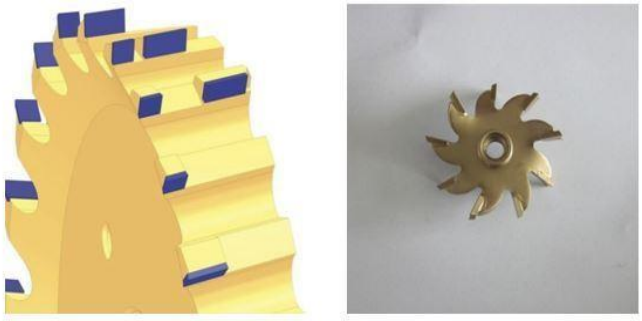

Figure 3.7 Single Blade Cutter

Advantages :

- The blade has good sharpness and high efficiency at the process of cutting, mean while ,it has long life span.
- Good cutting result, smooth cutting, flat surface and even size. Stable cutting, accurate cutting gap, waste reduction.

Based on Double blade cutter : In multi blade, machine having more than two cutting blades.

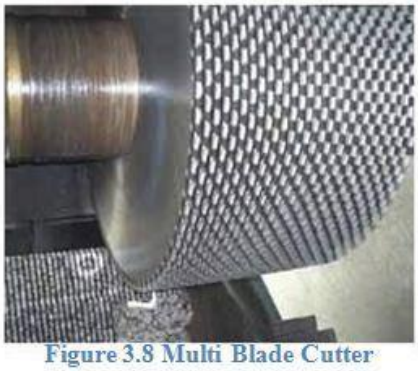

Figure 3.8 Multi Blade Cutter

Advantages :

- It work in low noise, small cutting slot which ensure maximum use of power and uniform thickness.
- Stable cutting gap, reduce waste.

Why single blade is preferable?

- Cutting efficiency improves 30% more, energy consumption reduces 30% more, good cutting result and fast cutting.
- This type of blade can effectively reduce noise and protect the environment.
- This product can be widely used on various power machines and environments.

Possible Advantages of wall grooving machine :

- Light and versatile.
- Clean cuts that avoid damage to the walls and uneven cuts.
- It performs perfect groove in one cuts only.
- Accurate work.
- Less effort.
- Reduce the working time.

Application :

- Electrical Cable fittings
- Water pipeline concealing
- Construction
- Hospital
- Mall
- Hotel
- Industries

III. CONCLUSION

After Viewing the existing method conclude that, with the use of wall grooving machine it is possible to remove the material from wall with ease and giving

appropriate straight and clean cut to the wall at specified height for conceal electrical fitting. Aim of designing this machine is making chases in wall of 35mm deep and 25mm wide in single operation without use of any hand tools so that electrical wires can easily accommodate space.

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