PNEUMATIC SHEET CUTTER

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ABSTRACT

For cutting sheet metal, we use scissors. Because it is a manual procedure, sheet metal will lose time due to errors such as incorrect dimensions. The pneumatic sheet cutting machine is one of the most contemporary approaches for making sheet cutting a more efficient procedure. This paper examines the pneumatic sheet cutting machine's dependability, performance, and potential for design simplification.

***KEYWORDS**: Sheet metal, Compressor, Pneumatic cylinder, Pneumatic hand lever*

INTRODUCTION: In some industries, hand sheet cutter is used which is operated manually. In these machines, we are using a pneumatic cylinder foe sheet metal cutting. These machines should be easy to operate and maintain also. Hence, we are introducing a pneumatic sheet metal cutting machine which will reduce manufacturing cost and minimize industrial labor problems which is the biggest headache for human.

The pneumatic cutting machine maintains a precise cutting speed at all times to produce a consistent cutting result. The machine is made out of a constructed pneumatic cylinder with a connecting joint attached to it. A cutter blade is used to put this joint together. We now have a bed in front of the cutter to support the material horizontally. We link the pneumatic cylinder to the compressor with pipe and valves via a valve arrangement controlled by a pneumatic hand lever that operates a solenoid valve.

LITERATURE REVIEW :

Pneumatics may be traced back to the first century, when Hero of Alexandria, an ancient Greek mathematician, described his steam-powered and wind-powered devices.
A German scientist, Otto von Guericke (1602–1686), developed on the idea. He created the vacuum pump, which pulls air or gas from a connected vessel. He demonstrated how to utilise the vacuum pump to separate the pairs of copper hemispheres using air pressures. The field of pneumatics has changed dramatically throughout time. It has evolved from small portable devices to large machines with several components that perform numerous functions.

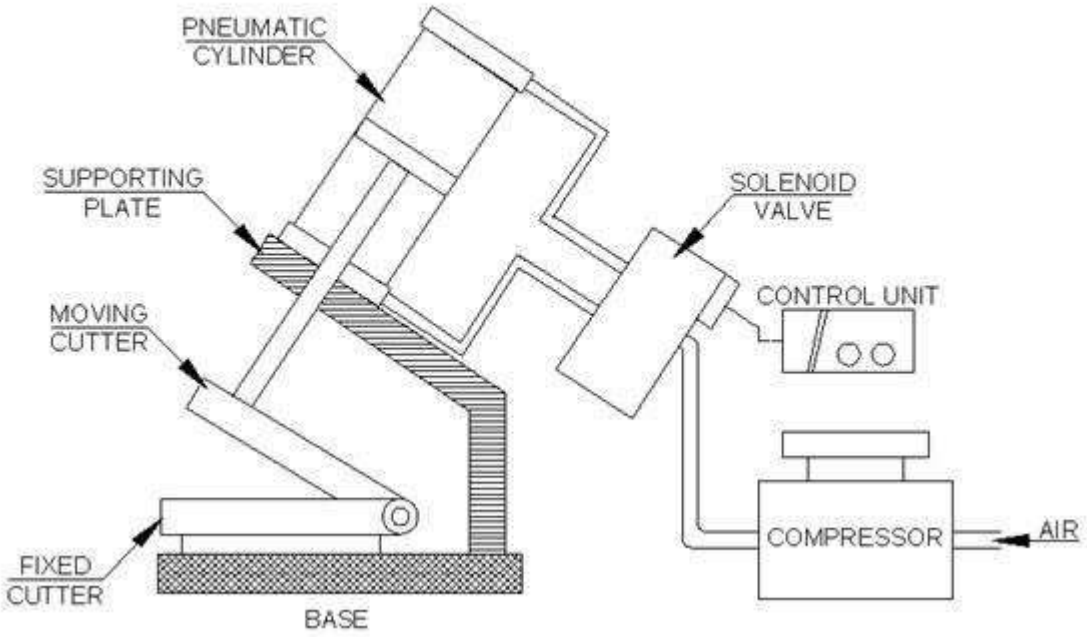
The sheet metal industry's beating heart is the sheet cutting machine. In some businesses, a hand sheet cutter is employed, which is less exact because it is handled manually. As a result, we're proposing a pneumatic sheet metal cutting machine. These machines should be simple to use and maintain, lowering production costs and reducing industrial labour issues.

In comparison to the prior circumstance, if we utilise the machine, the task will be accomplished in a timely manner. Sheet metal is just metal that has been cut into thin, flat pieces. It is one of the most basic metalworking forms, and it may be cut and twisted into a number of shapes. The material is used to make a wide range of common items. Although extremely thin thicknesses are called foil or leaf, and sections thicker than 6 mm (0.25 in) are considered plate, thicknesses can vary greatly.

Sheet metal is also used in vehicle bodies, aviation wings, hospital tables, building roofs (architectural), and a variety of other purposes. Shearing procedures are used to accomplish the most frequent cutting operations, which are sometimes referred to as shearing processes. Cutting techniques include separating a piece of sheet metal by exerting a sufficient amount of force to cause the material to fail. When a large enough shearing force is applied, the material's shear stress exceeds its ultimate shear strength, causing it to fail and split at the cut point.

Materials and Method:

It is controlled by a pneumatic two-way control valve hand lever. A compressor operates the control valve. Components involved cylinder with two actions Hand-operated pneumatic valve blade made of high-speed steel specification pneumatic cylinder is a kind of pneumatic cylinder. 100mm stroke length Pressure = 7 bar Diameter = 20mm 10 inches sheet cutter sheet metal cutter at work.



(Fabrication of sheet metal cutting machine)

The primary objective of the research is to learn more about pneumatic control systems. Then it's time to learn about double-acting cylinders. Then it's time to learn about high-speed blades. After that, it's time to design and build a pneumatic sheet metal cutting machine. After that, gather the necessary components. Then it's time to put everything together in the right order. Finally, finish the procedure of constructing a good pneumatic sheet metal cutting machine.

CONCLUSION: The sheet metal cutting machine works with the help of pneumatic double acting cylinder. The piston is connected to the moving cutting tool. Sheet metal cutting machine can be used to cut the sheet metal of minimum thickness without manual hard work. In this project I have tried my best to fabricate a pneumatic sheet metal cutting machine which can cut the sheet metal in small pieces.

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