

# DRILL BIT GRINDING ATTACHMENT

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**Abstract** -The present innovation provides a drill bit sharpening device for a support carrying rotatable grindstone and having pivot arm. retwining means the device comprises a jig having damp means for releasable retwining drill bit in position where in drill bit axis extends forward them the clamped along a corresponding clamp axis.

Whereas our project will be drill bit sharpening attachment which is to cause in the safety purpose where the aim is to protect from any external injuries as well as able to sharp the blunt drill bit providing safe distance from through rotating grind stone while holding it.

Our design of fixture is focus on the sharpen a drill bit to its correct angle which could be set and adjusted through the machine easily to revolve the current angle in addition the cost of buying a new drill bit can be reduces by using this fixture and can prolong the life span of drill bit.

Drill bit sharpening fixture is the hope that will be a successful product and be able to use to sharpen the drill bits to an exact angle safety and effectively.

**Keywords:** Drill, Fixture, Sharpening, Grinding.

## 1. INTRODUCTION

Drill bits are cutting tools used to create cylindrical holes, almost always of circular cross-section. Bits are held in a tool called a drill, which rotates them and provides torque and axial force to create the hole. There are several types of drill bits are used currently such as Spade, lip and spur (brad point), masonry bit and twist drill bits. Our focus will be on standard sized twist drill bits. Twist drills become dull after and must be sharpened. The preferred method of sharpening a twist drill is with the drill grinding machine which is done manually by holding and feeding the blunt drill bit on to the rotating grindstone, but this machine is not always available in field and maintenance units, so the offhand method of drill

sharpening must be used. The offhand method requires that the operator have knowledge of the drill geometry.

So in order to improve the usage of twist drill bits, we have to give priority on the sharpening angle of the bits. We have to input some alternative helps on sharpening drill bits manually. For example, technology input to invent a fixture for sharpening the bits. Thus, 'Drill Bit Sharpening attachment' which uses mechanical parts to sharpen the bits.

After researching and identifying the problems, we invented an idea that to create the 'Drill Bit Sharpening attachment'. This machine can upgrade the capability of human to sharpen twist drill bit easily into the correct angle and increase its life span. The design of 'Drill Bit Sharpening attachment' uses the grinding machine .

The assembly is adjustable to hold and tight up twist drill bit that will be sharpened using specified correct sizes. Then it is set according to the required angle of its muzzle. Alignment assembly, where the distance of drill bit is set to be in correct distance to be feed onto the rotating grinding wheel.

The machine's motor is turned on. Finally, the fixture table will be Fixed on the grinding machine table, and twisted 45 degree to left and right while the rotating grinding wheel and sharpened to its angle.

## 2. LITERATURE SURVEY

1. Mohd Najib Bin Talibin & Haji Mohd Mahadi Bin Haji Mydin(2014) studied the Drill Bit Sharpening Device. in which the production "Drill Bit Sharpening machine" prevent the problem that have arisen so that various injuries can be prevented and life span of twist drill bit can be used efficiently and longer in time span.
2. Rajesh Verma & Dhanraj Patel (2015) studied the Analysis of Drilling Tool Life – A Review. in which the It improves the tool life, drilling tool geometry and drilling rate. Thus they optimize the drilling process by

mathematical modeling and experimental analysis for improving the drilling tool life

3. K. M. Viramgama & R. D. Makwana studied the Design of Fixture For Valve Body For CNC machine .From this paper they conclude that for designing the fixture the geometry fixture method (3-2-1 principle) is very useful for the complex component having various machining processes though it is the basic principle of the fixture design

4. J.A. Armareg & J.D. Wright studied the analysis of Conical Drill Point Grinding- the Generation Process and Effects of Setting Errors. in This Paper has highlighted the complexities of the generation process and the attendant difficulties in achieving and controlling the specified drill point geometry method.

### 3. PROJECT PROTOTYPE

Drill Bit Sharpener attachment is a fixture for sharpen drill bits with the method easier and more effective than using the manual method. The purpose of using this fixture operator is to obtain the accuracy of the angle on the drill bit.

The fixture uses the concept where it uses rotating grinding wheel to sharpen the blunt twist drill bits. Grinding wheel is assembled and joined to the grinding machine.

When electric motor through shaft which is powered by electric power supply and the speed of the motor is constant on the size of the drill bit that will be sharpened. These parts are assembled at the base level of the machine.

The grinding level which is the outer fit of the body consists of the grinding area (grinding frame), which is fixed beside the motor assembly, assemble is inserted with collect inside to hold the drill bit according to its size. The chuck assemble is adjustable to hold n tight up twist drill bit from the size of 2.5mm, 3.0mm, 3.5mm, 4.5mm, 4.8mm, 5.0mm, 5.5mm, 6.0mm, 6.5mm, 7.0mm, 7.5mm, 8.0mm which are the standard sizes used in the workshop.

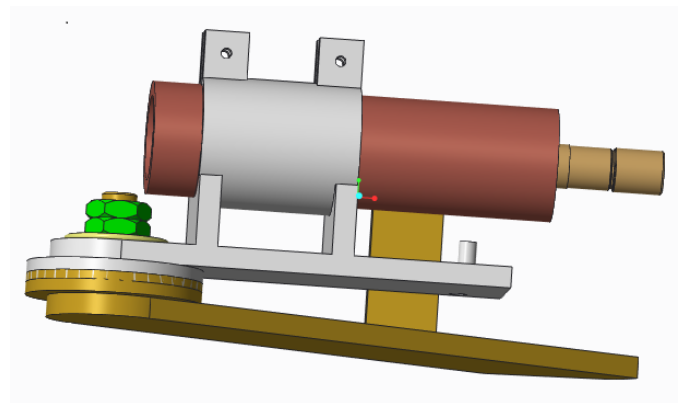
After tighten up (fixing) the specified drill bit which going to be sharpened onto the chuck, its then have to be set according to the required angle of its muzzle. After the angle of sharpening is set according to center point (alignment), the machine`s motor is turned on grinding wheel rotating and the

twisted drill bits move 45 degree left and right touching the rotating grinding wheel.

### 3.1 SOLID MODEL



**Fig 3.1 solid model**



**Fig 3.2 Final assembly of Drill Bit Attachment**

### 4. PROBLEMS AND REMEDIES.

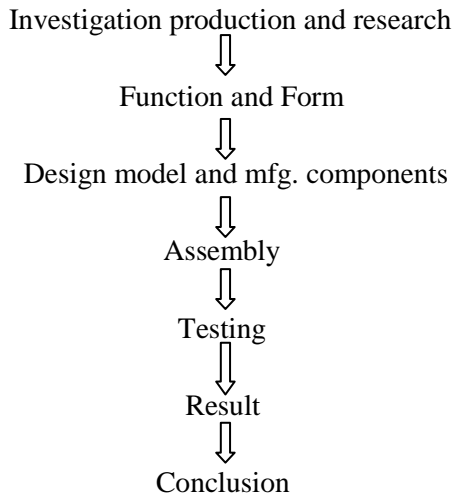
1. Fluctuation of drill bit
2. Machine Vibration
3. Excessive Length Of Drill Bit
4. Bearing play
  1. To correct the shank diameter
  2. Use machine damper
  3. Use U clamp & v clamp

### 5. NEED OF PROJECTS

1. It is safe to use.
2. Improves Accuracy.

3. It reduces machining time
4. Productivity Increases.
5. Unskilled workers can easily operate.
6. Cost of buying new drill bit can be reduced.

## 7. METHODOLOGY



## 8. RESULT

Times required for drill bit grinding

Production/hr.	Manually/hr.	Automation/hr.
No. Of Drill Bit Grinding	<b>6</b>	<b>10</b>

Number Of Blunt Drill Grinding Per Hour

process	Manual Drill	Automation Drill
Time/Drill	10 Min	6 Min

## 9. CONCLUSION

The production of “ Drill Bit Sharpening attachment” prevent the problem that have arisen so that various injuries can be prevented and the life span of twist drill bits, which are used in workshop can be used efficiently and longer in time span.

This discussed the techniques of old problems where the most common problem arising from drill bit sharpening a condition called negative relief.

This occurs when the material taken off the trailing edge of the bit surface is insufficient, and the trailing edge is at the same level or higher than the cutting edge. Thus, we have decided to invent a machine called “Drill Bit Sharpening”, to overcome the existing of the current problem.

## 10. REFERENCES

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