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Development of Clamping Device

Patel Tejas C.[1], Baladaniya Mayur V.[2], Bhisra Akash M.[3], Dhameliya Arth P.[4], Dholakiya Nainesh D.[5], Lad Jenish U.[6]
[1]*Assistant Professor,* [2, 3, 4, 5, 6]*Student, Mechanical Department, SSASIT, Surat*

Abstract: Development of clamping device for easy loading and unloading, for the saving of time, easy operation of Taper shape with the help of jaw, stopper and bad, we are going to introduce a small clamp which perform any taper shape operation and many other operation on the machine bad with less effort. By the use of solid works software it is easy to design the clamp for higher production as well as for more conveniently.
Keyword: Adjustable jaw, Stopper, Supporter, vice bad, lead screw.

I. INTRODUCTION

Once work piece is located, it is necessary to press it against locating surfaces and hold it there against the force acting upon it. The tool designer refers to this action as clamping and the mechanisms used for this action are known as clamps.

There are many types of clamps available for many different purposes. Some are temporary, as used to position components while fixing them together, others are intended to be permanent. In the field of animal husbandry, using a clamp to attach an animal to a stationary object is known as "rounded clamping." A physical clamp of this type is also used to refer to an obscure investment banking term, "fund clamps." Anything that performs the action of clamping may be called a clamp, so this gives rise to a wide variety of terms across many fields.

A. AIM

Development of clamping device, which is use for effectively clamping the object and reduce timing, in changing the clamped object and doing operation at different position of jaw.

B. Idea & Market Survey

In todays industry there are many types of clamp are available to hold the work piece loading and unloading and many other operation at a time of main operation is very difficult, Because it is require special clamping device.
This ideas involved high costs, time consuming, and restriction in movement in work piece for other operation.

II. TYPES OF CLAMPINGN DEVICE

Fig. 1 simple clamp

Fig. 2 v -block for taper shape

III. COMPONENT's DESIGN CONSIDERTION:

A. Clamping Device

In this stage based on work piece requirement, set a jaw at different position to operate different operation at a time of same wok piece operation process, so it is easy to handle and saving the operating time.

B. Design Depends On The Following Parameters

1) Tilting movement of Jaw
2) Shape work piece
3) Stopper

C. Clamping Specifications

1) Attachment attach with simple vice
2) Tilt angle tilt at 90° from bottom surface
3) Operation hand operated vice

IV. EXPERIMENT SETUP

1) *Experiment 1:* Set a jaw at 45 degree to hold taper work piece for doing operation.

Fig. 3 taper clamping

- *Result:* Set up work perfectly at 45 degree without vibration of work piece.

2) *Experiment 2:* set a jaw at 90 degree to hold the square and rectangular work piece.

Fig. 4 simple clamping

- *Result:* Set up work perfectly at 90 degree with high accuracy achievement in work piece.

3) *Experiment 3:* set a jaw at 0 degree to hold the less than 7 mm thickness striper plates.

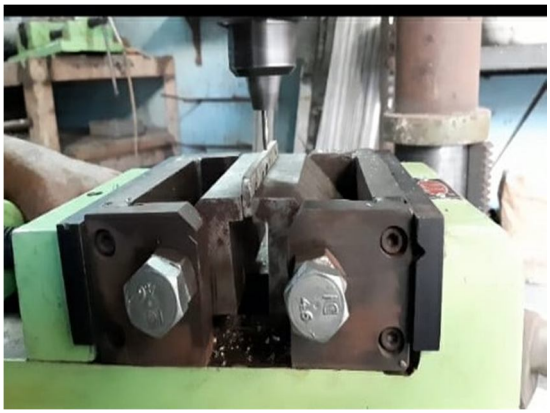

Fig. 5 striper clamping 0 degree

- Result: Set up work perfectly at 0 degree without braking and escaping a striper plate.

4) *Experiment 4:* set a jaw at 90 degree to hold the work piece between the stopper.

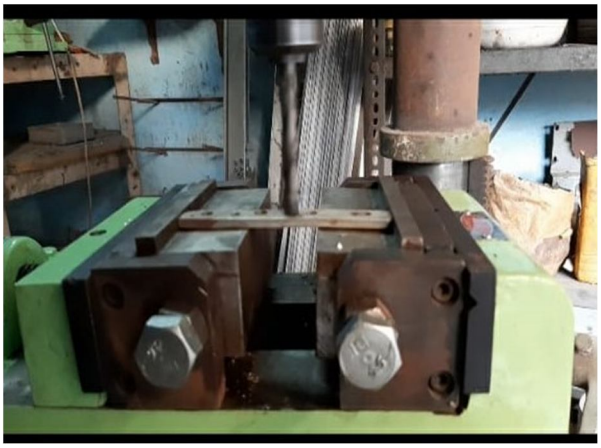

Fig. 6 stopper clamping

- *Result:* Set up work perfectly at 90 degree with high machining force without any failure.

A. *Diamention Of Compinent*

1) *Dimension of Jaw*

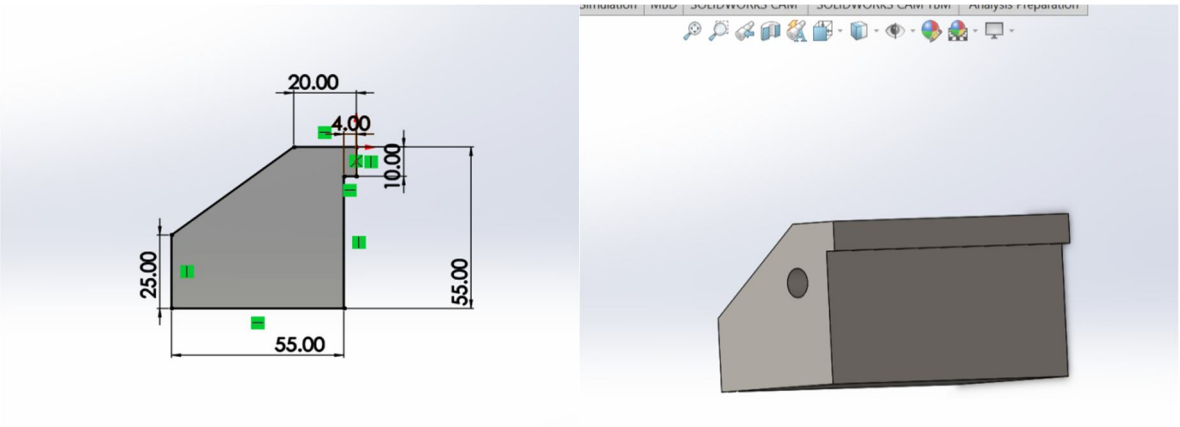

Fig. 7 dimension of jaw

2) Dimension of Supporter

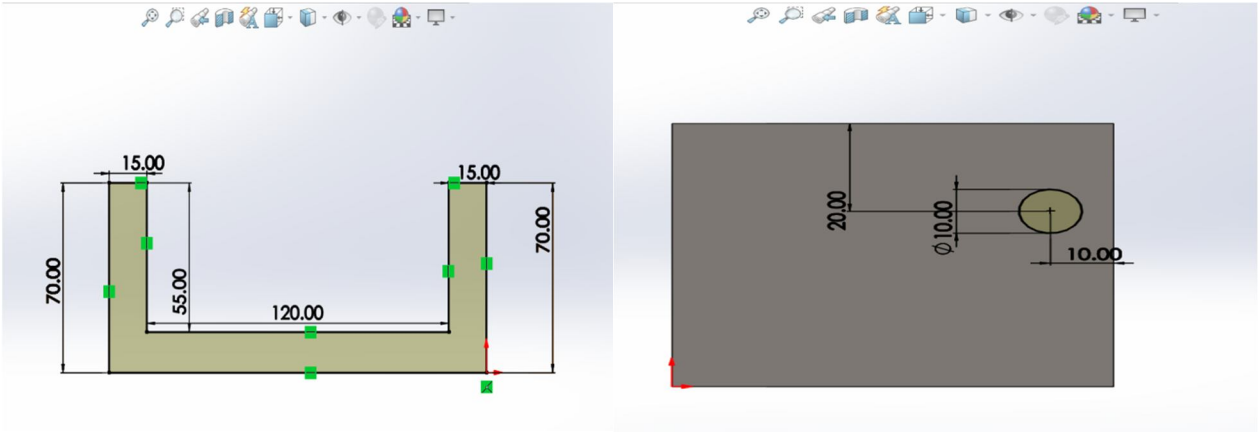

Fig. 8 dimension of supporter

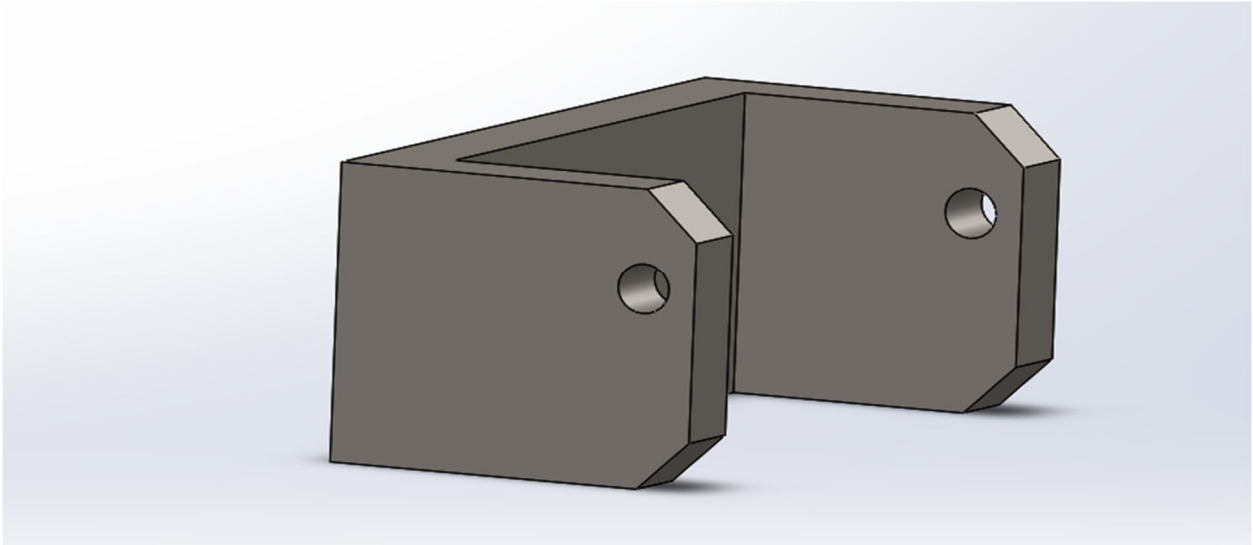

Fig. 9 isometric view of supporter

V. ACTUAL SETUP

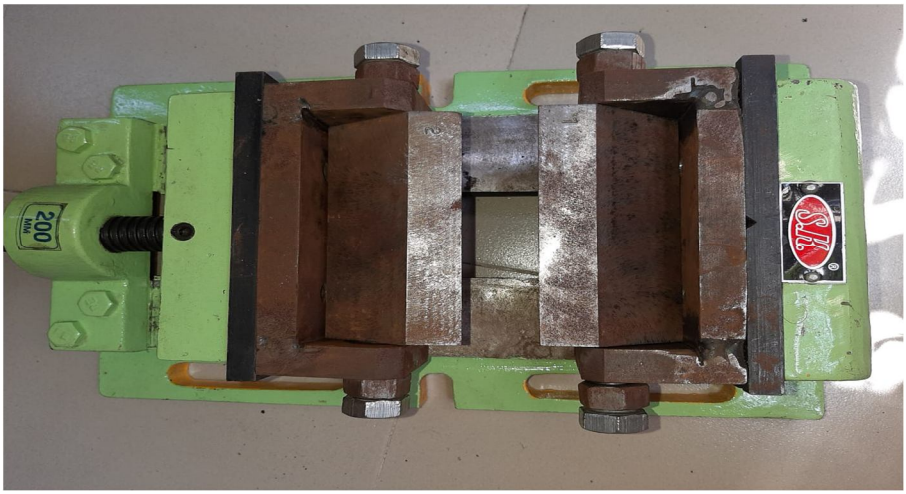

Fig. 10 actual figure (top view)

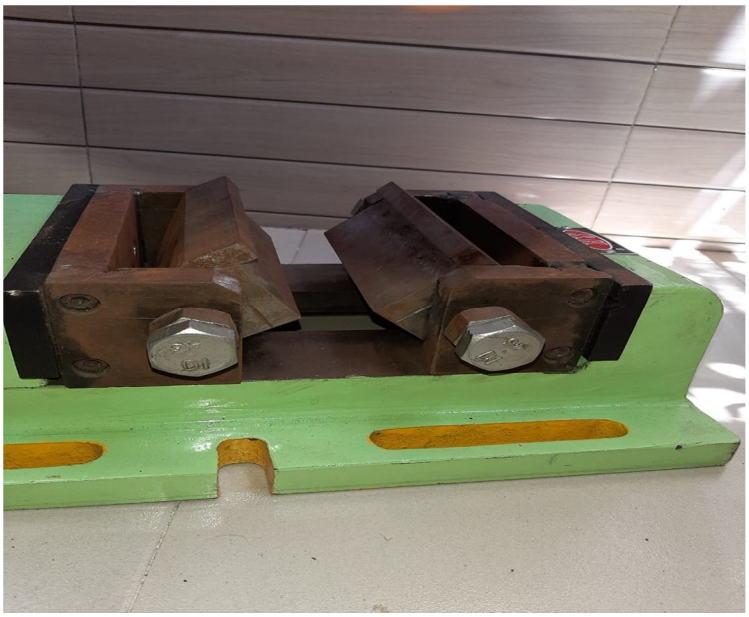

Fig. actual figure of side view

VI. CONCLUSION

A clamping device of taper shape work piece could be developed on the basis of above design. The design of the clamp can be optimized based upon the force required at the application point. The device can perform clamping, pressing and unclamping, all three actions in sequence with use of gear mechanism. That's why it is going to be easy to hold taper shape within minimum time.

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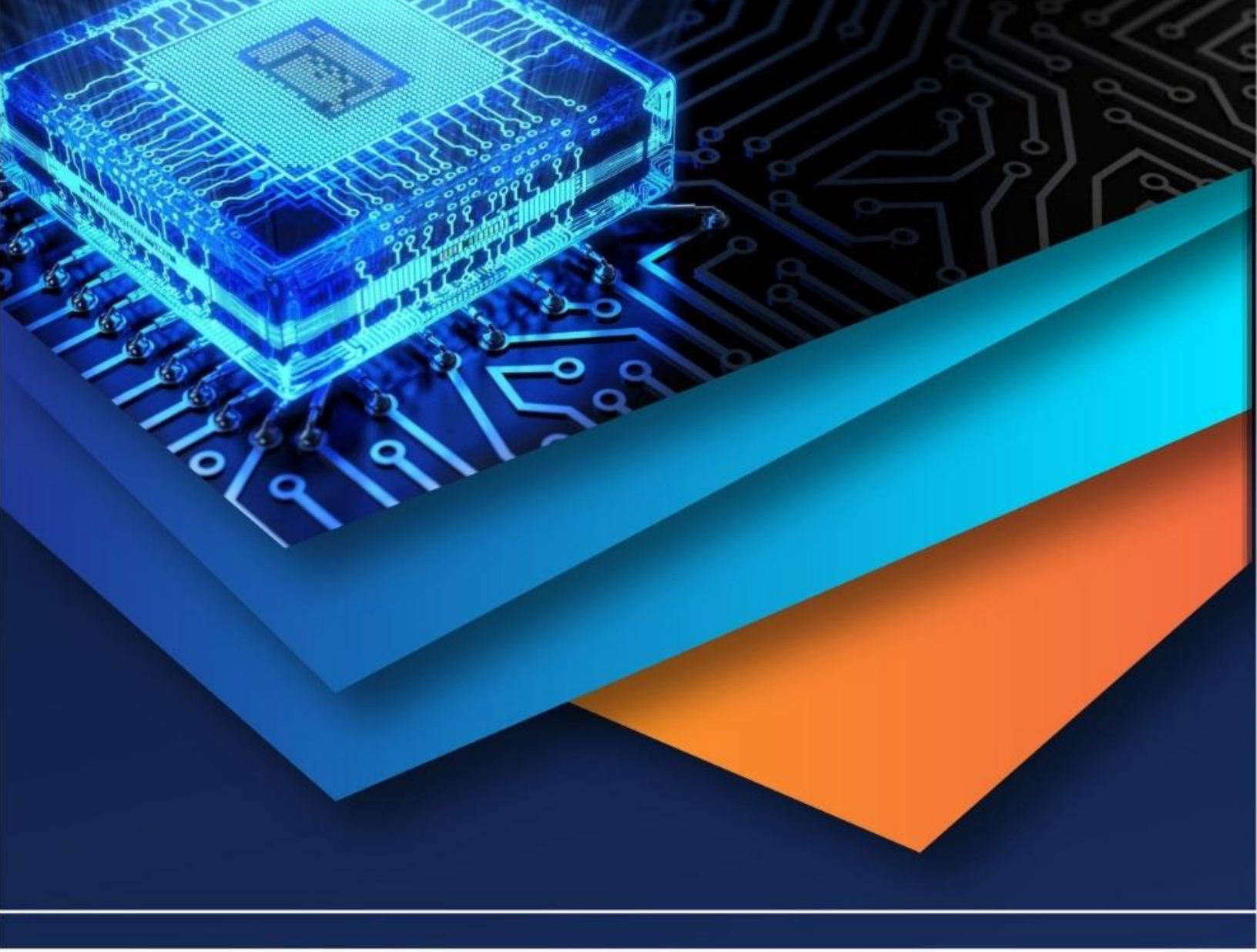

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