A Review Article on JIGS and Fixtures

Shalin M. Dongare[1] Eshant Barapatre[2]
[1,2]Department of Mechanical Engineering
[1,2]G.H. Raisoni College of Engineering, Nagpur, Maharashtra, India

Abstract— The paper gives a point by point meaning of jigs and fixtures, and furthermore distinguished the various focal points that are related with the utilization of jigs and fixtures in assembling to include: generation increment, cost lessening, compatibility and high exactness of parts, decrease of the requirement for examination and quality control costs, diminishment of mischance as security is enhanced, mechanization of machine device to a considerable degree, simple machining of perplexing and overwhelming segments, and also low changeability in measurement which prompts reliable nature of fabricated items. Fixtures are required in different businesses as indicated by their application. This can be accomplished by choosing the ideal area of fixturing components, for example, locators and clamps. The apparatus set up for part is done physically. For that more process duration required for stacking and emptying the material.

Key words: JIGS, Fixtures

I. INTRODUCTION

To find and immobilize workpieces for machining, review, gathering and different operations fixtures are utilized. An apparatus comprises of an arrangement of locators and clamps. Locators are utilized to decide the position and introduction of a workpiece, while clamps apply clasping powers so the workpiece is squeezed immovably against locators. Cinching must be suitably arranged at the phase of machining apparatus plan. The plan of an apparatus is a profoundly unpredictable and natural process, which require information. Fixtures configuration assumes an imperative part at the setup arranging stage. Appropriate apparatus configuration is urgent for creating item quality in various terms of exactness, surface complete and accuracy of the machined parts In existing outline the installation set up is done physically, so the point of this venture is to supplant with pressure driven apparatus to spare time for stacking and emptying of segment. Pressure driven apparatus gives the producer to adaptability in holding powers and to streamline outline for machine operation and process functionability . A jig for the previously mentioned reason has been outlined and created under the venture Niche Area of Excellence, Farm Mechanization in Rainfed Agriculture, at Faculty of agricultural engineering workshops . It ensures the interchangeability and thus the farmers can replace and repair components without losing appropriate time during weeding operation. Mass production aims at high productivity to reduce unit cost and interchangeability to facilitate easy assembly. The fixture is a special tool for holding a work piece in proper position during manufacturing operation. For supporting and clamping the work piece, device is provided. Frequent checking, positioning, individual marking and non-uniform quality in manufacturing process is eliminated by fixture. This increase productivity and reduce operation time. Fixture is widely used in the industry practical production because of feature and advantages.

II. REVIEW

The conventional dances and apparatuses demonstrated accommodating in expanding the generation units per unit time, sparing the time devoured simultaneously. The careful investigation of the whole procedure, it was discovered that all the previously mentioned parameters can additionally be enhanced with the assistance of enhanced jigs and Fixtures. Consequently, the outlining of passes on supportive in the generation of paddy weeder was finished with the assistance of planning programming strong works appeared in Figure 5. Once the outlining was done, the jigs were produced. One bite the dust was planned and produced for making 90˚ curves on the MS plates. Fig1 shows the created plans for the generation. Henceforth, wiping out the requirement for joints made and decreasing the measure of welding operation performed. For making the float, having a semi-circular shape, an arrangement of fixtures were additionally outlined between which, plates are put thus squeezed that the shape for the float is made.

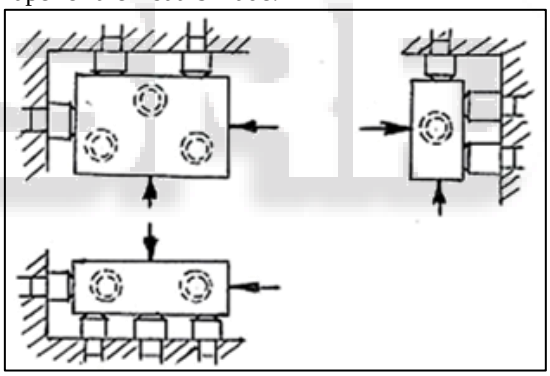

Fig. 1: Simple Fixture

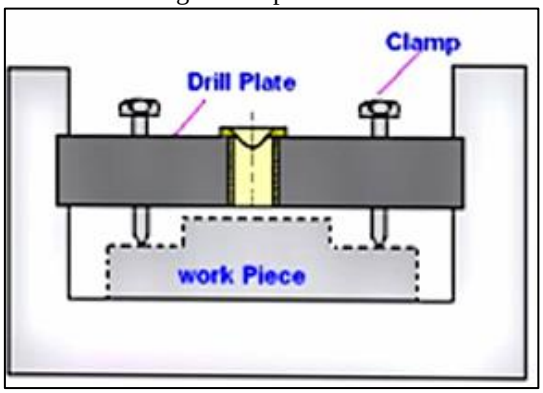

Fig. 2: Open Type Jig

Working at the same time by more than one device on a similar work-piece was conceivable. There was no compelling reason to inspect the nature of yield, gave that nature of utilized jigs and fixtures was guaranteed. The hand worked jigs for embellishment the MS plate in right edges and trim plate for advancement of float of paddy weeder is produced. The rate of welding got split with the utilization

of enhanced jigs, with the customary jigs the welding was required 12 times and now welding was finished in just five times, bringing about sparing of time and material utilized, thus decreasing the expenses related with generation. Figure 4 demonstrates the hand worked press and the casing created with its execution.

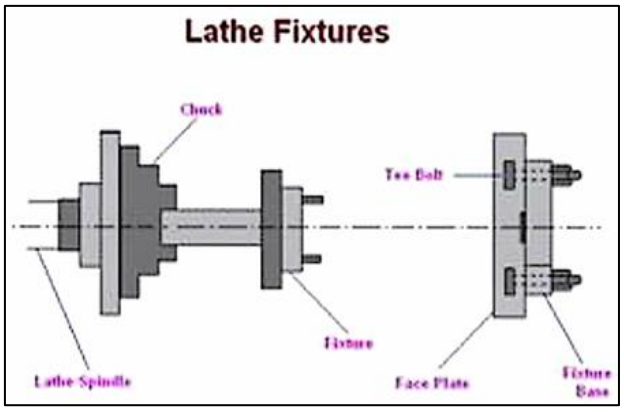

Fig. 3: Lathe Fixture

III. CONCLUSION

Both the jigs and the fixtures are utilized to diminish the ineffective time of any large scale manufacturing process. The guideline of area or the, devices, and FEA fixtures (like ANSYS) are utilized for the plan of the jigs also the fixtures. The jig is utilized for controlling the cutting apparatus (like a boring tool), and for doing as such, jigs have segments like a bush, which interacts with the cutting tools. Then again, an fixtures never comes in coordinate contact with the cutting tools . fixtures guarantee the position and arrangement of the work pieces for completing the required machining operation.

REFERENCE

[1] Jayash Vijaykumar Kumbhare, Harshwardhan Chandrakant Pandit. (2017) A Review Article on Jigs and Fixture . International Journal of Science and Research (IJSR) ISSN (Online): 2319-7064
[2] Ali, M. and Mahalle, G. (2013). Design and analysis of weight lever drilling jig. International Journal of Pure and Applied Research in Engineering and. Technology 1(8): 177-186.
[3] Midhun.R, Vignesh.A,Design and Fabrication of Jigs and Fixtures for Drilling Operation, International Journal for Scientific Research & Development| Vol. 3, Issue 12, 2016 | ISSN (online): 2321-0613
[4] Guohua Qin, Weihong, Zhang Min Wan "Analysis and Optimal Design of Fixture Clamping Sequence ASME for publication in the JOURNAL OF MANUFACTURING SCIENCE AND ENGINEERING, 2006.

