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Review Paper on Attachment for Lathe Machine for Gear Cutting

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Abstract — *The main objective of this paper is to give the Literature Review on Attachment for lathe machine for Gear Cutting. As gear cutting operation is mostly done on milling machine and also the cost of milling machine is very high, which is not economical for the small scale industries. This will reduce the initial investment of small scale industries for milling which can use their lathe machine for gear cutting operations. This will also reduce the space cover by the machines and the remaining space can be used for other productive work output.*

Keywords-*Gear cutting; milling; lathe; attachment; small scale industries; economical*

I. INTRODUCTION

As population of our country is increasing day by day, this has increase the demand of different product. This has lead to increase in number of various industries, most of them are small scale industries which manufacture small component for different large scale industries. Cost reduction is the one of the major factor that is consider in small scale industries. If industry can reduce the production cost then it will reduce the selling cost and increase the overall economy of that industry. This will also have an positive empact on the cost of product.

II. RELEVENT TERMS

GEARS - Gears are toothed wheel used to transmit power for small distances. It is positive types of drive and mostly preferred in machines. The important use of various types of gears are as follows-

- Spur gear-sliding mesh gear box, machine tool gearbox
- Helical gear- automobile gear box
- Rack & pinion- lathe carriage, steering gear box
- Worm & worm wheel- wiper mechanism, material handling equipment's gear box, steering gear box
- Bevel gear- automobile differential gear box
- Spiral gear-drives in textile machineries

LATHES - Lathe is one of the oldest machine tool and is to remove metal from a workpiece to give it the require shape and size. The lathe consist of a bed, a head stock, a carriage with cross slide, and tool post mounted on the cross slide. The spindle which carries the work holding device is driven by motor usually through a gear box for obtaining various speeds. The carriage moves on the bed guide ways, parallel to the axis of the work spindle, and cross slide provides transverse motion the require power for movements is obtained a feed shaft geared to the spindle drive.

FORM MILLING - From figure cutter is mounted on arbour with its axis right angle to work piece. Indexing plate provided for indexing movement of work piece. In single pass one tooth is finished hence it is time consuming process and suitable for job production.

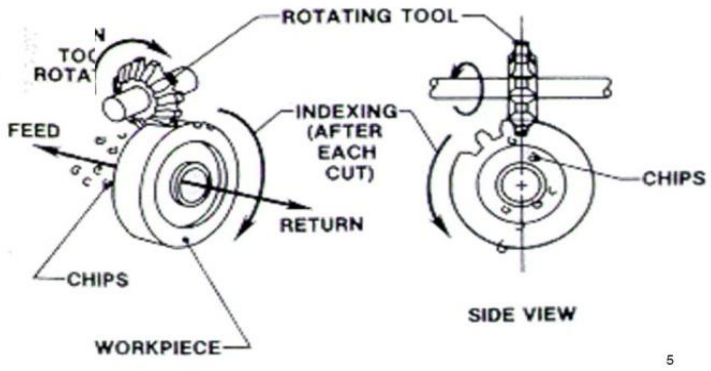

Figure 1. Form Milling Process

III. LITERATURE REVIEW

Mr. Kumar et al. "Design and Fabrication of Gear Cutting Attachment to Lathe for Manufacturing of Spur Gear", has concluded that gear up to 3 mm diameter and module 1 to 3 can be generated by Centre lathe by gear cutting attachment on lathe. Manufacturing cost of gear may be reduce by this method which will be helpful for small and medium industries. This attachment to lathe can perform indexing mechanism like milling machine and carriage function to and fro movement and sliding on bed.[3]

Mr. Gadakh et al. "Gear Manufacturing by using Conventional Lathe Machine", has concluded that gear manufacturing by milling machine is costly hence we have making a new attachment which make a gear. This setup is installed on lathe carriage. This one is cheap device hence avoids dependency on costly milling machine for gear production. This attachment is really useful for small workshops and this is good alternative for milling machine. From this arrangement we produce spur gear easily. This attachment having advantages is that having simple assembly, easily installed on lathe Machine.[4]

Mr. Shinde et al. "Attachment on Lathe Machine to perform Gear Cutting Operation", has concluded that gear cutting attachment on lathe reduce investment as well as space for small scale industry. This attachment is mounted on carriage. Work piece is fixed and tool is rotating perpendicular to work piece. Mandrel is design to hold the tool. Manufacturing cost of gear can be reduce by this method also reduce the cost of milling machine.[5]

Mr. Parmar et al. "Review paper on Additional Attachment on Lathe for Manufacturing of Gear", has concluded that milling machine is very time consuming process so, we have use conventional lathe machine for manufacturing of gear by additional attachment on lathe machine. So by this attachment cost of manufacturing of gear is reduce and gear is easily manufacture for small workshop and fabrication shop. This is multipurpose tool for lathe machine. Time and cost for machining is reduce hence it increase the efficiency of lathe machine.[6]

Mr. Dalvi et al. "Lathe attachment for Gear Manufacturing", has concluded that centre Lathe of standard power of 2.5 kW is capable of cutting spur gears. Gears upto 30mm diameter & module below 2 to 3 can be generated. And manufacturing cost is also reduced.[7]

III. CONCLUSION

From the above literature review we can conclude that gear cutting attachment for lathe machine can reduce the requirement of milling machine in small scale industries for gear cutting. This will lead to saving in cost of purchasing the milling machine. Increase the working space of the industry. Increase versitality of Lathe machine as no. of opertions that can be done on lathe machine will increase. Thus manufacturing cost of gear cutting will reduce and this will lead to economic growth of small scale industries.

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