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Fabrication of Waste Yarn Removal Machine for Industrial Bobbins used in Cotton/ Polyethylene Yarn Mill

Poonam M. Sonwane¹ Bhushan S. Thakare², Shubham S.Thakare³, Gajanan S. Thosar⁴, Prof. B.E. Gajbhiye

^{1, 2, 3, 4, 5} Guided by: Mechanical Department, Amaravati University

Abstract: In our project, we have found a lot of defects regarding to process problems during manufacturing of yarn in different departments. First we have discussed all problems that can occur in the process, and then at the same time we have also discussed a preventive action for those problems. We have also highlighted the critical success factors of every department that can cause more dangerous in quality point of view and improvement of process. After the participation and share knowledge from our three applicants there are many factors which can improve the productivity, but here we will focus on some specific areas. By working on these issues or factors, we can achieve our productivity goal. There are challenges for production managers and they need to take healthy measures for the enhancement in their production rates e.g. to find the best raw material available, to train its team and keep them updated to the latest technologies

Keywords: Bobbins, Yarn, Defects, Prevention, Product Waste, Yarn manufacture department.

I. INTRODUCTION

For the last few years, productivity is the hot issue for each companies either it is textile or chemical or fertilizer, to raise the production per unit is discussed. If we see productivity is the ratio of output per unit of input. If we take the labour productivity as an example that means ratio of output per labour hour. Productivity measures in different ways like in a factory how many hours does it take to produce the product? Productivity depends on different things or factors like labour, machinery, capital, temperature, raw materials quality etc. so every factor has its own contribution.

In textile, productivity has great influence on yarn and fabric production. Optimizing the output in this sector is a big challenge; to achieve this goal the role of an individual person regarding the production department has a great importance.



Fig : yarn removal machine

A. Benefits of Study

- 1) It reduce the wastage of time
- 2) It reduce the human afforder
- 3) It will increase the production rate
- 4) Parts use in fabrication:
- 5) Bobbins : A roving bobbin is a cylindrical body with tapered ends . It is created by building layer upon layer of parallel coils of roving on wooden or plastic bobbin tubes acting as package cores. To form the tapered ends, the height of the lift must be

reduced after each layer has been completed. The roving bobbin is the ideal package form for supplying material to the ring spinning frame; when full, the bobbin carries a relatively large quantity of material, owing to its compactness; when empty, it occupies a relatively small volume, convenient for transport and storage. The angle of taper of the ends is normally between 80° and 95° , and depends upon the adherence of the material. The angle is made as large as possible, so that as much roving as possible is wound onto the package. However, the angle must be small enough to ensure that the layers do not slide apart.

- 6) *Overall Length*: The total length of the ring tube is known as the overall length. The overall length of the tube depends on the spindle length and ideally the difference between the overall length of the tube and the spindle length should not be more than 20 mm.
- 7) *Lift of the tube*: The distance for which yarn could be wound on the tube is called the lift of the tube

B. Chain sprocket

- 1) A sprocket is a profiled wheel with teeth that meshes with a chain, track or other perforated or indented material. It is distinguished from a gear in that sprockets are never meshed together directly, and from a pulley by not usually having a flange at each side.
- 2) Sprockets are used in automobile industries, building construction industries, food plant, glass & plastic industries, petro chemical, printing machine, textile machinery, farm equipment and engineering industries for conveyors, rotor roller and related drives.



Fig. Chain sprocket

C. Chain drive

- 1) Chain drive is a way of transmitting mechanical power from one place to another. It is often used to convey power to the wheels of a vehicle, particularly bicycles and motorcycles. It is also used in a wide variety of machines besides vehicles. Most often, the power is conveyed by a roller chain, known as the drive chain or transmission chain, passing over a sprocket gear, with the teeth of the gear meshing with the holes in the links of the chain. The gear is turned, and this pulls the chain putting mechanical force into the system. Another type of drive chain is the Morse chain, invented by the Morse Chain Company of Ithaca, New York United States. This has inverted teeth.

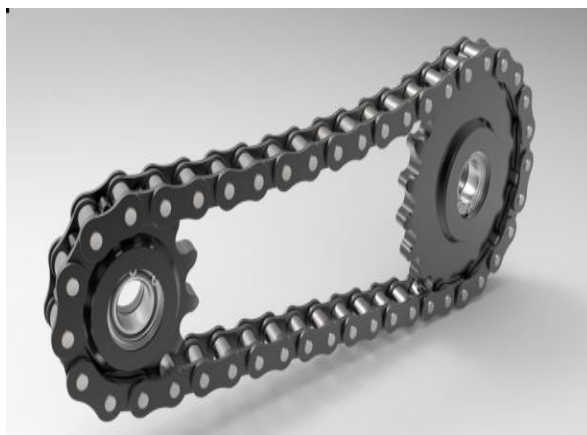


Fig. Chain drive

D. Wiper Motor

A wiper generally consists of a metal arm, pivoting at one end and with a long rubber blade attached to the other. The arm is powered by a motor, often an electric motor, although pneumatic power is also used in some vehicles. The blade is swung back and forth over the glass, pushing water or other precipitation from its surface.

Item	Specification
Voltage	12V DC
Power	120W
Speed	250 to 350 rpm

2)



Fig. Wiper Motor

E. HSS Blades

It is often used in power-saw blades and drill bits. It is superior to the older high-carbon steel tools used extensively through the 1940s in that it can withstand higher temperatures without losing its temper (hardness). This property allows HSS to cut faster than high carbon steel, hence the name high-speed steel. At room temperature, in their generally recommended heat treatment, HSS grades generally display high hardness (above Rockwell hardness 60) and abrasion resistance (generally linked to tungsten and vanadium content often used in HSS) compared with common carbon and tool steels.



Fig. HSS Blade

II. CONCLUSION

- An attempt was made to analyze the problem occur in existing solution of waste yarn. In this work is carried out successfully to meet the requirement as per constraint.
- Existing solution carefully observed to find problem in existing solution on yarn removing.
- In this project it has been found problem to cause production rate in textile industry

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