

# Universal Paper Cutting Machine – A Review

Shah Vipul<sup>1</sup>, Mistry Nishant<sup>2</sup>, Shaikh Sahil<sup>3</sup>, Patel Neel<sup>4</sup>, Yadav Surya Prakash<sup>5</sup>

<sup>1</sup>Asst. Prof., Dept. of Mechanical Engg., S.S. Agrawal Institute of Engineering & Technology, Navsari, India

<sup>2,3,4,5</sup>Student, Dept. of Mechanical Engg., S.S. Agrawal Institute of Engineering & Technology, Navsari, India

**Abstract:** Paper cutting is a process of all industries normally in small & medium industries manually hand operated paper cutting machine is used. And our project is about to make paper cutting machine. Automation in modern world is necessary. Any automatic machine aimed at the economical use of man, machine and material. In our project intermitted gear mechanism with swinging sector is utilized for automatic operation for paper cutting as well as feeding.

**Keywords:** Cutting, Gear drive, Cutter, Rolling

## 1. Introduction

• The device for cutting or trimming a sheets of paper in any required dimension is known as paper cutting machine. The paper-cutting machine is a recent development in the industrial world. The difficulty of making a successful machine of this kind to meet the new demands for accuracy, speed, convenience, and safety, has been overcome gradually in recent years and there are now several machines quite efficient and adequate to meet these demands of the modern manufacturer. Cutting jobs have an important place in the printing industry. All paper products from the smallest label to all types of posters, brochures, magazines, books, newspapers and billboards have to be prepared according to a specific size with regards to work quality and customer satisfaction, cutting is a highly delicate matter in the printing industry.

## 2. Literature review

- *To increase the Torque Capacity of a Pneumatic Paper Cutting Machine:* A Pneumatic Paper Cutting Machine with an increased Torque Capacity. It increases the Pressure Capacity of Air, which comes out from the Compressor and with the help of Silencer, we can reduce the noise produced by these Pneumatic Paper Cutting Machines. The existing Pneumatic Crushing Machines take a lot of time for cutting the paper as well as they are very much noisy during their operation.
- *Intermittent Paper Cutting Mechanism by Giving Feed through Geneva Wheel:* A kinematic study of a mechanism using a Geneva wheel and a gear train to achieve intermittent motion. The main motive of this project is to design a mechanism for cutting by giving intermittent feed. The intermittent feed is given by continuous rotation of circular disk in Geneva

mechanism.

- *Mechanically Operated Paper Shearing Machine:* This Research work is aimed for design and fabrication of mechanically operated paper shearing machine. This machine has the capacity to cut up to 25mm thick and 300 mm wide paper. The cutting force is obtained from screw press. Screw press is a device in which rotary motion of flywheel is converted into small displacement of ram with greater force. The reason for choosing screw press as main component of machine is its variation in force produced. In addition to paper cutting other applications like Bending, Punching, and Embossing can be done. Further it occupies less floor space when compared to existing cutting machines.
- *Design of a paper slitting and rewinding machine for a developing country:* This paper is on the design of a paper slitting and rewinding machine for a developing economy which targets small to medium enterprises (SMEs). The current problem is the high cost of such machines on the market hence most SMEs in a developing economy cannot afford them. Through careful analysis of current machines, use of alternative cheaper materials and use of more energy efficient drive mechanisms, it was possible to come up with a low cost and efficient solution.
- *Analysis and Synthesis of Geneva Wheel for Automation of Conventional Paper Cutting Machine:* Trying the design and manufacturing of Geneva wheel with laser cutting machines for jerk less and the intermediate motion. Geneva drive is an indexing mechanism that converts continuous motion to intermittent motion. Due to the paper roll's and paper is moved between the intervals of the cutting period. Then the paper cutting is achieved by cutter which is operated with same rpm motor as same as motor which drives the Geneva driving wheel.

## 3. Problem identification

- We can't receive the size of paper as per the required dimension at a same time.
- Such as If we need small scale paper we have to change roller wheel where there is time consuming and suddenly if we need large scale paper than also we

have to change alignment and we don't have time now a day if there is mass production going on we have lack of time.

- There is limitation in size.

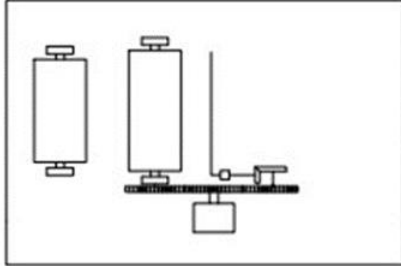


Fig. 1. Paper cutting machine

#### 4. Conclusion

This paper presented an overview of a universal paper cutting machine.

#### References

- [1] H.L. Ma, H. Duan, A. J. Tang, Survey on The Deformation of Milling Thin-walled Parts, *Machine Tool and Hydraulics* 09 (2010) 117-119.
- [2] Neugebauer, R., Denkena, B., Wegener, K., 2007, *Mechatronic Systems for Machine Tools*, *CIRP Anals*, 56/2, 2007
- [3] Duflou J. R., Sutherland J. W., Dornfeld D., Herrmann C., Jeswiet J., Kara S, et al. Towards energy and resource efficient manufacturing: A processes and systems approach. *CIRP Ann-Manuf Techn* 2012; 61:587-609.
- [4] Gray N. *Cutting Machines: A Primer of Information about Paper and Card Trimmers, Hand-lever Cutters, Power Cutters and Other Automatic Machines for Cutting Paper*. America Chicago: Committee on education, United typothetae of America; 1918.
- [5] C.T. McCarthy, M. Hussey, M.D. Gilchrist, "On the sharpness of straight edge blades in cutting soft solids: Part I indentation experiments", *International Journal of Engineering Fracture Mechanics*, 74 (2007), pp. 2205– 2224.