International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

FABRICATION OF GENEVA MECHANISM BASED CONVEYOR BELT

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ABSTRACT:-

The Geneva mechanism is a gear mechanism that converts constant rotation into rotation. The rotating drive wheel has a pin that fits into a hole in the drive wheel, allowing it to move further. We use Geneva conveyors for industrial equipment in our project. It has a motor, pulley, belt and pulley mechanism. Attach two rollers according to the required distance and mount the tape between the rollers on which the product is placed. The roller shaft is connected to the Geneva gear. The pulley drive shaft is connected to the motor shaft, so when power enters the motor, the drum rotates with a time delay as the pulley drive and belt move across the drum. To bring equipment. Timing can be done with Geneva drivers, thus eliminating the need for stepper motors and therefore reducing costs.

Keywords:
1. Electronic products
2. DC Motor
3. Gearbox
4. Conveyor belt
5. Geneva wheel, etc.

1. INTRODUCTION

This is a new concept mainly aimed at business. Its structure is simple, the working process is simple. In business life, goods need to be moved regularly from one region to another. It is necessary to reduce the number of employees involved. We have developed a Geneva drive conveyor that is very useful in the industry. Here we made a conveyor model that will transfer data from one place to another. The main components used in this project are motors, belts, pulleys, bearings and pulleys. The rotating drive wheel has a pin that fits into a hole in the drive wheel, allowing it to move further. The drive wheel also has a raised, circular block disc that locks the drive wheel into place on the treads.

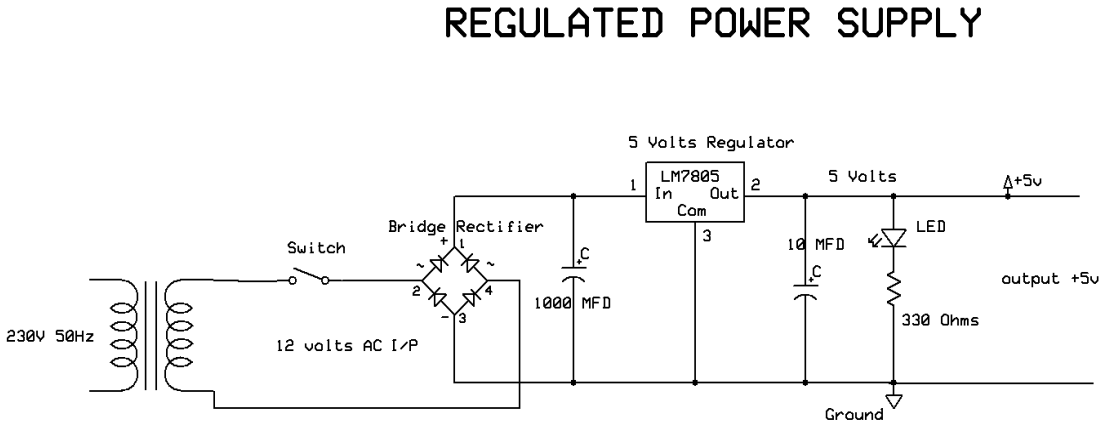
REGULATED POWER SUPPLY

Power supply is a supply of electrical power. A device or system that supplies electrical or other types of energy to an output load or group of loads is called a power supply unit or PSU. The term is most commonly applied to electrical energy supplies, less often to mechanical ones, and rarely to others.

A power supply may include a power distribution system as well as primary or secondary sources of energy such as
Conversion of one form of electrical power to another desired form and voltage, typically involving converting AC line voltage to a well-regulated lower-voltage DC for electronic devices. Low voltage, low power DC power supply units 1. Electronic products are commonly integrated with the devices they supply, such as computers and household electronics.

- Chemical fuel cells and other forms of energy storage systems.
- Solar power.

Generators or alternator

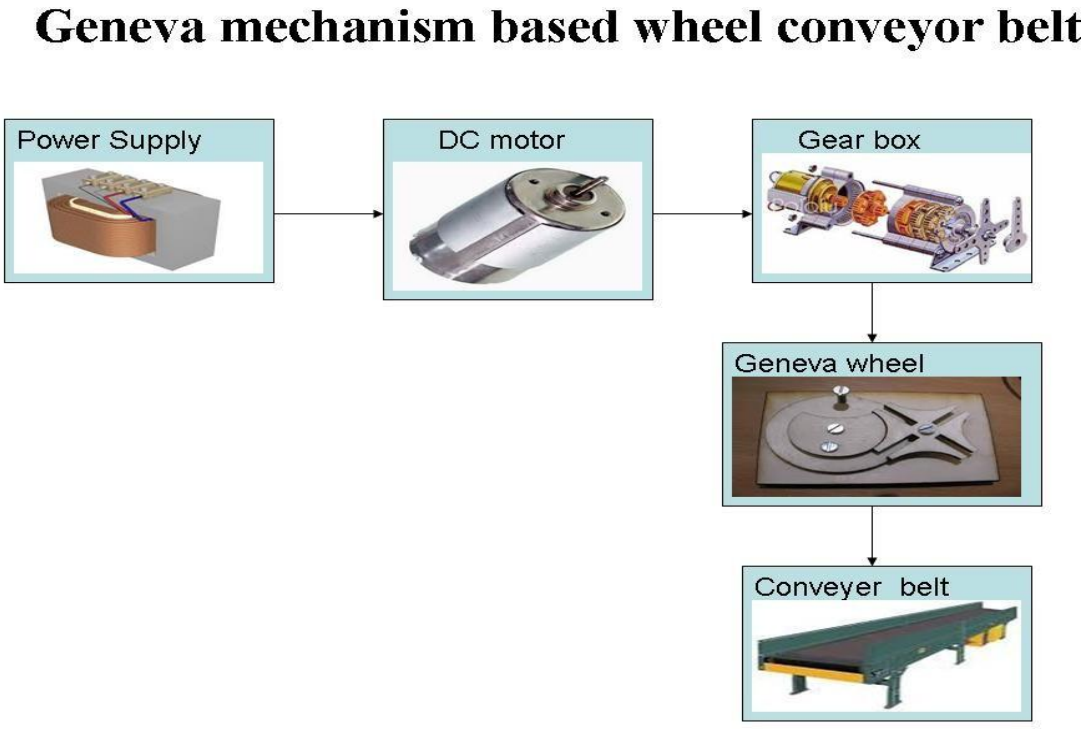


The components mainly used in above figure are

- 230V AC MAINS
- TRANSFORMER
- BRIDGE RECTIFIER(DIODES)
- CAPACITOR
- VOLTAGE REGULATOR(IC 7805)
- RESISTOR .

HARDWARE DESCRIPTION

1. Electronic products
2. DC Motor
3. Gearbox
4. Conveyor belt
5. Geneva Wheel



Power supply unit:

The power supply is an electronic device. A device or system that provides electrical or other power to output devices or idlers and pulleys and supports the drive mechanism.

2. 2 DC Motor:

Gear motor is a type of electric motor. Like all electric machines, it uses a magnet created by electric current to turn a rotor attached to a shaft. The power transmitted from the rotor to the shaft is used to power connected equipment. There are many types of geared motors, but the most common are AC (alternating current) and DC (direct current).

2. 3 Gearbox:

A gearbox is a device that uses a set of gears (two or more gears working together) to change the speed or direction of rotation of the machine. Most transmissions have more than one gear ratio, but there are also transmissions that use a fixed linkage.

2. 4 Conveyer belt:

The belt conveyor is an endless belt moving over two end pulleys at fixed positions and used for transporting material horizontally or at an incline up or down. The main components of a belt conveyor are:

1. The ***belt*** that forms the moving and supporting surface on which the conveyed material rides. It is the attractive element. The belt should be selected considering the material to be transported.
2. The ***idlers***, which form the supports for the carrying and return stands of the belt.
3. The ***pulleys*** that support and move the belt and controls its tension.
4. The ***drive*** that imparts power to one or more pulleys to move the belt and its loads.
5. The ***structure*** that supports and maintains the alignments of the idlers and pulleys and support the driving machinery.

2. 5 Geneva Wheel:

In these conveyors, a number of wheels are mounted on various shapes of conveyor track, and there are various wheel models to configure the conveyor channel, whether the horizontal gravity is sufficient to solve the angle of fall on the trolley. in the application or application set.

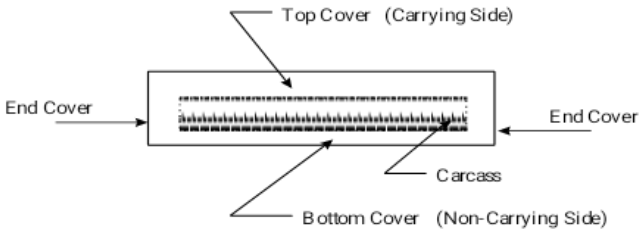
3. WORKING PROCESS

- The project GENEVA MECHANISM BASED WHEEL CONVEYOR BELT using dc motor, Geneva wheel, conveyer belt and regulated power supply is an exclusive project that can generate power wirelessly using copper coils.
- Presents introduction to the overall thesis and the overview of the project. In the project overview a brief introduction "**GENEVA MECHANISM BASED WHEEL CONVEYOR BELT"** and its applications are discussed.
- The hardware description. It deals with the block diagram of the project and explains the purpose of each block. In the same chapter the explanation of power supplies, dc motor, conveyer belt, Geneva wheel and regulated power supply are considered.
- The project description along with copper coils, pulse generator, switch and regulated power supply are interfacing.

Information needed to create a conveyor belt

Length of conveyor from center to end center Pulley. Inclined - Horizontal or inclined. Slope or ascent or descent distance. Average capacity per hour. It could be more than an hour. The item must be transported and its weight per cubic foot must be stated. Average size of the product. Maximum track size and percentage in broadcast. (a Material - dry or wet (moisture content).(b) Corrosive or corrosive?. Learn more about how to feed the tape and feeding details. How the material exits the belt (e.g. top drum or un loader) and discharge details. A general description of the support structure. Driving power. If it is AC motor, please specify the voltage, phase and frequency. If the motor is DC voltage. Items 1-7 determine the speed and width of the conveyor belt, the power required by the drive, the type of drive, the number of belt plies, size, shaft and idler spacing. Clauses 8-10 determine the quality and thickness of the rubber coating on the belt..

Description of Components



Product Description Conveyor Belt

Conveyor Belt has a skeleton covered on all sides with filling materials such as PVC and neoprene. Origin. It can be used to send different objects at higher speeds (6-8 m/s). For this purpose, the tape must have the following features:

1. Flexibility
2. Side skin
3. Small size of a long room
4. High energy
5. Simple and cheap
6. Longevity
7. It should not stretch under normal operating stress, meaning the relative elongation is low.

Wear-resistant9. Fire proof Strap ends are mechanically joined or vulcanized. The belt must be protected from side damage that may occur due to shaking. If the tape has a wet, sticky material, the material used to clean the tape must be chosen correctly. The material reaching the back of the belt must pass through a sufficient number of scrapers to prevent it from entering the drum at the lower end., a vacuum cleaner is used to clean the back surface of the conveyor belt. This band may be V-shaped.

Conveyor Belt Fasteners

Conveyor belt fasteners are one of the important items that must be carefully monitored for belt conveyors. The selection of fasteners should take into account the need for quality, service life and ease of installation and maintenance to ensure more than just the conveyor belt. Mechanical fasteners are mainly used in underground coal mining. The required size for mechanical fasteners is calculated based on the required tape width up to 263 kN/m. One such connection is the FlexcoÂ® SR â¢ Scalloped Edge â ¢ RAR8 Belt Fastener, designed for use in primary and panel applications with fastener materials up to 1,500 PIW (263kN/m). 8 rivet pattern and scalloped edge provide excellent performance in high pressure applications.

Geneva Wheel

The Geneva wheel or Maltese cross is a gear mechanism that converts continuous rotation into alternating rotation. The rotating drive wheel has a pin that fits into a hole in the drive wheel, allowing it to move further. The drive wheel also has a supporting, circular block disc that locks the drive wheel in position on the treads. Watch making Center. It is also often called the Maltese cross mechanism due to the visual similarity when the drive wheel has four faces. These machines are often used in watches because they are small and can withstand mechanical stress.

The name derives from the device's earliest application in mechanical watches, Geneva, Switzerland being an important centre of watch making. The Geneva drive is also commonly called a Maltese cross mechanism due to the visual resemblance when the driven wheel has four spokes. Since they can be made small and are able to withstand substantial mechanical stress, these mechanisms are frequently used in watches.

Results:

The creation of the "Wheeled Conveyor Belt According to Geneva Mechanism" project realizes energy transfer from electrical energy to electricity or wireless energy transfer. Electricity does not require a physical connection. Wireless messaging is useful in situations where a wired connection is inconvenient, dangerous, or impossible.

Conclusion:

Planning the project in advance provides ease of operation. Get smoother and noiseless operation with "Geneva Mechanism Wheeled Conveyor Belt". The "Geneva Mechanism Wheel Conveyor Belt" project was created with the hope that it will be useful and can help many businesses and education. This project helped us understand the steps needed to complete the project. We have completed this project so far.

Future Scope:

Our project "Wheeled Conveyor Belts According to the Geneva Mechanism" is the main target of new business ideas. Its structure is simple, the working process is simple. In business life, goods need to be moved regularly from one region to another. It is necessary to reduce the number of employees involved. We have developed a Geneva drive conveyor that is very useful in the industry. Here we made a conveyor model that will transfer data from one place to another. The main components used in this project are motors, belts, pulleys, bearings and pulleys. The rotating drive wheel has a pin that fits into a hole in the drive wheel, allowing it to move further. The drive wheel also has a raised, circular block disc that locks the drive wheel in position on the treads. It has a motor, pulley, belt and pulley mechanism. Attach two rollers according to the required distance and mount the tape between the rollers on which the product is placed. The roller shaft is connected to the Geneva gear. The pulley drive shaft is connected to the motor shaft, so when power enters the motor, the drum rotates with a time delay as the pulley drive and belt move across the drum. To bring equipment. Timing can be done with Geneva drivers, thus eliminating the need for stepper motors and therefore reducing costs.

REFERENCES:

1. P. Kali sindhur , g. Sri harsha “cutting mechanism by giving feed through geneva mechanism “4, april 2015. [2] han jiguang yu kang “analysis and synthesis of geneva mechanism with elliptic crank” 26,aug,2015. [3] david b. Dooner “a geneva wheel and a gear train” june 2014. [4] N.Sambath Kumar , k.Siva Kumar “design and fabrication of material inspection conveyer” mar 2014.
2. Konakalla naga Sri Ananth, “design & selecting the proper conveyor belt”, international journal of advanced engineering technology e–issn0976-3945.
3. https://en.Wikipidia.Org/wiki/geneva_drive
4. Nai vagesh Raman bhai, chandan k prasad, kishan a pates, salbi jones and deepak jadav “multipurpose geneva mechanism” ijcrt,2020volume 8, issue 6 june 2020.
5. Shreyas s charan, prashant narayan.Mmethi jain subham borade, vedant swami and santhosh pal “paper slicing mechanism via using geneva mechanism” ijarsct,2021, volume 9, issue 1, september 2021.
6. Taher -m abdul-ledeh, florian iion Tiberius perersu and Antonio apicella “mechanism with maltese cross [Geneva drive]”science publisions,24-05-201