



# Electricity Generation by Application of Foot Pressure on Floor Tiles

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**Abstract**— In India there is major problem of electricity which faced by people who lives in country. Electricity generation by floor tiles is an inventive and very useful concept. Electricity is the form of energy and it is basic part of nature. We get electricity, by primary sources like coal, natural gas, oil, nuclear power and other natural sources and here we generate electricity, which is the secondary source. The modern equipments and advancement rely on the electricity in this technological reign. Electricity acts as a essential backbone to this achievements. Calculate all the losses which caused by the shortage of electricity! Now there are more methods for generation of electricity. Generating of electricity from floor tiles or foot step is the eco-friendly method. Power crisis is one of the major topics to be discussed. The solution for this problem is that using of renewable resources. From this renewable resource we can generate electricity. The only resource that has not been utilised, is human resource. With suitable method the expected amount of power is tapped out from the human resource. We have utilised the human power to production of electricity, also we have uses a mechanical setups with small scales under flooring system. When the people walk over the floor platform, by application of human weight pressure the displacement of floor tile is done, due to that electricity is generated and this energy is stored in battery. This method will an efficient output if it is installed in countries where population is more. As per strategy, large power can be tapped out with the installation of this equipment.

**Keywords**— Electricity generation, pressure, spring, gear train.

## I. INTRODUCTION

Electricity is the major problem in India which is faced by people who resides in country. Electricity generation is innovative and useful concept by floor tiles.

In this system we have to produce the electricity by the application of human weight on floor tiles, due to that pressure applied on the tile and mechanical work is converted into the electrical energy and it is stored in battery.

In India, places like railway stations, dance floor, theatres, airports, bus stands are all over crowded. As a result huge amount of electricity can be generated.

A foot step electricity generating device was developed in the Reactor Control Division, Bhabha Atomic Research Centre. This device can convert foot pressure energy into the electrical energy.

To achieve this system modification goal, we design this Electricity Generation by Application of Foot Pressure on Floor Tiles system.

## II. PROBLEM DEFINITION

How to utilize weight of human being for electricity generation by using floor tiles?

- Determine electricity developed.
- Electricity developed versus weight of human
- By using Rack and pinion mechanism below floor tiles.

The mechanism of Rack and pinion is assembled below the floor tiles. Rack gives the linear motion when the human being passing over the floor tile. The rack will moves downward and motion of rack given to the pinion because of that pinion start to rotate. The shaft consists of a two sprocket which is again connected to the next shaft by chain drive. The chain drive is used to rotate the gear which is mounted on the same shaft. The last gear is connected to the generator shaft, which starts rotating. Thus the armature of generator generates AC and blows the bulb.

III. CONSTRUCTION & WORKING

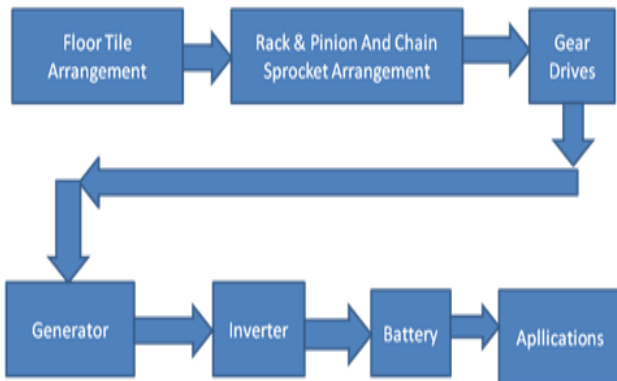


Fig.1: Block Diagram

This setup works on the principle of conversion of linear motion into the rotary motion due to application of foot step on tile the rotary motion is used to rotate dynamo (power generating device). Generated electricity is stored in the battery.



Fig.2: Constructional diagram

As per our reference we are using same technique in our work as shown below we use one rack and pinion gear system with dynamo fixed by gear mechanism.

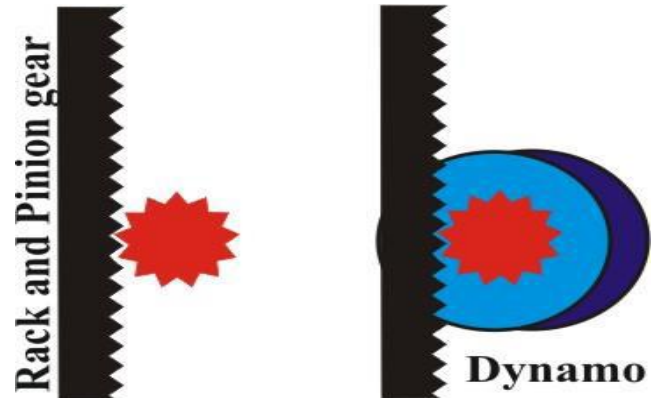


Fig.3: Working principle of rack and pinion mechanism.

IV. CONSTRUCTIONAL FEATURES

4.1 Spring

Specifications:-

- Stiffness of spring = 3.27 N/mm
- Wire diameter of spring = 2.5mm
- Mean coil diameter = 15mm
- No. Of active turns = 7
- Free length of spring = 53.5mm

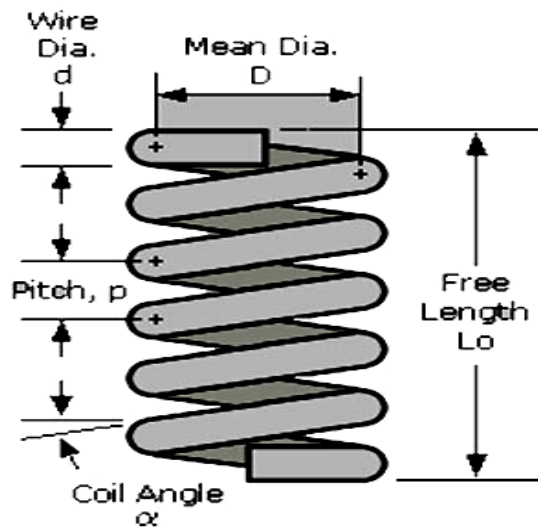
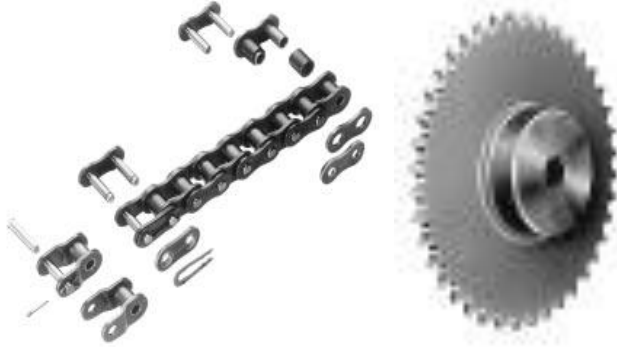


Fig.4: Spring

4.2 Chain and sprocket

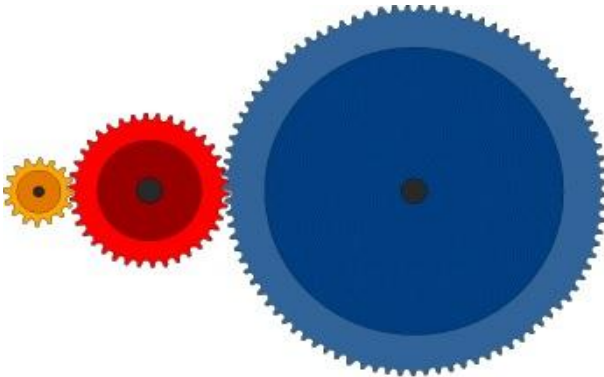
One chain sprocket are used which mounted on the shaft.



**Fig.5: Chain and sprocket**

#### 4.3 Gear Train

No. of gear pair = 3  
 No. Of bearing = 6



**Fig.6: Gear train**

### V. ADVANTAGES AND LIMITATIONS

#### 5.1 Advantages

- Highly efficient in more popular places.
- Depending upon the power generator power output is high.
- Low cost level.
- Simple in construction.
- Pollution free.

#### 5.2 Limitations

- More friction losses in mechanical system,
- Oiling and maintenance is required.
- System work above weight of 40 kg.
- Power output is depending on peoples passing on system.

### VI. APPLICATIONS

- Railway stations.
- Road Side.
- Bus stand, Air ports.
- Music halls, Theatres, Markets.

### VII. CONCLUSION

Behind the designing of this system, our main aim is to produce the electricity with human weight applied on the tile and also provide efficient solution to power crisis to affordable extent. This technology would facilitate the future creation of railway stations, bus stands, athletic fields, airports, music halls, theatres etc. like capable of harnessing human locomotion for electricity generation.

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