

## GEARLESS POWER TRANSMISSION SYSTEM

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**ABSTRACT:** *Designing and Fabrication of a Gearless Power Transmission. Today's world requires speed on each and every field. In current scenario, Industries are in need to eliminate the gear transmission which requires high level of maintenance and cost, so in order to overcome these liabilities, effective gearless power transmission arrangement is used for skew shafts to transmit power. In Gearless transmission system power is transmitted to odd numbers of pin or links which are used to represent the shaft diameter in centers of any two lines. Increase in number of links and pins will give a smooth motion but it will not be cost effective and also it will not be advisable due to strength of shaft. In Shaft both ends are drilled according to the size of Pins or links that are to be fixed may be permanent or temporary in which motion is to be transferred. The dimensions and angle of the pins or links are drilled accurately and precisely. In our experimental setup skew shafts are used in order to change the angle between shafts during the rotary motion or intermittent motion with own axis in rotational motion. In our experiment the result of gearless transmission is very effective and smooth arrangement with minimum power loss.*

### I. INTRODUCTION

The system "GEAR -LESS TRANSMISSION" being compact and portable equipment, which is skillful and is useful in transmitting power at right angle without any gears being used. It transmits the input power towards the output side in such a way that the angular forces produced in the slacks are transmitted with the help of rods which take up the input power and the right angle drive is transferred towards the output slack and rod assembly. The elbow mechanism is simple in construction and can be easily made with minor precision. This mechanism is mostly used in substitute of bevel gears where the motion is to be transmitted at 90°. So, in general elbow mechanism angle between rod is taken 90°.

The Elbow Mechanism is the mechanism which is used to transmit power through strong shafts which are bent at 90°. In this the power is given to the outer plate and the outer plate rotates through which the L-shaped shafts and through which the power is transmitted to other plate which is present at an angle of 90°. Hunting and back lash errors are absent. Thus frictionless elbow mechanism transmits the power from one end to other end. In this way, it is valued that efficiency as high as 90-92% are believable in a device with gearless transmission component.

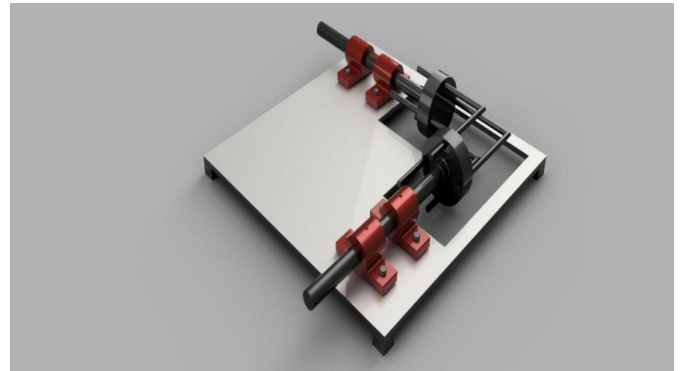


Fig. 6 Model of Gearless Power Transmission

### II. WORKING & PRINCIPLE

The Gearless transmission or El-bow mechanism is a device for transmitting Motions at any fixed angle between the driving and driven shaft. The structure would reveal that it comprises of a no. of links would be between 3 to 8 the more the links the smoother the operation. These links slide into hollow cylinders thus forming a sliding pair. Our structure has 3 such sliding pairs. These cylinders are placed on a shaft and are fastened at 120° to each other. This whole process is seated on brackets on a wooden table. Power is supplied by handle. The working of the structure is understood by the diagram.

Transmits the power between two shafts whose axes are at 90 degree over angled links.

3 links slide relatively allow to the motion given to input shaft.

Due to this, the rotational motion of input shaft is changed into sliding motion of links which is then changed to rotation motion of the output shaft.

### ADVANTAGES

- lack of friction increases the transmission of power from input to output.
- Problems like Backlash, undercutting of teeth are not available in this mechanism.
- This structure may also be applicable in lateral offset shaft not apart for right angles.

### Applications

- This elbow mechanism is already used in very rare cases not in regular some of the applications are listed below;
- The elbow mechanism was firstly used in the London tower clock in the year 1685
- This mechanism is further used for a different

spindle drilling operation concurrent.

- It is also used for angular drilling in between 0 to 90° position.

Future Aspect

- Torque bearing capacity can be improved. Flexible bent links can be used.
- Has a bright future in automation and robotics.
- Can be used in automobile industry in near future.

### III. CONCLUSION

The gearless power transmission is one of the budding ideas of the technology. It has a high scope in future to replace the cumbersome usage of gears which will be replaced simple, elegant usage of the shafts that will change the overall cost management of the industries using gear technology presently to gain more profits. This projects which looks very simple & easy to construct was actually very difficult to conceive & imagine without seeing an actual one in practice. Motions demands to be studied first & we have done that very thing. We find that while acceptable analysis for existing mechanism can often be Made quite easily we cannot without insight & imagination make effective synthesis of new mechanism hence we are mould to present this our project gear less transmission at 90 degree (El-bow mechanism) which we have managed to successfully device after long & hard input in conceiving its working principle

### REFERENCES

- [1] Gearless Power Transmission Google Wikipedia
- [2] Gearless Power Transmission Youtube