Geneva Mechanism

Lesson Plan



**Goals/Objectives**

* Observe the rotation of the shafts, in the same direction, created by the mechanism
* Notice the method used to transfer motion between the two shafts
* Notice the changes made to the disks to increase efficiency of the device

**Background**

A coupling is a device used to transmit power between two shafts. A six-disk coupling is a specific type of coupling that transmits power and results in the two shafts rotating in the same direction.

This motion is particularly interesting because it is unlike other couplings such as spur gears, which drive the two shafts in opposite directions.

Each parallel shaft contains three disks; the shaft is non-concentric with the disks. Each disk is offset by 120° from each other. When the input shaft is rotated, the output shaft

**Instructor Prep**

Follow the Instructables instructions to print and assemble the device.

Familiarize yourself with the concepts demonstrated by the device.

**Class Activities**

Show the videos from the Instructables site to show the same direction of rotation demonstrated by the mechanism.

Discuss the way the disks transmit motion and why the mechanism is difficult to implement in industry. Discuss how changing the number of disks would affect the mechanism.

Pass around the 3D printed mechanism to allow students to experience the mechanism and observe how the disks interact with each other to transmit motion.

**After Class Activities**

Have students brainstorm possible uses for a Six-disk coupling.

Have students make a six (or more) disk mechanism with household items, like jar lids.

**Additional Materials:**

Below is the efficiency analysis of a six-disk coupling given a coefficient of friction of .227. By analyzing one pair of disks, the efficiency of the entire mechanism can be determined.



