

Belt Drive: Washing Machines

Background



Belt drives are used in many modern machines simply because they are one of the easiest ways to transfer power. All cars on the road have an alternator which uses a belt drive to turn mechanical energy into electrical energy. Anyone interested in working with vehicles would have to be familiar with how belt drives work. Belt drives can also be found in flour mills, lathe or drilling machines, paper mills and conveyors.

One of the most common places to see a belt drive is in a washing machine, which is used to transfer power from the motor shaft to the drum shaft. This allows a small motor inside the washing machine to move the much larger drum that houses the laundry. It can be accessed from the back of a washing machine and is one of the first things to check if a washing machine isn't working. In this activity, we will build a model of a washing machine to see how it works.

Materials

- Shoebox (or similar sized box)
- Wire cutters/garden sheers
- Scissors
- Skewers
- Straws
- Pencils
- Lids (to draw circles)
- Cardboard
- Thick elastic
- Beads
- Hot glue gun

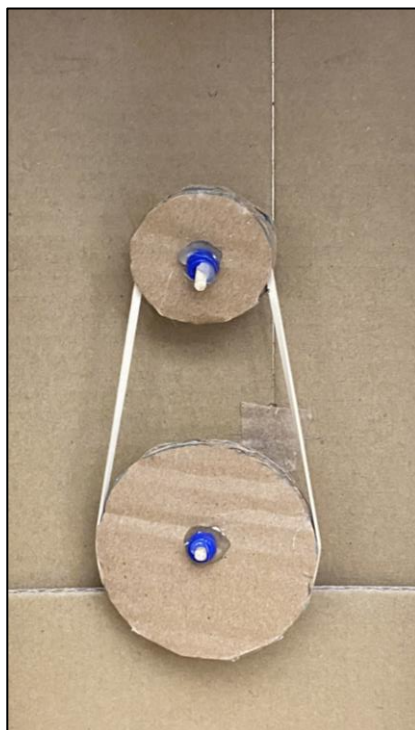
Procedure

- Poke two holes in the back of the box. One towards the bottom and one towards the top, they should be lined-up in the centre of the box.

- Insert a one-inch straw piece into each of the holes. Glue the straws in place.
- Use a large lid to draw two circles. Cut out the circles. Use a slightly smaller lid to make a third circle and cut it out. Poke holes through the middle of the three circles. Sandwich the smaller lid between the two bigger ones and glue it together to make a large circular drum.



- Repeat the previous step using smaller lids. This will make the second smaller circular drum.
- Thread the drums onto skewers and slide them into the straws. Use beads to secure the drums in place.
- Attach an elastic to connect the small and large circular drums.
- Turn the bottom skewer and observe the speed the top circular drum moves in comparison



Sources

Washing machine picture: <https://www.theartofdoingstuff.com/changing-a-washing-machine-belt/>