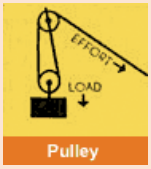
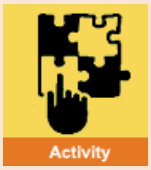
Simple Machines





Simple Machines Introduction

Compared to some of our forefathers (or mothers if we are being PC[1]) we have it pretty easy. Washing machines, elevators, and the horseless carriage (that's a car for anyone not living in the 1800s) are all examples of modern conveniences designed to save us time and effort.

Of course some people, like the guy in this video, take the idea of better living through technology a bit too far. While it may look like a lot of work, if you know what to look for you will notice that there are quite a few labor saving devices at work in that wonky contraption. As crazy as it might seem this page turning mechanism uses a lot of **simple machines**.

Simple machines are basic devices that use physics to save us labor. They work by redirecting or multiplying force. Way, way back in the day the work people could do was limited by how much they could push, lift, or carry. Sure animals helped, but even the strongest donkey isn't much help when building a skyscraper. Simple machines allowed people to do way more than they could with their muscles alone and made things everything from plowing fields to building pyramids possible.

There are six classical simple machines that act as the building blocks for more complicated machines like cranes, escalators, even the most complicated page turner. Once you know what they are, what they do, and how we use them you are going to take a look at some more wacky machines and see how many you can point out.

Lever

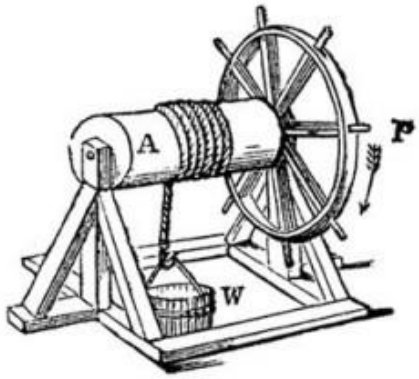
A lever is a beam, rod or plane that balances at on a point called a fulcrum. There are a few different types of levers but the classic example is a see saw[2], the basic concept is push down on one side and the other raises up.

Best Use of a lever ever:
Someone makes you dress like this until you move a rock.

[1] PC stands for Politically Correct and means being sensitive to people's differences. Being PC is generally a good idea if you don't want people to think you are a jerk.
[2] A piece of playground equipment responsible for many lawsuits, for more information ask anyone born before 1990.

Wheel and Axel

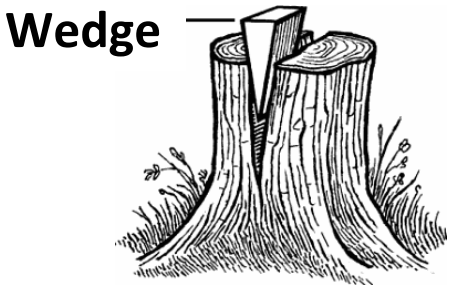
A Wheel and Axel consist of a wheel and rod that rotate, or spin together. Wheels an axels are most apparent on vehicles like cars and bikes, but doorknobs, pencil sharpeners, and cranks are all examples of the wheel and axel.



To your ancestors this was plumbing.

Wedge

A Wedge is usually triangular in shape and can be used to separate objects, hold something in place, or lift something up. The blade of a knife is a wedge that cuts and a door stopper is a wedge that holds. Any time you scratch something and you get gunk under your nails (ewww) you just used you your fingernails as wedges.

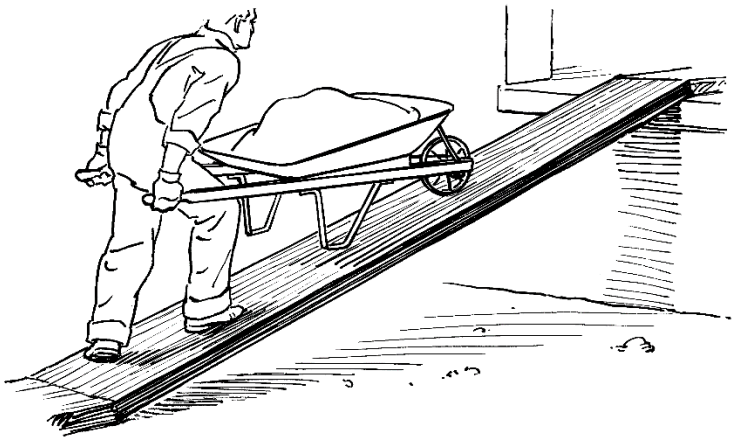


Pulley

Pulleys involve ropes, cables, or cords and can be used to change the direction of a force. A series of pulleys and ropes is called a block and tackle and can be used to lift or pull heavy objects. Cranes, elevators and, flag poles all make use of pulleys.

Inclined Plane

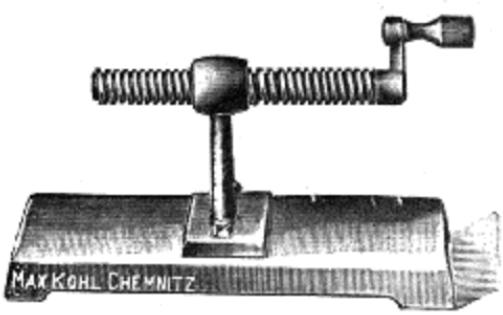
An incline plane is a ramp or a flat surface on an angle used for bringing things up and down. Ramps are all over and really useful. Don't think so? Think about how you would get to the 6th floor without stairs[3].



It all started with a trip to the Home Depot.

Screw

Screws consist of a shaft or straight rod that has ridges, groves, or threads on the outside. Screws that turn rotational motion into linear motion. This means you spin the screw around and it digs deeper straight into the wall. Other types of screws include drills, jar lids and bottle openers.



Activity

Now that you have seen all of the simple machines it is time to do something with your new found knowledge, AKA watch youTube for science!! Here are two more wacky inventions that use simple machines. Try to identify as many as you can you can keep track on a chart like this. When you are done you might want to make your own simple machine contraption. Instructions to get you started can be found here.

[3] Without an elevator or escalator smarty pants.