

BUILD A RUBBER BAND – POWERED CAR

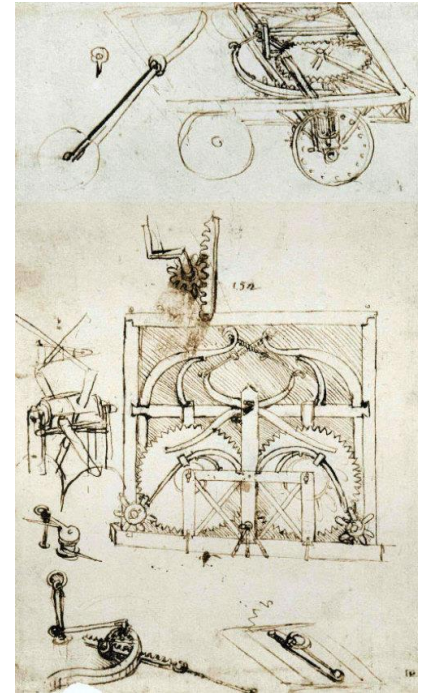
It seems the Leonardo designed one of the first cars. The original name of this project from the Codex Atlanticus is Crossbow Machine: it is a self propelled automatism.

By charging the big spiral springs, the crossbow were charged and the machine stored up energy that could be released and the car moved. It was used to move sceneries in theatres during performances, but it could also be used in many different ways... also for military purposes.

To build your car you need the help of an adult.

WHAT YOU NEED:

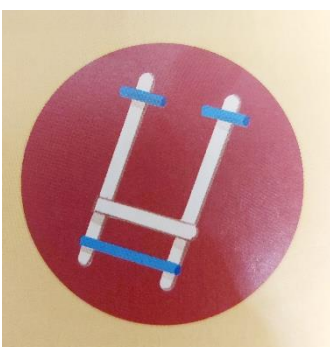
- 3 popsicles sticks
- 1 drinking straw
- 2 skrewer sticks
- 1 toothstick
- 1big rubber band (for the engine)
- 2 small rubber bands (for the wheels)
- 4 plastic bottle caps
- Hot glue
- scissors
- Tablecloth (to protect your table)



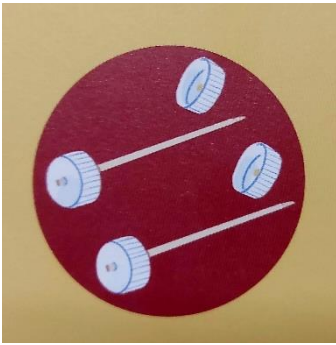
HOW TO BUILD THE CAR:



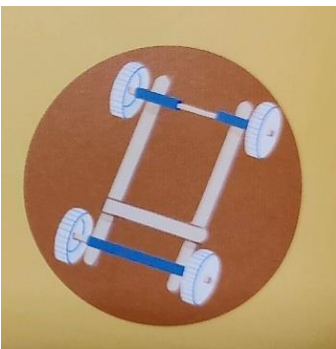
1. Cut in half one popsicle stick using the scissors. Put the other 2 popsicle sticks on the work-table and glue one half horizontally to the longer ones, forming the letter H as in the picture. It shouldn't be in the centre.



2. Cut the drinking straw: you need a piece as long as the car's width and two shorter pieces. Glue them to the popsicle sticks as in the picture.



3. Use the pointy end of a skewer or of a scissor to poke a hole through the centre of each bottle cap. Put each skewer sticks through one cap as in the picture.



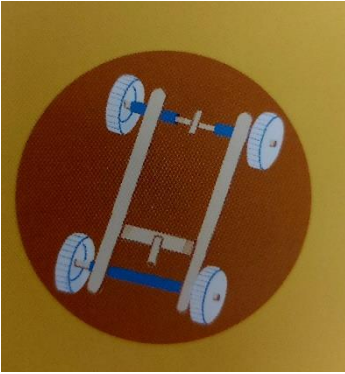
4. Put the skewer in the straw and finally in the other caps as in the picture. The top cap is the external side of the wheel.



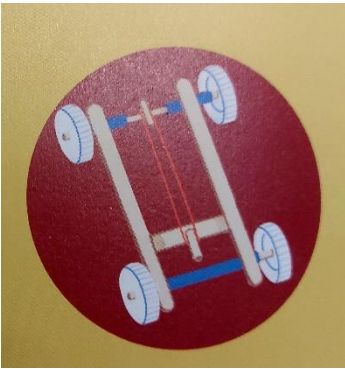
5. Glue the wheels to the axles (skewers), that's important for the transmission of the engine power.



6. And now the engine! Turn the car upside down, the drinking straws should be beneath. Cut the tooth-stick and glue it to the horizontal popsicle stick as in the picture.



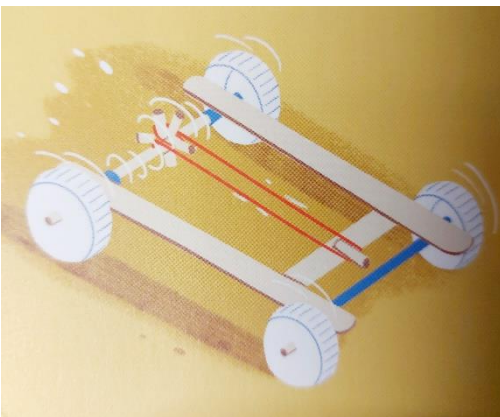
7. This passage is quite difficult. Glue another piece of the tooth-stick to the axle (the skewer) as in the picture.



8. Now the glue has to dry. Wrap a rubber band to the back axle as in the picture. Pull the rubber band and wrap the other end to the front axle. Dab a little hot glue on to hold both in place.



9. Very good! Your car is ready. Charge the wheels making the back wheels turning backwards. What? The car doesn't move at all! The problem is friction between the wheels and the worktable and you need some friction.



There are two possible solutions: you may wrap the rubber bands around the back wheels, the drive ones, or better you may glue a heavy bolt (a screw) on each long craft stick on the back of the car increasing the friction.