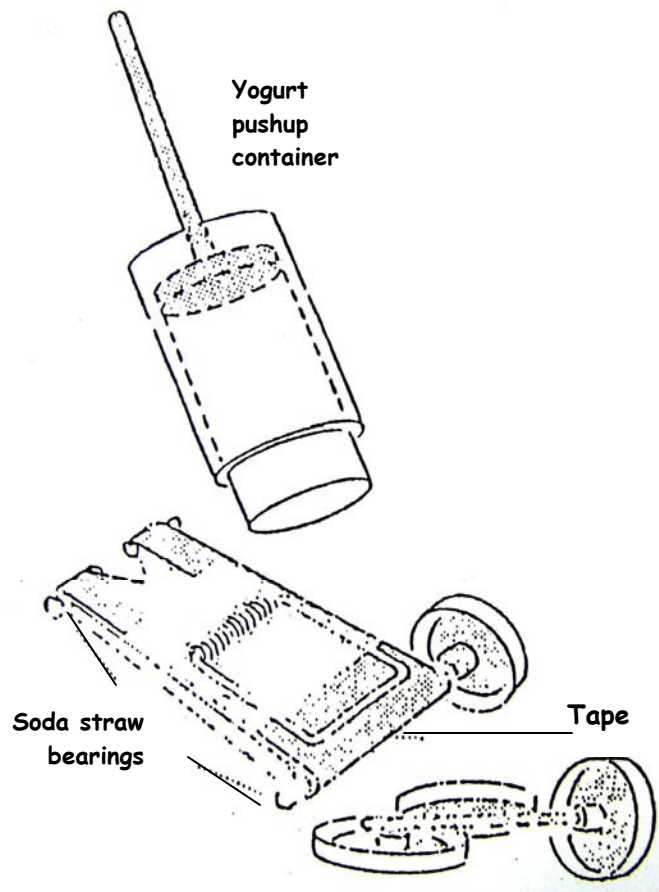


QUICK START CAR



1. This simplest mousetrap car can be made in a few minutes so that you have fun immediately.
2. Use pliers to remove the trigger and its long bar.
3. Saw or cut a V-shaped notch opposite the rectangular flipper.
4. Tape soda straw bearings to the end of the mousetrap base.
5. Cut the straw for the rear axle so it does not obstruct the V-notch.
6. Use the pushers from yogurt and ice cream containers for wheels and axles.

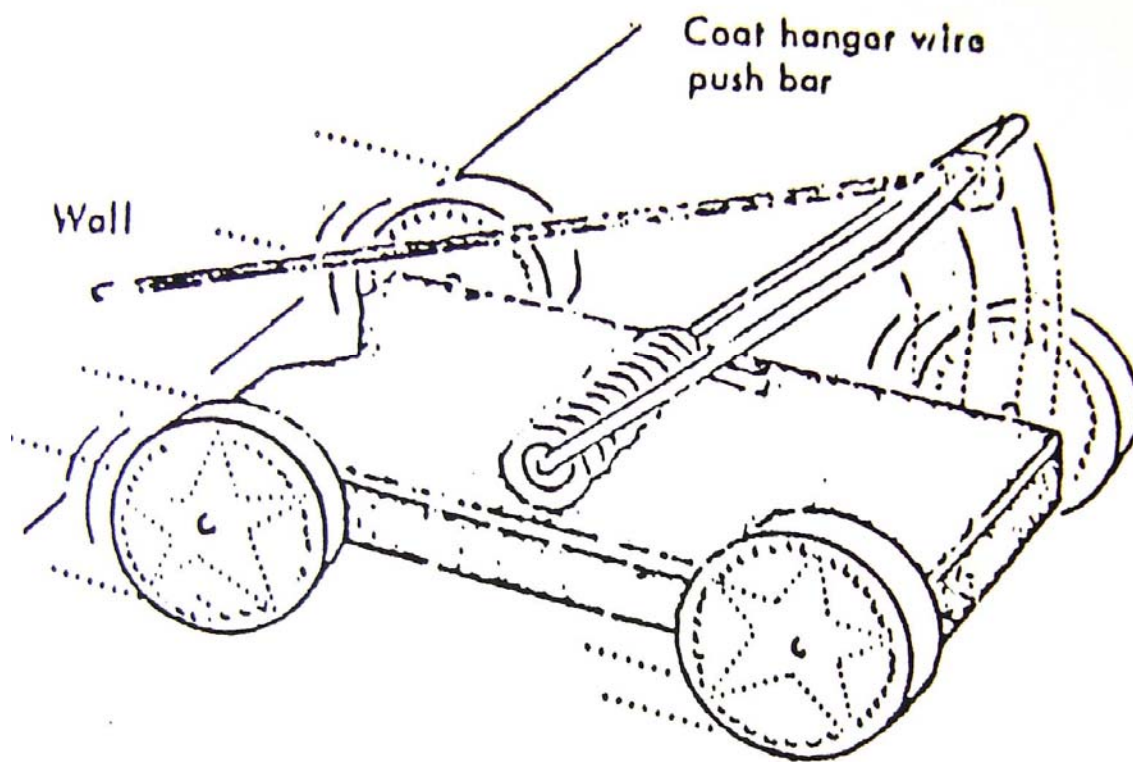
Tie and glue a string to the rear axle. When the glue is dry, wind some of the string on the axle. Pull the string to make the rear wheels spin. Why couldn't mousetrap power make the wheels spin for you? Tie the loose end of the string to the rectangular flipper. Cock the spring with the flipper and wind the string onto the rear axle again.

When you put this car on the floor to let it go, be ready to get out of the way! The quick start car has power for a short distance, and it may waste that power just spinning its wheels if the floor is smooth. After a little experimenting you should be able to convert this power to speed and distance.

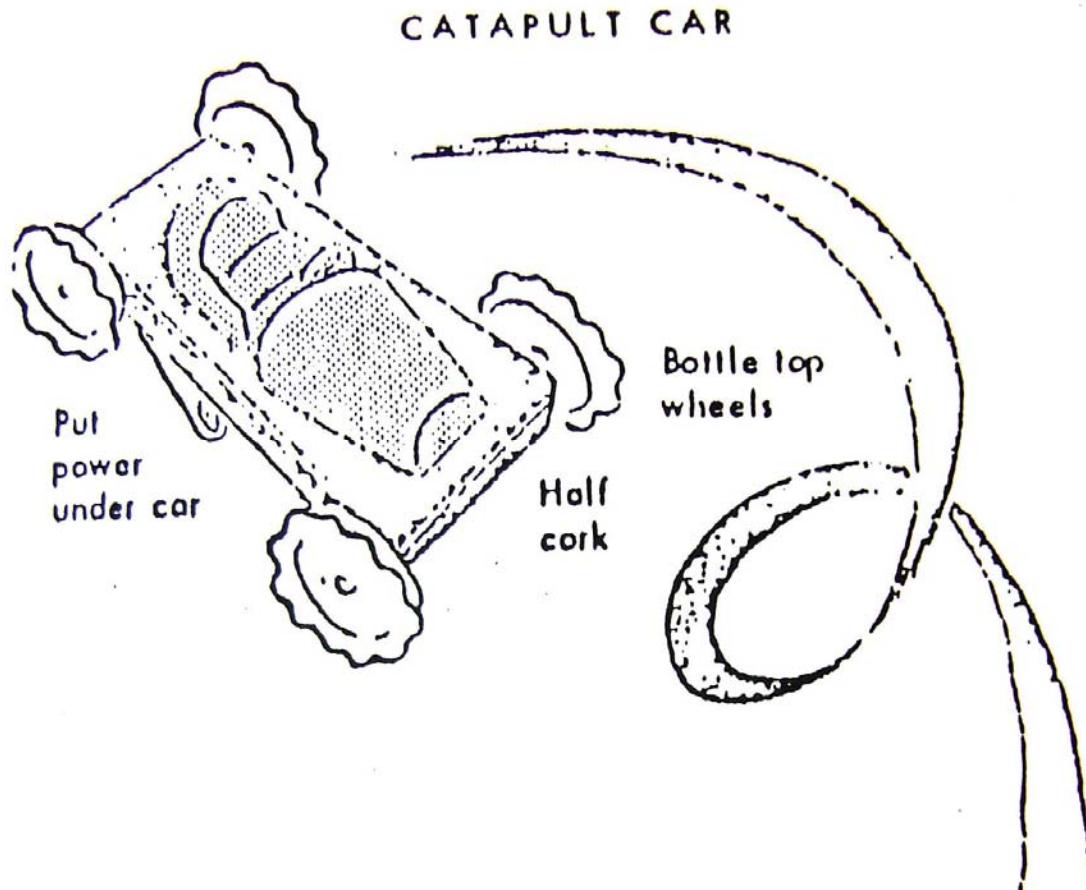
PUSH OFF CAR

This is another easy-to-make car that will help you to get started. Tack four checkers to the mousetrap base for wheels. A hot small nail will melt holes through plastic checkers quickly. Fasten a section of coat hanger wire to the flipper to be used as a push bar.

Would a light or a heavier car coast farther: Try and see. Make your cars build up as much momentum as possible. Momentum is the accumulated potential energy which is stored in a moving car and which keeps it moving after its power has been used.



CATAPULT CAR



Put the mousetrap power under this model. Glue half corks from a thermos bottle in place for a hood and for a seat. Bottle tops can be nailed to the base for wheels. When you let go, your car will leap forward. These are fun

cars. But you will have even more fun with cars that go faster and farther. Why don't you start experimenting now with these three cars and others to get all of the very best features on one super car?

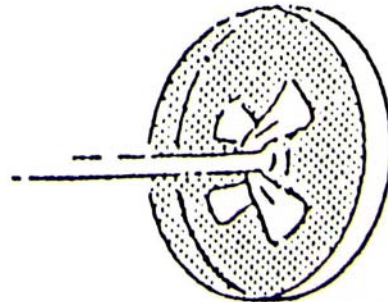
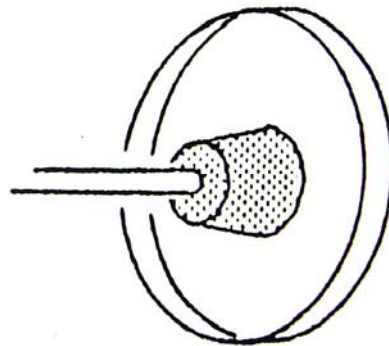
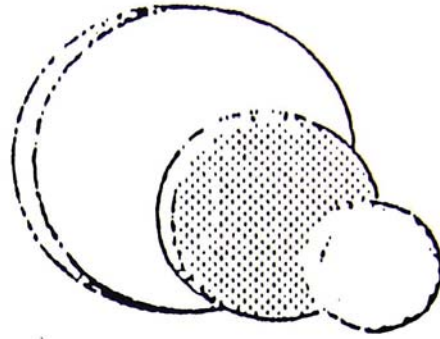
CHANGE THE WHEELS

Now is the time to start experimenting. Change something to learn more about these cars. Let us start by changing the wheels. Keep watching for the best combination of the conditions and the properties.

There is a full range of jar and bottle tops available for wheels. Vial caps are the smallest, and paint can lids are the largest.

Make the hole for the axle with a nail or with a drill. You may need a cork hub to steady the wheel. Tape can be used, too, to steady wheels.

If you would like to solder a metal bottle cap to a coat hanger wire axle, the metal must be hot, clean, bare, and bright.



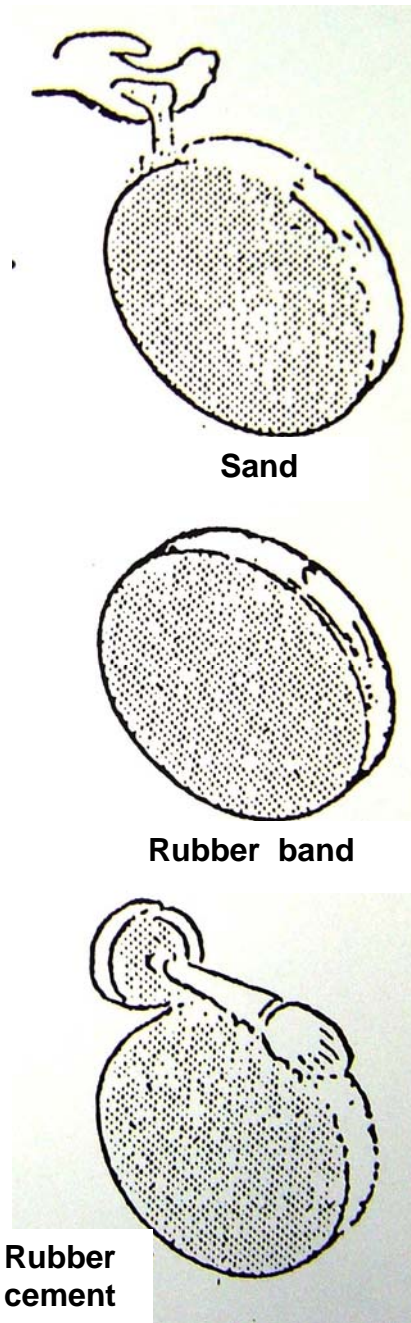
MOUSETRAP CAR PROJECT

Axle bearings should be as frictionless as possible; but you will want tires that grip the wooden floor securely with the greatest amount of friction.

Pour the sand over fresh glue on the wheels or bury the glued wheels in sand.

Stretching a wide rubber band around a wheel makes a fine tire. Many different sizes of rubber bands are available at stationary stores. Small, colorful balloon sections can be cut and stretched around the wheels.

Several layers of rubber cement can work as well as rubber bands or balloons. Remember that your car will be losing energy if your wheels slip.

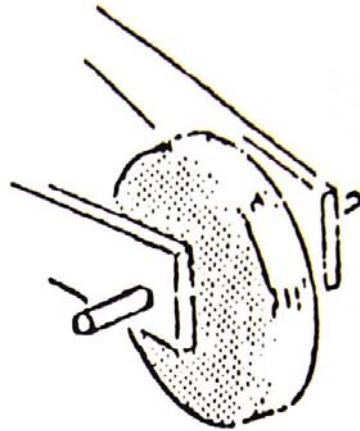


MOUSETRAP CAR PROJECT

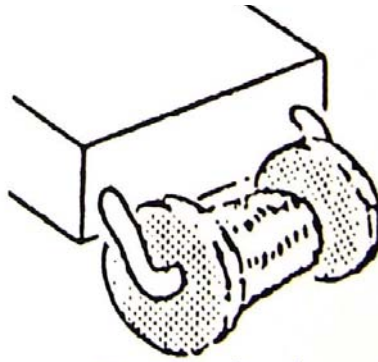
Don't overlook the fact that spools can be used as wheels as well as corks, checkers, broom handle sections, buttons, and tubular containers such as medicinal vials. These are often used for front wheels.

Coat hanger wire which has been bent into a U-shape is a good axle to support the front wheels on a wood car body. Such a small axle often requires a tube bearing and a tape bushing to fit the large holes of spools and other improvised wheels.

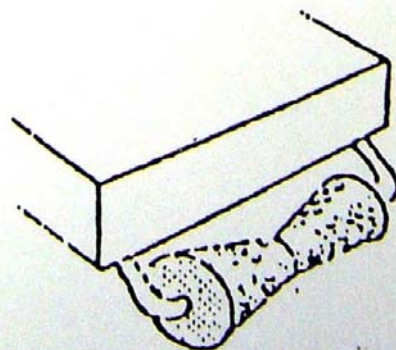
A loose bearing is often a source of friction and vibration. This is a common source of energy loss in these small cars.



Checker Wheel



Spool wheels



Cork wheels

HAVE EXPERIMENTAL FUN

Science is a most enjoyable subject to study because you get to develop ideas as well as to talk and to write about them. Theories need experimental proof, and this comes from exciting work in the laboratory. Your own laboratory can be your work desk at home.

Experimenting is simply changing something purposely to learn more about it, and this is fun. We get tired of looking at the same thing after a while. Being able to change something often opens a new approach to the problem.

Watch for conditions and properties which make a difference. When you can make that difference happen over and over again, you are beginning to have control over an event. This should make you feel good.

Often, even without knowing it, you are beginning to understand the problem. Be sure to look for hidden differences.

A condition is a state of being. The wheels for your mousetrap car can be smaller-larger, narrower-wider, smoother-rougher, lighter-heavier, and even duller-brighter. These are just a few of the conditional things about wheels which can be changed in your experimenting.

Properties are the characteristic attributes of objects and materials. They cannot be changed because they give identity; however, you can always substitute new objects and materials into the experiment which should introduce new properties.

CHANGE THE AXLES

Should the rear axle pulley be large or small? You can decide this best when you experiment with the other conditions which will exist with it.

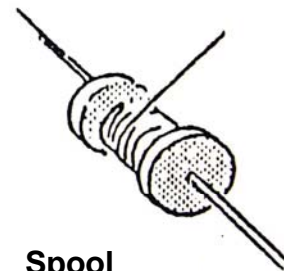
Remember that a pulley is a form of lever. You have wound the string on the plastic axle of the quick start car. That was a very small pulley. You can use a spool for a larger, rear axle pulley, and you can use a fishing line reel or a typewriter reel for a still larger pulley if you make the body of your car a little longer.

Pulleys are levers which can give you speed or power. Which do you want for your model?

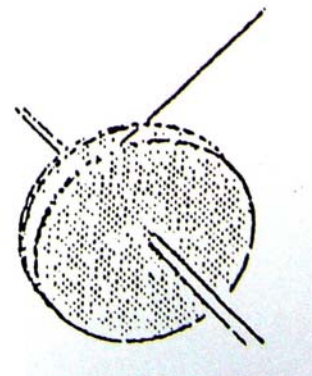


Wire axle pulley

axle pulley



Spool pulley



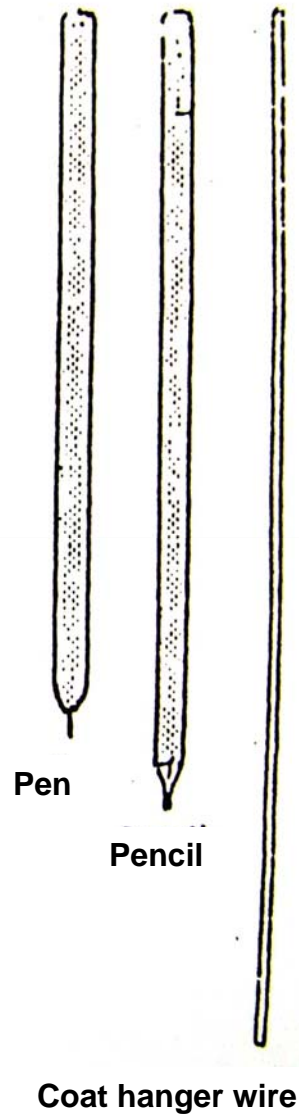
Fishing reel pulley

MOUSETRAP CAR PROJECT

Good axles can be made from pencils, pens, rods, dowels, soda straws, tubes wires, nails and bolts. Pins and screws are used sometimes, too.

If your wheels wobble, you need bearings to keep them straight and free of friction. The simplest bearing can be plastic soda straws which are taped to the wheels on both sides. Copper, brass, and aluminum tubing make sturdier bearings, but a hacksaw is needed for cutting them.

Sometimes a bearing does not fit the wheel hole. Wrapping the bearing with a bushing of masking tape will make it fit any hole. Narrow cardboard, paper, and can lid wheels usually have bad wobble problems. A bearing made from a checker, a dowel section, or a cork can be glued to the side of the wheel to make the hub wider and more stable.

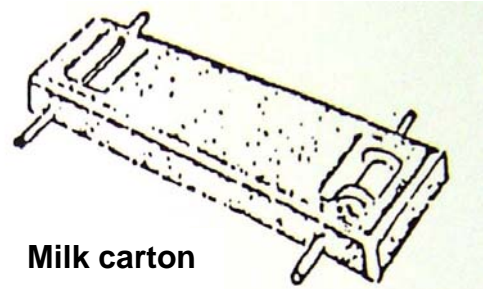


CHANGE THE BODY

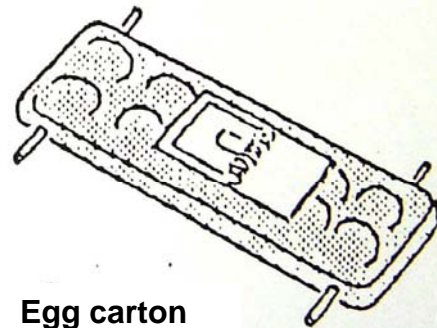
Milk cartons and other boxes can be cut flat for bodies. Milk carton paper is extremely strong, plasticized paper which is easily cut with a slanted razor blade. Use a paper punch or a sharp pencil point to make axle holes.

If you desire a very lightweight car body, an egg carton or its top will serve well. Plastic sponges have been used, too, because of their lightness. They are easy to drill and to shape. Plastic sponges have been used, too, because of their lightness. They are easy to drill and to shape. Polyurethane foam is always an ideal model material.

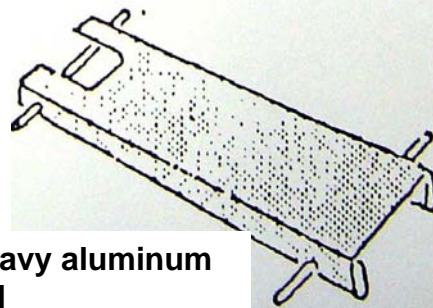
Thin sheet metal such as in aluminum plates is a fine body material when bent into an inverted U-shape. Bend the edges double for strength.



Milk carton



Egg carton



Heavy aluminum foil

CHANGE THE FLIPPER

Would a shorter lever or a longer lever work better as a flipper? Do you want speed, power, or distance?

It is easy to shorten the flipper lever. Some common ways to lengthen the flipper are shown here because this is harder to do.

A coat hanger wire works best as a flipper lever when it is

doubled to make it stronger. It can be tied or taped to the flipper.

A ruler makes a handy wooden or plastic extension. Should this lever be shorter or longer? Should it be lighter or heavier? You can find what works best in your combination of conditions by experimenting.