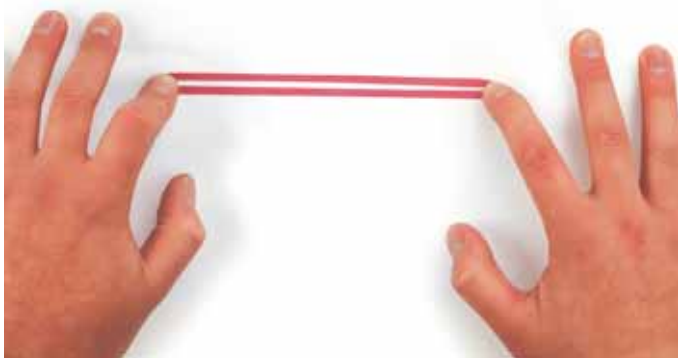
5 Elastic sheets and elastic bands

Some special kinds of elastic can be very springy, both as bands and as sheets.

If you stretch an elastic band between two fingers you can feel that the more you stretch the elastic band the more it pulls back (Picture 1). You can use this idea to make a throwing machine (Picture 2) called a **CATAPULT**.

Another way of stretching an elastic band is to twist it. You can test how much an elastic band pulls, depending on how much it is twisted, by making a cotton reel dragster (Picture 3).



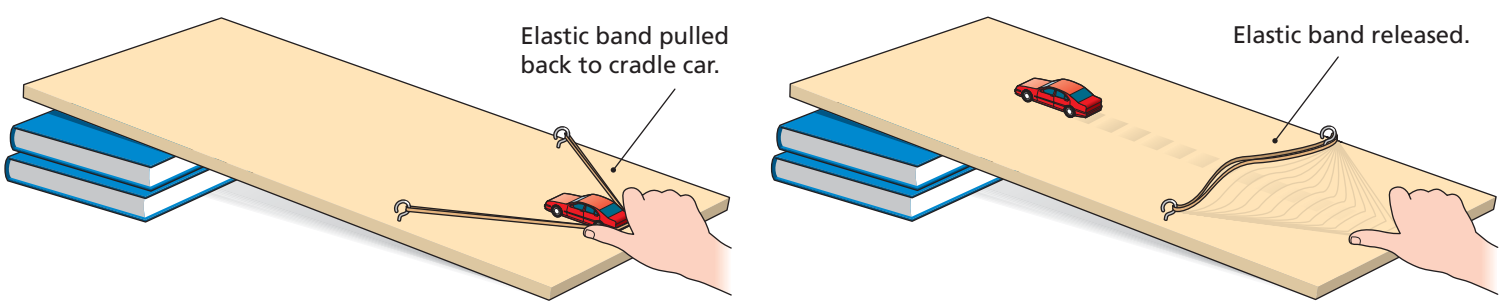
▲ **(Picture 1) When you stretch an elastic band you can feel it pulling back as it tries to go back to its starting shape.**

Elastic sheets

A trampoline is an excellent example of how an elastic sheet can be springy (Picture 4). Have you ever jumped up and down on a trampoline? You are not normally heavy enough to stretch the trampoline much when you stand on it. But if you jump up and down, you push down harder on the elastic sheet.

When you land on the trampoline, you can see the elastic sheet stretch as your feet sink in. Gradually, the sheet stops stretching. Now it has 'soaked up' all of the energy from your jump. From now on it starts to push back, shooting you upwards as it straightens back to a flat sheet.

▼ **(Picture 2) A throwing machine.**



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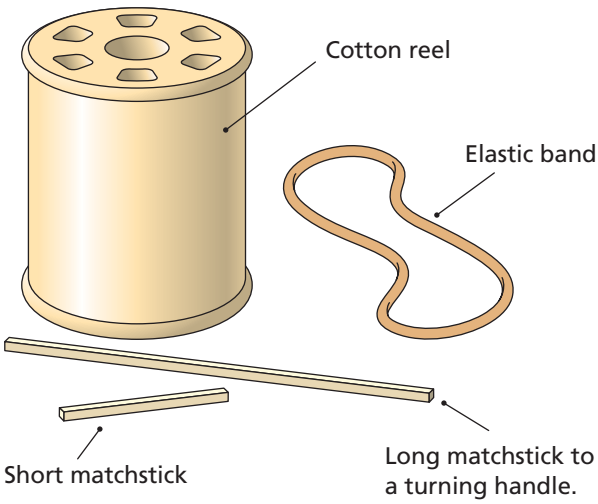
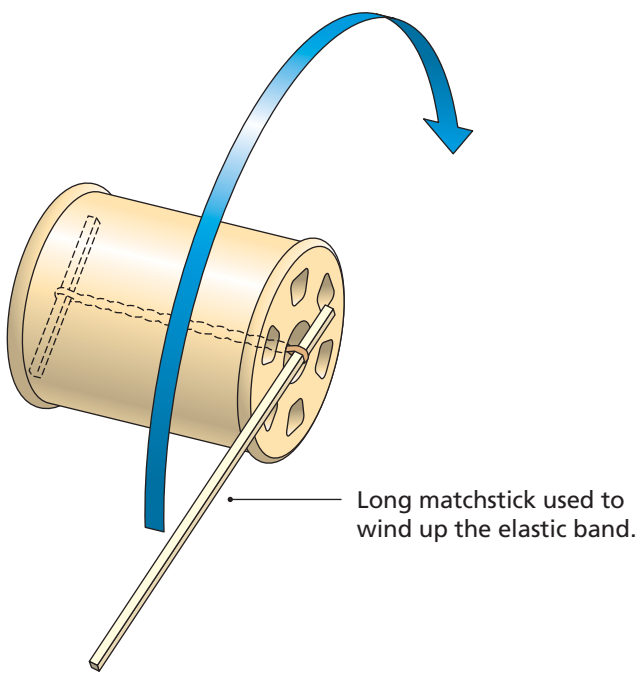
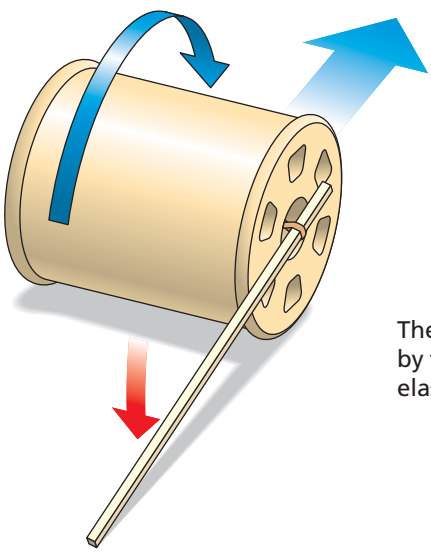


◀ **(Picture 3) Pass the elastic band through the hole in the cotton reel. Loop one end over a matchstick longer than the width of the cotton reel. Loop the other end over a matchstick which is shorter than the width of the cotton reel. The stretched elastic will hold the machine together. Wind up the machine by turning the longer matchstick, then place it on the floor and let it go!**



▲▼ **(Picture 4) A trampoline is an elastic sheet.**



The cotton reel is driven by the unwinding of the elastic band.

Summary

- **Elastic bands and sheets are made to be very springy.**
- **The more you stretch a band, the more force it stores up.**