

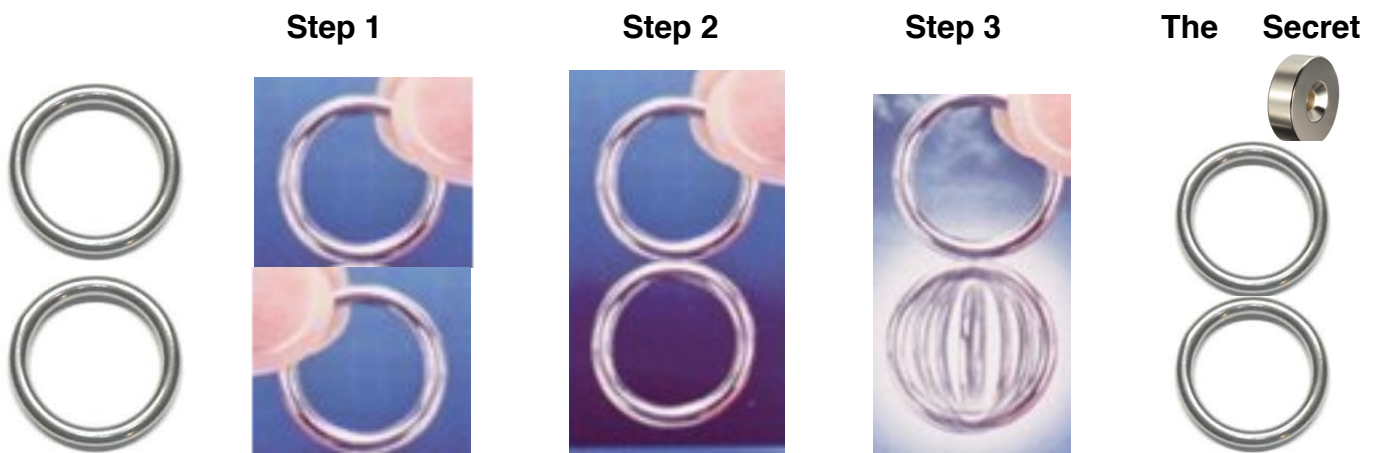
Spinning Rings

This many magic vendors sell this trick for a few dollars per trick and it work well. I want more than one set of the trick and often give a few away each semester so I have found that it is cheaper to get several rings and **neodymium** magnets at the local hardware store and business supply store. I get better looking rings and better magnets for less money. Just be sure the rings are attracted to the magnets before you buy them.

Step 1. Take out 2 medal rings. Hand them to a couple of students to examine. Point out the area where the rings were welded together. Take back the two metal rings and hold one in each hand using 2 fingers on each ring as shown. Place them close together one on top of the other. Say that there is a part on each ring where the ends of each ring are connected together. If that opening is just a bit loose you may be able to link the rings together so that the lower one was suspended from the top one. Try it by placing the bottom ring touching the top ring, pretend to link the rings. Then let go of the lower ring and let it drop. Pick up the ring that dropped and say, “well that didn’t work. Let me try again”

Step 2. Try it again. Take the two metal rings and hold one in each hand using 2 fingers on each ring as shown. BUT this time you hold a small neodymium magnet between the finger and thumb that holds the top magnet. Place the top ring between the top fingers so the ring touches the magnet. Place them close together one on top of the other. Touch the bottom ring to the top ring, pretend to link the rings and then let go of the lower ring. The lower ring will hang there, suspended on the top ring. Say” I got it this time.”

Step 3. Spin the lower ring. Don’t spin to hard or the ring will fall off. Let it spin a bit, then take both rings in the fingers holding the lower coin and drop the rings on a desk so the students can examine both rings. As they are doing this put the magnet in your pocket.



How does this work?

The steel rings are not magnets. They are made of a metal that is attracted by a magnet.

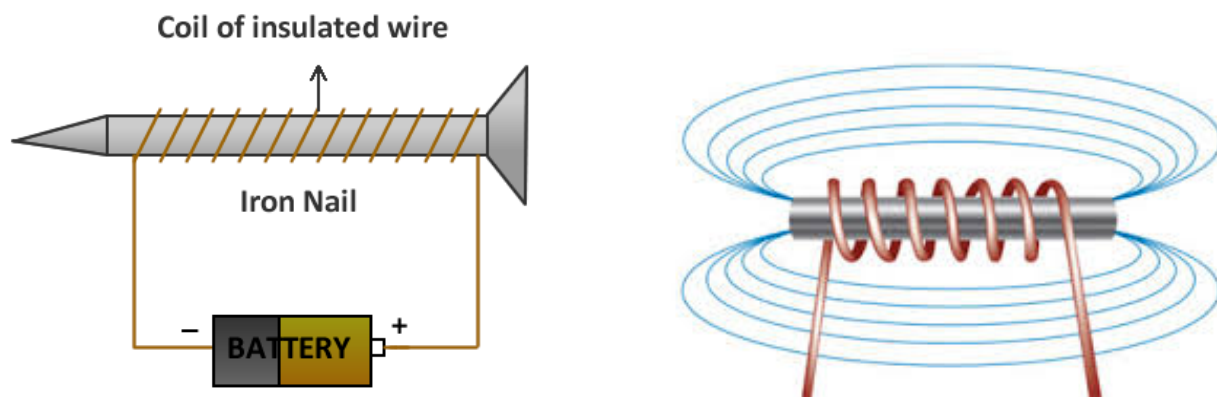
Ferromagnetic materials: Ferromagnetic materials are strongly attracted by a magnetic force. The elements iron (Fe), nickel (Ni), cobalt (Co) and gadolinium (Gd) are such materials. Steel is also a ferromagnetic material. It is an alloy or combination of iron and several other metals. Any ferromagnetic material can be made into a magnet.

Individual particles such as electrons have magnetic fields. If a larger object, such as a piece of iron, has the magnetic fields of most of its electrons lined up in the same direction, then the larger object also has a magnetic field, as a sum of the fields of its particles. If a larger object exhibits a sufficiently strong magnetic field it is called a magnet.

Making a Magnet

There are 2 basic ways to make an object composed of ferromagnetic material into a magnet.

1. A wire that conducts electricity, like copper can be used to make an iron nail into a magnet. Wrap the insulated copper wire wrapped around the piece of metal. When an electric current passes through the wire, a circular magnetic field is created. This magnetic field aligns the magnetic fields of the individual electrons and causes the iron nail to act as a magnet.



If the current that created a temporary electro magnet is removed its ability to act like a magnet is removed.

If you have a strong enough current and you let the current run for a long enough the iron nail will keep the ability to be a magnet. If this happens, you have just made a permanent magnet.

∩2. When a magnet touches another magnetic object such as an iron ring, the object becomes a temporary magnet for as long as it is touching the real magnet! The second magnet will not be as strong as the original magnet. If the original magnet is strong enough it can make the first temporary magnet strong enough so that it can make a ring it touches into another temporary magnet. This magnet will even weaker then the ones before it.

If you have a strong enough magnet and it touches a magnetic object such as an iron ring long enough the second ring will keep the ability to be a magnet even it is not touching the original magnet. If this happens, you have just made a permanent magnet.

The steel rings are not magnets. They are made of a ferromagnetic metal that is attracted by a magnet.



A very strong permanent magnet.



A temporary magnet made by touching the ring with a magnet.



A weaker temporary magnet made by touching the ring with a temporary magnet.

If the permanent magnet is removed the ring loses its ability to act like a magnet. When you then take both rings in the fingers holding the lower coin and drop the rings on a desk they are no longer touching the permanent magnet and they lose their ability to act like magnets.

When you do the trick, students will say the rings must be magnets and want to examine the rings. They can be examined, and placed so that they touch each other but they will not stay connected as they did when they were temporary magnets. Try as they might students cannot repeat what they just saw you do.

NOTE: Try to avoid dropping the magnets on hard surfaces if possible. The permanent magnet has the magnetic fields of most of its electrons lined up in the same direction. If the magnet is dropped hard enough some of the electrons may not stay lined up in the same direction with the other electrons. This will cause the magnet to become weaker. The more you drop it the weaker it will become.

NOTE: Pennies are made of copper and zinc. Nickels are made of nickel and copper. These are not ferromagnetic materials. Trick pennies and nickels can be purchased that are made of iron and coated to look real. They are often used to perform this trick by magicians. It makes for a special effect but the cost of the trick coins is more then simple rings bought at a local store.