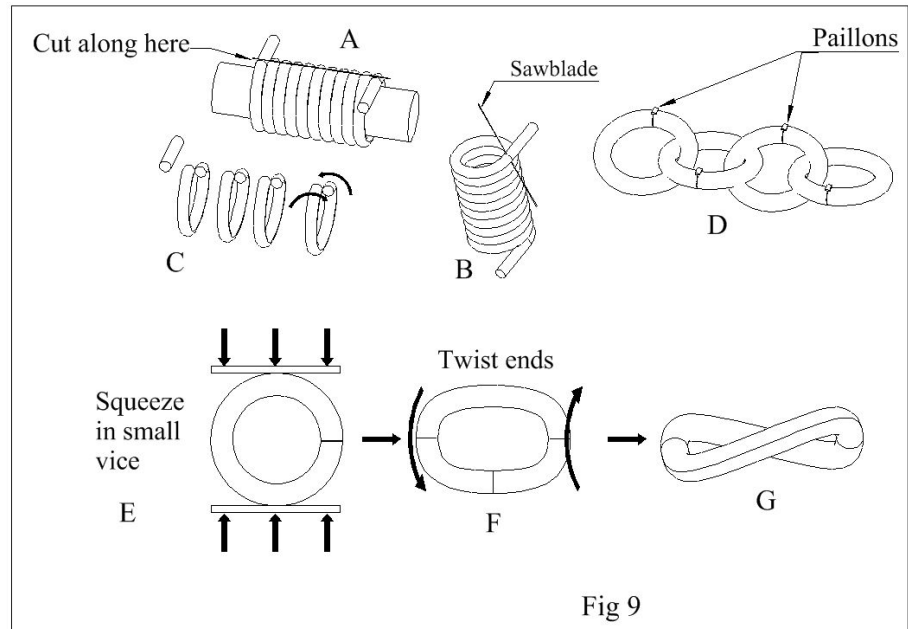


## Making chain

One of the more interesting things you can do with wire is to make your own chain. It's really quite easy.

There are two main types of chain: trace and curb. Both are made from oval links but the links in trace chain are flat whereas in curb chain they are twisted. You make them in exactly the same way, but curb requires an extra step.

Although you actually need oval links, you will find it easier to make round ones first. Choose a round rod of appropriate diameter as a mandrel (the shank of a twist drill works well for short chains) and, using annealed wire, wind it round the rod as if you are making a tight spring. **Fig 9-A** shows the result. Remove the coil from the former and, with a piercing saw, cut along the line shown to separate all the links as in **9-C**.



Don't try cutting all the links at once; hold the coil fairly vertical with the saw blade at an angle to the axis as shown in **9-B**. Saw carefully and *don't twist or tilt the saw without moving it up and down*; if you do the blade will certainly break. You should then end up with a lot of links as in **9-C**. Link them together by first opening them slightly and then closing them by twisting the ends axially as shown by the arrows in **9-C**. If you also push them a little radially to ensure the ends overlap slightly, they will be closed with a light tension. Never open or close links by bending them radially; if they have been opened that way, close them by first bending radially until the ends *just* overlap, then bend them axially as shown to line them up. Next, arrange them with the joints alternating shown as in **9-D**, flux the joints and apply paillons of silver solder as before, and then finally apply heat to melt the solder. You then have a trace chain made of circular links.

It's best to use a flame no wider than a link, but if you are careful and have applied flux *only* to the joints, you can get away with a larger one. The danger arises from the possibility of having the solder spread from the joints to freeze the links together. Small chains heat up very quickly, so be prepared.

The easiest way of making them oval is to squeeze each one in the smooth jaws of a small vice as shown in **9-E**. Don't be tempted to make oval links by winding the spring on an oval former. It works OK for 5 or 6 links but if you try it for lots you'll find it extremely difficult, if not impossible, to pull the former out of the spring. It

doesn't take very long to squash each link, and it's easy to get a consistent shape by remembering the position of the vice handle, or working to a stop. For links that are thick relative to their length, you can finish off by a pass or two through a groove on the rolling mill.

If you wanted a trace chain, you've finished, but if you want a curb chain you have to twist each link as shown in **9-F**. If it's a fine chain you can probably twist all the links together by hooking one end of the chain in a loop held in a vice, and twisting the other end. You have to apply quite a lot of tension otherwise the links tend to bunch up and it's obvious it's never going to work.

There are two solutions to this problem: you can twist the ends of each link separately, with pliers, as shown in **9-F**, or can do as I do and make a frame that keeps the chain in tension and allows you to rotate one end.

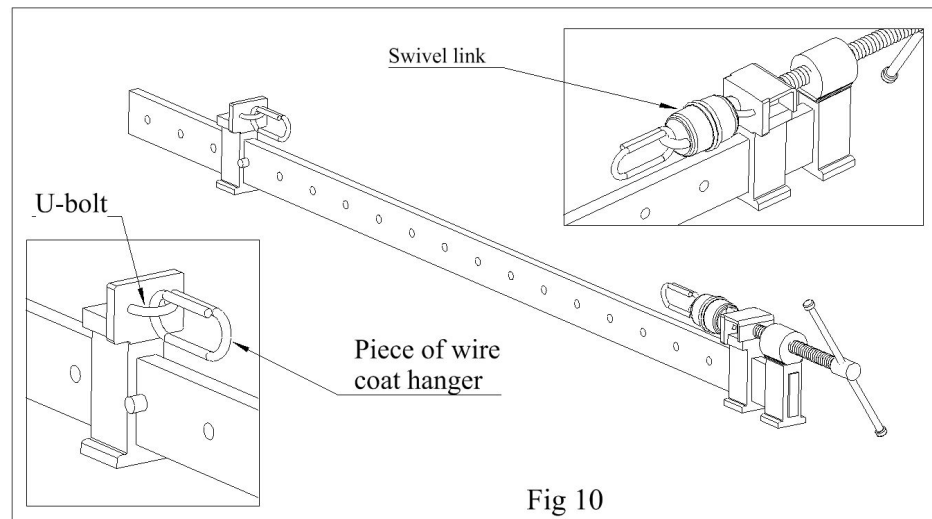


Fig 10

I made mine by making a slight modification to an ordinary wood-working sash cramp. The modification consists of drilling two holes in each jaw, spaced so as to accept a U-bolt. I then purchased a swivel link which was placed on one U-bolt and then both U-bolts were bolted to the sash-cramp jaws as shown in **Fig 10**. I then salvaged two lengths of steel wire from a wire coat-hanger, bent them into long links rather like a part of a big paper-clip, and attached them as shown. The ends of the chain to be twisted are then threaded on to the coat-hanger links and the screw-handle is adjusted to apply a slight tension on the chain. If the chain you make won't fit on coat-hanger wire, then use a different size.

A short bar can then be inserted into the wire link nearest the swivel joint and used to twist the end of the chain. As each link in the chain twists the chain tries to get shorter, so the tension is released a little; either that or the links get narrower. If some links twist more than others you just apply torque at appropriately placed points with your hands. Chances are that a link will break at the soldered joint; don't worry, just remove the chain and re-solder the link.

Twisting the chain is a very good test for the joints; once the chain is fully twisted you know all the joints are good. You have to twist the whole chain rather more than you expect. The way you check is to remove it from the cramp and hold it by one end; if it hangs nice and straight you're done, otherwise put it back on the cramp and twist some more.