

TAKE THE CONFUSION OUT OF FUSING

Make a classic foxtail chain by linking fused jump rings. When you finish making the rings, you'll be a fusing expert!

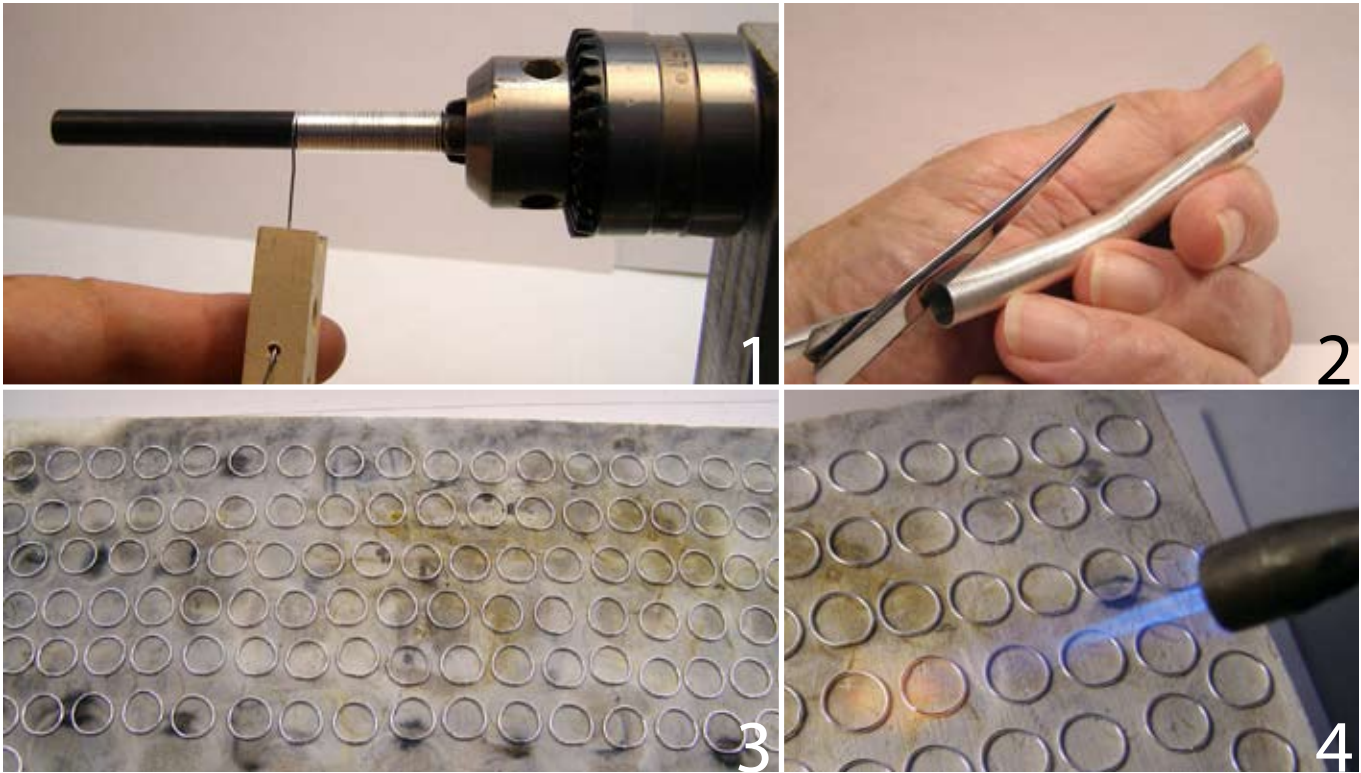
# Foxtail-Chain Necklace

Perfect your *fusing technique*  
with one *classic, basic chain.*

by **Howard Siegel**

**F**using is a straightforward technique that you can use to join metals without solder. To fuse, you use a torch to melt the metal on both sides of a joint, and the surface tension causes the molten metal to flow together. To fuse well, you need a delicate touch and fine timing, and what better way to practice both than by fusing the jump rings you'll need for making a chain?

If you follow the measurements for the materials called for in this project, you'll make a 20-in. (50.8 cm) chain; to make a longer or shorter chain, add or remove links as desired. If you prefer, you can draw the chain through a drawplate (see "Just Drawn That Way," page 4) to reduce the chain's diameter; this will make the chain longer and give it a more delicate appearance.



**Make a clothespin tool.** This is a handy tool for controlling the tension of your wire as you coil it around your mandrel. Use a drill bit in a flex shaft to drill a hole through one leg of a wooden clothespin below the rope recess. The hole should be slightly larger than the gauge of wire you'll be using and drilled at roughly a 45° angle to the rope recess; this will allow the wire to pass smoothly through the tool without kinking.

**Coil the wire.** Cut a manageable section of wire from a 10-ft. (3.05 m) length of fine-silver wire. Insert one end of the fine-silver wire through the hole you drilled in your clothespin. Pull the wire through the clothespin until the wire extends about 1 in. (25.5 mm) beyond the jaws. Make a 90° bend about ½ in. (13 mm) from the end of the wire.

Place a mandrel into a coil winder. Place the bent portion of the wire between the jaws of the coil-winder chuck to secure the wire. Using the clothespin tool to keep tension on the wire and guide it, wind a coil about 3 in. (76 mm) long onto the mandrel [1]. Cut the wire and slide the coil off the mandrel. Wind 3-in. (76 mm) coils until you use all the wire.

**NOTE:** The wire will wear a groove in the wooden clothespin. When the tool can no longer apply tension to the wire because of wear, replace the clothespin tool.

**Cut the coil to make rings.** Hold a coil between the thumb and fingers of your nondominant hand. Position the coil so that it crosses your palm at a 45° angle.

Insert the lower jaw of a pair of shears into the coil [2]. The shears should be pointed between your thumb and fingers. Cut the rings, being careful not to cut your hand.

When it is difficult to cut any further, withdraw the shears and remove the cut rings. Reinsert the shears, being careful to align the lower jaw with the edge of the last cut on the coil. Cut rings from the remaining coil. Repeat with the rest of the coils.

**Prepare the rings for fusing.** Place a firebrick on your workbench, and place a Solderite pad on top of the firebrick.

In order for the rings to fuse correctly, the cut ends must be aligned and in good contact. Click on "How To" and then "Wirework" at [www.artjewelrymag.com](http://www.artjewelrymag.com) to see how to open and close jump rings.

Close a ring and look at it from all

angles. Adjust the cut ends as necessary until they're aligned and touching.

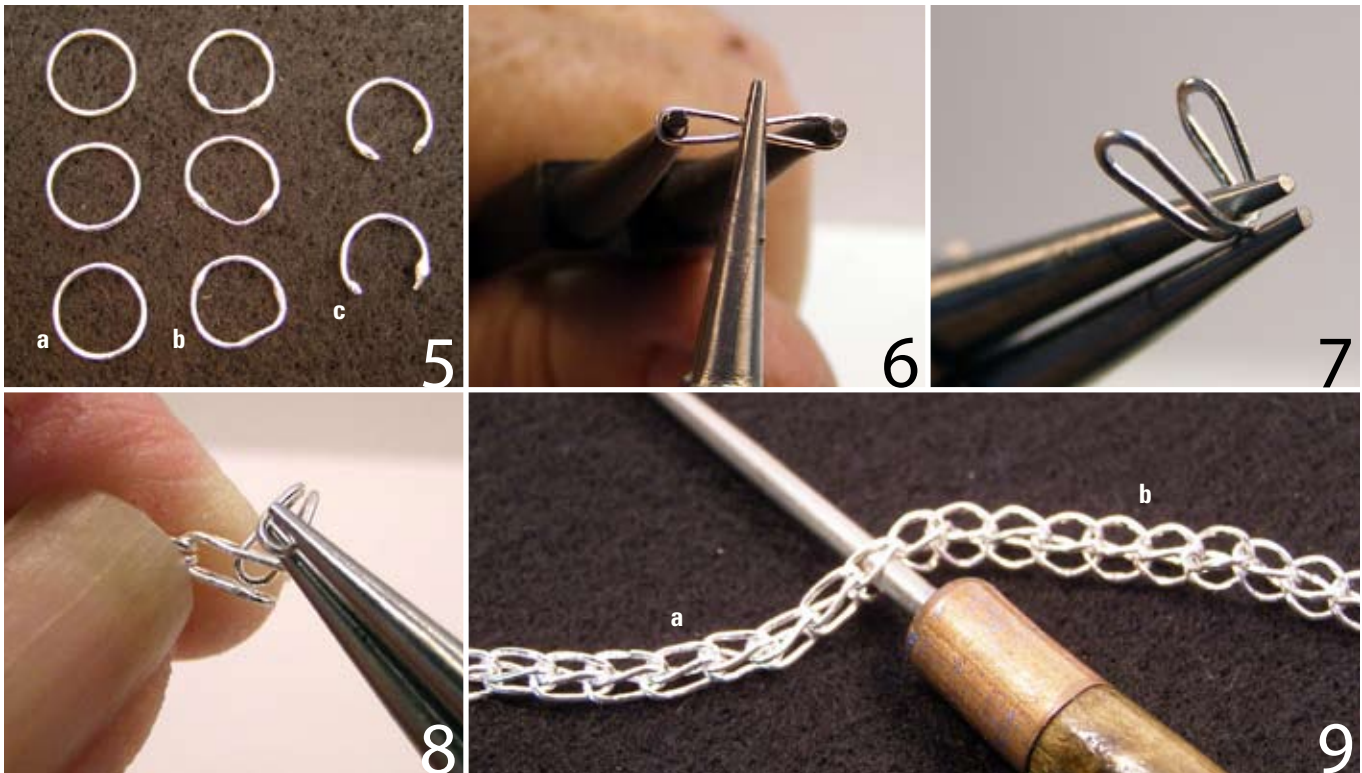
Place the closed ring at the left rear of the Solderite pad, with the cut facing forward. Continue closing and placing the remaining rings, leaving about ⅛ in. (3 mm) between the rings and about ¼ in. (6.5 mm) between the rows [3].

**Fuse the rings.** Put on your Optivisor. Light your torch and adjust the flame to about half its maximum length. You may need to readjust the flame to get the control you need for fusing the rings.

Work on one ring at a time. Move the tip of the flame in a circular motion so that the flame passes just inside the rear of the ring, over the side, and just in front. Keep circling until the ring glows a dull red.

**TIP:** When you're working with a torch, dim the lights in your workroom so it's easier to see when the metal changes color.

When the ring changes to a dull red, center the flame tip on the cut ends of the ring and move the torch with a small circular motion so that you uniformly heat both cut ends [4].



Watch the cut carefully so that you see when the metal melts, or “flashes.” (Molten metal is more reflective than solid metal, so metal “flashes” when it melts.) When you see the flash, immediately remove the flame to avoid either overfusing or burning through the ring. Continue until you have fused all the rings.

Properly fused rings show a smooth join [5a]; overfused rings show some thinning of the joint and thickening of the ring adjacent to the join [5b]; burned-through rings show a small ball of silver on each side of an open cut [5c].

**NOTE:** You can still use slightly overfused rings to make the chain, because you can hide the imperfect join inside the chain. But these rings will be weaker than a properly fused ring, so use them near the end of your chain in case they break later in the chain-forming process.

**Stretch and form the rings.** Hold a pair of bow-opening pliers (a tool that opens, rather than closes, when you squeeze it) closed in your nondominant hand.

Place a fused ring over the jaws of the bow-opening pliers, positioning the fused joint at the tip of one jaw. Squeeze the bow-opening pliers’ handles to elongate

the ring until its sides are parallel. Don’t squeeze too hard, or the ring will break.

Use roundnose pliers to pinch the center of the ring to form a propeller-like shape. Reposition your roundnose pliers so they’re perpendicular to the bow-opening pliers, and grasp the ring where it’s pinched [6]. Release the pressure on the bow-opening pliers and use the roundnose pliers to lift the ring off.

Holding the ring in the roundnose pliers, bend the ring’s two legs up with your fingers to begin forming a U. Stop bending the legs of the U before they are parallel. Try to make both legs the same length [7]. Repeat to form all the rings.

**Weave the chain.** Place a twist tie in the U of one link. This is the starter link. Bend the legs of the U together until they are parallel. Holding the twist tie in your nondominant hand, place one leg of a second link through both legs of the starter link. Pull this link through the starter link until it is centered. (Positioning this link will pull the legs of the starter link closer together.) Bend the legs of the second link together until they are parallel.

Holding the second link, insert one leg of a third link through both legs of the second link [8]. Pull this link through the

second link until it is centered. Bend the legs of the third link together until they are parallel.

Continue to add links until the chain is the desired length.

**NOTE:** If you can’t insert a link through both legs of the previous link, you can insert an awl into the legs to enlarge the opening. Rotate and push on the awl to round out the opening.

**True-up the chain.** To make the links in your chain look uniform, you must “true-up” the chain by inserting the awl into each link from all four directions, rotating the awl each time to round out the link.

The woven links [9a] look flatter than the trued-up links [9b]. When you’ve finished truing-up the chain, it will be more uniform and slightly shorter.

If you are happy with the appearance of the chain, proceed to the next step to add the clasp. If you prefer a more delicate look, see “Just Drawn That Way,” page 4.

**Add the clasp and finish the chain.**


Remove the twist tie from the starter link.

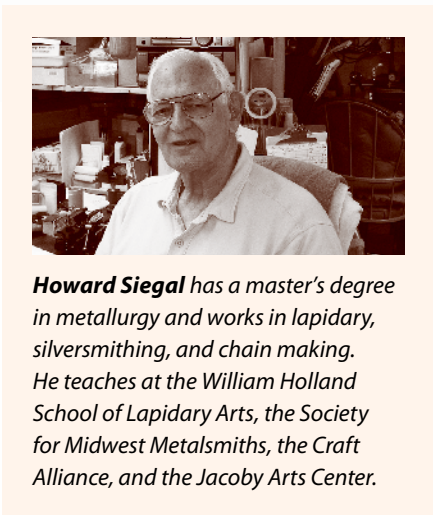
Open a 5 mm-inside-diameter jump ring. Thread the jump ring through the U of the starter link and through a lobster



claw clasp. Close the jump ring. Attach another 5 mm jump ring to the other end of the chain.

Place the assembled chain in a tumbler with steel shot and burnishing compound. Tumble the chain (click on “How To” and then “Metals” at [www.artjewelrymag.com](http://www.artjewelrymag.com) for more information) for about an hour to smooth any rough spots on the chain and to polish the surfaces.

Rinse the chain in clean running water and dry it. Pull it through your hands to make sure that there aren't any rough spots. If it's not smooth enough, tumble it for another hour or two. (Additional tumbling will not damage the chain.) 



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## just drawn that way

To make the chain even more uniform — and longer and smaller in diameter — pull it through a drawplate. (I used a homemade one, but they're also readily available through tool suppliers.)

Before drawing the chain, coat it with beeswax to lubricate it. Then, insert one end of the chain through the hole in the plate that's only slightly smaller than the chain's diameter, and pull the chain through the hole.

I prefer to pull the chain through each hole in the drawplate twice before proceeding to the next-smaller hole.



## materials

- Fine-silver wire: 22-gauge (0.6 mm), round, 10 ft. (3.05 m)
- Sterling silver jump rings: 18-gauge (1.0 mm), 5 mm inside diameter, 2
- Lobster claw clasp: 10 x 5 mm

## tools & supplies

- Clothespin
- Flex shaft, drill bits
- Wire cutters: flush
- Mandrel: 5/16-in. (8 mm) diameter
- Coil winder
- Shears
- Firebrick
- Solderite pad
- Torch: propane pencil torch, Blazer-type butane torch, or conventional acetylene/air torch with a very small tip
- Pliers: chainnose (two pairs), roundnose, bow-opening
- Optivisor or other optical magnifier
- Twist tie
- Awl
- Drawplate (optional)
- Beeswax (optional)
- Tumbler, steel shot, burnishing compound

See Safety Basics: click on “How To” at [www.artjewelrymag.com](http://www.artjewelrymag.com)

## suppliers

- Mandrels, Blazer-type butane torch (Harbor Freight Tools, 800.444.3353, [www.harborfreight.com](http://www.harborfreight.com))

## ACKNOWLEDGEMENTS

I learned to make this chain from the following books:

McOمبر, Robert W. *Chain Making*.

McOمبر, 1976.

Stark and Smith. *Classical Loop-In-Loop Chains and Their Derivatives*.

Brynmorgen Press, 1999.

Untracht, Oppi. *Jewelry Concepts and Technology*. Doubleday, 1982.

The clothespin tool was shown to me by Cao Madina. I am indebted to him for sharing this extremely useful tool.

The drawplate I used for this project was given to me by David Newman, one of my students.

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