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Before diving into wire-weaving techniques, it is important to understand the basic properties of the materials and tools you will be using to create weaving projects. This section will give you a brief introduction to these materials and tools, as well as a guide to several techniques used in preparing frame wires for weaving, tips for more successful weaving, and simple instructions for applying finishing touches to your designs.

About Wire

Whether you work with wire only, or incorporate other elements such as beads, stones, or cabochons into your woven design, wire is the component that will have the greatest impact on that piece. After all, there would be no wire weaving without the wire! For that reason, it's important to know about the various types of wire—different shapes, sizes, and metals—as well as their properties and design applications.

Frame and Weaving Wires

Throughout the book I will be using the terms frame wire and weaving wire. These terms describe the different tasks that each wire type is assigned. Frame wires are used to create the overall outline of a piece of jewelry. During the weaving process, they remain mostly stationary while the weaving wires move around them, stitching all the parts together to create various patterns and give the design stability. Frame wires are like bricks in a masonry construction, whereas weaving wire is like the mortar. Although each has a different function, both work together to form a cohesive unit, and one could not do its job properly without the other. When woven jewelry is designed well and crafted skillfully, it should be strong and have a solid feel to it.

Selecting Wire

As with any functional art, there are two facets to jewelry design: the aesthetic, which has to do with the sensual expression of the art, and the practical, which deals with the construction of the piece and its functionality, strength, and comfort to the wearer.

When selecting wire for your project, it is helpful to understand how different wire properties can impact one or both of these equally important design aspects. For example, choosing the wire’s color and metal type is almost entirely an aesthetic decision, and choosing the degree of wire’s hardness will be purely a functional one. When deciding what sizes or shapes of wires to use, you will have to consider both the aesthetic and the practical impact of that choice on your design.

Wire Shapes

Even though everyone is most familiar with round wire, wire is also available in several other shapes. Square, half-round, domed, rectangular, and triangular wires are often used in wire wrapping and other jewelry-making techniques.

**Round wire** offers the greatest versatility, and it is still the most frequently used shape of wire in both jewelry and non-jewelry applications. Round wire is available in the widest array of colors, sizes, and types of metals. Also, and most importantly: Because of its shape, round wire bends with equal ease in all directions, which makes it the easiest to mold into various configurations. This property is very important in freeform weaving designs that require a lot of bending and frequent changes in direction, so you will find that most freeform wire weaving and the majority of projects in this book are designed with round wire only.

**Square wire** has four flat sides and four corners. The gauge of square wire is determined by its thickness, the same as round wire. However, because its corners add extra bulk, square wire has about 20% more metal in it than round wire of the same size. Square wire bends most easily and cleanly along one of its flat sides. When working with square wire, be careful not to turn it the wrong way and end up with a twist where it does not belong. Square wire can be used to make twisted wire to use as accents. (Be aware that twisting hardens the wire.)

**Half-round wire** has one flat and one rounded side. Its gauge is determined by its width, and because it is half of a round wire, its weight is also half of round wire of the same gauge. It bends well only toward the flat side. Half-round wire is commonly used in wire wrapping to bind square or round wires together. In weaving projects, it can be used for the same purpose. In addition, it can be used to add decorative elements to woven work. For example, you can wrap half-round wire around a frame wire to create slightly different coiling effects than you get when using round wire. The heavier gauges can also be used as frame wires in some limited applications.
Triangular and low-dome wires only come in large gauges and are not suitable for use in freeform weaving.

Wire Hardness

Precious metal wires such as gold, gold-filled, fine silver, sterling silver, and Argentium sterling silver, are sold in three degrees of hardness, or stiffness: hard, half hard, and dead soft. Brass, bronze, and copper wires are usually available only in dead soft. Color-coated copper, anodized aluminum, and other artistic and craft wires are sold in various degrees of hardness that is often unspecified and differs from manufacturer to manufacturer. Experiment a bit with different brands to see which ones work best for you.

Keep in mind that hardness designation such as “dead soft” does not mean that all types of wires with that label will be exactly the same degree of firmness. For example: dead-soft sterling silver wire is slightly harder than dead-soft copper wire, and brass and bronze wires are even stiffer.

There are also methods for changing the degree of hardness of wire, such as annealing it with a torch or in a kiln to soften it, or work-hardening it by drawing it through a drawplate or striking it repeatedly with a plastic or rawhide hammer.

Selecting which hardness of wire to use for your project is a purely practical decision.

Weaving wire

Since weaving wire’s job requires it to bend and twist into tight curves and loops, it needs to be as malleable as possible, and therefore it should always be dead-soft. Be aware that your wire will work-harden (or become stiffer) during weaving, which is another reason to start with the softest wire possible. You will know the wire is soft enough when it bends effortlessly into graceful curves and follows the flow of the weave. In contrast, when it bends in all the wrong places and breaks easily, it is probably too firm and will most likely result in a jagged, uneven weave.

Fine-silver and copper wires—including some color-coated copper—are the softest and easiest to use. Dead-soft wires such as sterling silver, Argentium sterling, gold-filled, and gold also work very well.

Frame wire

Selecting the right firmness for the frame wires is a little more complicated than for the weaving wires. In most cases, neither the soft nor the hard wire is an ideal choice. Hard wire holds its shape much better, both during the weaving process and later in the finished jewelry; however, it can be difficult to manipulate and once formed, it is almost impossible to reshape without leaving unsightly bumps and nicks. Soft wire, on the other hand, is great for forming curves and loops and is fairly easy to reshape if something needs to be readjusted. At the same time, because it is soft, it tends to
Weaving

Making your weave smooth and even

Smooth out the frame wires: Straighten and smooth out all the frame wires before starting your project and take care not to twist them up while shaping your piece and during the weaving process. Make sure that the wires that are supposed to be straight are perfectly straight, and the wires that are supposed to be curved or looped have a smooth and bump-free arc. Keep in mind that any bumps and kinks on the frame wire will ultimately show up in your weave and become part of your design, whether you planned it that way or not.

Maintain proper spacing between frame wires: Always leave enough space between frame wires for the weaving wire to pass through. In parallel weaves, that space should be even throughout the length of the weave. The thicker the weaving wire, the wider the space between the frame wires needs to be. It is also important to keep the correct spacing between frame wires that are not parallel, such as in silhouettes, where the shapes can easily be distorted if correct distance is not kept between the wires.

I find that the best way to maintain desired spacing is to avoid pulling on the weaving wire as you bring it across to create a weave (photo 1). Pulling it across will push the frame wires together, making it difficult to control the spacing between them. Instead, always pull the weaving wire at a 90° angle to the weave as you tighten the loop around the frame wires (photo 2).

Maintain even tension on the weaving wire:
• Pull the weaving wire tight against frame wires with each wraparound.
• Make sure the wire is straight and flat as you draw it over or between frame wires.
• Keep uniform spacing between individual weaves.

Preventing and removing kinks
It is important to keep the wire as kink-free as possible and to remove any kinks that do occur right away. Here are several tips that will help you keep your work kink-free:

Work from the spool: Whenever you can, it is best to work from-the-spool. That means leaving your weaving wire rolled up on the spool it came on and unrolling a little at a time—only as much as you are comfortable working with. Having only a short section of wire free from the spool will help with the kinking-up problem. Also, when the wire is left on the spool, you don’t have to worry about how much of it you will need to cut off to have enough to complete a particular section. Simply weave until you are finished, and then snip it off. No underestimating or overestimating, no waste.

If the original spool is too bulky and gets in your way, measure and cut the length of the weaving wire you need, and then wind it onto a lighter, smaller, flexible plastic spool.

Do not allow the weaving wire to twist and loop: Make sure the weaving wire maintains a gentle curve throughout its length. Straighten it out as soon as you notice it starting to twist or cross itself.

Take extra care when threading the weaving wire: The weaving wire tends to kink most when it is being threaded or pulled through tight spots, such as in the netting technique, when stitching, and when working on a part of a design where the frame wires create a closed loop. To stop weaving wires from twisting, place a pen or similar object (I often use my finger) inside the loop created by the weaving wire and let the wire glide over it (photo 3). As you continue pulling and the loop gets smaller, replace the pen.
Freeform toggle clasp

In the previous project, you discovered how silhouettes can be used as individual elements to create simple designs. Here, you will start to link and combine these elements to generate slightly more complicated forms. As you work on this piece, notice how the eye part of the clasp is made of a crescent shape formed into a circle, and the toggle bar consists of two wedge shapes joined in the center.

Make the eye

1. Cut an 8-in. and a 5-in. piece of 18-gauge wire. Measure and mark the 8-in. frame wire 4½ in. from one end. Grasp the wire at the mark with roundnose pliers, where the jaw measures approximately ¼ in., and loop both wire ends around one jaw until they cross one another and make a complete circle (photo a).

2. Mark both wires where they intersect. Grip one of the wires with flatnose pliers slightly above the mark, and bend it outward. Repeat with the other wire. They should now run in the same direction with a narrow space (about ⅛ in.) below the loop (photo b).

Skills to review:
- shaping frame wires, p. 18,
- over-under weave, p. 26,
- crescent silhouette, p. 29,
- wedge silhouette, p. 29

Tools
- Weaving tools
- Finishing tools and supplies
- Patina tools and supplies (optional)

Materials
- 13 in. 18-gauge half-hard wire
- 12 ft. 28-gauge dead-soft wire
- 3–4mm round bead (optional)
Twisted Ribbon earrings

This project is a twist (literally) on the ribbon concept. Here, a single woven strip is folded and twisted together to create a new, more dimensional ribbon. Notice how twisting the ribbon not only changes the shape of that ribbon, but also alters the apparent pattern of the weave?
Cut the 20-gauge wire into eight 6-in. pieces. Make two bundles of four wires each. Mark 1 in. from one end of each bundle, and tape the wires together just outside the mark. Starting at the 1-in. marks, weave each ribbon with 28-gauge wire. Use the over-over weave with a repeating pattern of six weaves across two middle wires and one weave across all three wires to weave a 4-in. section on each ribbon. Mark the centerpoint of each ribbon (photo a).

1. Clamp a ¼-in. dowel in a vise. Place the center of the woven section of one of the ribbons on its edge on the underside of the dowel. Bring the ends of the ribbon up and around the dowel until they cross above the dowel (photo b). Repeat for the second earring, making the ends cross in the opposite direction from the first earring (photo c).

Skills to review:
- filing, p. 18, stitching on beads: method #3, p. 23, over-over weave, p. 40

Tools
- Weaving tools
- Patina tools and supplies (optional)
- Finishing tools and supplies
- ¼-in. diameter dowel
- Table vise

Materials
- 4 ft. 20-gauge half-hard wire
- 16 ft. 28-gauge dead-soft wire
- 6 in. 26-gauge wire
- 2 8mm beads
- Pair of earring post backs
Looping

Looping can be used to create ornamental surfaces, attach beads, and construct bezels and other stone settings. Except for the very first row, where loops must be attached to some kind of a starter frame, looping is done entirely with weaving wire and does not require frame wires.

techniques

Flat (linear) looping
Flat looped elements (nets) are created with straight rows of loops that run back and forth as they are hooked into one another. The first row of loops is attached to a straight piece of frame wire or some other frame material. To start, loop the weaving wire around the frame wire from front to back, and then let it cross in front of its tail as it comes back to the front (figure 1). Make the next loop by bringing the weaving wire around the frame wire from front to back again, then thread it through the space between the first and the second loop (figure 2). Continue looping, spacing the loops evenly until you reach the desired length. After finishing the first row, wrap the starting tail end around the wire of the first loop a couple of times and trim it to finish it off (figure 3). Turn the piece over so that the back is facing you. Start the next row by hooking the first loop of the new row into the last loop of the previous row (figure 4). Continue looping this way, turning the piece over at the end of each row.

Circular looping
Circular looping is similar to linear looping, except the loops travel in a circle in a continuous weave. As you loop, keep the same side toward you and turn the piece around bit by bit so the loops are always at the top. The circular net can grow from the inside out or from the outside in.

From the outside in, as the circle gets larger and the rows get farther from the center, the distance around the circle increases. The same number of loops would become progressively larger. To keep the loops uniform in size, add an extra loop here and there by occasionally hooking two loops into one loop (figure 5).

If the net grows from the outside in, the distance around the circle gets smaller as the rows get closer to the center. Decrease the number of loops by occasionally skipping over a loop here and there (figure 6).

Looping with beads
To add beads to loops, string a bead on the wire and then hook the loop like you normally would (figure 7). You can add a scattering of beads here and there, or weave entire rows of beads (figure 8). For multiple rows, place at least one row of empty loops between the bead rows (figure 9).
Make sure to start at the center and weave toward the edge (photo d).

5 Place the frame back on the stone. Continuing with the same weaving wire, start attaching loops to the frame wire. Loop toward the back of the stone (photo e).

6 Loop across the back (photo f).

7 When you reach the front, again start adding beads to each loop. When you reach the woven section of the frame, place loops on the lower frame wire (use the needle tool to make spaces between the weaves for the weaving wire to pass through). Add enough beads to go all the way across the front of the pendant (photo g).

8 Loop around the back again. Place an empty loop around each bead in the front (photo h).

9 Continue looping around the stone. As you work, use a needle tool to lift the loops slightly away from the stone for easier access. Loop until you get down past the widest part of the stone. End when you are happy with the look (photos i, j).

10 Attach a chain to the frame wire loops on the sides of the stone. Apply liver of sulfur solution (optional). Tumble for 20 minutes or longer.
So far, you’ve used woven ribbons to create flat designs. This project takes the idea of the ribbon in the third dimension. This design is based on a basic knot ring. Simply weave the ribbon without beads, and then shape it the way you would the beaded ring.