Simple Metalworking Techniques and Making a Steel Butterfly by mattthegamer463

Step 1: Materials and Tools

Not too many materials that we need for this job.

Materials:
- 22 gauge steel sheet
- Butterfly picture
- Solid-core wire

Safety gear:
- Gloves
- Goggles
- Ear protection

One of those steel thumb protectors would be a good idea.

Tools:
- Hammer (8oz to 16oz weight hammer will give the best control, make sure the face is flat and smooth)
- X-acto knife or craft knife
- Tin snips or equivalent
- Anvil (or a carriage bolt as I'll later describe)
- Vice
- Pliers
- Scotch tape
- Assorted metal files (needle files and larger)
- Drill and small bit (2mm diameter or around 5/64ths)
- Soldering Iron (optional, but makes life prettier)

Step 2: Cutting Out The Basic Shape

Our picture of the butterfly is pretty, but we need it on the metal. Cut out the butterfly with the knife or with scissors.

Put loops of tape on the back of the shape, staying within the boundaries of the cutout, as we can see in the pictures below. Stick the butterfly to your steel sheet.

Use tin snips to cut a very rough (almost square) cutout of the butterfly, to get it off the main sheet of steel so we can work with it easier. We need to cut around the shape getting as close as we can. Don't worry about tight notches like around the head and abdomen, or the tiny notches in the middle of the wings.

Now, cut those tiny notched spots, and use pliers if you can't snip the tiny bits out completely. Twist and pull the small pieces of unwanted steel off until the shape is almost what we want. Don't worry about how flat the piece is yet, or if sharp spots stick up. Remove the printed butterfly picture.

Step 3: Smoothing The Edges

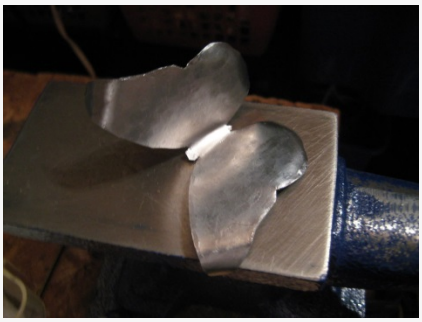
If your tin snips have tiny teeth-like textures on the jaws, then your cutout edges will end up being shiny, bumpy and very sharp. To fix this, just hammer around the edge of it on a sturdy metal surface. This will bend the metal and clean up these sharp bits that we dont want. Its best to remove them while the piece is flat.

VERY CAREFULLY run your finger along the edge of the cutout. If you encounter any sharp bits, file them off gently. You can feel the spots that you'll need to file. Try to not remove too much material and change the shape of the piece, unless intentional.

To file the piece without bending it, place it on the edge of a table so that little more than the edge you are going to file is sticking over the edge. Then hold the piece down firmly as you file.

Do any major filing that you need to complete to make your piece the shape you want. Once you're happy with it, move to the next step: shaping!

Step 4: Hammer Time!



If you don't have an anvil, you can make a makeshift one using a steel carriage bolt from a local hardware store. Smooth off the end and grip it in a vice so that it sticks straight up, then place your piece on top of it and hit it with a hammer. Its not elegant or very good, but its better than nothing. See the photo below to see what I mean.

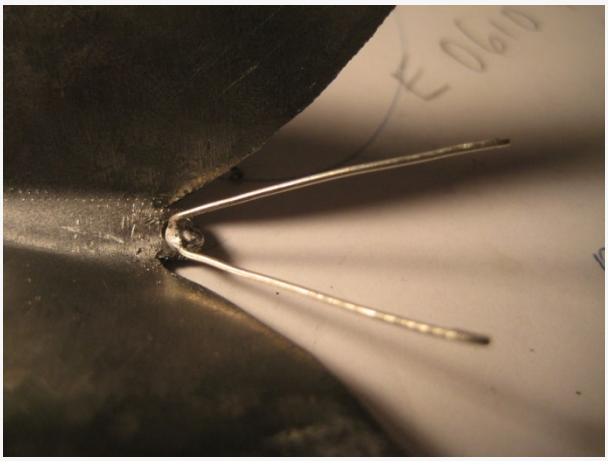
Start hammering by going back and forth on the wing on the curve of the anvil horn. After a slight bend begins to form, move the piece and keep hitting so that it bends smoothly, but doesn't kink or develop sharp bends unintentionally. You may want to practice on a scrap piece if you've never done this before. Its very intuitive, and you need to "feel" what you're doing, so I'm not going to try to describe it further. Feel the bends with your hands, and make decisions based on that. Its hard to screw up, so just keep working the metal until you're satisified.

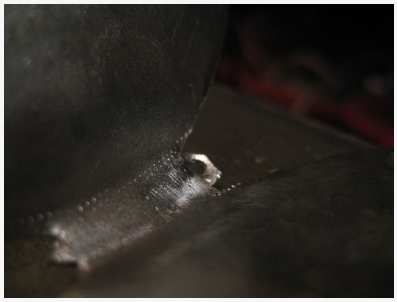
Use more of the anvil curve to curve the wing tips more sharply.

Next we're going to bend the wings up. Grab the body of the butterfly tightly with needle-nose pliers. Grab each wing and bend them upwards by hand. Try to bend it with your hands as close to where the bend is happening, so that we dont deform the wing shape.

If you're satisfied, the hard work is done!

Step 5: Adding Antennae





A bug isn't complete without antennae, so we need to drill a hole and make some wire antennae for our little butterfly. Drill a hole in the head of the butterfly using your small bit. The hole shouldn't be very big compared to the head, and the head shouldn't suffer structurally.

Strip some solid-core wire to use for antennae. Make sure the wire is stiff enough to pose. Cut the lengths about 2x longer than how long you want your antennae to be. Feed the wire through the hole and then loop it back through, and pull tight. Solder them in place and cut off the access.

Now, we need to shape them. Grab the end with needle-nose pliers nad make a sharp kink around on itself. Squeeze the kink so its near 180 degrees. Now, grab the kink and turn it in such a way that you gently bend the wire around into a small coil. The pictures should give you the idea.

Step 6: Complete, but What Now?

So the butterfly is complete. What now?

This is only limited by your imagination. Its steel, which means magnets can stick to it, so have fun. Here are some ideas:

- Magnetic broach.
- Glue on a hairpin to make a butterfly hairpin.
- Mount on a stick and place several butterflies around your flower garden. (Spray with clear coat to prevent rust in the rain, or use stainless steel)
- Glue on a magnet to use as a fridge magnet.
- Paperweight.
- Christmas tree decoration.
- Make a windchime out of a bunch of butterflies.
- Paint it pretty colours and repeat the list.
- Adorn with plastic jewels and stones and repeat list.

Experiment with the whole process. Try polishing the finished product a little, or use a center punch or nail to make decorative dents and other textures. Go nuts, the sky is the limit here.