



# Dapping & Forging Animal Forms

PAMELA SELBERT & JAMES CLELAND

## Beginner project.

For this exercise, we will design and produce a simple piece, a box turtle shell. There will be only two components, top shell (carapace) and bottom shell (plastron). Those with more experience may add a head and legs.

Editor's note: To see more of James Cleland's work, read "Recreating Nature," page 294.

### STEP 1. Design & layout.

Very elaborate projects, such as animal representations, can easily be crafted by breaking them down into component parts, then integrating the parts: body, head, legs, and, in the case of insects, wings, eyes, and antennae. The sources Cleland uses for drawings to copy include illustrated field guides, animal prints from old books, and sometimes the animal itself. Use a copy machine to en-



large or reduce the drawing until it is exactly the size you plan to create in silver.

### STEP 2.

Apply your white paint or correction fluid to the sheet of silver by whitening one side and cellophane-taping a small sheet of carbon paper to it. Place the drawing over the piece and trace the lines with a hard lead pencil. Be sure you have positioned the drawing in the center of the silver. Hold the drawing up to a light while taping it down, and

## TOOLBOX

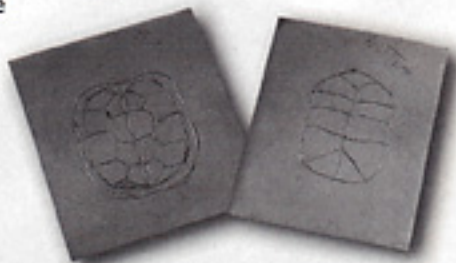
- Pitch bowl (a professional cast iron bowl — or old cooking pot — filled with pitch)
- Dapping tools: Cleland uses a full set of round punches, a full set of chasing tools, and numerous punches of his own making
- Standard torch
- Soldering block
- Jeweler's saw
- Files
- Sandpaper
- Polish
- Sharp scribe
- Sheet of sterling, 22-gauge is best for most projects, as deep dapping will not punch through the metal
- Silver solder
- Silver pin parts
- White paint, correction fluid, or gesso
- Carbon paper for layout
- Protective glasses

Note: Always ask for the MSDS (Material Safety Data Sheet) for any materials you buy, which will give you the physical/chemical characteristics, and reactivity, health hazard, and safe handling data.

leave enough silver on each side so that the silver doesn't crumple as the project is hammered. (First-timers might want to make a soft-shell or snapping turtle, as their shells are not as highly domed.)

### STEP 3. Deep punching.

After tracing the drawing, draw over the lines with a scribe or sharp steel point (the point of a needle file works well). Be careful not to scribe the lines too deeply or you may create weak points that will cause the metal to tear later.



Use a solvent to remove all of the paint, since residual metals in the paint can contaminate the process.

### STEP 4.

Put on protective glasses! Prepare the pitch by gently warming it with the torch at the center of the bowl. If the pitch gets too hot, it can boil and even burn. This means it's too hot to work! Stop! Wait 3 or 4 minutes, then warm it again. Test the working properties of the pitch by pushing on it with your hammer or a punch. It should not be too watery or too stiff. There is a narrow middle temperature at which the project works best.

### STEP 5.

Choose a larger punch (12mm to 20mm) to begin dapping. Dap the entire piece, taking care to stay within the drawn borders. As your work progresses, begin using smaller punches, dropping size by 3mm or 4mm at a time.



### STEP 6.

When making a box turtle, stop about halfway through the project to let the wax cool. Remove the silver and anneal the silver sheet. Reheat the pitch and push the piece back in. The silver is now very soft, so dap more lightly. Achieve a distinct outline and a satis-



factory depth, making sure that the outside lip of the carapace (upper shell) is curved slightly outward for ease in soldering.

### STEP 7.

For the final external shaping, Cleland uses a 13mm punch and taps slightly harder along edges of the individual scutes (external bony plates). Dapping may obscure guiding lines, and you may need to put them back in.

The last part dapped should be the bony ridge along the turtle's spine. Use a 4mm round or oblong punch, moving it gently back and forth.

### STEP 8.

If the pitch cools too much and becomes too hard as you work the piece, wait a few minutes for it to cool enough for the silver to easily pop out, then reheat pitch with the torch. Don't heat to remove the silver, as this will cause the pitch to stick to it.

Patience is the key here. If by mistake you overheat the pitch and the piece gets pushed in too far, let it cool and begin the process again. Dapping when the pitch is too hot will cause the piece to distort or to sink deeply into the pitch.

### STEP 9.

Follow the same procedure to dap the plastron (lower shell), making it slightly shallower.

### STEP 10. Cutting out the silver shape.

When you have achieved the desired shape, saw along the outside edge of the animal (the line scribed onto the silver). Use the jeweler's saw to cut out the shape of the lower shell, then file or grind until its rim fits snugly just inside the upper shell.

### STEP 11. Soldering.

Carefully solder along the perimeter of the shell and fit the 2 shells together. Add the pin parts. Cleland now adds his name plate and sterling stamp.

### STEP 12. Polishing & scribing.

After the first polishing, outline the scute borders with a graver or heavy scribe (Cleland uses a 3mm Hart burr). Scribe in the growth lines on the scutes (he uses a diamond burr), working in an irregular spiral motion for a realistic look. Give the piece a final buffing, blacken for more contrast, if desired, and polish gently with red rouge. ♦

*Metalsmith James Cleland enjoys creating such pieces as fabricated insects, plants, and animals; gemstone jewelry; and cast gold eggs. He and his wife, Ginger, own and operate Designs in Gold, based in St. Louis.*

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