

NAIL REPOUSSE TOOLS:



2 1/2" SPIRAL MASONRY NAIL

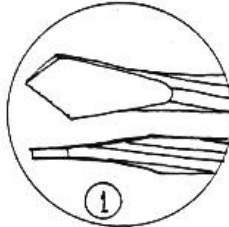


3" CUT MASONRY NAIL

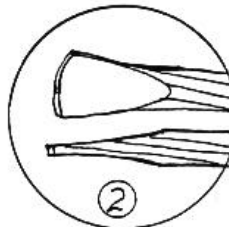
Liner



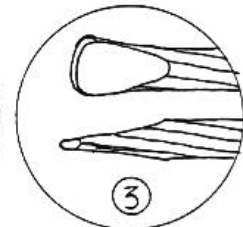
FLATTEN TIP - APPROX. 1mm.



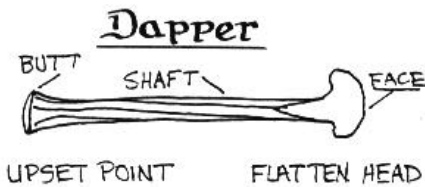
FORGED



GROUND

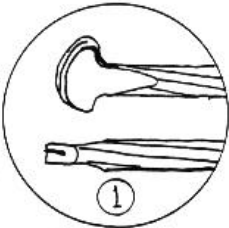


SHAPED & POLISHED

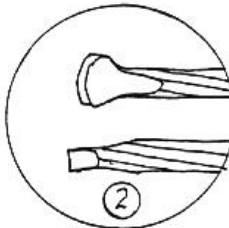


UPSET POINT

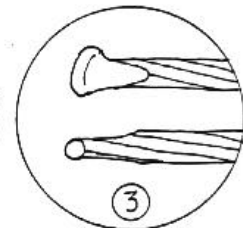
FLATTEN HEAD



FORGED



GROUND



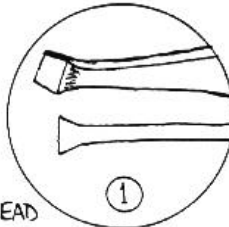
SHAPED & POLISHED

Flatter

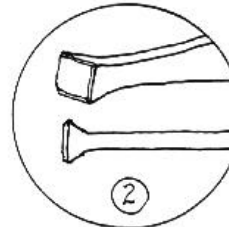


UPSET END

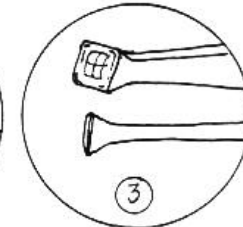
ANNEAL & ROUND HEAD



FORGED



GROUND



SHAPED & POLISHED

④ STEP 4 FOR ALL IS TO HARDEN AND REFINISH FACE

3 POINT REPOUSSE:

Attached are two basic designs, a fleur de lis and quatrefoil, which will demonstrate the basic technique of what I call three point repousse. I call it "3 point" since it creates relief patterns which are 3 sided and resemble triangles when viewed in cross section. More advanced repousse (which means "re-pound" in French) can create modeled forms in high relief and even full round or 3 dimensional forms. A famous example is the Statue of Liberty which is clad in copper sheets which were formed by the repousse technique. We will be working on a smaller and simpler scale for your beginning project.

TOOLS REQUIRED:

1. 3 chasing tools - a liner, flatter & dapper
2. Small hammer - approx. 8 oz. cross peen
3. Lead block - flat on both sides and at least ½" thick or greater
4. Steel surface plate or anvil to pound on
5. Torch capable of at least 1800° F
6. Grinder or belt sander
7. Supplies - masking tape, xerox copies of design, acetone, water, sandpaper (400)

Making a repousse tool / chasing tool:

1. There are three basic parts to a chasing tool - FACE, SHAFT & BUTT
 - a. You forge, grind & polish the face for the shape you want it to make.
 - b. You hold the shaft to position the face where you want an impression made.
 - c. You hit the butt end with the hammer to make the desired mark.
2. Heat the heads of several concrete nails (bigger is better) and let them air cool to anneal (or soften) the striking surface to avoid chips, etc.

Heat only about 1/4" of the end to red/orange or until it's nonmagnetic. If you overheat the steel, it will emit sparks which means you are losing carbon content. You do not want to do this.
3. Heat the pointed end to red/orange and forge flat as shown in figure 1 for the liner. If you're quick you can do this with your fingers while tapering it down to about 1mm. near the end.
4. Next grind the shape you want for the face of your tool. Eye balling is good enough. Rotate the face as you grind to help keep the plane of the face perpendicular to the shaft. If it's off to the right or left it won't strike straight and level. See figure 2.
5. So far you have been working with annealed or softened tool steel which you will now harden by heating the business end to red/orange or nonmagnetic and quenching vertically in water. Don't stir, swirl or move it.

6. Your tool is now hardened and ready to polish. Use a light touch and avoid overheating by quenching frequently in a can of water if you regrind. If you can, keep the face true to the original shape. Just remove enough to get a level surface and polish with 400 grit sand paper held on a flat surface for flats or a magazine for rounded faces.
7. Repeat steps 2 thru 6 for dapper & flatter using a cut masonry nail for the flatter. To upset ends as shown, heat 1/4" of tip to red-orange, hold opposite end on surface plate and hammer straight down on hot area. This will shorten and thicken the target area. If it bends, hammer the top of the bend until straight and repeat until area is the size and shape you want.

STEPS:

1. **Lining** - Defines edges of design areas on front and back of work piece.
2. **Flattening or texturing ground** - Levels background around design to contrast relief against a flat or textured background and maintain form of work piece.
3. **Dapping/Modeling**- Increases depth or height of design's relief and models rounded forms from rear between lines.

Tool uses:

1. **Liners** - used to outline front borders of pattern and peak areas between lines from back
2. **Flatters** - used to level background areas on the front
3. **Backgrounders** - textured face - cut, punched or filed for textured background work
4. **Dappers** - rounded face - used to dome areas between lines and to model forms

Shapes:

Liners can be straight, rounded, curved, angled etc. and sized to fit different scales of work. Flatters, background tools and dappers can also be any shape or size that you want or need. The basic geometric shapes are good to start with. As you progress with repousse you, will accumulate hundreds of tools.

DOING REPOUSSE:

1. To line steel, hold the tool vertical to the work surface and hammer straight down on the butt end of the tool. Observe the depth and if suitable, move the tool a partial face width down the line and hit it again. Keep overlapping your marks to avoid a dotted line effect. With a little practice you can chase a continuous even line to the desired depth. Your work should be secured with tape to the lead block which yields to the blows thus allowing the sheet to be formed. After completing a line around part of your pattern the area inside will appear "puffed" as will the surrounding sheet.

2. To flat your background, go around the outside of your lines with a flatter so that the “puff” on the outside of the line is hammered back down flat. Start next to the edge of the line and work outwards until you are happy with the background. This step is done on a surface plate of steel. Avoid hitting too hard or you will stretch the metal and warp the work. Hit the puff just hard enough to bend it with out thinning it too much. Flattening is done as needed. You do not need to do the entire background, just remove the bumps you don’t want for now.
3. Turn your sheet over and tape it to a flat lead block. Use a liner to chase the middle or centers of your pattern from the back side of your sheet. Make even lines varying the depth gradually so that the line is a bit deeper in the center than at the ends. This will create an arched relief on the front. Experiment! When finished the front will have high relief over the entire surface of the pattern on a flat background. Three point repousse automatically makes peaked relief and is easy to do. However, if you want more modeling in terms of varied heights you must use a dapper.
4. To dap an area, you follow the center line of your pattern on the back as you would with a liner. After completing the line, check the front to see if the desired effect is there. If not, then work the tool at an angle on either side of center and recheck. Use finesse to avoid making a warty surface on the front. Experiment!

YOU HAVE NOW EXECUTED THE REPOUSSE TECHNIQUE WITH HANDMADE TOOLS!
This is a good thing. Toolmaking is what separates us from our hairy brethren who swing from the trees.

IS IT RIGHT? If your tool has developed mushroomed edges and is bent it is too soft. If the face has chipped or fractured, it is too hard. Anneal & re-harden. The nail will stand this a good number of times as long as you don't overheat it to the point of emitting sparks which burns out the carbon.

SPARK TESTING TOOL STEEL:

Take the suspect stock and grind it hard enough to create a shower of sparks. If the sparks are straight and not too bright, you have nontool steel or iron. If the sparks fork and fan out in a bright pattern, you have tool steel. Use a wood nail and an old drill bit for comparison. Compare a wood nail (bends) and a concrete nail (breaks) for spark patterns. This is a scrounger’s test and will not provide an alloy number or hardening information but can lead to results with a little trial and error. Junk is cheap. High tech tool steel ain't!

REPOUSSE TIPS:

1. Control the force of your blows to the tools. If struck too hard, a liner can perforate the work. This is a bad thing.
2. Control the angle of your tool, especially with flatters and background tools, or the edges will scar your work and require extra work to fix.
3. If your tool shank gets bent, heat the middle after straightening and quench to harden. It probably became too hot during forging.

4. Annealing will be required after working the front and back due to work hardening. Anneal as needed or the work will develop cracks.
5. As you go, flattening as needed works better than trying to get it flat at the end.
6. Check the face of your tools from time to time and polish if needed. A ding in your tool will multiply as many times as you use it.

XEROX TRANSFER TECHNIQUE:

1. Draw or trace your pattern on paper.
2. Using the copier, enlarge or reduce as you wish.
3. Clean your metal with acetone or lacquer thinner.
4. Tape your copy face down on the work surface.
5. Rub the back of the copy with a rag dampened with acetone so the paper looks translucent and you see the pattern through it.
6. Before it dries or gets moved, press down on the pattern with the dry end of your rag until it dries (60 seconds max).
7. Carefully peel off the paper, which will stick a little where the toner transferred and see if the design is all there.
8. This will produce a durable pattern which you can spray with clear lacquer for longevity of complicated designs. It will not rub off easily and can be transferred to anything the solvent won't eat!

NOTE: Your pattern is a mirror image of the original! You may want to trace the back of your design and copy that to allow the lettering to transfer correctly. It works great for making stamp or die patterns which must be reversed anyway.

10. If you want to do it over, just clean the metal with acetone and repeat.

SAFETY TIPS:

For those of you who have lawyers, please observe the following advice. You are responsible for your own safety and work habits. Use safety glasses when using grinders, torches, hammers and all potentially dangerous tools and power equipment (especially rotary). Avoid burns. If it gets hot let go! Remember that black heat (not glowing red) can burn you. You can hold work with your hands while forging but if you're not a quick worker be prepared to let go quick. Enough said about the obvious.

3 Point Repoussé

