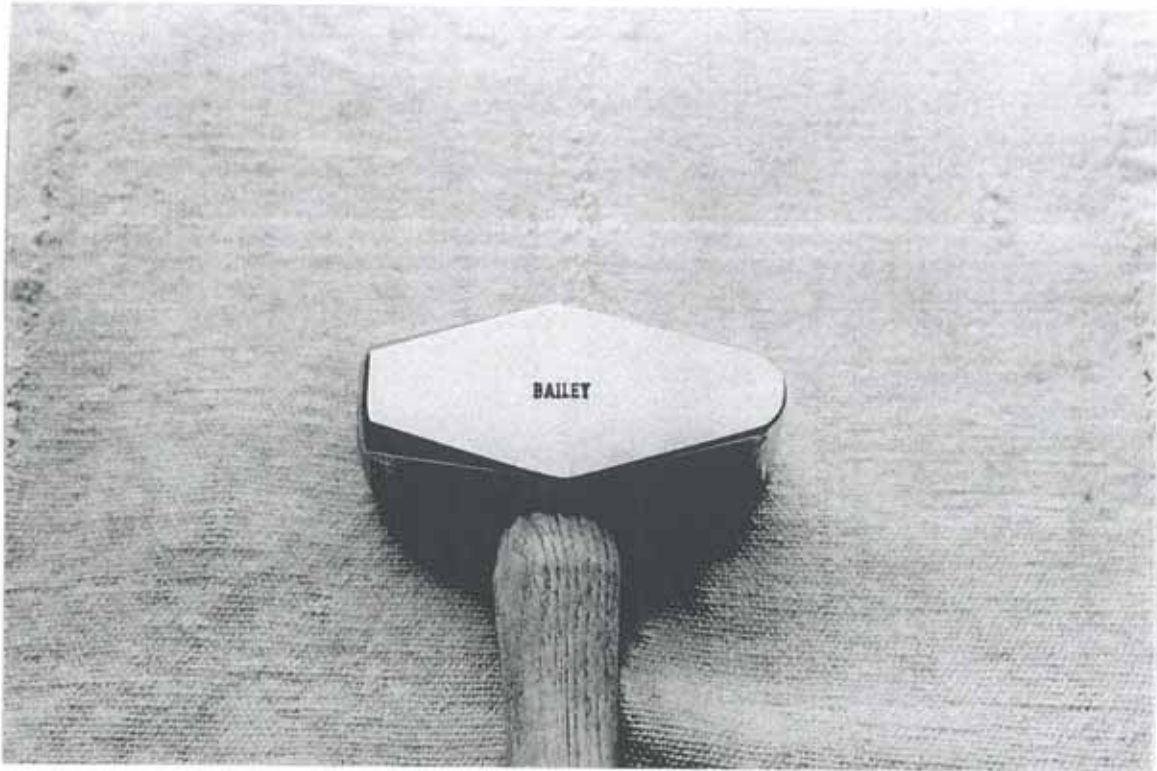


Bailey Cross Pein



Tools you will need

Anvil
Forge
Hammer
Slitting chisel
Drift
Center punch
Calipers
Soapstone marker or scribe

Materials

The material you start with will depend on the size of hammer you want to make. This particular hammer is 1 3/4 lbs. I have chosen to use Atlantic 33, a specialty alloy.

Atlantic 33

Carbon	.33
Molybdenum	.75
Copper	.75
Silicon	.65
Chromium	.75
Manganese	.40

Suppliers for Atlantic 33

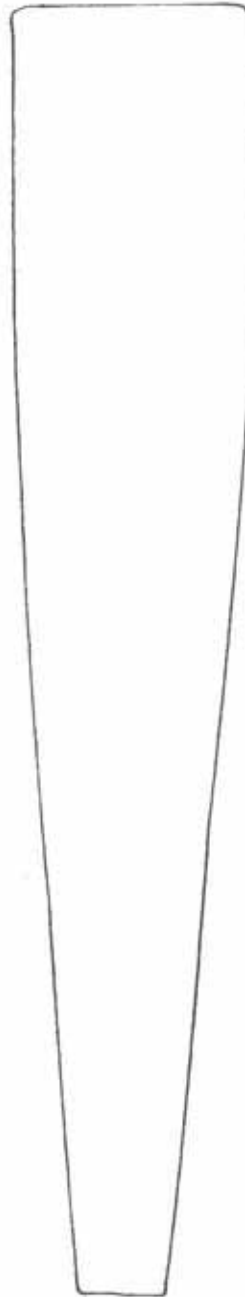
Mojave Southern Machine Works Tel. 1-951-655-5660 Fax 1-951-654-4070
190 Bissel Place
San Jacinto, CA 92582

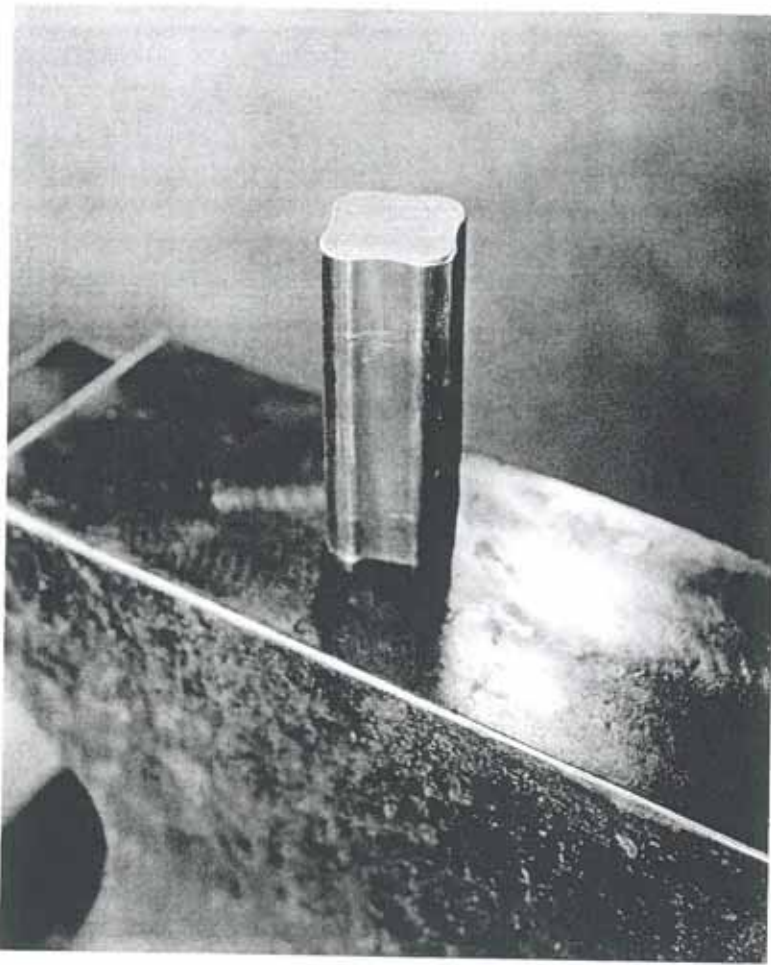
Atlantic Steel Corporation Tel. 1-718-729-4800 Fax 1-718-937-2411
35-27 36th Street
Astoria, NY 11106

Slitting Chisel

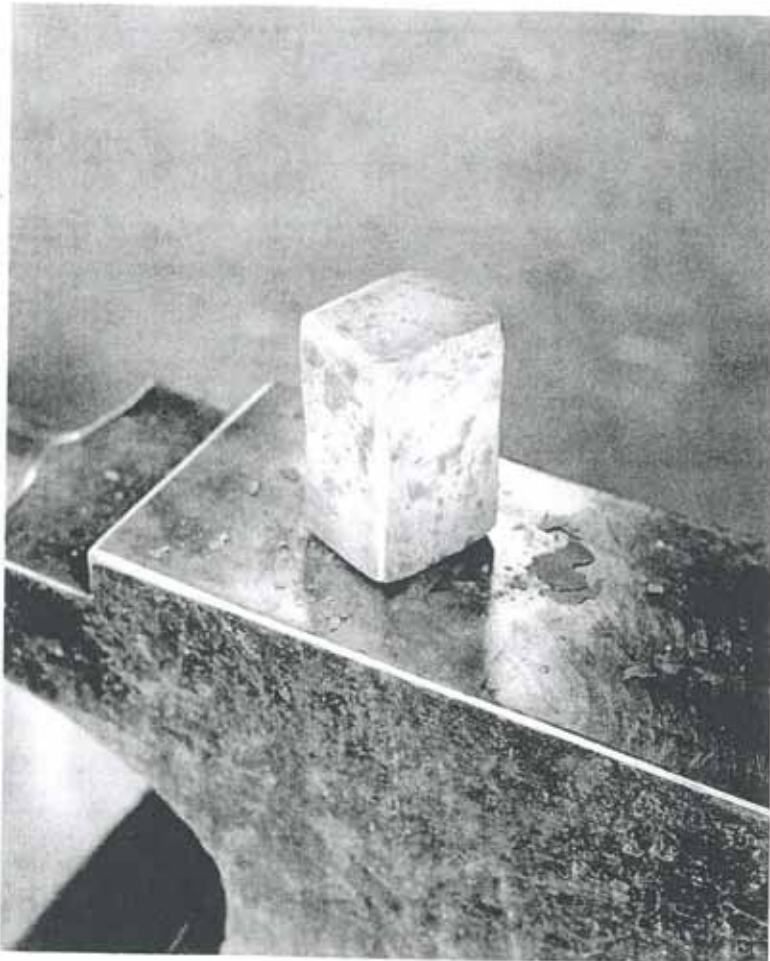


Drift

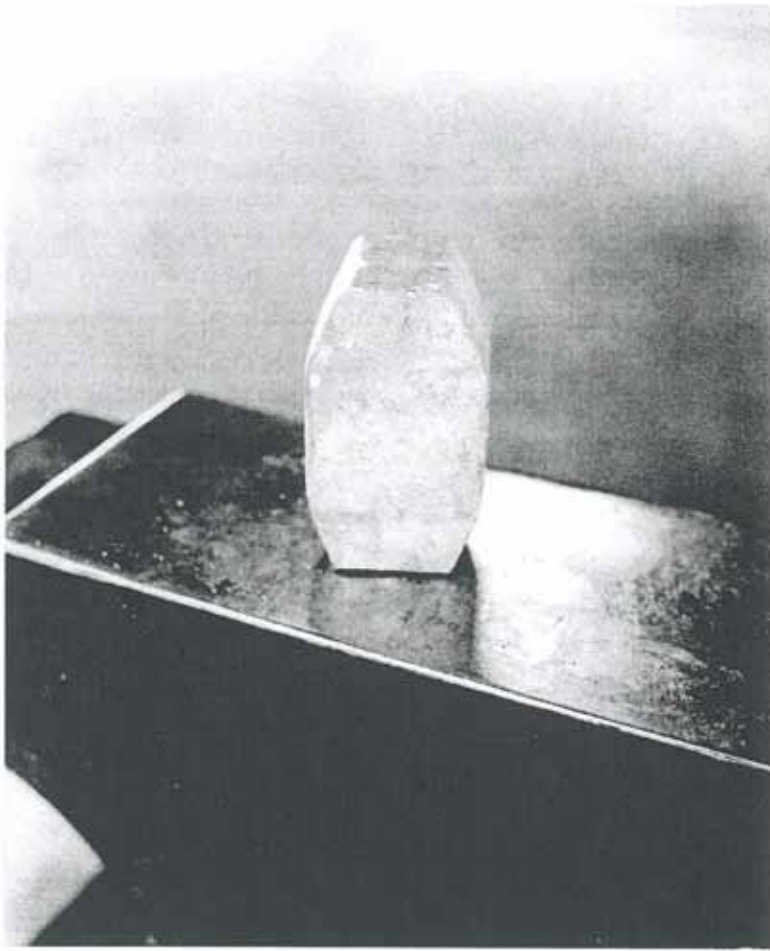




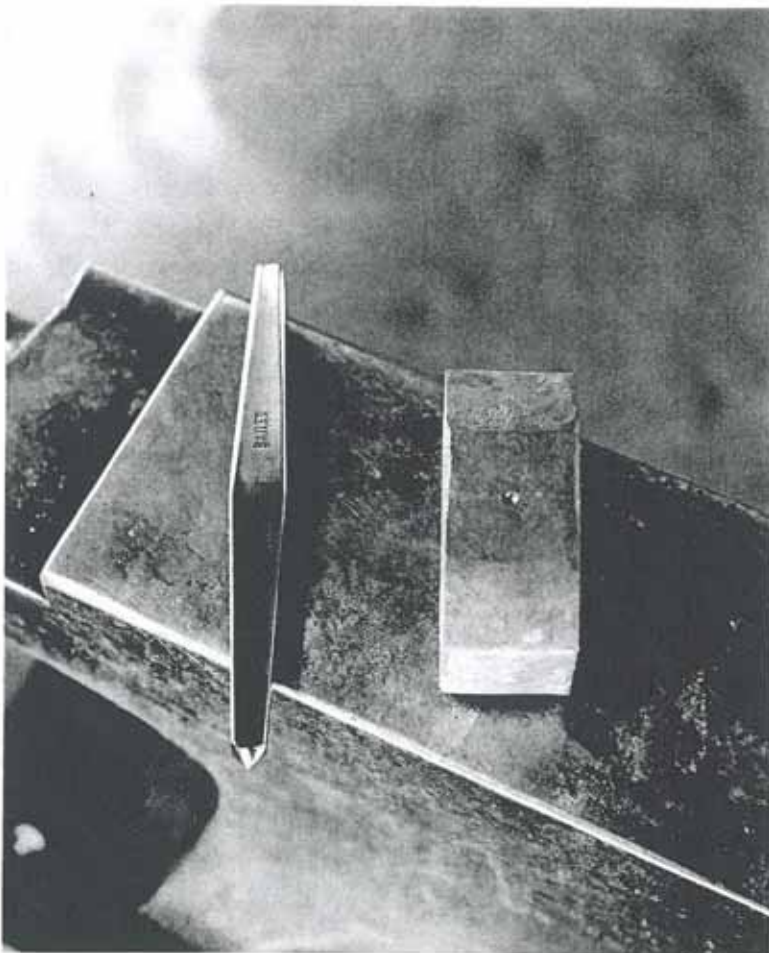
To make a 1 3/4 lb hammer I started with a piece of steel measuring 3 3/4" L x 1 1/2" square. Bring the piece to a uniform forging temperature. Don't burn it.



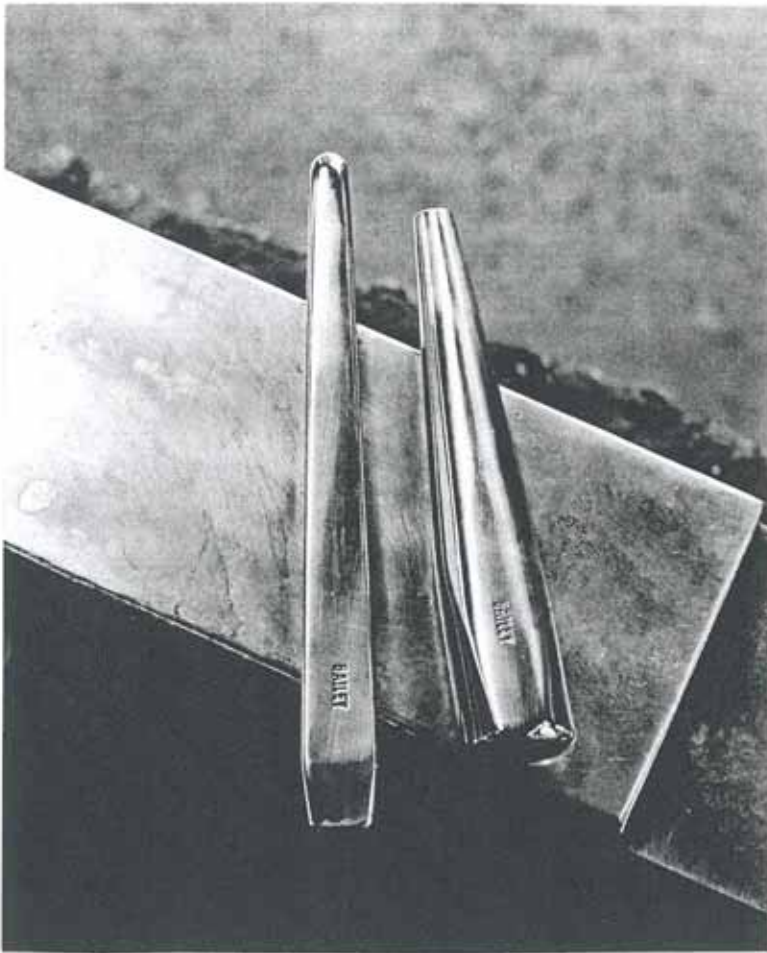
Upset the piece into a block measuring 3 1/8" L x 1 5/8" W x 2" H. I recommend using a power hammer. If you don't own one, a large sledge, 15-20 lbs, will work.



Forge a taper on both ends, increasing the length but keeping the width the same. Find the center in the length and the width and mark it using the center punch.

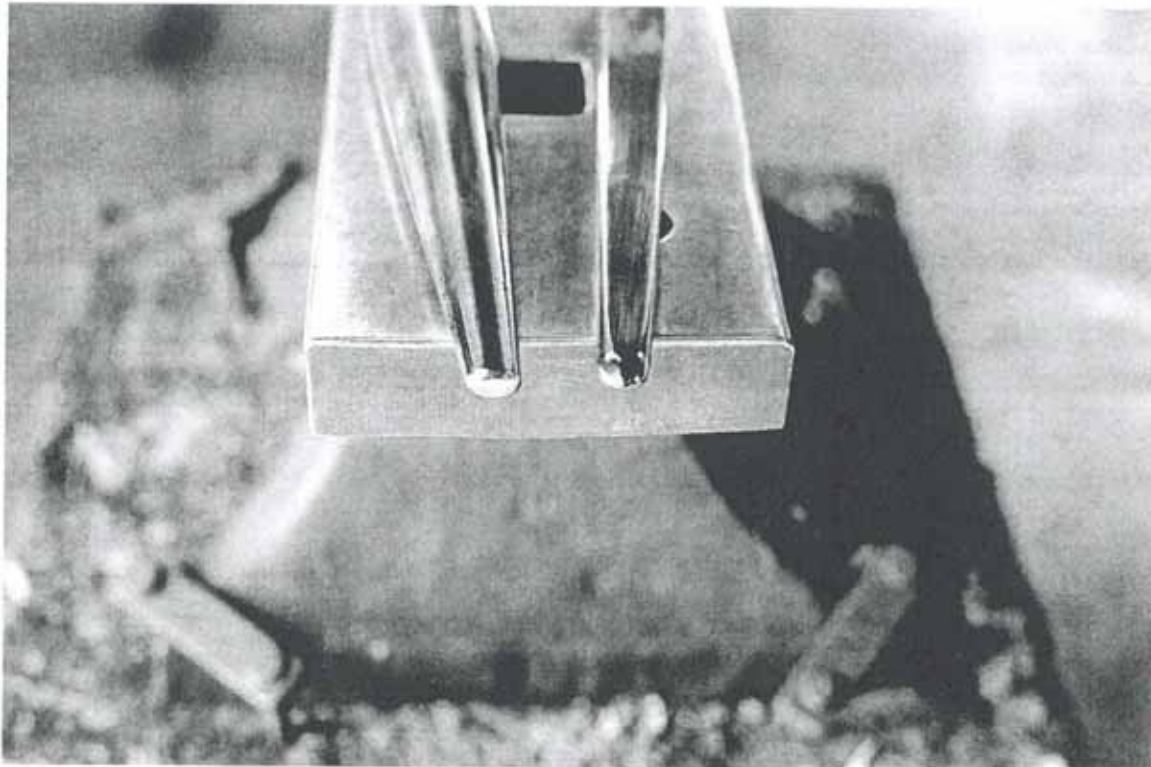


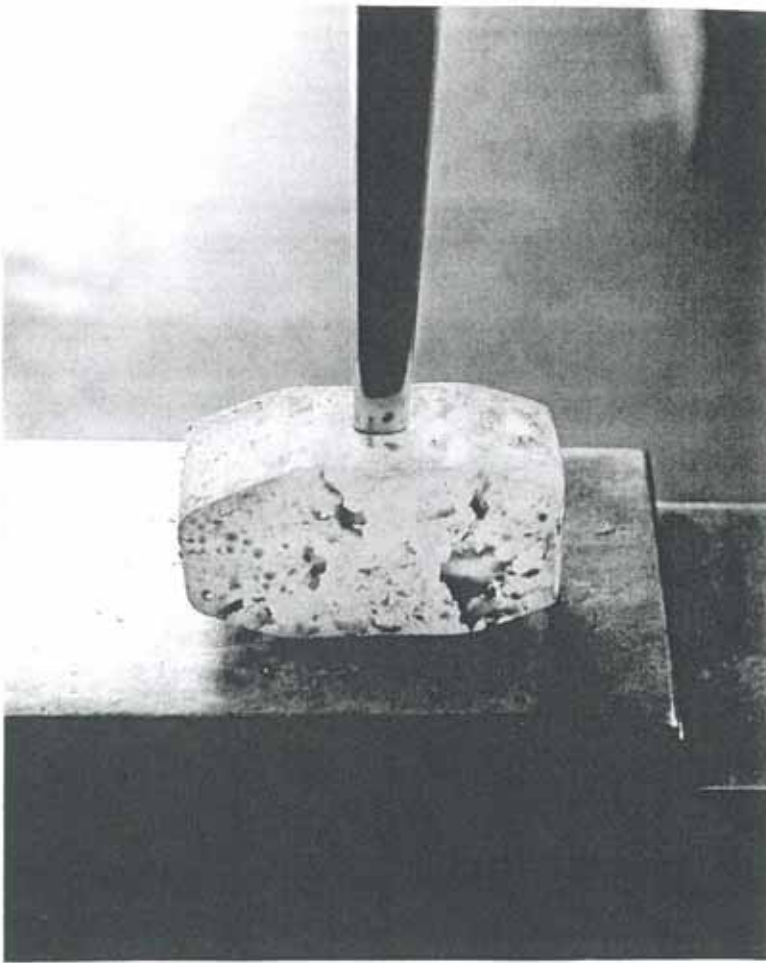
With the center marked on the top and bottom you are now ready to slit and drift the eye.



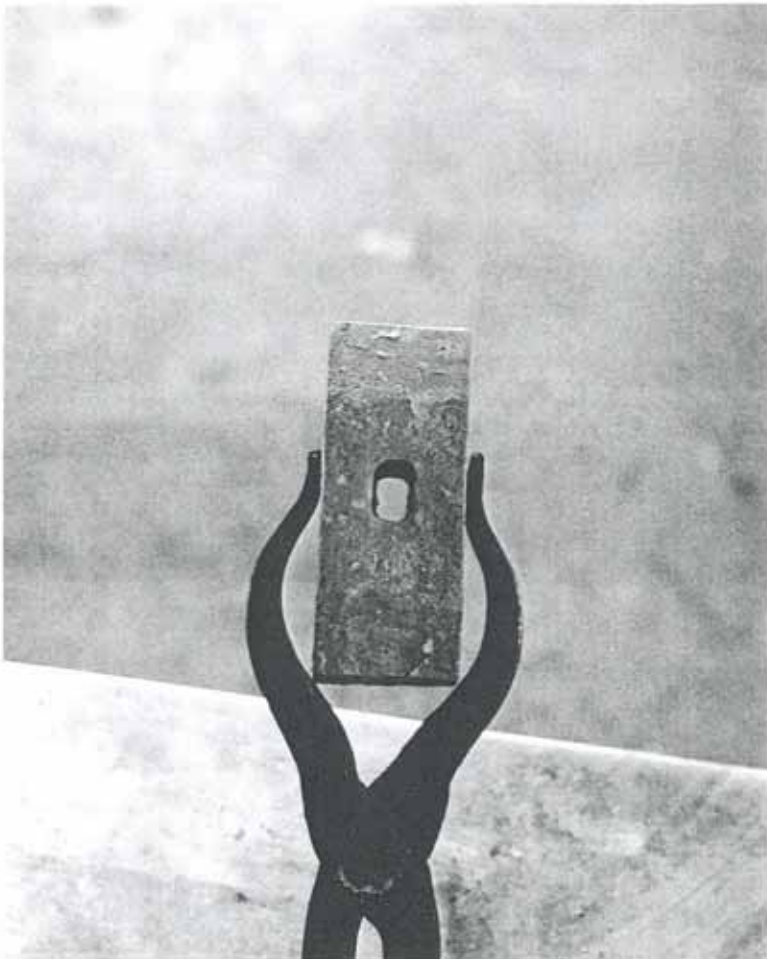
Page 3 contains tracings that represent the actual size of the slitting chisel and drift that I use.

A word of advice: I have used several different steels for the slitting chisel and drift. Bottom line, Atlantic 33 has performed better than any other steel or alloy.

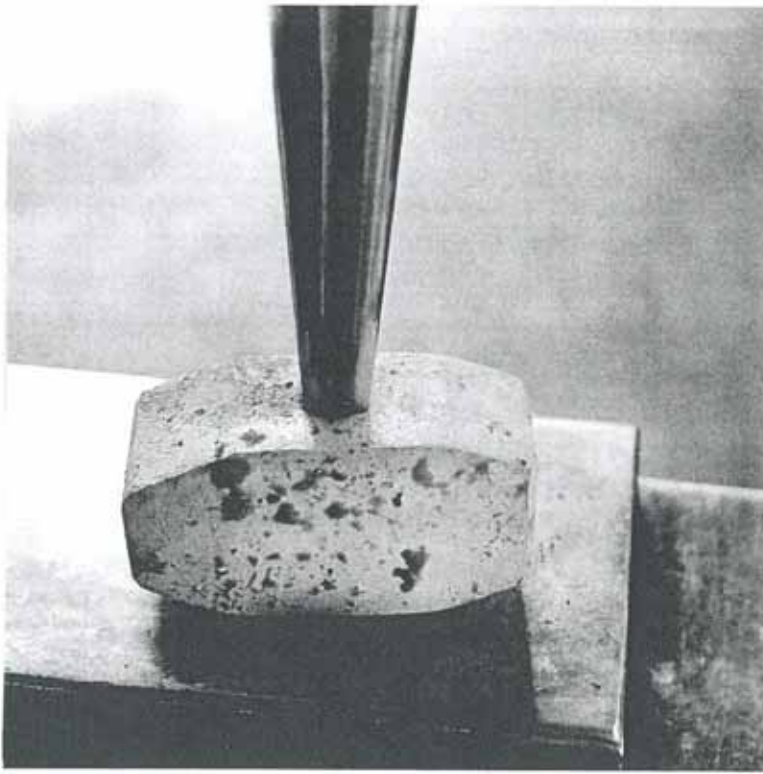




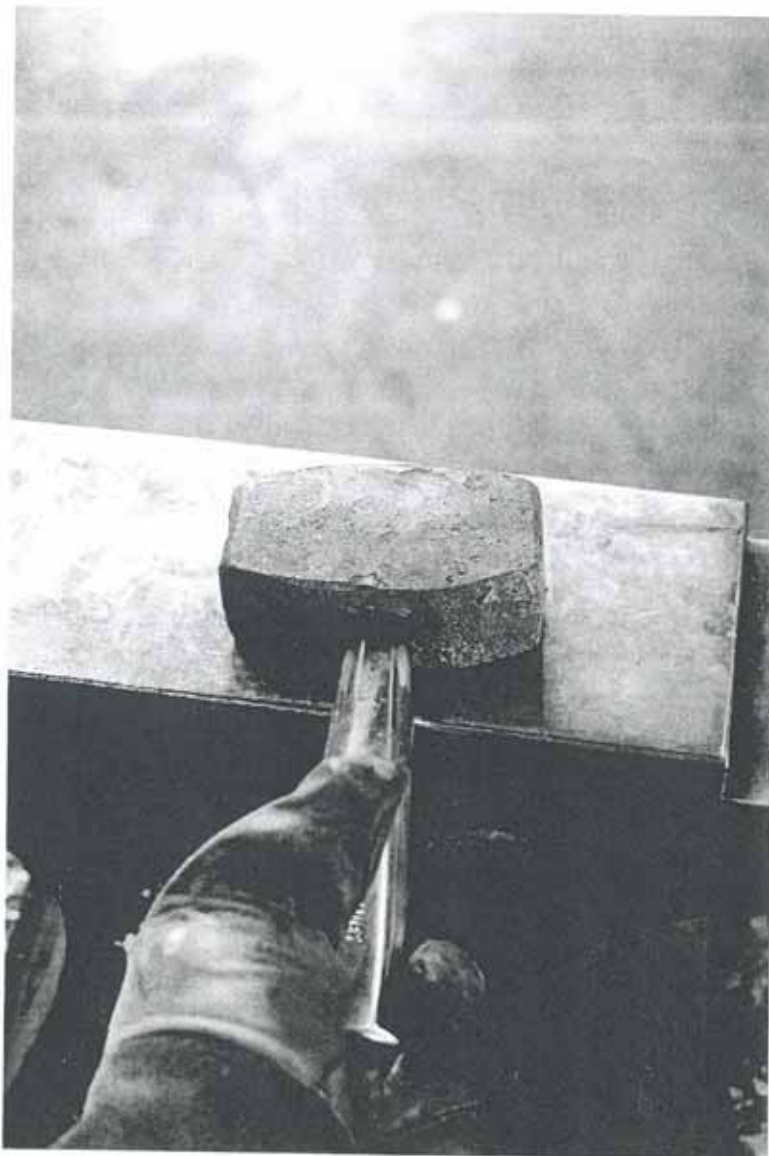
When slitting the eye don't try to cut through from only one side or one direction. Work from one side to the other, until the cuts meet in the center. Also, rotate the hammer blank 180 degrees while slitting. This is necessary because while striking the slitting chisel you will naturally drive it more in one direction. Rotating the hammer will maintain a straight and centered cut through the blank.



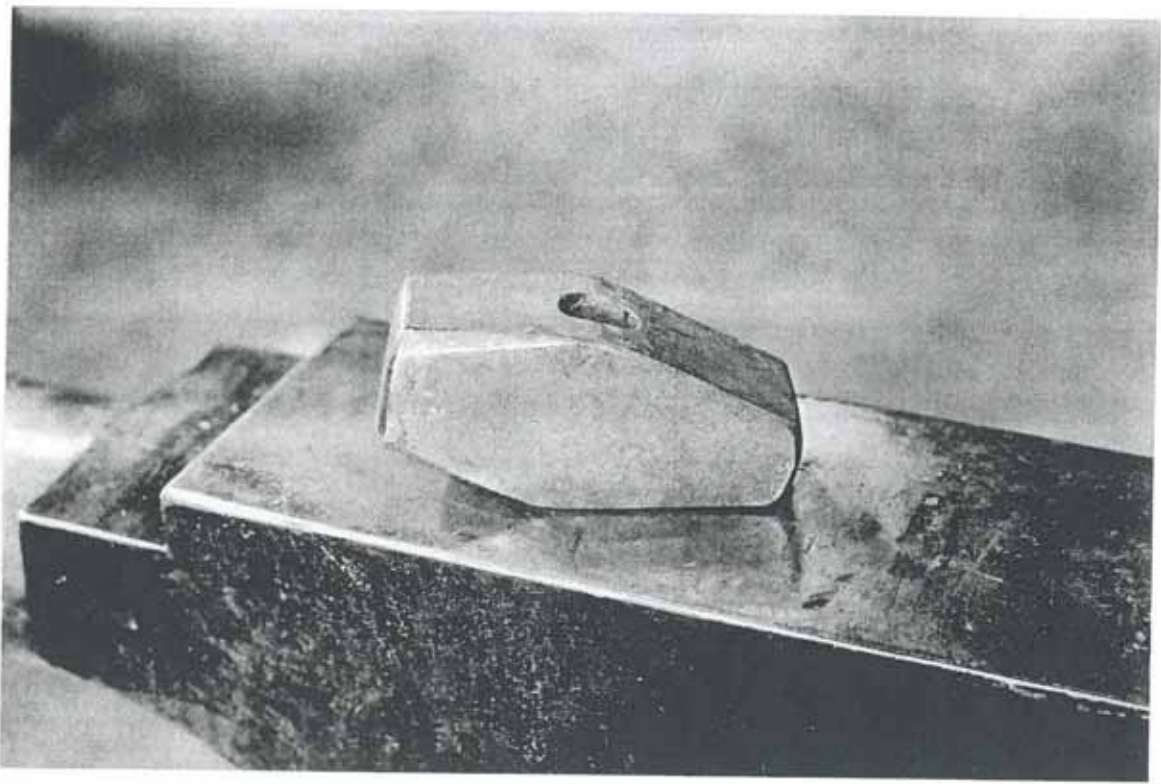
Slitting the eye is complete.



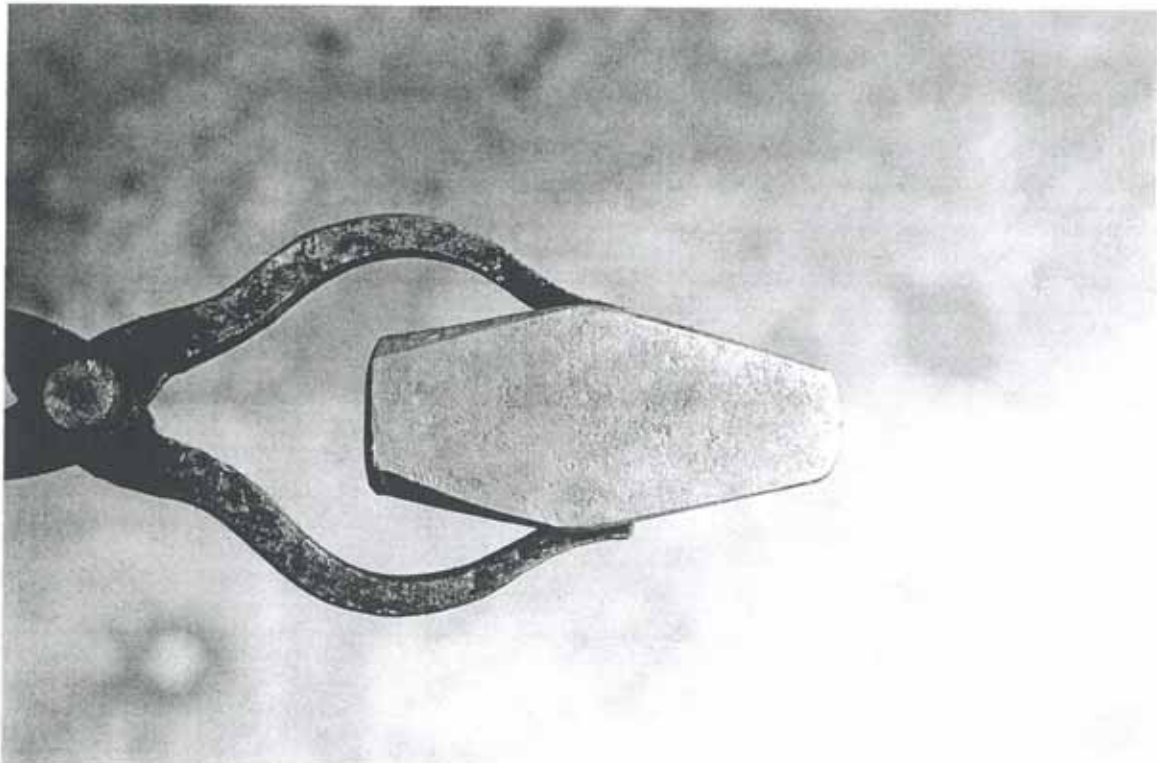
Drifting the eye. Use the drift in the same manner as the slitting chisel. Working from one side to the other and also rotating the blank 180 degrees.

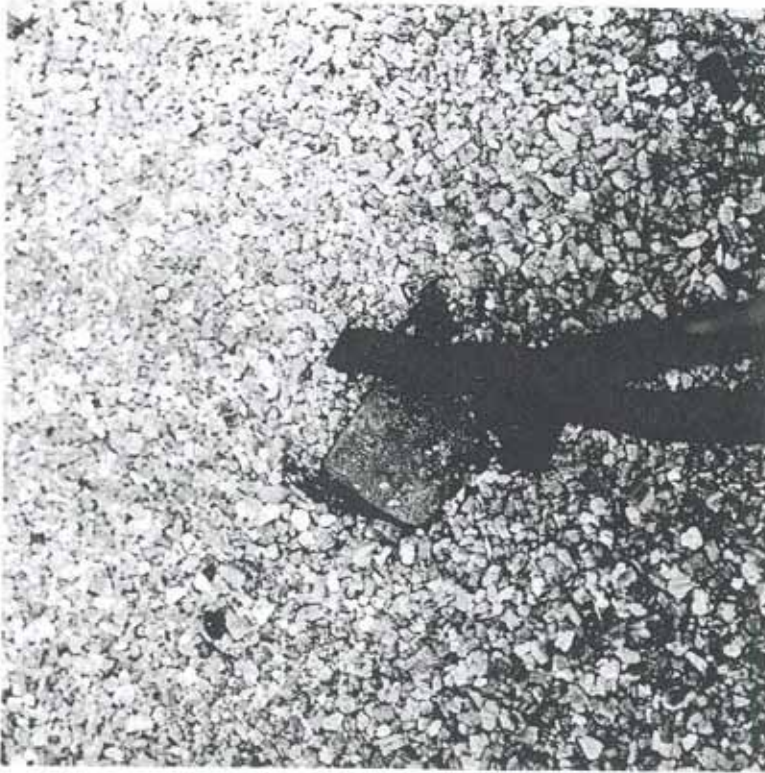


For this particular style of hammer flat sides are required. While drifting the eye, metal will be displaced, resulting in the sides of the blank to bulge outwards. To maintain flat sides, simply turn the blank on its side, keep the drift placed in the eye, and forge down the bulged areas with your forging hammer. When you have completed drifting the eye, finish the hammer by forging down the pein and refining the diamond shape.



All forging is completed.





When you have finished forging the hammer, anneal it in vermiculite or ashes.

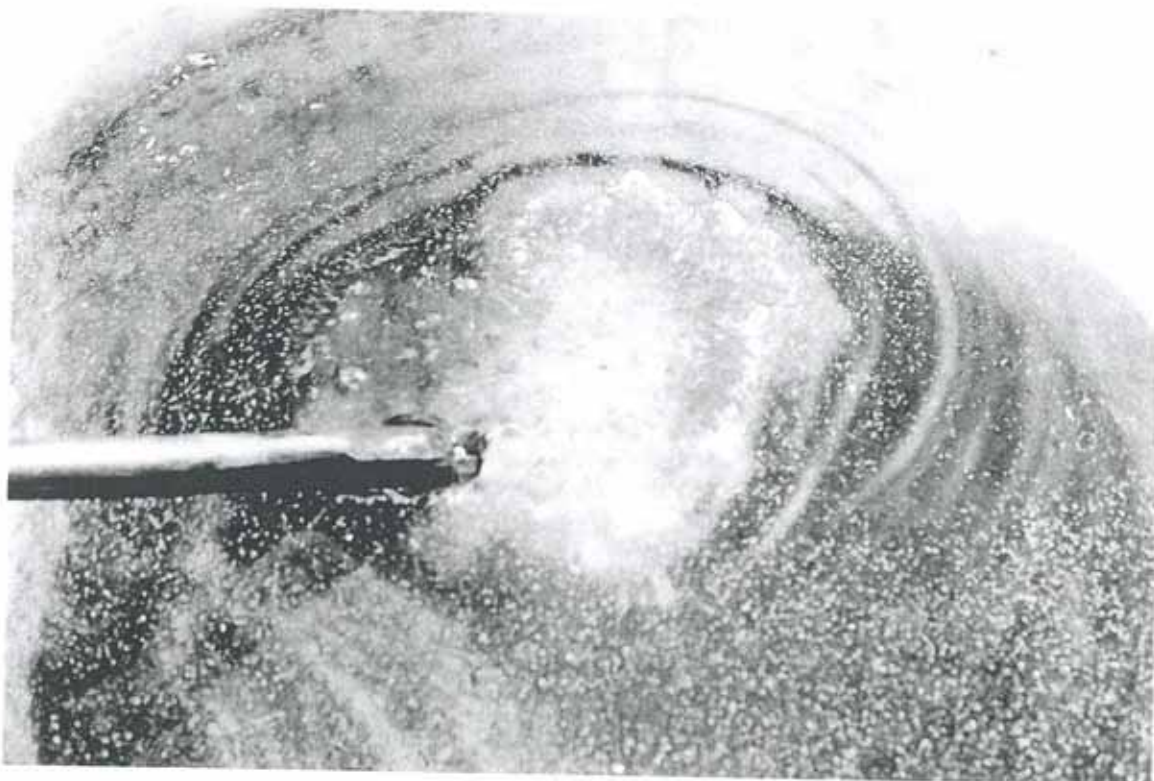
A word of advice on grinding: remove the heavy scale with a grinding wheel fitted to an angle grinder. Finish the hammer on the belt sander.

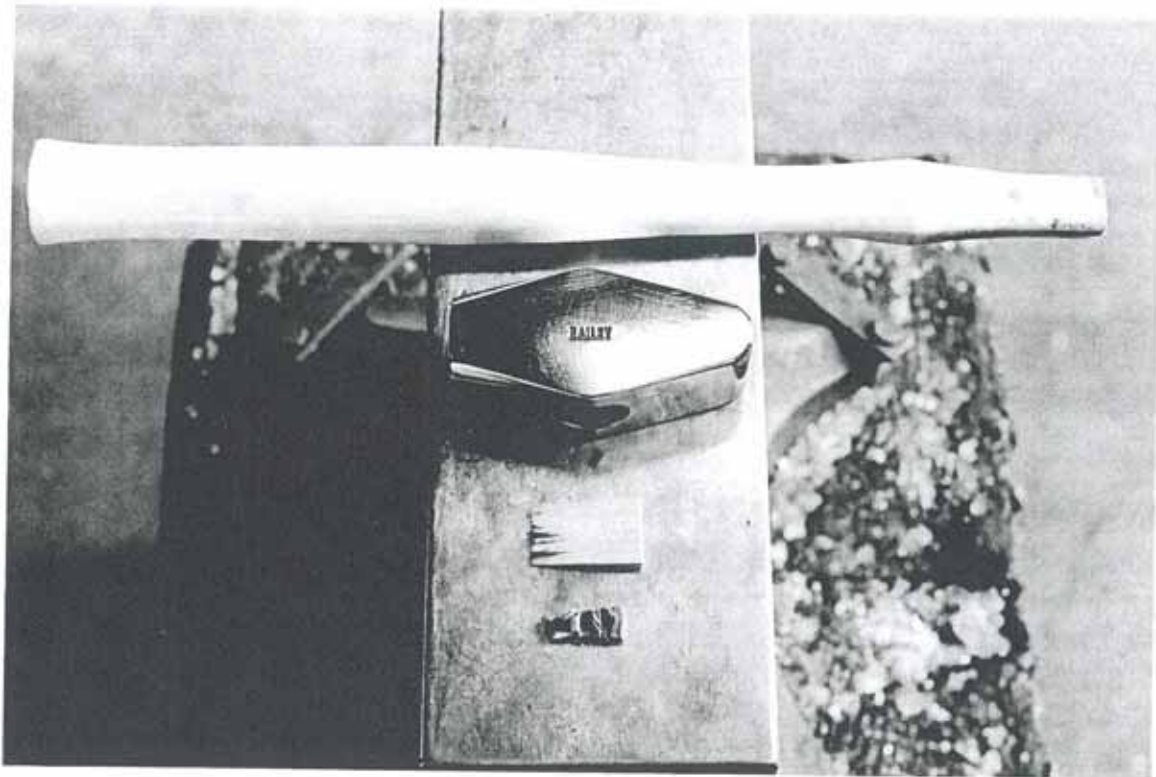


After the hammer has annealed, grind it to its final profile.

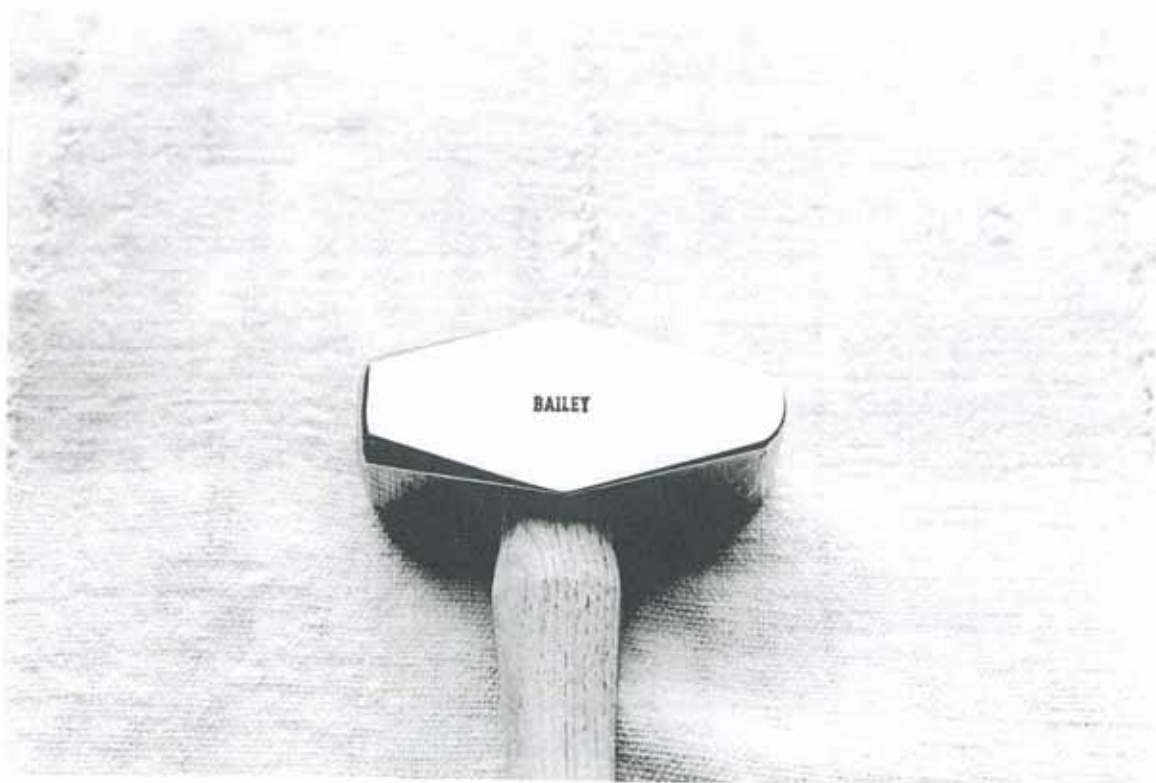


Heat treating. Atlantic 33 is a water quench alloy that requires no tempering. In a coal fire, use a pair of flat jawed tongs to turn the hammer from pein to face until both ends have been heated to a bright red or low yellow color. The area surrounding the eye should show very little color, preferably none. When the pein and face of the hammer have reached the desired temperature, quench the entire hammer in water. Up and down and swirled all around.





Fitting the handle. Components: hammer, handle, wood wedge, steel wedge. The wood wedge is fitted parallel with the length of the hammer. Fit the steel wedge across the middle of the eye. It is best that the hammer is not so tight that it peels the wood on the bottom of the eye. To help prevent this from happening chamfer the edge of the eye with a die grinder or round file.





by Brent Bailey