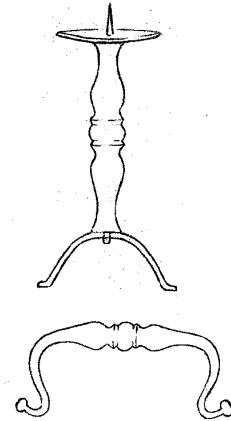


MAKING A DECORATIVE DIE

by Bill Robertson

This project is a result of the Walt Anderson Founders Scholarship, awarded by FABA,

which provided the opportunity for me to spend several days with Tom Latane at his shop in Pepin, Wisconsin. Tom uses this die for door pulls and as a decorative pattern on projects such as candle stands. Using the following process many similar dies can be easily made for all sizes of stock.



STEP 1: Making the Die Jig

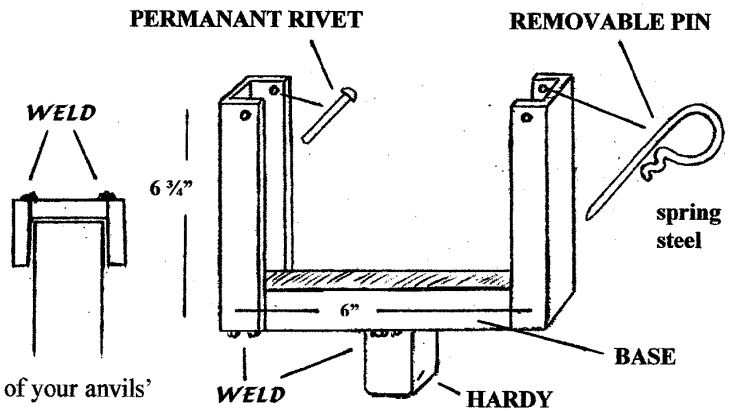
Materials needed:

1045 tool steel 1-inch square. x 2 feet (two 6-inch sections and two 5 1/2 inch sections). This can be purchased at your local *Metal Supermarket* for about \$10 per foot.

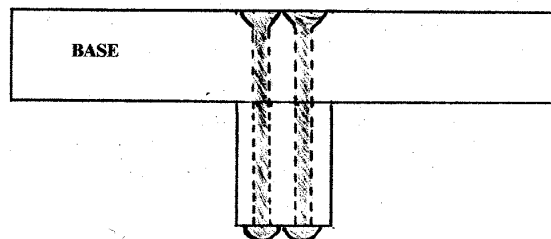
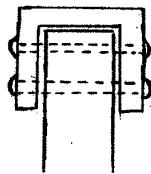
Flat mild steel 1 x 1/4 inch x 3 1/2 feet (six pieces 6 3/4 inch long)

Square mild steel 1 1/2 inches long (the size of your anvils' hardy)

A small piece of spring steel for the removable pin



Note: If you do not have welding equipment you can make this jig by substituting 1/4 inch flat stock, 3 inches wide for the sides. Hammer it around your 1-inch square stock to form a channel for your sides and rivet it to the base. You can also attach the hardy by drilling several holes through the base and hardy, recessing the holes in the base and riveting the two together.



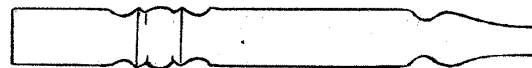
STEP 2: Making the Die Patterns

Materials needed:

3/4 inch round mild steel 12 inches

Kasenit (surface hardening material). This can be purchased through the *Brownells* catalogue for \$10.55 (order #479-001-100). Their phone number is 515-623-4000 (Rob Gunter's quench will work as well).

Small round and half round files



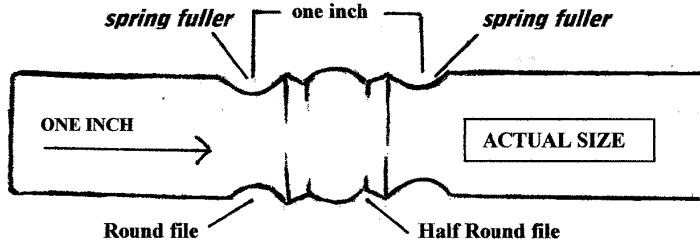
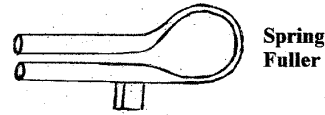
Making a Decorative Die

Die Pattern A



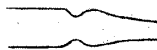
Using a spring fuller, fuller a ¼ inch deep depression 1 inch or so back from the end of the round stock.

Next fuller a ¼ inch depression 1 inch further in from that.



File the center of the two fullered areas to the desired shape. Next heat the die pattern area to critical (where a magnet does not stick), and coat with *Kasenit*. Reheat to a bright red then quench in cold water.

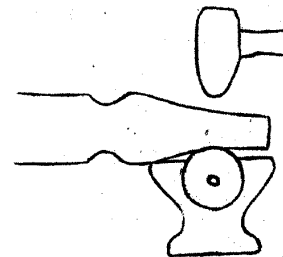
Die Pattern B



From the other end of your round stock that now has Pattern A on it spring fuller a ¼ inch depression 2 inches back from the end.

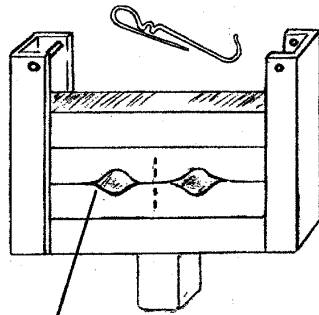
Next using a wide cross-peen hammer fuller the end over the horn of the anvil and file to finish.

There is no need to surface harden this die pattern with *Kasenit*. It has enough mass and no refined detailing so it will hold up fine when making the die.



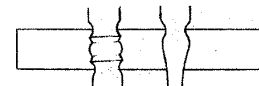
STEP 3: Making the Die

You are now ready to use your die patterns to form the impressions into the die blanks.



Heat two 5 ½ inch pieces of the square stock (die blank) to an orange heat. Note you do not use 6 inch sections because the metal will stretch when forming the dies. It may become necessary to trim some off the ends if it starts to bind in the die jig.

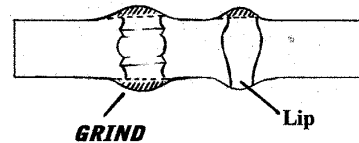
Place one hot piece of the die blank into the die jig, center a die pattern on it then place the second hot piece on top. Place a cold square piece on top of that. The top piece saves wear and tear on your die.



A gap develops on the sides. This is good. It may be necessary to grind them down even more if bite marks appear on your work when you are using the die. Also place a chisel line down the middle of the die blanks on one side. This will make sure that you get the dies set on top of each other the same way each time.

Hit with a heavy sledgehammer. After the first blow turn the die pattern ¼ turn and hit again. When able, place the pin in, it will keep the dies from jumping out. Continue until the two die blanks touch. Be careful that the pattern is lined up properly before each blow. You can feel for this by turning the die pattern back and forth slightly.

Repeat for the second pattern. When cool grind the sides down.



You can refine how the die performs by how much you grind the sides and the lip of the pattern. You can use modeling clay to see how the die performs.

After you are done grinding, heat the dies to critical and quench in water to harden
You are now ready to use your new die (use ¾ inch round stock in the dies)