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Kim St. Jean appears on location with the thinking man piece.

[Click here to watch the video for this project.](#)



The Thinking Man

Techniques: metal etching, cold connections, chain making

Materials needed

- 24g copper sheet
- 24g nickel sheet
- 18g iron binding wire
- Micro screws
- Misc. attachments
- Ferric chloride
- Soap/water
- Packing tape
- Plastic container
- Liver of sulfur
- Renaissance Wax
- Black Stayz On ink pad

Tools

- Green scrubby
- Course sanding sponges
- Rubber ink stamp
- Chop stick or tooth pick
- Files
- Jeweler's saw
- 3/0 saw blades
- Bench pin
- bees wax
- round nose pliers
- chain nose pliers
- cutters
- medium wrap-n-tap
- 4oz ball peen hammer
- Anvil or bench block
- Drill/ hand punch/hole punch
- Spring loaded punch
- Eyelet setter
- Metal sheers
- Chasing hammer

Instructions

1. Follow the instructions for etching metal included in your kit.
2. Cut a 3' piece of 18g. iron binding wire.
3. Gently run the binding wire through a piece of 0000 steel wool.
4. Using your fingers, apply a small amount of Renaissance Wax to the entire piece of wire.
5. Cut 12 pieces of wire 2" long and flush cut each end.
6. Using your round nose pliers, curl over each end of the wire in opposite directions.
7. Place the "S" link you have made on the anvil and hammer it flat, flaring out the loops on each end.
8. Use your ball peen hammer to tap closed each loop on the "S" links.
9. Use the largest barrel of a medium wrap-n-tap to make a coil of 14 jumpring.
10. Use the red and white sheers to cut the coil down the middle creating flush cut jumprings.
11. Attach each jumpring to an "S" link to create your chain.
12. Make more links and jumprings if needed.
13. Cut a 3" piece of binding wire.
14. Use the chasing hammer to make a small paddle on one end of the wire cut in step 13.
15. Tightly curl over the end with your round nose pliers.
16. Using the middle barrel of the medium wrap-n-tap, adjust the curl made in step 15 flush with the pliers.
17. Wrap the wire around the barrel creating a miniature shepherds hook.
18. Remove the wire and hold it in the middle of your round nose pliers about 1/4" above the shepherds hook.
19. Do a basic loop wrap with the remaining wire.
20. Hold the hook on your anvil and flair it with a chasing hammer.
21. Attach your hook to one end of your chain.

22. Once you have cleaned and dried your etched metal pieces, you need to sand all of the etching residue off with the course sanding sponge.
23. Round the corners of your nickel base pieces with a metal file. Support the metal on a wood block or bench pin while filing. *File in one direction, not back and forth.*
24. Use a jeweler's saw with a 3/0 saw blade to saw out the outline of the head etched in the copper sheet.
25. Use a course sanding sponge to smooth the edges.
26. Use a spring loaded punch to mark the spots in which you are going to drill holes for two 1/8" eyelets for chain. These two holes should be approximately 1/8" in from each side and 1/8" down from the top.
27. Drill each hole and place an eyelet in each.
28. Use either a spring loaded eyelet setter or a nail set punch to set the eyelets.
29. Arrange your gears on the head. It is much more interesting if you arrange the gears so that some of the gears overlap. This makes it appear that they may actually be moving gears.
30. Use the spring loaded punch to dimple each spot in which you will drill holes to attach the gears using micro hardware and rivets. Drill each hole.
31. Attach each gear that is flush to the metal following the instruction given during the demo or refer to the sheet on basic cold connection techniques.
32. Attach the raised gears.
33. Position the head on the map and use the spring loaded punch to dimple each spot in which you intend to attach the head to the map.
34. Drill all four holes in the head and in the map.
35. Thread a nut and a washer on each screw.
36. Thread above through each hole drilled for attaching the head to the base.
37. Turn the head over and tread three washers on each screw.
38. Lower the base down onto the upturned screws.
39. Thread another nut on each protruding screw and tighten it down.
40. Cut off the excess screw and file off the burrs.
41. Place the first screw in the hole drilled in the corner of the anvil and gently flair the end of the screw over the nut so that it will not unscrew itself.
42. Repeat step 19 with each remaining screw.
43. Place the pendant in a warm liver of sulfur solution, rinse and clean off excess with 0000 steel wool.
44. Seal your pendant with Renaissance Wax.
45. Attach the chain you made while the metal pieces where etching to the holes you set eyelets in.

