

Layer by layer

By Amanda Carlson

Metal artist finds contentment in old and new welding techniques

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Tennessee metalworker makes a living combining old and new metalworking processes.



Made mostly from copper, Walker's garden sculptures have gained traction among metal art lovers and local art galleries.

It took two degrees and several years on the job before Matt Walker realized he didn't really enjoy working for other people.

The Bluff City, Tenn., resident, who spent time as a layout engineer, carpenter, firefighter, and land surveyor, discovered true happiness when he finally decided to work for himself.

“I’m not fit to work for anyone else. If I was willing to work for other people, then I could be making a lot more money than I do right now selling insurance. But some people don’t like taking orders from others,” Walker explained.

It turns out that his metalworking talents have proven more than sufficient in making a living and providing for himself and his family.



Most importantly, it’s a living that he can enjoy.

The Road to Damascus and Pattern Welding

Walker is a guy who has always liked working with his hands. As a young man he worked at an auto dealership where the guys would save all of the welding and cutting jobs for him to perform. At first he thought they were doing him a favor by giving him work to keep busy, then it dawned on him that they were actually giving him the work that they didn’t want to do. It was for the best because it gave Walker an opportunity to learn a lot about metalworking from some of the older guys.

His first introduction to forge welding came through stories from his father about a guy that could weld in fire.

“That always fascinated me even when I learned to electric weld. I still find forge welding to be a fascinating process because it’s almost like magic—when you get the metal really hot and it still doesn’t stick and you have to beat on it or use a press on it. It’s like faith. You have to have your mind right or it won’t work.”

Today his business, Experiments in Metal Inc., lets him show off his wide array of metalworking skills, from arc welding to forge welding, that allow him to create custom garden sculptures and intricate Damascus steel for knifemakers and other end users.

Damascus steel, or pattern welding, has been around for centuries. It has been linked to metalwork done by the Vikings and, further back, to knives and swords that originated in the Middle East.



It's impossible to miss the vibrant swirling layers on this knife, also crafted with Walker's Damascus steel.

Walker first got involved with forging it for a few buddies who were making knives. Their source for Damascus steel had dried up so, knowing he had a forge and most of the appropriate tools, they approached Walker. He did research and read books and, through trial and error, got the hang of it.

When making Damascus steel, Walker begins by cutting out and cleaning strips of 1080 and 15N20 steel, alternating each until he's got a stack of about 30 layers. The stack, also known as a billet, is then tack welded together, attached to a long metal rod, and placed in a forge to heat it to about 2,400 degrees F.

The heat and the pressure from a press or hammer force the inner materials of the billet to bond and become a solid billet, Walker explained.

"When you finish and you drop it into a mild acid, the chemical works on the 1080 by eating away at it immediately. The 15N20 with the nickel content is resistant to that acid so what you get is a topography, where the 1080 is eaten away slightly and the 15N20 stays at the surface.

"Not only will it show up as a black layer and white layer, but also as a high layer and a low layer. I can drill holes into it or I can punch into it. I have dies or die sets on the press that press a pattern into it, like ridges. Once you press that pattern in, you can imagine the layers of that billet pushing up into those ridges. Then you take a big, heavy grinder and grind those surfaces back flat."

It's very specialized, very skilled, and very hot work that Walker thoroughly enjoys. Not only has his work generated interest from knifemakers, it's also piqued the interest of flashlight-makers and e-cigarette manufacturers for his round bar Damascus steel.

Walker is known for more than his Damascus steel. His custom garden sculptures, popular items with consumers, also can be found in art galleries throughout the region.

Combining elements of torch welding and brazing with some aspects of forge welding, he is able to achieve the desired appearance.

On his woodpecker sculpture, for example, the beak is made from several metal rods forged together that seem to converge and take shape, almost as if it grew that way naturally. The body, however, is joined with a torch.

"I'm a sculptor so I do use the best process for what I'm doing."



Walker's round bar Damascus steel was used to fabricate this flashlight. The intricate layers of separate metal joined as one.

Walker relishes the freedom that working for himself provides and has faith that his metalworking abilities and varied interests will keep him busy for a long time.

"When one opportunity closes, you have to open up something else. I feel like I can do enough things that I shouldn't ever have to work for anyone else again."

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A closer look at the woodpecker's beak reveals an almost natural convergence of multiple steel bars to create the desired shape.

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