Rebuilding A Gate – Not As Easy as it First Appeared, Version 1.1

By R. G. Sparber

I gain a lot of satisfaction when I look at this unremarkable gate. All slats are simply correctly spaced and square.

My starting point was a gate with grotesque wooden slats warped and weakened by over 20 years in the brutal Arizona sun. After unbolting them, it was easy to break the wood with my hands.

With the old slats removed, I noticed something odd: the bottoms of the left and right gates bound up on each other when closed. Ah, the steel frame is pre-distorted! It is only square when fully loaded with slats.

I also noticed that each side's first and last slat is ¼ inch narrower than the rest.

I bought the slats[2] from Lowe's. They are a composite made of a mixture of soft plastic and straw[3]. The wood slats were tightly bolted to the frame, but this plastic won't survive such treatment. It is better to gently secure the plastic slats to permit expansion and contraction over temperature.

The nuts and bolts showed no sign of rust, so I cleaned up the threads and reused them.

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[2] Natures Composites Traditional 3/8-in x 3-1/2-in W x 5.75-ft H Rosewood Composite Fence Picket

[3] Looking into a saw cut, I did not see any straw so expect it is encapsulated in the plastic.

Using my table saw, I ripped 18 planks[4] 3¼ inches wide and the remaining four 3 inches wide. All were cut to a length ¼ inch less than the inside distance between horizontal bars. This gave me a 1/8-inch gap around each slat.

I then built a drill guide for the top hole of each 3¼ inch-wide plank. It consisted of a scrap piece of aluminum angle with a plate[5] bolted to it. I fitted the angle to the plate and drilled through with a 6-32 tap drill. Then I opened out the hole in the angle. The securing 6-32 screw does not extend below the plate where it would hang up on the plank.

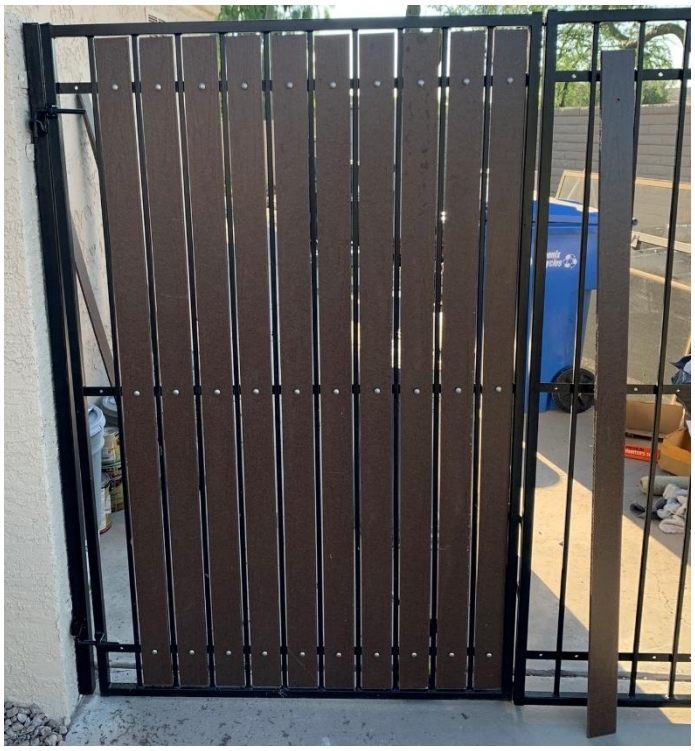
I drilled a 9/32-inch hole in it $\frac{3\frac{1}{4}}{2} = 1\frac{5}{8}$ inches from the reference edge.

With the plate's edge aligned with the slat's cut side, I ran my 9/32 inch drill through the guide and the plank. This tool drilled 88 holes, and I'm sure my guide hole became slightly enlarged. Yet, this is good enough for the task at hand.

The bolts are ¼-20, so the standard clearance hole is 0.257 inches, an F drill. However, I knew this plastic would move around due to temperature variations and distort if bound too tightly. I, therefore, chose to drill all clearance holes 0.281 inches, a 9/32 inch drill. This size matches the hole in the steel support, making subsequent match-drilling easier.

I arranged all slats with their cut edge facing the same way. Only I will notice this minor consistency, which adds a little to my satisfaction.

[5] You can see that this plate has been reused many times. I don't care what it looks like and will take the tool apart when the job is done. The angle and plate go back into my junk drawer and the 6-32 screw returns to its fastener drawer.



Using 1-inch ¼-20 carriage bolts, I loosely secured the tops of all slats on one gate. This weighed down the frame and made it relatively square.

I used a piece of 1/8-inch thick angle about 2 inches long as a spacer, positioning the first plank on the right so it has a 1/8-inch gap on the tight side. Then I used the hole in the steel frame to guide my drill as my helper pressed on the opposite side.

After installing a second bolt, I repeated the alignment and drilling process to secure the bottom of the slat. I then repeated this process for all slats on the gate. All nuts are finger-tight.

The carriage bolt heads were left proud, only noticeable upon close inspection. The goal is to hold each plastic slat ***gently***. If tightly held, the plastic slats will distort and may crack during temperature cycling. I expect the surface of these planks to reach 160° F in direct sunlight during the dog days of summer. During our brief "winter," they can see slightly less than freezing.

Toward the end of the installation, I ran into the slat that should have been my first one. I had fully drilled it in place but then forgot about it. When I tried to install it near the hinge, I found the middle and bottom holes were about ¼-inch off. This experience underlines the importance of loading the gate before drilling. Fortunately, I could drill new holes and have the defects hidden by the bolt heads.

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