View of the damage and the "C" clip that will have to be removed.

Repairing a Front End

Welcome back, fellow collectors and builders, to this month's "Down to Details." This month, I am going to take the opportunity to walk you through one of my simpler builds/repairs. It seems lately on our most popular social media hub, Facebook, that there have been quite a few collectors and custom builders who have had the front wheels break off their model tractors and were wondering if any parts were available to fix these tractors. Well, I had a Precision John Deere 4440 that fell into this same category. After arriving home from a toy show, we opened the box to find that BOTH front wheels had been broken off of the tractor.

Having a donor tractor to use as an example for this project, I thought it would be a good time to walk you through what I have found to be the best way to repair these front ends.

With the tractor and broken axle on the bench, the first thing I did was remove the pivoting axle from the knee of the tractor. Ertl used a "C" clip to hold the axle in place. With a little patience and a small flat-tipped screwdriver, I carefully remove the clip and do the best I can to save it for a later date. I don't plan on reusing it on this project, but you never know what tomorrow will bring.

With the "C" clip removed, I place the front axle assembly over a 1/8-inch hole I have drilled in my bench. Ever so lightly, I use a small hammer to tap the top of the broken axle, freeing it from the steering arm and the axle assembly. Then I do this again on the opposite side of the tractor.

Now that the pivot axle has been completely removed from the tractor, it is time to move forward to the repair part of the project. First, I evaluate the damaged pieces I have and realize the pivot axle measures just under 1/8 of an inch, which gives me a good idea of how I plan to repair the axle assembly. I will see if I can repair the damage by drilling into the bottom half of the pivot axle and installing a piece of 1/8-inch brass rod.

With this plan, I grab the bottom section of the pivot axle and clamp it into my Dremel vise. I use my spring-loaded center punch to make the center of the hole I want to drill. With the center marked, I use my cordless drill with a No. 52 drill bit and drill down between one-half to three-quarters of the way through the

The lower half of the axle in my vise drilled for the 1/8 inch rod.

The broken tractor.

part. Starting with the smaller drill bit provides a little insurance in case I make a mistake and drill the hole in the wrong location. With the first hole drilled, I install the 1/8-inch bit and drill the hole to the correct size, again about three-quarters of the way through. That way, the visible repair is kept to a minimum.

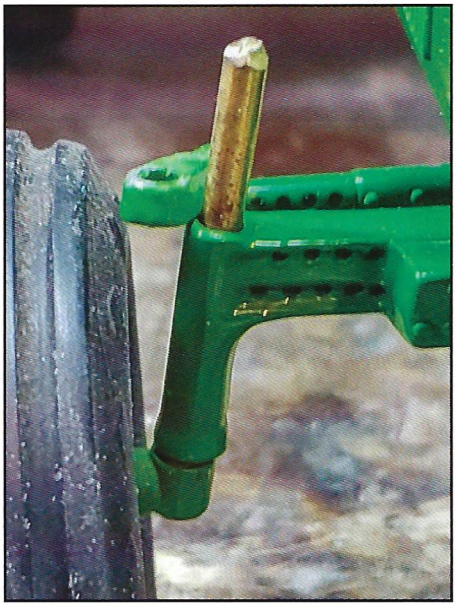
Having the 1/8-inch hole drilled, I take a piece of 1/8 brass rod about 1.5 inches long and give things a test fit. With the test fit complete, I take the 1/8 rod and grind the end of it to a taper that will roughly match the taper of the drill bit, giving the most adhesive surface possible between the rod and the pivot axle. With the rod tapered, I apply a small amount of epoxy in the hole and on the rod and drive the rod down solidly into the pivot axle, followed by time for the epoxy to cure. Once the epoxy has fully cured, I use a file and clean up any excess epoxy that seeped out and ready things for another test fit.

With the new rod installed and fitted, it is time to cut the rod to the correct length. This is done by installing the pivot axle back into the knee for the assembly and then setting the steering arm next to the rod to mark the height the rod needs to be cut. With the rod marked, I then remove the pivot axle and cut the rod to the correct length.

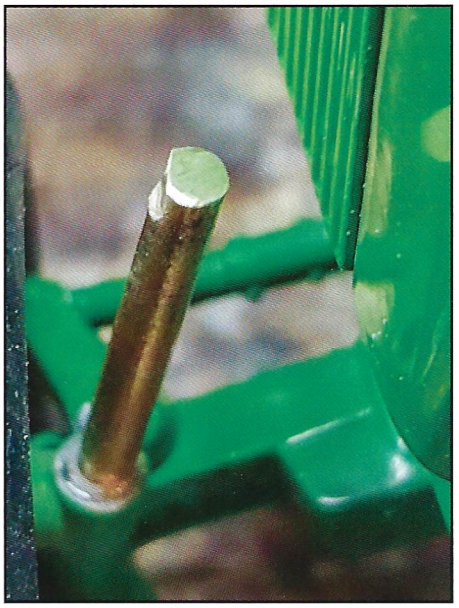
The next step is to cut the flat into the side of the rod that locates the steering arm to the rod. Here again, I test fit the rod back into the knee and line the steering arm up to find the correct location of the flat that needs to be cut. With the location found, I use the cutoff wheel of my Dremel, along with a file, to get the correct fit. It takes a few test fits to get the correct fit, but I would rather have it that way then take too much and have a sloppy fit. With the flat cut and the steering arm fitting together properly, I apply a small amount of epoxy to the steering arm and install it to the rod and let it cure.

With the steering arm glued to the rod, a small amount of paint is applied to the top of the steering arm, and I still have the second side to do. But I could not let the 4440 project end this easily, so I also installed a set of our newest tire, a 20.8x38 long bar short bar tire with a set of our standard John Deere rims and finally three sets of wheel weights on each wheel.

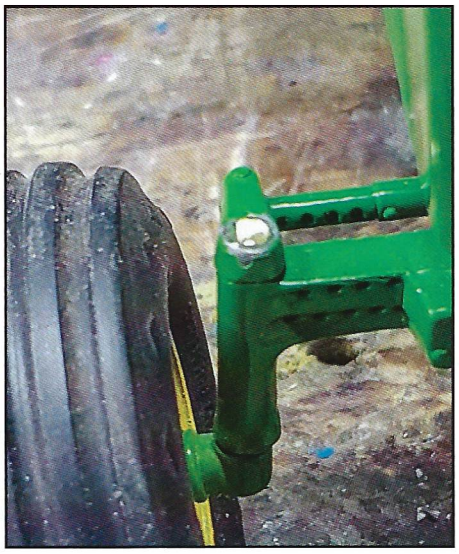
I hope a few of you will be able to utilize this information on a project. As always, check out www.chuckysprecisionspullersandparts.com for past "Down to Details" columns, as well as parts used in this project and many more. *TF*



The rod is installed in the axle and test fitted.



The flat is cut onto the brass rod to match the steering arm.



The repaired front axle waiting for a little touchup paint.

The finished tractor with our replacement rear rims, tires and weights.

Living just northwest of Dyersville, Iowa, in the heart of farm country and farm toy replica country, Chuck Steffens has found a niche in the toy world, building high-detailed replicas in his spare time. He shares his experiences with Toy Farmer *readers, hoping to lead other collectors to personalize one of their own tractors. Comments or suggestions can be directed to csteffens@wildblue.net.*