

Fireside function: Build a firewood cart

Build a sturdy card to help stoke your next fire

By Ryan Shervill



Those of you who have a wood stove or fireplace know how tedious it can be to move firewood from where it's stored to where it's burned. Whether you employ the "armload method" or use a canvas carrier, it generally means multiple trips back and forth from the woodpile to the stove. I designed this firewood cart to help make this chore easier and faster, requiring fewer trips to the woodpile and less strain on your back.

I had some objectives I wanted to achieve with this design. It had to be functional, of course, but I also wanted it to be made with readily available parts and materials, be lightweight and fit through a standard doorway. The unique, forward-of-centre placement of the handle and the pivot point make the cart extremely easy to tilt and manoeuvre.



The unique position of the handle makes it easy to carry a big load

Skill
3

Instructions

Shop Wood

This entire cart is built from a 2x4 sheet of 12mm (essentially, 1/2" thick) Baltic birch ply straight off the rack. Since the biggest parts are irregular in shape, it makes sense to work straight from the grid cutting guide.

Begin by taking a long straight-edge and marking a grid of 1" squares on your plywood sheet with a pencil. When you are done, use the grid diagram to plot the shapes required on your sheet. The front supports and back support have straight edges, so you could simply measure, mark these with a pencil and cut them on the tablesaw; but the sides are too irregular to cut this way. With all parts laid out, saw them to shape. A jigsaw equipped with a plywood/veneer blade is ideal for cutting out the sides. Cut out all the parts, then sand to clean up any rough edges.

The next step is to drill the 5/8"-diameter holes through the sides for the axle, and the 1/4"-deep x 1 1/8"-diameter counterbored pockets to accept the long dowels later. These dowels connect the sides of the firewood cart. The axle holes have to be located in exactly the same place on both sides, so clamp them together and drill both side parts at once. The counterbored pockets for the dowels are best created using a drillpress spinning a Forstner bit. Use the drillpress's depth-stop to ensure the holes are consistently 1/4" deep. While you're at the drillpress, go ahead and bore the oblong holes through the front supports as well. These 1 1/8" x 15/8" ovals are made by drilling overlapping holes with the same Forstner bit, then straightening the sides of the holes with a sharp chisel. The last step is to drill a 1/8"-diameter hole in the centre of each pocket to allow easy driving of screws during assembly.

Now, it's time to cut two short dowels to 12 3/8" long, and two long dowels to 13 1/2" long. I used a 5'-long piece of 1 1/8"-diameter hardwood dowel for all pieces. Mark and predrill 7/64"-diameter x 1 1/2"-deep pilot holes in the ends of the dowels. These holes ease assembly and help to prevent the dowels from splitting as the screws are driven in later.



The cart features a pivoting arm to facilitate quicker unloading if desired

Assembly Line

If you are going to be finishing your cart, now is the time to do it. I applied three coats of Krylon Clear spray to give the wood some protection, but you can use poly, lacquer or even just leave your cart unfinished if you like.

Begin by building the swing-away front assembly. Insert the 12 3/8"-long dowels into the recesses you cut earlier in the front supports, then drive 1 3/4"- or 2"-long pan- or washer-head screws into the dowel's ends to lock everything together.

Next, assemble the sides of the cart using the same method. Just be sure to place the completed front support assembly between the side parts as you do. The bottom long dowel must go through the oval holes in the front supports. With the two long dowels in place, insert the plywood back panel, as shown in the plans, and secure it with three to four 1 1/2"-long pan-head screws per side, driven into predrilled holes.

Next, you need to make the axle. I have a special technique I used for this. (See "Axle Excel" below for the complete step-by-step instructions.)

The last step is to make the swivelling front supports capable of locking in the upright position. A small metal rod assembly makes this happen. Using a second set of hands or a clamp, swing the arm assembly into the upright position and clamp it there. Mark the correct location for the pivot-stop bolts, then drill 1/4"-diameter holes through the sides with a brad-point bit. Insert a 1/4"-diameter x 1 1/4" stove bolt into each hole, then thread a 1/4" coupler nut over the end of each bolt. You'll end up with a solid-metal extension on the bottom sides of the front supports. If everything is working properly, the entire front assembly should settle down so the coupler nuts engage solidly into the locking notches. Test the locking and unlocking action, and adjust if necessary.

Ordinary hardware-store components, a couple of wheel assemblies and some plywood come together to make a handy cart to ease those many trips to the woodpile.

Axel Excel



To build this cart, I used a favourite technique of mine: the torsion bar.

Rather than just using a standard 3/4"-diameter axle, I used a 1/2"-diameter threaded rod and a 3/4"-diameter hollow-tube assembly setup in such a way that there is tension applied across the length of the axle. Having this assembly under tension creates an incredibly rigid axle, and locks together and stiffens the entire cart substantially. To make this assembly, you are going to need: a 36" length of 1/2"-diameter threaded rod, a 36" length of 3/4"-outside diameter aluminum tube, four 1/8"-thick 5/8" flat washers, two 5/8" lock nuts and a short length of 3/4"-diameter copper pipe.

The torsion assembly requires three pieces of the 3/4"-diameter aluminum tube. (Note: Most 3/4" aluminum tube has an inside diameter of just over 5/8" and should accept the threaded rod, but it's a good idea to check before cutting.) Using either a pipe cutter or your mitre saw spinning a standard carbide-tooth wood blade used slowly, cut one piece of pipe 12 3/4" long for the centre, and two more at 5 3/4" long for the sides. The next step is to make up the spacers that keep the wheels in place, well away from the cart sides. I've found that standard copper pipe (with an inside diameter of 3/4") fits perfectly over the aluminum tube and makes a great spacer. Cut off two of these at a length of 2 3/8" and remove burrs on the ends with some sandpaper. You'll notice in the pictures that there is no copper pipe visible. It's there; I just painted it silver, so don't let the pictures confuse you.

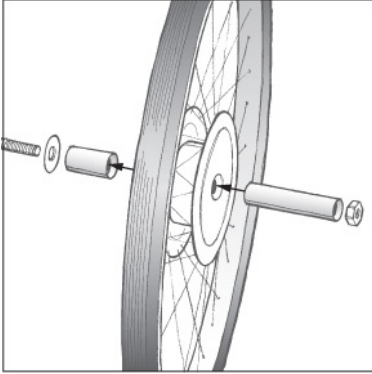
Next, cut the threaded rod to approximately 28" long with a hacksaw to make it easier to handle during assembly. This is slightly over length, but you can cut it accurately in the last step.

To assemble the wheel-and-axle assembly, take one end of the threaded rod and install one nut, keeping it flush with the end of the rod. Next on the rod goes the first short aluminum tube. Overtop of this tube, slide on your first wheel assembly, then follow that up with one of the copper pipe spacers and a flat washer.

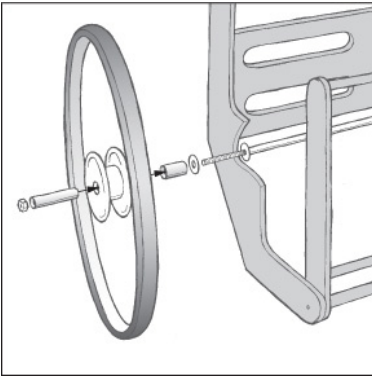
Next, slide the rod through one side of the cart, through one flat washer, through the long aluminum tube, then through another flat washer, the other side of the cart and, finally, one more flat washer. Repeat the steps for installing the short

aluminum tube, the copper spacer tube, the wheel and the nut.

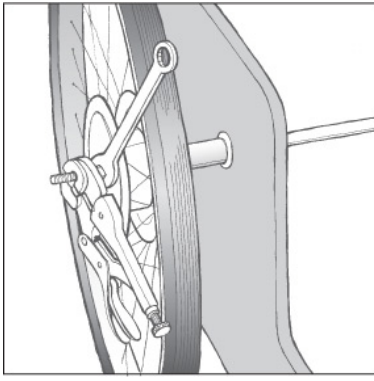
At this stage, you should have an inch of threaded rod extending out past the nut on this last side. Clamp a set of locking pliers on the threaded rod to prevent it from spinning, then turn the lock nut with a wrench until it is very tight. By tightening this nut, the tubes are all put under compression, while the rod itself is put under tension. The result is the torsion effect I mentioned earlier, making for an extremely stiff and strong setup. In addition, the copper pipe spacers and the nuts serve as a stop on each side of the wheels, keeping them in place yet free to rotate. Remove the locking pliers, then grab a hacksaw and cut off the extra rod, flush with the nut.



In the wheel: one nut on the threaded rod, a short aluminum tube, then a copper pipe spacer an a flat washer



Install the axel on the cart with two flat washers and the long aluminum tube



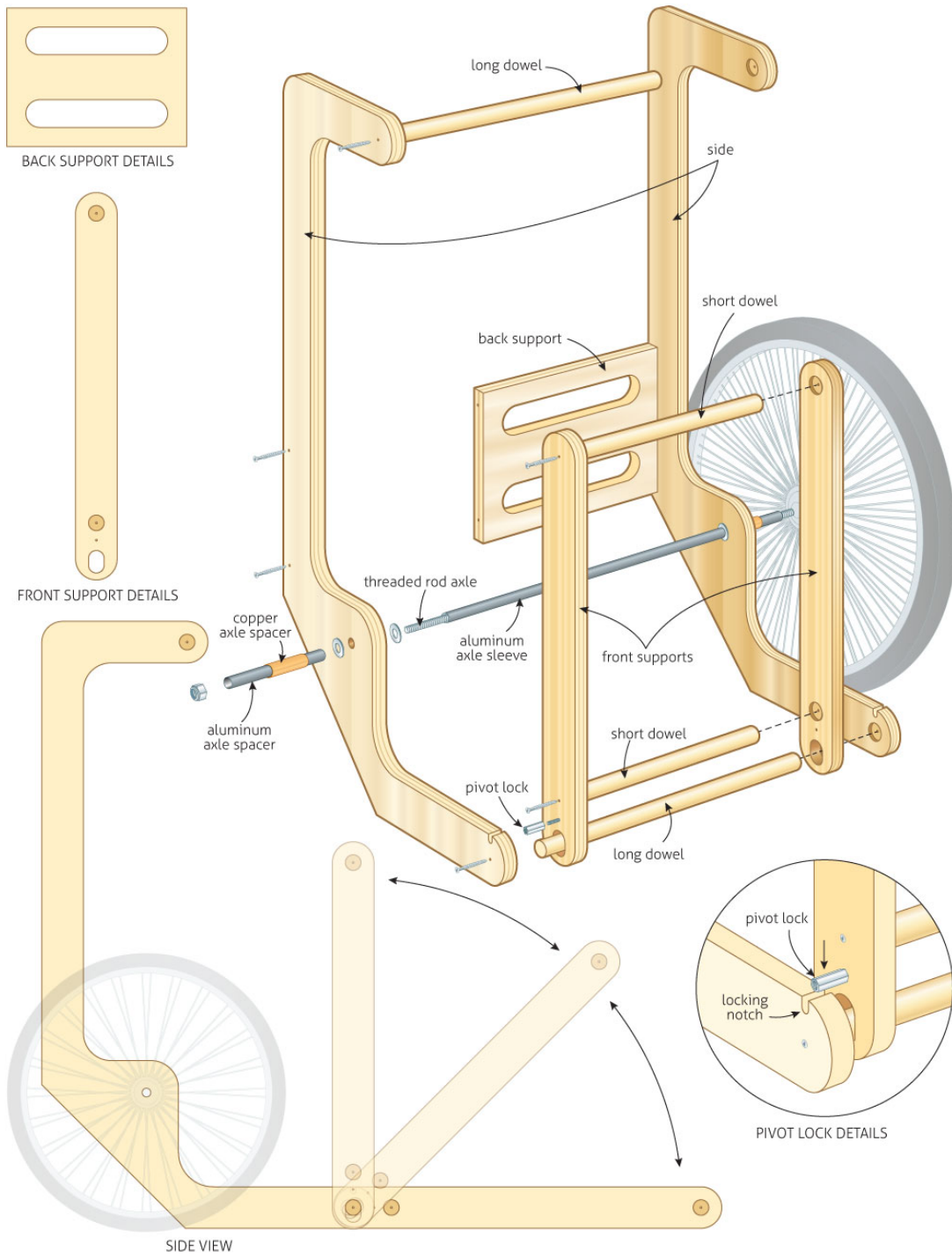
Tighten the assembly with locking pliers on the threaded rod and a wrench on the lock nut

Tools and Materials

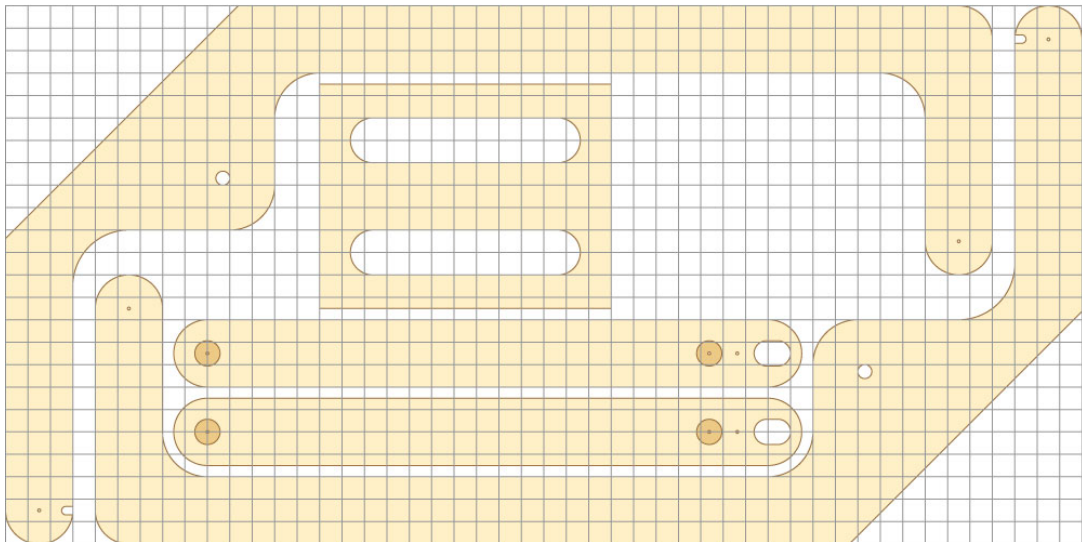
Part	Material	Size (T x W x L*)	Qty.
Shopping list			
Baltic birch plywood		1/2" x 2' x 4'	1 sheet
Hardwood dowel		1 1/8" x 5'	1
Threaded rod		1/2" x 36"	1
Aluminum tube		3/4" outside dia. x 36"	1
Copper pipe		3/4" inside dia. x 12"	1
Flat washers		5/8"	4
Lock nuts		5/8"	2
Stove bolts		1/4" x 1 1/4"	2
Coupler nuts		1/4"	2
Wheels		20"-dia, 3 1/4" hubs	2
(LV# XP225)			

* Length indicates grain direction

Plan



Cutting guide



1 square = 1"

Illustration by Len Churchill