

How Do You MAKE ...

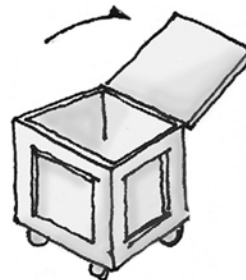


A SHOP-BUILT CHAIN MOTOR BOX

BOXES

Rolling boxes are used extensively in touring, where supplies and equipment must be loaded and unloaded frequently. They are also quite handy to have around a resident theatre to store cable, props, and so forth. This method is also used to make personal work boxes. It is simple and straightforward. Some touring boxes are covered with carpet, or laminate, or have metal edges and complicated latching systems. These are fine boxes, and especially well suited for electronics. They are, however, somewhat difficult to manufacture without investing in a specific technology, and that is not cost-effective for most people. The older style of wooden box works just as well and is very easy to build with standard materials in even a very modest shop. This type of box has plywood sides and corners reinforced with 1×4 lumber.

Start off by determining the interior dimensions required by the equipment you will be storing. *Cable crates* should be no more than waist-high and about 30" square for 20-amp jumpers and somewhat larger for multicable—this stiff, large-diameter cable is harder to coil into a small space. The lid should be hinged to open up and then flop all the way around to the back, out of the way. If the box is too tall, it is hard to feed the cable into it. If it is too large overall, the weight of the cable used to fill it will be too much for the casters.



CABLE CRATE

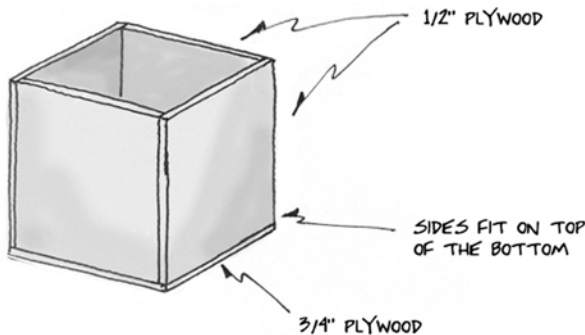
A good size for a *prop box* is 48" wide by 72" tall and 20" to 24" deep. That takes advantage of the 4-foot-wide sheet of plywood, and is short enough to fit through a regular door. It is easy to run a show out of this kind of box if it has double doors in the front and a number of shelves inside. After the show, the doors can be locked for security. Casters will allow you to roll the box around as needed.



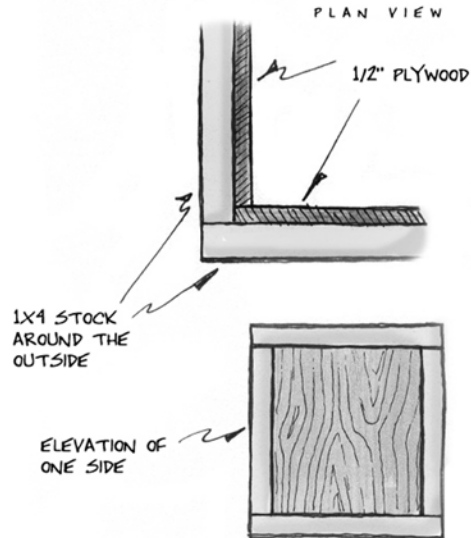
TYPICAL PROP BOX

On a touring production, the studio that builds the scenery and props often constructs wooden cases for pieces that are too delicate to travel loose in the truck. These boxes come in all shapes and sizes and often have interior partitions to hold specific items. There is an entire industry devoted to making quite similar crates for trade shows.

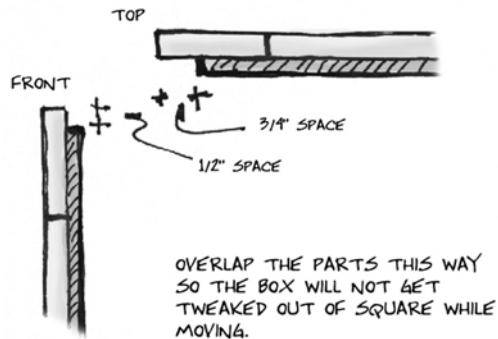
Construction is pretty straightforward. Cut slabs of plywood to size for the bottom sides and top. Use $\frac{3}{4}$ " ply for the bottom, and $\frac{1}{2}$ " for everything else. Make sure to adjust your cut list to account for the thickness of the plywood where it overlaps. Much more information about measuring and cutting plywood can be found in the book, Chapters 17 through 20. Don't worry about lids or doors yet; it will be easier to figure them out after the body, or case, is done. Glue and nail/staple the plywood body parts together. Make sure that the sides sit on top of the $\frac{3}{4}$ " plywood bottom. This makes for a stronger structure when the strapping goes on and casters are attached.



Use 1×4 strips as *strapping* to reinforce the edges and corners. Wherever possible, the overlap of the lumber should be the opposite of the overlap of the plywood. This will give the strapping a better purchase on the plywood. Use plenty of glue, and staple from the inside, through the plywood and into the back of the 1×4 s whenever possible. Use fasteners on the outside to join the corners of the lumber.

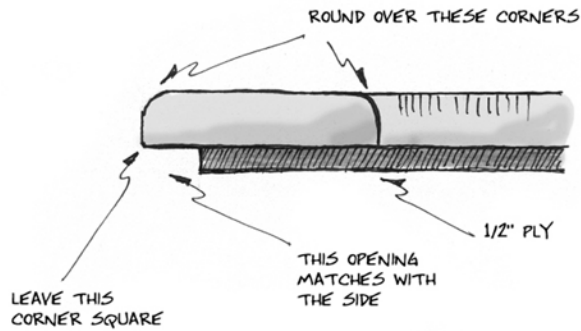


In order to make a door or lid fit properly, extend the 1×4 lumber up an extra $\frac{1}{2}$ " past the edge of the plywood where the lid will fit. Cut the plywood for the lid so that it fits loosely inside the strapping but still rests on the plywood sides of the case. Align the edges of the strapping for the lid with the outside edges of the case strapping. In this way, the lid is interlocked in position when closed, but the outside of the case will be smooth. This is an important factor in making a sturdy box.

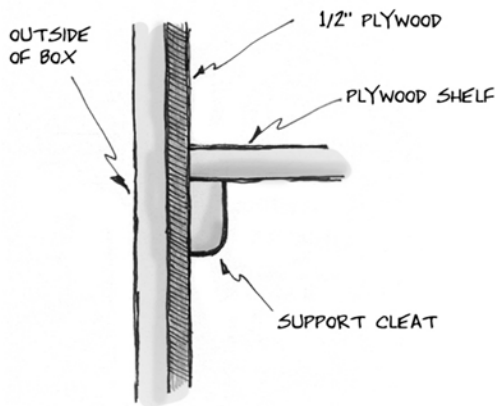


Use a router with a $\frac{1}{4}$ " rounding-over bit to ease all of the corners of the box inside the strapping and

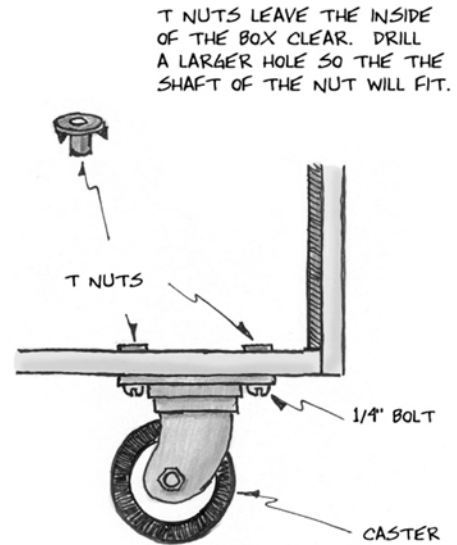
out. Not only will this prevent your hands from getting splinters later on, but it will also make the box last longer by preventing large cracks from developing in the strapping.



Interior dividers and shelves can be held in place with cleats, screwed or T-nutted (explained next) to the inside walls. It is generally not a good idea to set the shelf into a dado groove, because there is too much movement in the casework, and the shelf will tend to pop out.



Bolt the casters on the bottom to ensure that they will stay attached. *T-nuts* are useful for this, because they keep the bolt end from sticking out and catching on things. A cable crate may weigh hundreds of pounds when fully loaded, so bear this in mind when selecting casters. Use large strap hinges for the doors, and bolt these on also. A hasp should be provided to secure the lid, and if necessary, a padlock for security. If security is not a problem, a short length of sash cord can be stapled to the box, and the end run through the hasp to keep it shut.



Metal corners can be screwed on to beef up the strength of the wooden corners of the box. There are many types of these; just pick something big enough to really do some good. Finally, a good coat of waterproof paint will help to protect the box from rain and from scraping up against other objects.