

Enclosed-axle wheels

jaws, the jaws won't mark the wood. But even if they do, it's no big deal in this case—those marks add tread to each wheel, and the same on each one.

Turn a cylinder—Make it the diameter of your wheels and long enough for the set you're turning. Calculate the length you need by adding the width of the four wheels, parting cuts to separate them, an allowance for a tenon for chuck jaws, and enough to make an extra wheel if you spoil one. For example, wheels $\frac{3}{4}$ in. wide need a blank that's $5\frac{3}{4}$ in. long.

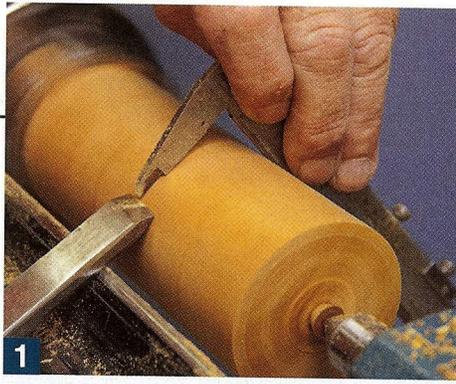
Don't work with a blank more than 8 in. long in a chuck unsupported by the tail center. A heavy catch can be dangerous, pulling the blank out of the chuck. It's safer to turn just one pair of wheels out of a short blank.

Mount the cylinder in a chuck—Support the other end with the tail center. Keep the tail center in place while you true the cylinder. Do this even if the cylinder seems to run true. You want it spot on; otherwise, any detail you put on the sides won't be concentric with the rim.

True the end grain—For safety and in case you have a catch, remove most of the waste before backing off the tailstock. Clean up the end grain either with a skew chisel long point down or with a spindle gouge. The skew leaves a much better surface; just be sure you use the point with only the bevel side rubbing the end grain.

Drill for the axle—This wheel will be $\frac{3}{4}$ in. wide, so I bore in $\frac{5}{8}$ in., using blue tape wrapped around the drill as a guide. It helps to have a small dimple at center to start the drill. Either bring up the tail center and advance its point into the wood, or make the dimple with the long point of a skew.

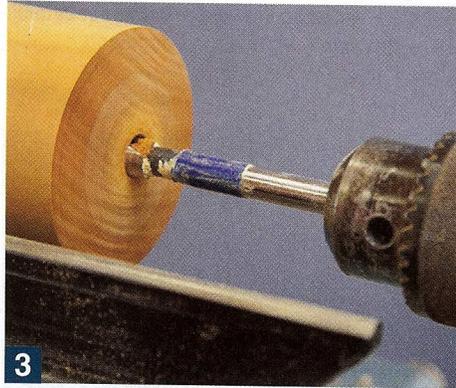
Turn a useful detail—This embellishment will also allow you to reverse-chuck the wheel. Cut a tenon as short as your chuck jaws will allow. Hold the wheel by this tenon so you can complete the outside. You can use a ruler and pencil to lay out the diameter, but dividers are more accurate. They also score the wood so you have a well-defined line to work to. The circle you score with the left point needs to line up with the right point, but don't



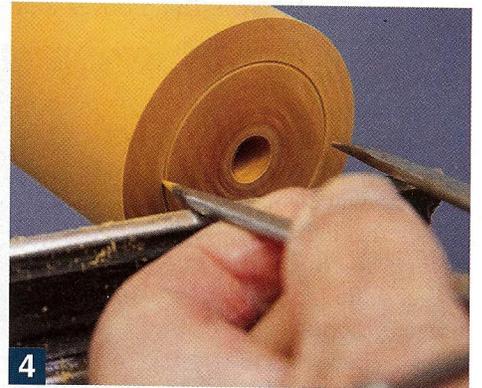
1 **True the wheel blank.** Use calipers to ensure a uniform diameter. Take very light peeling cuts with a skew chisel.



2 **Smooth the end.** A very light scraping cut with a skew will yield the smoothest end grain.



3 **Drill the axle hole.** Drill a hole nearly as deep as a wheel is wide. Wrap tape around the drill bit to gauge the depth.



4 **Mark a tenon for the chuck.** Use calipers to score a line on the end grain that defines the diameter of the tenon.



5 **Make a tenon.** Use the bevel side of a skew to make a series of light cuts, creating the tenon.



6 **Mark the width.** Grab the dividers again to establish the width of the wheel.



7 **Part off the wheel.** Use a thin parting tool to separate the wheel from the blank. Cut to the left of the line scribed with dividers, to allow for tearout and burnish marks to be turned away.



8 **Add details.** Use a skew as a scraper to add grooves and other embellishments. You can use the tool's width to locate and mark these details.