

# ROTATING BARREL COMPOSTER

A Rotating barrel composter can ease the labour requirements for turning and aerating the composting materials. Most of them are limited in capacity due to the size of readily available barrels. They must be operated on a batch basis (no further materials added after a point in time) in order to produce finished compost. A number of small to very large commercially made barrel units are available that rotate either on their sides or end to end.

This particular side rotating barrel design makes use of a standard 45 imperial gallon size metal drum 34-3/4" in height. It is adapted from a design originally adapted from the *Rodale Guide to Composting*.

## List of Materials

- |   |  |    |                                     |
|---|--|----|-------------------------------------|
| 1 | 45 imperial gallon (205 liter) "food grade" metal drum | 1  | steel rod, 1/2" diameter x 42" long |
| 4 | 8' 2x4s  | 8  | 1/4" x 1-1/4" stove bolts c/w nuts  |
| 3 | 8' 1x3s  | 12 | 1/4" x 1" stove bolts c/w nuts      |
| 1 | 2' x 2' piece of 3/4" (19 mm) plywood                  | 28 | 1-1/2" galvanized #10 wood screws   |
| 2 | 1-1/2" x 2" galvanized butt hinges                     | 2  | 1/2" flat washers                   |
| 1 | small hasp   | 2  | 1/8" x 1-1/2" steel cotter pins     |
|   |  |    | Carpenters glue                     |

## Specialized Tools

Drafting compass

Keyhole saw or motorized saber saw

Metal file

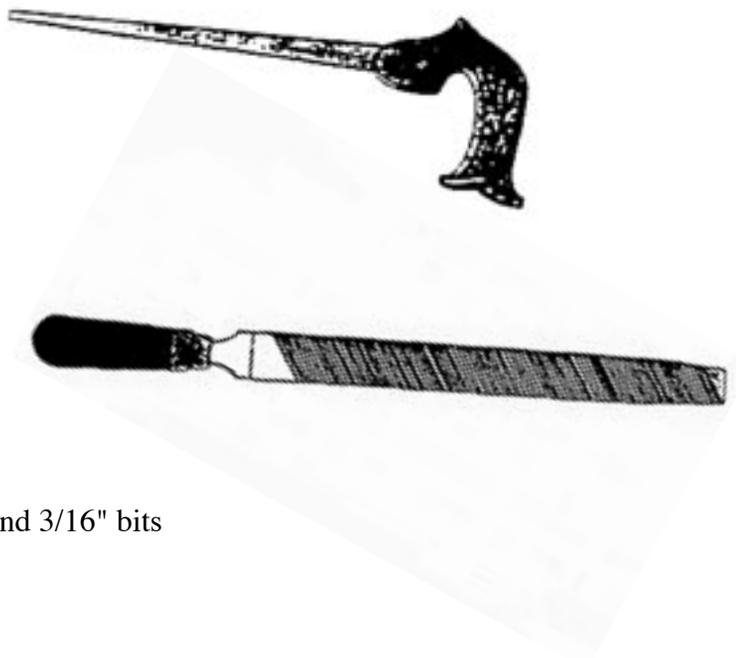
Center punch

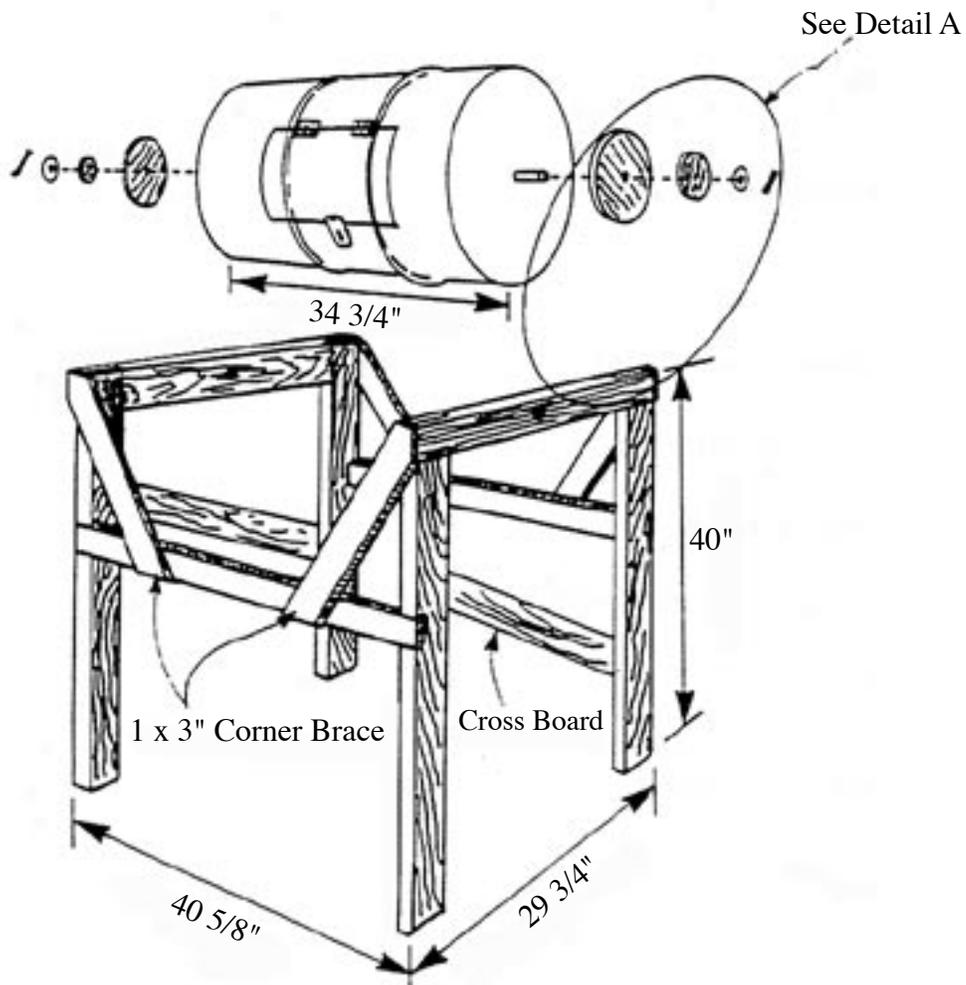
Hammer and wood chisel

6" adjustable wrench

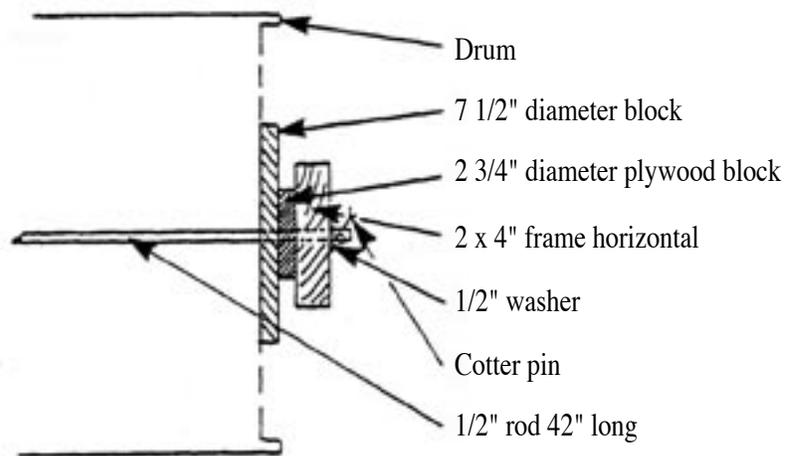
Hand or power drill with 1/2" spade bit and 1/4" and 3/16" bits

Carpenters square



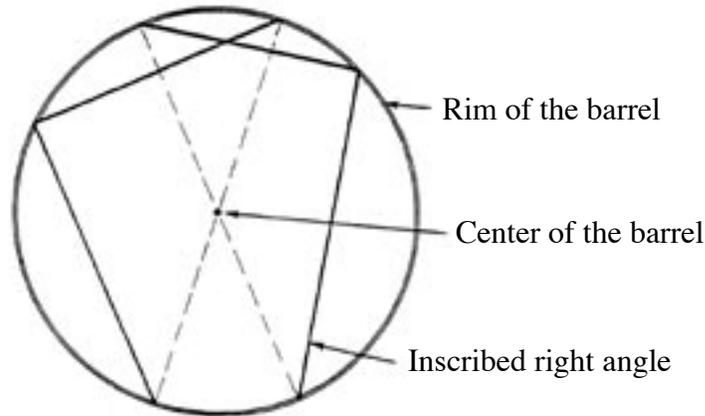


Detail A



## Construction Sequence

1. Obtain a good 45 gallon drum that has not been used to hold any toxic chemicals. Those designated "food grade" are the best choice. If the barrel is metal, it should be unpainted on the inside and free of rust. Plastic barrels may also be used.
2. To accommodate the steel axial rod, a 1/2" hole must be drilled through the exact center of the barrel at both ends. There are a number of ways of finding the center of the top and bottom of a circular barrel. One simple method (see illustration below) is to use a carpenter's square to inscribe two right angles on the circular surface. The lines joining the end of the right angles will intersect at the center of the circle.



3. Mark the outline of the door opening on the outside of the barrel. The opening should be large enough (8"-10" x 16"-20" is good) to accommodate easy loading and unloading of material. For easier cutting, round the corners of the opening slightly. Drill a 1/4" hole on one of the lines to start the keyhole saw or sabre saw. If the door cuts across the rib on the barrel, a 1" V notch must also be cut out on the rib to facilitate opening the door. Once the door has been cut out, re-attach it to the barrel using the hinges and hasp and the 1/4" x 1" stove bolts.
4. For ventilation, drill several rows of 1/4" holes into the barrel on the side opposite the door. To aid in heat retention, paint the entire outside of the unit with a flat black rust paint.
5. On the 3/4" piece of plywood, scribe and cut out two circles 7 1/2" in diameter and two 2 3/4" in diameter. Drill a 1/2" hole through the center of each. Center and glue each small circle to its larger counterpart. Slipping each set of circles temporarily over the 1/2" steel rod prior to gluing will ensure that they remain centered. After the glue has dried, attach the large circles to the ends of the barrel, as illustrated, with four 1/4" x 1 1/4" stove bolts per circle. Keep all the holes aligned.
6. File down each end of the steel rod by 1/2" to provide two flat parallel surfaces for drilling. Drill a 3/16" hole in each flattened end of the rod. Center punching the holes first will make drilling easier.
7. For the support frame, take the 8' 2x4s and cut four pieces 40" long for the uprights, two pieces 29 3/4" long for the frame horizontal pieces and two pieces 27" long for the cross boards. On the horizontal pieces, drill a 1/2" hole in the exact center of the board (14 7/8" from each end) to accommodate the steel rod. On the outer narrow side of the uprights, mark and chisel out horizontal dado cuts for the 1x3 side bracing. Start these 23" up from the bottom. The cuts should be 2 1/2" wide by 3/4" deep.
8. Assemble the two ends of the frame as illustrated with glue and two 1 1/2" #10 screws per joint. Use a corner lap joint between the uprights and frame the horizontal pieces. For additional support, brace the two U-shaped ends with the cross boards set at an angle as shown. Pilot drill all screw holes with a 3/16" bit.

9. For the 1x3 side supports, cut two pieces 41" long and four pieces 23 3/4" long. Slip the steel rod through the wooden bearing pieces on the barrel and fit the barrel assembly through the holes on the support frame ends. Insert a washer and steel cotter pin through each end of the steel rod and bend back the pin to keep the barrel in place.

10. Stand up the end frames and insert and fasten the two 1x3 side braces to the dadoed uprights with glue and 1 1/2" #10 screws. Attach the corner braces in the same manner and trim the ends to fit. Pilot drill all #10 screw holes with a 3/16" bit.

11. In order to keep material properly turning in the barrel and not simply sliding along the bottom as it is rotated, take one or two remaining 2x4 scrap pieces, cut them to fit and wedge them into the barrel at an angle.