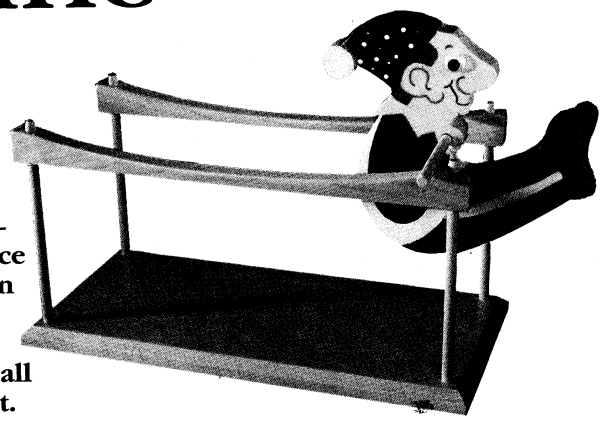
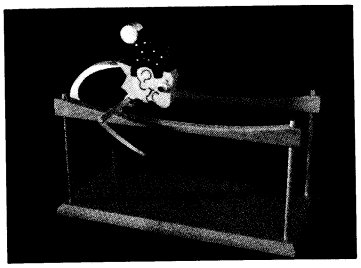
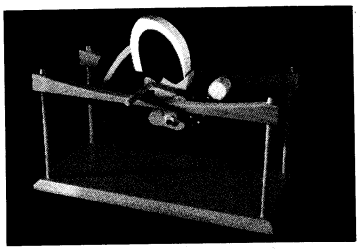
ACROBATIC CLOWN







It's not really a perpetual-motion machine, but once launched, our rolling clown will spin and change directions on the parallel bars several times. Kids of all ages can't resist watching it.

Note: *We cut all the parts from a ¾x5½x24" piece of clear pine. To do this, we first cut out the clown, and then planed the remaining board to ½" thickness. (See the Cutting Diagram* below.*)*

Let's start with the clown cutout

1. Transfer the full-sized pattern of the clown (A), shown *opposite,* onto a ¾"-thick piece of clear pine. (We used carbon paper.) Include the detail lines for the clothing, hands, face, and the location of the ¼" hole. Next, using a scrollsaw or bandsaw, saw the clown to shape.

2. Chuck a ¼" brad-point bit in your drill press, and drill the hole through the clown's hand. (We placed a piece of scrap under the workpiece to prevent chip-out.)

3. To transfer the pattern to the clown's second side, make another copy of the pattern and tape it to a window, pattern-side against the glass. Now, relying on daylight to make the pattern visible through the paper, trace over the clown pattern lines with a pencil as shown at *right.* (This creates a *reversed* pattern.) Remove the copy from the window, place the reversed pattern on carbon paper, and cut around it. Next, tape it and the carbon paper to the unmarked side of the clown cutout, aligning all edges. Now, trace the pattern onto the cutout. Remove the pattern and carbon paper; then set the clown aside.

Now, make the parallel bars and base

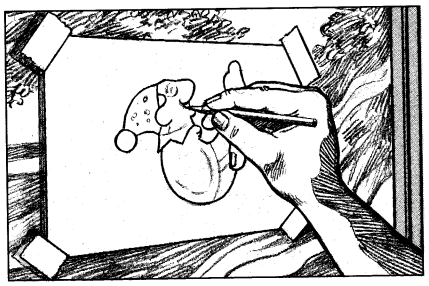
1. If you start as we did, with a ¾ x5½x24" board, plane the remaining piece to ½"-thick. (Or purchase a piece of ½" pine.) Next, cut out the base (B), using the dimensions on the Bill Of Materials.

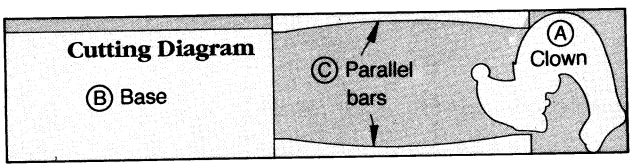
2. Chuck a chamfer bit in your router, and rout a ¼" chamfer along the top edges of the base where shown on the Exploded View drawing *below right.* (We used a tablemounted router.)

Bill of Materials

Part	Finished Size* T	W	L	Mat.	Qty.
A clown	¾"	5½"	6½"	P	1
B base	½"	5"	10¼"	P	1
C bar	½"	¾"	10"	P	2

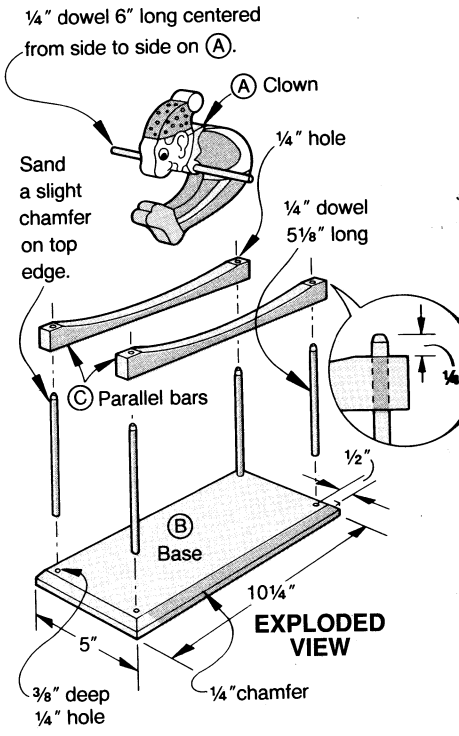
Material Key: P—pine
Supplies: Acrylic paints (6 colors), ¼" dowel.

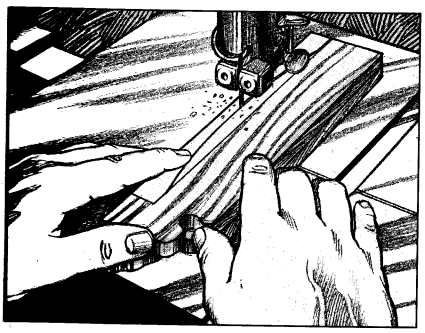




¾ × 5½ × 24" Pine

3. Rip the remaining piece of ½" stock to create two equal halves. Using double-faced tape, stick the pieces together, aligning the edges and ends. Make a full-sized pattern of the parallel bar (C), *opposite,* and trace it onto the face of one piece, aligning the bottom with the straight edge of the wood. (A photocopy of the pattern adhered to the wood with spray adhesive also works well.) Saw the parallel





bars (See *above.*) Lightly sand the curved surfaces of the pieces (we used a drum sander). Separate the pieces. Now, finish-sand all parts.

4. Chuck a ¼" bit in your drill press. Clamp a fence on the table ¼" away from the center of the bit. Next, place a mark ⅜" in from the ends on the top edge of each bar. Back the workpiece with scrap and drill the ¼" holes through the pieces. (See the detail on the Exploded View drawing.)

5. Move the fence ½" away from the center of the drill bit. Adjust your drill press so the bit extends to ⅜" from the tabletop. Mark the centerpoints for the four ¼" holes ½" in from each corner on the base. Drill the holes.

6. Cut four pieces of ¼" dowel to 5⅛" long and one to 6" long. Sand a slight chamfer on one end of the four short dowels.

Assemble the project and supply the finish

1. Apply glue to the unchamfered ends of the 5⅛"-long dowels and insert them into the holes in the base. (We used yellow woodworker's glue.) Apply glue in the holes in the parallel bars and dip them onto the chamfered ends of the dowels, and push down until ¼" of the dowels protrudes. Finally, apply glue in the hole in the clown, insert the 6"-long dowel through the hole, and then center the clown on it.

2. Finish the project. (We applied two coats of spray varnish to the parallel bars and base, and one coat to the clown to serve as a wood sealer. Then, we lightly sanded the top surface of the parallel bars crosswise with 80-grit sandpaper to improve traction for the clown when rolling up the bar's incline. Following the transferred lines on the clown, we then painted it with acrylic paints. See the pattern for our color selections.) Apply a finish coat of varnish to the clown. Add the adhesive-backed toy eyes, or paint the eyes on. (See the Buying Guide for our source of eyes.)

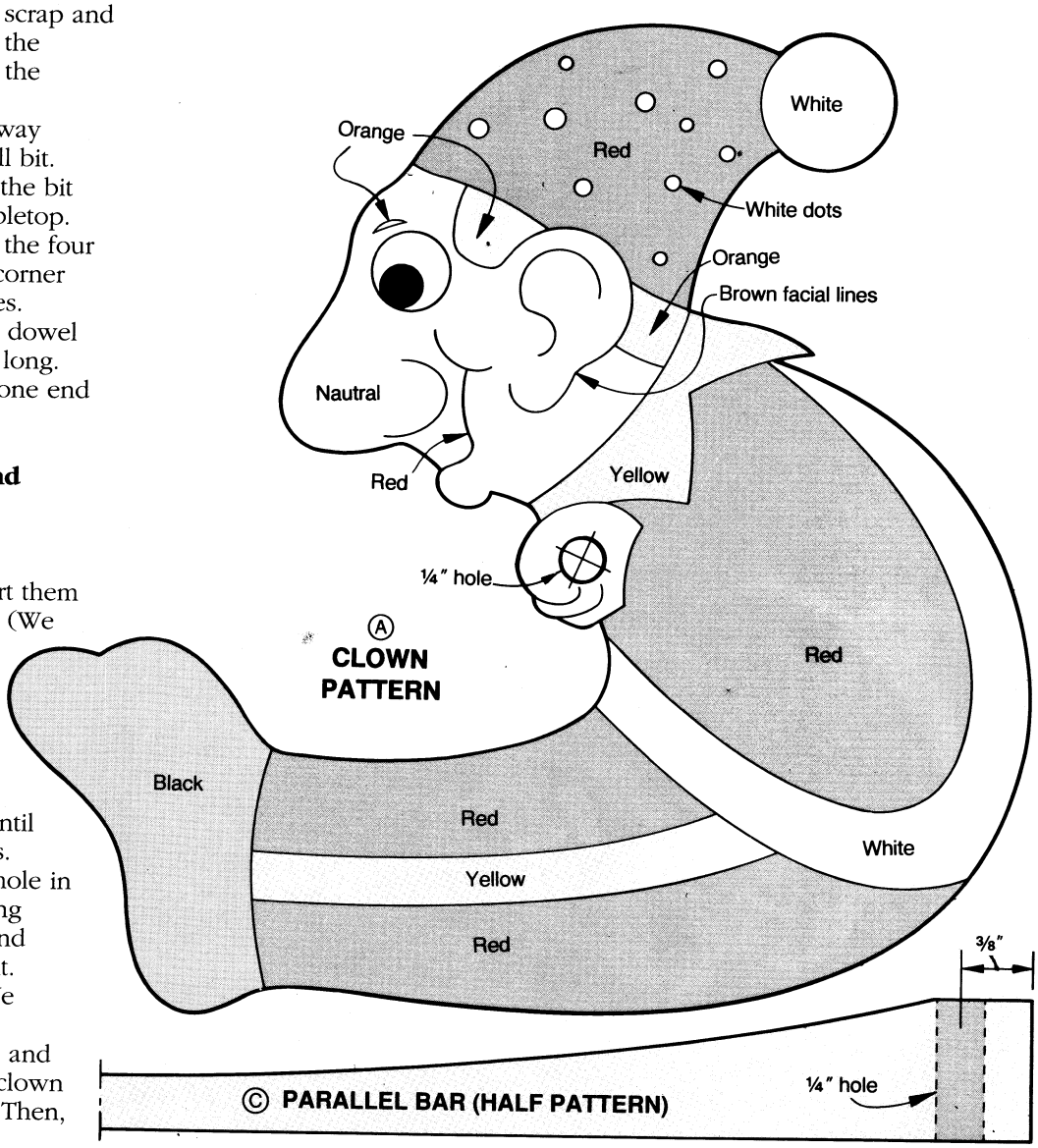
Buying Guide

- **Toy animal eyes.** ⅞" diameter, catalog no. ME-3. For current price, contact Armor Products, Box 445, East Northport, NY 11731. Phone 516-462-6228.

Project Tool List

Tablesaw
Bandsaw or scrollsaw
Drill press
  ¼" bit
  Drum sander
Router
  Router table
  Chamfer bit
Finishing sander

Note: *We built the project using the tools listed. You may be able to substitute other tools or equipment for listed items you don't have. Additional common hand tools and clamps may be required to complete the project.*



Ⓐ CLOWN PATTERN

© PARALLEL BAR (HALF PATTERN)