

How to Repair a Bent Cab Roof on Lionel Steam Locomotives

Lionel steam locomotives are heavy and when they derail and fall on the floor a bent cab roof will often be a consequence. Lionel steam locomotives are made out of an alloy that is reported to have cold flow properties. Applying constant pressure over time will cause the material to bend. It is possible to correct even a severely bent cab roof without heat, paint loss or cracking using the homemade vise described here. Some basic woodworking skills are required to make this. This process actually produces 2 vises.

Materials

- Piece of hardwood - oak, mahogany or maple 1 full inch thick (I use scrap pieces of oak stair treads that are exactly 1 inch thick)
- 6 inch long 5/16 hex bolts, nuts and washers
- Tools
- Hole saw 3½ inch diameter. This appears to perfectly replicate the arc of many Lionel steam locomotives.
- Drill bit 5/16 inch diameter and greater than 6 inches long
- Electric drill A drill press will be more precise.
- Miter saw
- Router
- ½ inch straight router bit
- Ruler
- Wrench

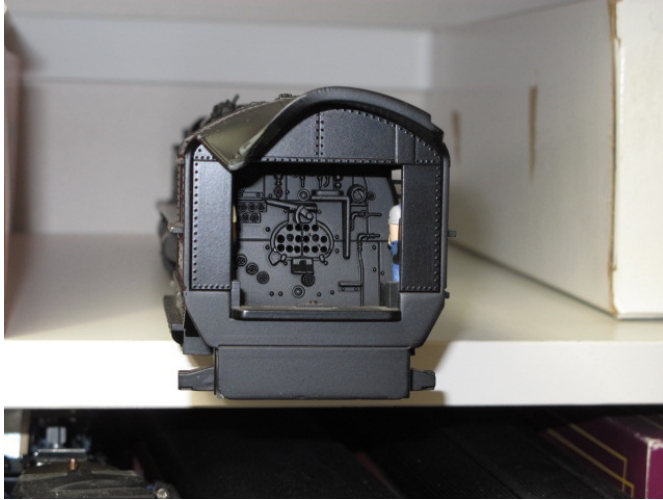
Directions

1. Cut two hardwood boards 8½ inches long x 5 inches wide.
2. On a long (8½ inch) edge of both boards, measure 1½ inches in from each end and mark the center point at that spot, then drill two 5/16 inch holes through the 5 inch width of both boards.
3. With the boards lying flat on your work surface, find and mark the center point on both boards. Drill a 3½ inch hole completely through the first board and remove the disc.
4. On the second board, drill a 3½ diameter circle 5/16 inch deep.
5. Using a router and straight bit remove the material within the circle to a depth of about 5/16 of an inch.
6. Mark the centers of both boards and bisect both boards lengthwise using a miter saw.
7. Cut the disc made by the hole saw in half using a miter saw.
8. Glue a thin 1/8-inch strip of scrap wood to the bottom of each half disc to provide more pressure from the vise.
9. Place the hex bolts through each half to form the vise or clamp.



Bent Cab Repair

1. Place the vise on a flat surface (work bench or table).
2. Place bent cab between the half disc and the top (curved side) of the vise.
3. Adjust the cab so that it is perpendicular to the vise.
4. Tighten the bolts until the cab is snug.
5. Continue to tighten the bolts a little at a time (e.g., 1/2 to a full turn in the morning and again in the evening) until the bent cab roof is correct. This can take days or even weeks. Proceed at a pace that you're comfortable with.
6. Don't rush this last step to avoid cracking the cab or the paint.





Final Result of Straightening Process





