

Shay Cab - Floor & Roof

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Cab Floor: A cab floor was made at the same time as the tender floor. I was unhappy with some of the cutouts and the way the floor fit around the boiler so I made this second cab floor. The material is 1/8" thick hot rolled sheet. The floor is fastened to the frame I beams with four 6-32 flat socket head screws. The cutout is for the fuel tank output hose and drain valve.



This is a view of the floor from the other direction. The floor is designed so that it can be removed without removing the shelf support by sliding the floor an inch or so to the rear.



Walkways: This shows the left walkway. The walkway is fastened to the I beam and the supports with #1-72 button head cap screws.



This is the right side walkway with the whistle mounted to the walkway. This side is also secured with #1-72 button head cap screws into the supports and the frame I beam.



Finishing strip: The floor and walkways all have a 1/8" square CRS finishing strip soldered (550 degree soft solder) to the under side of the outer edge. The oxide coating was sanded off the plates before the strip was clamped in place. The corner between the plate and strip was coated several times with Ruby Flux and heated. Some solder was then melted into the corner and spread with the flux brush after it was dipped again in flux. This type solder doesn't flow as readily as the 50-50 lower temperature solder. However, a really nice joint can be made using this technique. It helps to practice a little on a couple scrap pieces.



Roof: Kenneth used a roof with a hole cut in the center to access the controls. I liked the look of a design shown in [So You Want to Build A Live Steam Locomotive](#) that has the rear of the roof propped up to access the controls. I wanted a design that:

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1. Had a flat position for photos.
2. Had an elevated position for viewing the gauges and accessing the controls.
3. Permitted the roof to be easily removed for access to the plumbing in the cab.

The photo shows the underside of the partially completed roof. The frame sides and ribs were made of 1/8" X 1/2" CFS strips and the ends were cut from ~0.100" sheet. The frame was silver soldered together. The props are 1/8" X 1/4" CFS with 4-40 screws into the frame side serving as pivots. The roof sheet is 18 gauge steel and is soldered to the sides and ends of the frame using 550 degree soft solder.



This shows the roof before the vent and gutters were installed.

Several schemes to raise the rear of the roof were considered such as:

- An RF or IR controlled firmware based servo system (recall, I'm an electrical engineer).
- A steam cylinder on each side to raise the rear corners.



After much thought a very simple roof control system was selected.

CFS 1/8" X 1/2" stiffener strips were riveted to the cab sides just in front of the door openings. U shaped retainers were made from 3/16" X 1/2" CFS stock by milling a 1/4" wide 1/8" deep slot. The retainers were screwed to the stiffener strips using #0 button head cap screws. The roof props slide through the retainers when the roof is in the lowered position as shown in the photo.



When the rear of the roof is raised the L shaped clip slides under the end of the prop to hold the roof in the elevated position.

There is no hinge at the front of the roof. The front of the roof frame is held in position by the cab front and sides. The props are held vertical by the retainers and keep the roof from sliding frontward or backwards. The roof can be removed by merely

lifting it vertically.



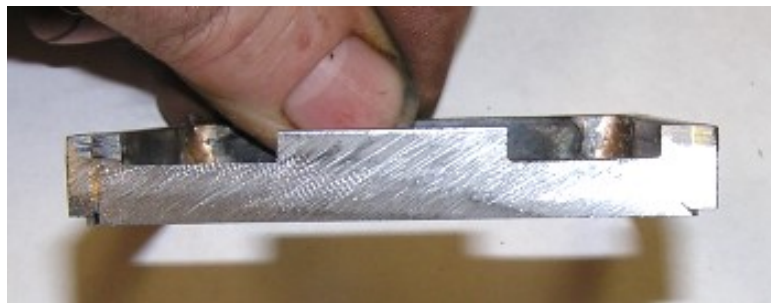
Gutters of 3/16" brass angle were screwed to roof using #0 button head cap screws.



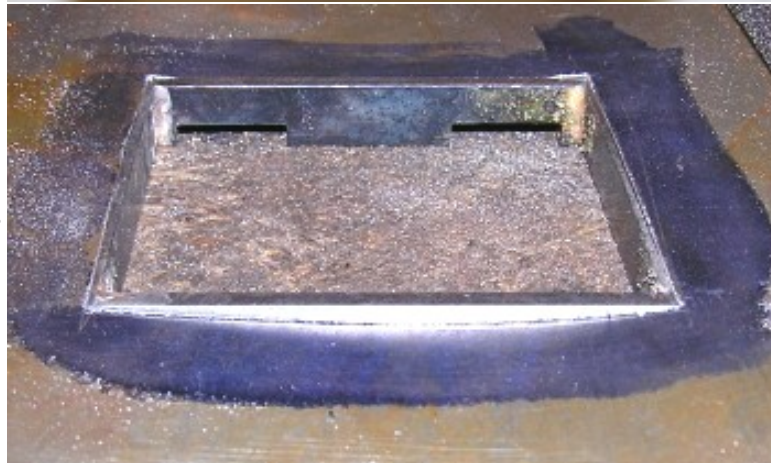
Roof Vent: The vent frame was made from 1/8" X 3/8" CFS. Slots for the ends were milled in the sides. The sides were screwed to the ends using #0 flat head brass screws through the slots. The corners were then silver soldered. The photo shows the frame after the silver soldering. The excess ends of sides were then sawed off and the stub filed flush with the ends.



This shows one end of the frame. The notches are for the top hinges. Note the offset that was milled in the sides before the soldering process. The resulting lip of the sides sets on top the roof while the ends fit inside the hole cut in the roof.



This shows the under side of the roof with the vent frame in position. This design where the ends side through the roof avoids the need to machine curved edges in the underside of the frame.



Vent Prop: The vent prop is made from two pieces of 1/8" square rod with pivots at the ends and middle. The photo shows the vent in the raised position. The position is stable because the upper rod is pushing the lower rod against the frame.

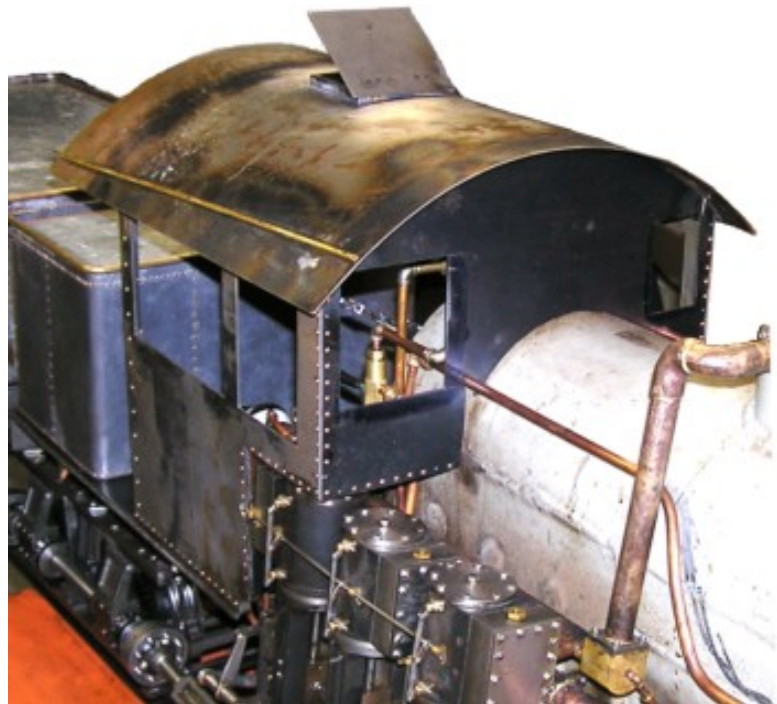


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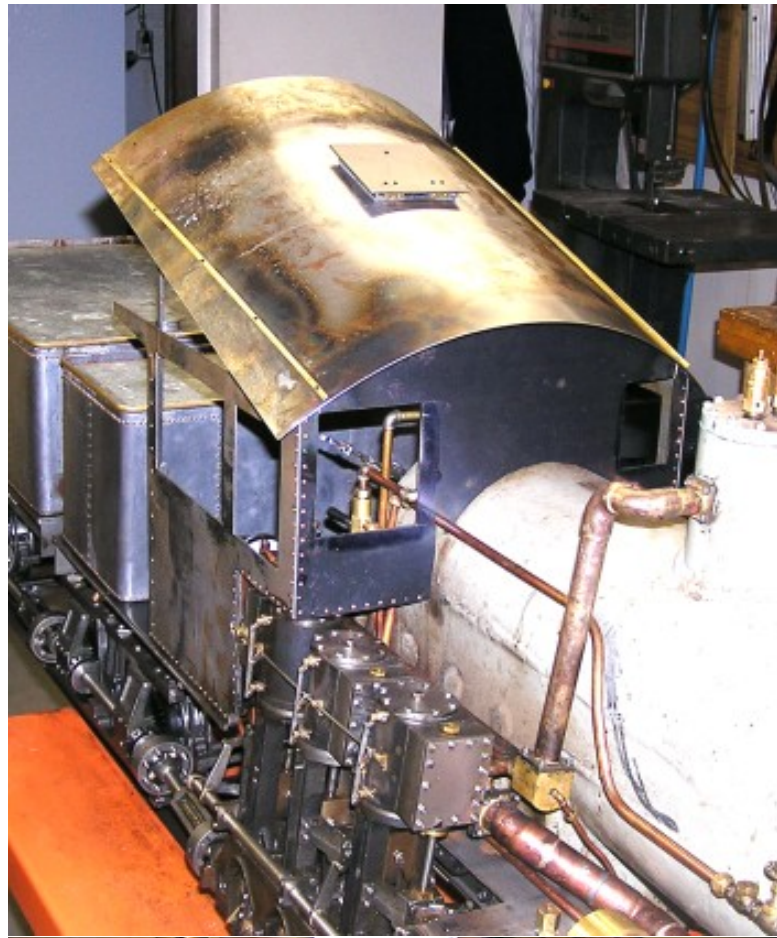
This shows the underside of the lowered vent. The prop simply folds to achieve this position. The hinges are from the local hardware store and cut down somewhat.



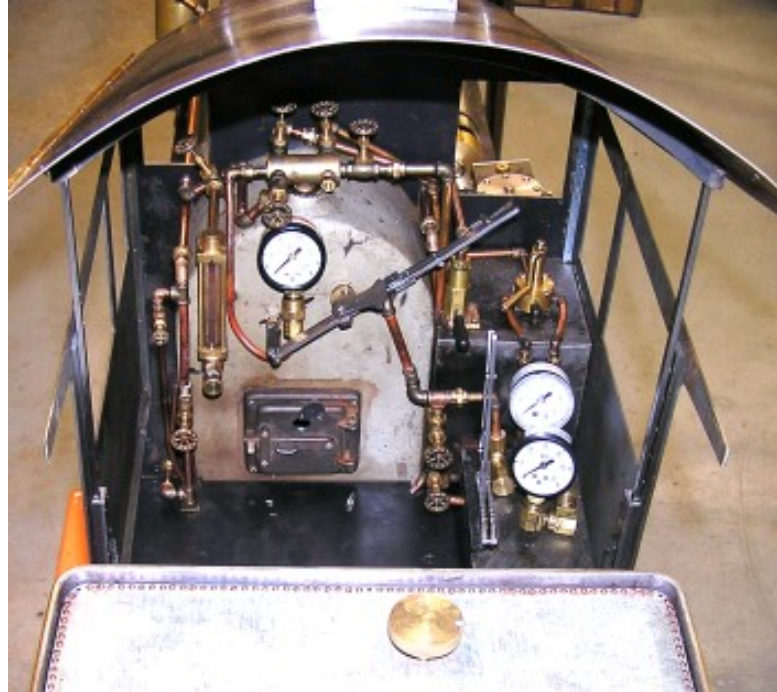
Finished Roof: This shows the finished roof in the lowered position.



The roof with the rear elevated



The operator's view of the cab gauges and controls.



The only things remaining to be done on the cab is to install the window frames in the front and sides and then paint it.

[Shay Project
NLW Home](http://www.nelsonslocomotive.com/Shay/Project/NLW/Home)

