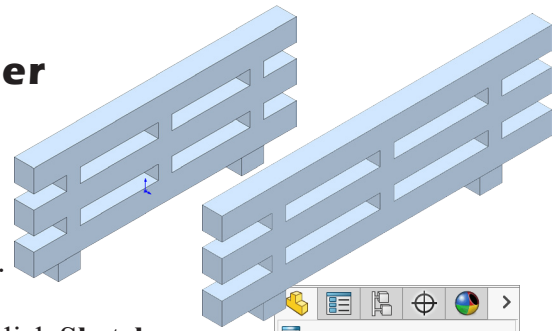




Bike and Trailer Rails



A. Extrude1.

Step 1. Click File Menu > New, click **Part Metric** and OK.

Step 2. Click **Right Plane**  in the Feature Manager and click **Sketch**  on the context toolbar, **Fig. 1**.

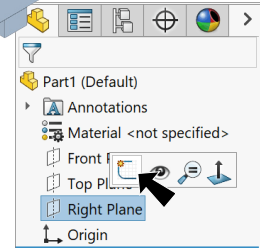





Fig. 1

Step 3. Click **Corner Rectangle**  in the **Rectangle flyout**  on the Sketch toolbar.

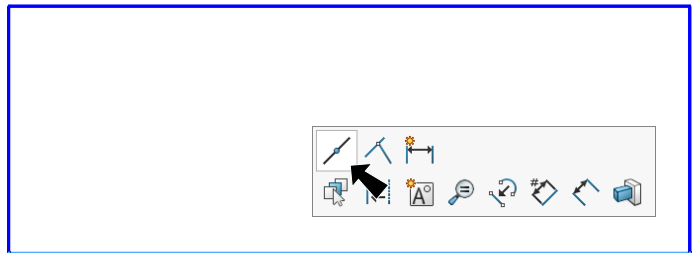
Step 4. Sketch a rectangle **above** Origin , **Fig. 2**.



Step 5. **Unselect Rectangle tool**. To unselect, **right click graphics area and click Select**  from menu.

Step 6. **Ctrl click bottom line of rectangle and the Origin**. Release Ctrl key and click **Make Midpoint**  on the context toolbar, **Fig. 3**.

Origin  **Fig. 2**



Step 7. Click **Line**  (L) on the Sketch toolbar.

Step 8. Sketch **4 horizontal lines across rectangle**. Double click to terminate the chain of lines, **Fig. 4**.

Ctrl click line and Origin  **Fig. 3**

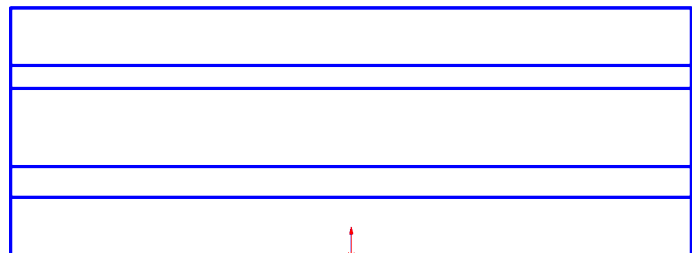


Fig. 4

Step 9. Sketch **4 vertical lines from second line from top line to bottom line**, **Fig. 5**.

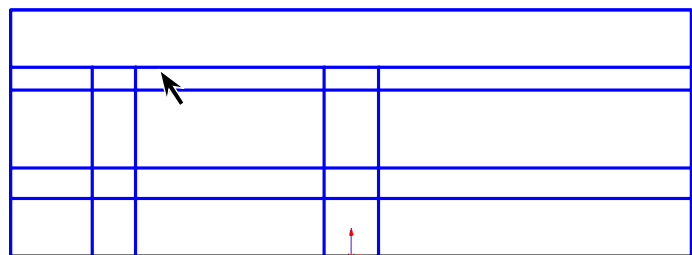





Fig. 5

Step 10. Click **Centerline**  in the **Line flyout**  on the Sketch toolbar.

Step 11. Sketch **two vertical centerlines**.

One up from Origin  and another up between other pair of vertical lines, **Fig. 6**.

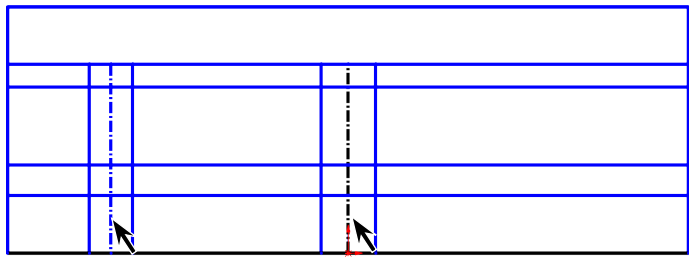


Fig. 6

Step 12. **Unselect Centerline tool**. To unselect, **right click graphics area and click Select**  from menu.

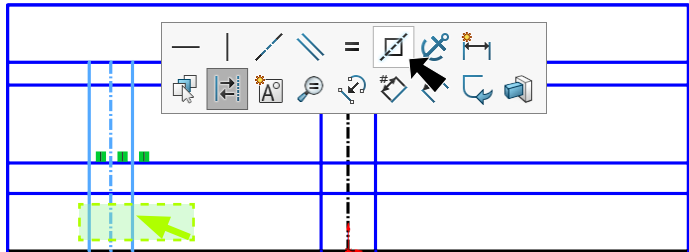





Fig. 7

Step 13. **Drag a selection to left across a pair of vertical lines**. Click **Make Symmetric**  on the context toolbar, **Fig. 7**.

Step 14. **Drag a selection other set of vertical lines at Origin** . Click **Make Symmetric**  on the context toolbar, **Fig. 8**.

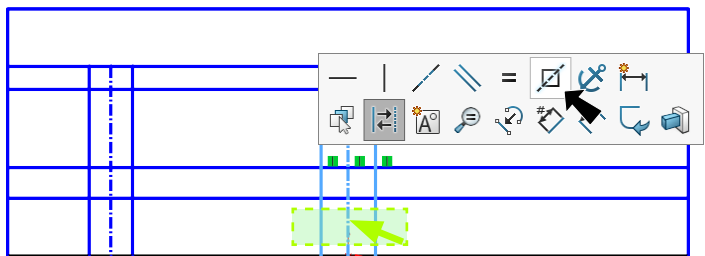



Fig. 8

Step 15. Click **Smart Dimension**  (S) on the Sketch toolbar.

Step 16. Add dimensions, **Fig. 9**.

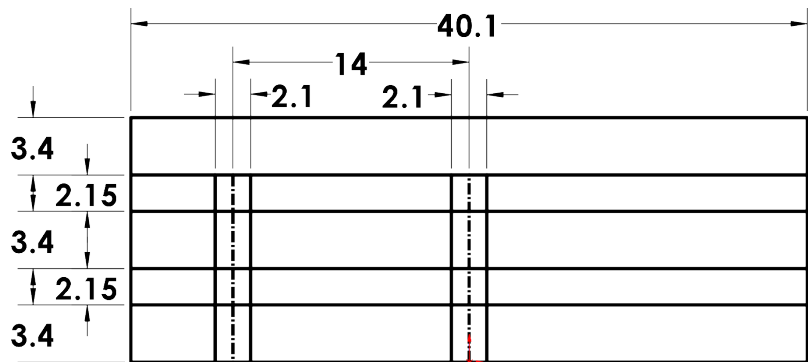



Fig. 9

Step 17. Click **Line**  (L) on the Sketch toolbar.

Step 18. Sketch **3 lines off of left vertical post**, **Fig. 10**.

Step 19. **Unselect Line tool**. To unselect, **right click graphics area and click Select**  from menu.

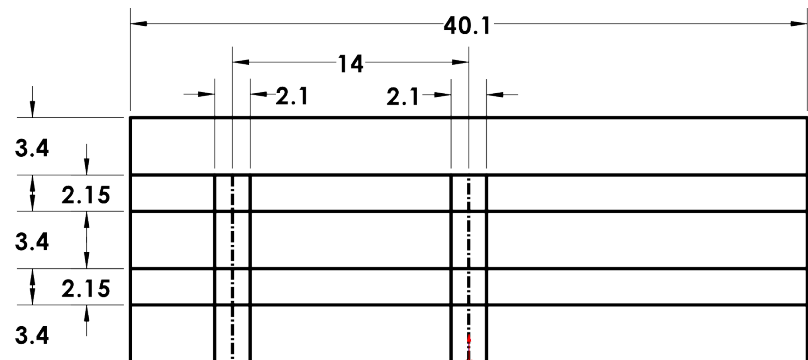

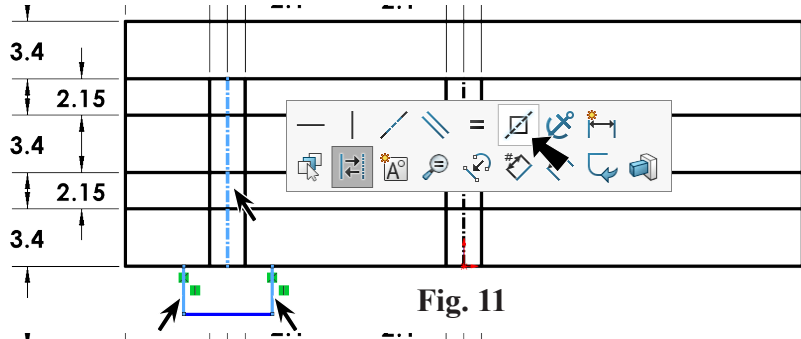



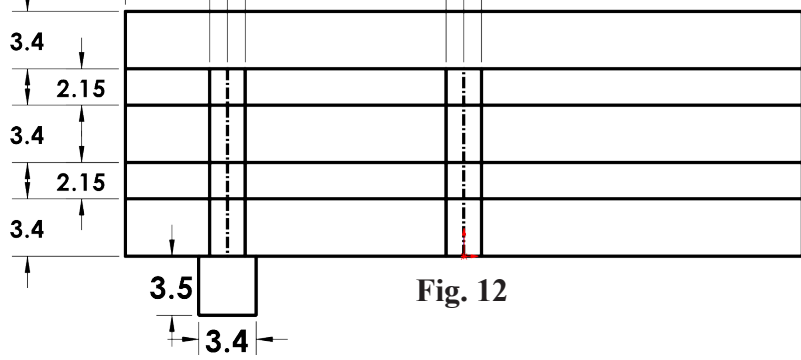
Fig. 10


Step 20. **Ctrl click both vertical lines and centerline** to select both. Release Ctrl key and click **Make Symmetric**  on the context toolbar, **Fig. 11**.



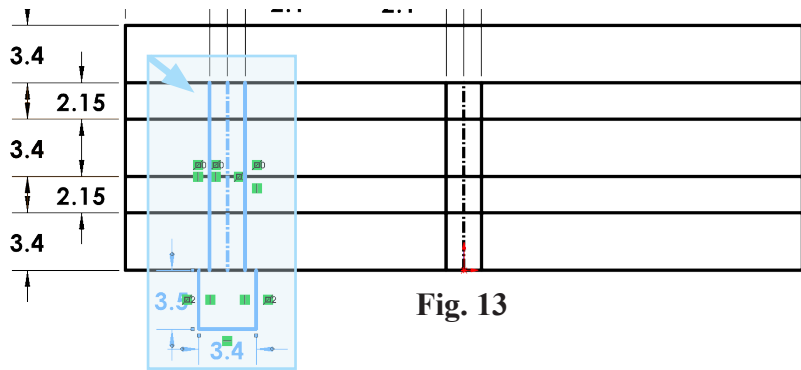
Step 21. Click **Smart Dimension**  (S) on the Sketch toolbar.

Step 22. Add dimensions, **Fig. 12**.

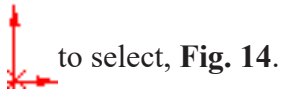


Step 23. **Unselect Smart Dimension**. To unselect, **right click graphics area and click Select**  from menu.

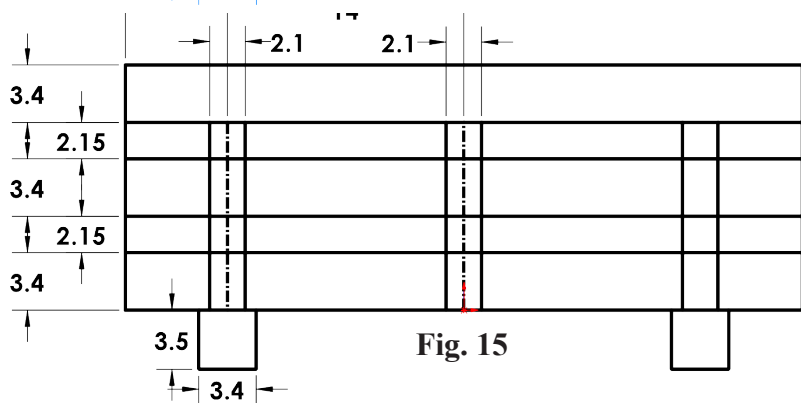
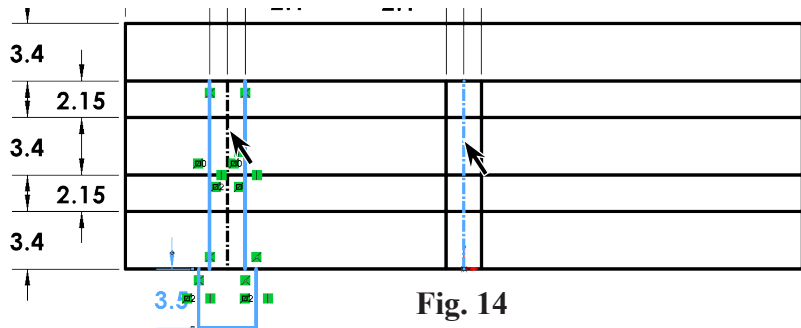
Step 24. Drag a selection to right to select the left stake geometry, **Fig. 13**



Step 25. Then, **Ctrl click it's centerline to unselect**. Then, **Ctrl click centerline at Origin**



Step 26. Click **Mirror Entities**  on the Sketch toolbar, **Fig. 15**.



Step 27. Click **Features**  on the Command Manager toolbar.

Step 28. Click **Extruded Boss/Base**  on the Features toolbar.

Step 29. In the Boss-Extrude Property Manager set:

under Direction 1, **Fig. 16**

End Condition **Blind**

Depth  **3**

Click **Normal To**  on the Standard Views toolbar. (**Ctrl-8**)

under Selected Contours click the contours (21), **Fig. 17**

Rotate view to view bottom. Use **Up Arrow key**  once and

Right Arrow key  once.

click OK .

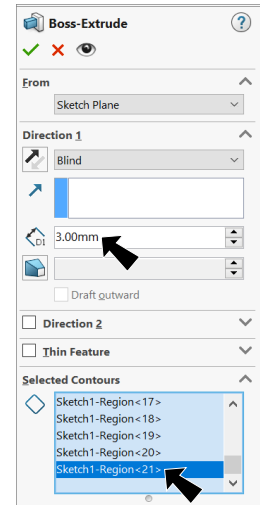


Fig. 16

B. Save as "REAR RAIL".

Step 1. Click File Menu > Save As.

Step 2. Key-in **REAR RAIL** for the filename and press ENTER.

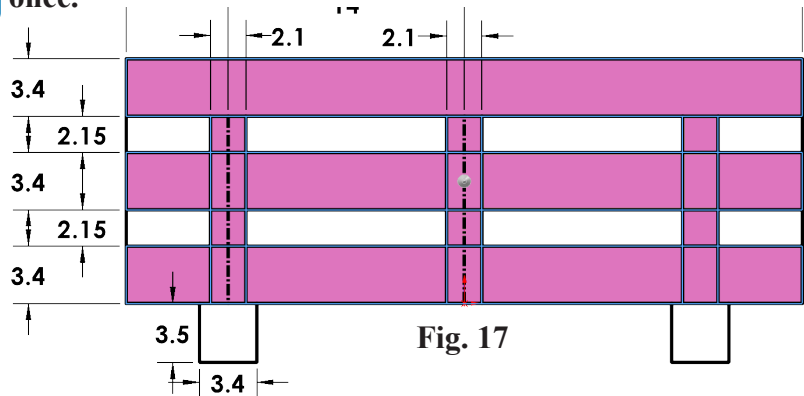


Fig. 17

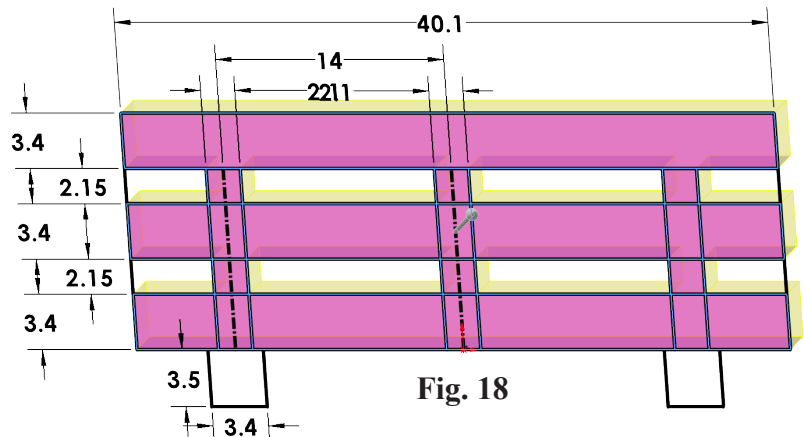


Fig. 18

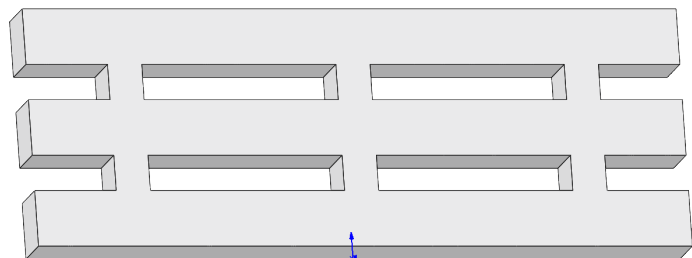


Fig. 19

C. Extrude2.

Step 1. Expand **Boss-Extrude1** in the Feature Manager and click rail sketch, **Sketch1** to select sketch, **Fig. 20**.

Step 2. Click **Extruded Boss/Base** on the Features toolbar.

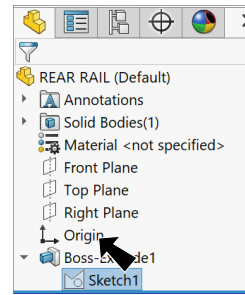
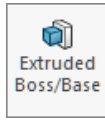


Fig. 20

Step 3. In the Boss-Extrude Property Manager set:
 under Direction 1, **Fig. 21**
 End Condition **Blind**

Depth D1 2.4

under Selected Contours
 click the **2 contours**, **Fig. 22**

click OK

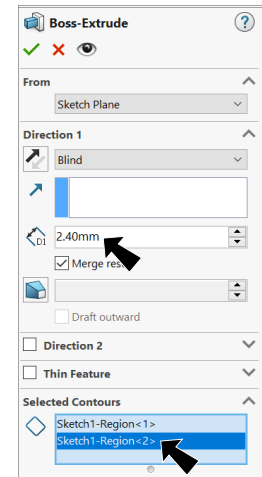


Fig. 21

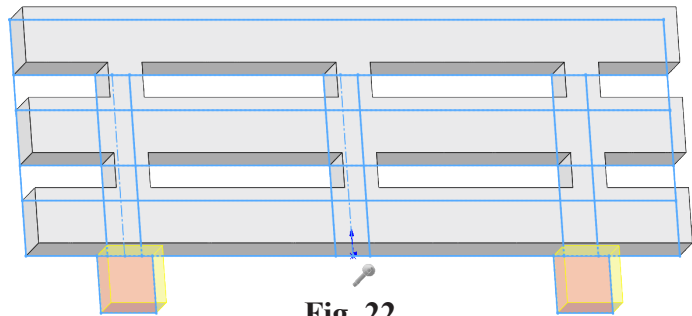
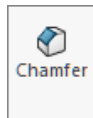


Fig. 22

D. Chamfers.

Step 1. Click **Chamfer** on the Features toolbar.



Step 2. In the Chamfer Property Manager set:
 under Chamfer Type, **Fig. 23**

select **Angle Distance**

Distance D .5

Angle A 45°

under Items To Chamfer
 click **bottom face of both stakes**, **Fig. 24**

click OK

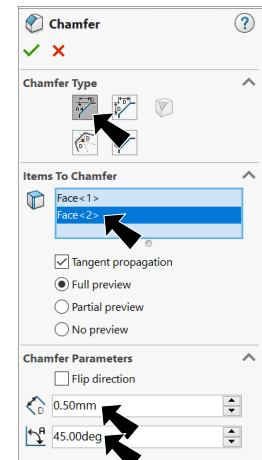


Fig. 23

Step 3. Save (Ctrl-S).

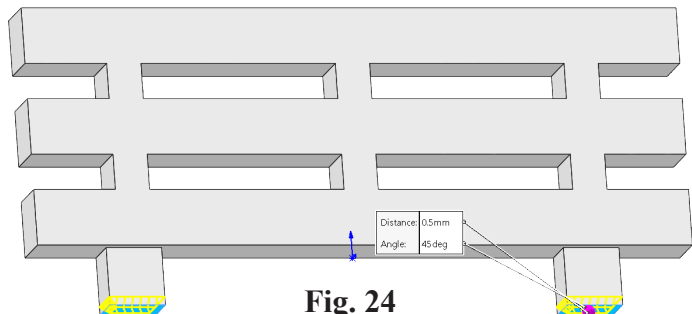




Fig. 24

L. Appearance: Blue Paint.

Step 1. Click the part to select part, click

Appearances Callout  on the context toolbar and click **REAR RAIL** , Fig. 45.

Click part 

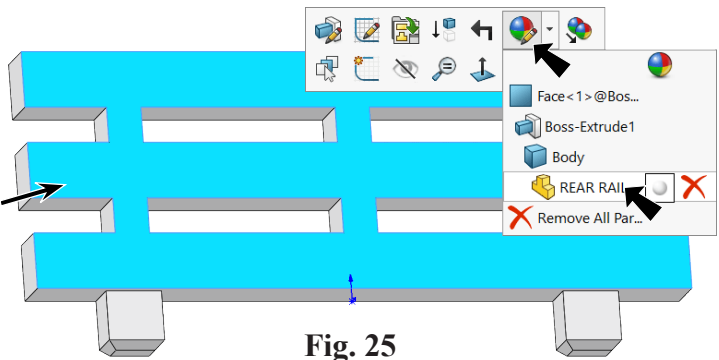



Fig. 25

Step 2. In the Appearances Task pane, expand **Painted**, click **Car** and in the lower pane select **gloss blue**, Fig. 46.

Step 3. In the Appearances Property Manager set:
 under Color, Fig. 47
 set RGB values
R 207
G 229
B 255
 click OK .

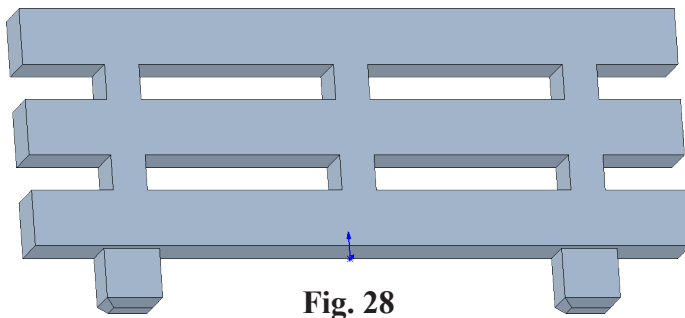


Fig. 28

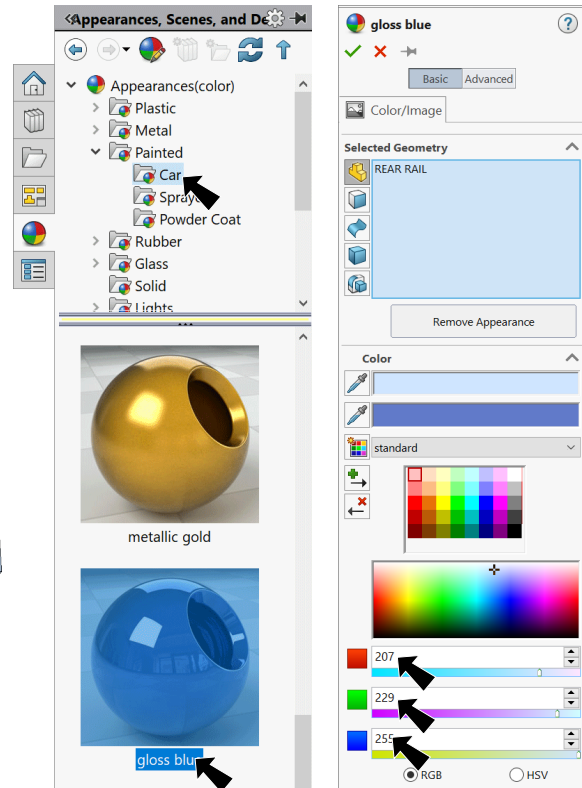


Fig. 26

Fig. 27

F. Save As "SIDE RAIL".

Step 1. Save. Use **Ctrl-S**  to save REAR RAIL.

Step 2. Click File Menu > Save As.

Step 3. Key-in **SIDE RAIL** for the filename and press ENTER.
 You now have two Rail files, REAR and SIDE. Next, we lengthen SIDE RAIL.

G. Change Length.

Step 1. Click **Boss-Extrude1** in the Feature Manager and **Edit Sketch** in the content toolbar, **Fig. 29**.

Step 2. Click **Normal To** on the Standard Views toolbar. (**Ctrl-8**)

Step 3. Change width dimension 40.1 to **50.1** and 14 to **16.4**, **Fig. 30**.

Step 4. Click **Exit**

Sketch
on the Sketch toolbar.

Step 5. Save (**Ctrl-S**).

You should have 2 Rails:
REAR
SIDE

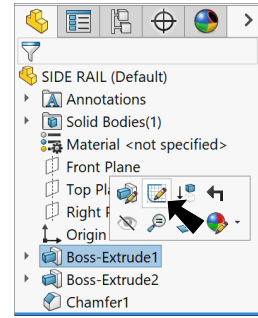


Fig. 29

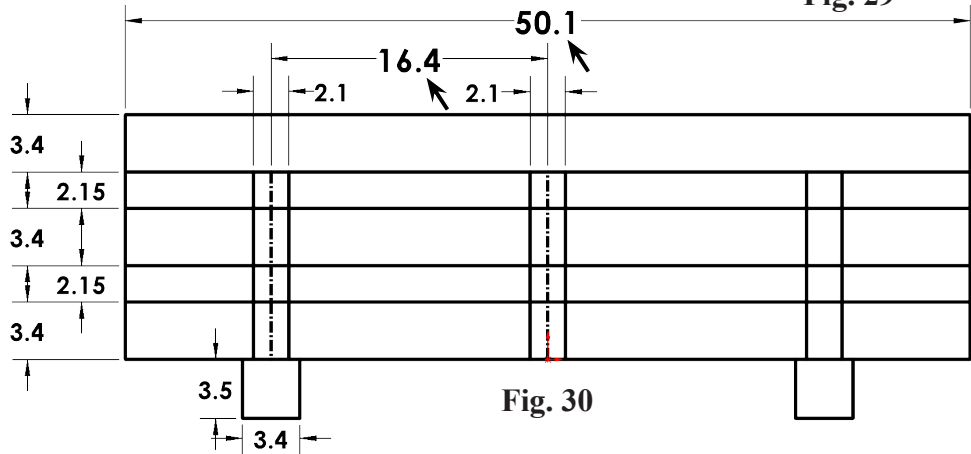


Fig. 30

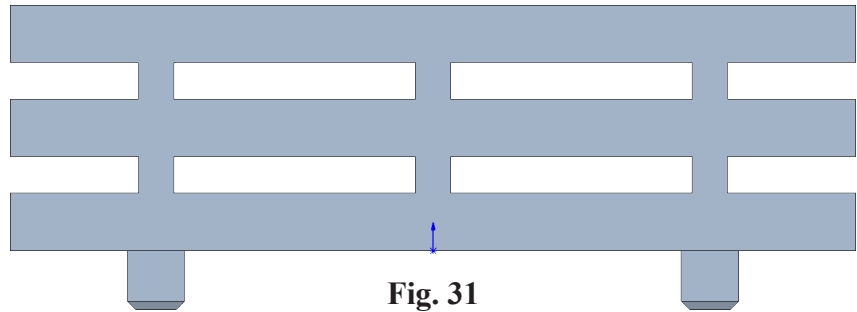


Fig. 31

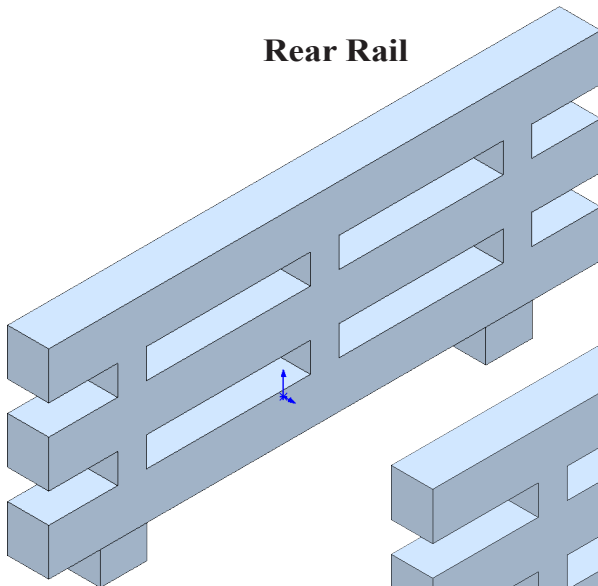


Fig. 32

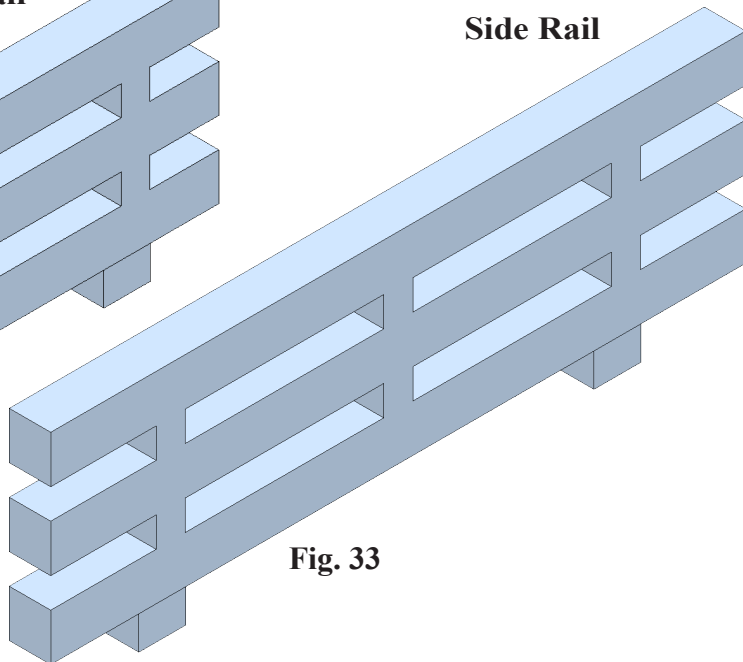


Fig. 33