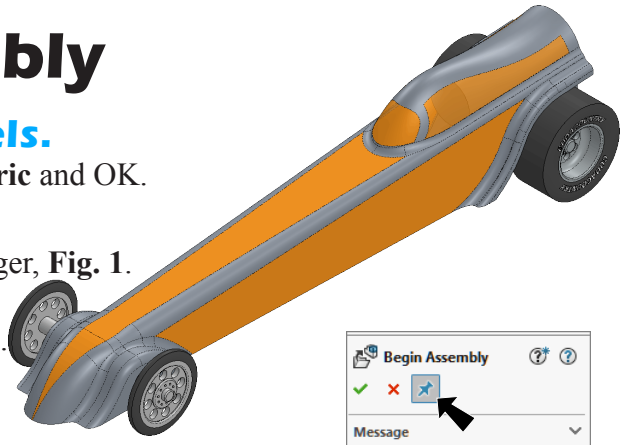
CO2 Rail Car
Assembly



A. Insert Axles, Washer and Wheels.

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

Step 2. Click **Keep Visible** in the Property Manager, **Fig. 1**.

Step 3. Click **Browse** in the Property Manager, **Fig. 1**.

Step 4. Select your **BODY RAIL** file and click Open.

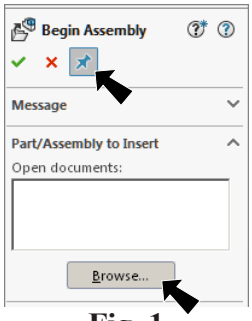


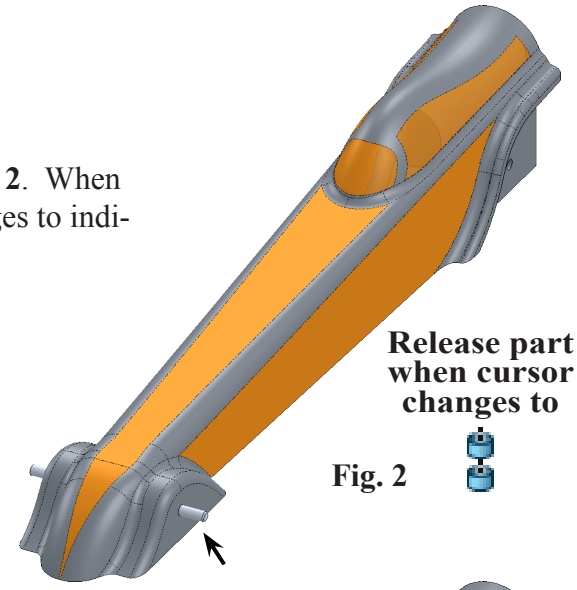
Fig. 1

Step 5. Click OK in the Property Manager. This will place the body origin at the assembly origin and fix the position of the body so that it cannot move. This fixed component should have a **(f)** before its name in the Feature Manager (f) BODY RAIL<1>.

Step 6. Click **Browse** in the Property Manager, **Fig. 1**.

Step 7. Select your **FRONT AXLE** file and click Open.

Step 8. Position **Front Axle near Front Axle hole**, **Fig. 2**. When Axle snaps into place and pointer (cursor) changes to indicate a Concentric mate, click to release Axle.



Release part when cursor changes to

Fig. 2

Step 9. Click **Browse** in the Property Manager.

Step 10. Select your **REAR AXLE** file and click Open.

Step 11. Position **Rear Axle near Rear Axle hole**, **Fig. 3**. When Axle snaps into place and pointer (cursor) changes to indicate a Concentric mate, click to release Axle.

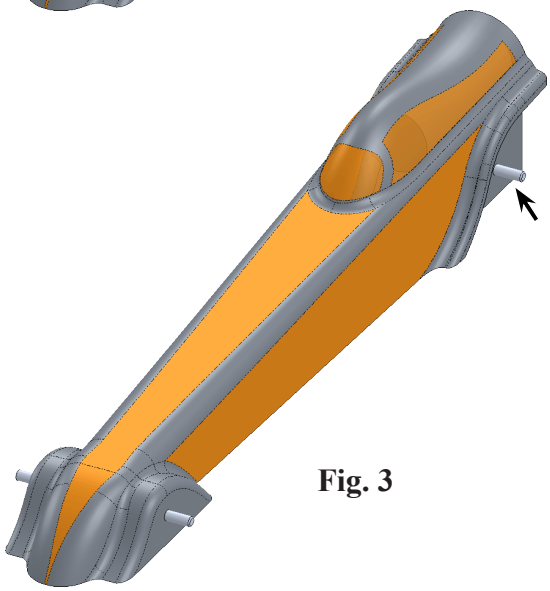


Fig. 3

Step 12. Click **Browse** in the Property Manager.

Step 13. Select **WASHER** and click Open.

Step 14. Place **Washer on Axle**, **Fig. 4**. When Washer snaps into place and pointer changes to indicate a Concentric mate, release Washer.

Step 15. Click Add/Finish Mate in Mate pop-up toolbar to add a **Concentric** mate, **Fig. 5**.

Fig. 5

Step 16. **Add Washer to other Axle** by repeating Steps 14 and 15.

Step 17. Click **Browse** and in the Open dialog box, confirm Filter Assemblies is depressed to see Assembly files.

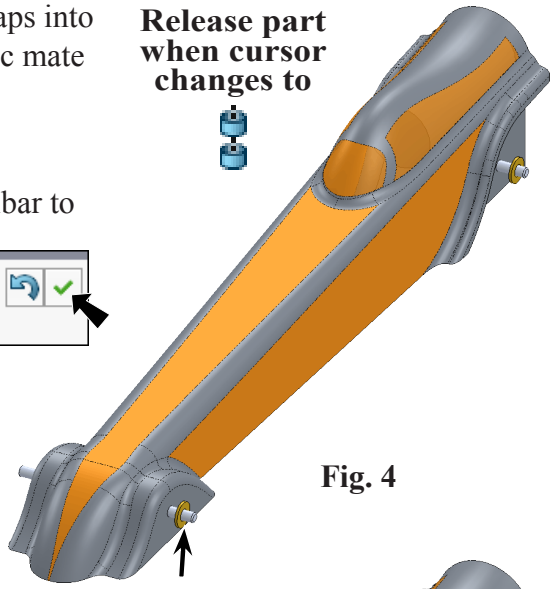


Fig. 4

Step 18. Place **FRONT WHEEL ASSEMBLY** on Front Axle, **Fig. 6**. Release when pointer changes to indicate a Concentric mate.

Step 19. To flip Wheel Assembly, click **Flip Mate Alignment** in the Mate pop-up, **Fig. 7**.

Step 20. Click Add/Finish Mate in Mate pop-up toolbar to add a **Concentric** mate, **Fig. 7**.

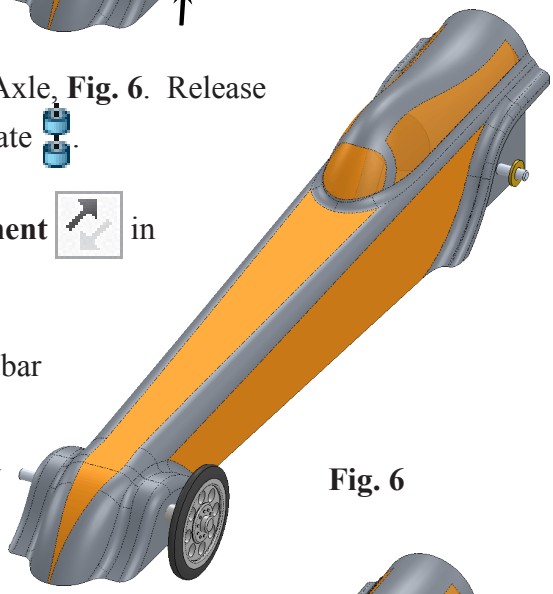


Fig. 6

Step 21. Browse and place **REAR WHEEL ASSEMBLY** on Real Axle, **Fig. 8**. Release when pointer changes to indicate a Concentric mate.

Step 22. To flip Wheel Assembly, click **Flip Mate Alignment** in the Mate pop-up, **Fig. 7**.

Fig. 7

Step 23. Click Add/Finish Mate in Mate pop-up toolbar to add a **Concentric** mate, **Fig. 7**.

Step 24. Click OK in the Property Manager when done.

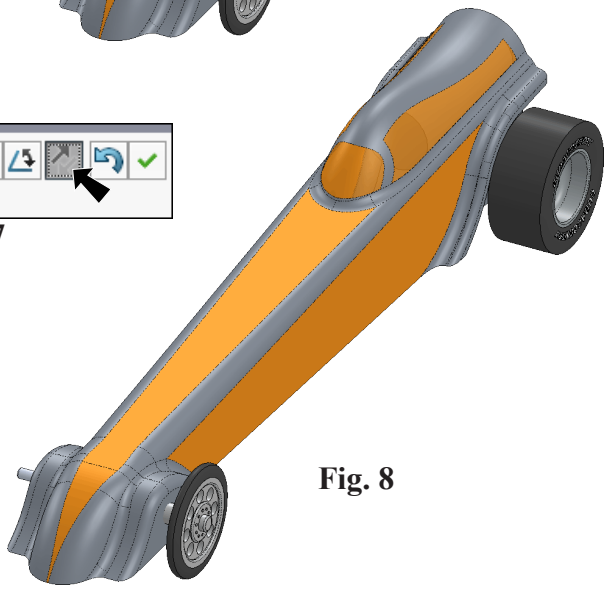


Fig. 8

B. Save as "RAIL CAR ASSEMBLY".

Step 1. Click File Menu > Save As.

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

C. Mate: Washer to Front Wheel Assembly.

Step 1. Drag **Rear Wheel Assembly** and **Front Wheel Assembly** off Axles, **Fig. 9**.

Step 2. With the Front Wheel Assembly selected, click **Zoom to Selection** (**Q**) on the View toolbar to zoom to Front Wheel Assembly.

Step 3. Press **Escape key** to unselect Wheel Assembly.

Step 4. Click **Mate** on the Assembly toolbar.

Step 5. Click **side face of Washer**, **Fig. 10**.

Step 6. Use **Right arrow** key to rotate assembly to view inside face of Front Rim, **Fig. 11**.

Step 7. Click **inside face of Front Rim**, **Fig. 11**.

Step 8. Click Add/Finish Mate in Mate pop-up toolbar to add a **Coincident** mate, **Fig. 12**.

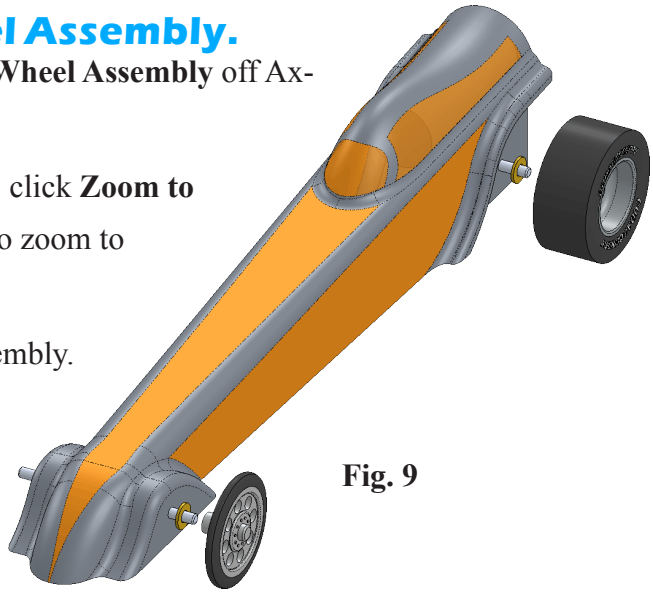


Fig. 9

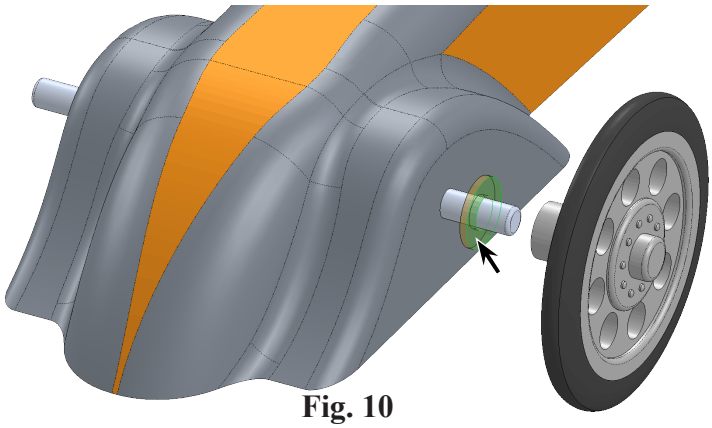


Fig. 10

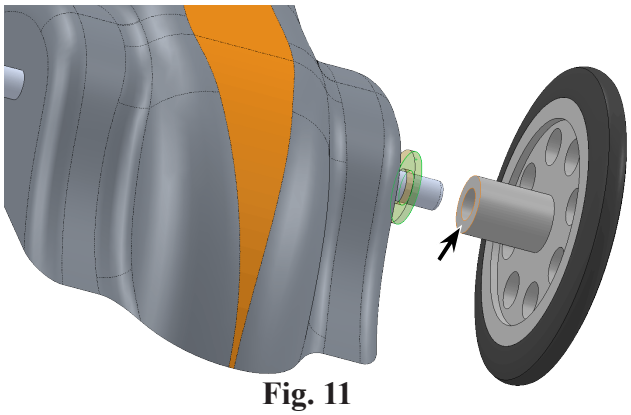


Fig. 11

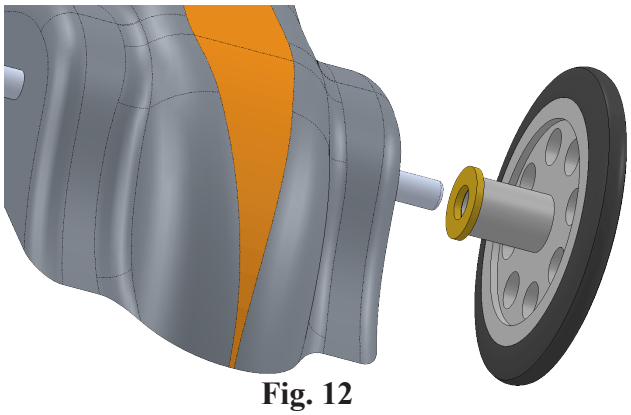


Fig. 12

D. Mate: Washer to Rear Wheel Assembly.

Step 1. Click **Trimetric**  on the Standard Views toolbar.

Step 2. Zoom in around **Rear Wheel Assembly**, **Fig. 13**. To **zoom**, place the cursor over the Rear Wheel at Axle and spin the wheel on mouse back. While spinning the wheel keep cursor on Rear Wheel at Axle.

Step 3. Click **side face of Washer**, **Fig. 14**.

Step 4. Use **Right arrow** key to rotate assembly to view inside face of Rear Rim, **Fig. 15**.

Step 5. Click **inside face of Rear Rim**, **Fig. 15**.

Step 6. Click Add/Finish Mate in Mate pop-up toolbar to add a **Coincident** mate, **Fig. 16**.

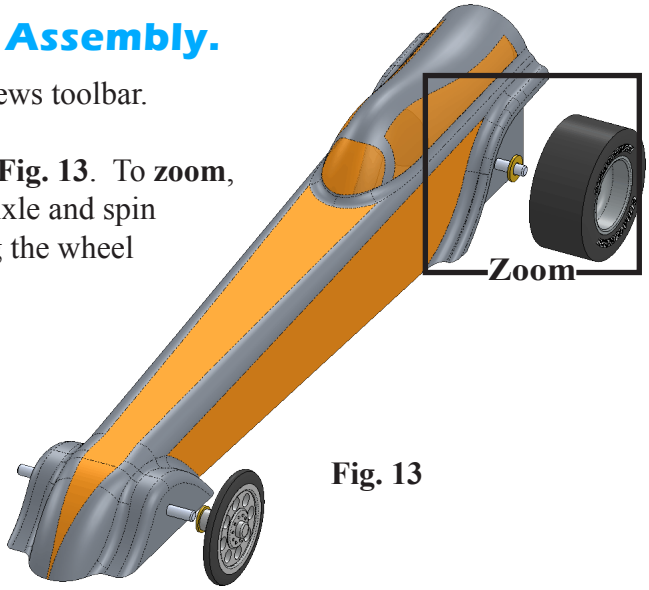


Fig. 13

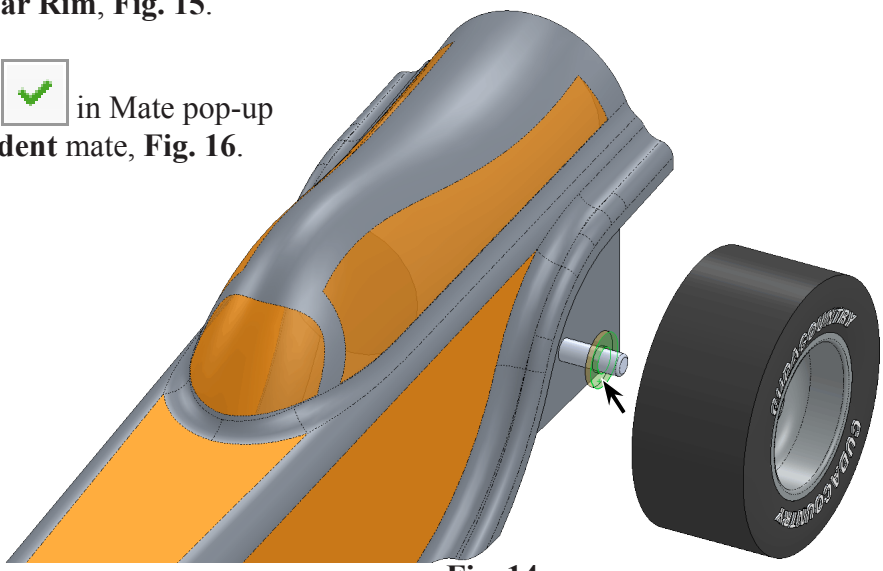


Fig. 14

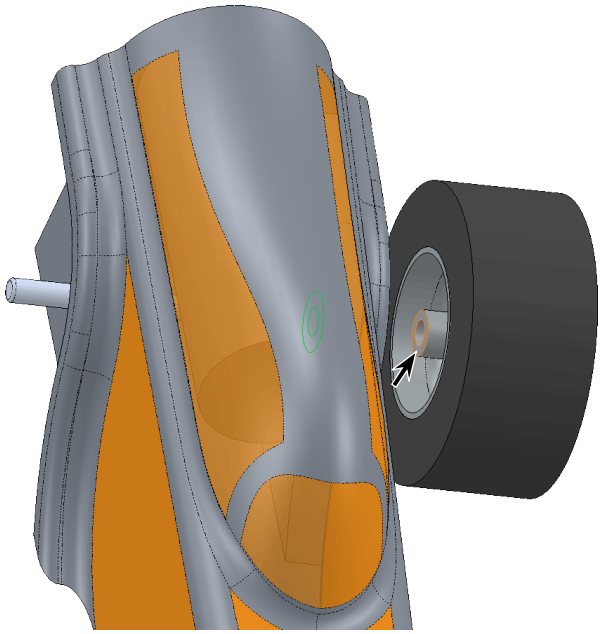


Fig. 15

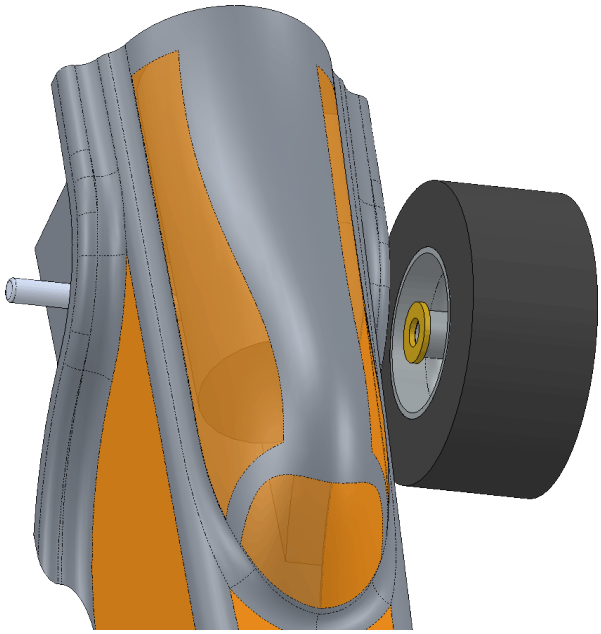


Fig. 16

E. Distance Mate: Front Wheel Assembly.

Step 1. Click **Bottom** on the Standard Views toolbar. **(Ctrl-6)**

Step 2. Expand the flyout Feature Manager design tree (click ▸) in the top left corner of the graphics area and click **Right Plane**, **Fig. 17**.

Step 3. Expand **FRONT WHEEL ASSEMBLY** and click **Right Plane**, **Fig. 17**.

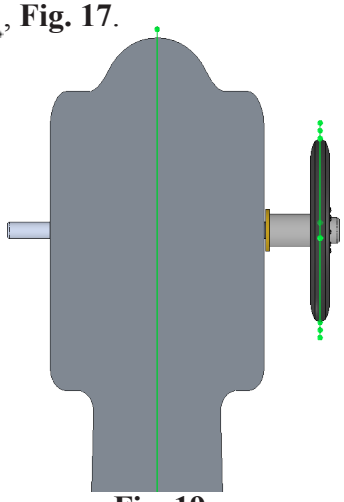


Fig. 19

Step 4. Click **Distance** in Mate pop-up, **Fig. 18**. Set **distance to 30.5** and press ENTER. The Washer should set next to the Body, **Fig. 19**. If positioned in opposite direction, click **Flip Dimension** in the Mate pop-up, **Fig. 18**. Click Add/Finish Mate to add Distance mate.

Fig. 18

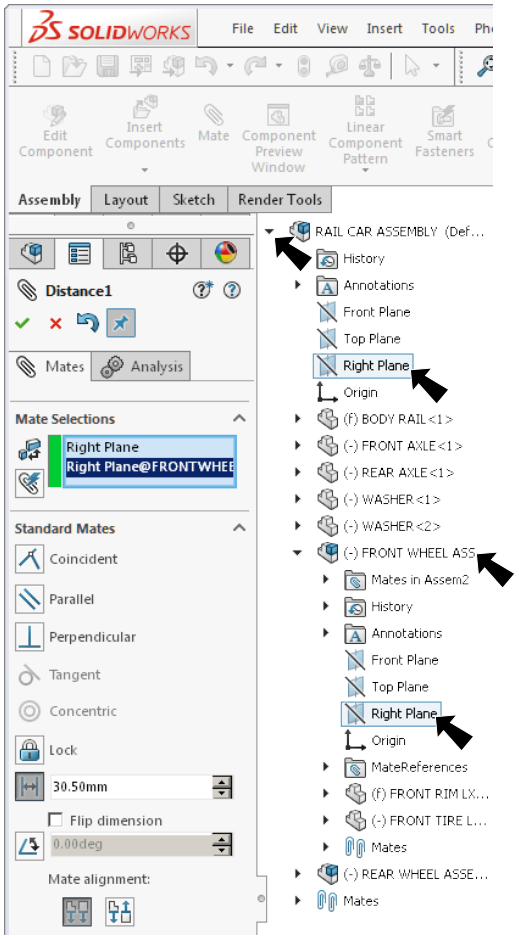


Fig. 17

F. Distance Mate: Rear Wheel Assembly.

Step 1. Click **Right Plane**, **Fig. 20**.

Step 2. Expand **REAR WHEEL ASSEMBLY** and click **Right Plane**, **Fig. 20**.

Step 3. Click **Distance** in Mate pop-up, **Fig. 21**. Set **distance to 31** and press ENTER. The Washer should sit next to the body, **Fig. 22**. If positioned in opposite direction, click **Flip Dimension** in the Mate pop-up, **Fig. 21**. Click Add/Finish Mate to add Distance mate.

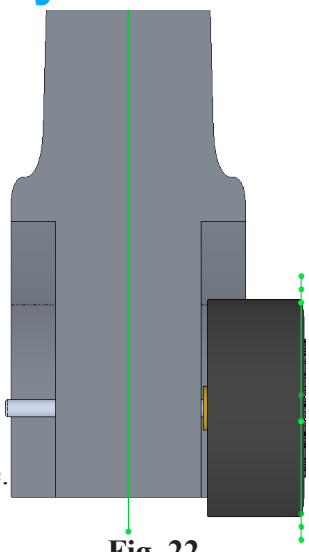


Fig. 22

Step 4. Click OK in the Property Manager when done.

Step 5. Save. Use **Ctrl-S**.

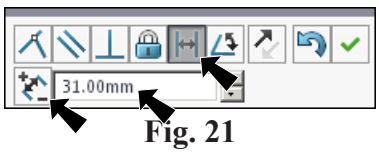


Fig. 21

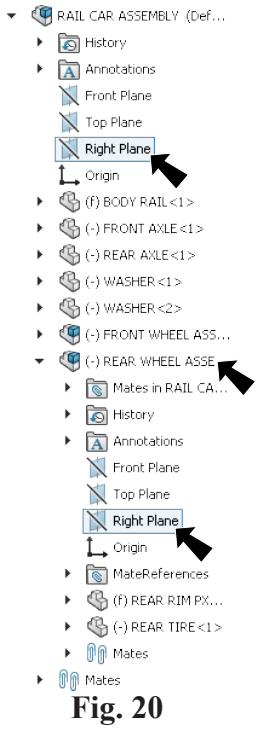


Fig. 20

G. Mirror.

Step 1. **Ctrl click Right Plane**, **both Washers** and **Wheel Assemblies** in the Feature Manager, **Fig. 23**. To Ctrl click, hold down the Ctrl key and click Right **Plane**, both Wheel Assemblies and Washers.

Step 2. Click Insert Menu > Mirror Components.

Step 3. In the Mirror Property Manager click OK, **Fig. 24**.

Step 4. Save. Use **Ctrl-S**.

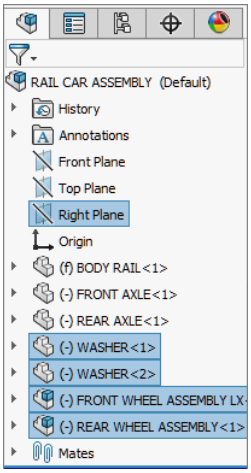


Fig. 23

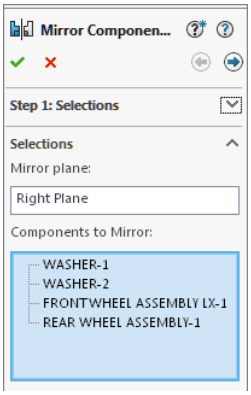


Fig. 24

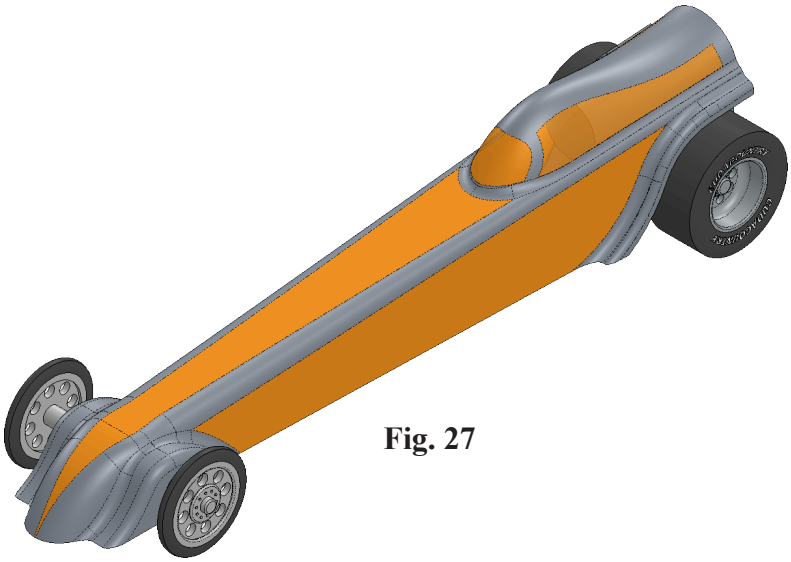


Fig. 27

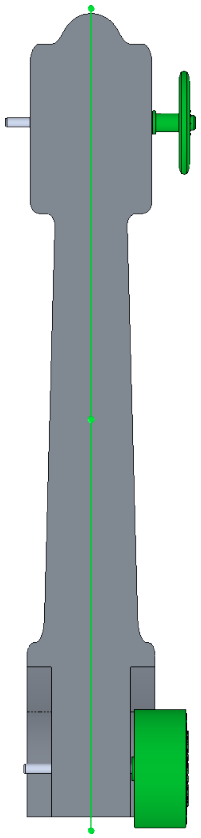


Fig. 25

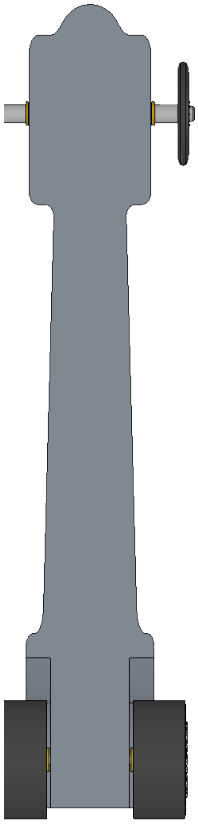


Fig. 26