

# Bike and Trailer Wheel Assembly





## A. Insert Hub and Tire.

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

Step 2. Select your **HUB** file and click Open from the Open dialog box.

Step 3. In the Begin Assembly Property Manager set:


click **Keep Visible** , **Fig. 1**

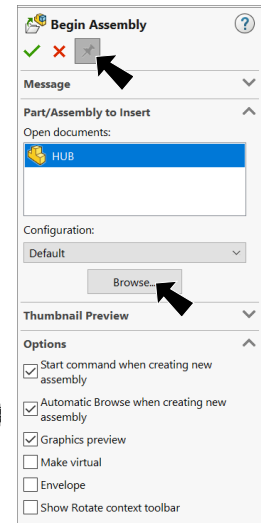
Click OK  in the Property Manager. This will place Hub origin at the assembly origin and fix the position so Hub cannot move. This fixed component should have a **(f)** before its name in the Feature Manager  (f) HUB<1>.

Step 4. Click **Browse** in the Property Manager, **Fig. 1**.

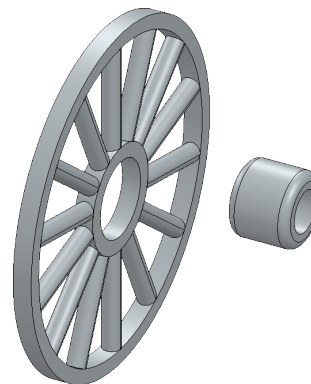
Step 5. Select your **RIM** file and click Open.

Step 6. Click approximately where Rim is positioned in **Fig. 2**.

Step 7. Click OK  in the Property Manager when done.



**Fig. 1**





**Fig. 2**

## B. Save as "WHEEL ASSEMBLY".

Step 1. Click File Menu > Save As.

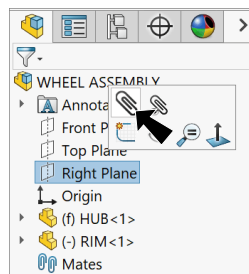
Step 2. Key-in **WHEEL ASSEMBLY** for the filename and press ENTER.

## C. Mate: Rim.

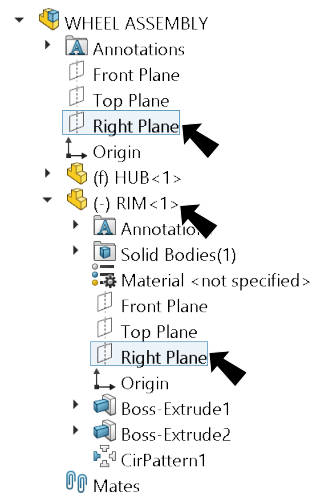
Step 1. Click **Right Plane**  in the Feature Manager and **Mate**  on the context toolbar, **Fig. 3**.

Step 2. Expand the flyout Feature Manager design tree, expand **RIM** and click **Right Plane** , **Fig. 4**.

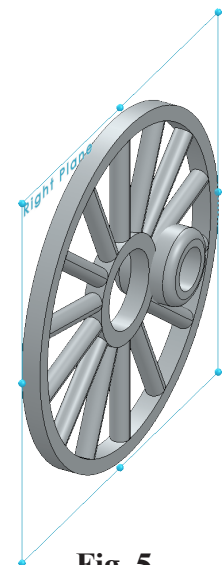
Step 3. Click Add/Finish Mate  to add a **Coincident** mate.



**Fig. 3**




**Fig. 4**



**Fig. 5**

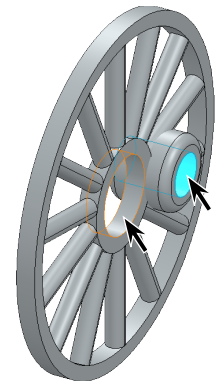
Step 4. Click a **cylindrical face Hub** and a **cylindrical face of Rim**, **Fig. 6**.

Step 5. Check **Lock Rotation** and Add/Finish Mate  in Mate pop-up toolbar to add a **Concentric** mate, **Fig. 7**.

Step 6. Click OK  in the Property Manager.



Step 7. Save  (Ctrl-S).



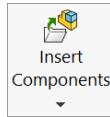
**Fig. 6**

## D. Insert Tire.

Step 1. Click **Insert Components**  on the Assembly toolbar.

Step 2. Select your **TIRE** file.


Step 3. Place the Tire, **Fig. 8**.



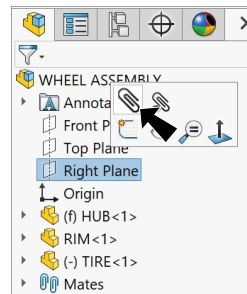
**Fig. 8**

## E. Mate: Tire to Rim.

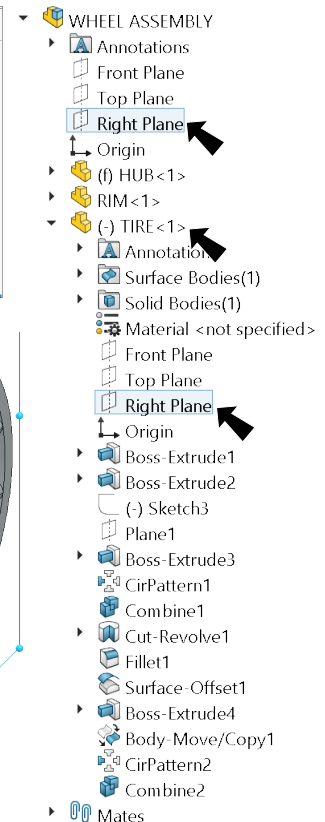
Step 1. Click **Right Plane**  in the Feature Manager and **Mate**  on the context toolbar, **Fig. 9**.

Step 2. Expand the flyout Feature Manager design tree, expand **TIRE** and click **Right Plane** , **Fig. 10**.

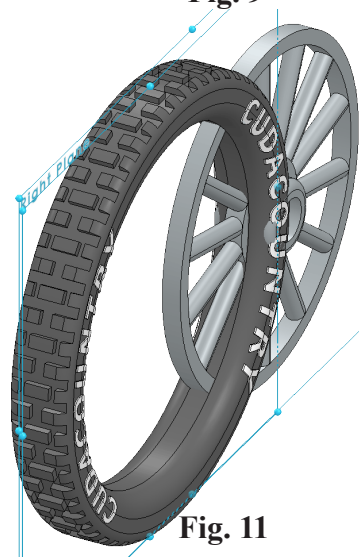
Step 3. Click Add/Finish Mate  to add **Coincident** mate.



**Fig. 9**




**Fig. 10**



**Fig. 11**

Step 4. Click a **cylindrical face of in Rim** and a **cylindrical face of Tire**, **Fig. 12**.

Step 5. Check **Lock Rotation** and Add/Finish Mate  in Mate pop-up toolbar to add a **Concentric** mate, **Fig. 13**.



**Fig. 13**

Step 6. Click OK  in the Property Manager.

Step 7. Save  (Ctrl-S).




**Fig. 12**



**Fig. 14**

## **F. Open Bike Assembly File Insert Wheel Assembly.**

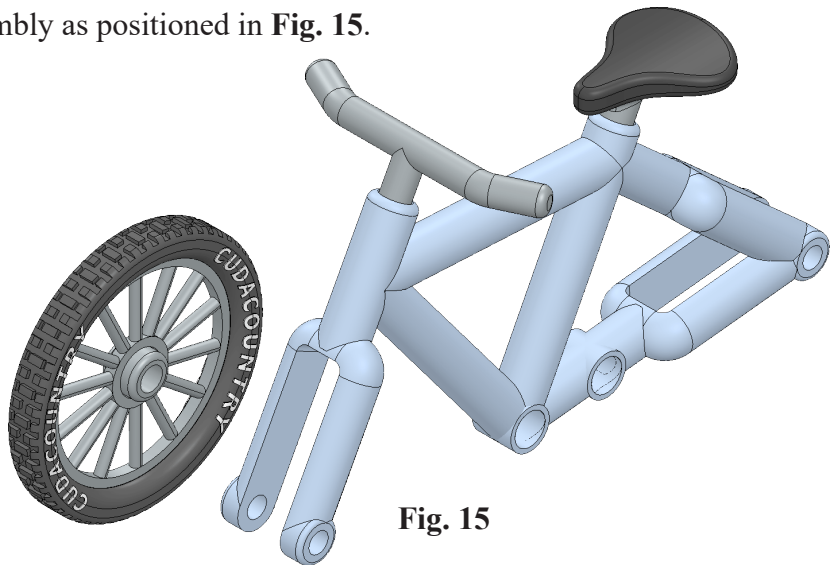
Step 1. Open your **BIKE ASSEMBLY** file.

Step 2. Click **Isometric**  on the Standard Views toolbar. (**Ctrl-7**)

Step 3. Click **Insert Components**  on the Assembly toolbar.



Step 4. Click **WHEEL ASSEMBLY** file and click Open from the Open dialog box.

Step 5. Click to place Wheel Assembly as positioned in **Fig. 15**.



**Fig. 15**

## G. Mate: Wheel Assembly.


Step 1. Click **Right Plane**  in the Feature Manager and Mate  on the context toolbar, **Fig. 16**.

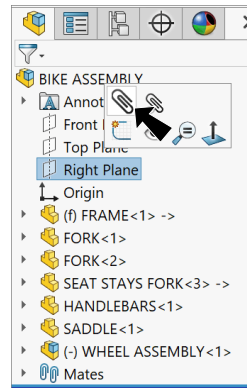
Step 2. Expand the flyout Feature Manager design tree, expand **WHEEL ASSEMBLY** and click **Right Plane** , **Fig. 17**.

Step 3. Click Add/Finish Mate  to add **Coincident** mate.

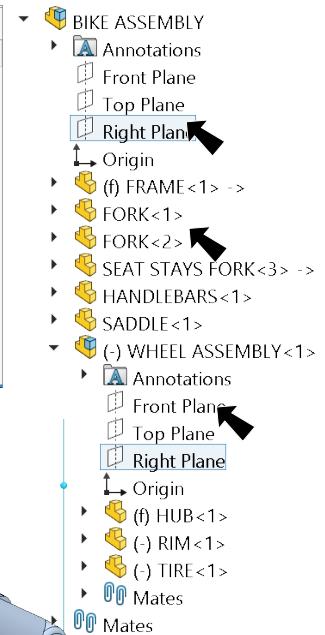
Step 4. Click **cylindrical face of Axle hole in Head Tube Fork** and a **cylindrical face of Hub**, **Fig. 19**.

Step 5. Click Add/Finish Mate  to add a **Concentric** mate.

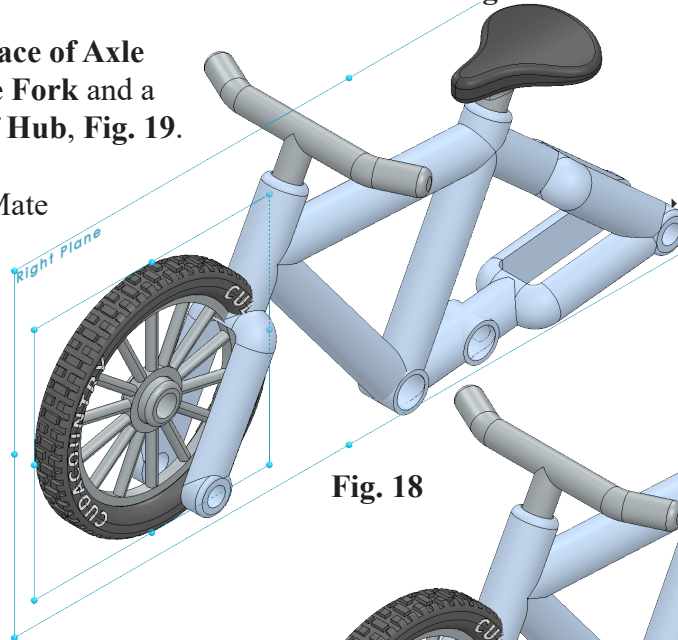
Step 6. Click **OK**  in the Property Manager.



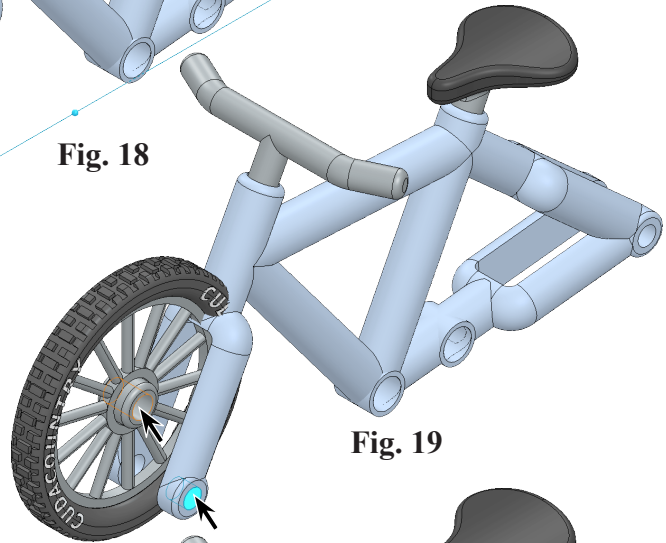
**Fig. 16**



**Fig. 17**

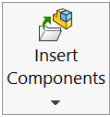


**Fig. 18**



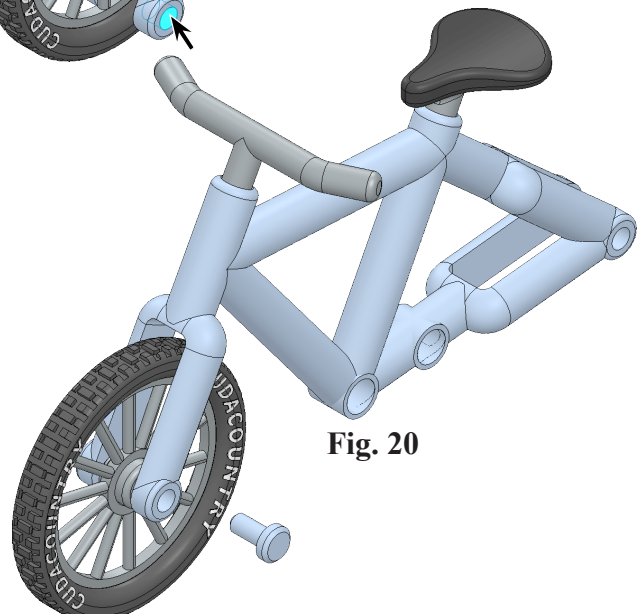
**Fig. 19**

## H. Insert Bike Axle.

Step 1. Click **Insert Components**  on the Assembly toolbar.

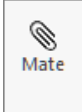
Step 2. Select your **AXLE** file.

Step 3. Place the Axle, **Fig. 20**.



**Fig. 20**

## I. Mate: Axle.

Step 1. Click **Mate**  on the Assembly toolbar.

Step 2. Click **side face of Head Tube Fork at Axle hole**, **hide outside cylindrical side face of Axle** and click **inside face of flat boss on Axle**, Fig. 21. To hide face, hover cursor over face and press **Alt** key.

Step 3. Click Add/Finish Mate  to add a **Coincident** mate.

Step 4. Click a **cylindrical face of Axle hole Extrude in Head Tube Fork** and a **cylindrical face Axle**, Fig. 22.

Step 5. Click Add/Finish Mate  to add a **Concentric** mate.

Step 6. Click **OK**  in the Property Manager.

Step 7. Save  (Ctrl-S).

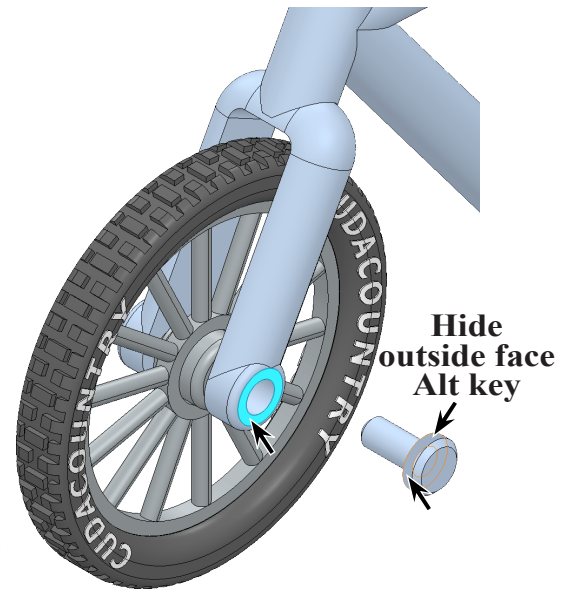


Fig. 21

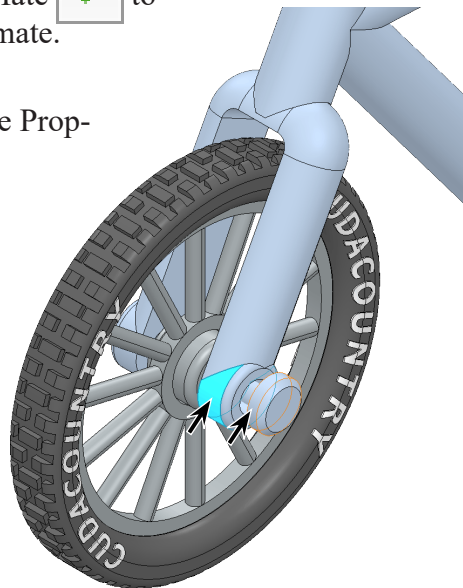


Fig. 22

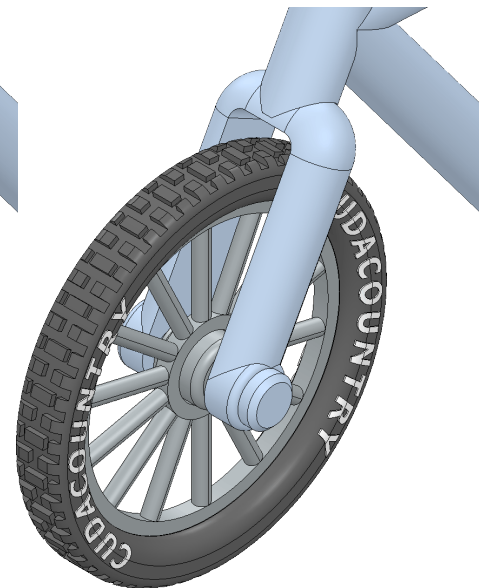


Fig. 23

## J. Copy with Mates Wheel Assembly.

Step 1. **Ctrl** click **Wheel Assembly** and **Axle** in the Feature Manager, then, **right click** and click **Copy with Mates** on menu, **Fig. 24**.

Step 2. In the Copy with Mates Property Manager:

Step 1: Select Component, **Fig. 25**  
Preselected

click **Next**

Step 3. Still in Copy with Mates Property Manager:

Step 2: Mates, **Fig. 26**  
under Mates

Coincident10 check **Repeat**

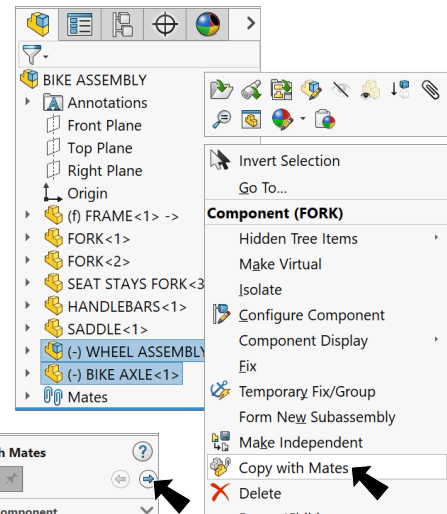
Concentric3 click **cylindrical face of rear Axle hole in Frame**, **Fig. 27**

Coincident11 check **Repeat**

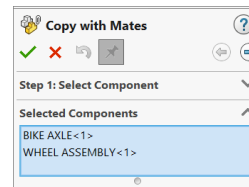
Concentric4 click **cylindrical face of rear Axle hole in Frame**, **Fig. 28**

click **OK** and click **Cancel**.

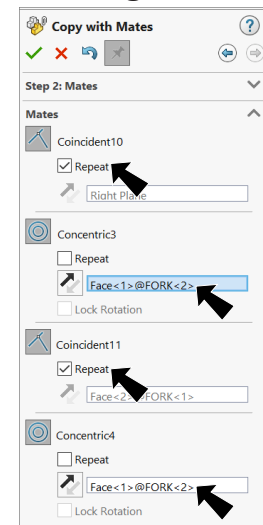
Step 4. Save (Ctrl-S).



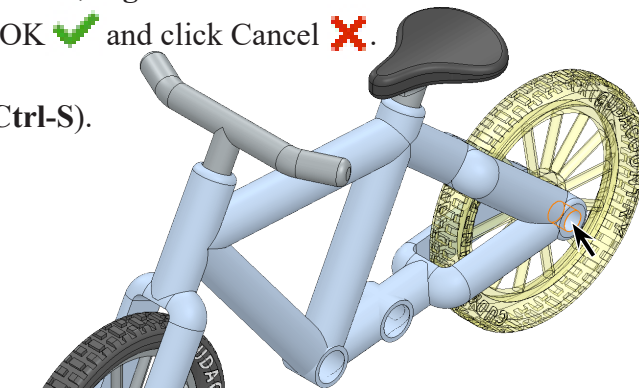
**Fig. 24**



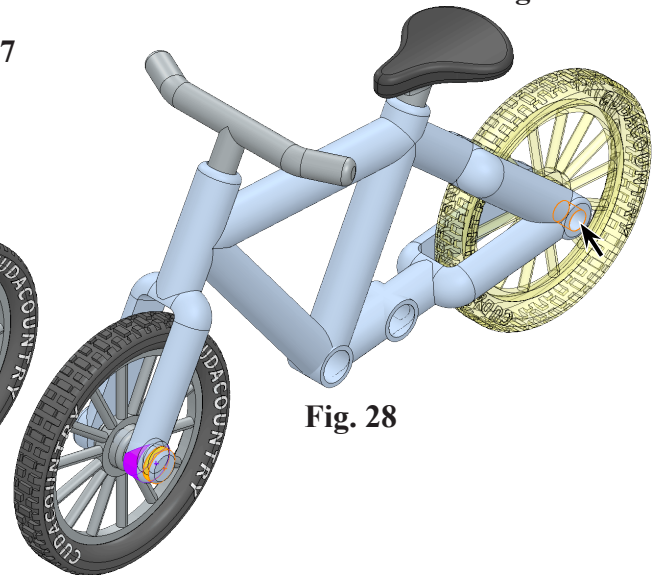
**Fig. 25**



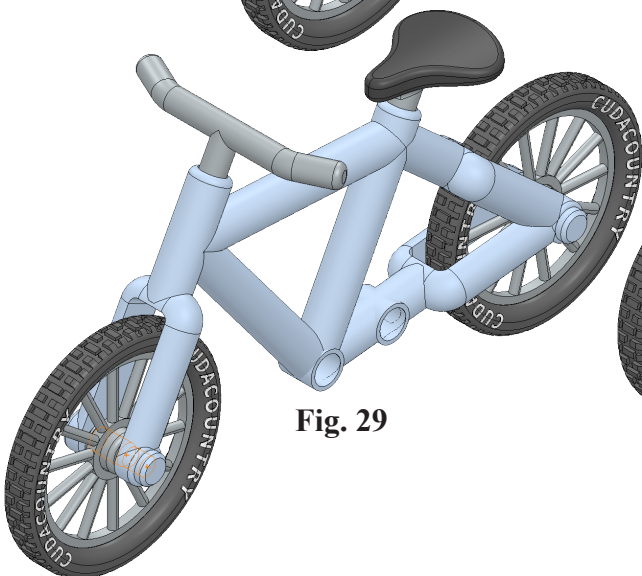
**Fig. 26**



**Fig. 27**



**Fig. 28**



**Fig. 29**

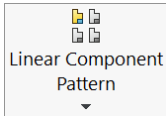
## K. Mirror Bike Axles.

Step 1. Rotate view to right side, Fig. 33. To rotate view, **Shift-Ctrl** click the Y axis of the Reference Triad

(bottom left corner of graphics area).

Step 2. **Ctrl** click **Right Plane** and both Bike Axles in the Feature Manager to select, Fig. 30.

Step 3. Click **Mirror Components** in the **Linear Component Pattern** flyout



on the Features toolbar.

Step 4. In the Mirror Property Manager:

Step 1: Selections

all were preselected

click **Next** to view mirrored components, Fig. 31

Step 5. Still in Mirror Property Manager:

Step 2: Set Orientation

Confirm mirrored components, Fig. 33

click **OK**.

Step 6. Save (Ctrl-S).

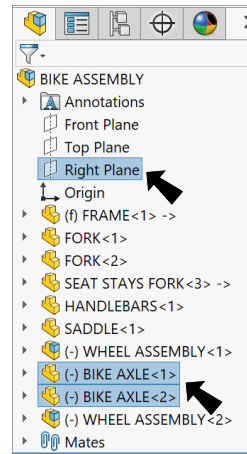


Fig. 30

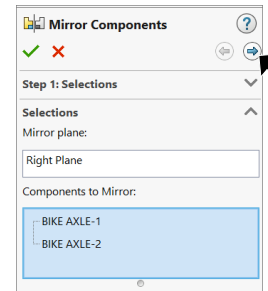


Fig. 31

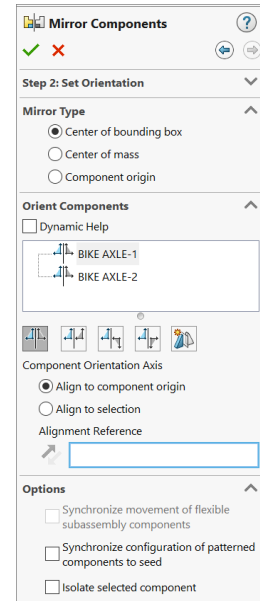


Fig. 32

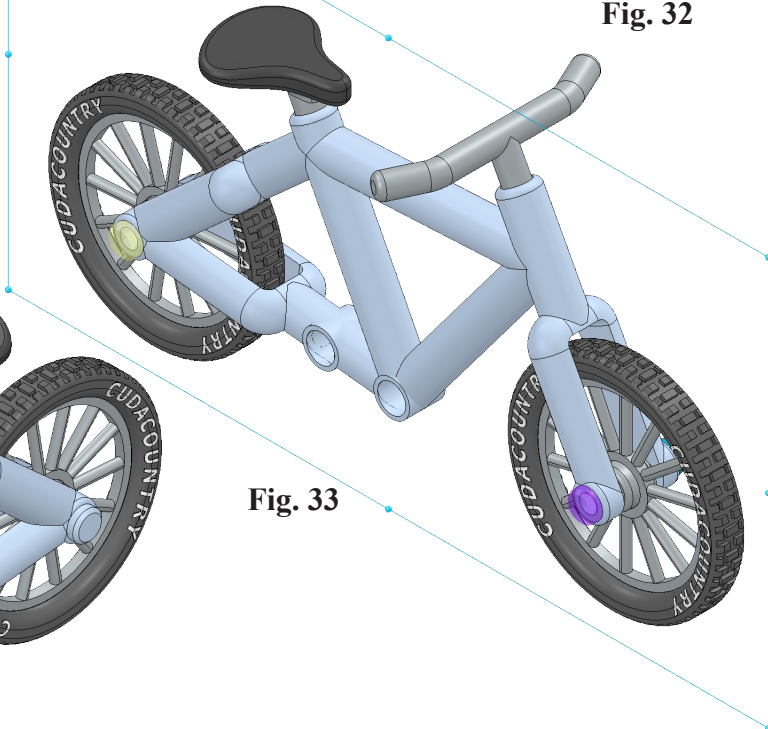


Fig. 33

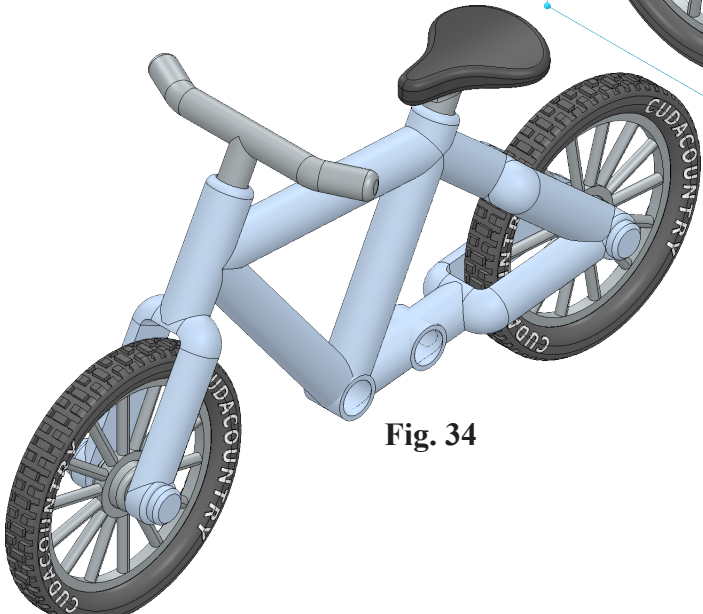


Fig. 34