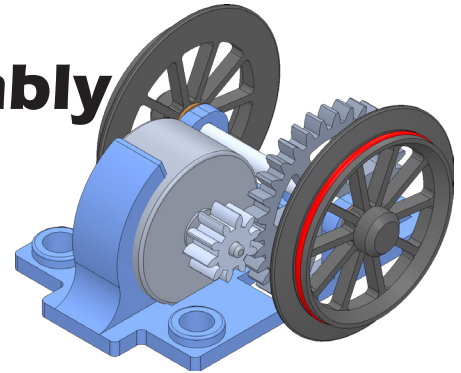




Chapter 14

Solar Train

Motor Bogie Assembly



A. Save as "MOTOR BOGIE ASSEMBLY".

Step 1. Open your **Bogie Assembly** file.

Step 2. Click File Menu > Save As.

Step 3. Key-in **MOTOR BOGIE ASSEMBLY** for the filename.

You now have Assembly files, BOGIE and MOTOR BOGIE. Next, we replace components in Motor Bogie Assembly.

B. Replace Bogie Bracket with Motor Bracket.

Step 1. Click **Isometric**  on the Standard Views toolbar. (Ctrl-7)

Step 2. Click the **BOGIE BRACKET**  component in the Feature Manager to select the component, **Fig. 1**.

Step 3. Click File Menu > Replace.

Step 4. In the Replace Manager set:
under Replace these components, **Fig. 2**
Bogie Bracket was preselected
under Instances to replace
select **All**
under With this one:
click **Browse** 
In the File Open dialog box
click **MOTOR BRACKET** and click Open
click OK .

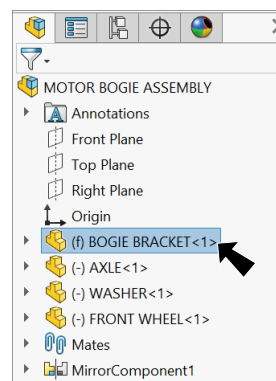


Fig. 1

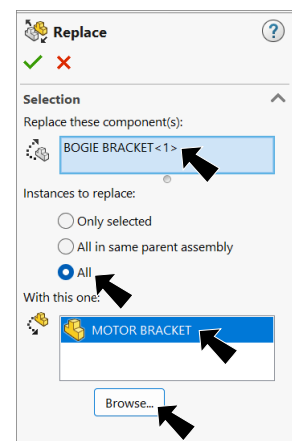


Fig. 2

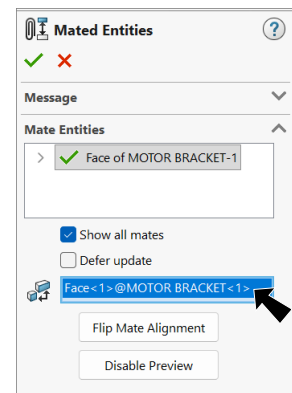


Fig. 3

Step 5. In the Mated Entities Manager set:
under Mated Entities, **Fig. 3**
click **Axle hole in leg of Motor Bracket**, **Fig. 4**
click OK .

Step 6. Save  (Ctrl-S).

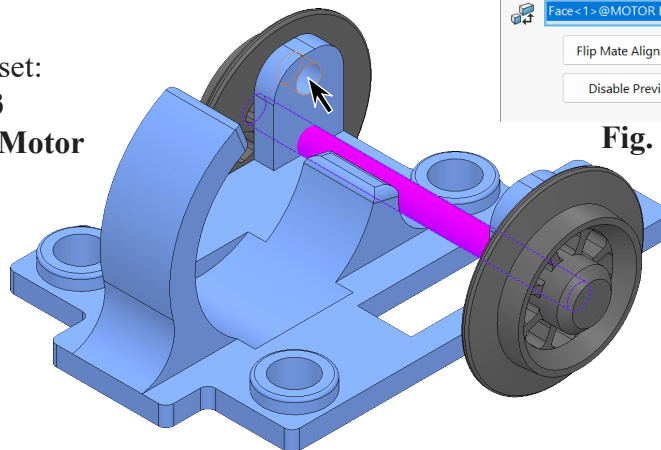
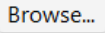


Fig. 4

C. Replace Front Wheel with Rear Wheel.

Step 1. Click the **FRONT WHEEL**  component in the Feature Manager to select the component, **Fig. 5**.

Step 2. Click File Menu > Replace.

Step 3. In the Replace Manager:
under Replace these components, **Fig. 6**
Front Wheel was preselected
under Instances to replace
select **All**
under With this one:
click **Browse** 
In the File Open dialog box
click **REAR WHEEL** and click Open
click OK .

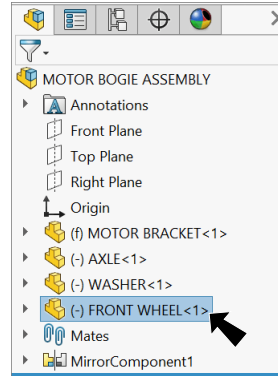


Fig. 5

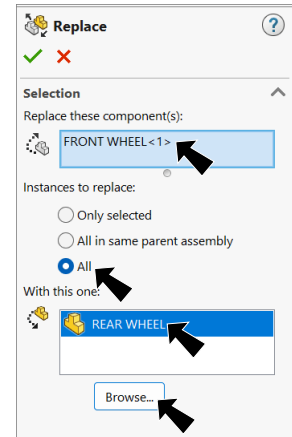


Fig. 6

Step 4. In the Mated Entities Manager click OK .

Step 5. Save  (Ctrl-S).

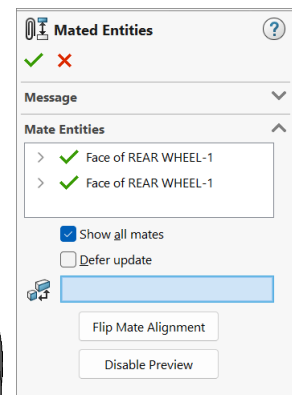


Fig. 7

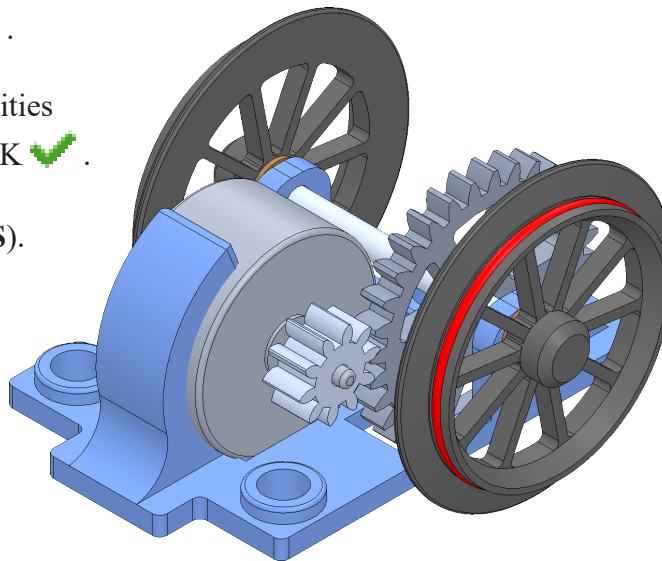
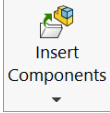


Fig. 8

D. Insert Band.

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

Step 2. Position Band as shown, **Fig. 9**.

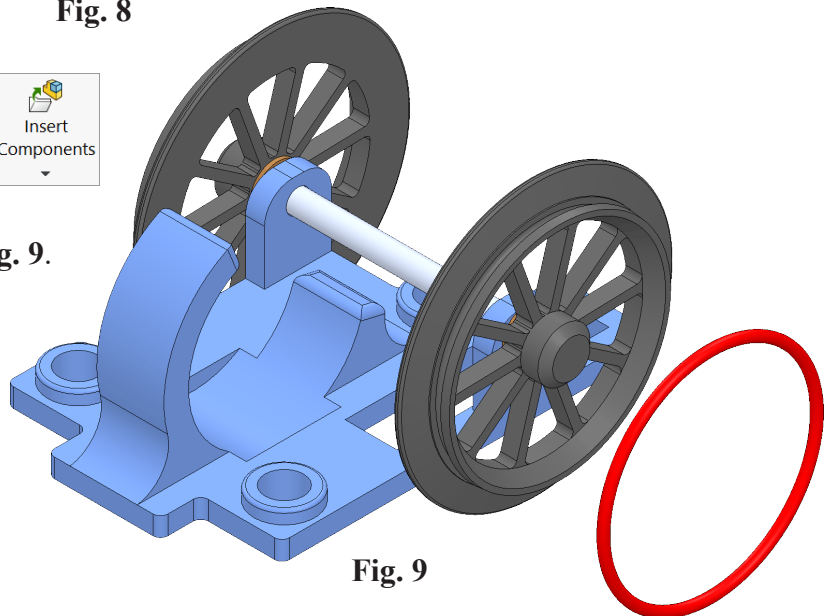
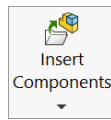


Fig. 9

E. Mate: Band.

Step 1. **Show Temporary Axis**, To show, Click View Menu > Hide/Show > Temporary Axis (Alt-V H X).

Step 2. Click **Mate**  on the Assembly toolbar.

Step 3. Click **Temporary Axis of Band** and a **cylindrical face of Wheel**, Fig. 10.

Step 4. Check **Lock rotation** in the Mate pop-up. Click Add/Finish Mate  to add **Concentric**  mate, Fig. 11.

Step 5. Click **Front**  on the Standard Views toolbar. (Ctrl-1)

Step 6. Expand the flyout Feature Manager design tree, expand **Rear Wheel** and click **Right Plane** , expand **Band** and click **Right Plane** , Fig. 12.

Step 7. Click **Distance**  in Mate pop-up, Fig. 13. Set distance 2.3. Click Add/Finish Mate  to add Distance mate.

Step 8. Click OK  in the Property Manager when done.

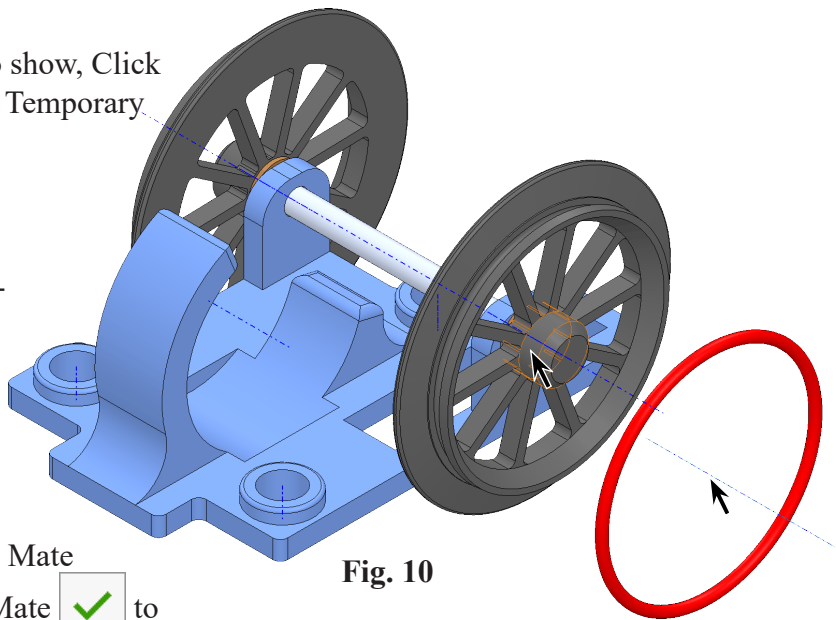


Fig. 10



Fig. 11

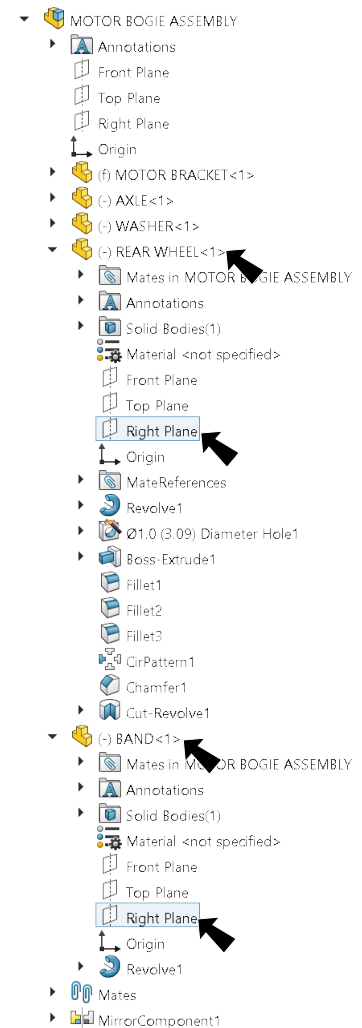


Fig. 12



Fig. 13

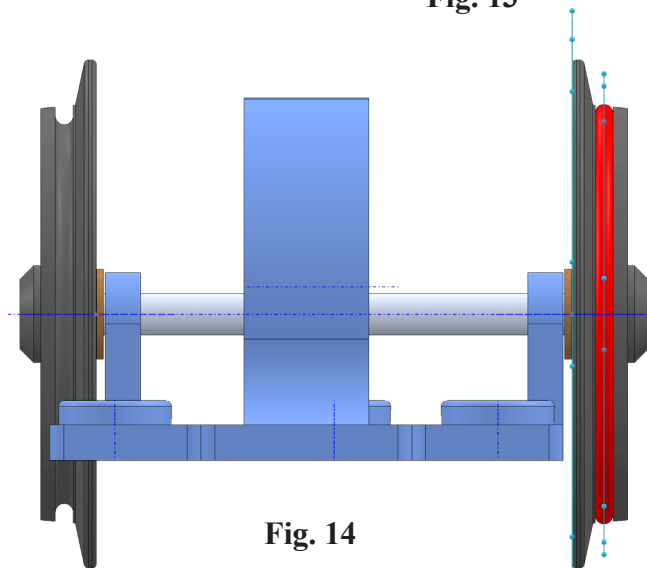


Fig. 14

F. Edit Mirror Component.

Step 1. **Hide Temporary Axis Alt-V H X.**

Step 2. Click **MirrorComponent1**  in the Feature Manager and **Edit Feature**  in the content toolbar, **Fig. 15**.

Step 3. In the Mirror Property Manager:
under Components to Mirror, **Fig. 16**
click the **Band** to add, **Fig. 17**
click OK .

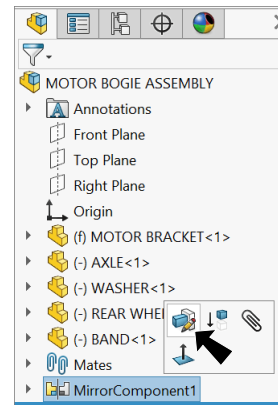


Fig. 15

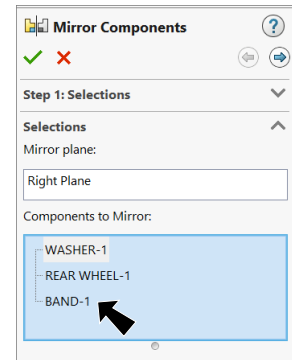


Fig. 16

Step 4. Save  (**Ctrl-S**).

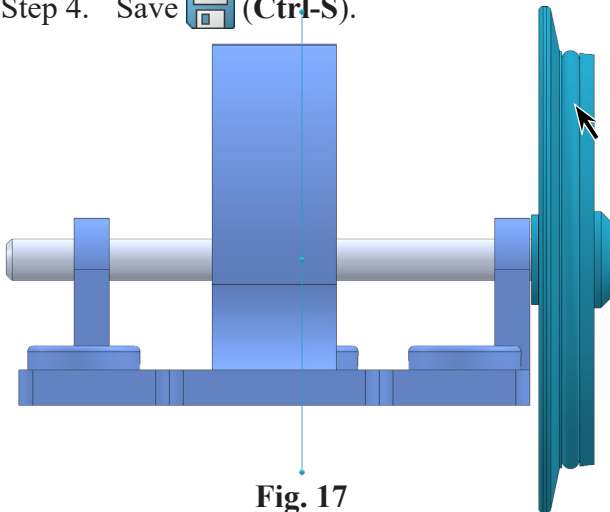


Fig. 17

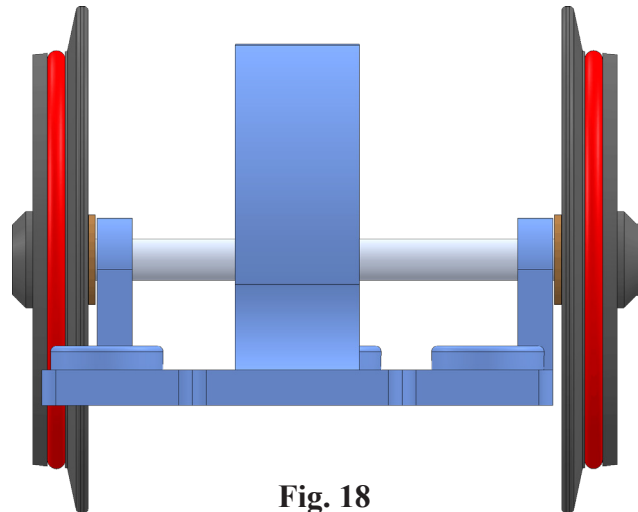
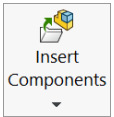


Fig. 18

G. Insert Motor.

Step 1. Click **Isometric**  on the Standard Views toolbar. (**Ctrl-7**)

Step 2. Click **Insert Components**  on the Assembly toolbar.

Step 3. Position Motor as shown, **Fig. 9**.

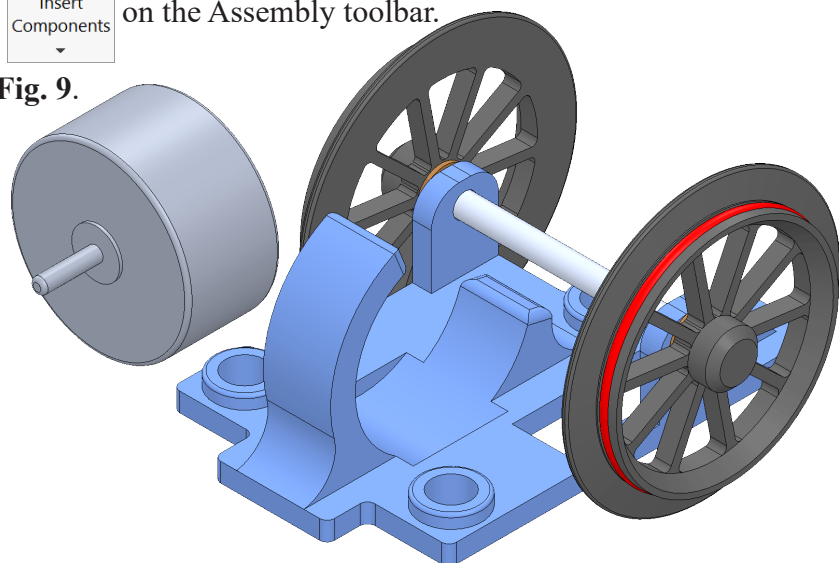


Fig. 19

H. Mate: Motor.

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

Step 2. Click cylindrical face of motor mount in Bracket and a cylindrical face of Motor, Fig. 20.

Step 3. Check **Lock rotation** in the Mate pop-up. Click Add/Finish Mate  to add **Concentric**  mate, Fig. 21.

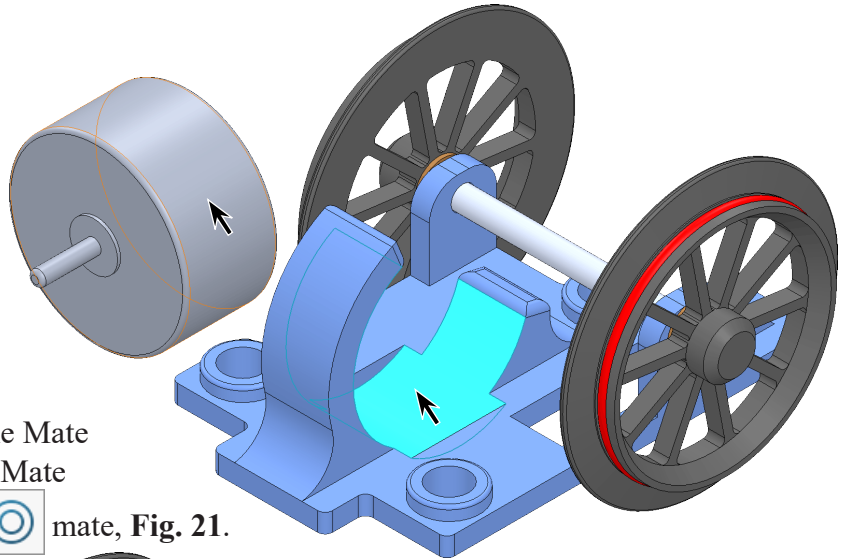


Fig. 20

Step 4. Click **Top**  on the Standard Views toolbar. (Ctrl-5)



Fig. 21

Step 5. Expand the flyout Feature Manager design tree, click **Right Plane** , expand **Motor** and click **Front Plane** , Fig. 23.

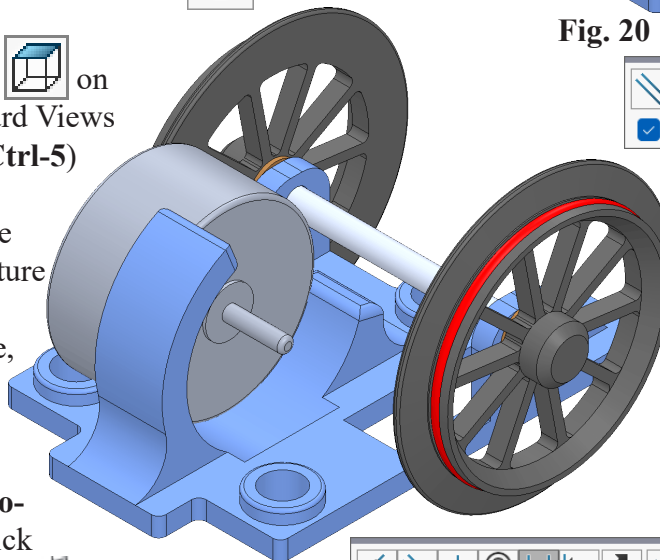


Fig. 22



Fig. 24

Step 6. Click **Distance**  in Mate pop-up, Fig. 24. Set distance 4.2. Click **Flip Dimension**  until **Motor** is centered between on the motor mount, Fig. 25. Click **Add/Finish Mate**  to add Distance mate.

Step 7. Click OK  in the Property Manager.

Step 8. Save  (Ctrl-S).

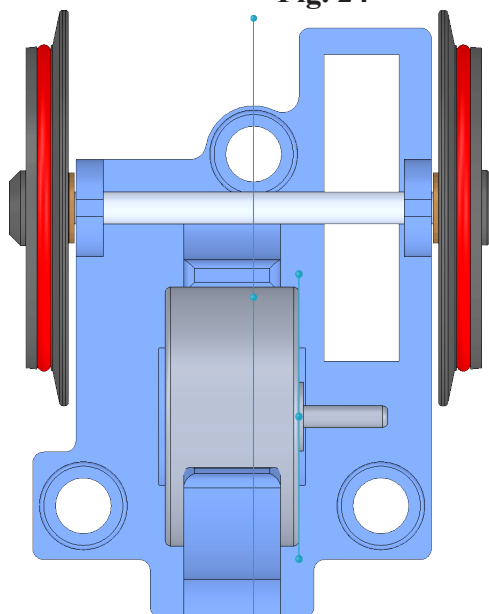


Fig. 25

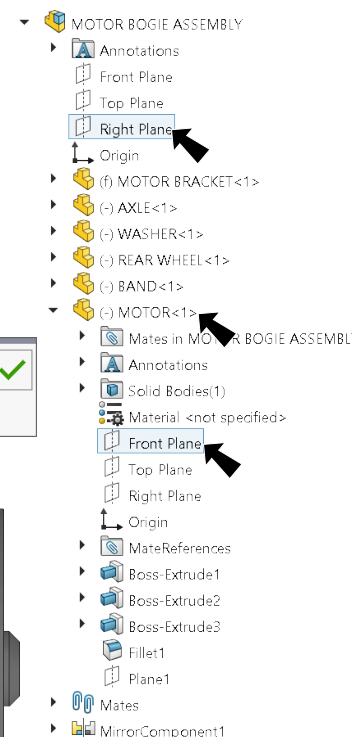
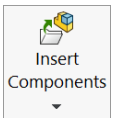


Fig. 23

**Right
to
Front
Distance 4.2**

I. Insert Gears.

Step 1. Click **Isometric**  on the Standard Views toolbar. (Ctrl-7)

Step 2. Click **Insert Components**  on the Assembly toolbar.

Step 3. **Ctrl click both GEAR** files and click Open from Open dialog box.

Step 4. In the Begin Assembly Property Manager set:

click **Keep Visible** , **Fig. 26**

under Part/Assembly in Insert

select **GEAR 10T** to highlight.

**Release
component
when cursor
changes to**

Step 5. Position **Gear 10T near Mo-
tor shaft**, **Fig. 27**. When
Gear snaps into place and
cursor changes to indicate

a Concentric mate ,
click to release Gear.

Step 6. Check Add/Fin-

ish Mate 

in Mate pop-up

toolbar to add a **Concen-**

tric  mate, **Fig. 28**.

Fig. 27



Fig. 28

Step 7. Back in the Begin Assembly Property Manager:

under Part/Assembly in Insert, **Fig. 29**

select **GEAR 32T** to highlight it.

Step 8. Position **Gear 32T near Rear Axle**, **Fig. 30**. When

Gear snaps into place and cursor changes to indi-

cate a Concentric mate , click to release Gear.

Step 9. Check **Lock Rotation** and Add/Finish Mate

 in Mate pop-up toolbar to add a **Con-**

centric  mate, **Fig. 31**. Lock here

as Shaft will rotate.

Step 10. Click OK  in the Property Manager.



Fig. 31

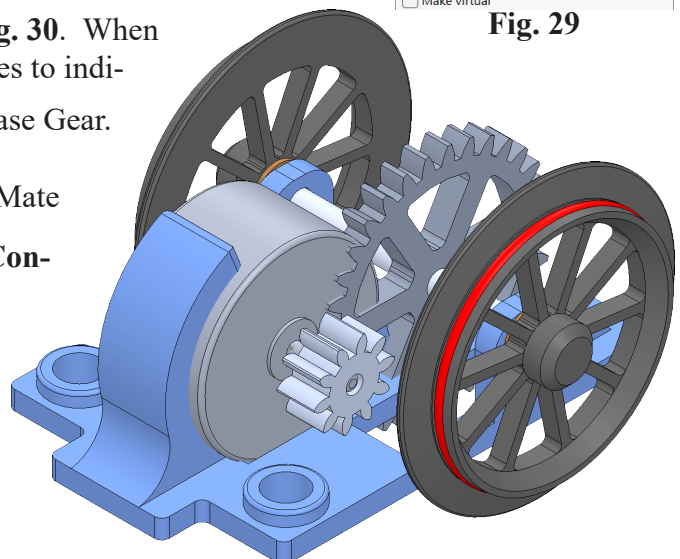


Fig. 30

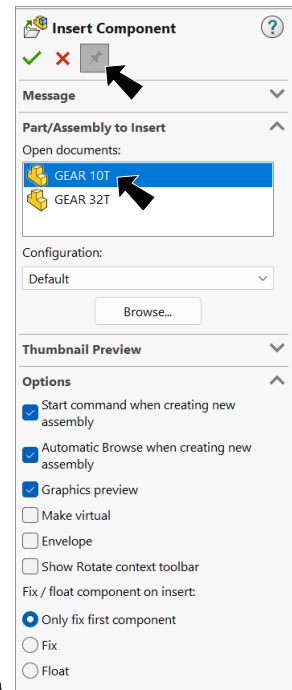


Fig. 26



Fig. 29

J. Mate: Gears.

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

Step 2. Click **outside face of Motor** and **outside face of Gear 10T**, Fig. 32.

Step 3. Click **Distance**  in Mate pop-up, Fig. 33. Set **distance 6.9** and press ENTER. The Gear should be positioned out from Motor, Fig. 34. If positioned in opposite direction, click **Flip Dimension**  in the Mate pop-up. Click Add/Finish Mate  to add Distance mate.

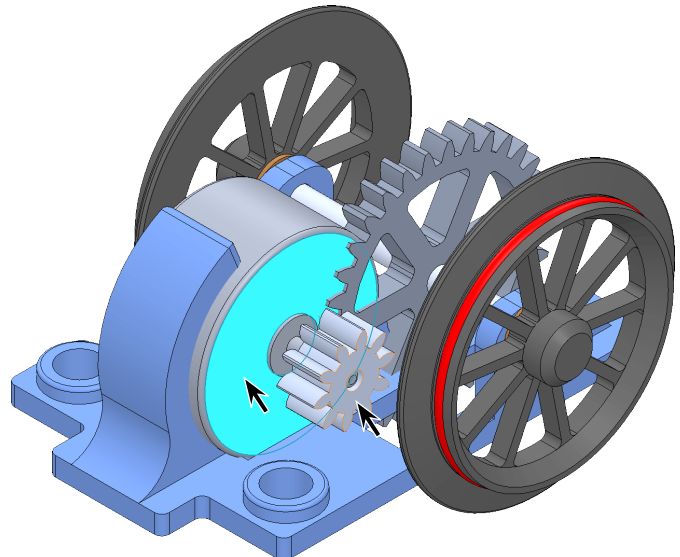


Fig. 32



Fig. 33

Step 4. Click **outside face of both Gears**, Fig. 35.

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

Step 6. Click OK  in the Property Manager when done.

Step 7. Save  (Ctrl-S).

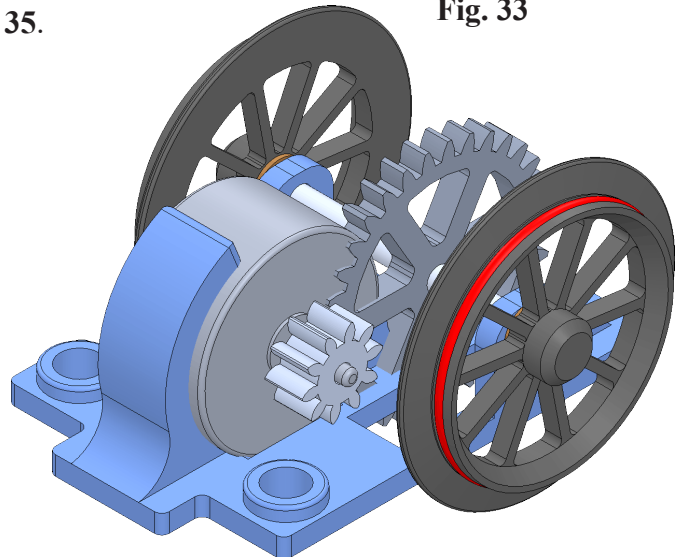


Fig. 34

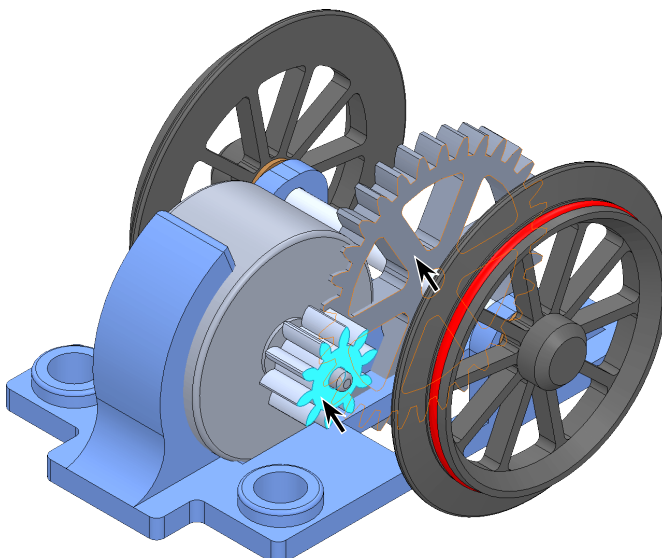


Fig. 35

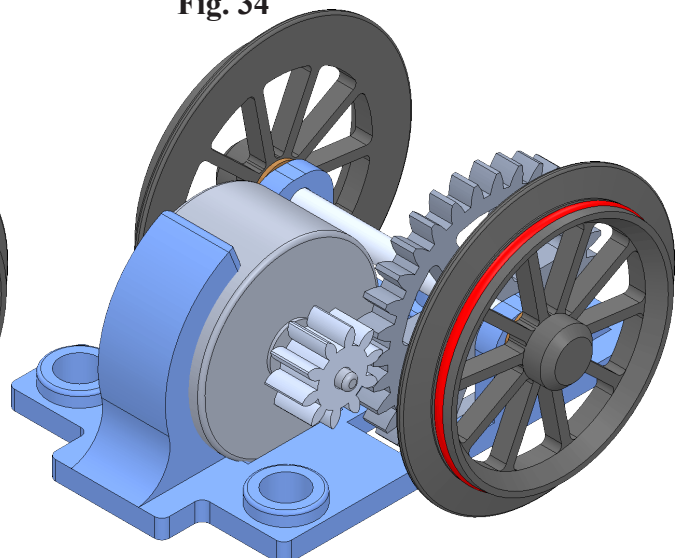


Fig. 36