

Mission 9

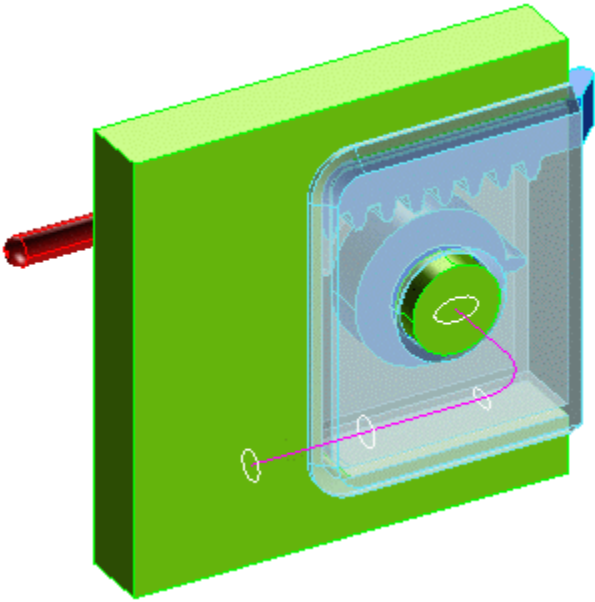
This door mechanism has no handle, Moldey, and nearly all of the gears inside have been stripped. We need to make a new handle and replace those gear teeth so we can get through this door!

Step One:

Let's get moving...

- MAXIMIZE the graphics window.
- DRAG the HISTORY TREE shut.
- FIT to screen if necessary.

Your door mechanism is a sleek Italian design by Bulfoni. It should look like this:

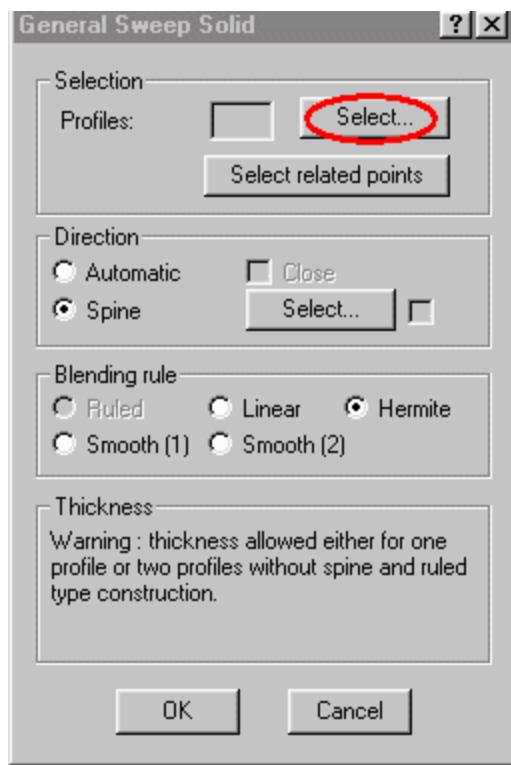


Step Two:

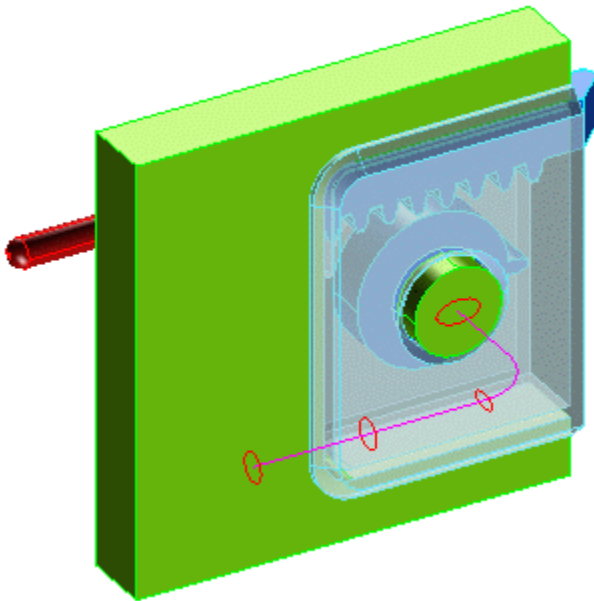
First, let's make a solid out of these profiles

- You want **Insert**  **Solid**  **Sweep**  **Spined Solid...**
- CLICK the **Profiles, Select** button.
- DO NOT hit OK or anything else in the dialog yet.

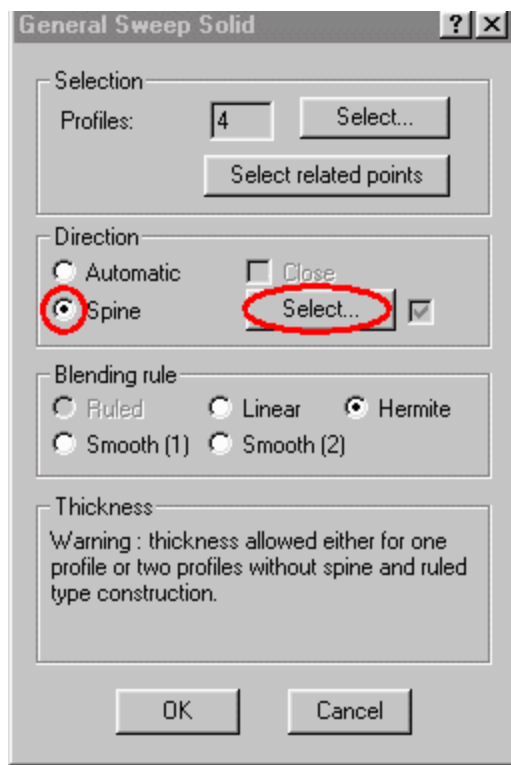
You won't see anything happen, yet.
Keep going:



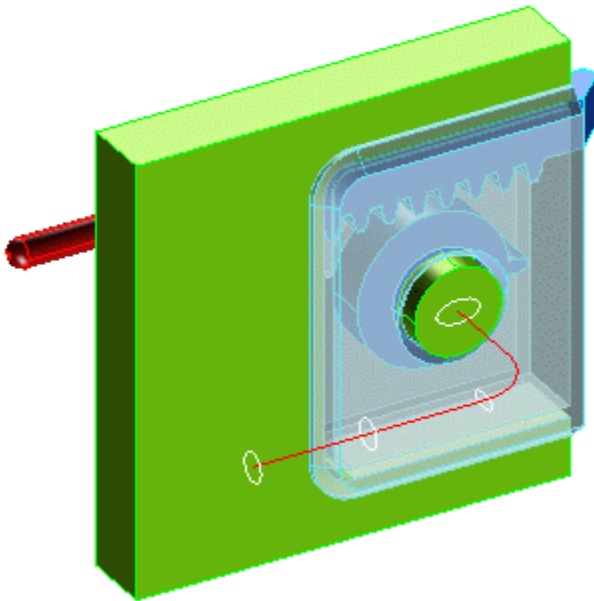
- Starting at either end, consecutively CLICK on the four oval-shaped profiles.



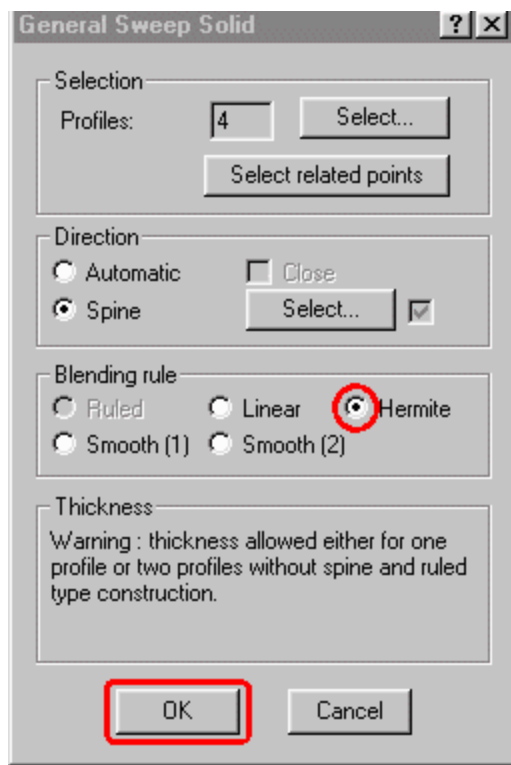
- RIGHT MOUSE CLICK.
- Hit **End of Selection**.
- Now you want to set Direction to be **Spine**.
- Now, CLICK its **Select** button.
- DO NOT hit OK or anything else in the dialog yet.
You STILL won't see anything happen.



- CLICK the SPINE.



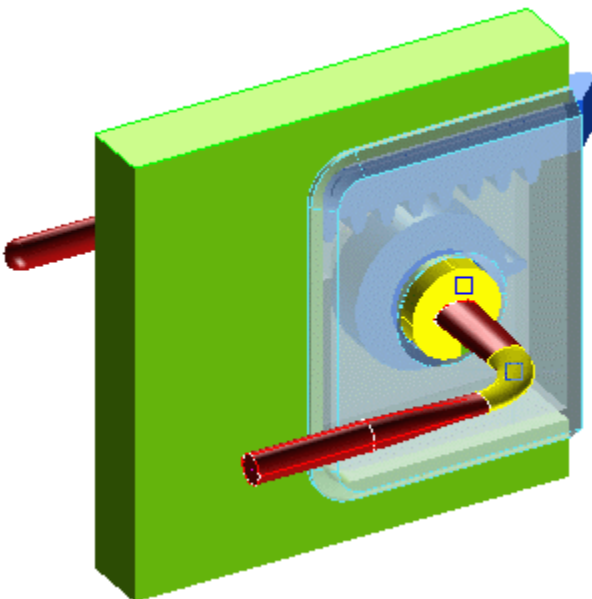
- You want the **Blending Rule** set to **Hermite**.
- Now you can CLICK **OK**.



Step Three:

We need to join the handle to the cylinder. Go to the Pulldown Menu:

- You want **Insert** → **Solid** → **Boolean** → **Union**.
- CLICK any part of the handle.
- CLICK the cylindrical solid.
- RIGHT MOUSE CLICK anywhere.
- Hit **End of Selection**.
- Hit **ESC** to end the command.

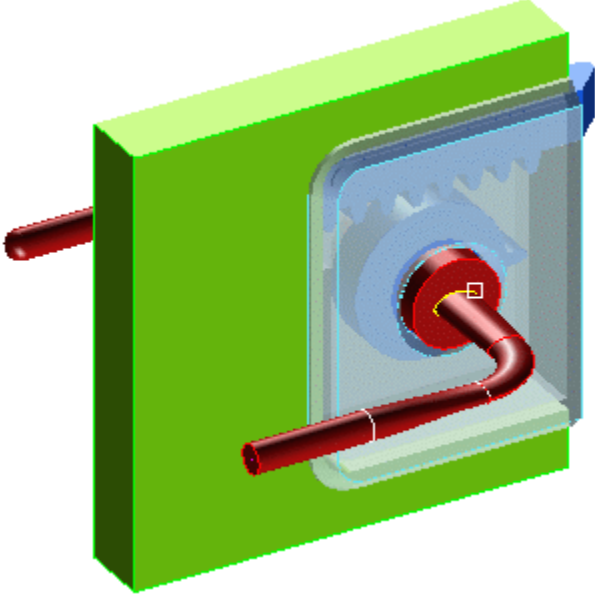


Now the handle is joined to the cylinder.

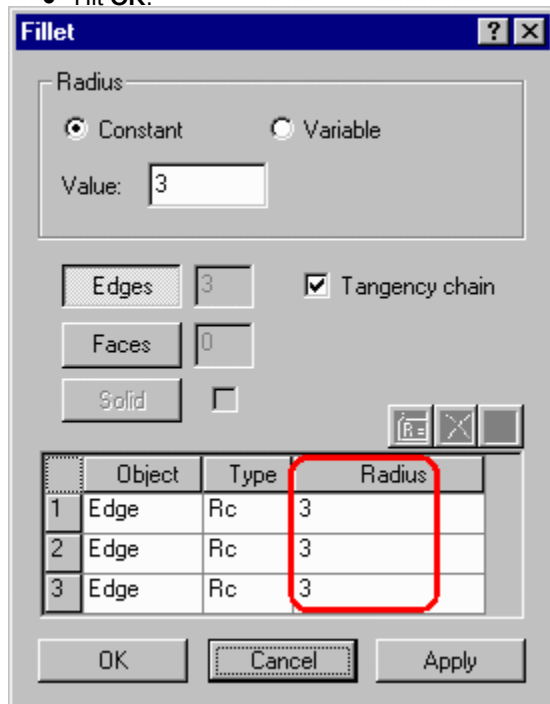
Step Four:

Let's **Fillet** some sharp edges.

- RIGHT MOUSE CLICK the JUNCTION EDGE between the handle and the cylinder.



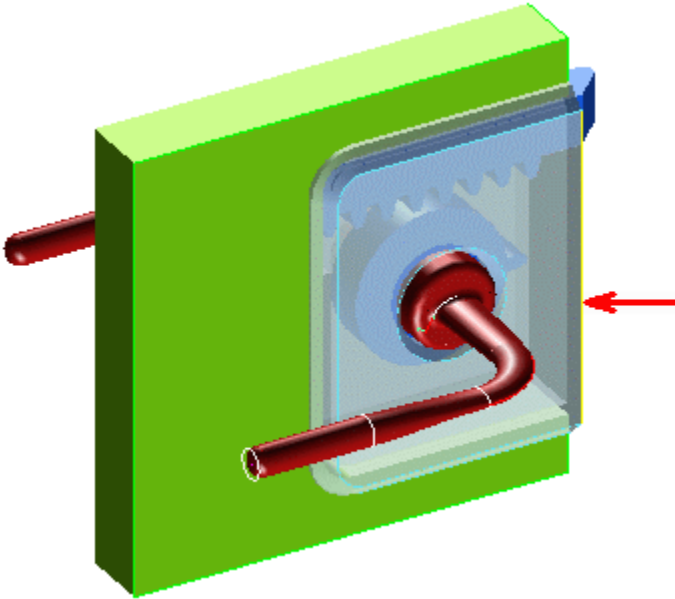
- You want **Insert**  **Fillet**.
- CLICK the sharp edge of the CYLINDER.
- CLICK the HANDLE EDGE, too.
- Make sure the radius values are at 3
- Hit **OK**.



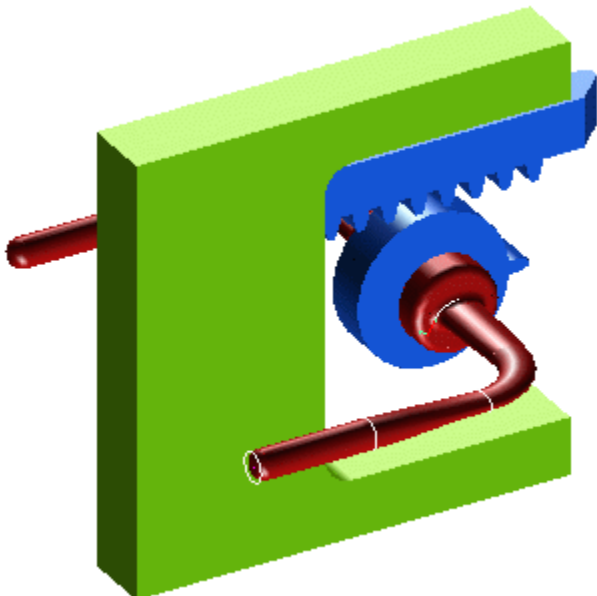
Step Five:

We have to fix the gears, but that transparent cover is in our way. Let's hide it so we can see what we're doing.

- RIGHT MOUSE CLICK the edge of the cover.
- You want **Select**  **Select Solid**.
- RIGHT CLICK the edge again.
- You want to **Hide** the cover.



Now the cover is out of the way.

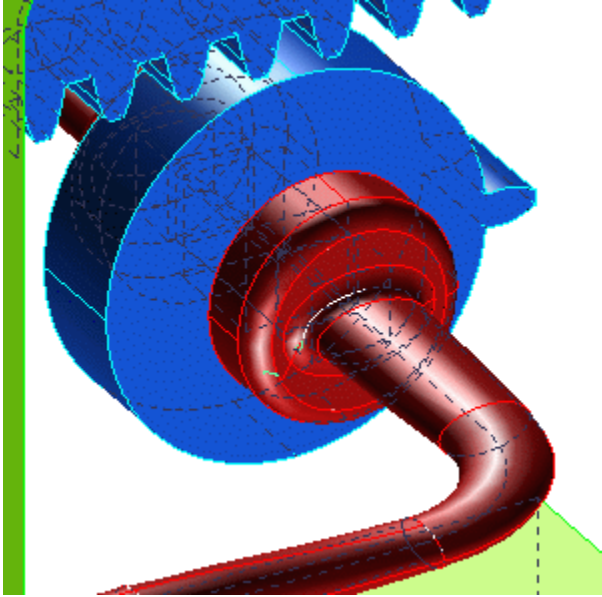


Step Six:

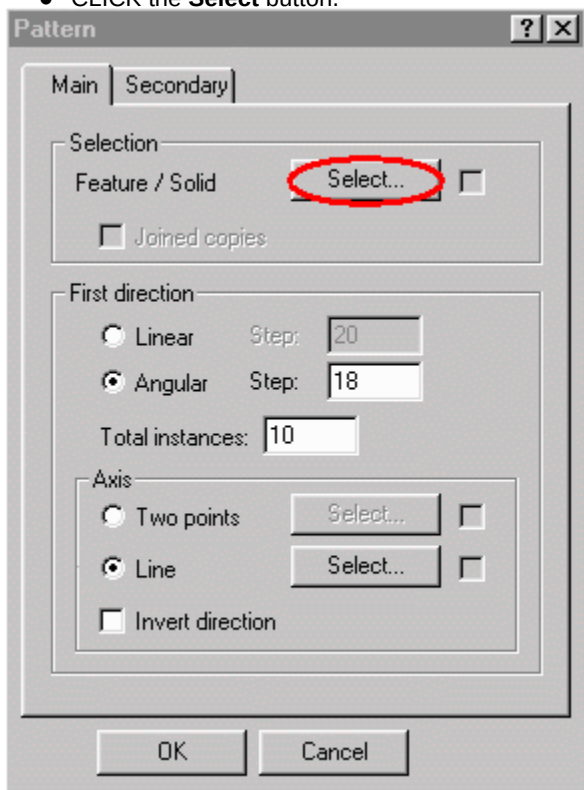
Now let's use the original model to make more gear teeth.

You have to **Zoom Window** to see the details.

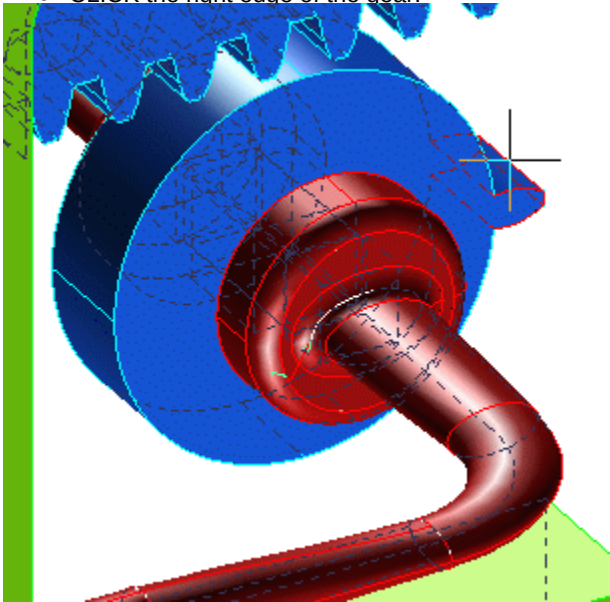
- Switch to **Hidden Line View**.



- From the Pulldown Menu select **Insert** → **Solid** → **Pattern**.
- CLICK the **Select** button.



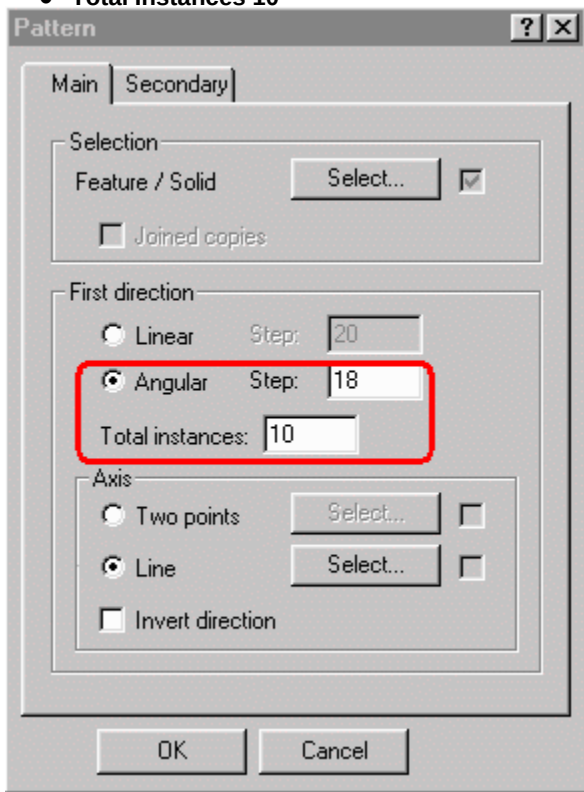
- CLICK the right edge of the gear.



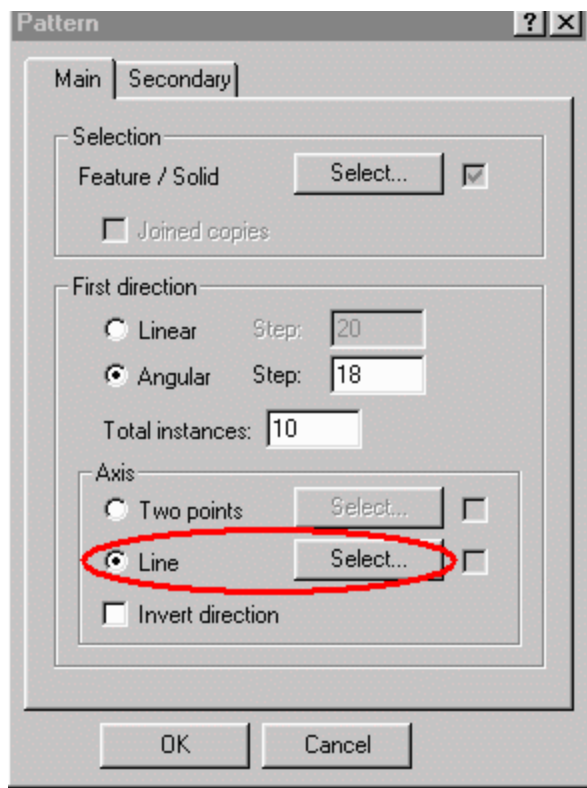
Make sure the settings are right.

They should be:

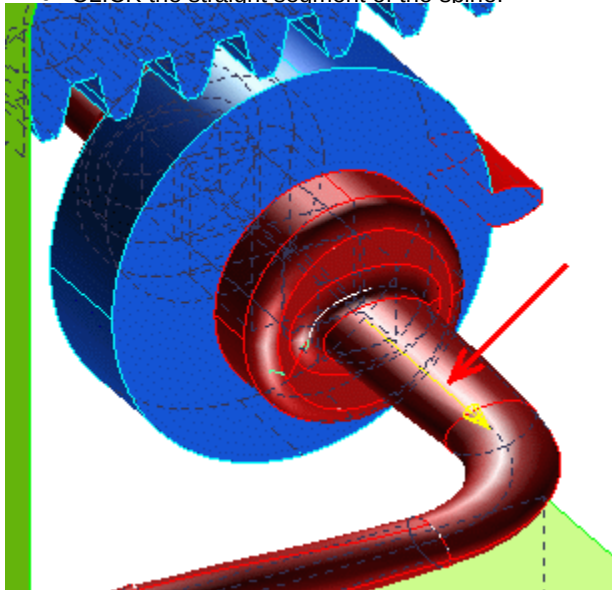
- **Angular**
- **Step 18**
- **Total Instances 10**



- CHANGE the Axis to **Line**.
- CLICK the **Select** button.



- CLICK the straight segment of the spine.



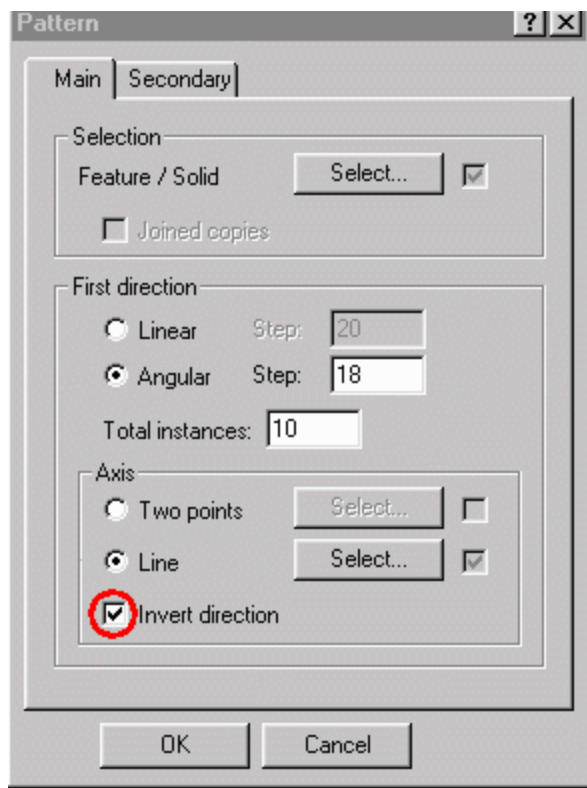
This is IMPORTANT, Moldey...

We need to know which way the new teeth are going to add on. Here's how we determine that:

RULE OF THUMB:

Point your right thumb in the direction of the arrow.
The pattern will instance in the same direction as the curl of your fingers.

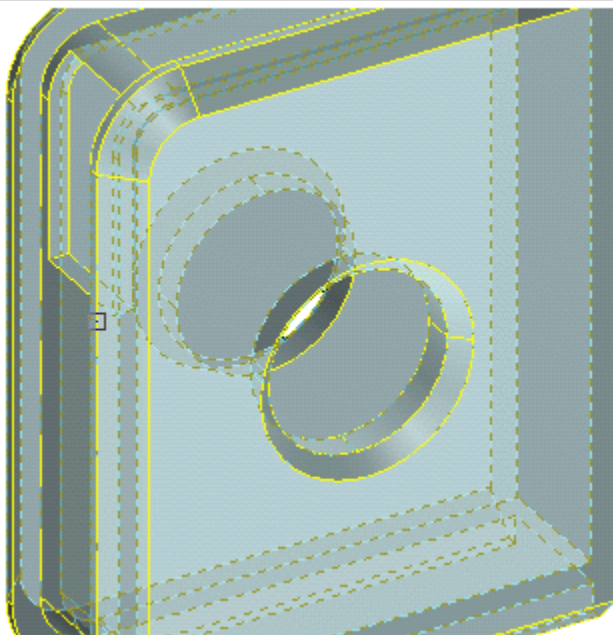
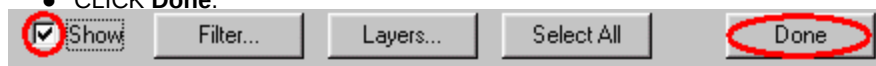
- **Invert Direction** if necessary.
- Hit **OK**.



Step Seven:

Let's bring back the cover.

- From the pulldown menu select **View** → [Unhide](#).
 - In the Parameter Area Check the **Show** box.
 - CLICK any edge of the clear cover.
- It disappears. That means it's unhidden.
- CLICK **Done**.

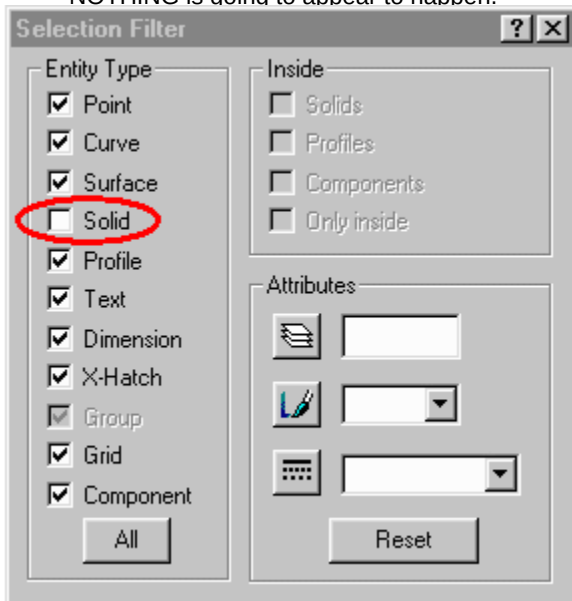


Step Eight:

I need to show you another way to look at this model, Moldey. This is an important display mode so we can see the models in a more realistic way.

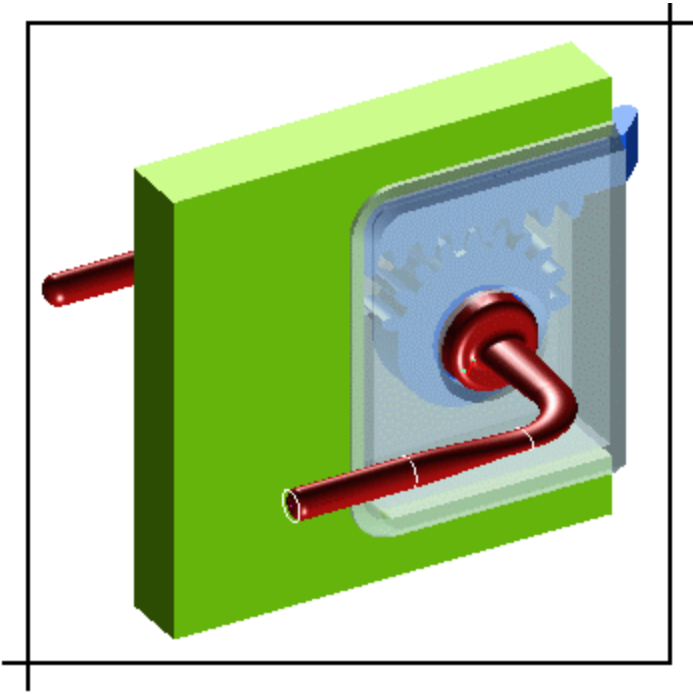
- CLICK on **Previous View**.
- From the Pulldown Menu select **View** → **Display** → **Shaded**.
- From the Pulldown Menu select **View** → **Hide**.
- RIGHT MOUSE CLICK.
- Hit **Select** → **Filter...**
- Deselect **Solid**.

NOTHING is going to appear to happen.

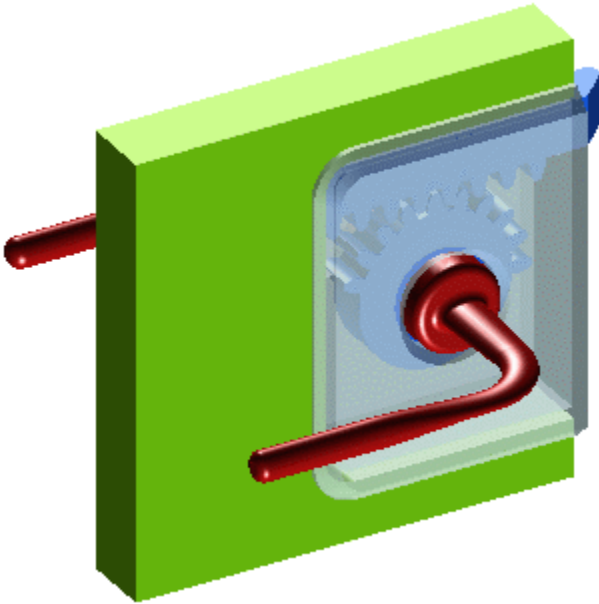


Now you need to select the ENTIRE model in a window.

- CLICK a point ABOVE and to the RIGHT of the model.
- CLICK a point BELOW and to the LEFT of the model.



Congratulations, Moldey! You did a beautiful job fixing the handle.
Now, open that door and let's get out of here!



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