

WALL CLOCK KIT SEBRINGVILLE



A clock is a precision mechanical instrument containing many slowly moving parts. There are over a hundred points of contact where friction works to bring it to a stop.

Take your time assembling this kit, and pay attention to the details. Great pains have been taken to craft these instructions to ensure your success. If there are any steps that seem unclear, please let us know.

Before you begin, check that there are no missing or damaged pieces in the kit. A parts list is provided to help identify each piece.

Finally, read through all the instructions before you begin. This will help you understand how each piece fits into the finished clock.

ABONG
i n c o r p o r a t e d

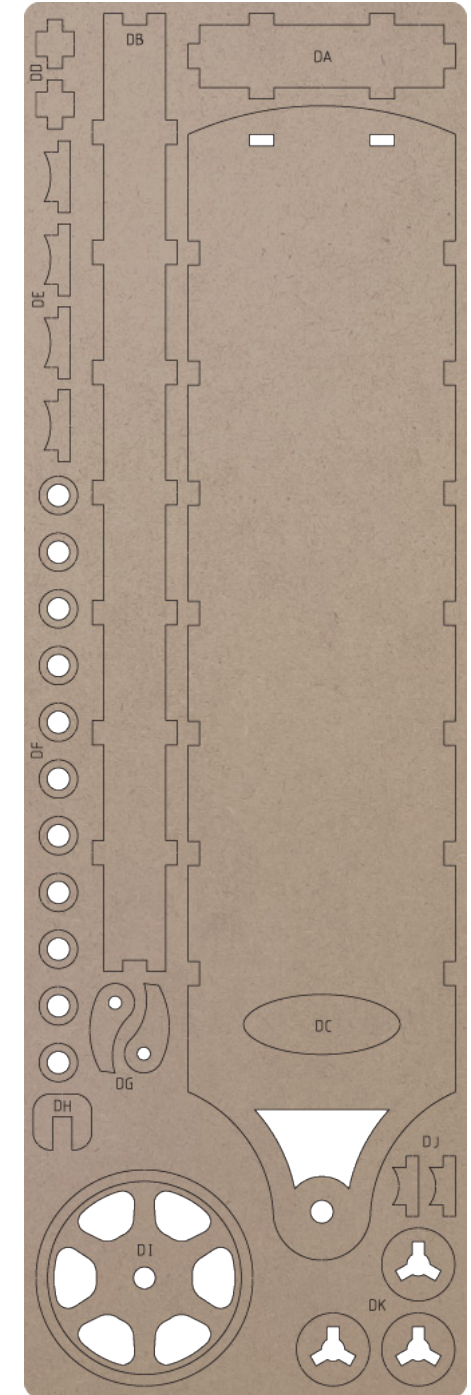
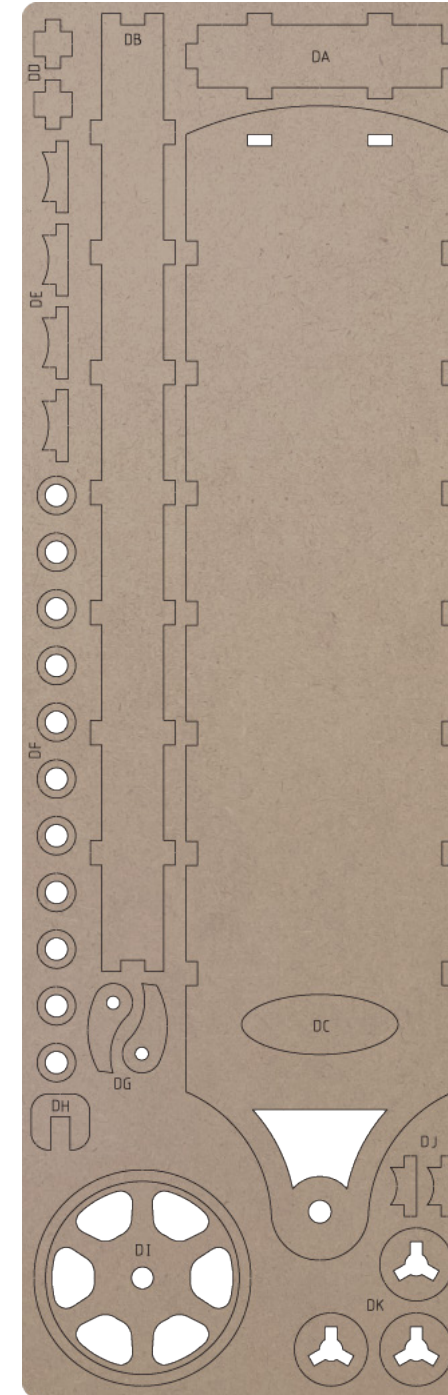
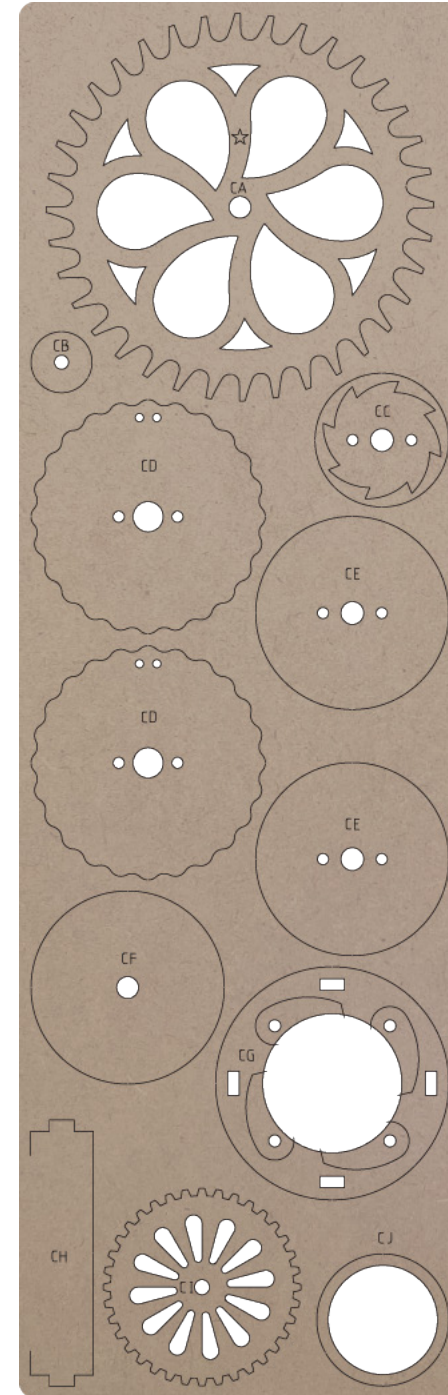
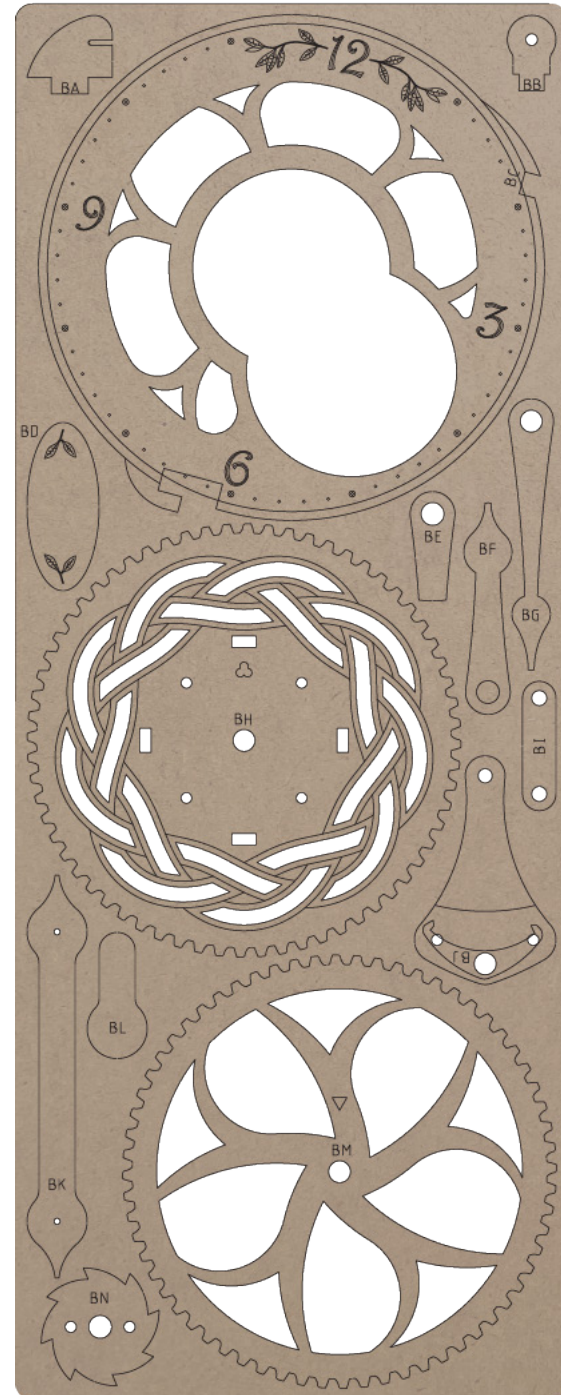
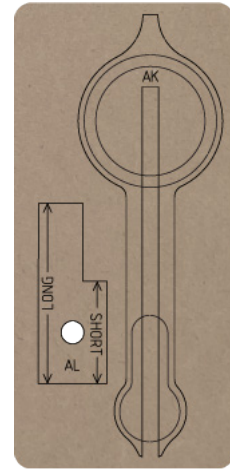
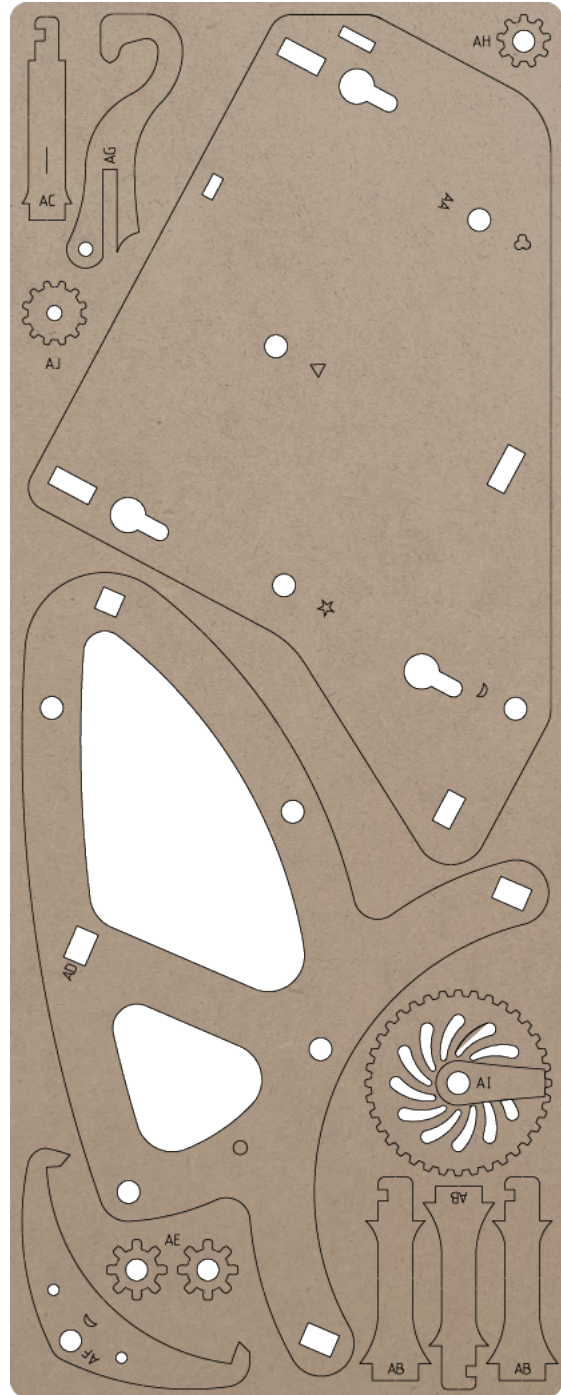
Made in Canada by
ABONG, Inc
5-775 Woodlawn Road W
Guelph, ON N1K 1Y7



WARNING!
CHOKING HAZARD - CONTAINS
SMALL PARTS. NOT RECOMMENDED
FOR CHILDREN UNDER 3 YEARS

DAMAGED OR MISSING PARTS?
email: service@abong.com

- 1.** Six laser cut sheets are supplied with the kit.
- There are two thicker boards, one large and one small with parts labels beginning with 'A'
 - There is one thinner board with parts labels beginning with 'B'
 - There is one thinner board with parts labels beginning with 'C'
 - There are two identical thinner boards with parts labels beginning with 'D'



2. The kit also contains a number of other components needed to complete the clock.

Tube (6mm carbon fiber)



Pendulum rod (4mm carbon fiber) - 2 pieces



Dial train rod (4mm carbon fiber)



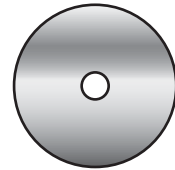
Small dowel (3mm birch)



Small axle pin (birch)



Metal weight (28mm x 1mm)



Adjustment screw



Counterweight cord



- 3.** The tools needed to assemble this kit are:
- Razor saw (42 teeth per inch)
 - Scissors

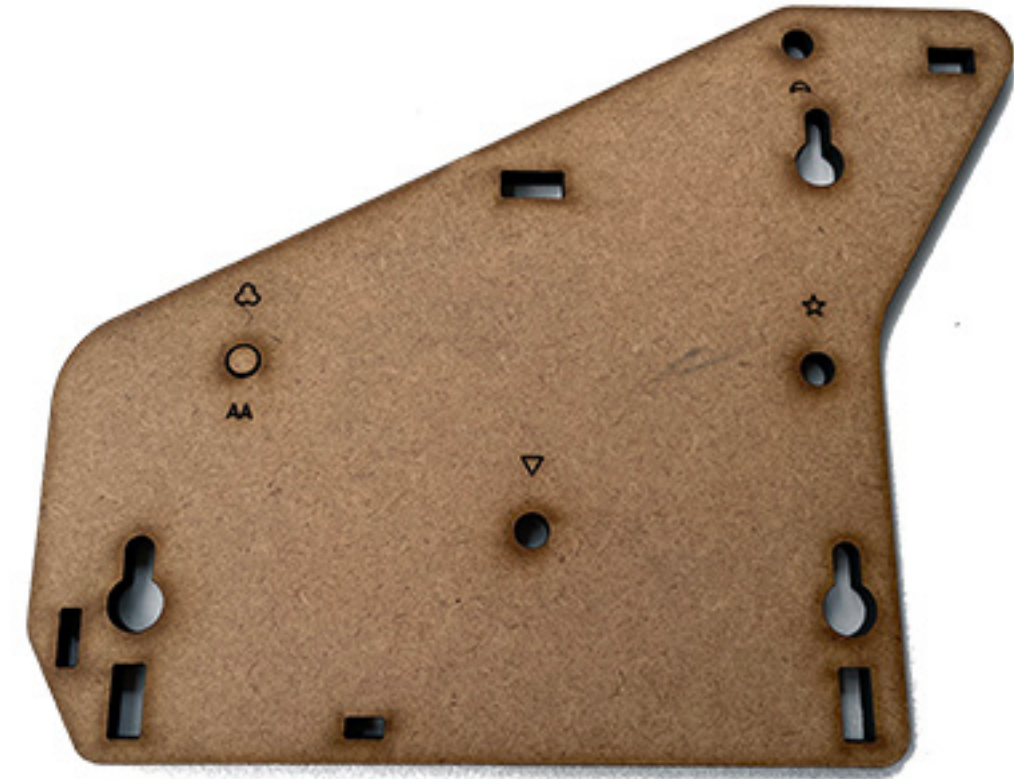
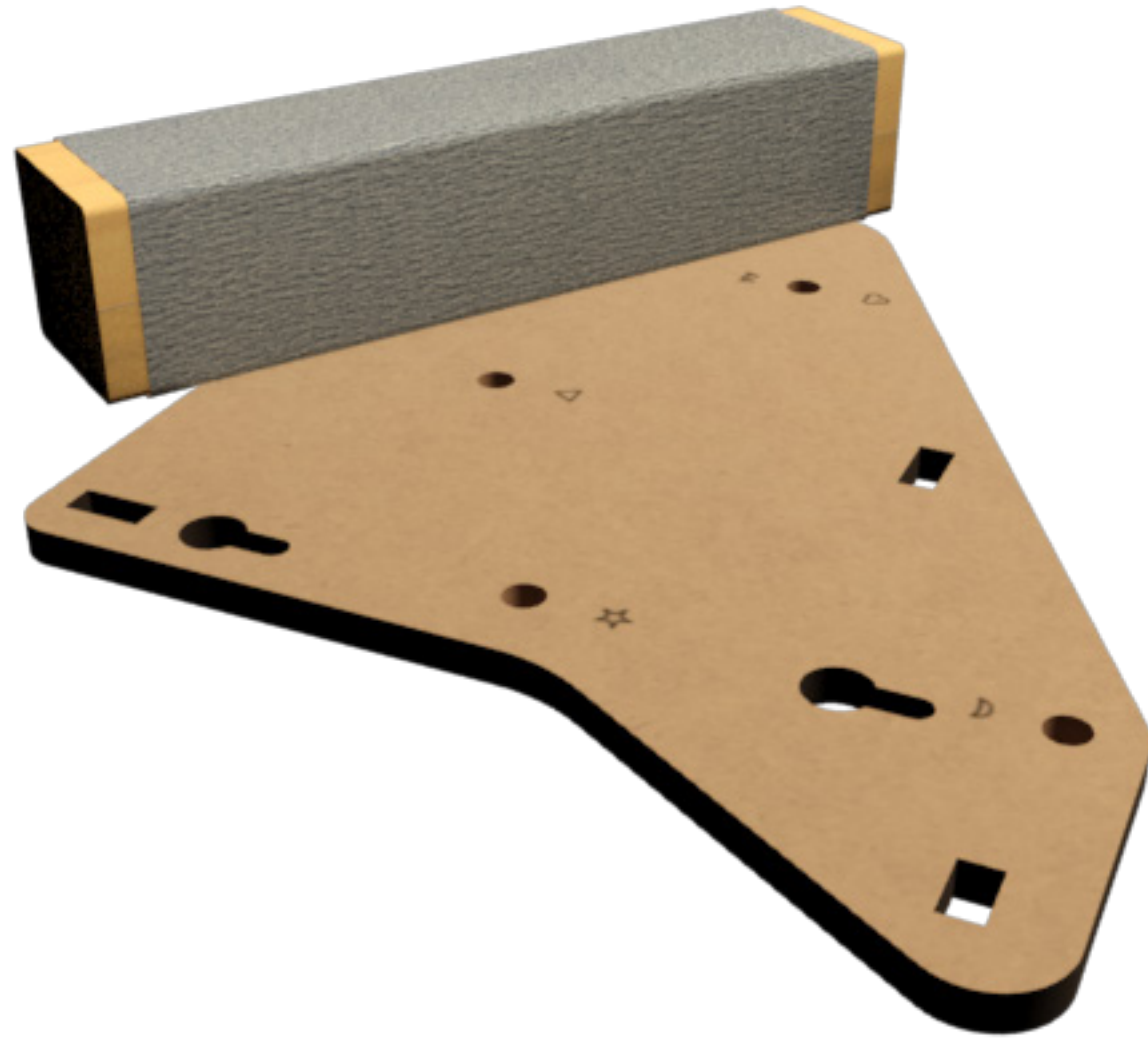


The supplies needed to complete the kit are:

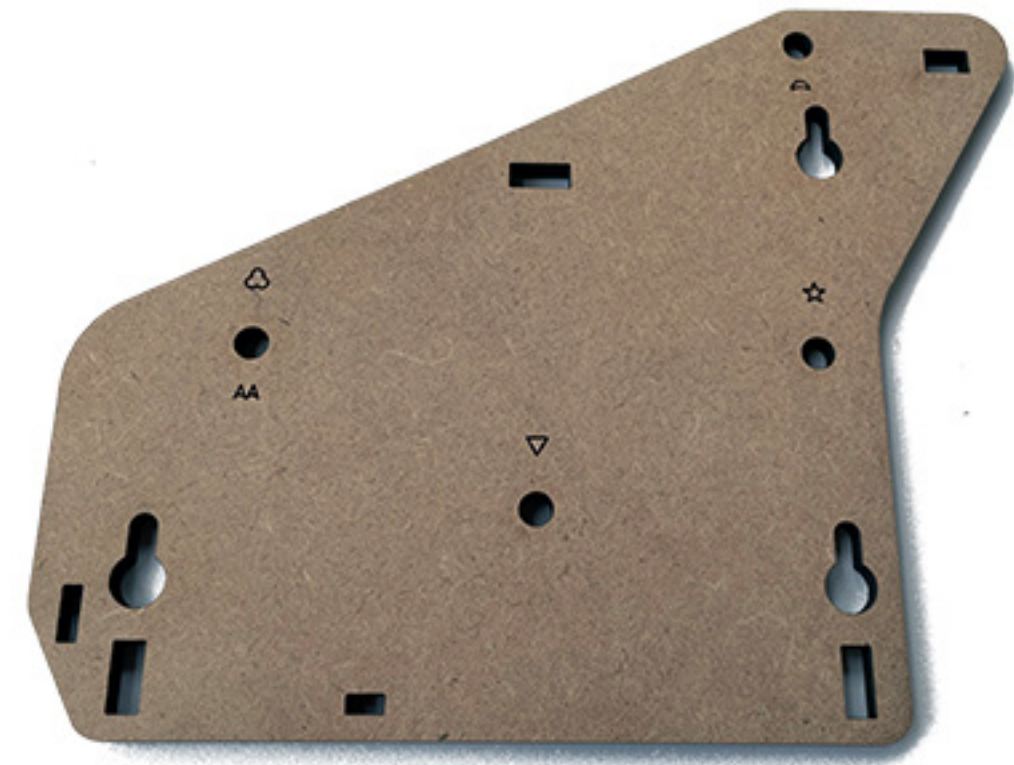
- Two or three sheets of good quality, fine grit (220) sandpaper
- Cyanoacrylate gel glue (also called "CA", crazy, or super glue).
- Wood glue (also called carpenter's or PVA glue)
- One pack (6000 count) BBs (Daisy or Crosman)
- Block of scrap wood (optional)



4. Using 220 grit sandpaper, sand both faces of each part to remove blemishes and residue left by the laser cutting process. For large pieces, use a sanding block, which can be as simple as a piece of scrap wood with sandpaper wrapped around it.



BEFORE

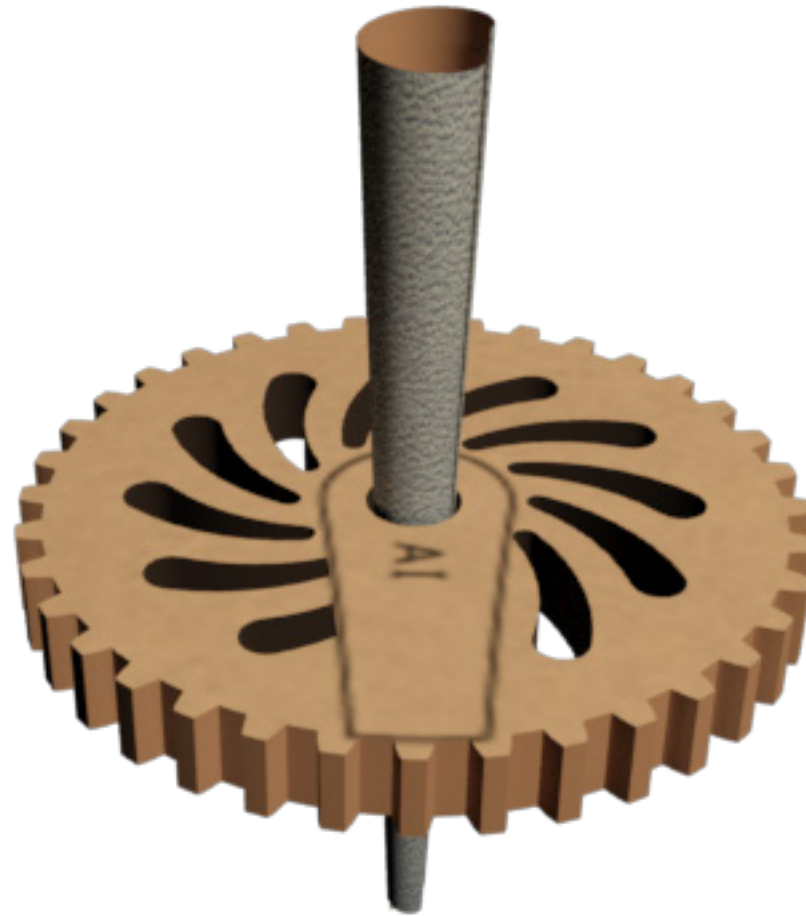


AFTER

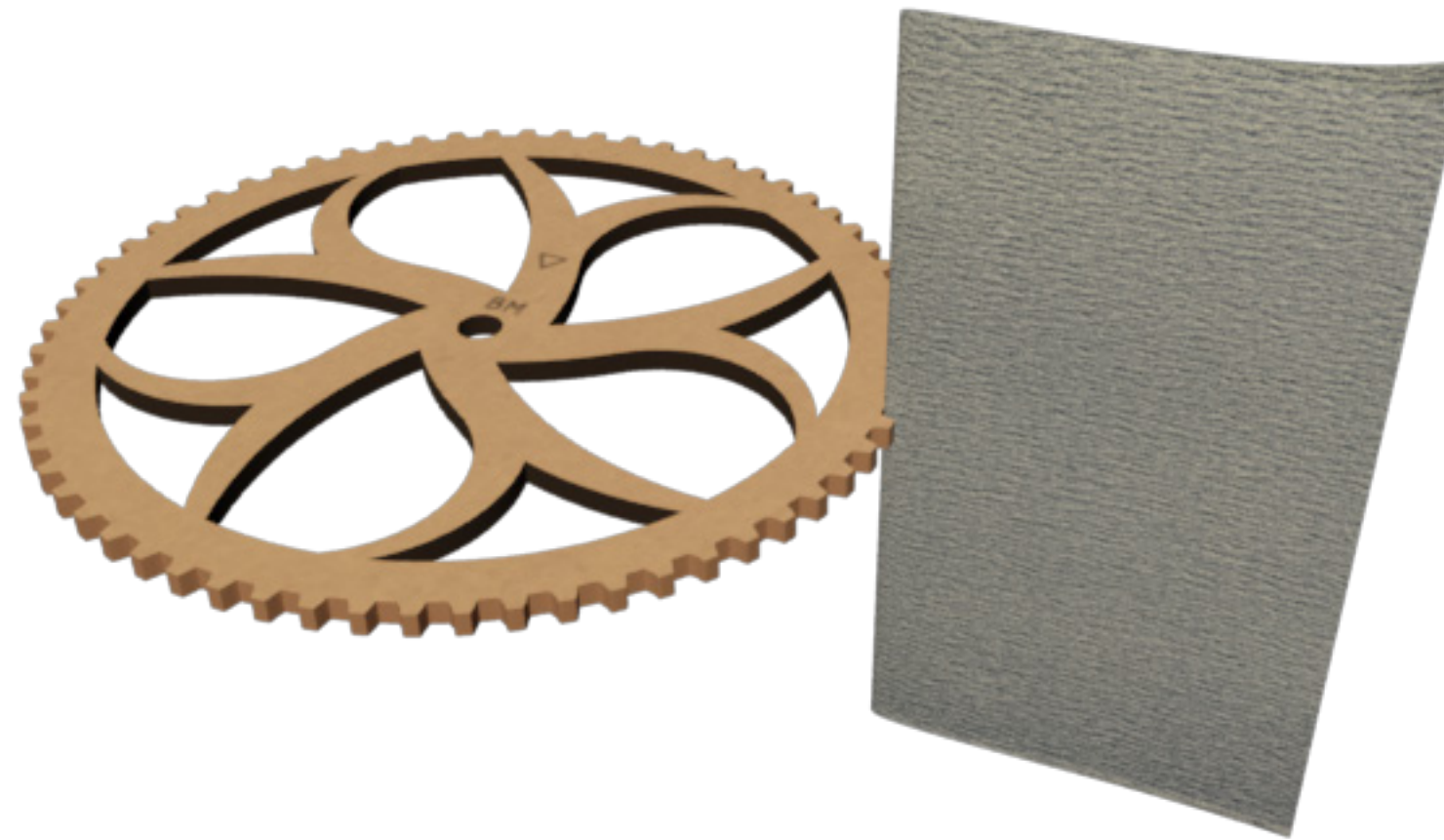
- 5.** For small pieces, lay the sandpaper flat and move the part against it. Take care not to remove any laser etched marks. Taking a little extra care and patience to prepare each piece will make a huge impact on the appearance of the completed kit.



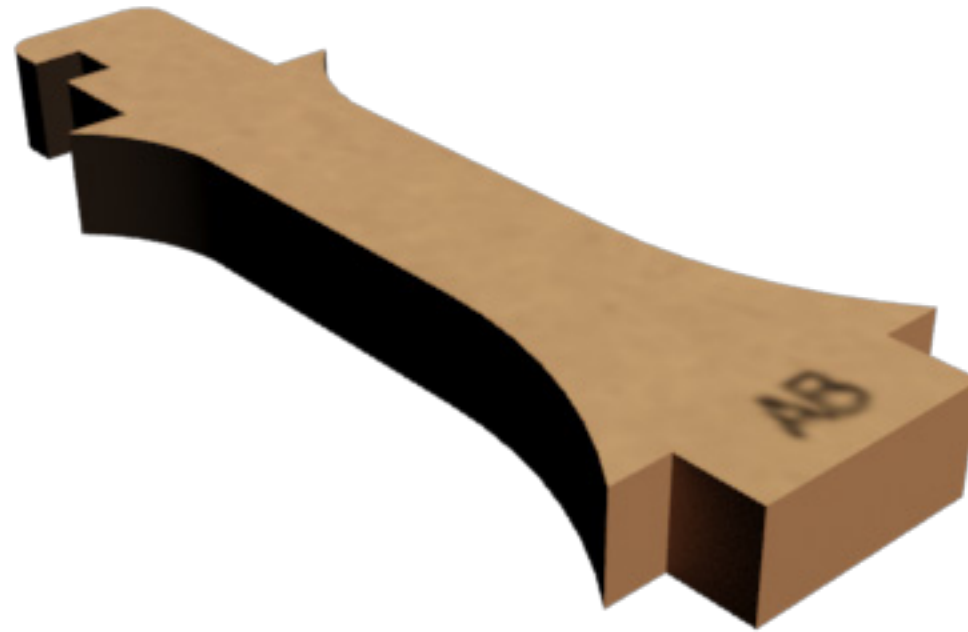
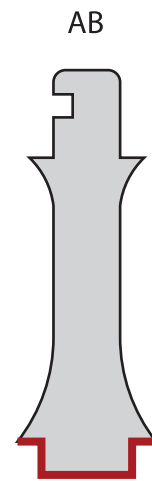
6. To sand holes and smaller openings, tear a small strip of sandpaper and tightly roll it into a cone shape small enough to fit. Work the sandpaper into the opening, twirling it as it is moved in and out.



- 7.** To sand gear teeth, fold a strip of sandpaper twice, and sand each tooth across the thickness of the material. Work around the rim of the gear first working on one side of each tooth, then flip the gear over, and sand the other side. Take care to remove only enough material to expose the natural color of the material.



- 8.** The dark edge left by the laser cutting process is caused by natural resins in the material. It does not bond well with glue.
The instructions will include diagrams indicating which edges need to be sanded.
Lightly sand the highlighted edges to expose the material beneath. Don't forget that holes need to be sanded too!



- 9.** Before applying glue, always test the fit of the parts. Carefully sand any joints that bind so the parts fit together smoothly. Sand the end of alignment pins, rods, and tubes to remove any rough edges. It is critical that the parts are fully inserted, and all edges are in contact to ensure correct operation of the finished clock.



- 10.** Wood glue (also known as carpenter's glue or PVA) is used to "tack" parts together. It takes longer to dry and allows the parts to be adjusted before the glue sets and hardens.

The symbol below indicates wood glue is required in a step



- 11.** CA glue (also known as cyanoacrylate glue, crazy glue or super glue) is used to permanently bond parts together. It is available as a liquid or gel. The gel type is preferable for this application as it stays where applied.

This glue will “sieve” the parts as soon as you stop moving them.

First test fit the parts, then apply glue to one part before attaching the other part in one smooth steady motion. Remove any excess with a damp paper towel before it sets.

Carefully follow the safety instructions provided with the glue you use!

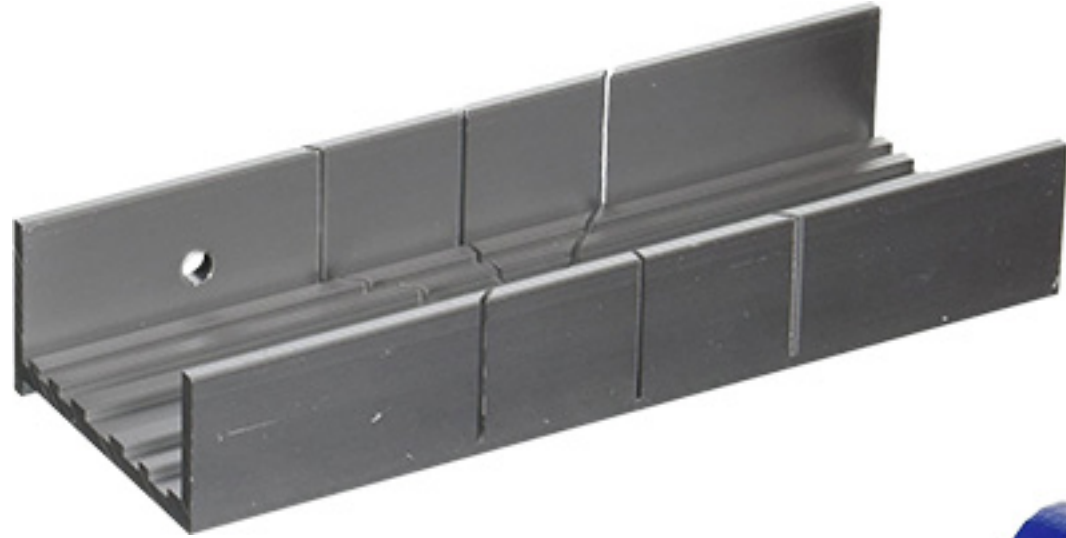
The symbol below indicates CA glue is required in a step



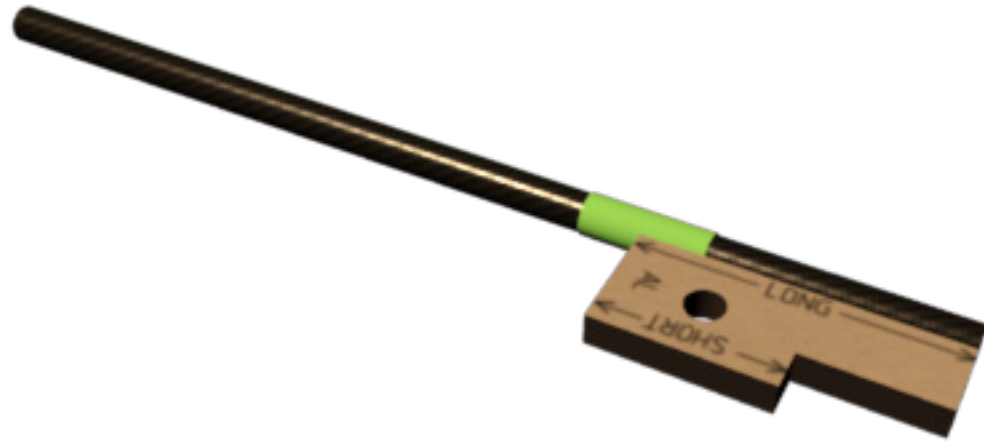
12. Carbon fiber is tough and can be challenging to cut. Always use a sharp blade and follow these steps to get the best results.

Secure the piece to be cut. Some options are:

- a miterbox
- a vice
- a block of scrap wood



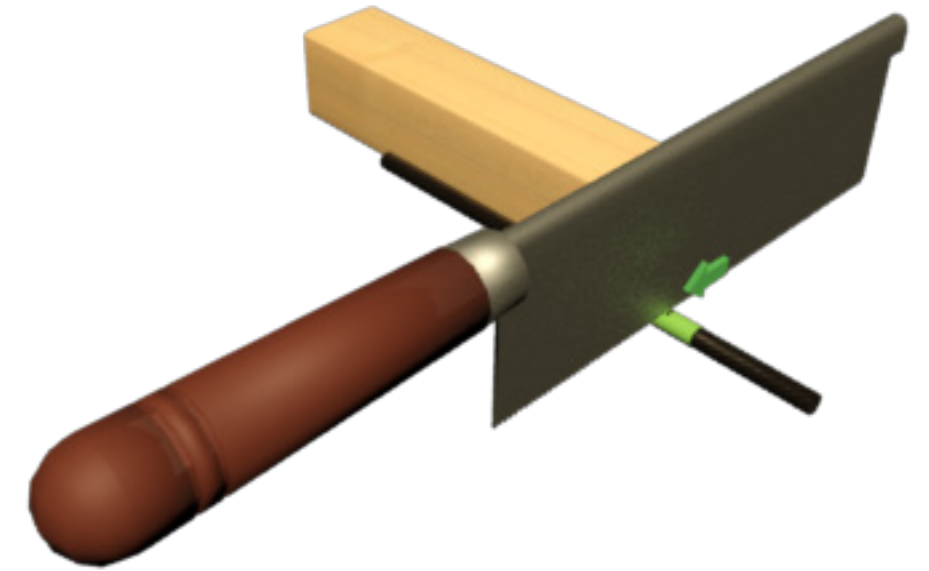
13. Wrap the area to be cut with masking tape.



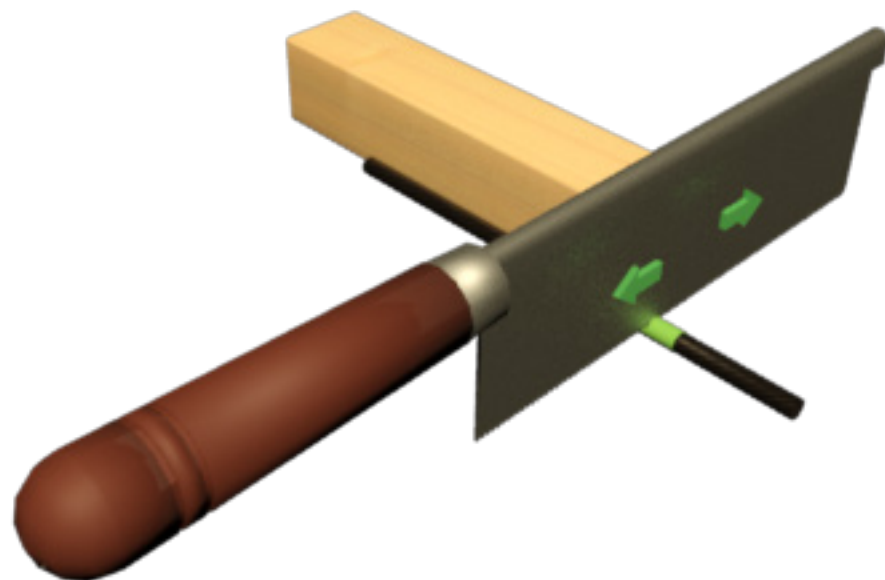
14. Measure and mark the masking tape where the part will be cut.



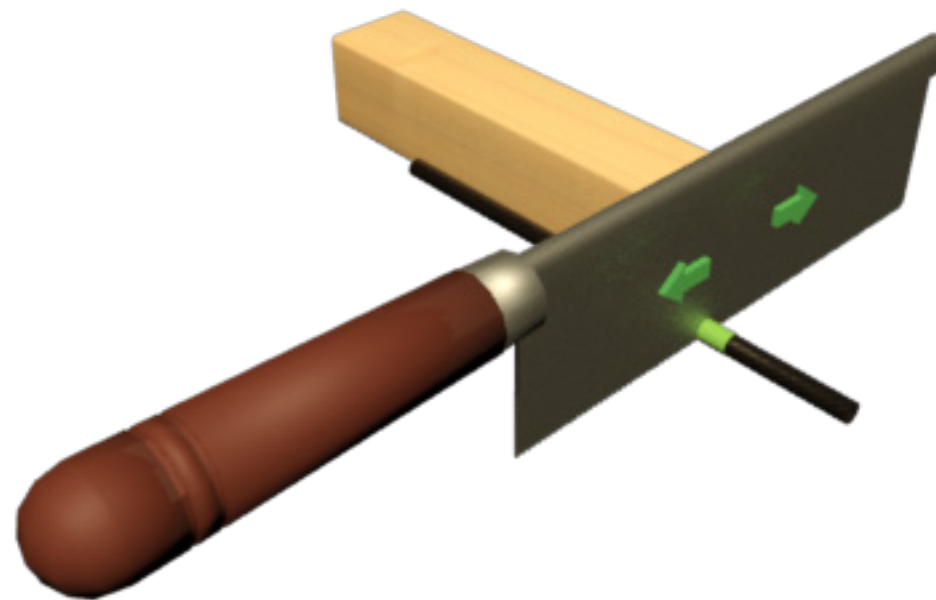
15. Lightly draw the saw over the part to score it on the marked line. This will help prevent the blade from wandering.



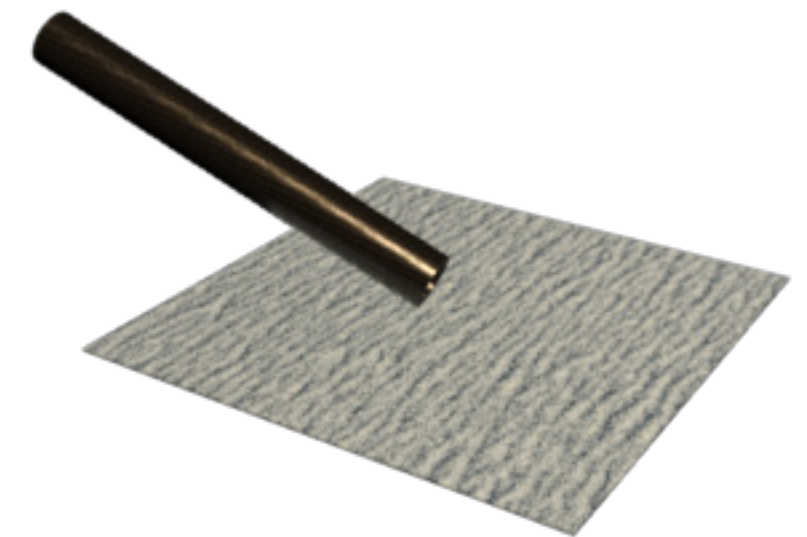
16. Apply very light downward force to the saw as you cut. Excessive pressure will dull the teeth and clog the saw.



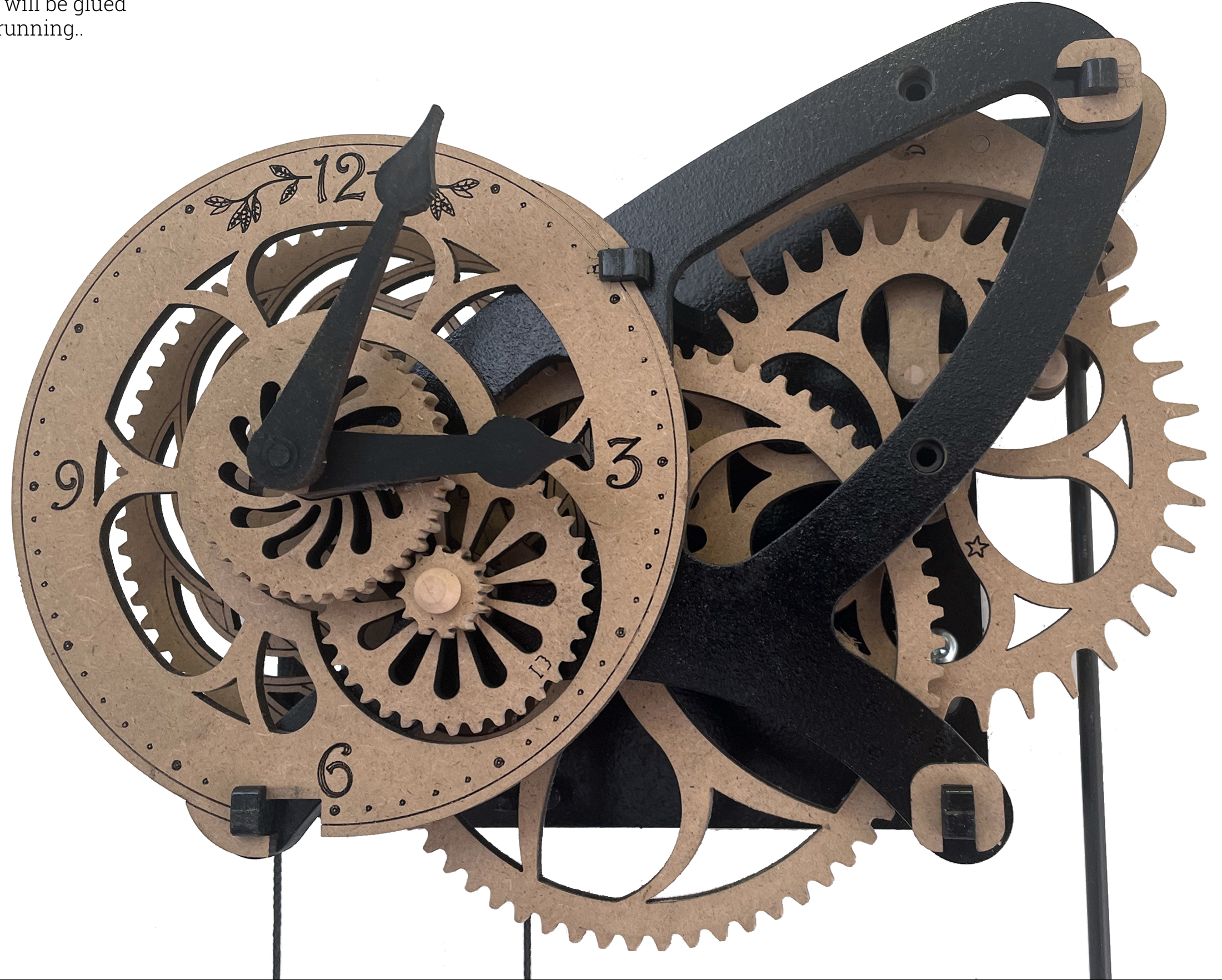
17. Reduce the amount of pressure applied even more near the end of the cut to avoid fraying or delaminating the carbon fiber.



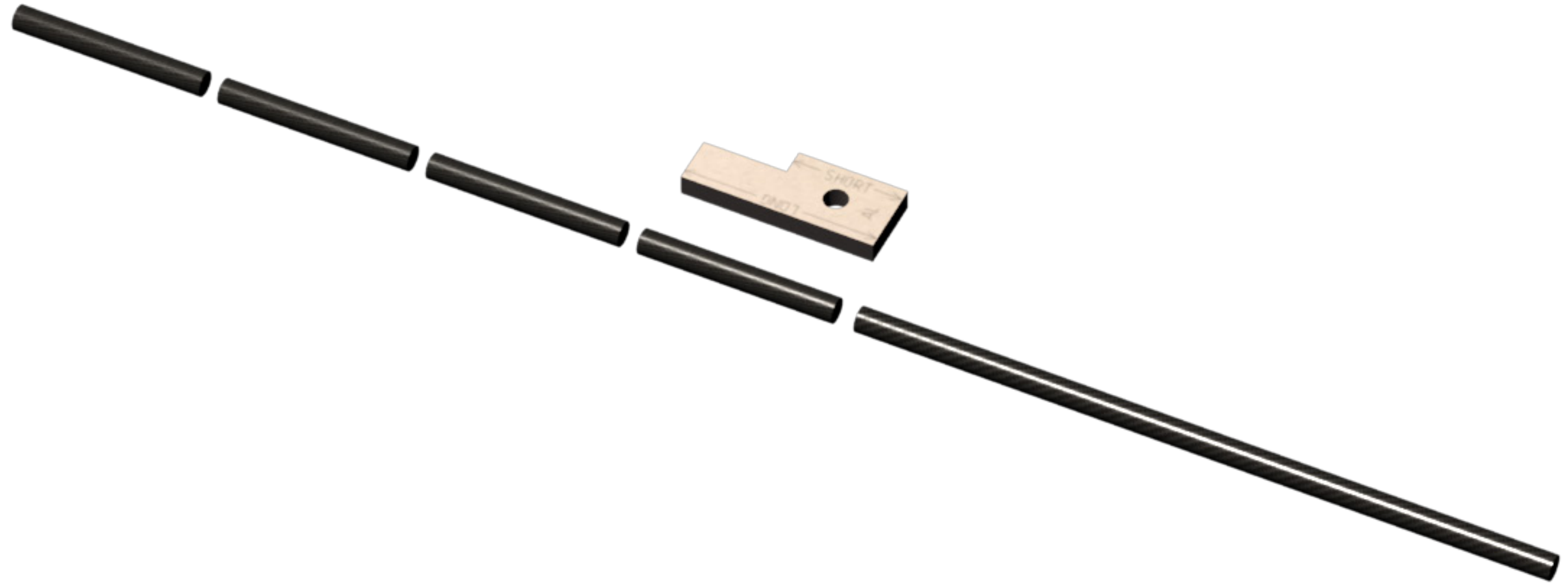
18. Sand the cut edge to remove any burrs.



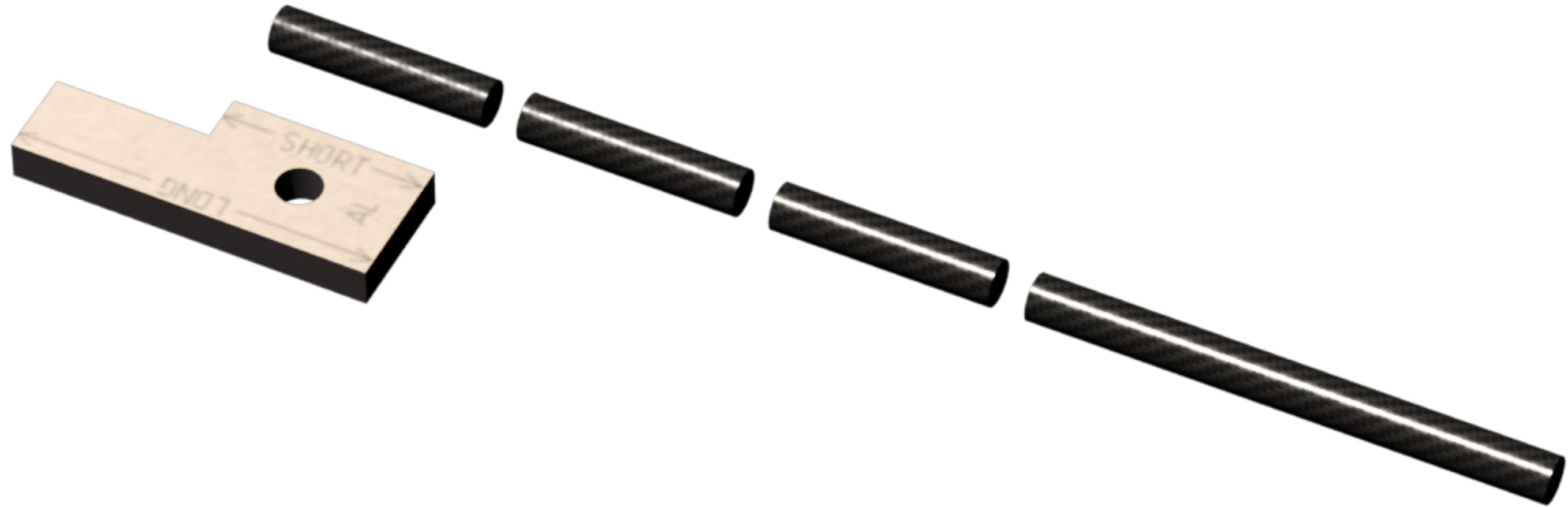
- 19.** If you wish to apply a finish to the kit, craft paints are a simple and effective method. Carefully apply the paint to completed components before final assembly. Avoid getting finish onto any edge or surface that will be glued or contact other parts while the clock is running..



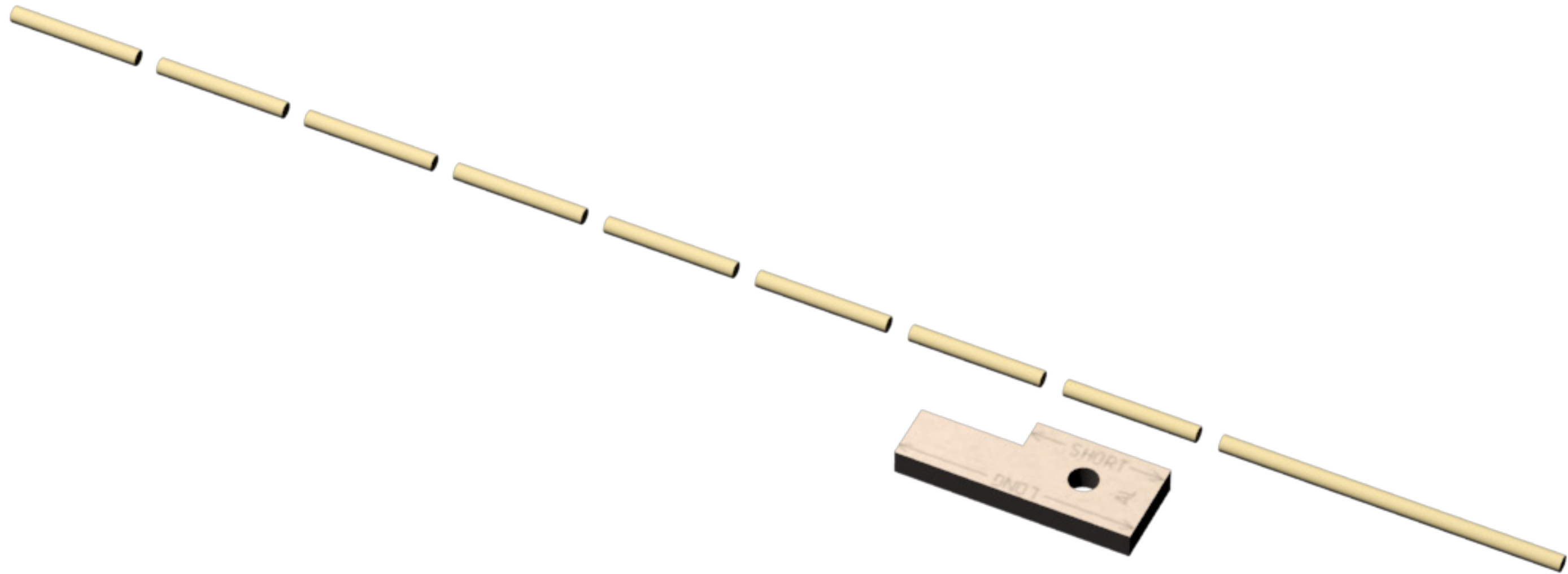
1. Use the guide (AL) as a reference to cut four 'LONG' sections of carbon fiber tube. Ensure the ends are cut flat, and the length is accurate. Use a sharp razor saw, jig saw, or dremel tool. Wear a mask and safety glasses.



- 2.** Use the guide (AL) as a reference to cut three 'SHORT' sections from the remaining carbon fiber tube.
Use a sharp razor saw, jig saw, or dremel tool.
Wear a mask and safety glasses.
There will be a length of tube left over. Set it aside as a spare.



- 3.** Use the guide (AL) as a reference to cut eight 'SHORT' sections from the small dowel. These are alignment pins.
Use a sharp razor saw, jig saw, or dremel tool.
Wear a mask and safety glasses.
There will be a length of dowel left over. Set it aside as a spare.

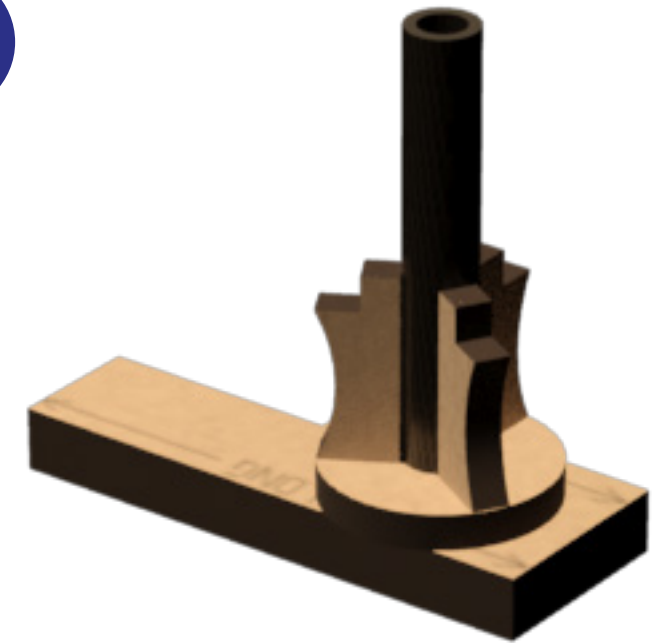




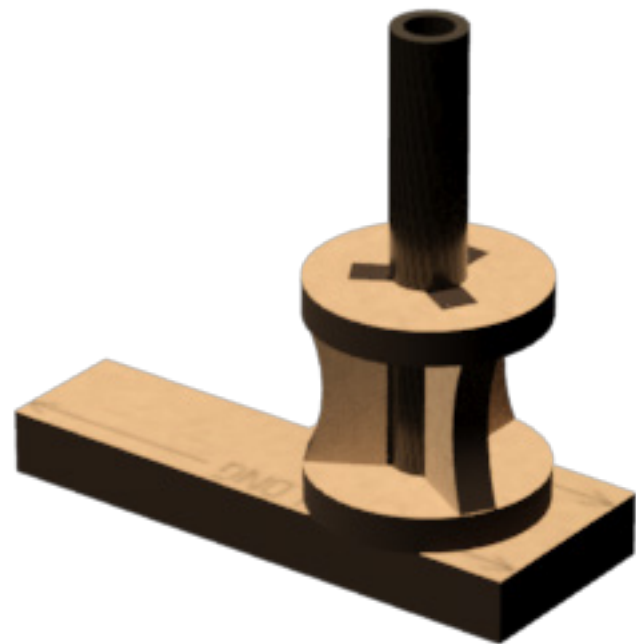
4. Insert a 'LONG' section of tube into the guide (AL).
Do not glue!



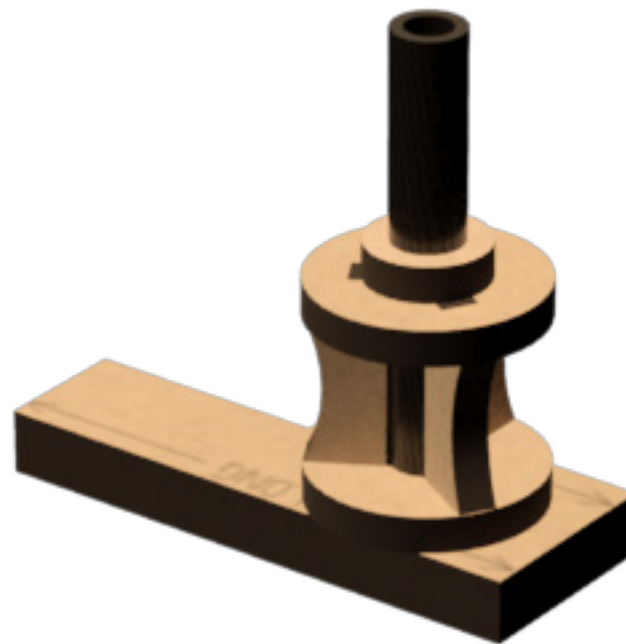
5. Slip on an end plate (DK) . Do not glue!



6. Use CA glue to attach three long spacers (DE) to the
end plate.
Do not get glue on the tube!



7. Use CA glue to attach an end plate (DK) to the long
spacers (DE). The long spacers (DE) must be fully
inserted into the end plate (DK).
Do not get glue on the tube!



8. Use CA glue to attach a spacer ring (DF) to the top end
plate (DK).
Do not get glue on the tube!



9. Remove the long spacer assembly from the tube.

- 10.** Repeat the previous six steps to create a second long spacer assembly.

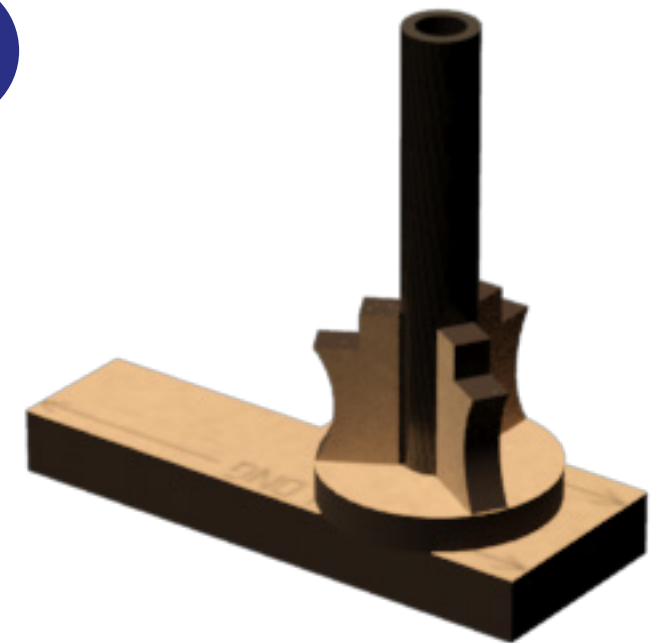




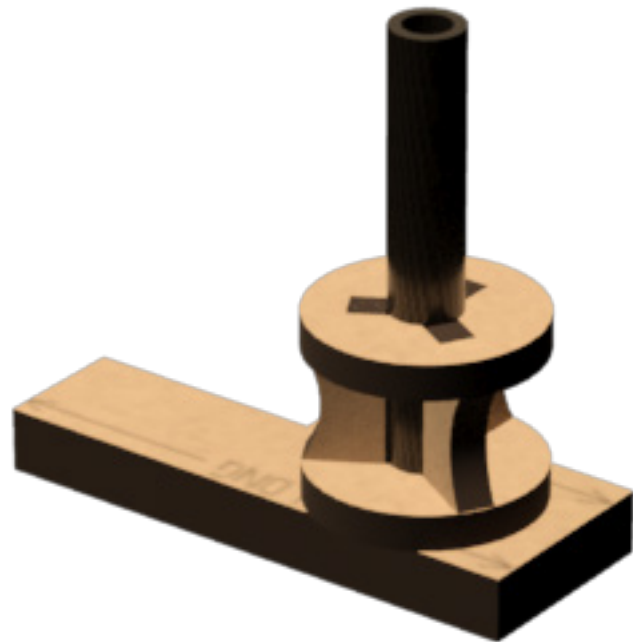
11. Insert a 'LONG' section of tube into the guide.
Do not glue!



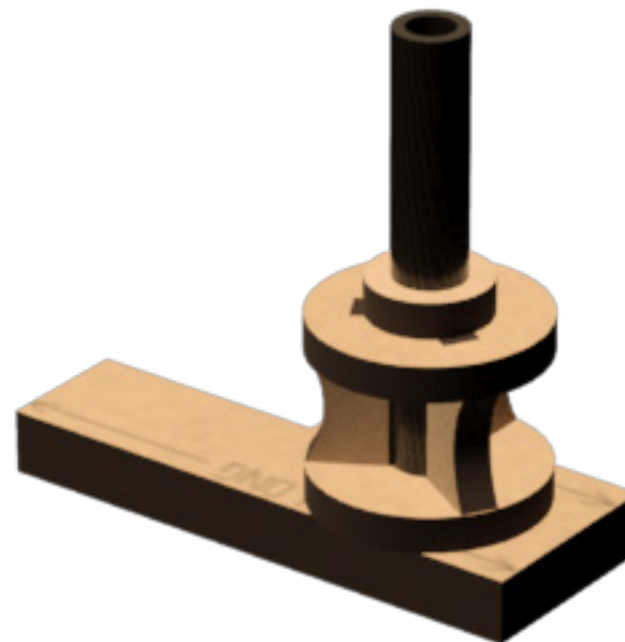
12. Slip on an end plate (DK). Do not glue!



13. Use CA glue to attach three short spacers (DJ) to the end plate (DK).
Do not get glue on the tube!



14. Use CA glue to attach an end plate (DK) to the short spacers (DJ).
The short spacers (DJ) must be fully inserted into the end plate (DK).
Do not get glue on the tube!

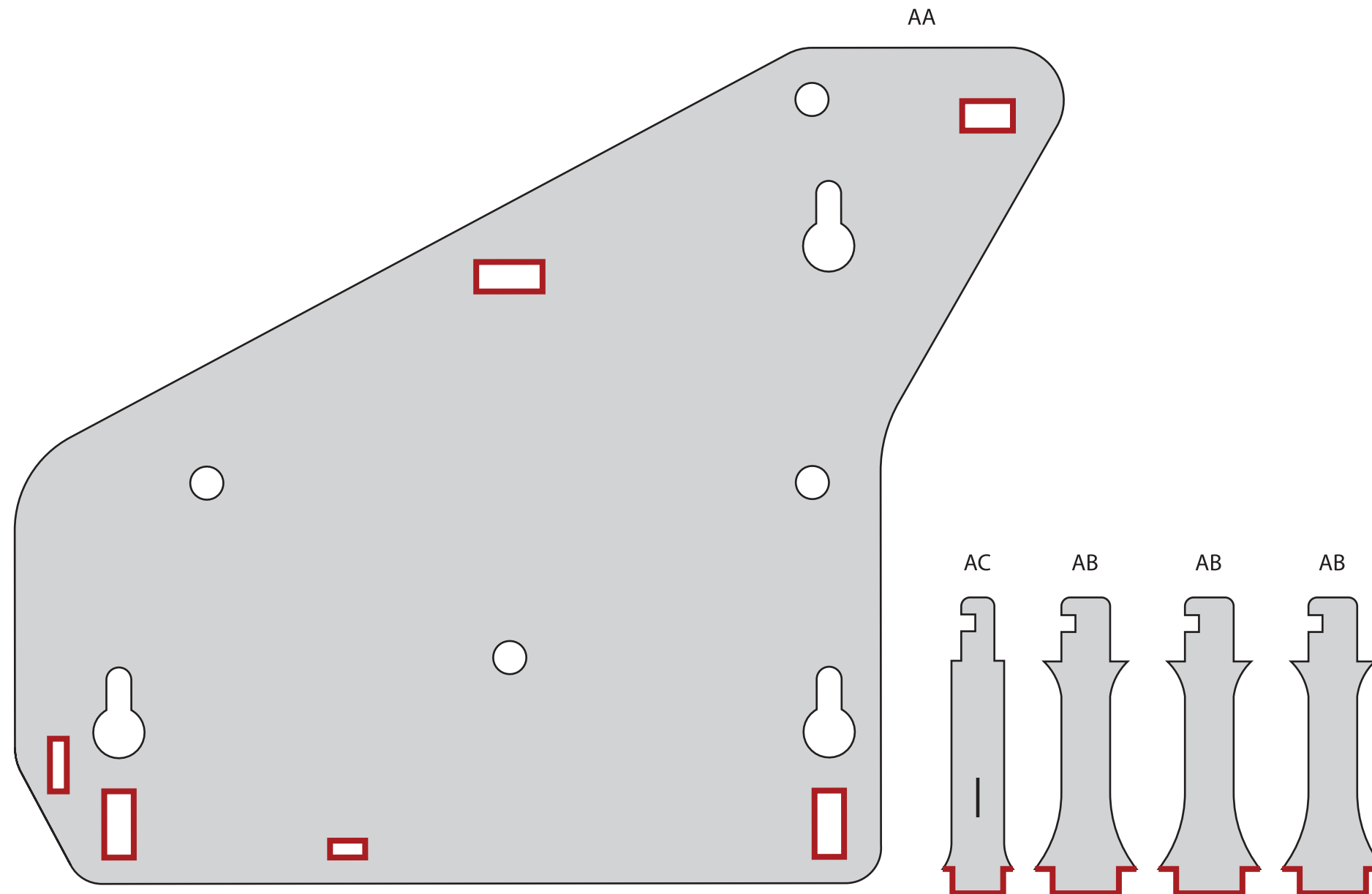


15. Use CA glue to attach a spacer ring to the top end plate (DK).
Do not get glue on the tube!

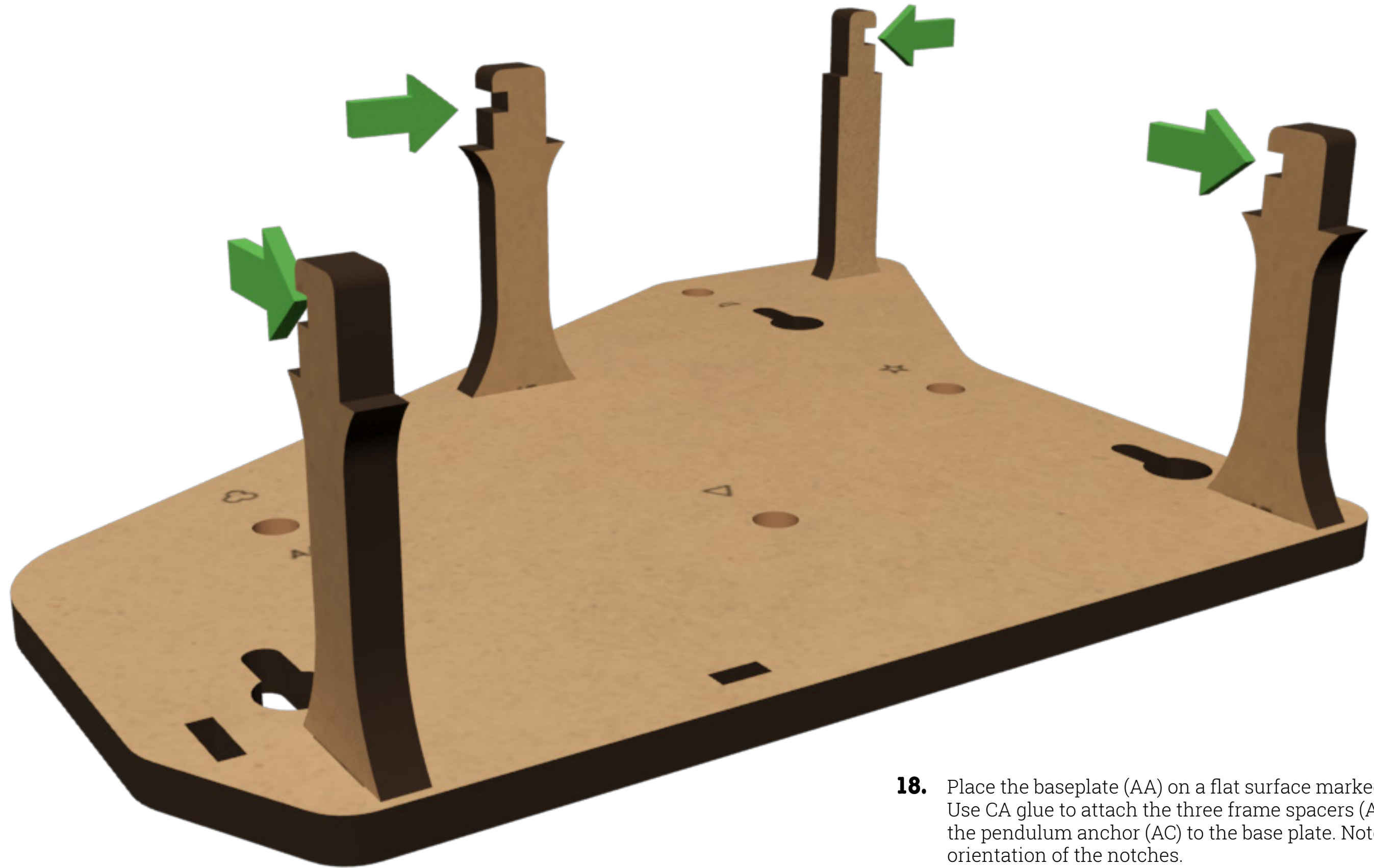


16. Remove the short spacer assembly from the tube.

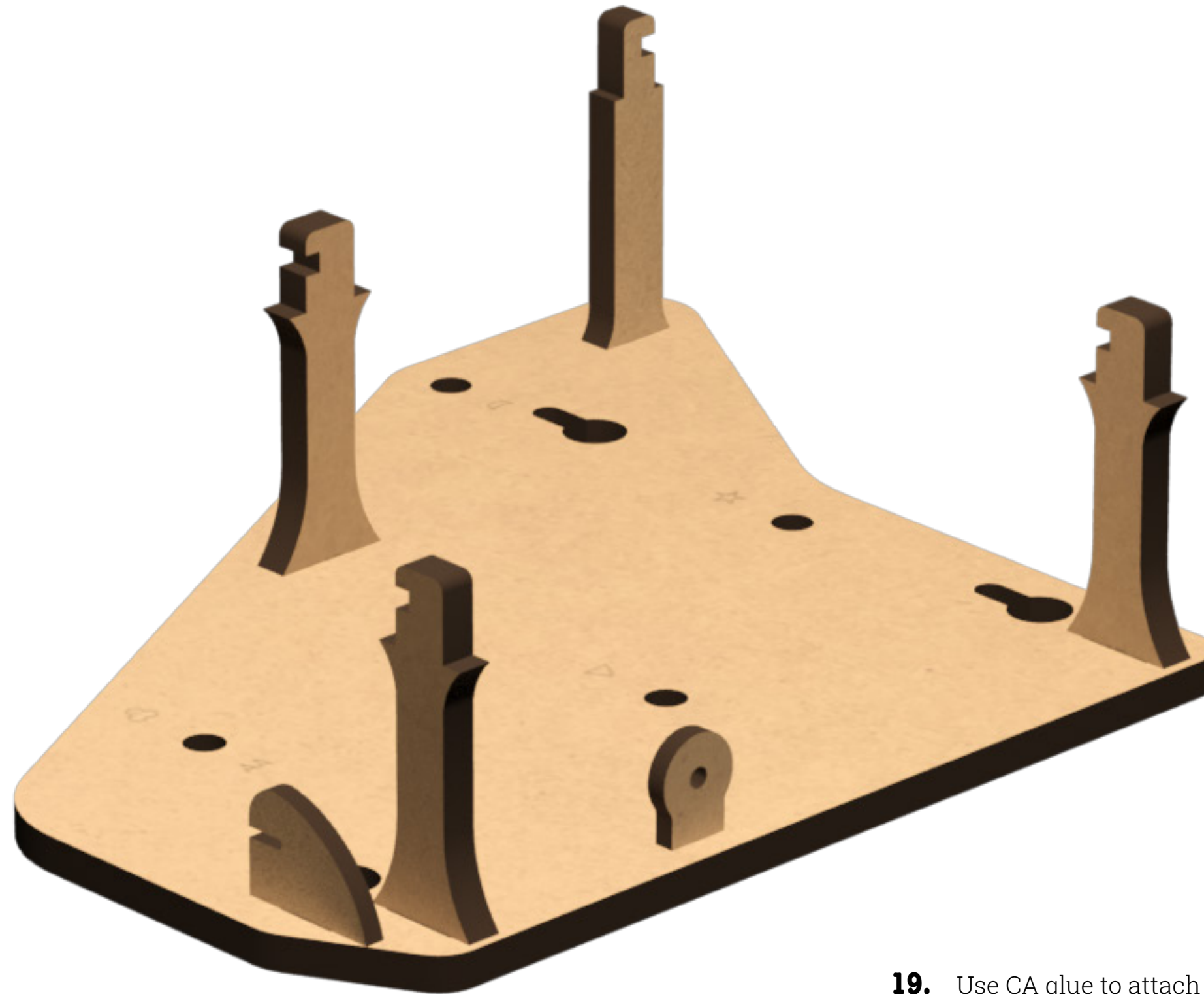
- 17.** Sand the edges marked in red of the three frame spacers (AB), the pendulum anchor (AC), and the baseplate (AA). Use 220 grit sandpaper. A secure glue joint is critical for this load-bearing component!



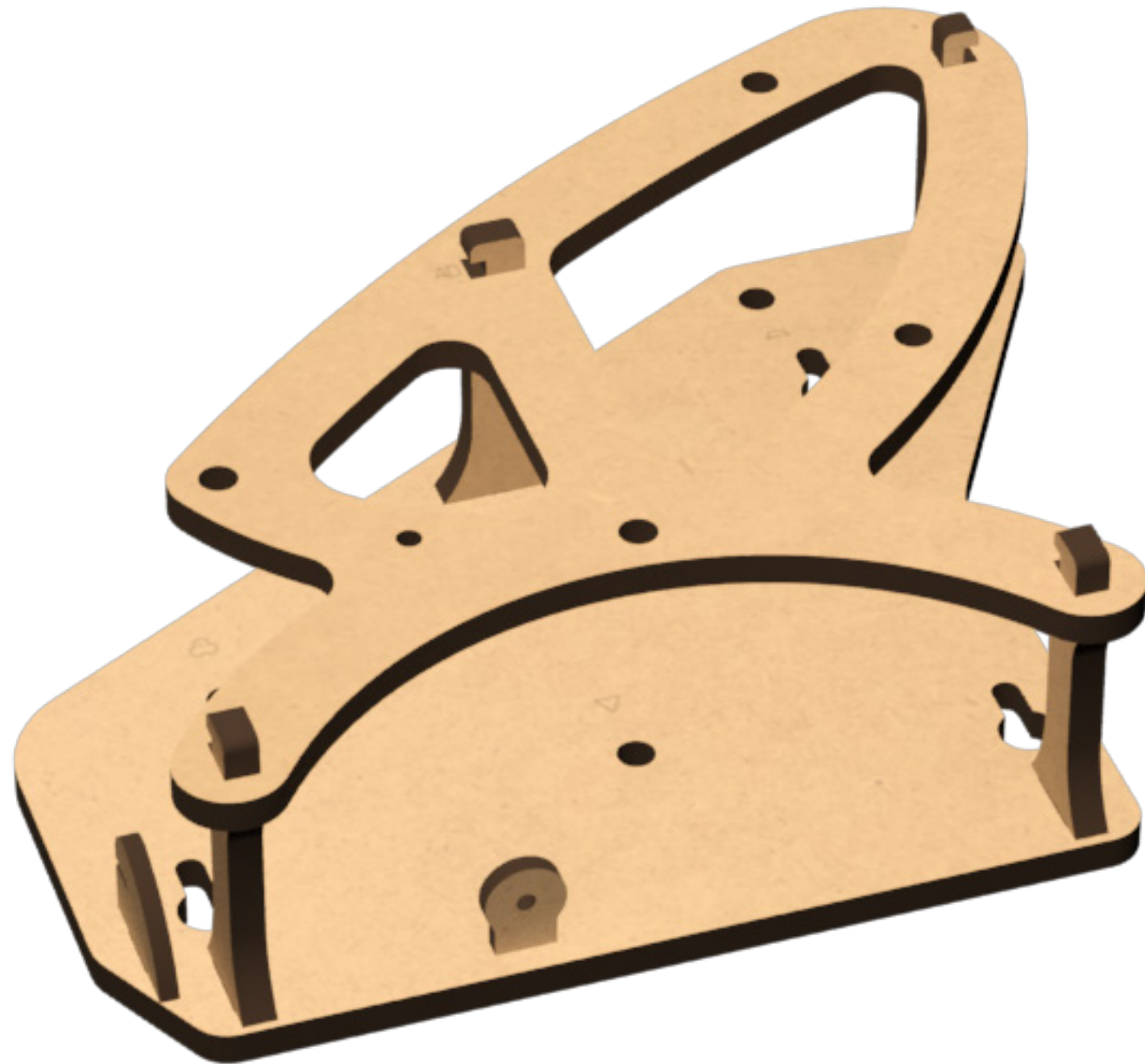
CA
GLUE



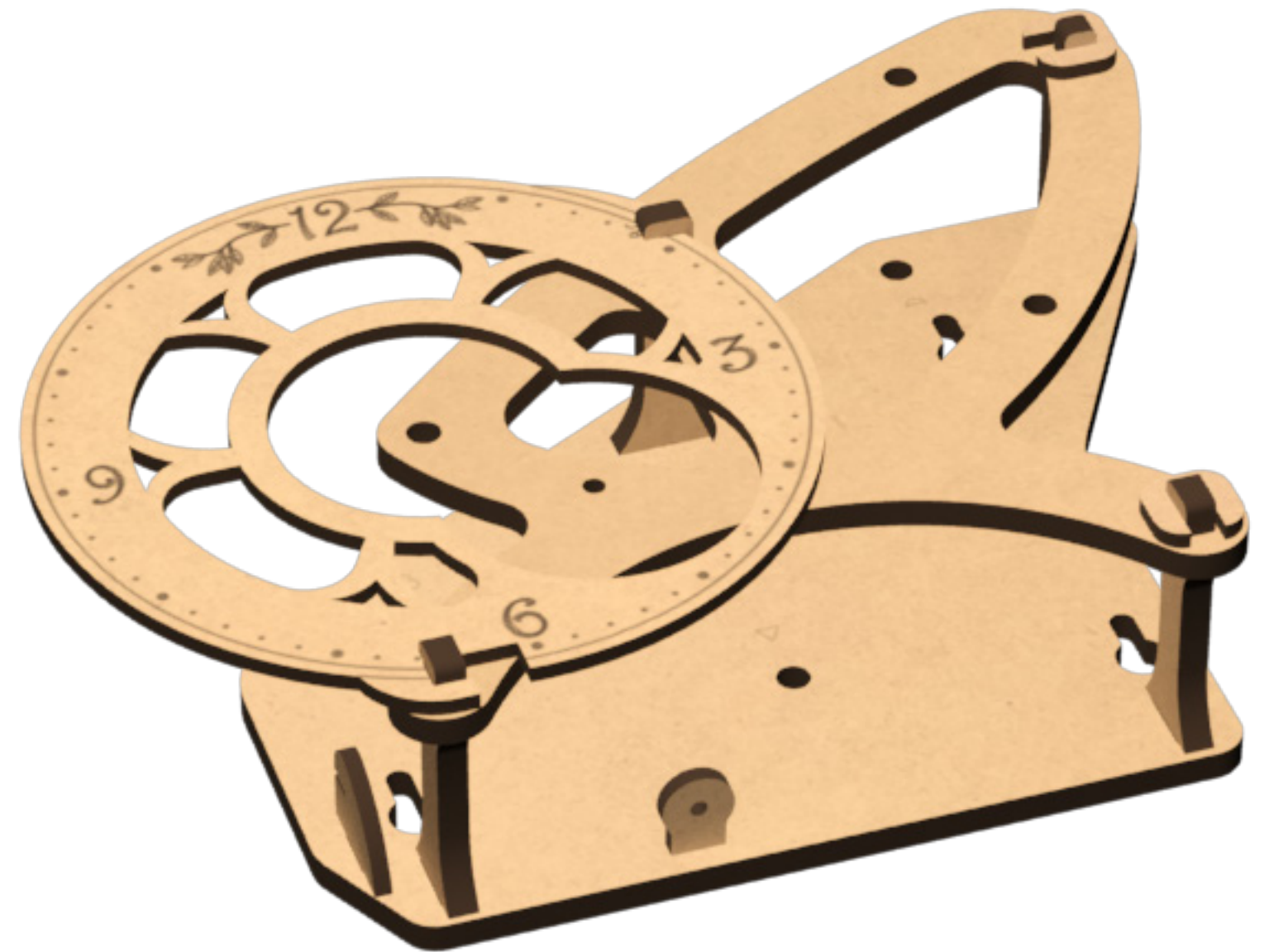
- 18.** Place the baseplate (AA) on a flat surface marked side up. Use CA glue to attach the three frame spacers (AB) and the pendulum anchor (AC) to the base plate. Note the orientation of the notches.



- 19.** Use CA glue to attach the pendulum anchor (BA) and pendulum cord guide (BB) to the base plate (AA). Note the orientation of the notch.

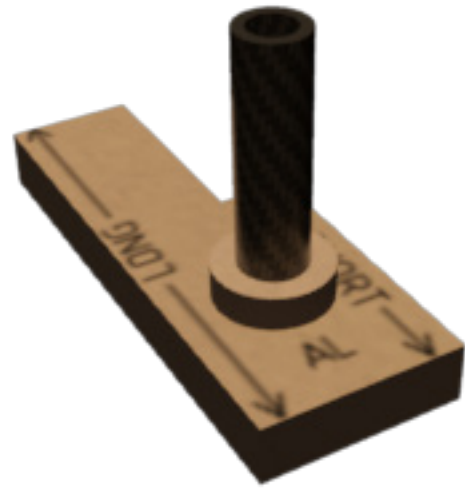


20. Test fit the front plate (AD) to the frame. Do not glue!

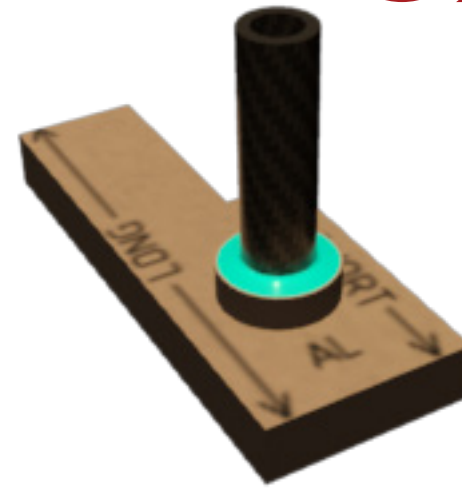


21. Test fit the two retainer clips (DH) and the clock face (BC) to the frame. The clock face slides into the notches in two frame spacers as shown. Do not glue!

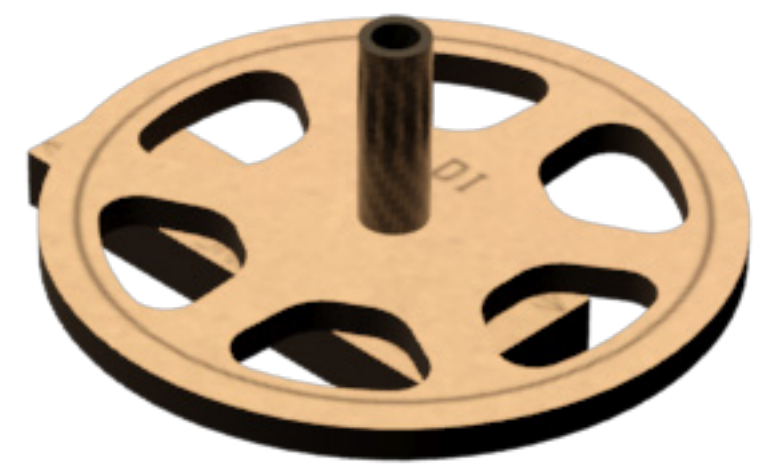
Remove the clock face (BC), retainer clips (DH), and front plate (AD).



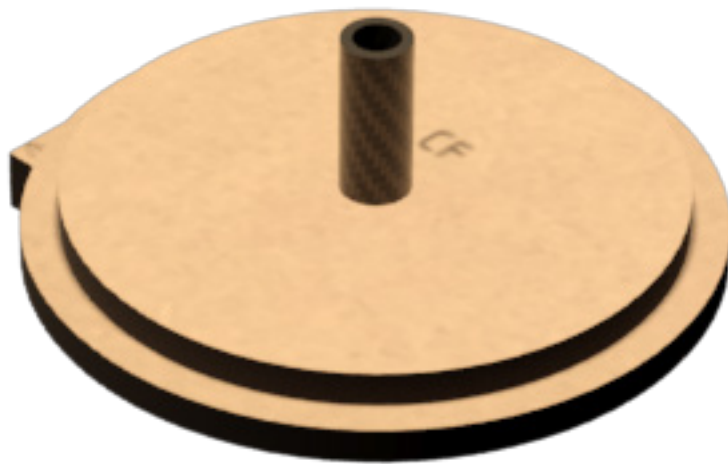
22. Place a "SHORT" section of tube into the tool (AL) and slip on a spacer ring (DF). Do not glue!



23. Apply CA glue to the joint between the spacer ring (DF) and the tube.



24. Press a pulley flange (DI) onto the spacer ring (DF), marked side up.



25. Apply CA glue to the face of the pulley flange (DI) inside the marked ring. Press the pulley core (CF) onto the pulley flange (DI).

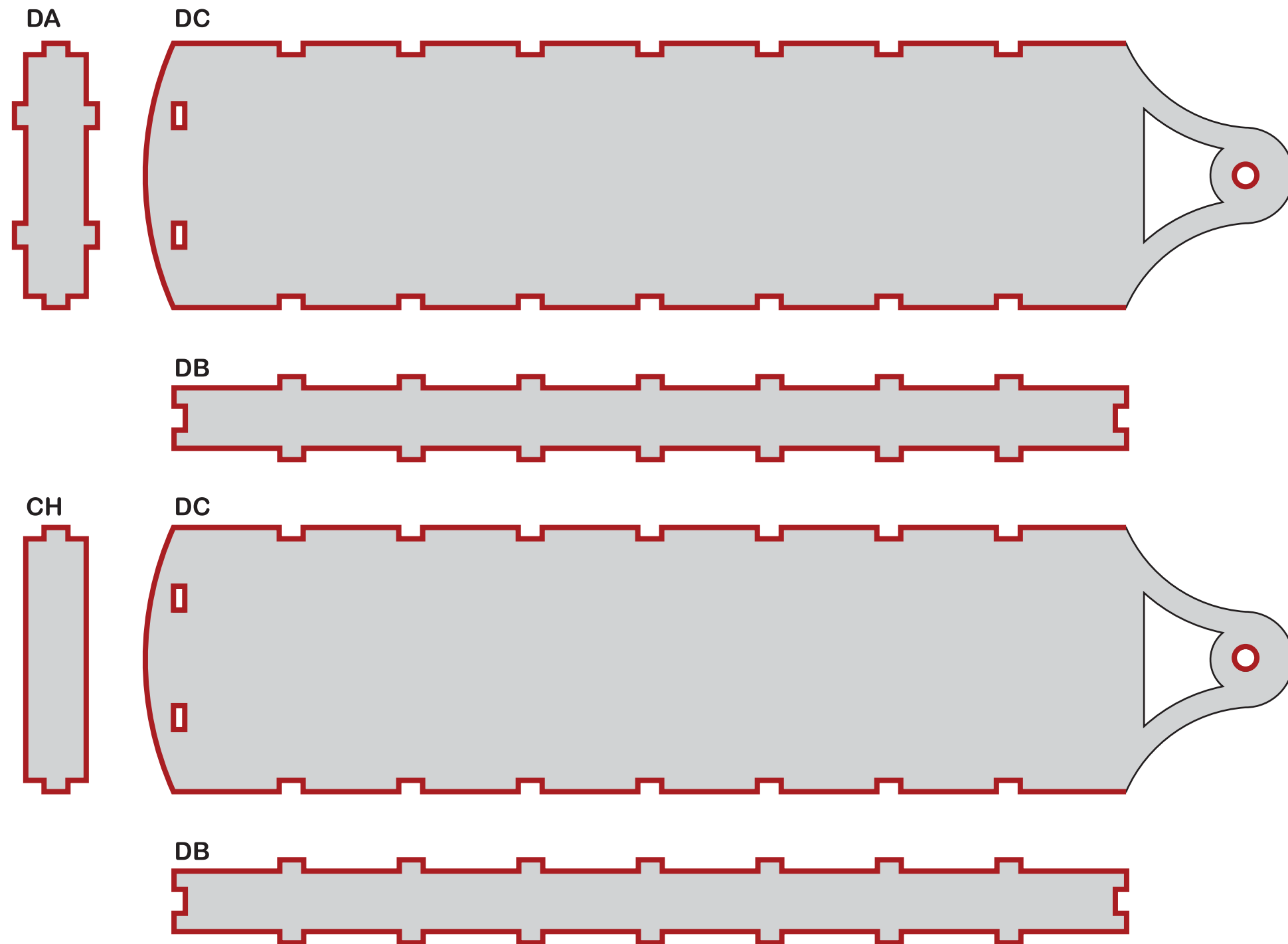


26. Apply CA glue to the face of the second pulley flange (DI), inside the marked ring. Press the pulley flange (DI) glue side down onto the pulley.



27. Apply CA glue to the joint between the tube and the pulley flange (DI). Press a spacer ring (DF) onto the pulley flange.

- 28.** Sand the edges marked in red of the two counterweight faces (DC), the two sides (DB), the bottom (DA) and the top (CH). Use 220 grit sandpaper. A secure glue joint is critical for this load-bearing component!



CA
GLUE



29. Use CA glue to attach the counterweight bottom (DA) to the marked side of a counterweight face (DC). Ensure all seams are tight and secure.

CA
GLUE



30. Use CA glue to attach the two counterweight sides (DB) to the counterweight face (DC) and the bottom (DA). Ensure all seams are tight and secure.

CA
GLUE



31. Slip the counterweight pulley into the counterweight back. Do not glue!
Use a generous amount of CA glue to attach the remaining counterweight face (DC) marked side up to the counterweight sides (DB) and bottom (DA). Ensure all seams are tight and secure.

CA
GLUE



32. Fill the counterweight with BBs (not supplied).

CA
GLUE



33. Use CA glue to attach the counterweight top (CH)

CA
GLUE



34. Use CA glue to attach the decorative plate (BD) to the front counterweight face (DC).

CA
GLUE



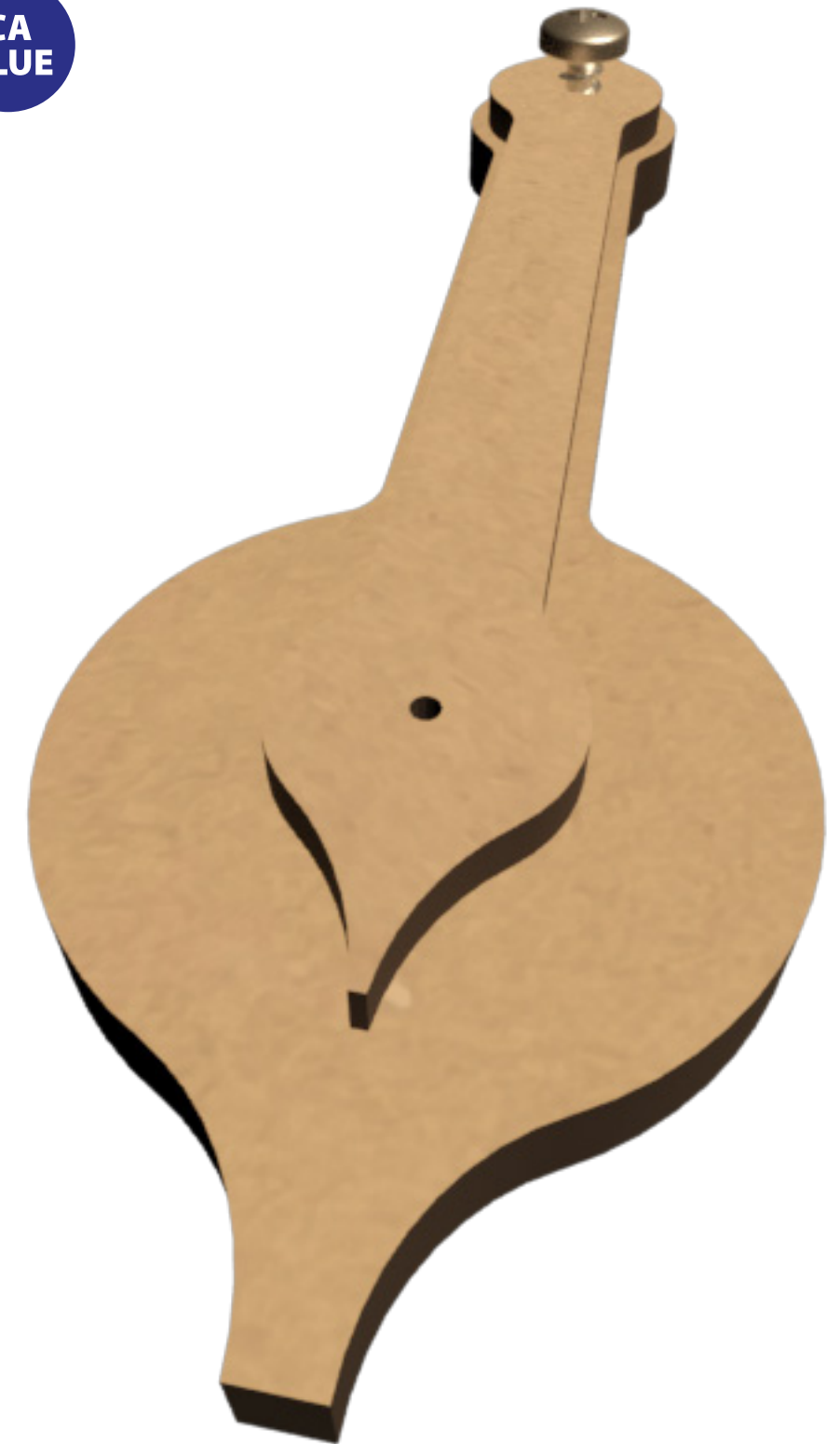
35. Use CA glue to attach the guide ring (CJ) and backing plate (BL) to the marked side of the pendulum bob core (AK).

CA
GLUE



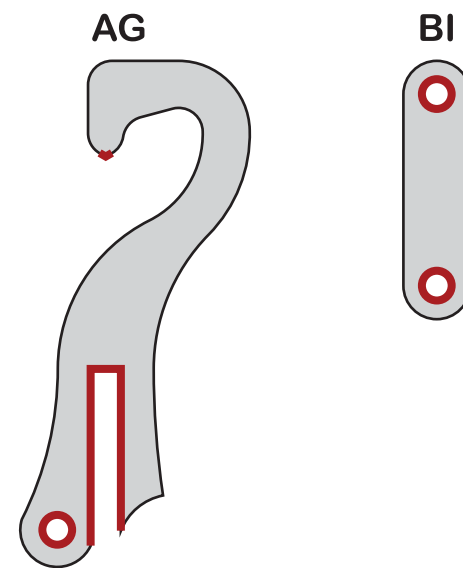
36. Use CA glue to fit the metal weight inside the guide ring (AK).

CA
GLUE



37. Use CA glue to attach the trim plate (BK) to the unmarked side of the pendulum bob core (AK). Insert the adjustment screw one turn into the trim plate (BK) as shown. This completes the pendulum bob.

38. Sand the indicated edges of the the pendulum crown (AG) and the crutch (BI). Use 220 grit sandpaper.

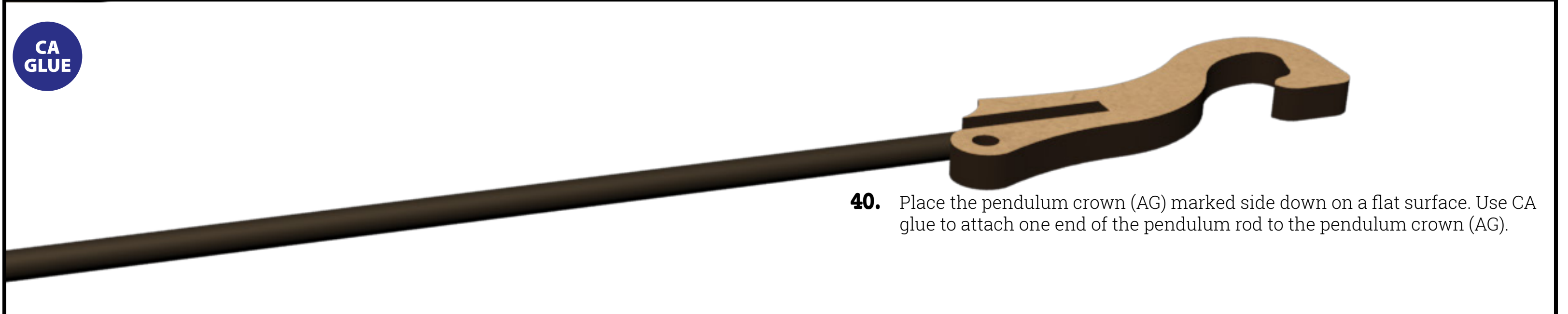


CA
GLUE



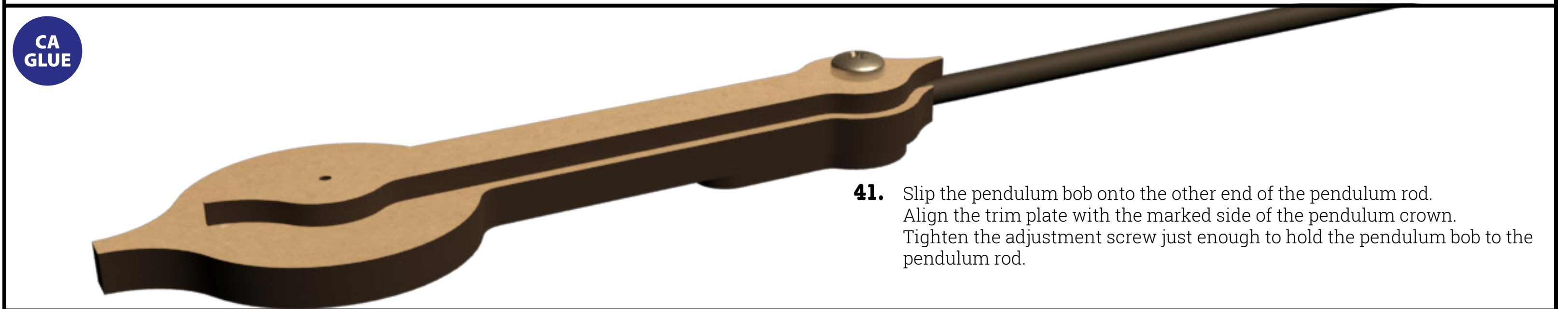
- 39.** Join the two long carbon fiber rods using CA glue and a 'SHORT' section of tube. This forms the pendulum rod.

CA
GLUE



- 40.** Place the pendulum crown (AG) marked side down on a flat surface. Use CA glue to attach one end of the pendulum rod to the pendulum crown (AG).

CA
GLUE



- 41.** Slip the pendulum bob onto the other end of the pendulum rod. Align the trim plate with the marked side of the pendulum crown. Tighten the adjustment screw just enough to hold the pendulum bob to the pendulum rod.

CA
GLUE



42. Slip a small axle pin through the unmarked side of the crutch (BI). Glue the axle pin to the marked side of the pendulum crown (AG). Note the crutch should pivot easily on the axle pin.

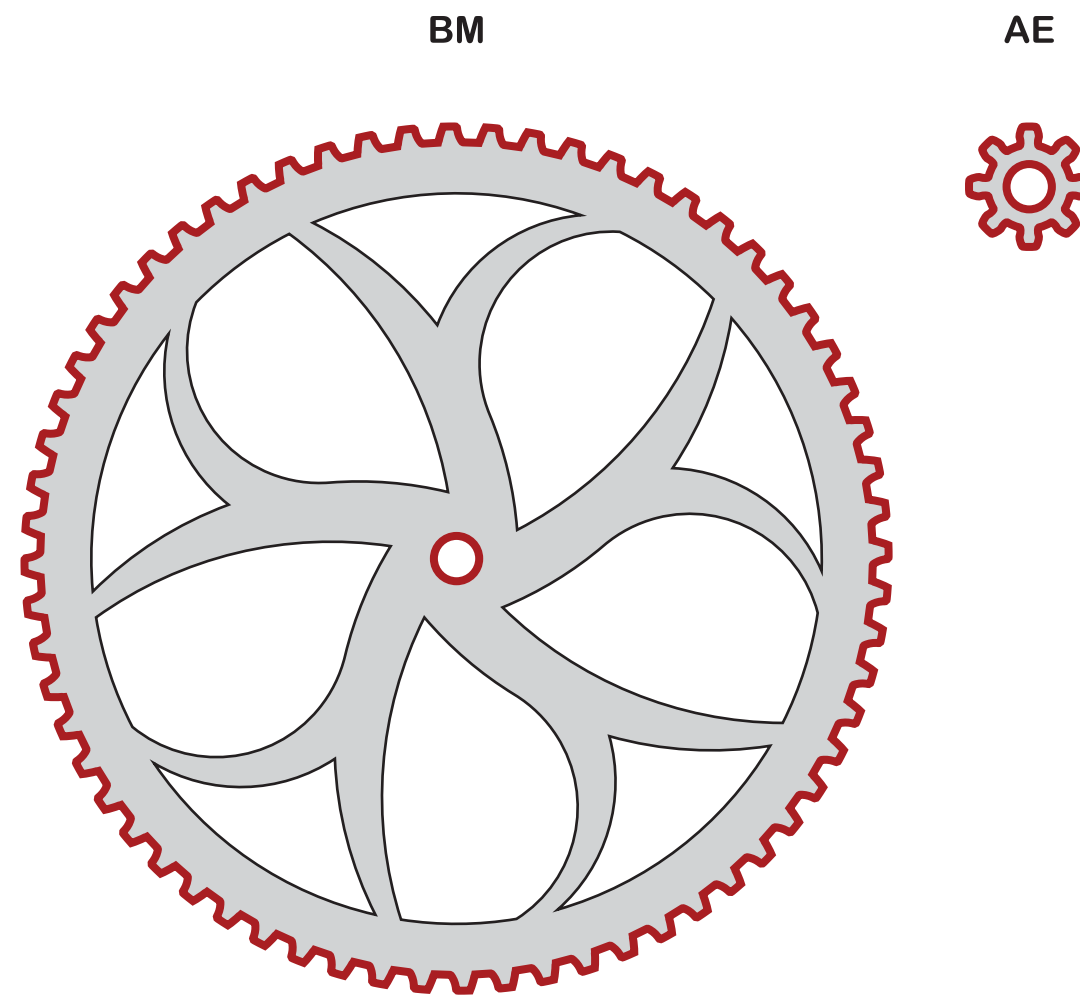


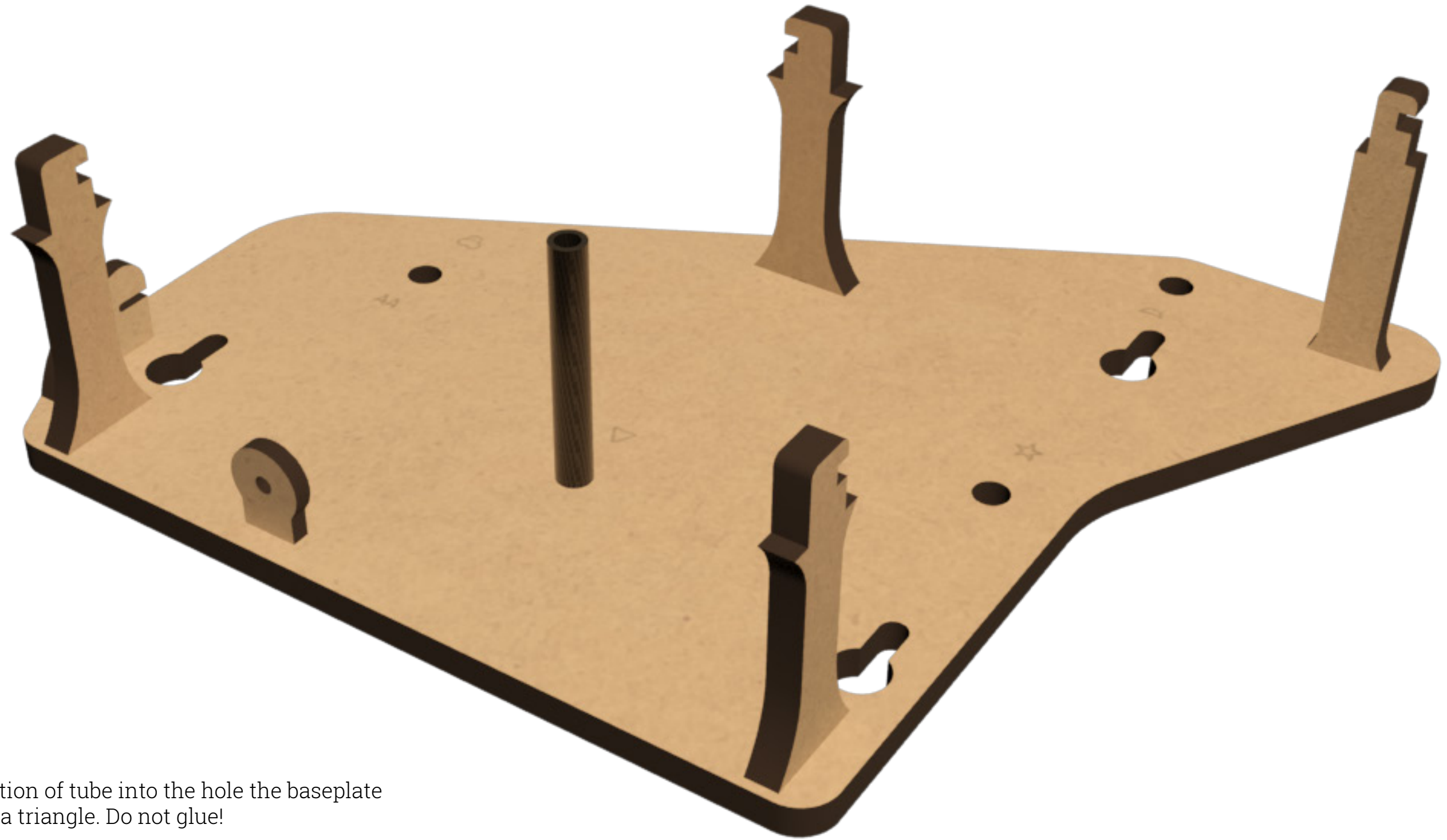
43. Trim the small axle pin to the unmarked side of the pendulum crown (AG). This completes the pendulum.



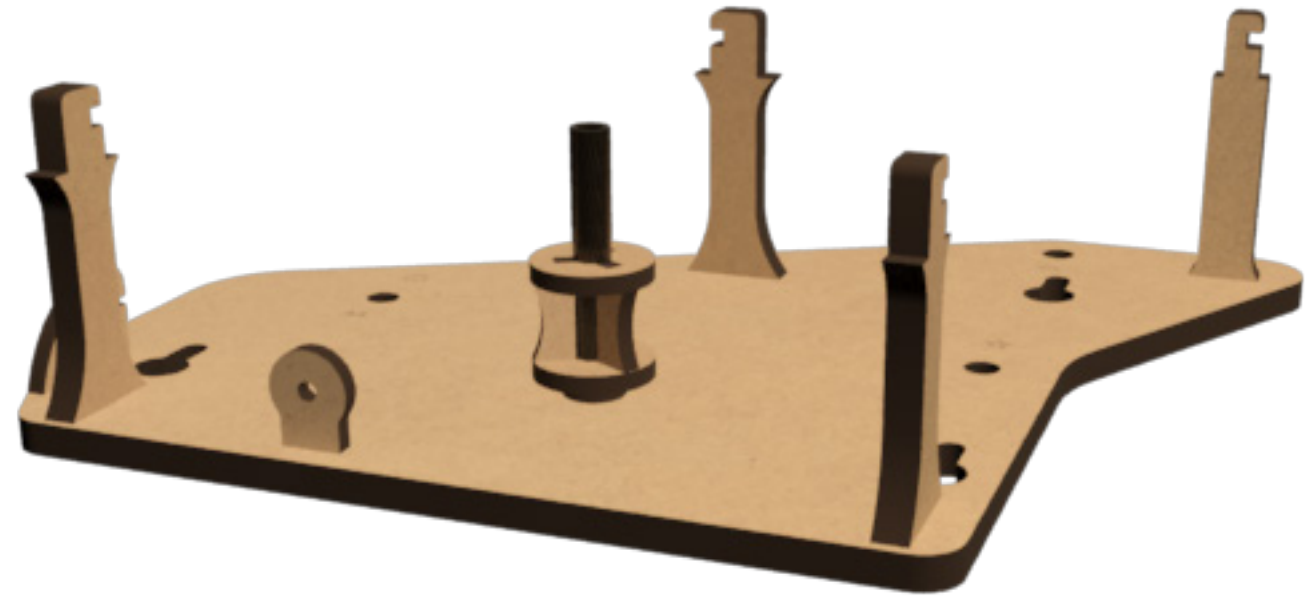
- 44.** Use 220 grit sandpaper to sand each tooth of the second wheel gear (BM) and a pinion (AE) to remove residue left by the laser cutting process.

Use 220 grit sandpaper as needed to provide a sliding fit between the holes in both the second wheel gear (BM) and the pinion (AE) and the tube.

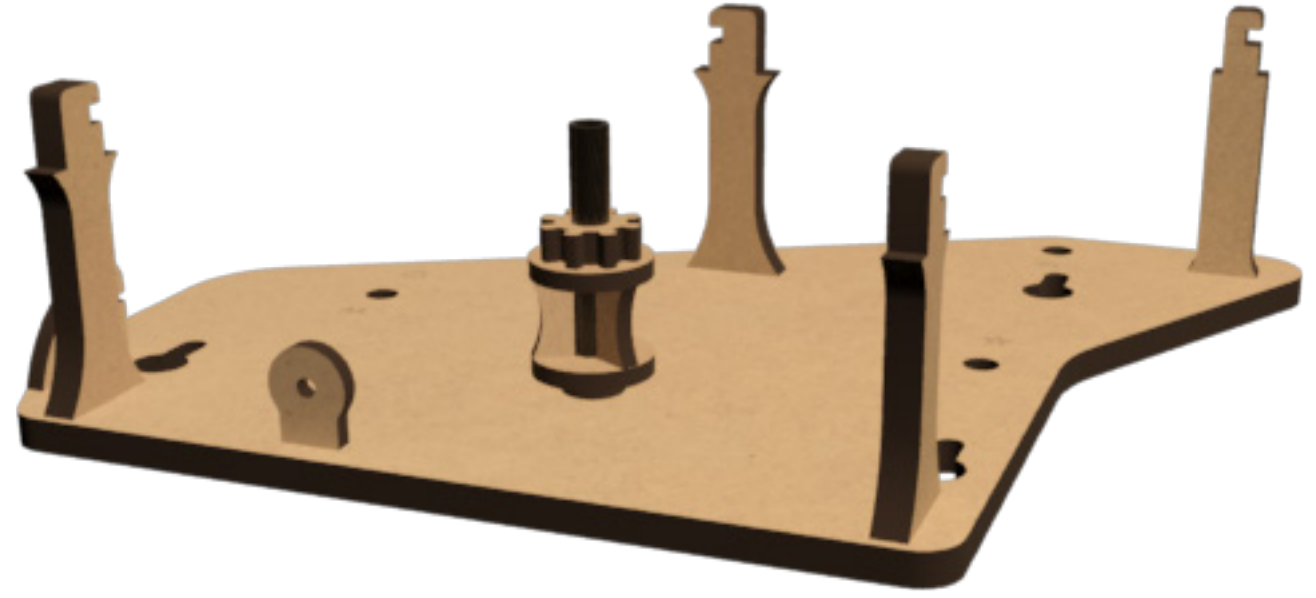




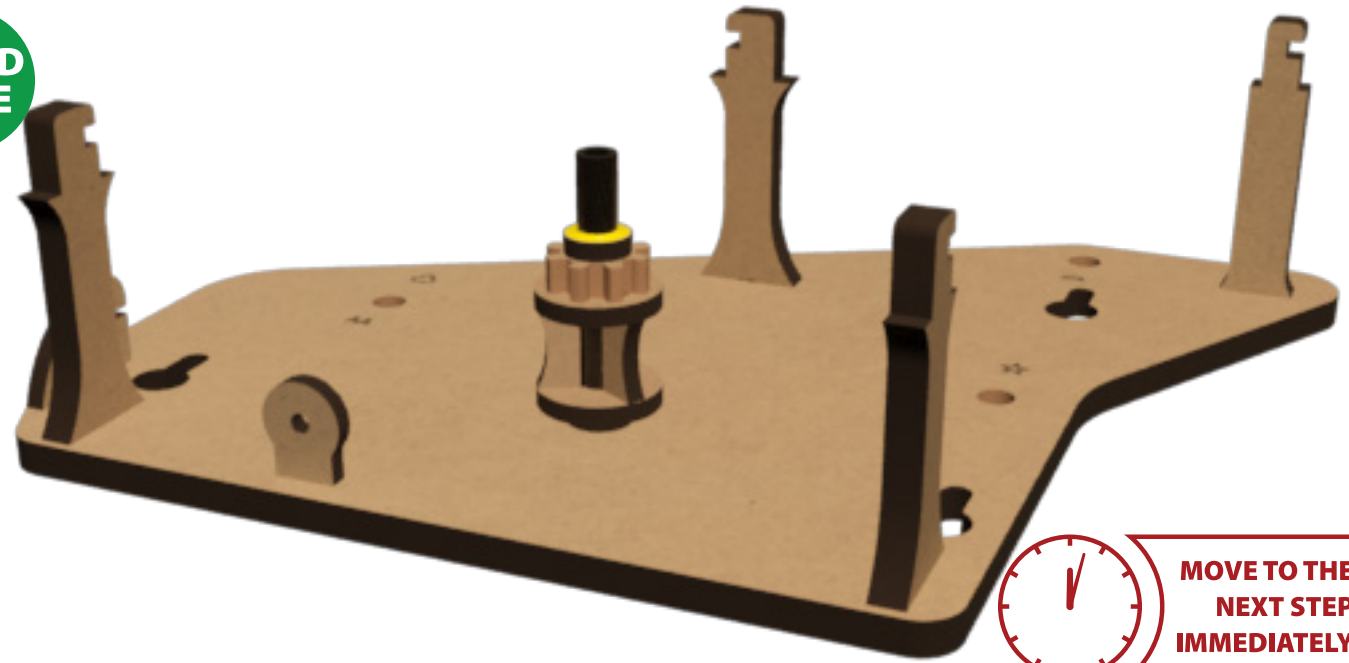
- 45.** Place a 'LONG' section of tube into the hole the baseplate (AA) marked with a triangle. Do not glue!



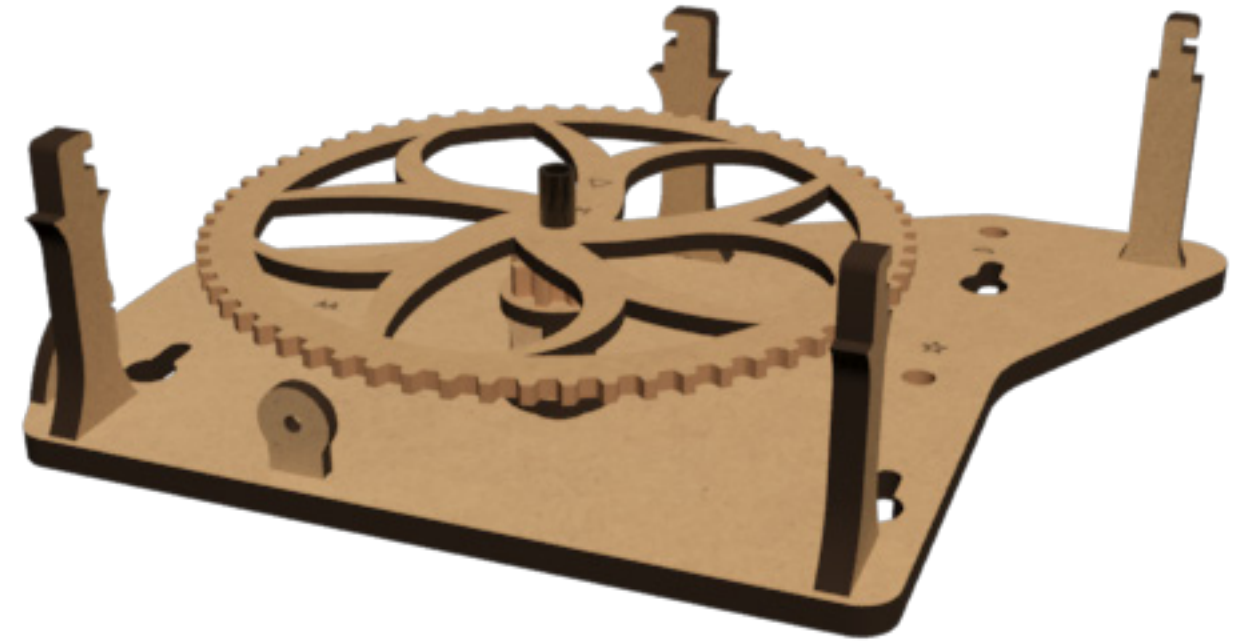
46. Slip a long spacer assembly (ring side down) onto the tube. Do not glue!



47. Slip a pinion (AE) onto the long spacer assembly. Do not glue!

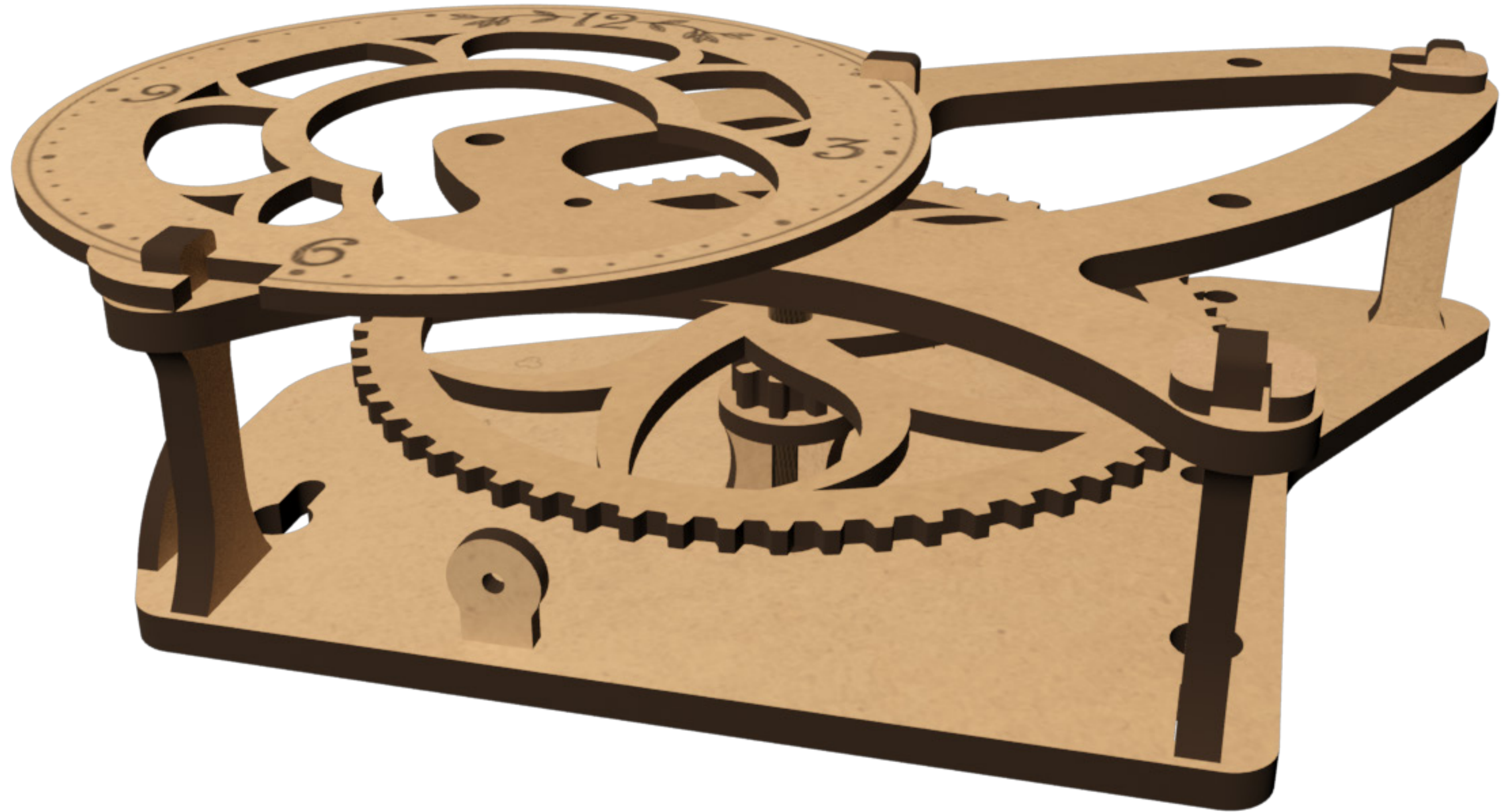


48. Slip a spacer ring (DF) onto the pinion (AE). Apply a bead of wood glue to the joint between the spacer ring (DF) and the carbon fiber tube.



49. Press the second wheel gear (BM) marked side up onto the spacer ring.

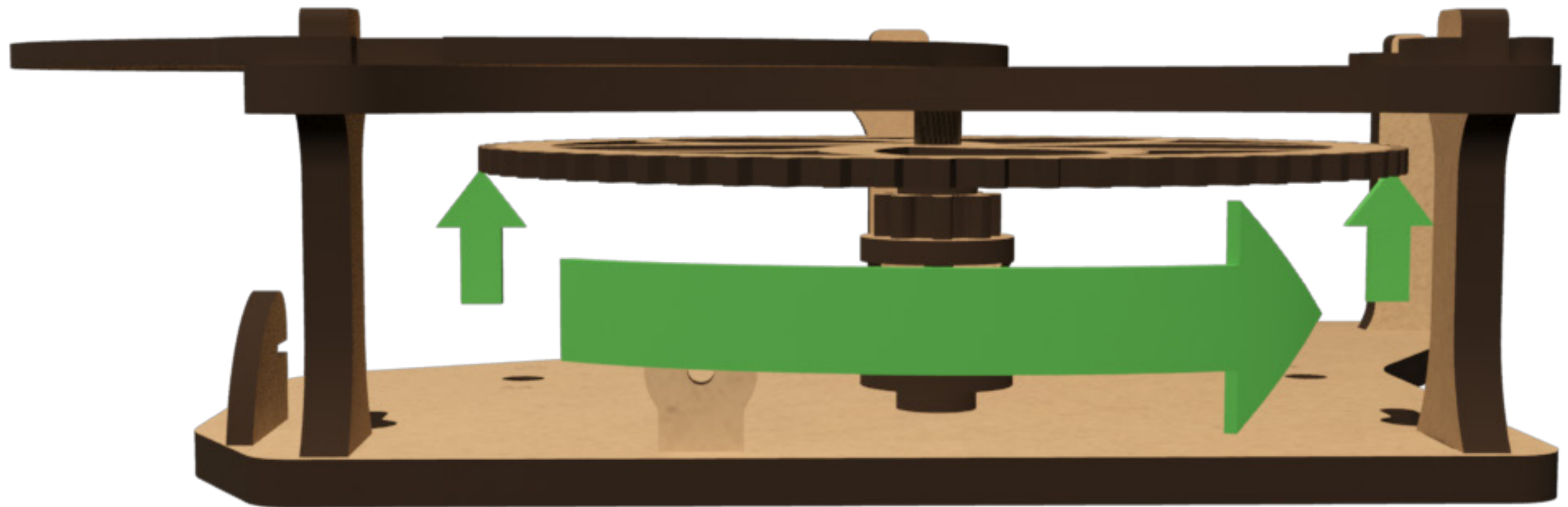
50. Assemble the faceplate (AD) to the assembled base using the clock face (BC) and retaining clips (DH).



- 51.** Before the wood glue sets, slowly rotate the second wheel assembly while examining it edge-on.

The space between the second wheel gear (BM) and the faceplate (AD) should be consistent to prevent wobbling.

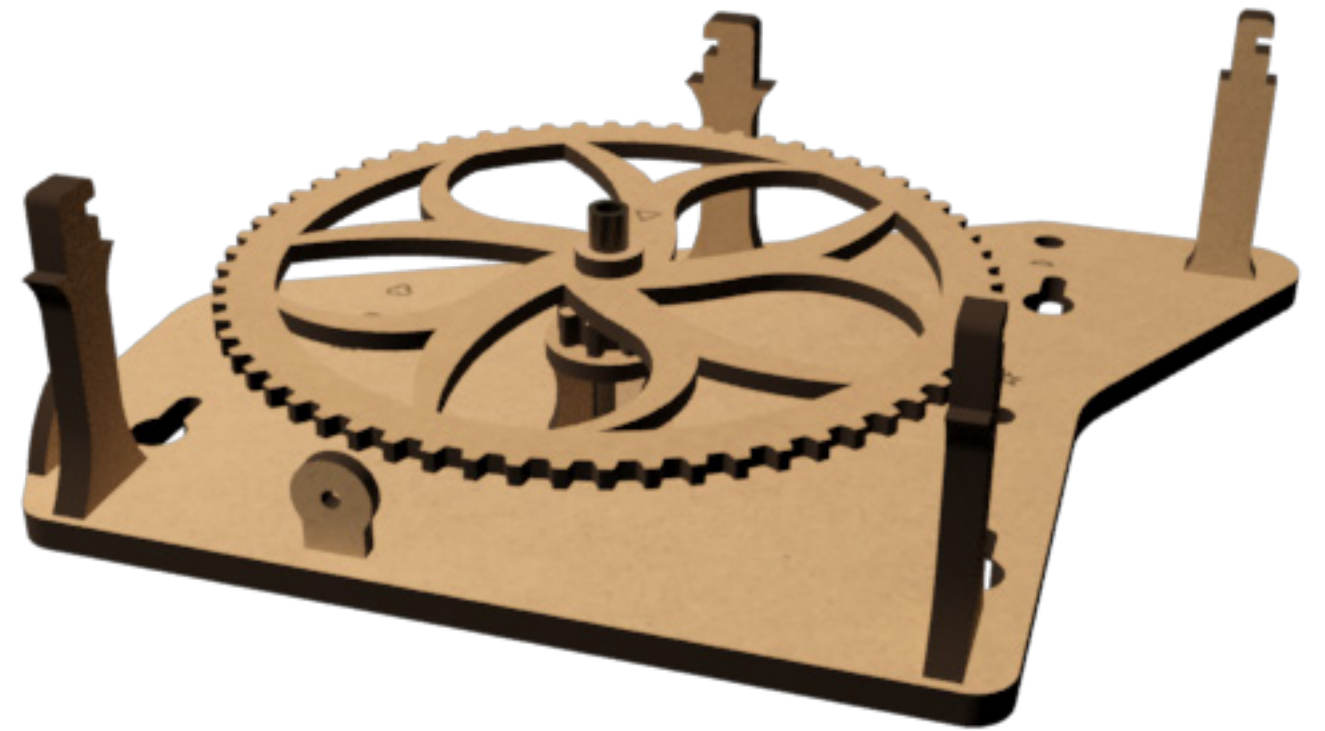
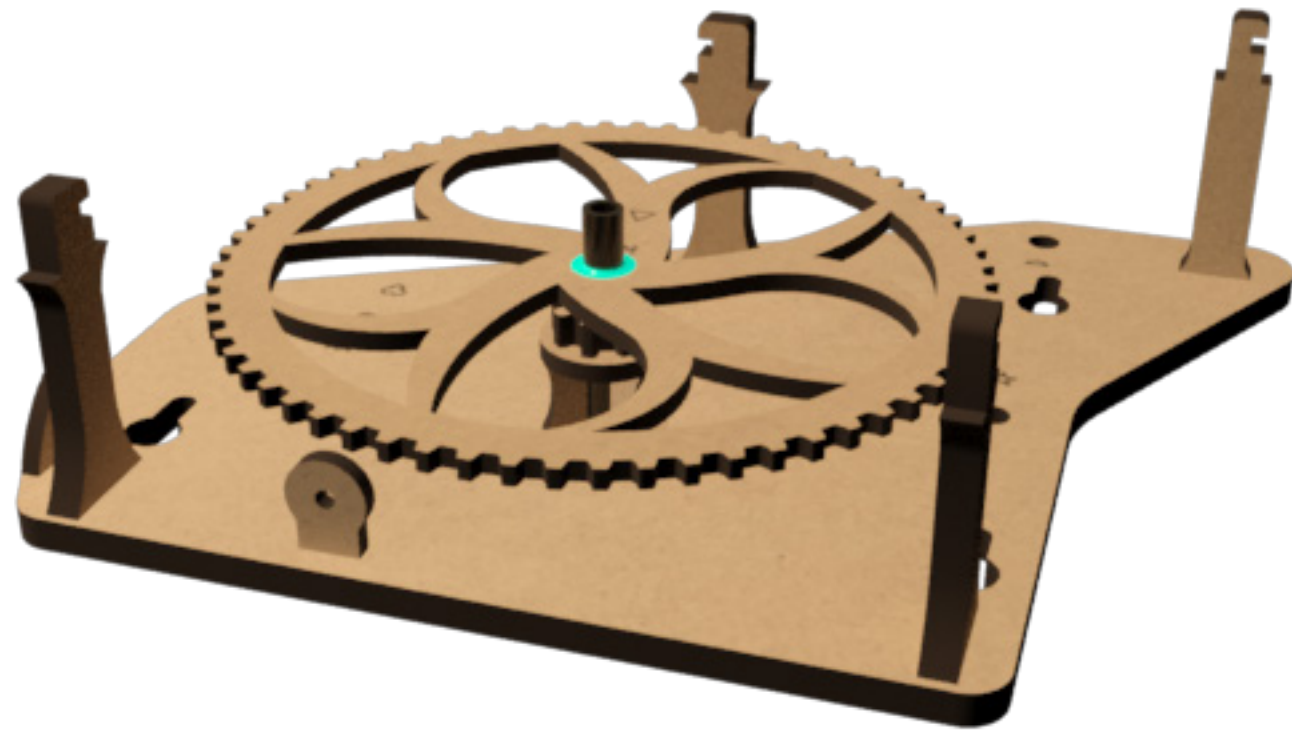
Continuing rotating the assembly and adjusting as necessary while the glue dries.



CA
GLUE

MOVE TO THE
NEXT STEP
IMMEDIATELY

CA
GLUE

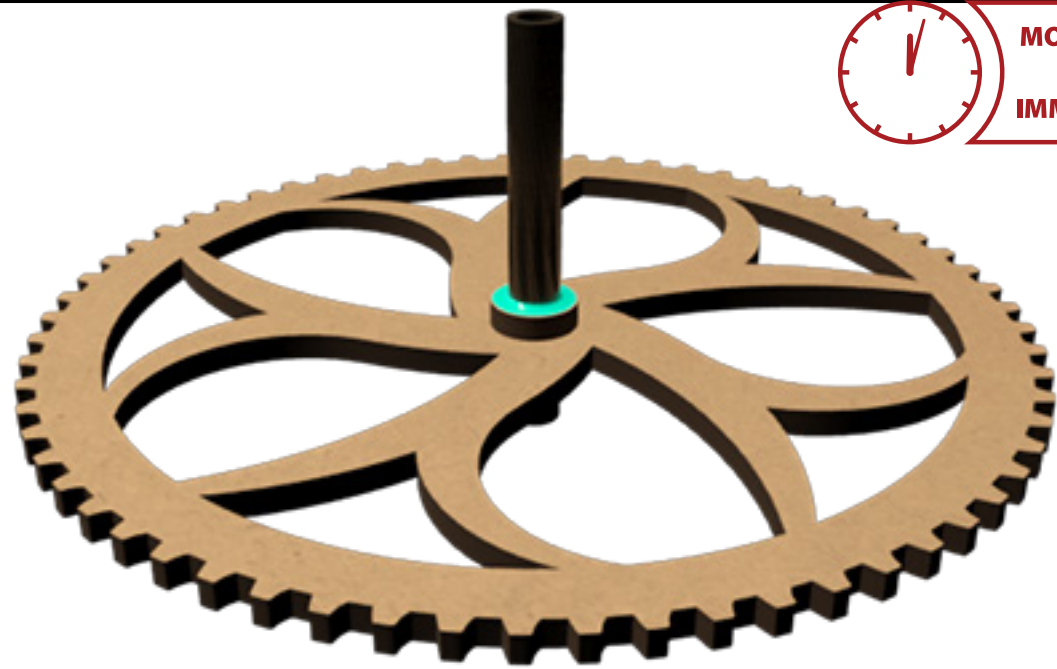


52. Remove the clock face (BC), retaining clips (DH) and faceplate (AD) from the assembled base.

Apply CA glue to the joint between the second wheel gear (BM) and the tube.

53. Press a spacer ring (DF) onto the second wheel gear (BM).

CA
GLUE

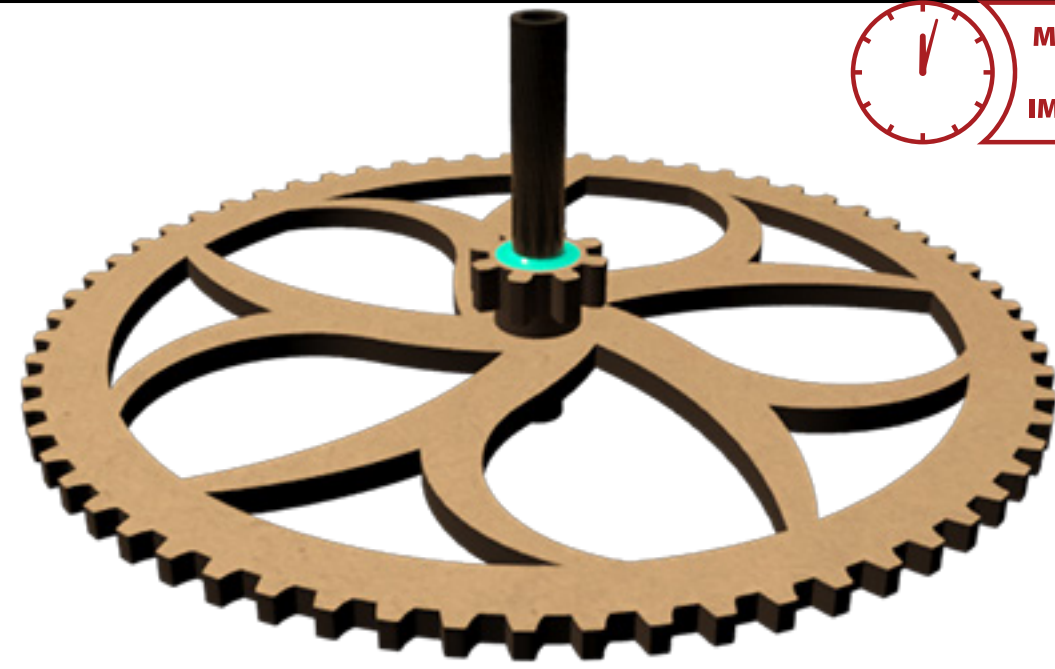


MOVE TO THE
NEXT STEP
IMMEDIATELY

- 54.** Remove the second wheel from the assembled base, and the long spacer assembly and pinion (AE) from the tube.

Apply CA glue to the joint between the spacer ring (DF) and the tube on the unmarked side of the second wheel gear (BM).

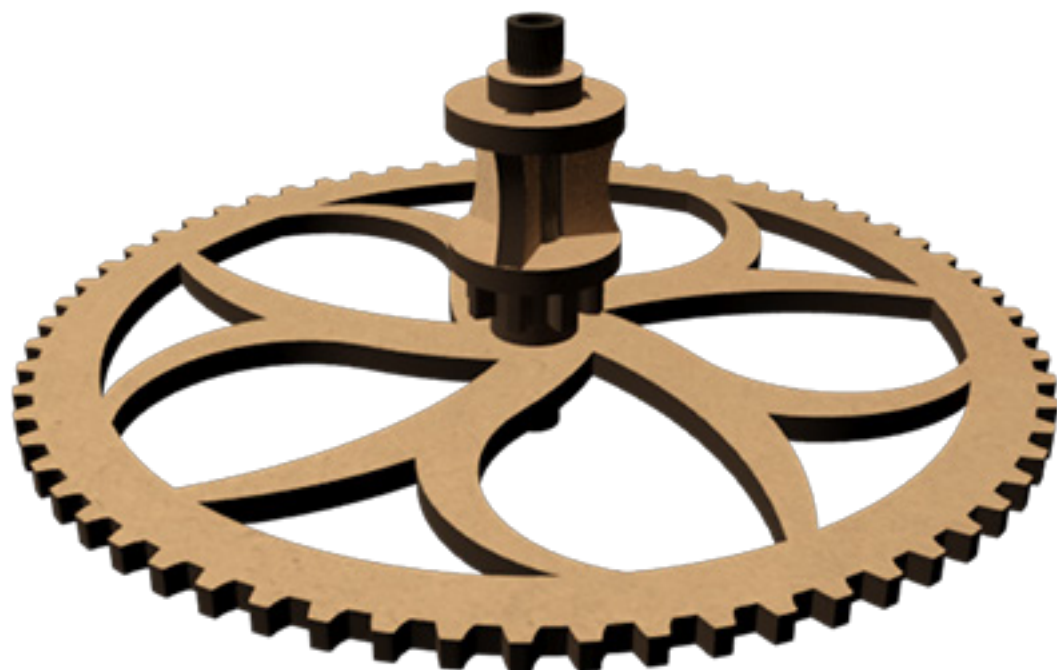
CA
GLUE



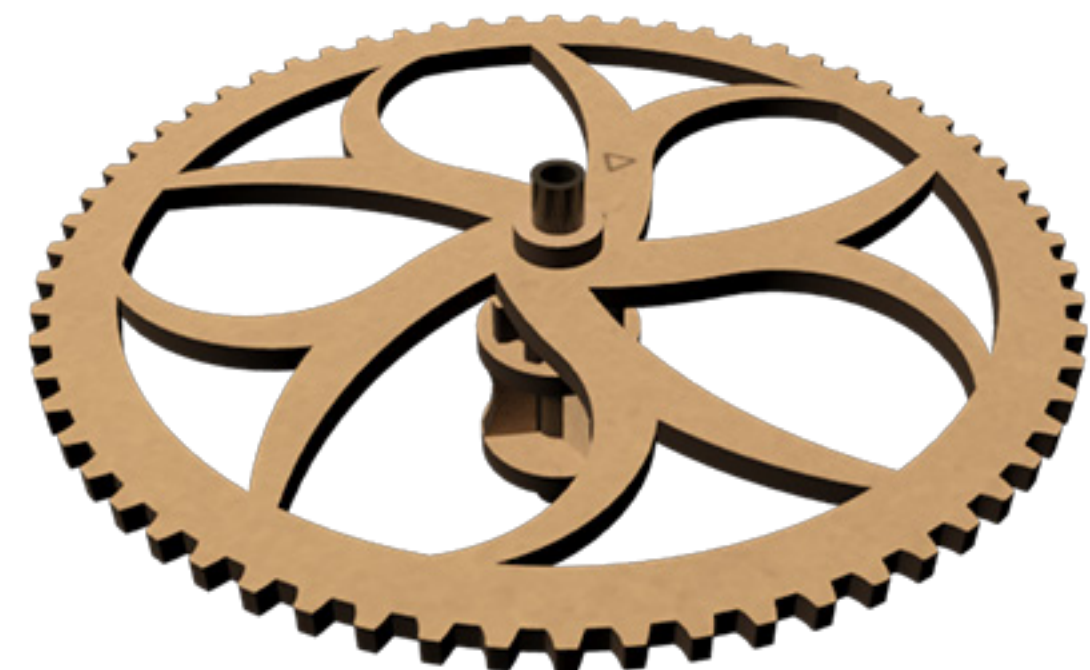
MOVE TO THE
NEXT STEP
IMMEDIATELY

- 55.** Press the pinion (AE) onto the spacer ring.

Apply CA glue to the joint between the pinion (AE) and the tube on the unmarked side of the second wheel gear (BM).



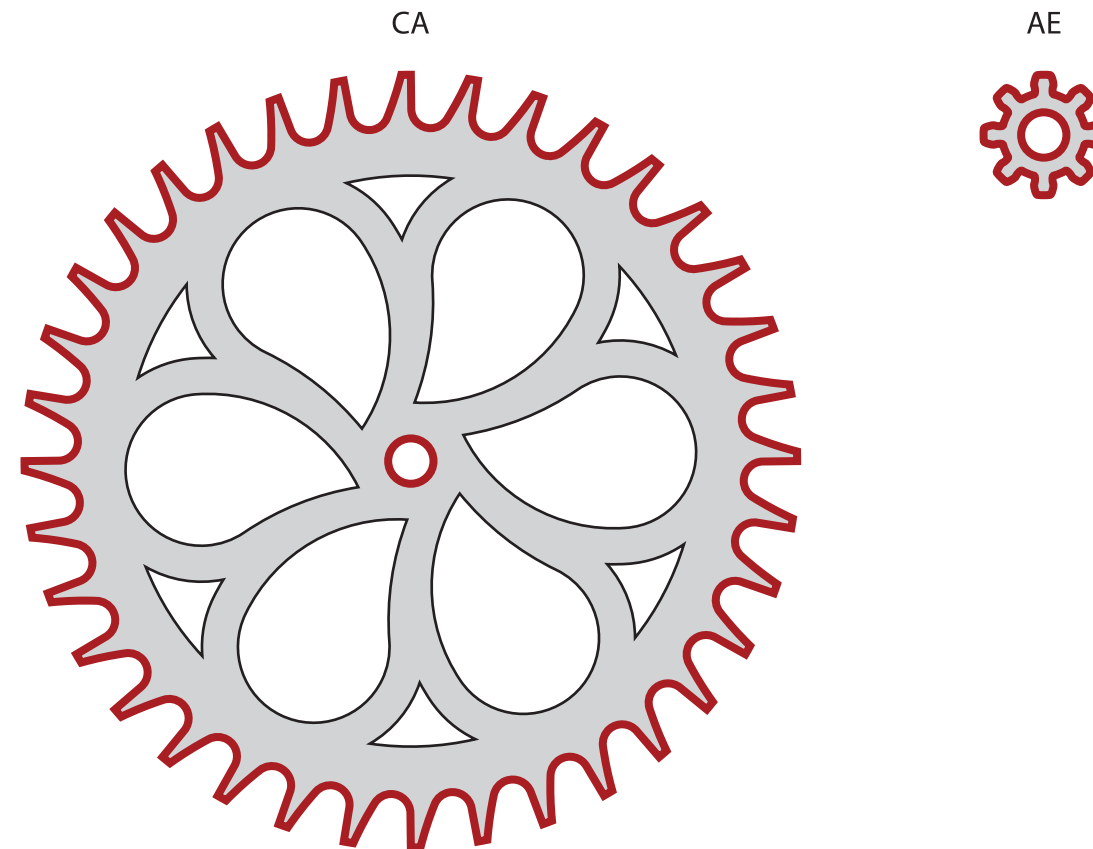
- 56.** Press the long spacer assembly onto the pinion (AE)

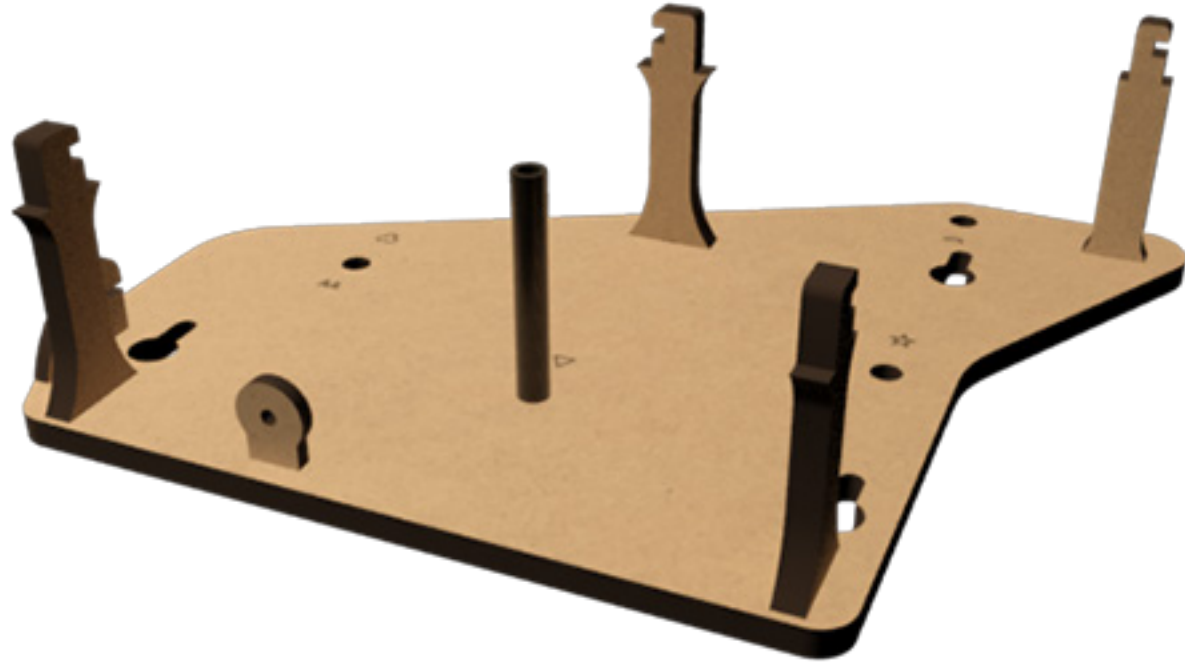


- 57.** This completes the second wheel.

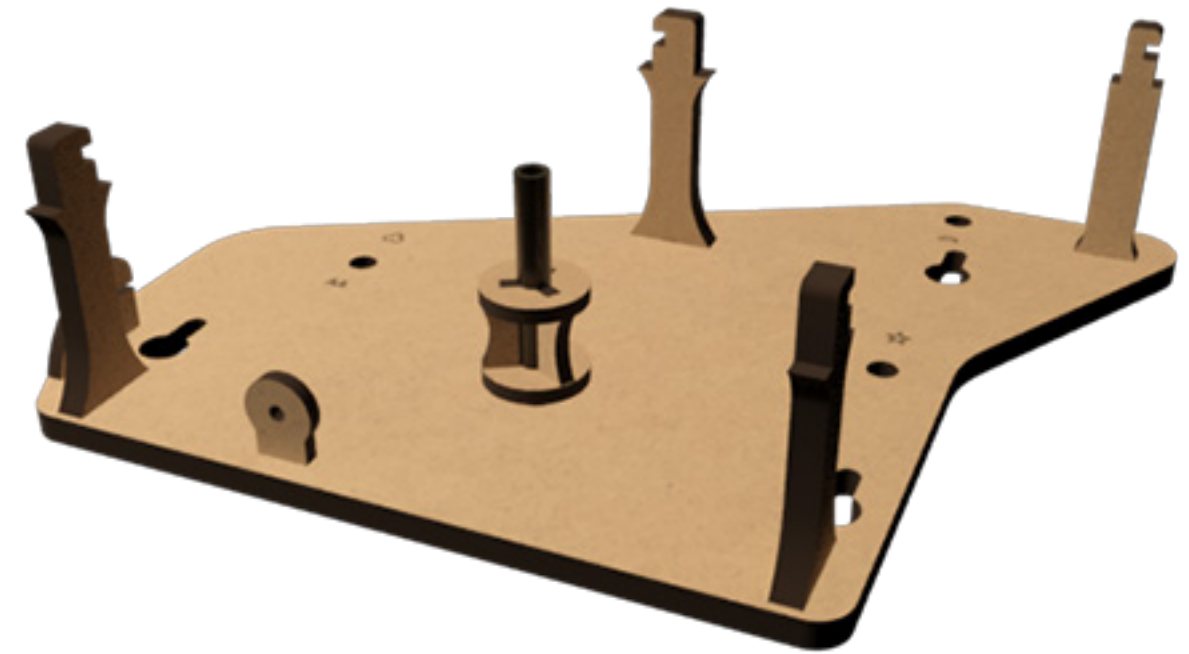
- 58.** Use 220 grit sandpaper to sand each tooth of the escape wheel gear (CA) and a pinion (AE) to remove residue left by the laser cutting process.

Use 220 grit sandpaper as needed to provide a sliding fit between the holes in both the escape wheel gear (CA) and the pinion (AE) and the carbon fiber tube.

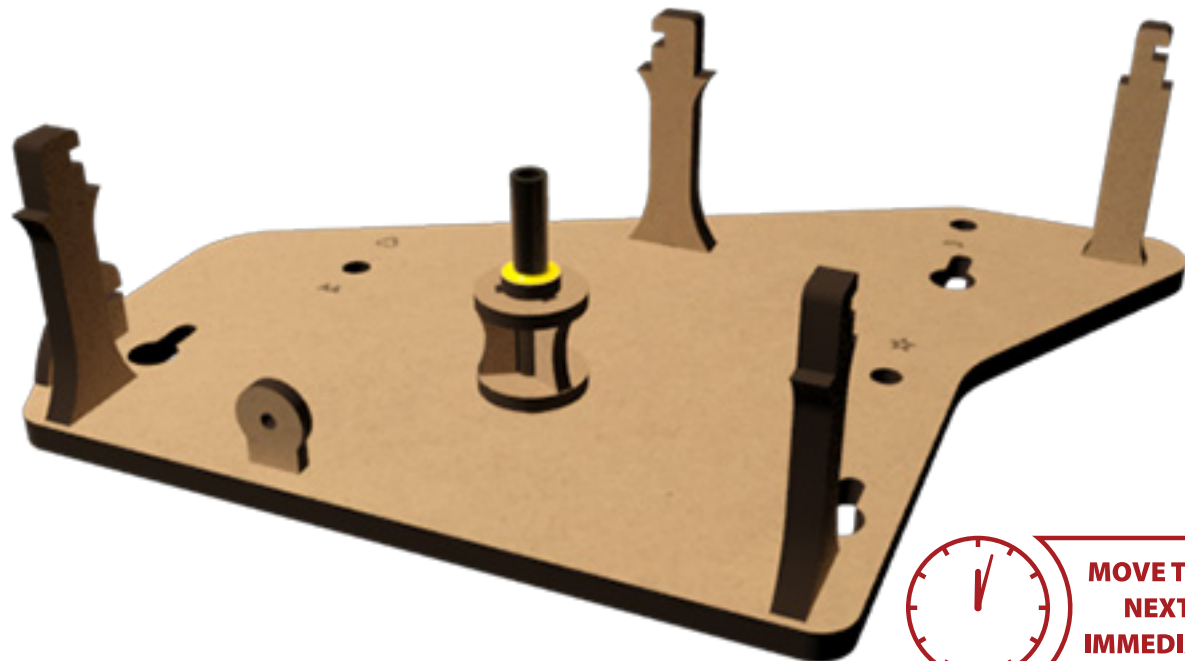




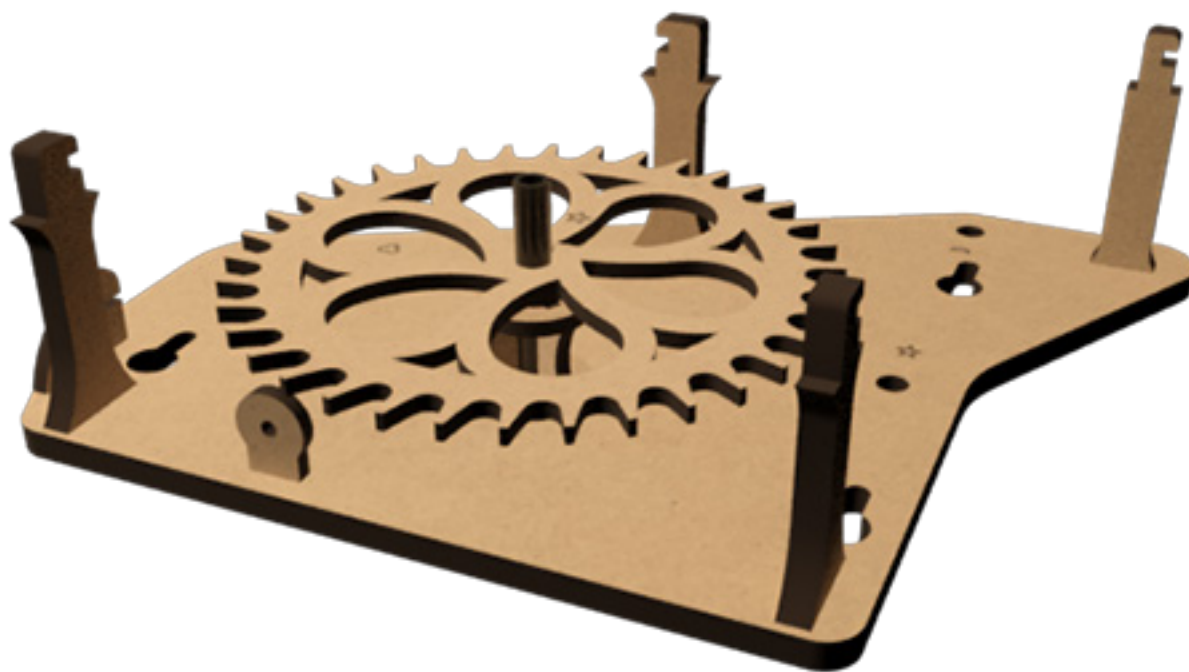
59. Place a 'LONG' section of tube into the hole the baseplate (AA) marked with a triangle. Do not glue!



60. Slip a long spacer assembly (ring side down) onto the tube. Do not glue!

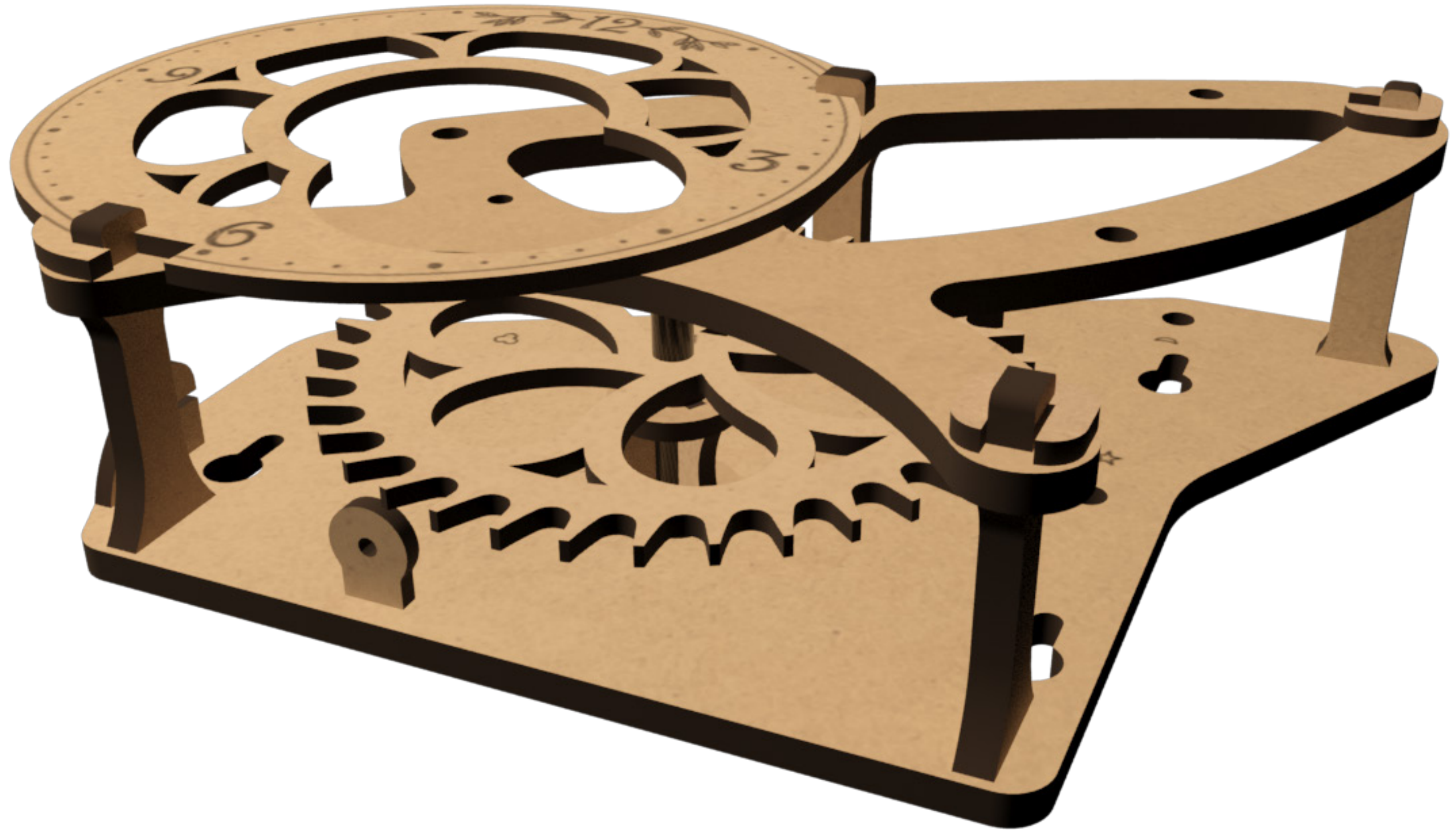


61. Slip a spacer ring (DF) onto the long spacer assembly. Apply a bead of wood glue to the joint between the spacer ring (DF) and the tube.



62. Press the escape wheel gear (CA) marked side up onto the spacer ring.

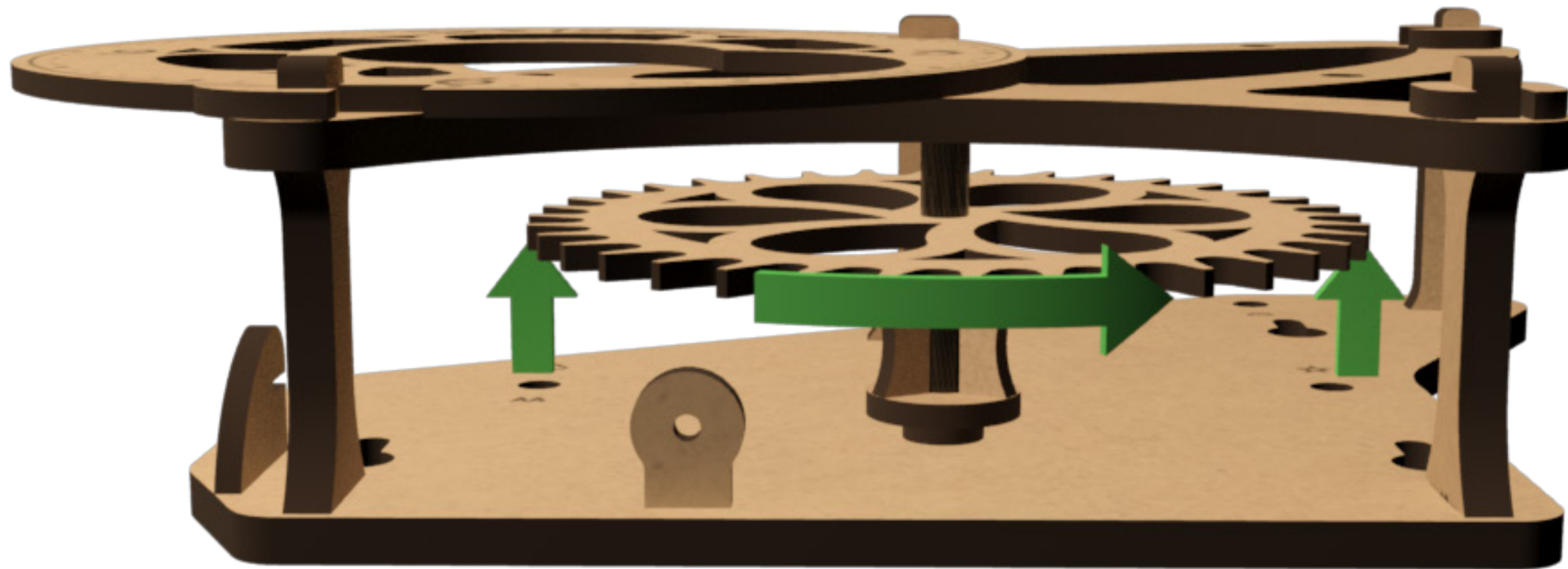
63. Assemble the faceplate (AD) to the assembled base using the clock face (BC) and retaining clips (DH).



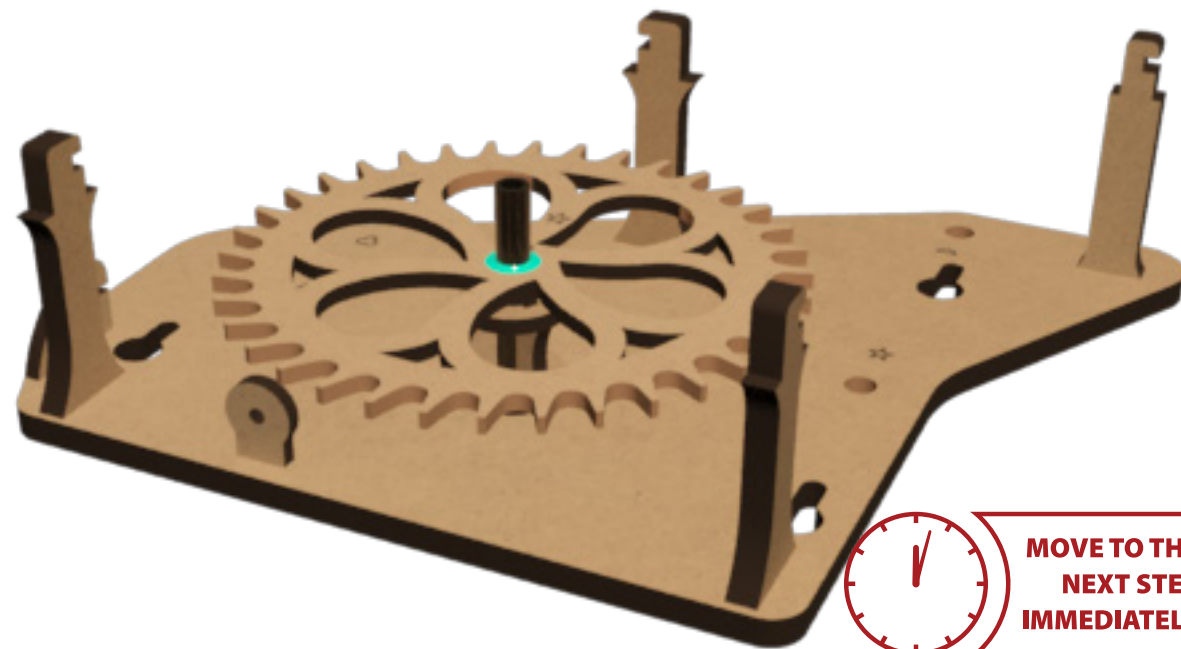
64. Before the wood glue sets, slowly rotate the escape wheel assembly while examining it edge-on.

The space between the escape wheel gear (CA) and the faceplate (AD) should be consistent to prevent wobbling.

Continuing rotating the assembly and adjusting as necessary while the glue dries.



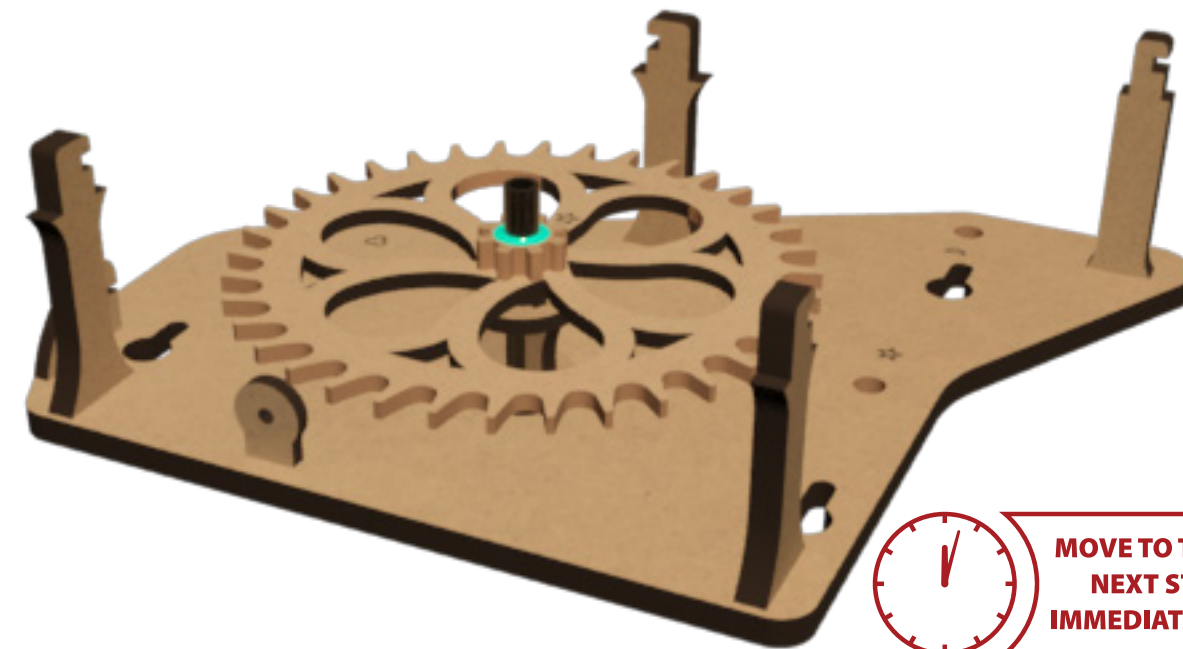
CA
GLUE



65. Remove the clock face (BC), retaining clips (DH) and faceplate (AD) from the assembled base.

Apply CA glue to the joint between the escape wheel gear (CA) and the tube.

CA
GLUE



66. Press a pinion (AE) onto the escape wheel gear (CA).

Apply CA glue to the joint between the pinion (AE) and the tube.



67. Press a spacer ring (DF) onto the pinion (AE).

CA
GLUE



68. Remove the escape wheel assembly from the base and the long spacer assembly from the tube.

Apply CA glue to the joint between the spacer ring (DF) and the tube on the unmarked side of the escape wheel gear (CA).



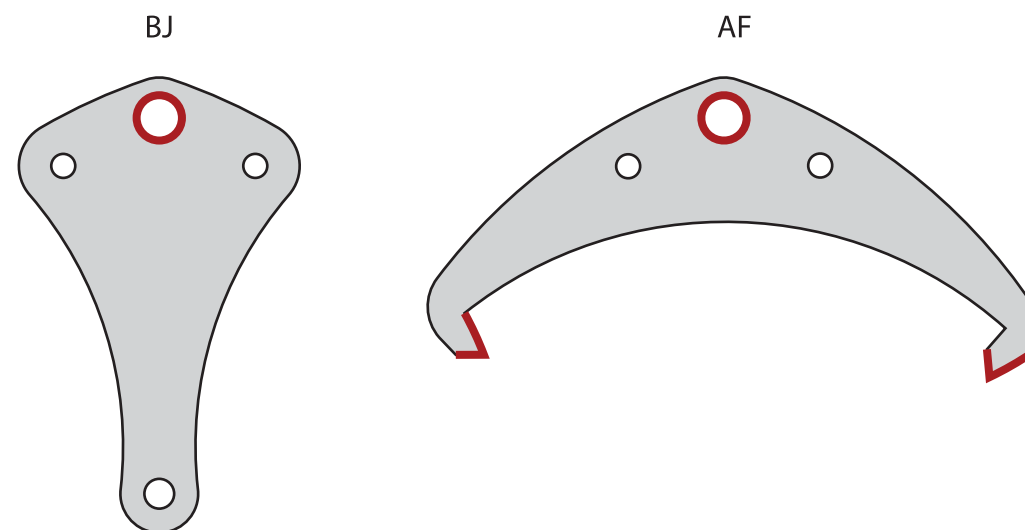
69. Press the long spacer assembly onto the pinion (AE)

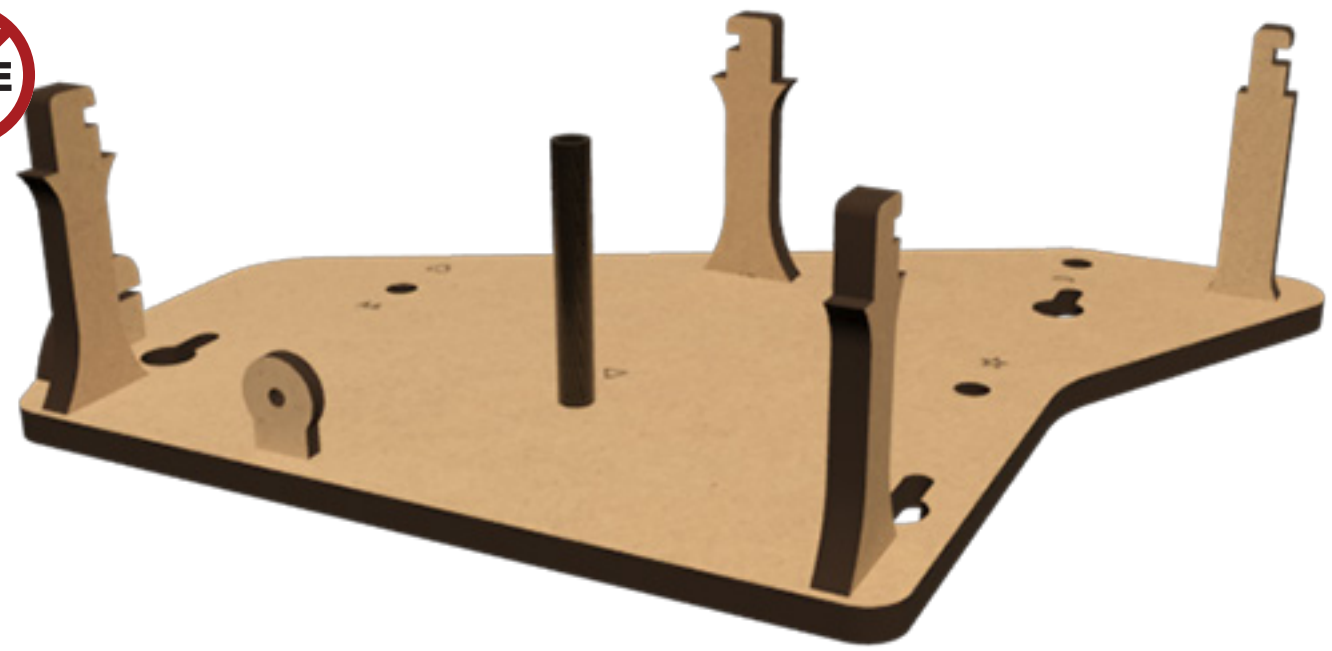


70. This completes the escape wheel.

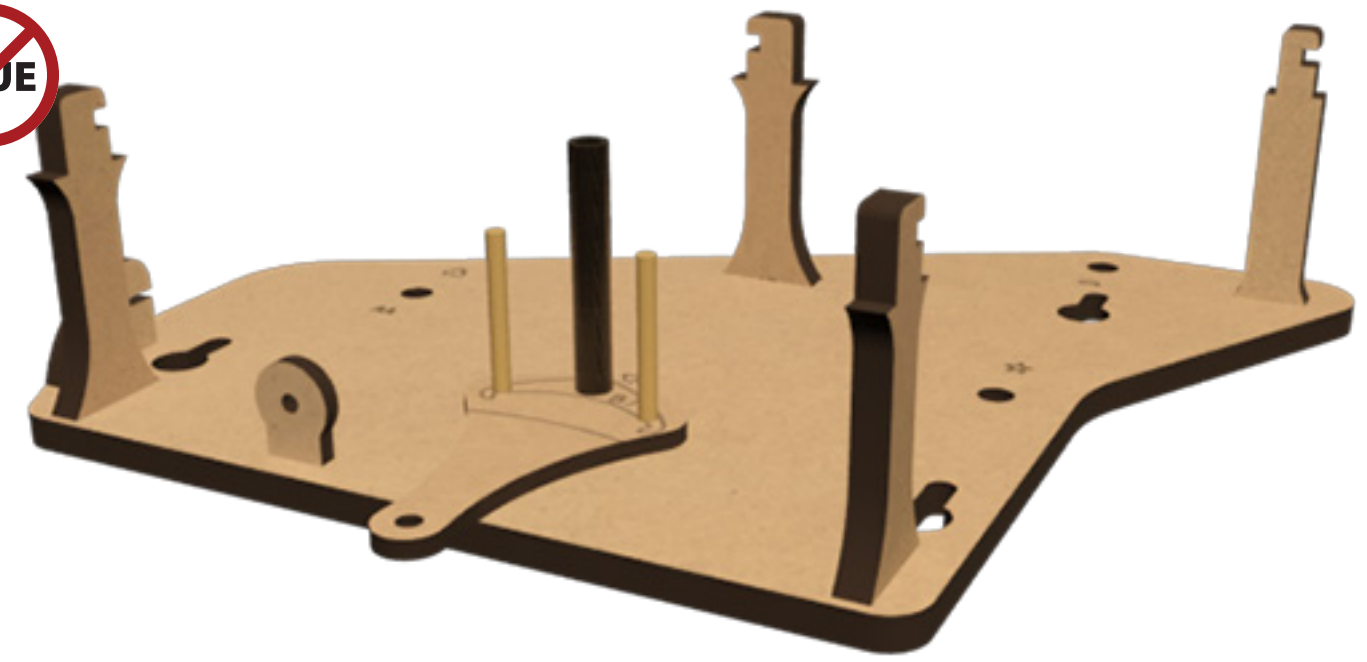
71. Use 220 grit sandpaper to sand the working faces of the pallets (AF). Work carefully, and do not alter the shape of the part

Use 220 grit sandpaper as needed to provide a sliding fit between the holes in both the pallets (AF) and the pallet backing plate (BJ) and the tube.

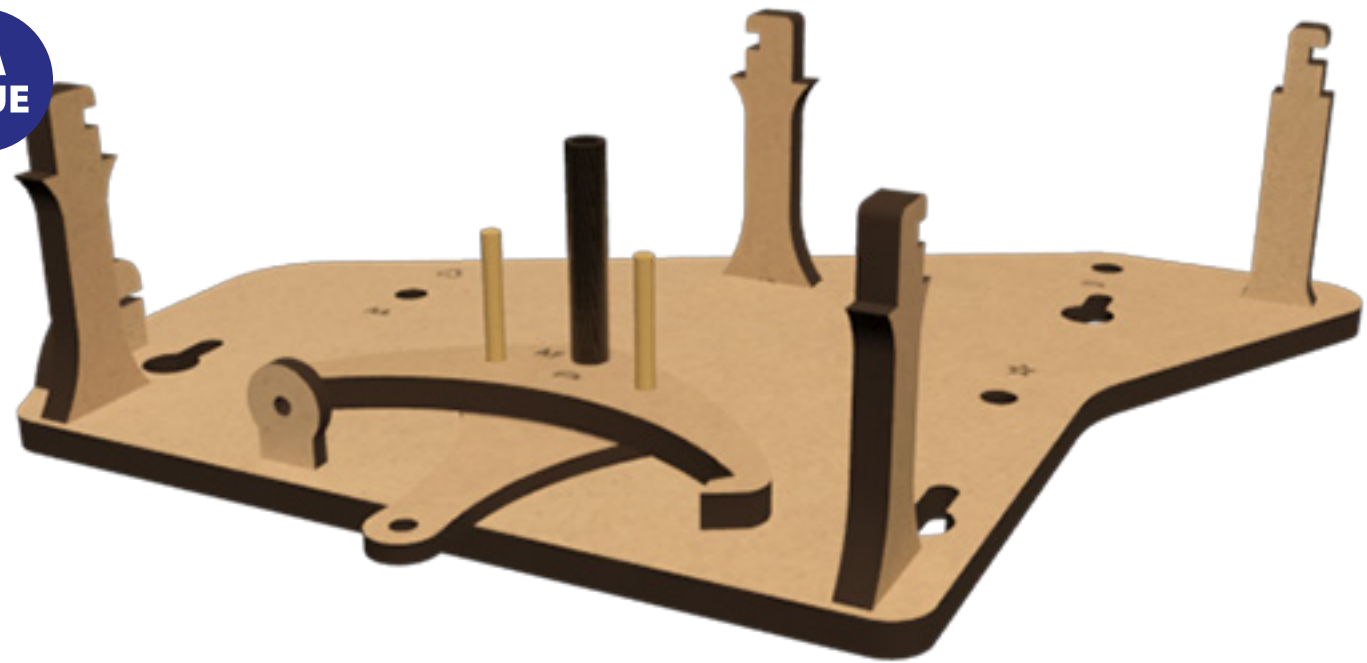




72. Place a 'LONG' section of tube into the hole the baseplate (AA) marked with a triangle. Do not glue!



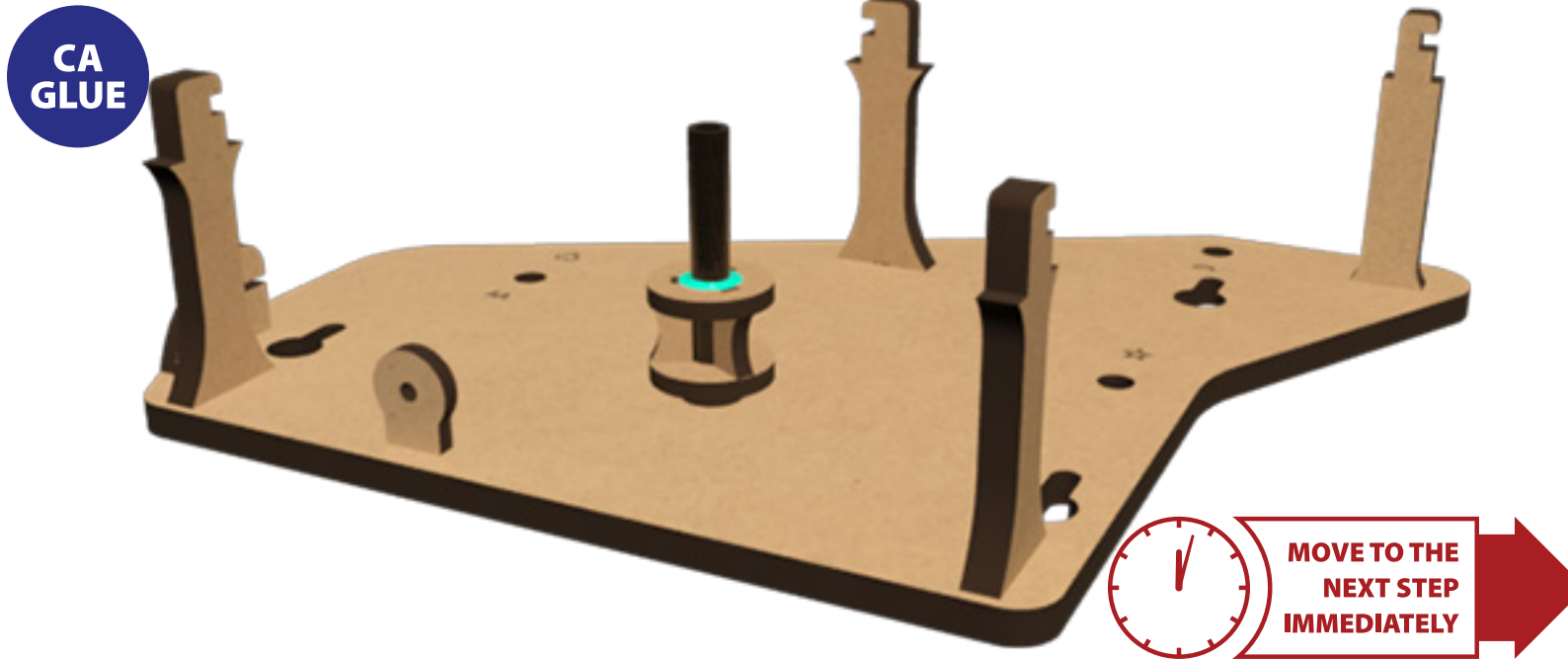
73. Slip the pallet backing plate (BJ) marked side up onto the tube. Do not glue!
Press two alignment pins into the holes in the pallet backing plate (BJ).



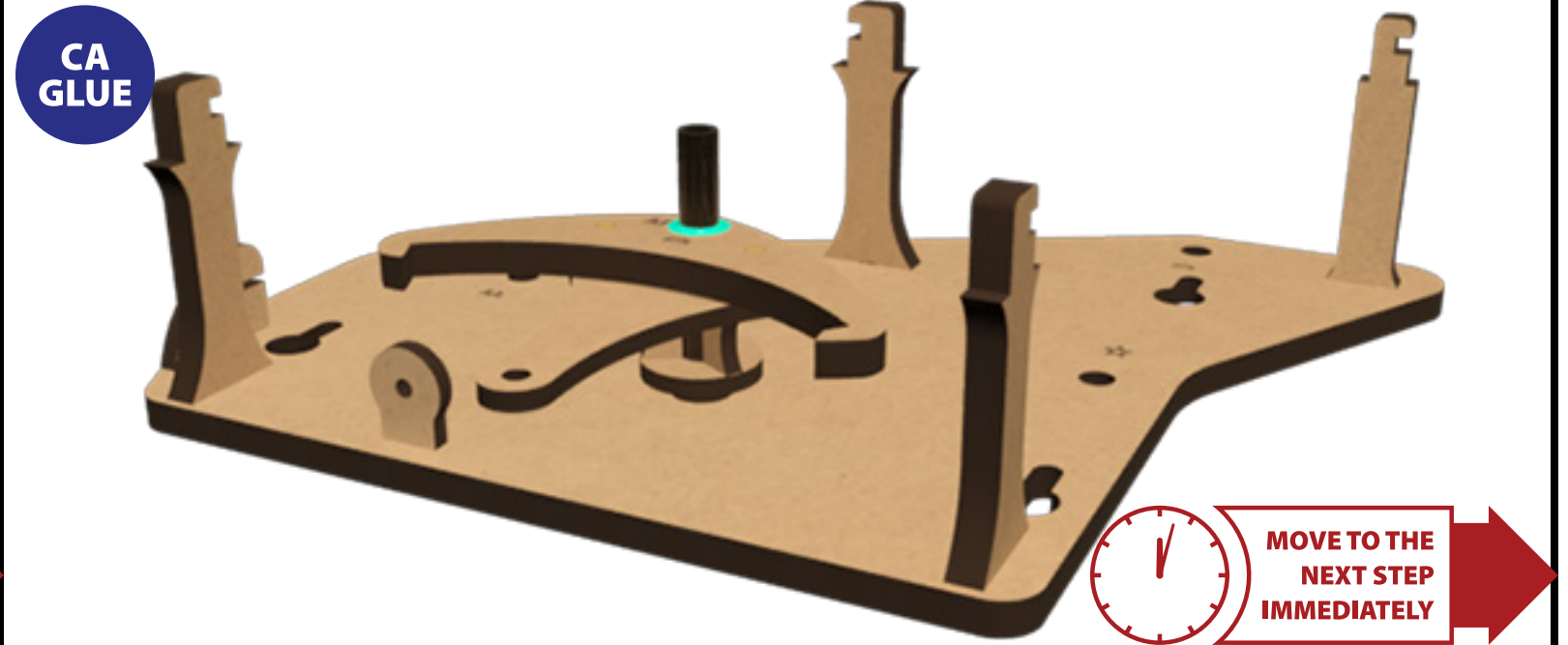
74. Use CA glue to attach the pallets (AF) to the pallet backing plate (BJ) and alignment pins



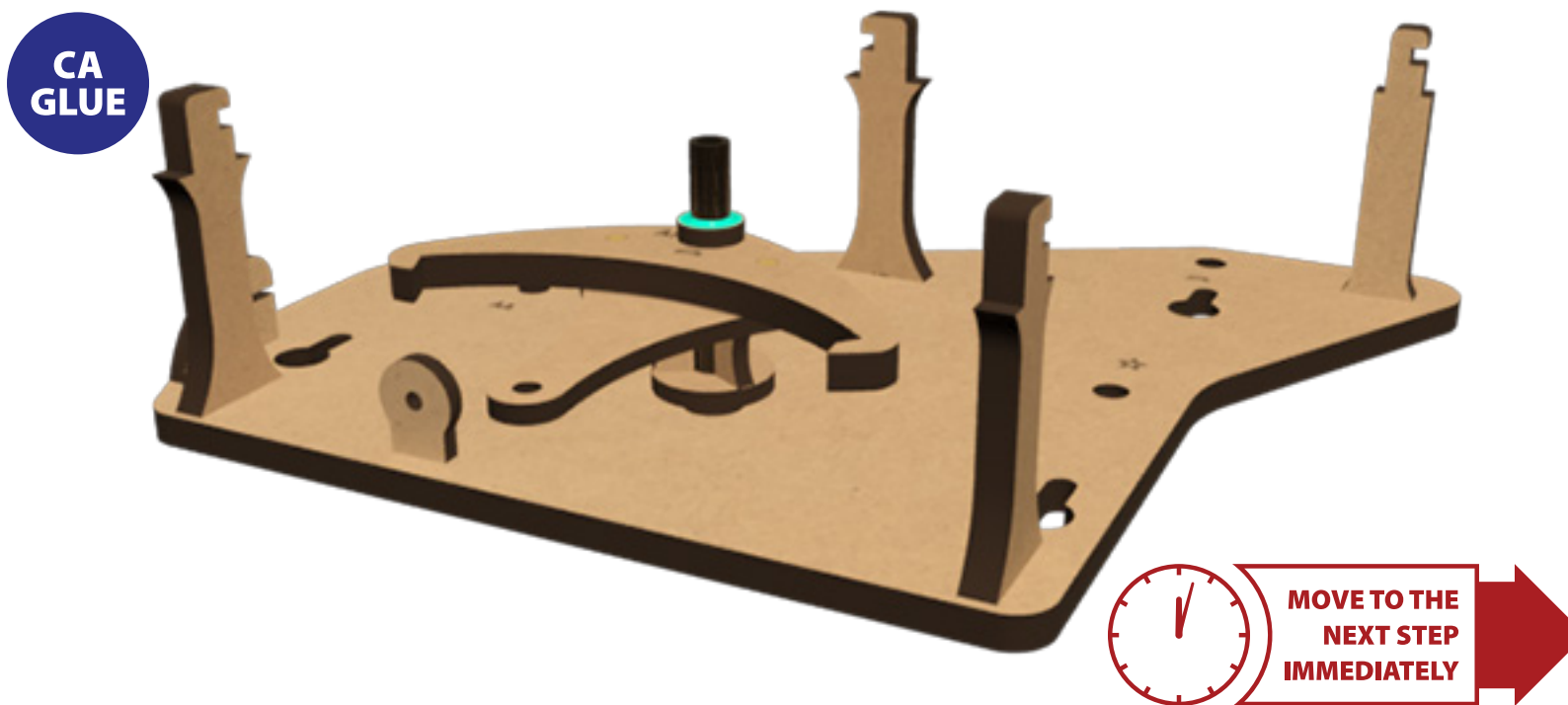
75. Remove the pallets from the tube, then trim and sand the alignment pins flush with the marked side of the pallets (AF)



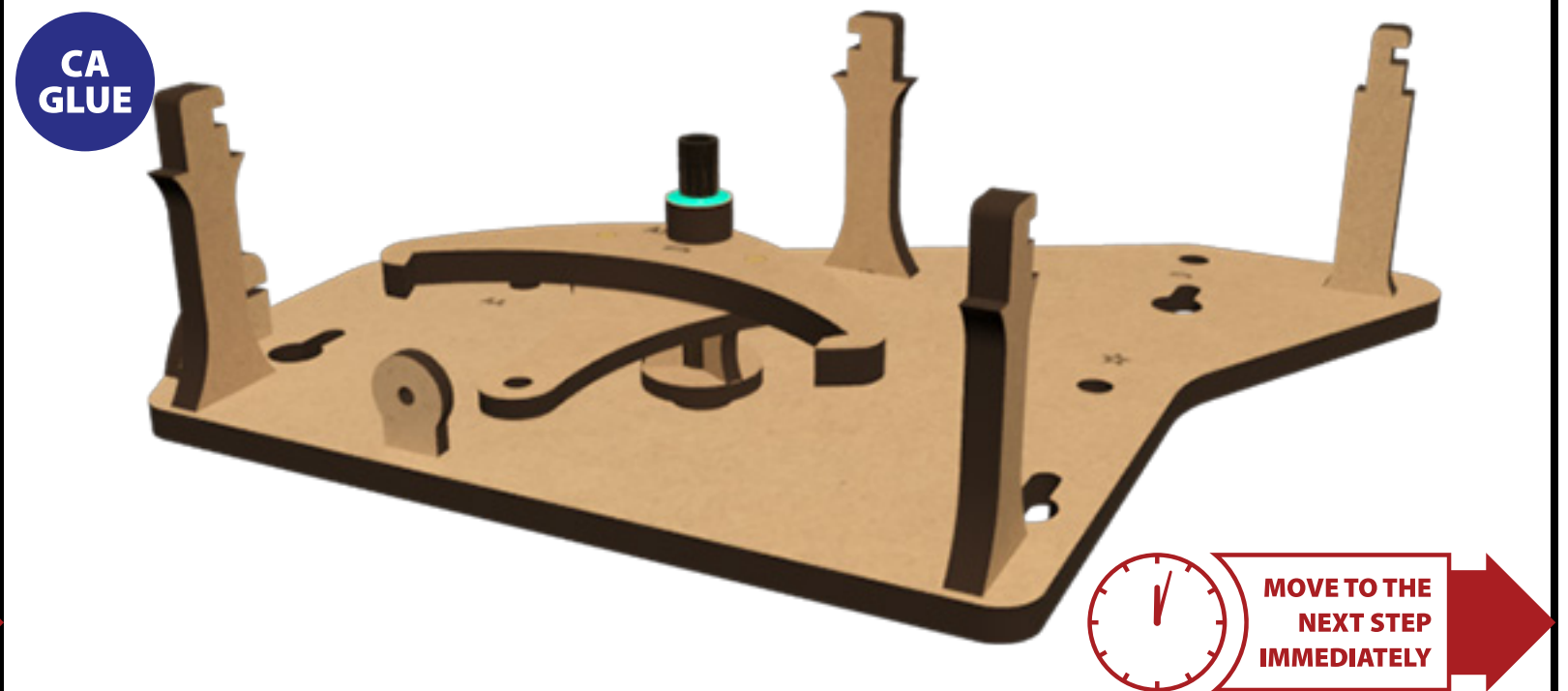
- 76.** Place the short spacer assembly ring side down onto the tube.
Apply CA glue to the joint between the short spacer assembly and the tube.



- 77.** Press the pallet assembly marked side up onto the short spacer assembly.
Apply CA glue to the joint between the pallets (AF) and the tube.

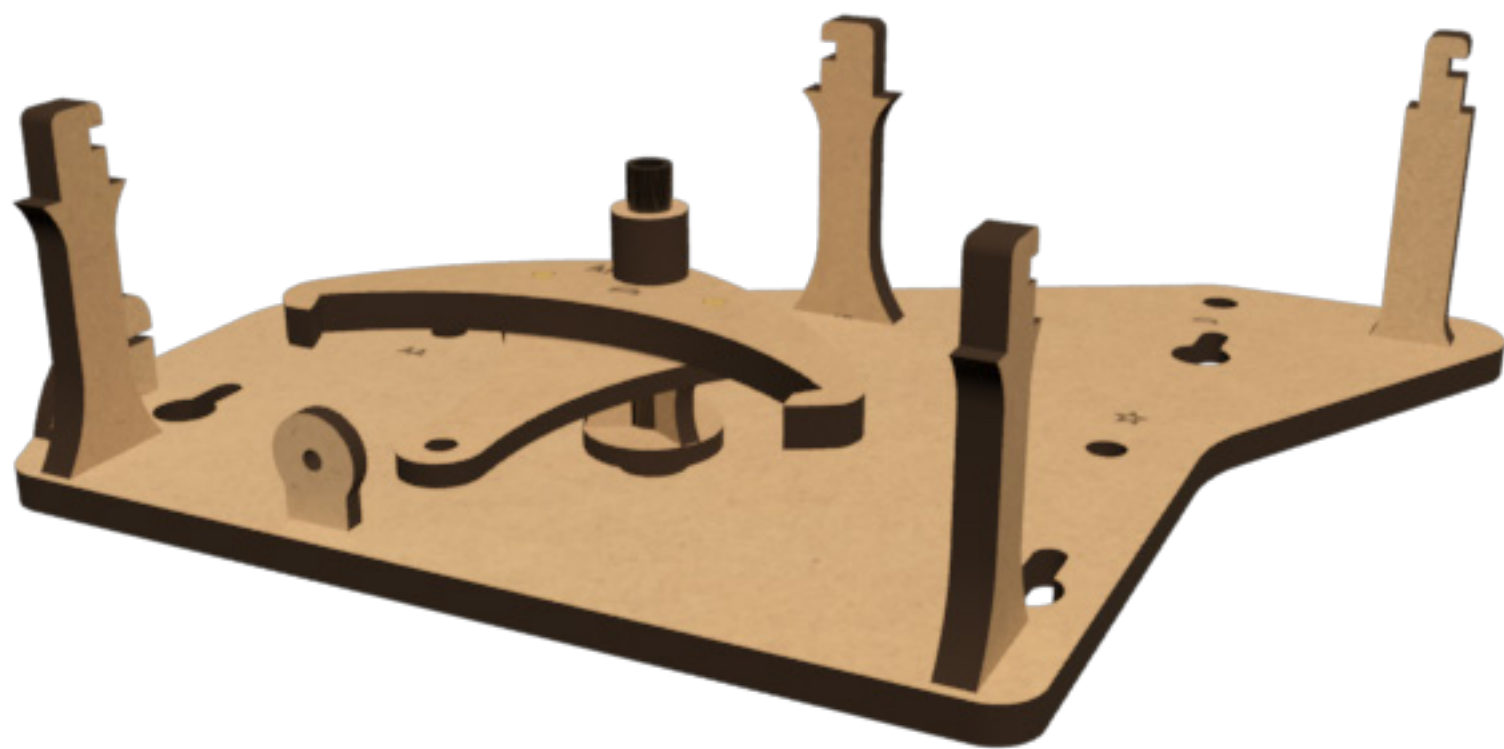


- 78.** Press a spacer ring (DF) onto the pallets (AF).
Apply CA glue to the joint between the spacer ring (DF) and the tube.



- 79.** Press a second spacer ring (DF) onto the previous spacer ring (DF).
Apply CA glue to the joint between the spacer ring (DF) and the tube.

80. Press a third spacer ring (DF) onto second spacer ring (DF).



81. Remove the pallets from the assembled base.

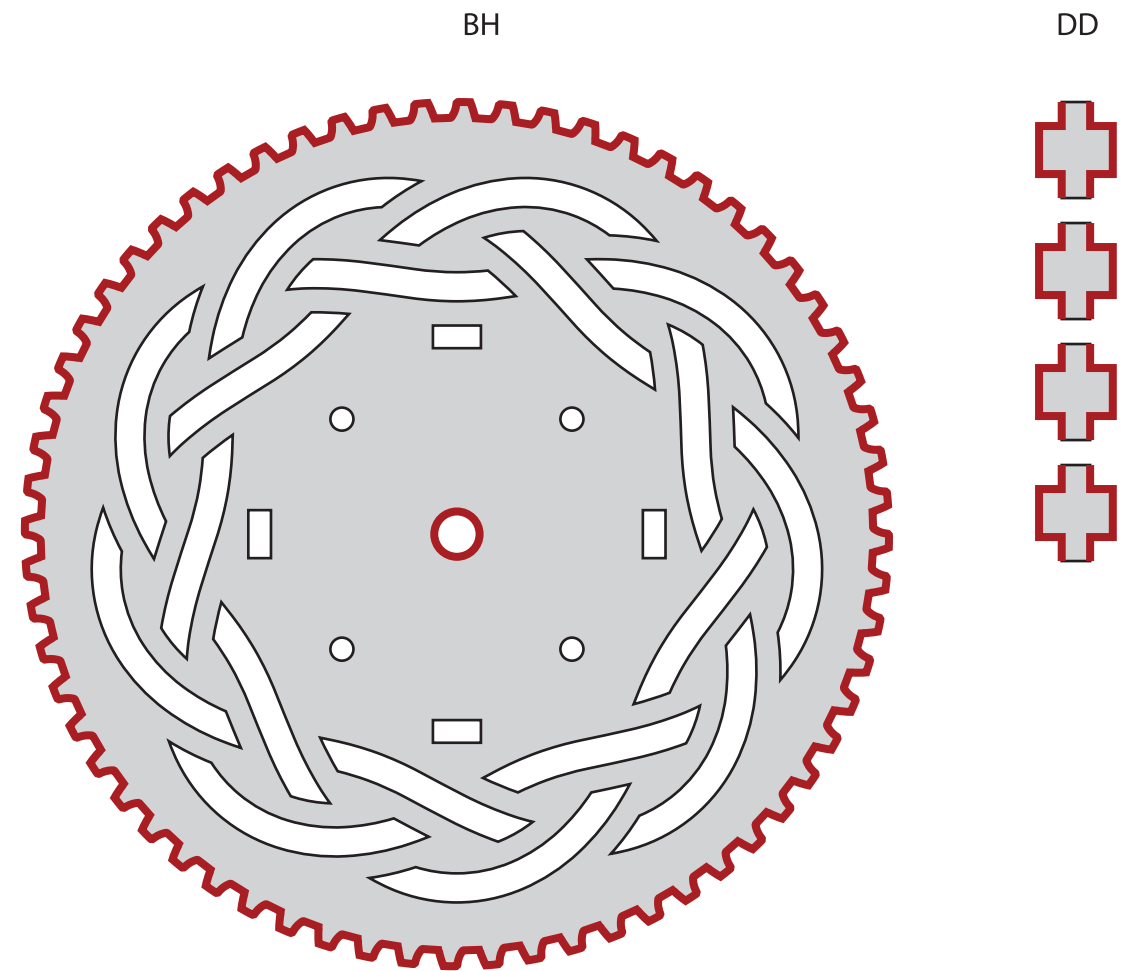
This completes the pallets.

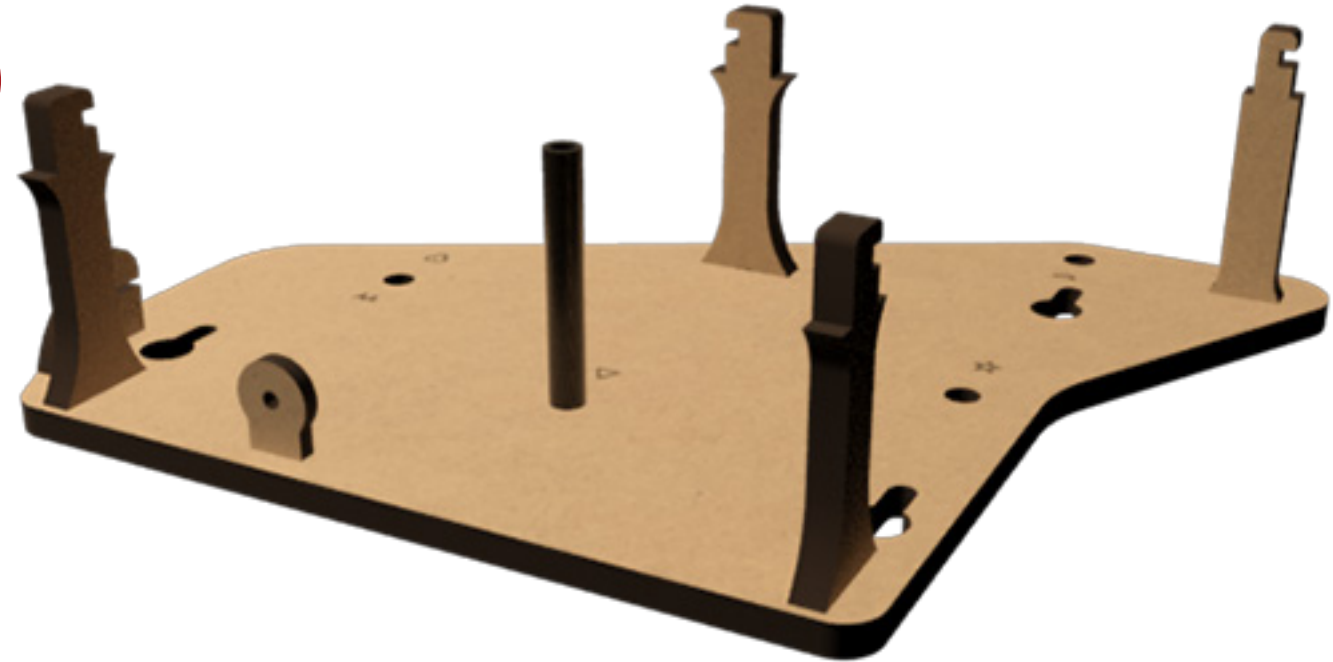


82. Use 220 grit sandpaper to sand each tooth of the winder wheel gear (BH) to remove residue left by the laser cutting process.

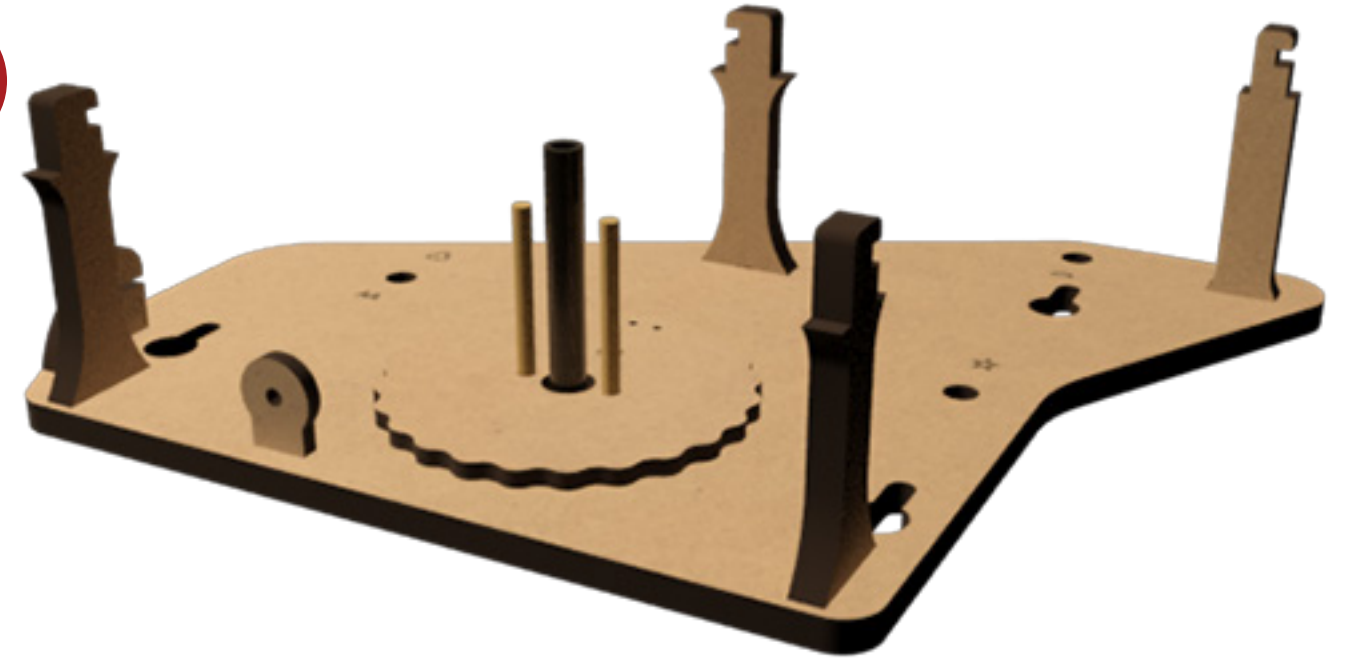
Use 220 grit sandpaper as needed to provide a sliding fit between the hole in the winder wheel gear (BH) and the tube.

Use 220 grit sandpaper on the pawl spacers (DD) to remove residue left by the laser cutting process from the edges highlighted in red.

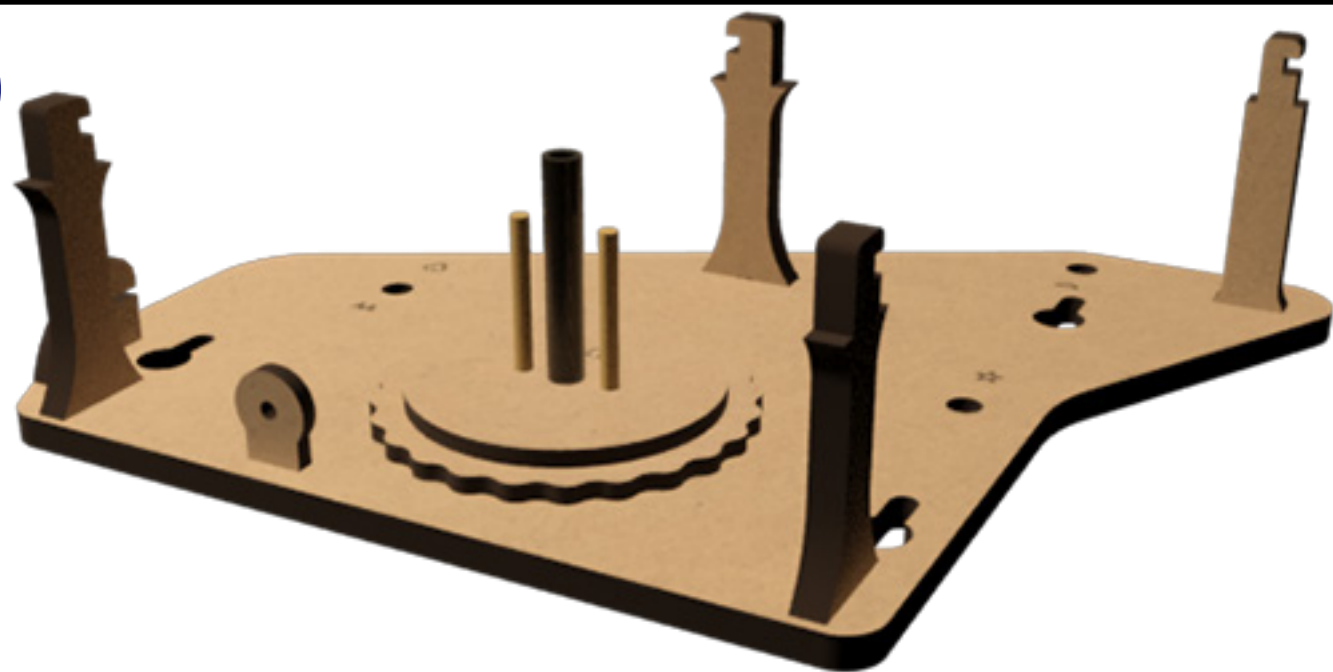




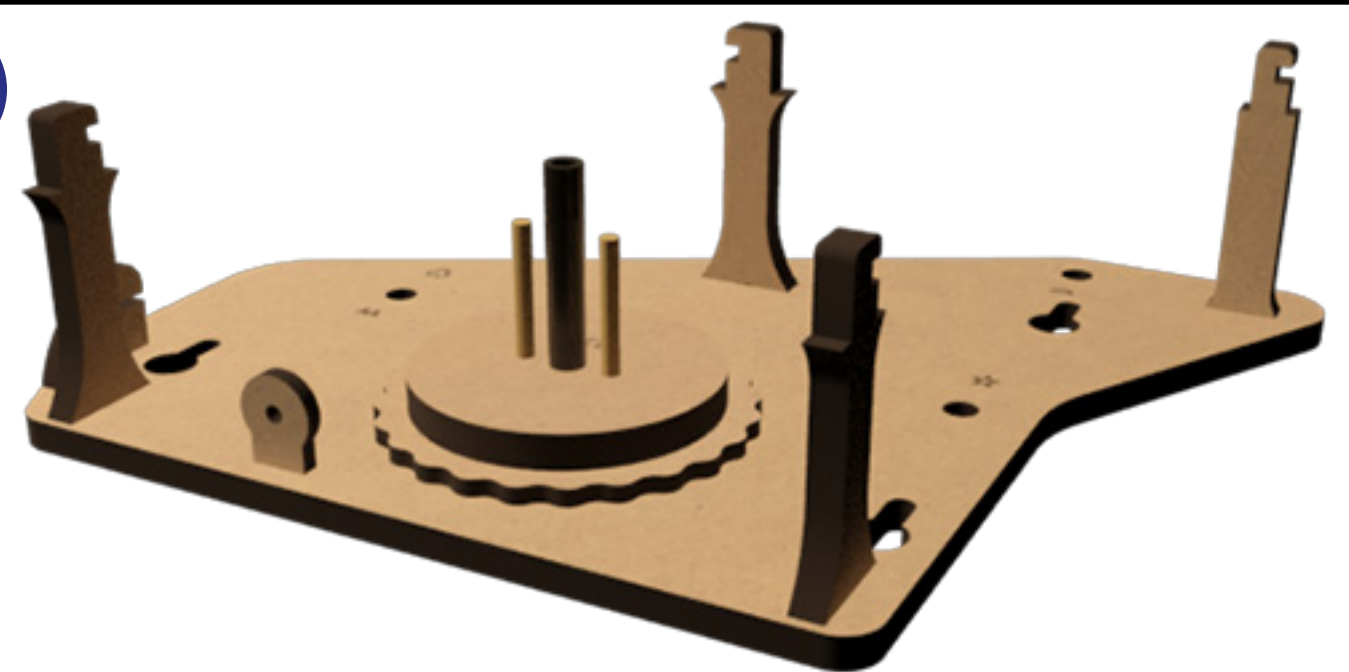
83. Place a 'LONG' section of tube into the hole the baseplate (AA) marked with a triangle. Do not glue!



84. Slip a spool thumbwheel (CD) onto the tube, Do not glue!
Press two alignment pins into the spool thumbwheel (CD)

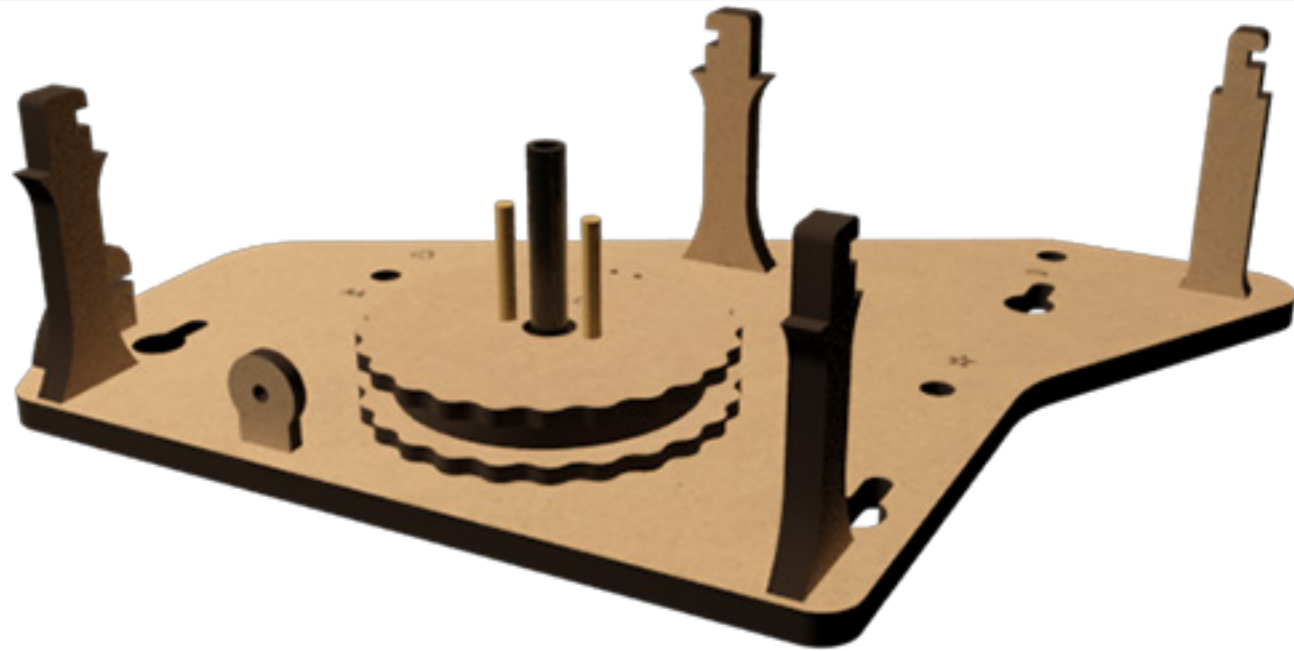


85. Use CA glue to attach a spool core (CE) to the spool thumbwheel (CD) and alignment pins. Do not allow glue to come into contact with the tube!



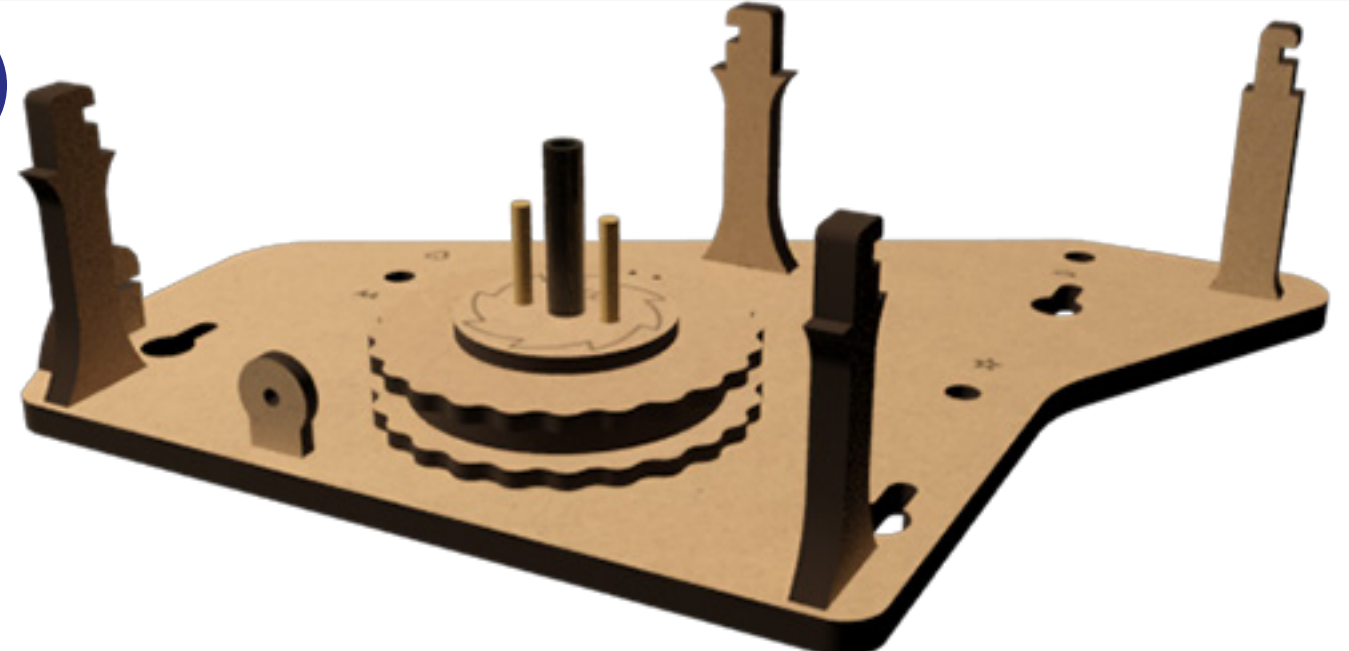
86. Use CA glue to attach a second spool core (CE) to the previous spool core (CE) and alignment pins. Do not allow glue to come into contact with the tube!

CA
GLUE



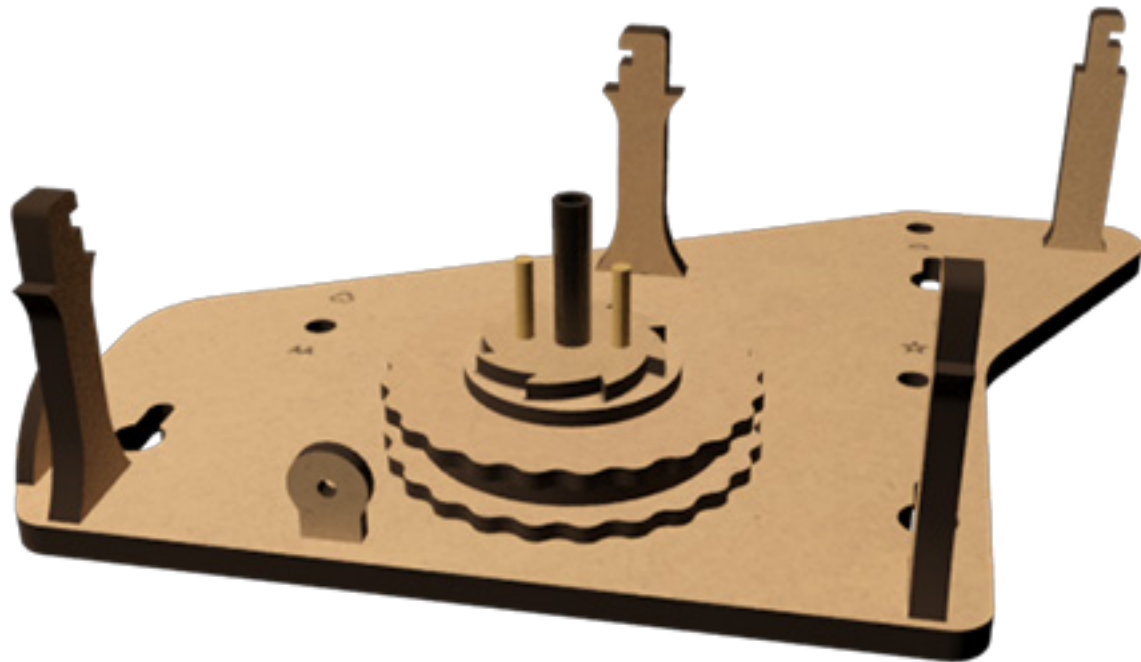
- 87.** Use CA glue to attach the second spool thumbwheel (CD) to the spool core (CE) and alignment pins. Do not allow glue to come into contact with the tube!

CA
GLUE



- 88.** Use CA glue to attach the ratchet spacer (CC) marked side up onto the spool thumbwheel (CD). Do not allow glue to come into contact with the tube!

CA
GLUE



- 89.** Use CA glue to attach the ratchet (BN) to the ratchet spacer (CC) marked side down. The outline of the ratchet (BN) must match the markings on the ratchet spacer (CC). Do not allow glue to come into contact with the tube!



- 90.** Remove the spool from the tube.
Trim and sand the alignment pins flush with the surface of the ratchet (BN).

CA
GLUE



- 91.** Place the winder wheel gear (BH) face down on a flat, smooth surface.
Use CA glue to attach four alignment pins into the winder wheel gear (BH)

CA
GLUE



- 92.** Use CA glue to attach four pawl spacers (DD) to the winder wheel gear (BH). Ensure they are fully inserted and correctly oriented.

~~GLUE~~



- 93.** Slip the pawls (DG) onto the alignment pins. Do not glue!
The pawls should pivot freely on the alignment pins. Use 220 grit sandpaper on the holes in the pawls (DG) and alignment pins as needed.

CA
GLUE



- 94.** Double check the orientation of the pawls. They should match the marked side of the pawl retainer (CG).
Use CA glue to attach the pawl retainer (CG) marked side up to the pawl spacers (DD).

CA
GLUE



95. Trim the alignment pins flush with the surface of the pawl retainer (CG).

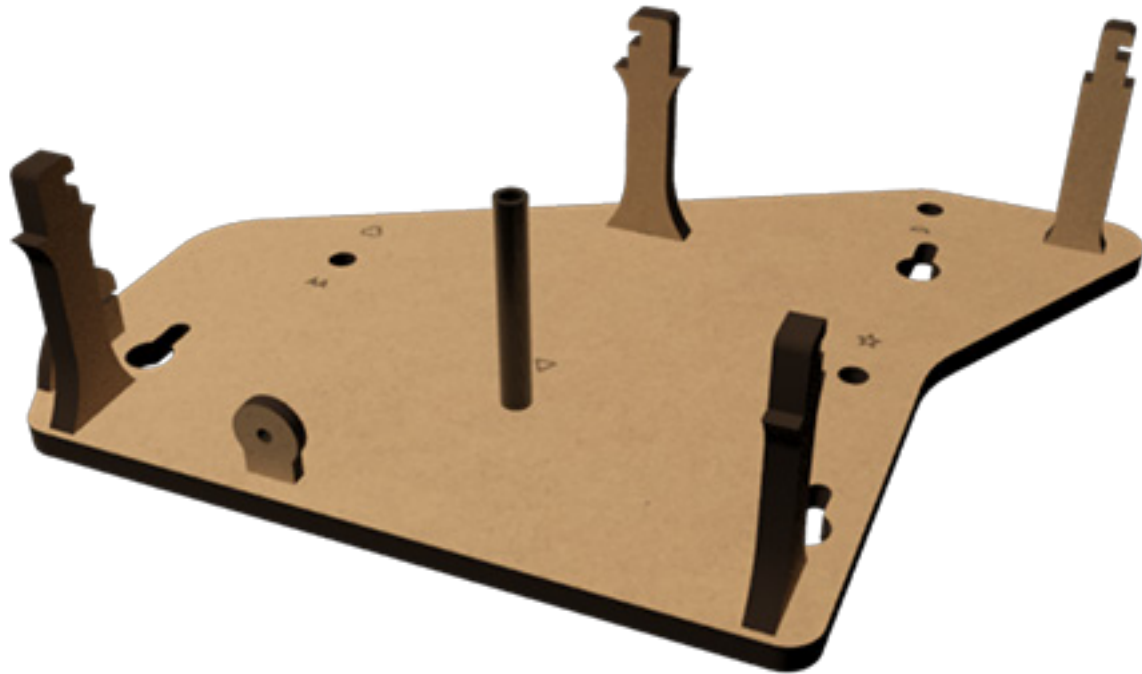
~~GLUE~~



96. Ensure the pawls are retracted and assemble the two halves of the winder wheel. Do not glue!

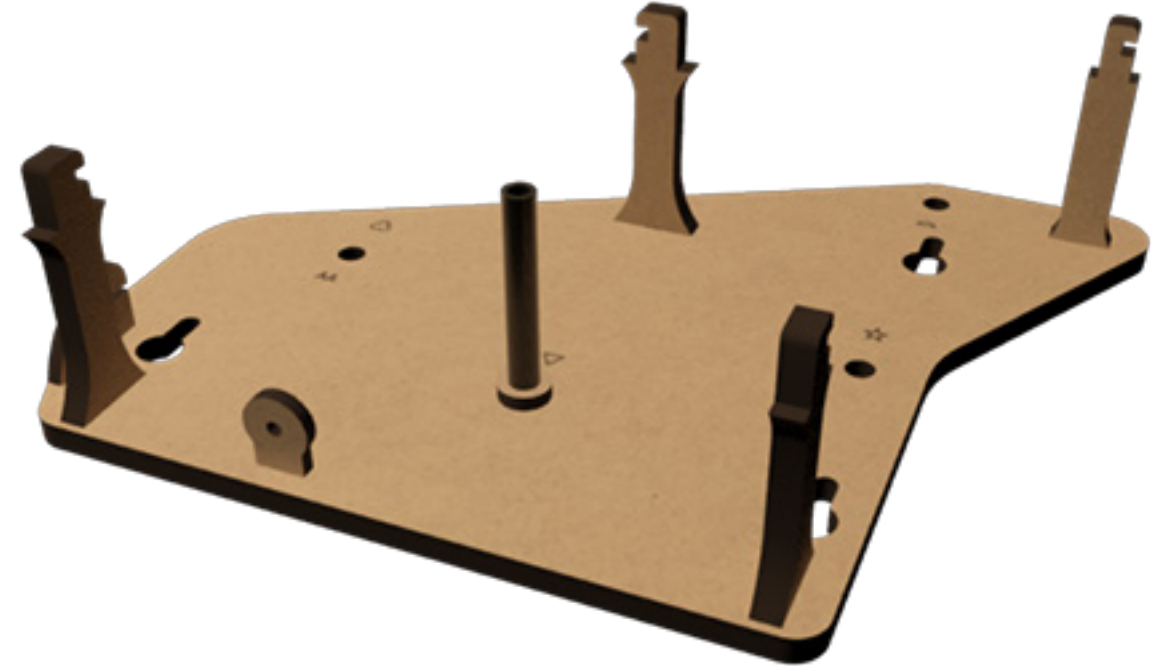
The retainer plate (CG) should be flush against a spool thumbwheel (CD) with the ratchet fully inserted into the pawls.

~~GLUE~~



97. Place a 'LONG' section of tube into the hole the baseplate (AA) marked with a triangle. Do not glue!

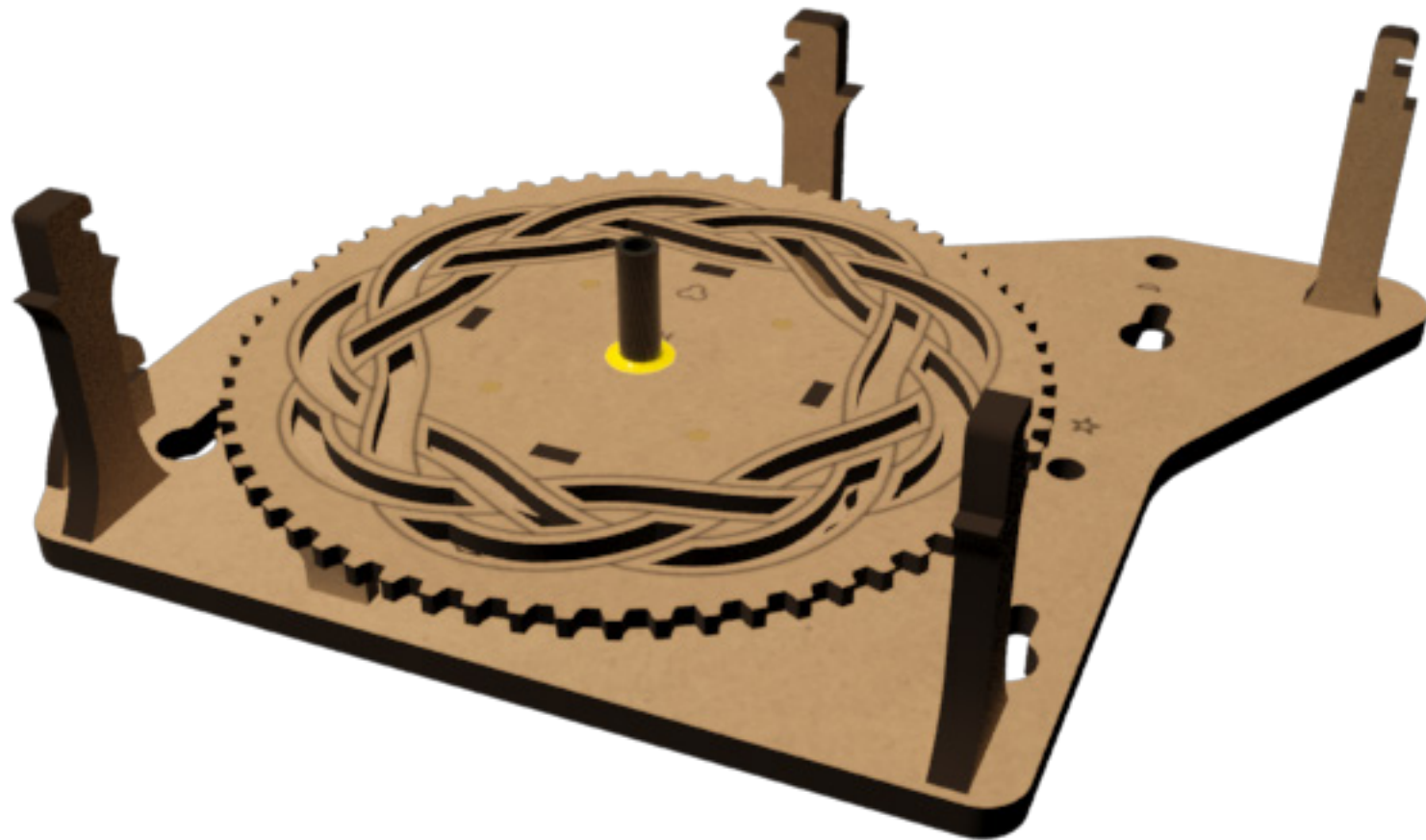
~~GLUE~~



98. Slip a spacer ring (DF) onto the tube. Do not glue!

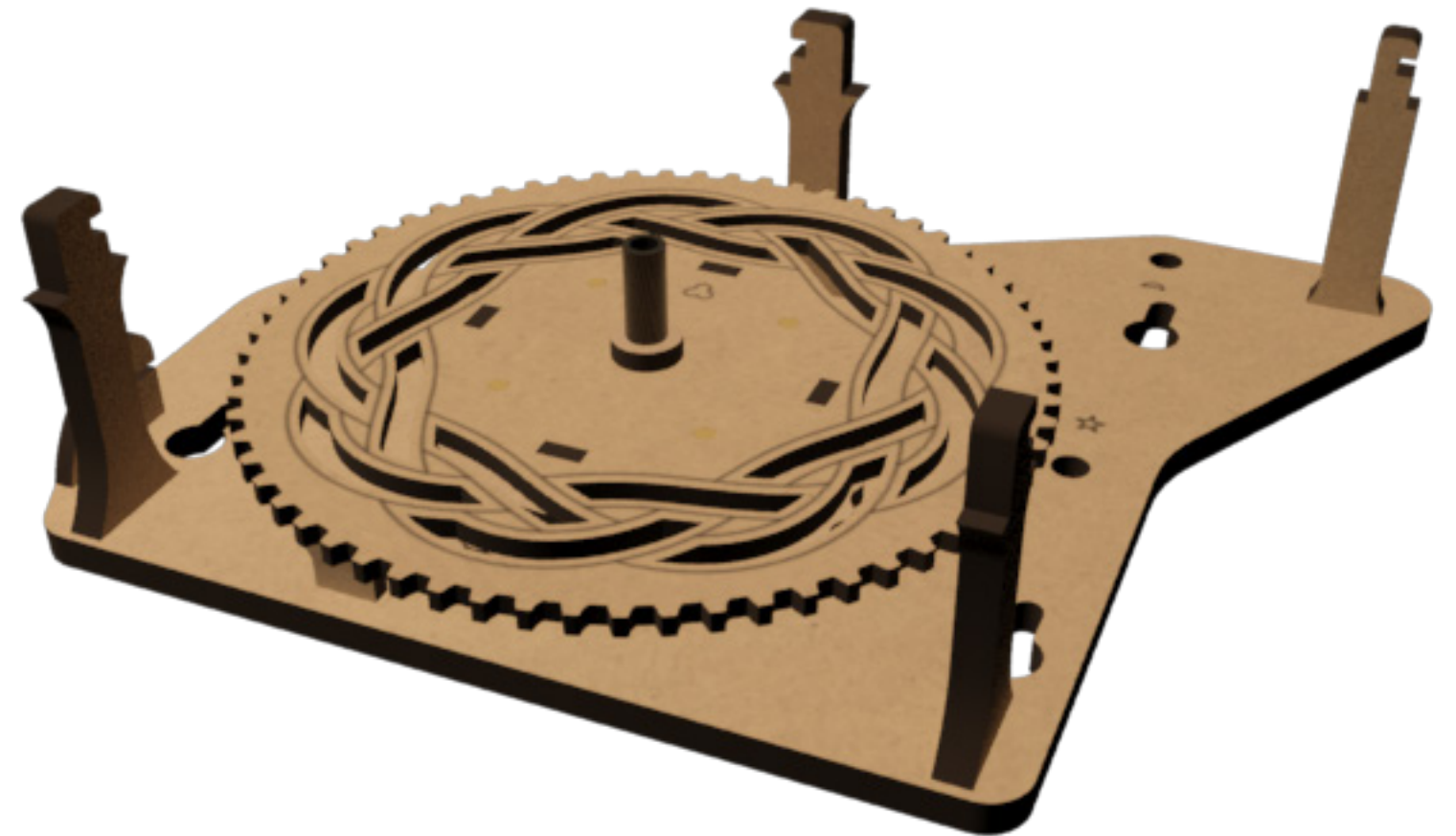
WOOD
GLUE

MOVE TO THE
NEXT STEP
IMMEDIATELY



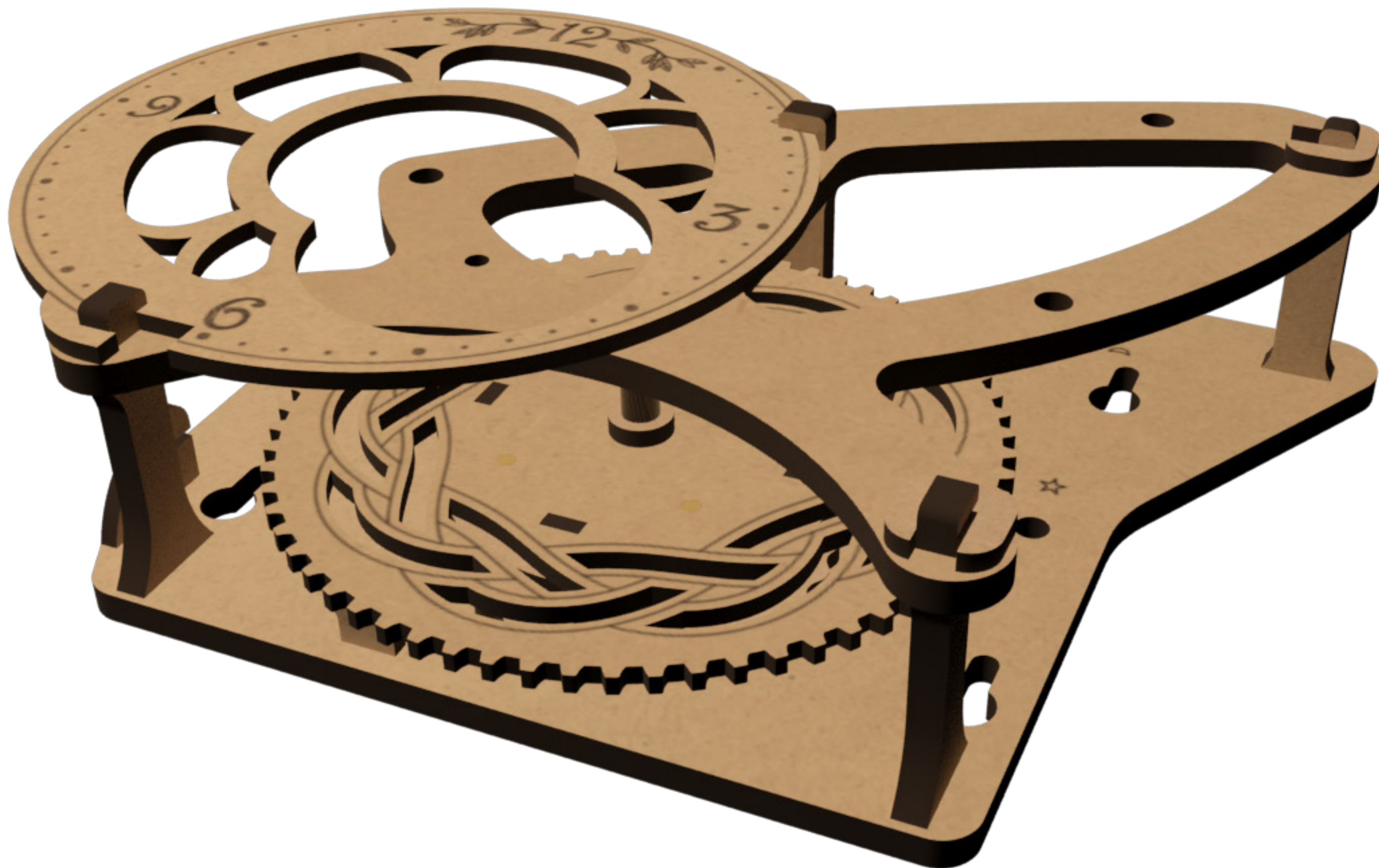
99. Slip the assembled winder wheel onto the tube. Ensure the ratchet is still fully engaged.

Apply wood glue to the joint between the winder wheel gear (BH) and the tube.



100. Press a spacer ring (DF) onto the winder wheel gear.

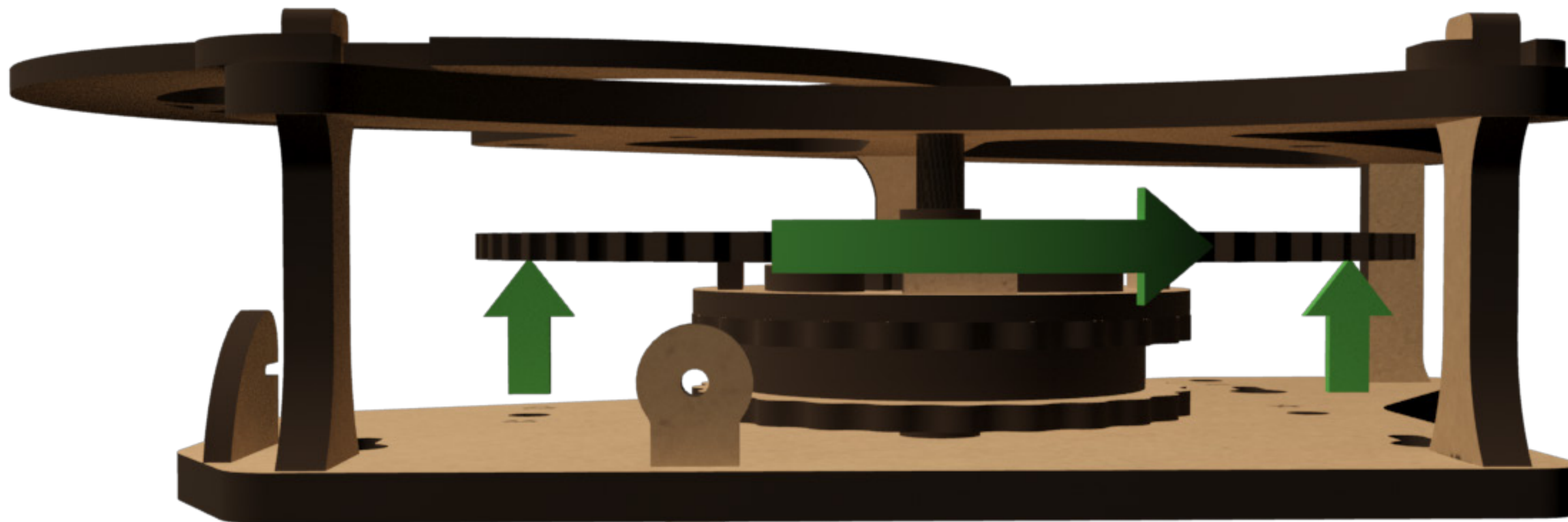
101. Assemble the faceplate (AD) to the assembled base using the clock face (BC) and retaining clips (DH).



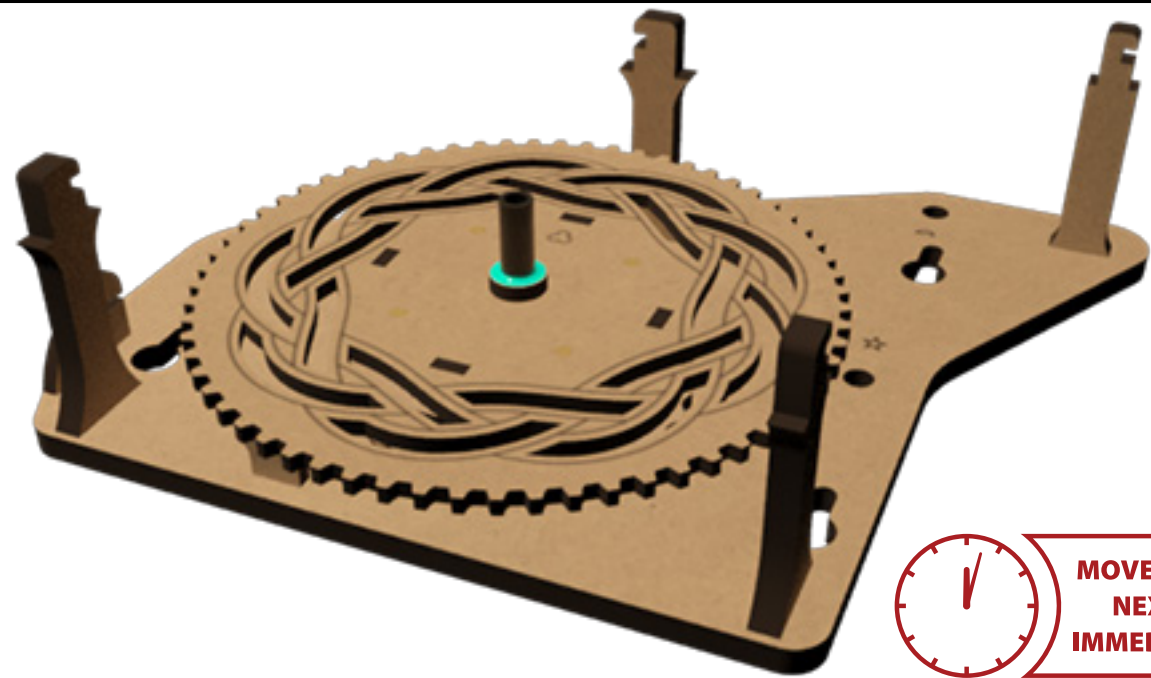
102. Before the wood glue sets, slowly rotate the winder wheel assembly while examining it edge-on.

The space between the winder wheel gear (BH) and the faceplate (AD) should be consistent to prevent wobbling.

Continuing rotating the assembly and adjusting as necessary while the glue dries.



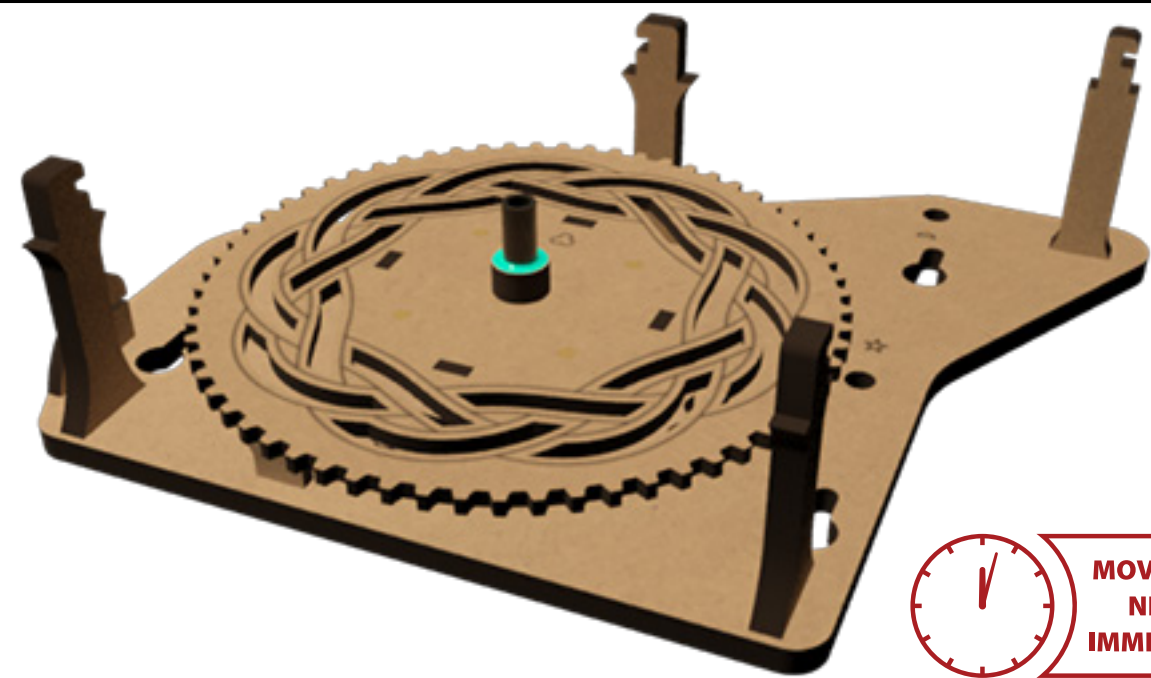
CA
GLUE



103. Remove the clock face (BC), retaining clips (DH) and faceplate (AD) from the assembled base.

Apply CA glue to the joint between the spacer ring (DF) and the tube.

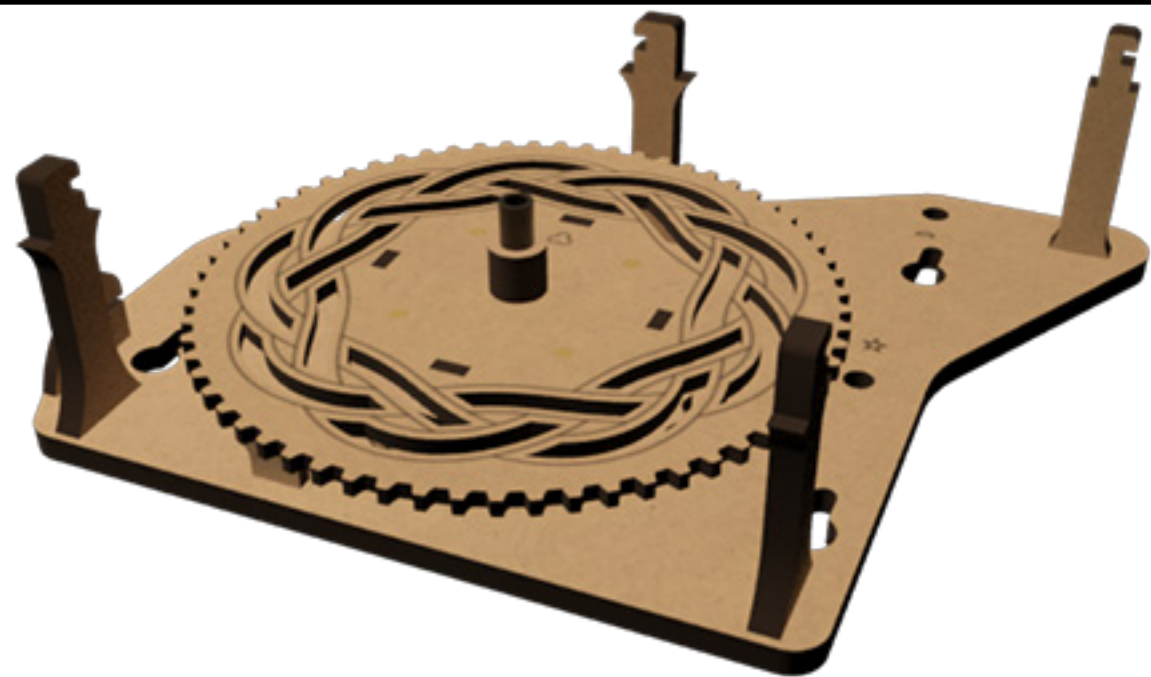
CA
GLUE



104. Press a second spacer ring (DF) onto the previous spacer ring (DF).

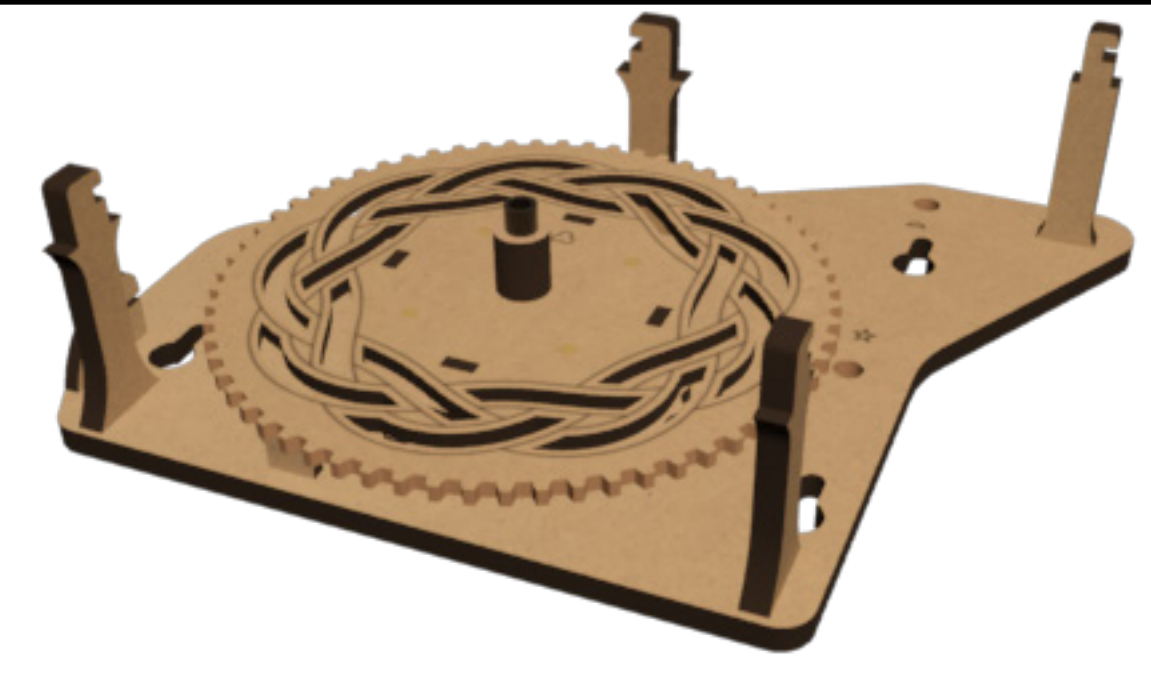
Apply CA glue to the joint between the second spacer ring (DF) and the tube.

CA
GLUE



105. Press a third spacer ring (DF) onto the second spacer ring (DF).

~~GLUE~~



106. Slip a fourth spacer ring (DF) onto the third spacer ring (DF). Do not glue.

This ring may be removed and sanded to provide the correct fit between the winder wheel and the frame.

CA
GLUE



107. Remove the winder wheel from the assembled base, and the spacer ring from the tube. Ensure the ratchet is still fully engaged.

Apply a thin bead of CA glue to the tube near the spool thumbwheel (CD).



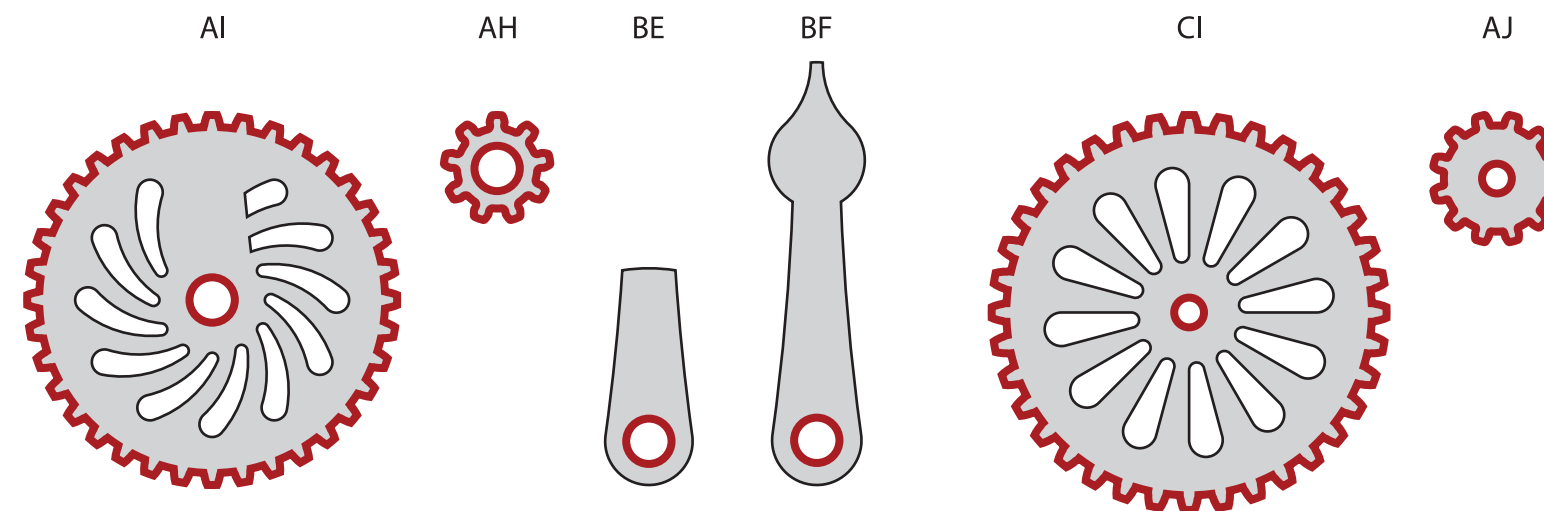
108. Press a spacer ring onto the tube until it 'just' contacts the spool thumbwheel (CD). Do not allow glue to come into contact with the spool!

109. When held upright, the spool should rotate independantly of winder wheel gear and tube in one direction, while the entire assembly rotates together in the other.



110. Use 220 grit sandpaper to sand each tooth of the idler gear (CI), idler pinion (AJ), hour gear (AI), and hour pinion (AH) to remove residue left by the laser cutting process.

Use 220 grit sandpaper as needed on the holes in the idler gear (CI), idler pinion (AJ), hour gear (AI), hour pinion (AH), hour hand spacer (BE) and the hour hand (BH) to ensure they spin freely on their axles.



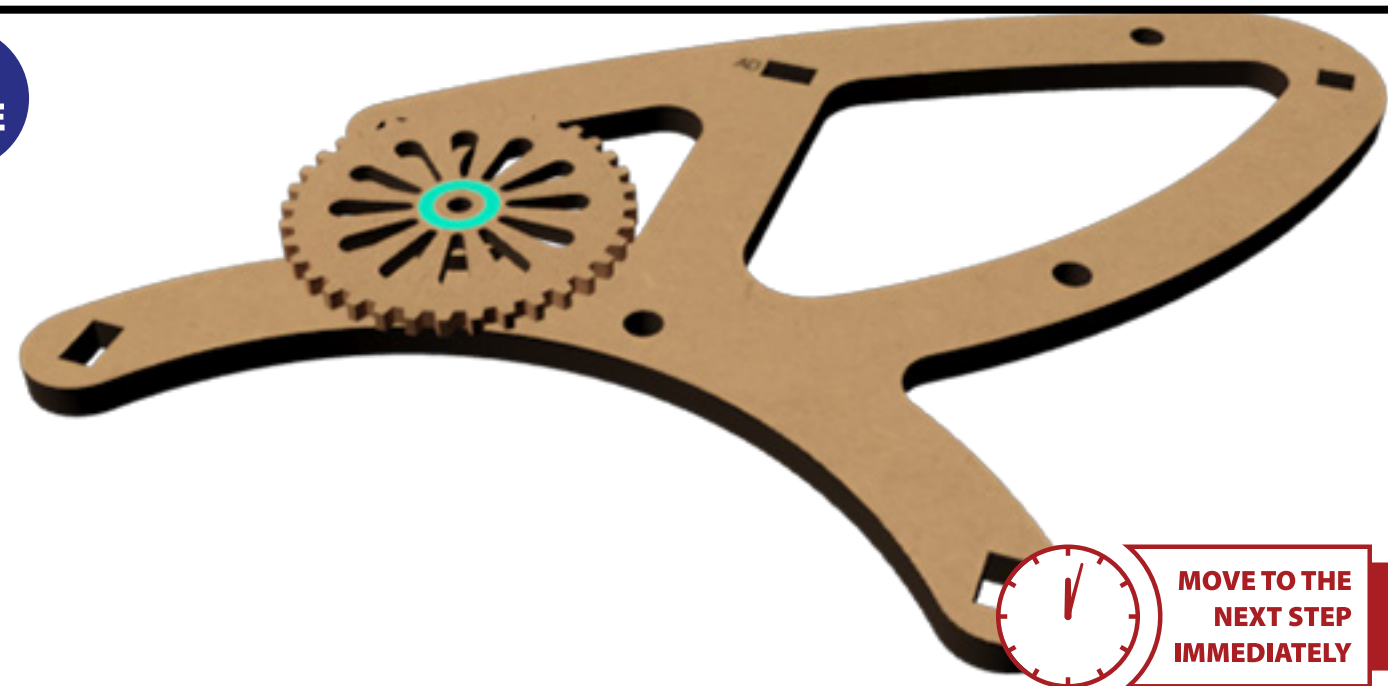


111. Place the faceplate (AD) marked side up on a clean flat surface.



112. Center the idler spacer ring (CB) over the small hole in the baseplate (AD). Do not glue!

CA
GLUE



113. Center the idler gear (CI) over the idler spacer ring (CB). Do not glue!

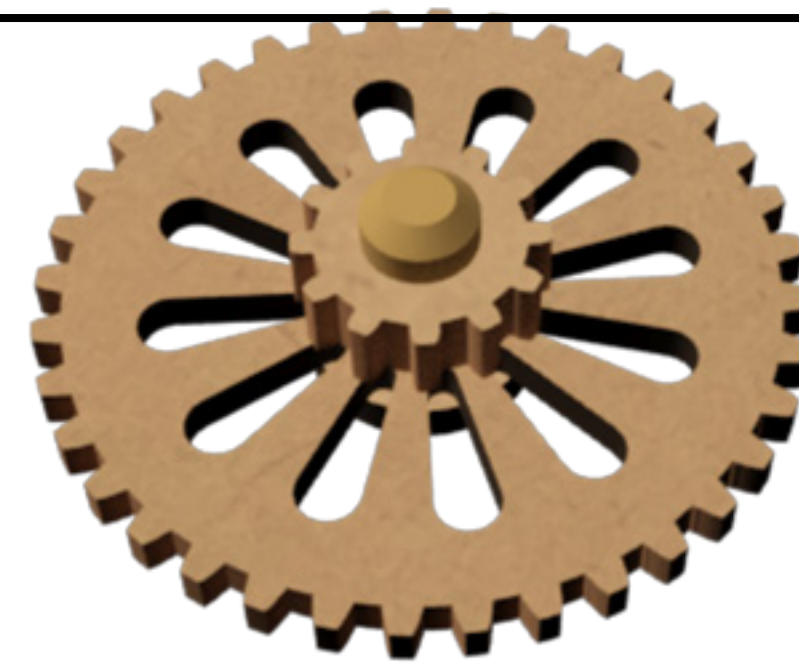
Apply a ring of CA glue around the pivot hole in the idler gear (CI)



114. Place an axle pin through the pivot hole of the idler pinion (AJ) and press the assembly through the hole in the idler gear (CI), idler spacer ring (CB) and into the faceplate (AD).
This ensures the pinion and gear are concentric.



115. Remove the axle pin and idler assembly from the baseplate.



116. Place the axle pin through idler assembly and idler spacer ring (CB)

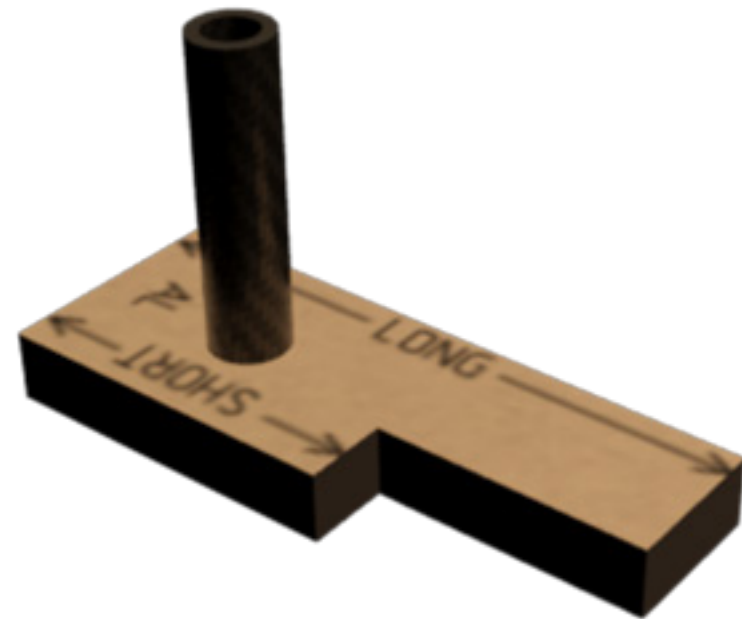
**CA
GLUE**



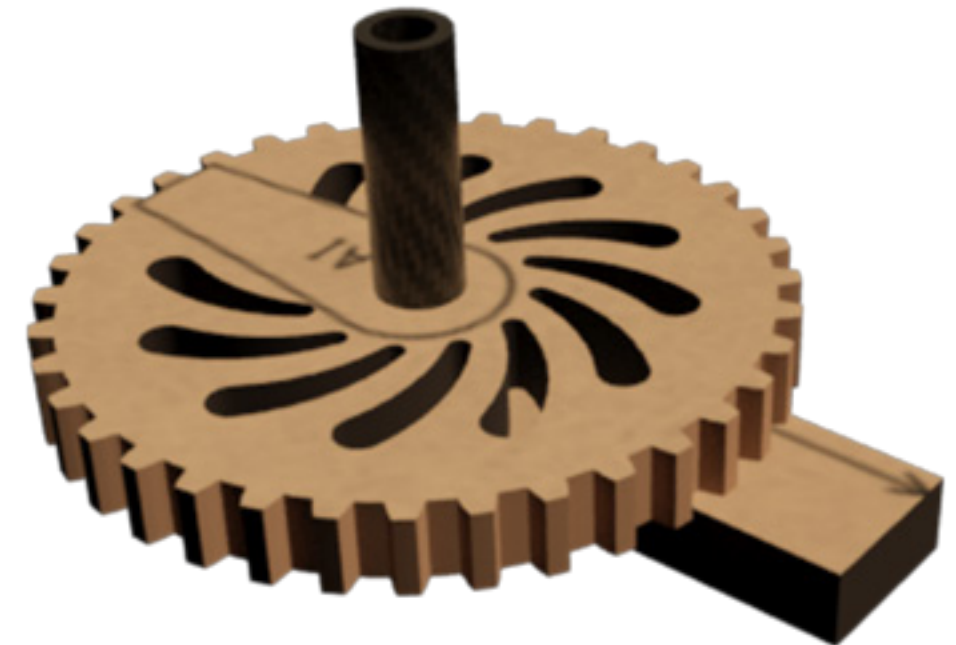
117. Apply CA glue around and in the small hole in the faceplate (AD)



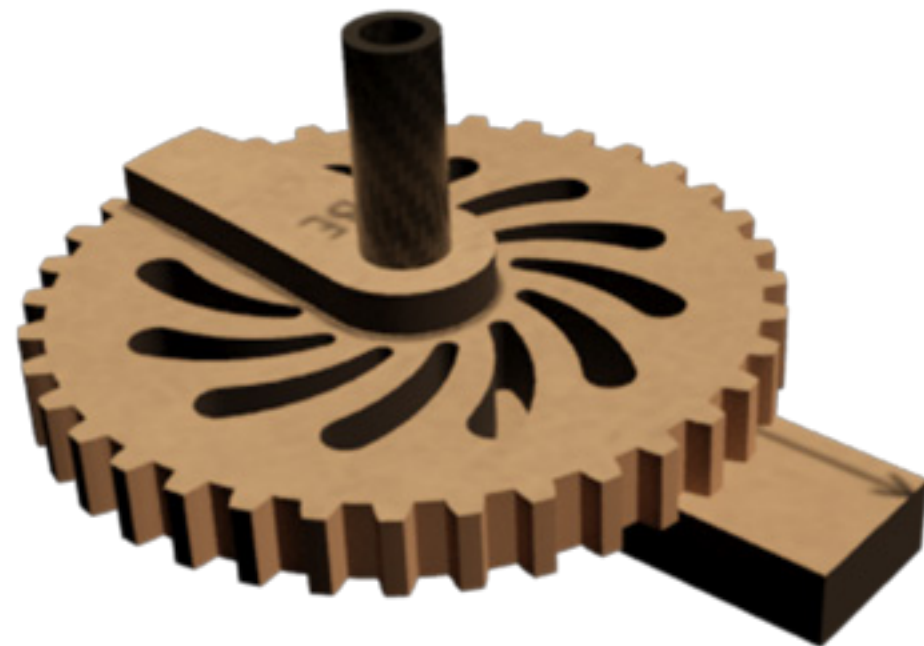
118. Press the axle pin into the hole in the faceplate, leaving a gap roughly the thickness of a piece of paper between the head of the axle pin and the idler. The idler spacer ring should be firmly attached to the faceplate. The idler should spin freely with minimal resistance.



119. Place a 'SHORT' section of tube into the hole the guide (AL) .



120. Slip the hour gear (AI) onto the tube (do not glue).



121. Use CA glue to attach the hour hand spacer (BE) to the hour gear (AI). Do not allow glue to contact the tube!



122. Use CA glue to attach the hour hand (BF) marked side down onto the hour hand spacer (BE). Do not allow glue to contact the tube!
Sand the hole in the assembly as needed to ensure the completed hour hand spins freely on the tube.



123. Remove the hour hand assembly and tube from the guide (AL)

CA
GLUE

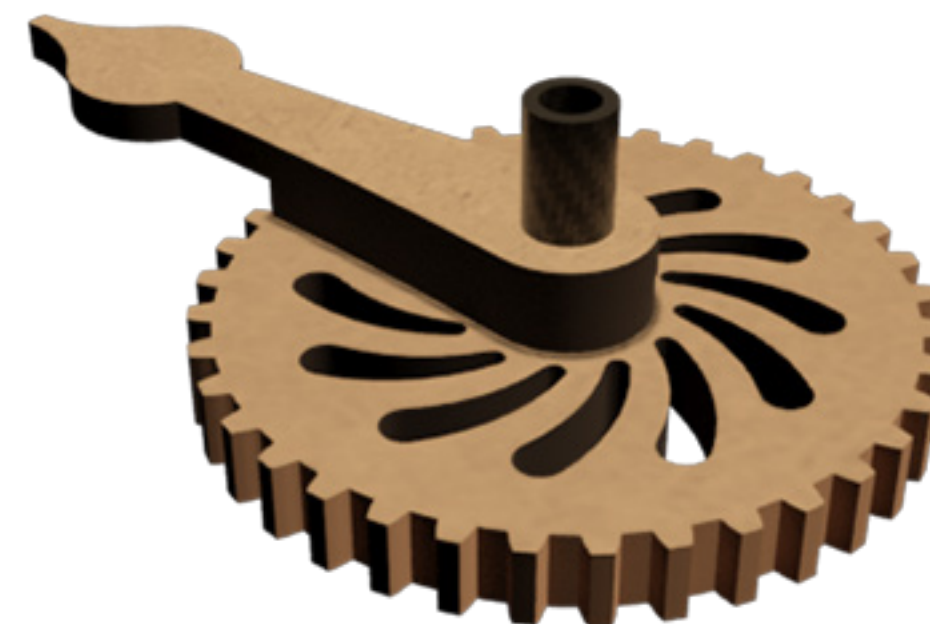


124. Slip a spacer ring (DF) onto the end of the 'SHORT' section of tube. It must be even with the end of the tube. Apply a bead of CA glue to the joint between the spacer ring (DF) and the tube.



125. Press the minute pinion (AH) onto the spacer ring (DF).

~~GLUE~~



126. Slip the hour hand assembly onto the tube. Do not glue!

CA
GLUE



MOVE TO THE
NEXT STEP
IMMEDIATELY

127. Slip a spacer ring onto the hour hand assembly. Leave a gap roughly the thickness of a piece of paper to allow the hour hand assembly to spin freely.

Apply CA glue to the joint between the spacer ring (DF) and the tube.



128. Press the minute hand (BG) marked side down onto the spacer ring (DF).

CA
GLUE

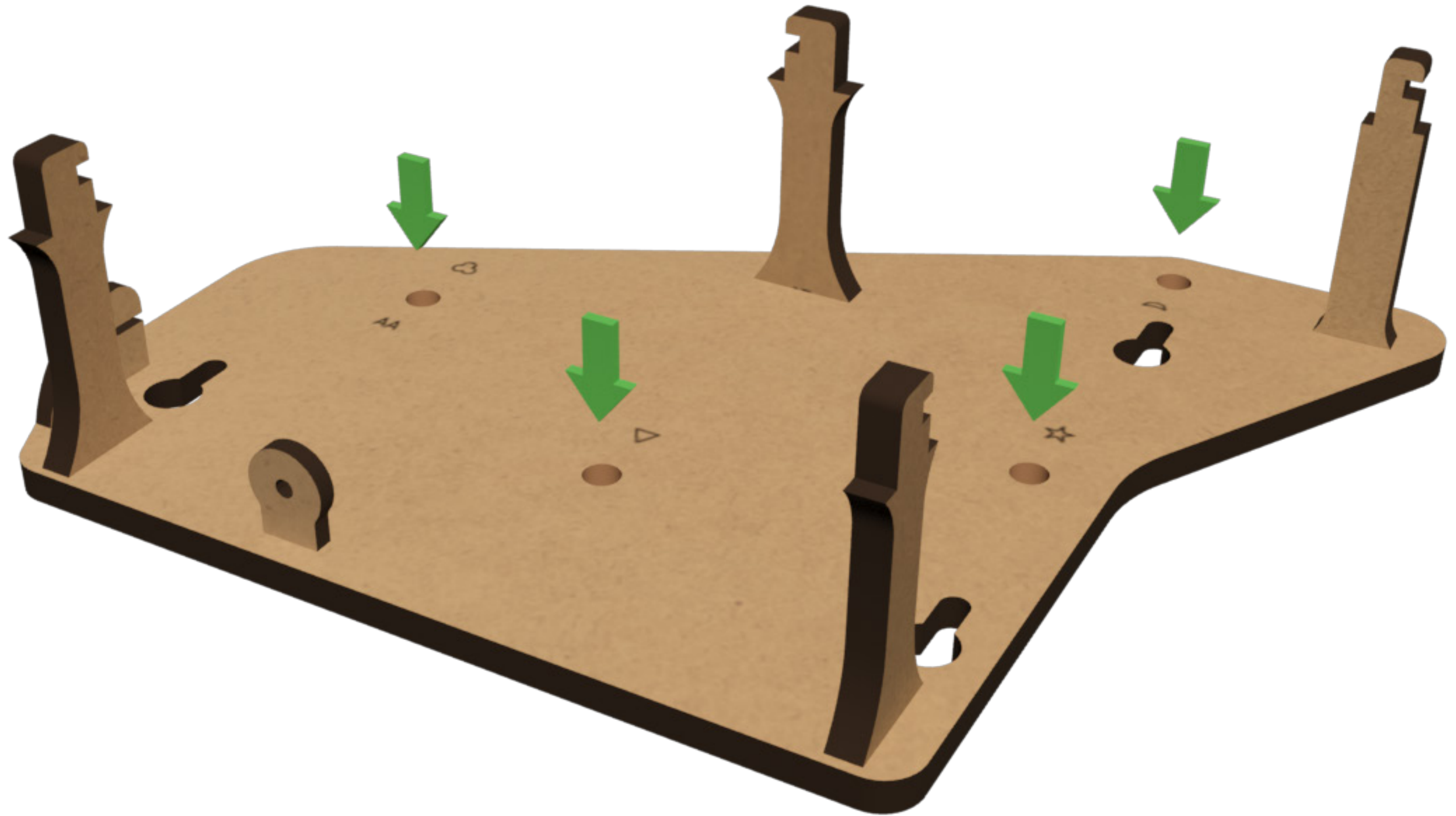


129. Use CA glue to attach the dial train rod to the tube. It should be inserted into the side opposite to the dial hands..

130. Use sandpaper to trim any excess carbon fiber tube. Wear a mask while sanding.

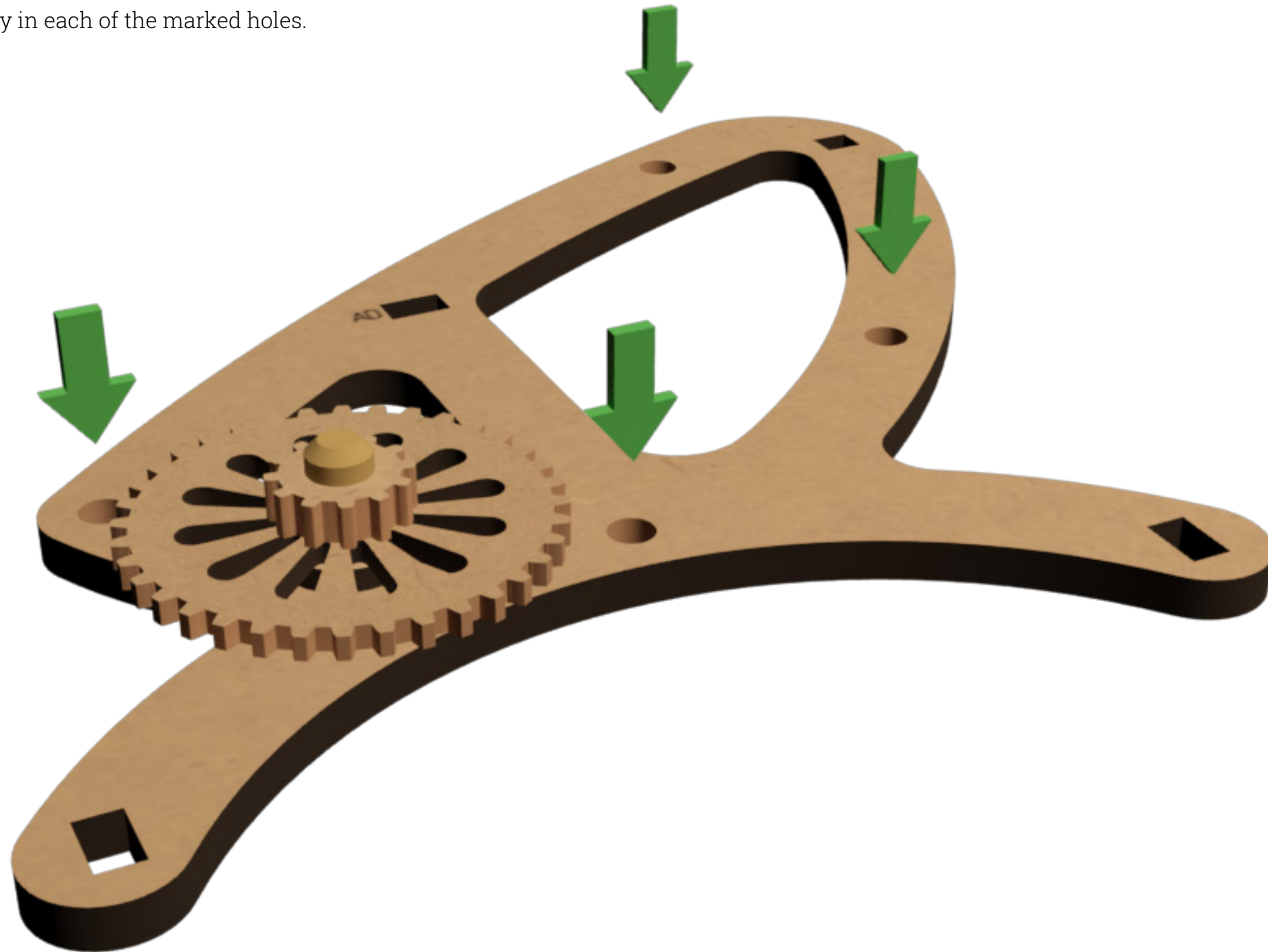
131. Use 220 grit sandpaper to remove any residue from the axle holes in the base plate (AA).

The tube should spin freely in each of the marked holes.

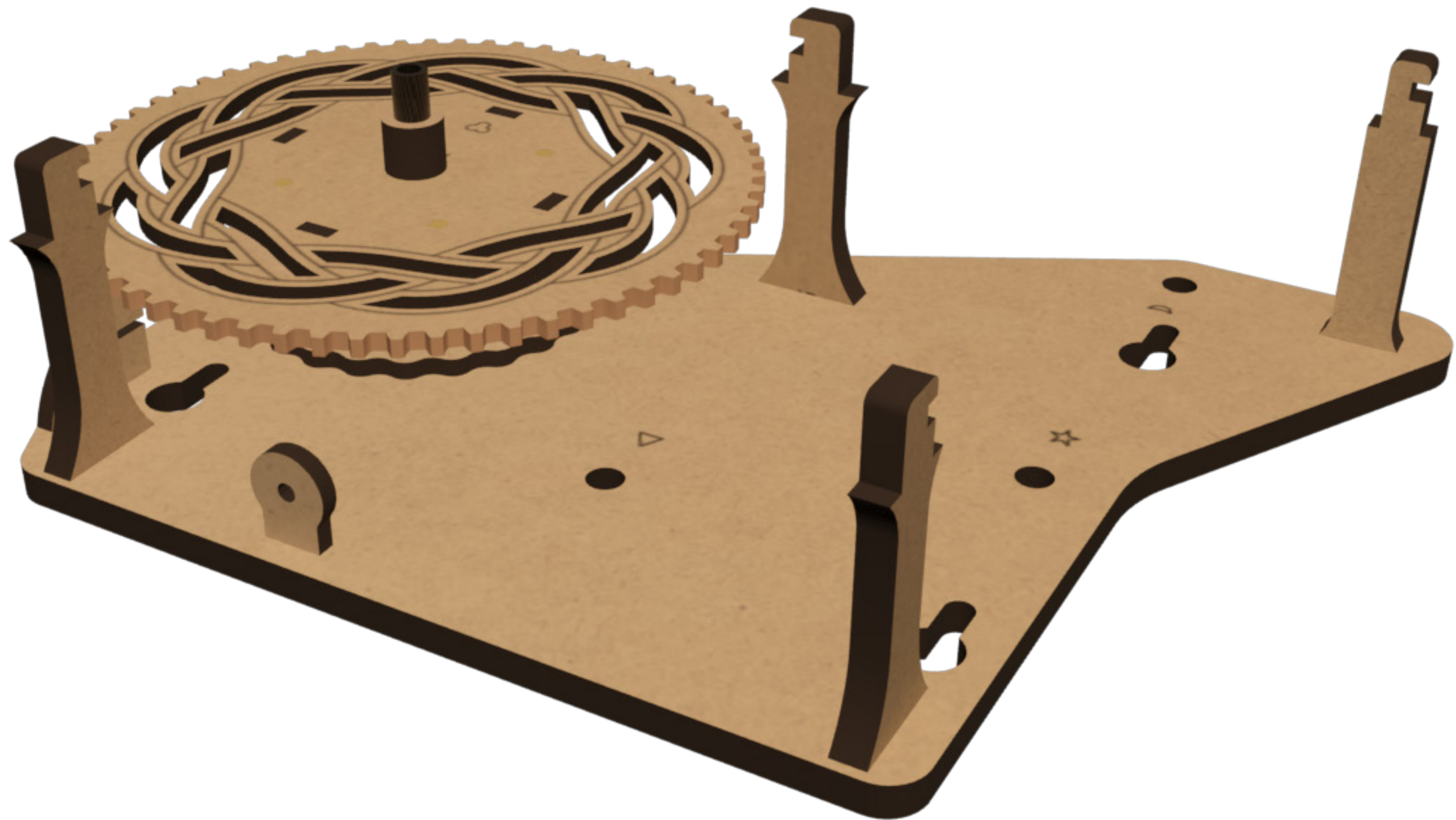


132. Use 220 grit sandpaper to remove any residue from the axle holes in the faceplate (AD).

The tube should spin freely in each of the marked holes.



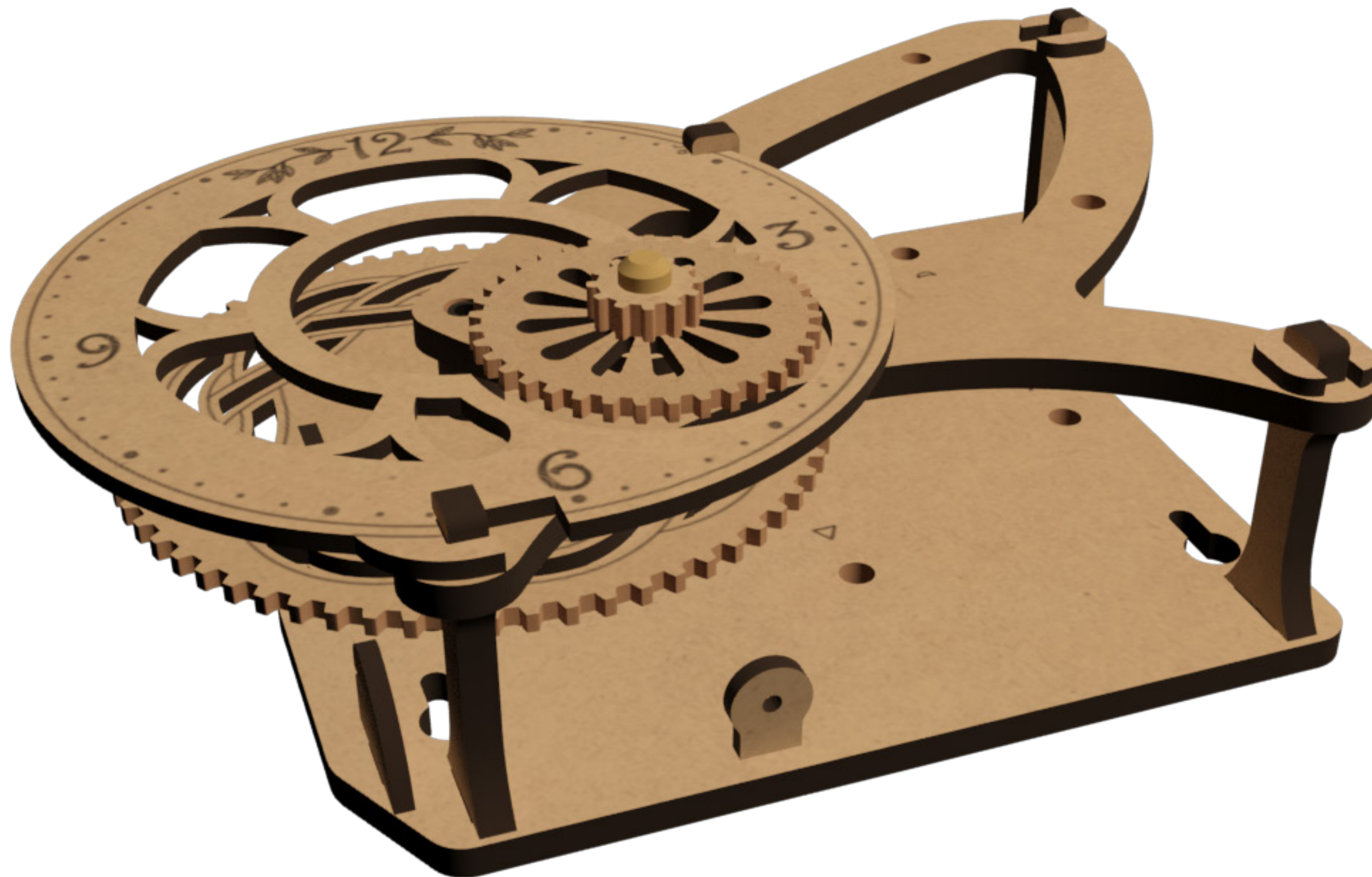
133. Place the winder wheel in the hole marked with a club.

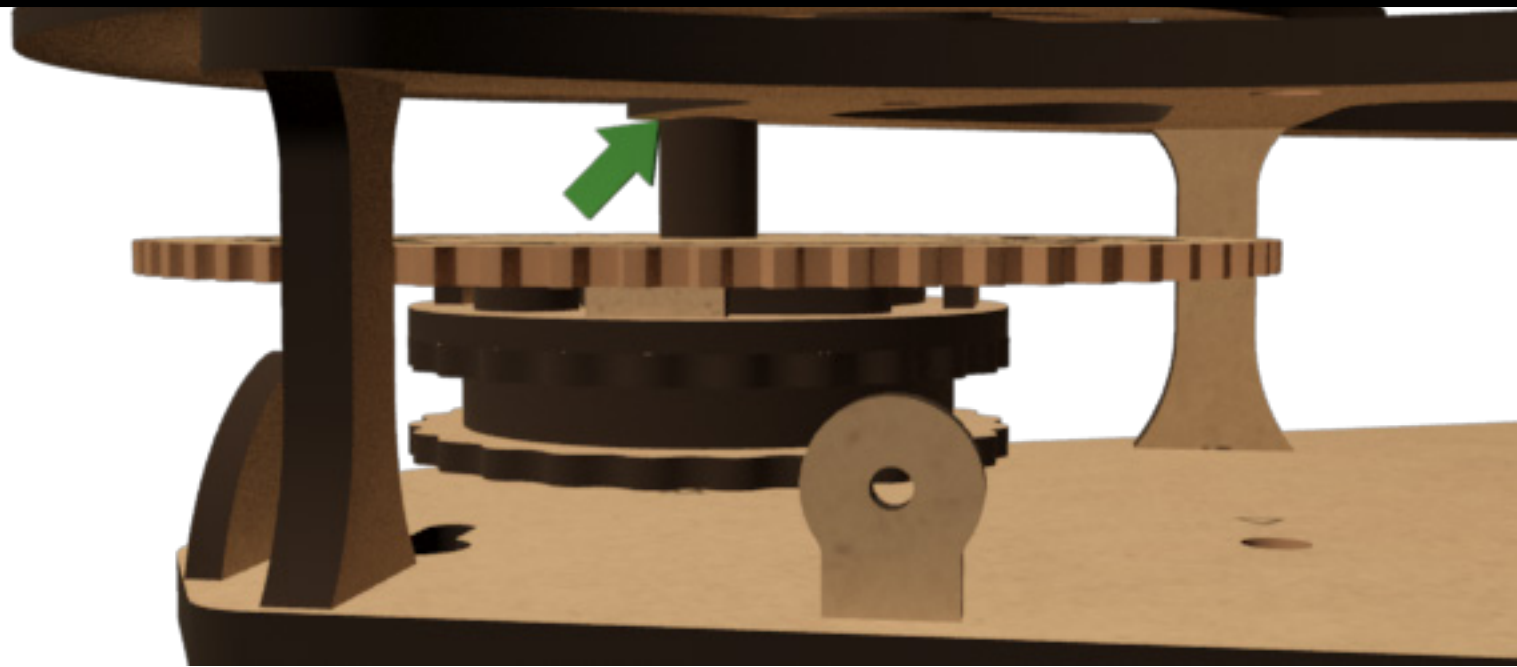


134. Slip the dial face (BC) under the idler gear.

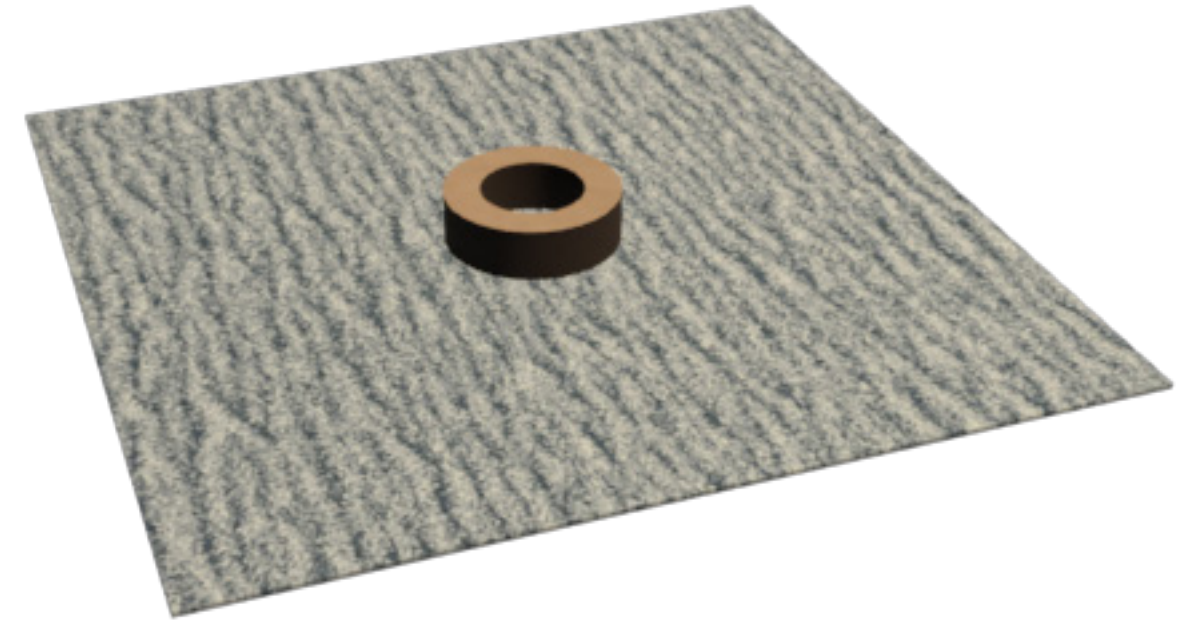


135. Attach the faceplate (AD) to the assembled base using the dial face (BC) and two retainer clips (DH).





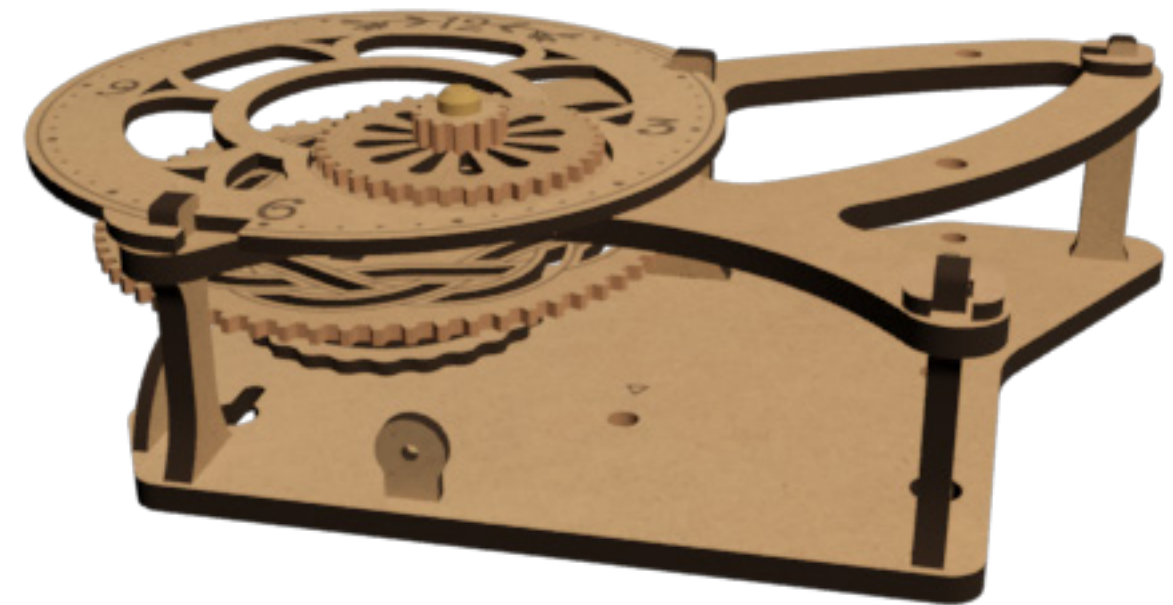
136. View the winder wheel from the edge on. There should be a small gap ($< 1\text{mm}$) between the top retaining ring and the frame. If there is, skip the next three steps.



137. If the top retaining ring is touching the frame, remove the winder wheel and the top retainer ring (DF). Sand the ring to reduce its thickness to create the required space.

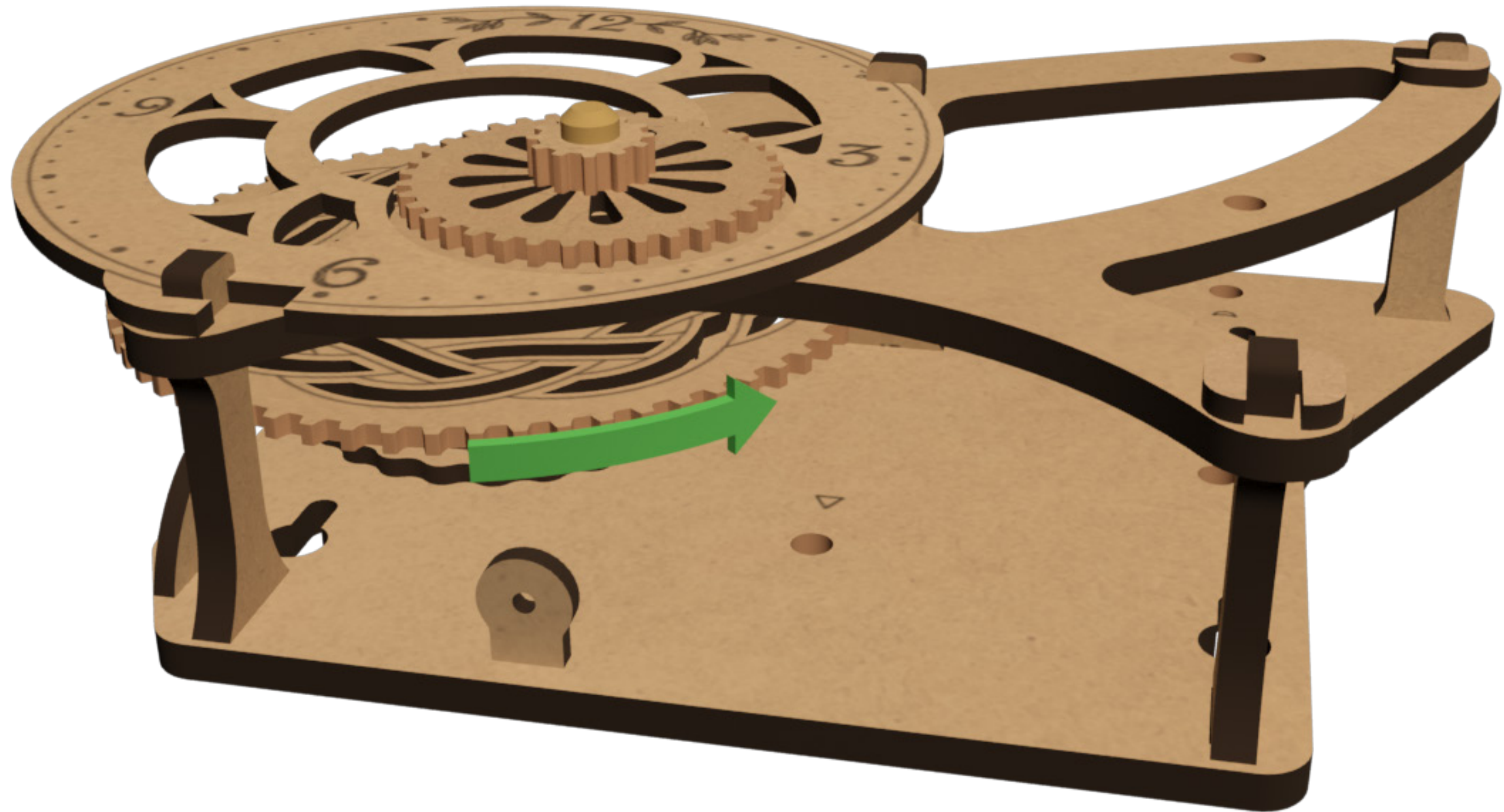


138. Replace the retainer ring.

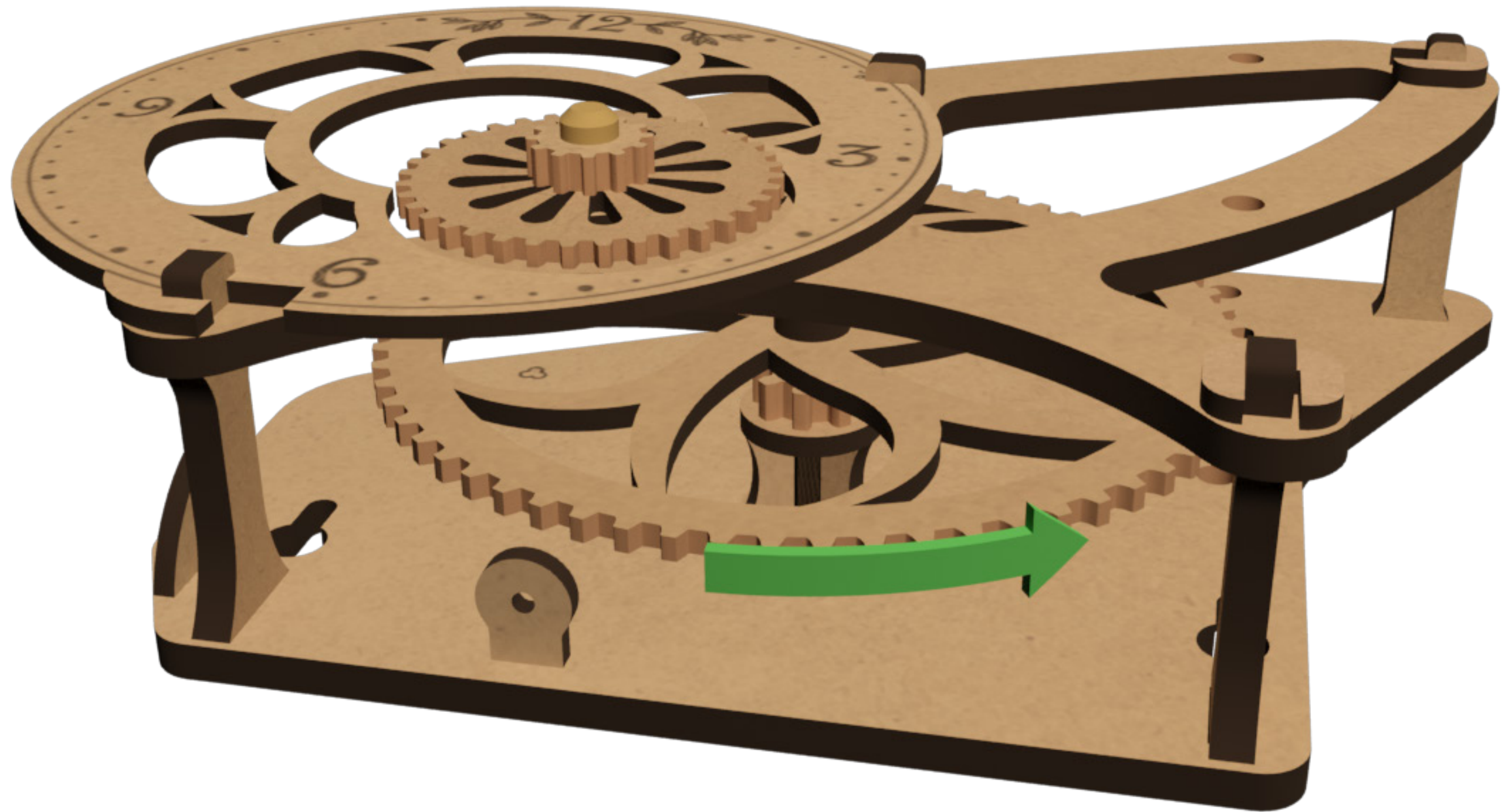


139. Reinstall the winder wheel.

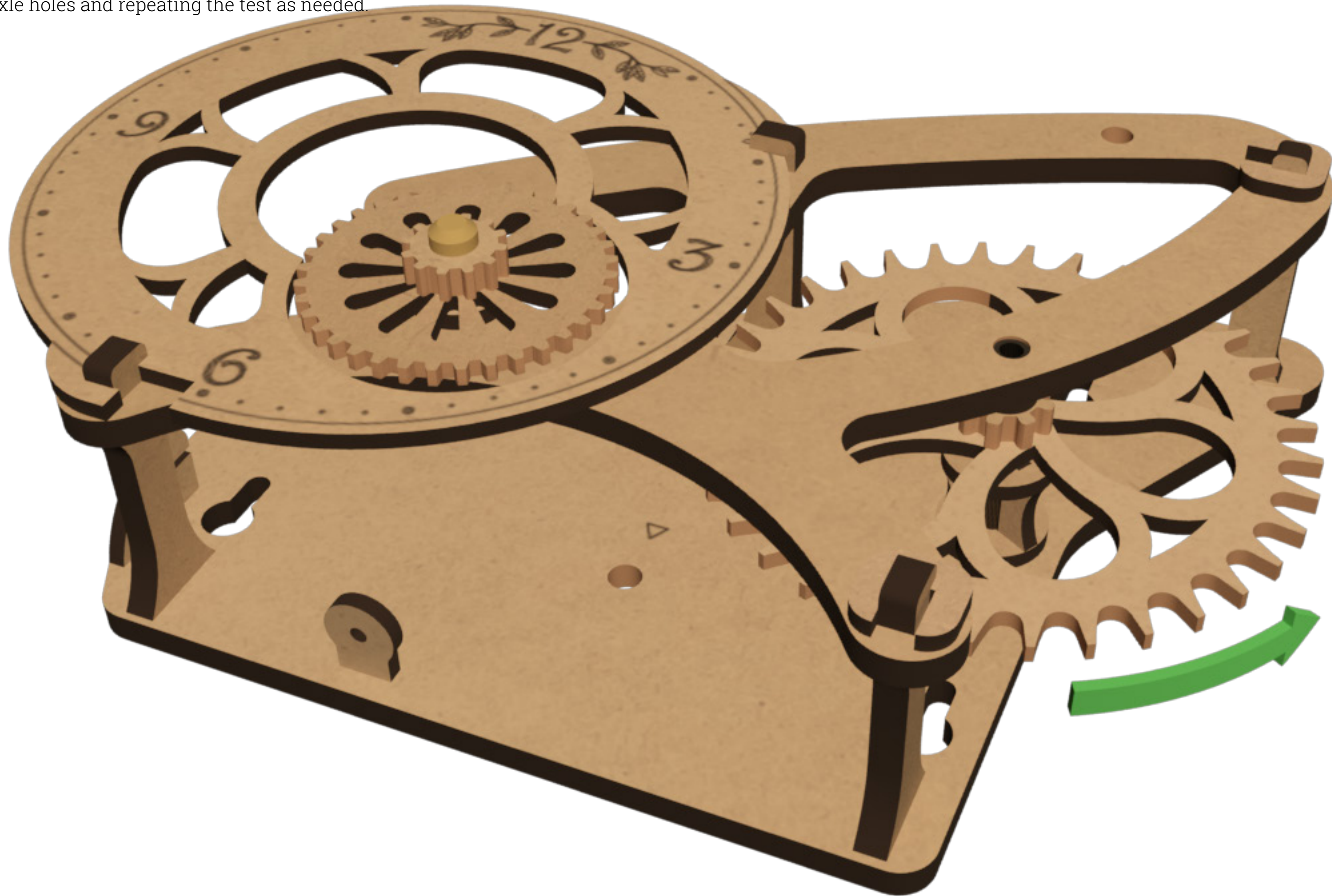
140. Spin the wheel. It should rotate freely and gently coast to a stop. If it does not, sand the axle holes in the base plate (AA) and faceplate (AD) again with 220 grit sandpaper. Repeat as needed.



141. Remove the winder wheel and install the second wheel in the hole marked with a triangle. Ensure it rotates freely and gently coasts to a stop, sanding the axle holes and repeating the test as needed.



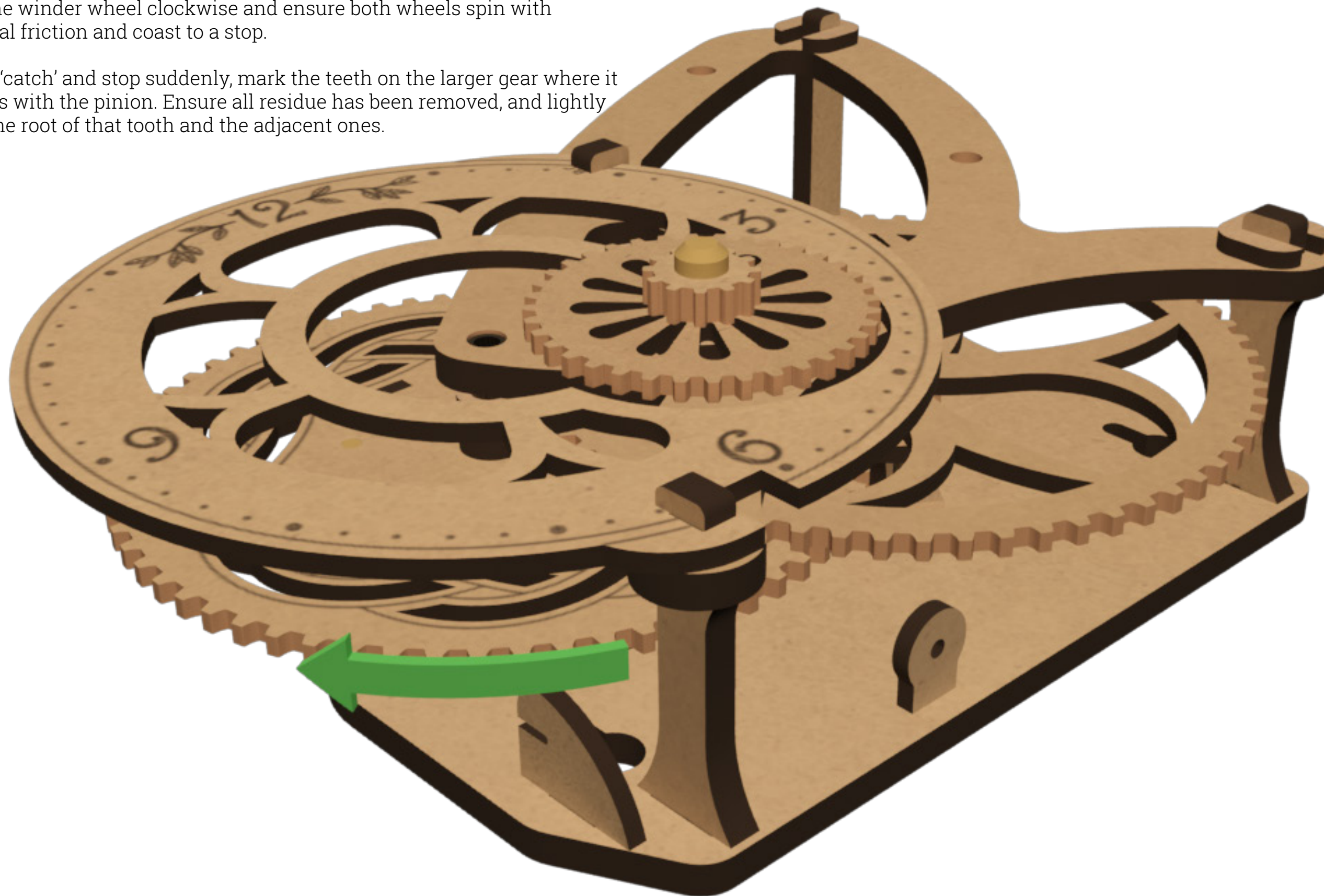
142. Remove the second wheel and install the escape wheel in the hole marked with a star. Ensure it rotates freely and gently coasts to a stop, sanding the axle holes and repeating the test as needed.



143. Install the winder wheel and second wheel.

Spin the winder wheel clockwise and ensure both wheels spin with minimal friction and coast to a stop.

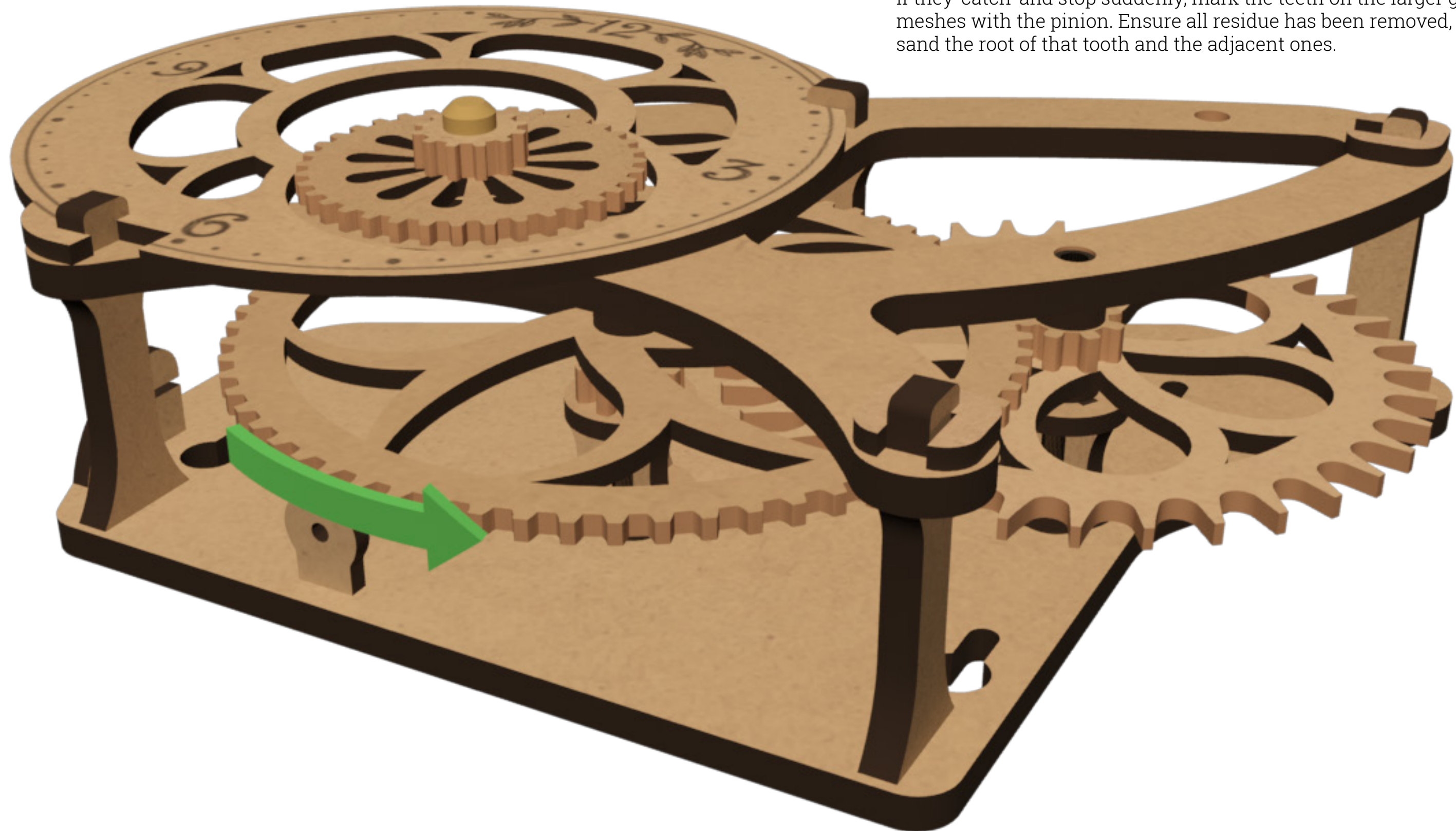
If they 'catch' and stop suddenly, mark the teeth on the larger gear where it meshes with the pinion. Ensure all residue has been removed, and lightly sand the root of that tooth and the adjacent ones.



144. Remove the winder wheel and second wheel, and install the escape wheel and second wheel

Spin the second wheel counterclockwise and ensure both wheels spin with minimal friction and coast to a stop.

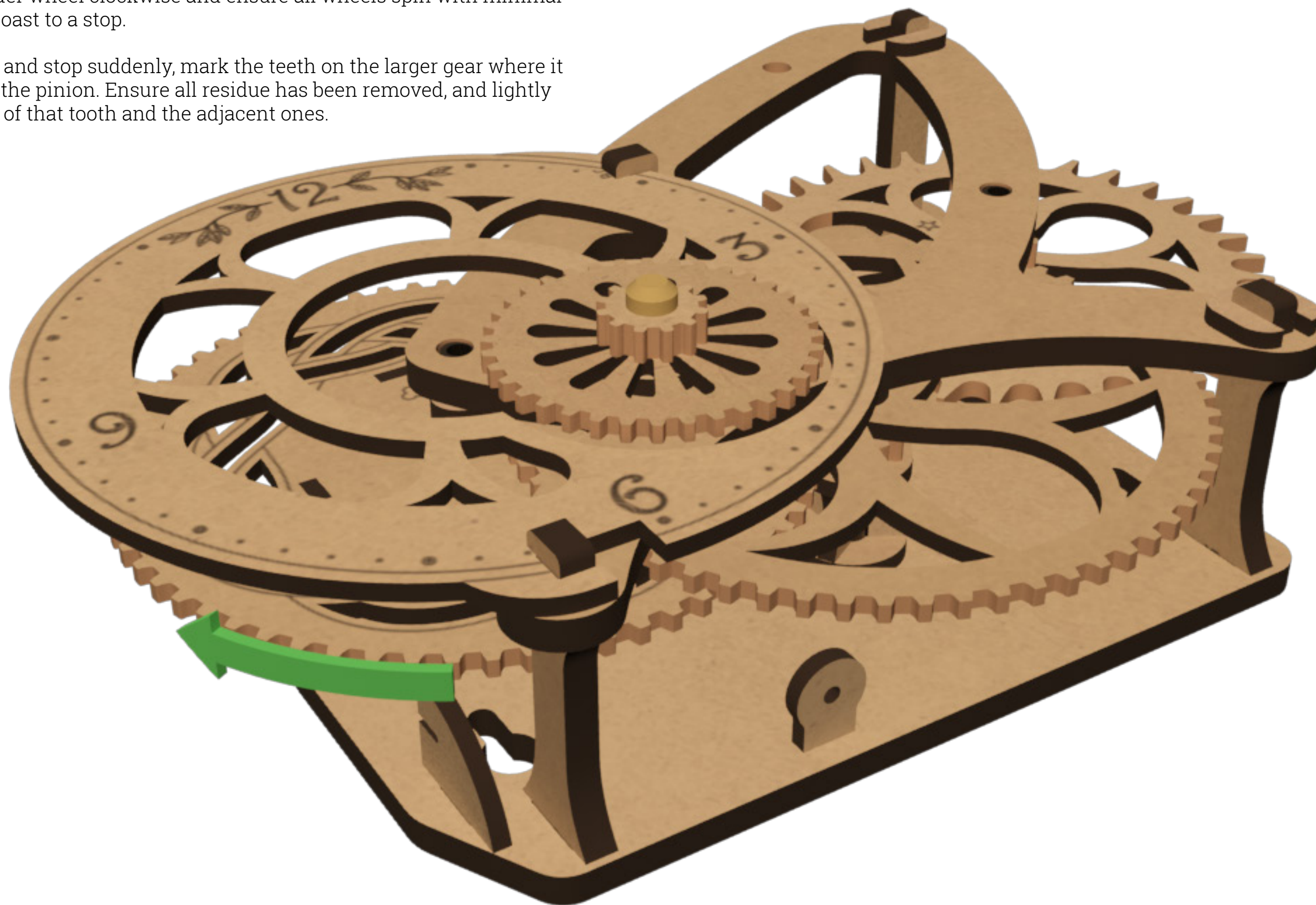
If they 'catch' and stop suddenly, mark the teeth on the larger gear where it meshes with the pinion. Ensure all residue has been removed, and lightly sand the root of that tooth and the adjacent ones.



145. Install all three wheels

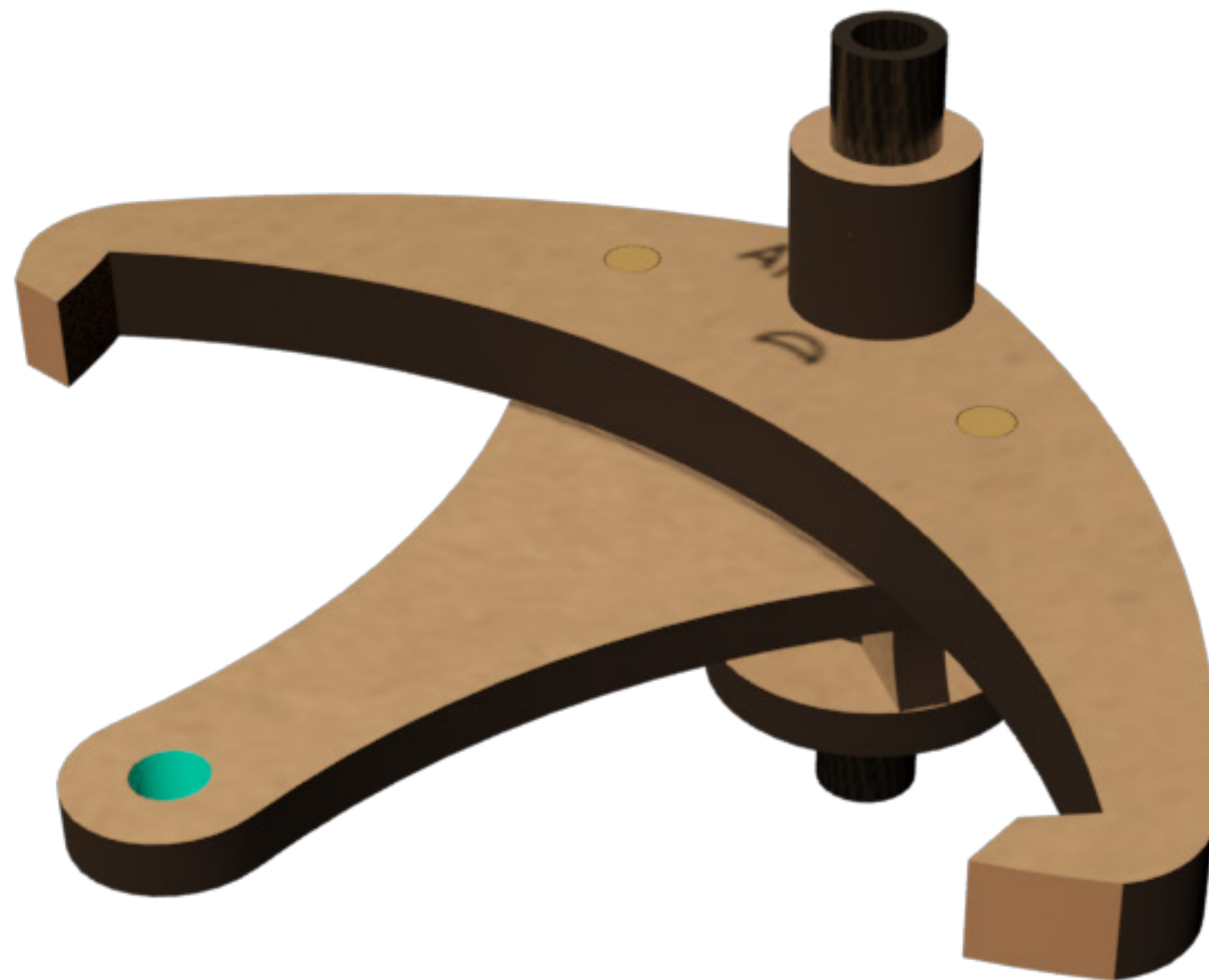
Spin the winder wheel clockwise and ensure all wheels spin with minimal friction and coast to a stop.

If they 'catch' and stop suddenly, mark the teeth on the larger gear where it meshes with the pinion. Ensure all residue has been removed, and lightly sand the root of that tooth and the adjacent ones.

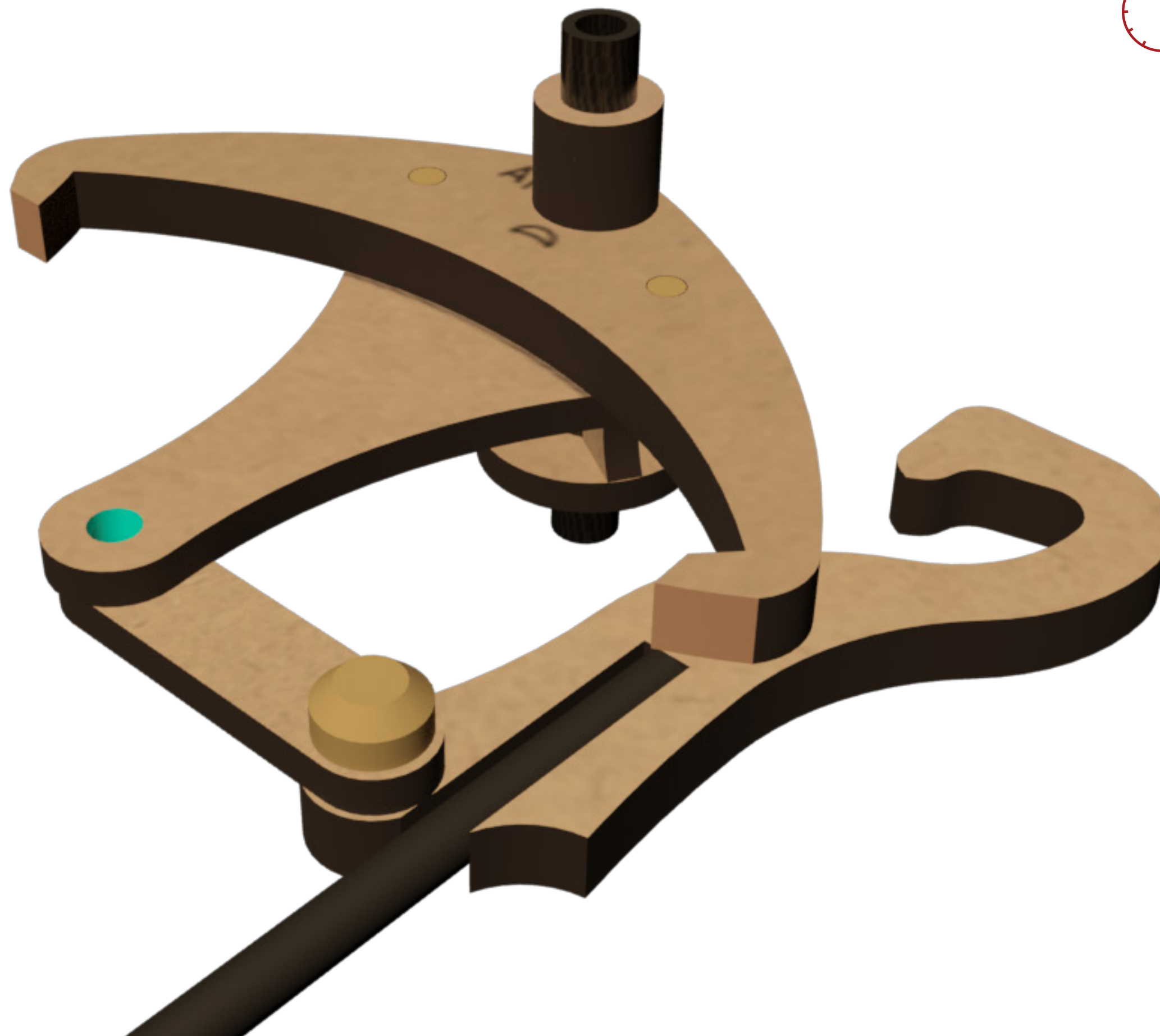


146. Apply CA glue to the hole in the pallet backing plate (BJ)

CA
GLUE



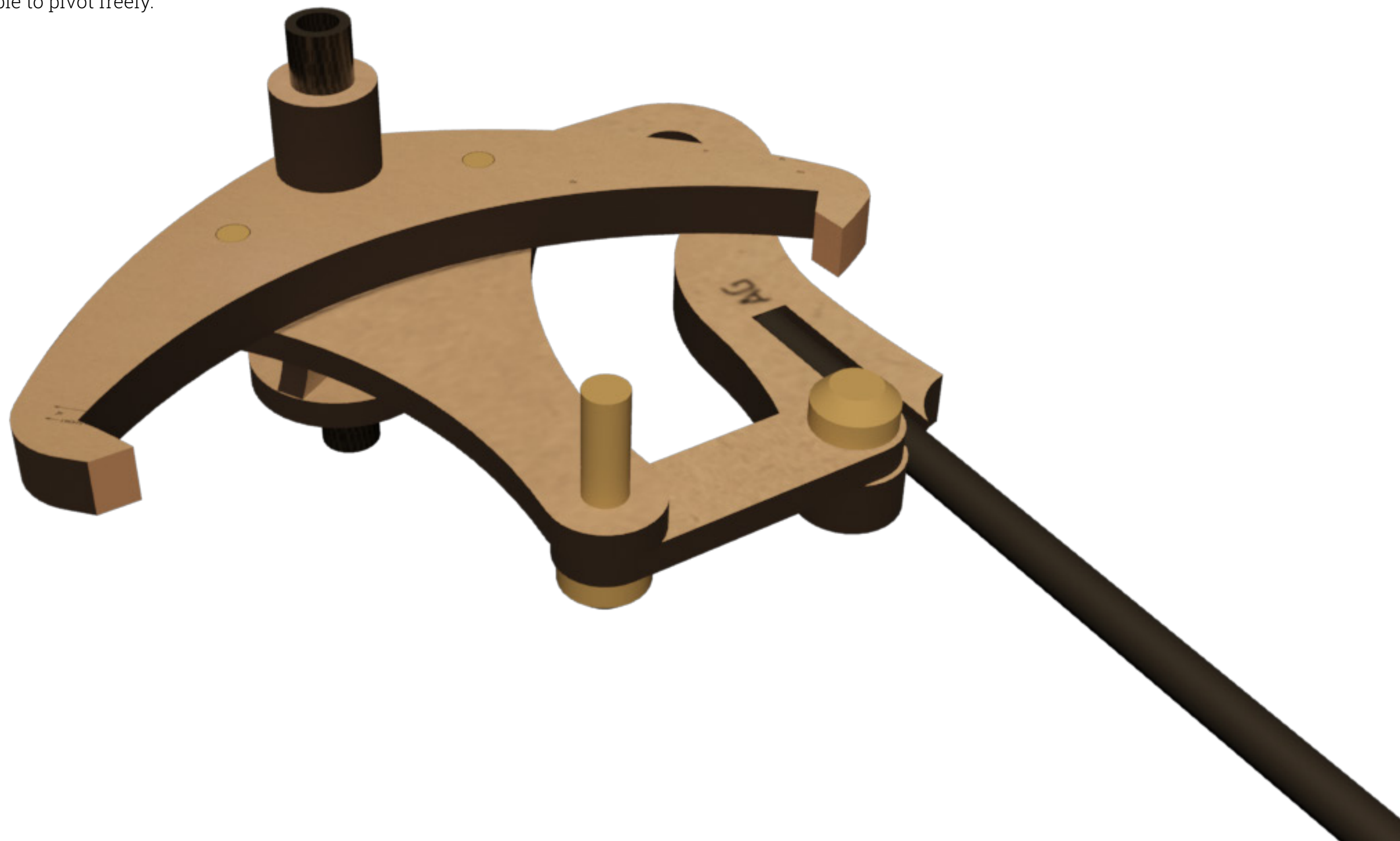
147. Align the hole in the crutch (BI) and the hole in the pallet backing plate (BJ).



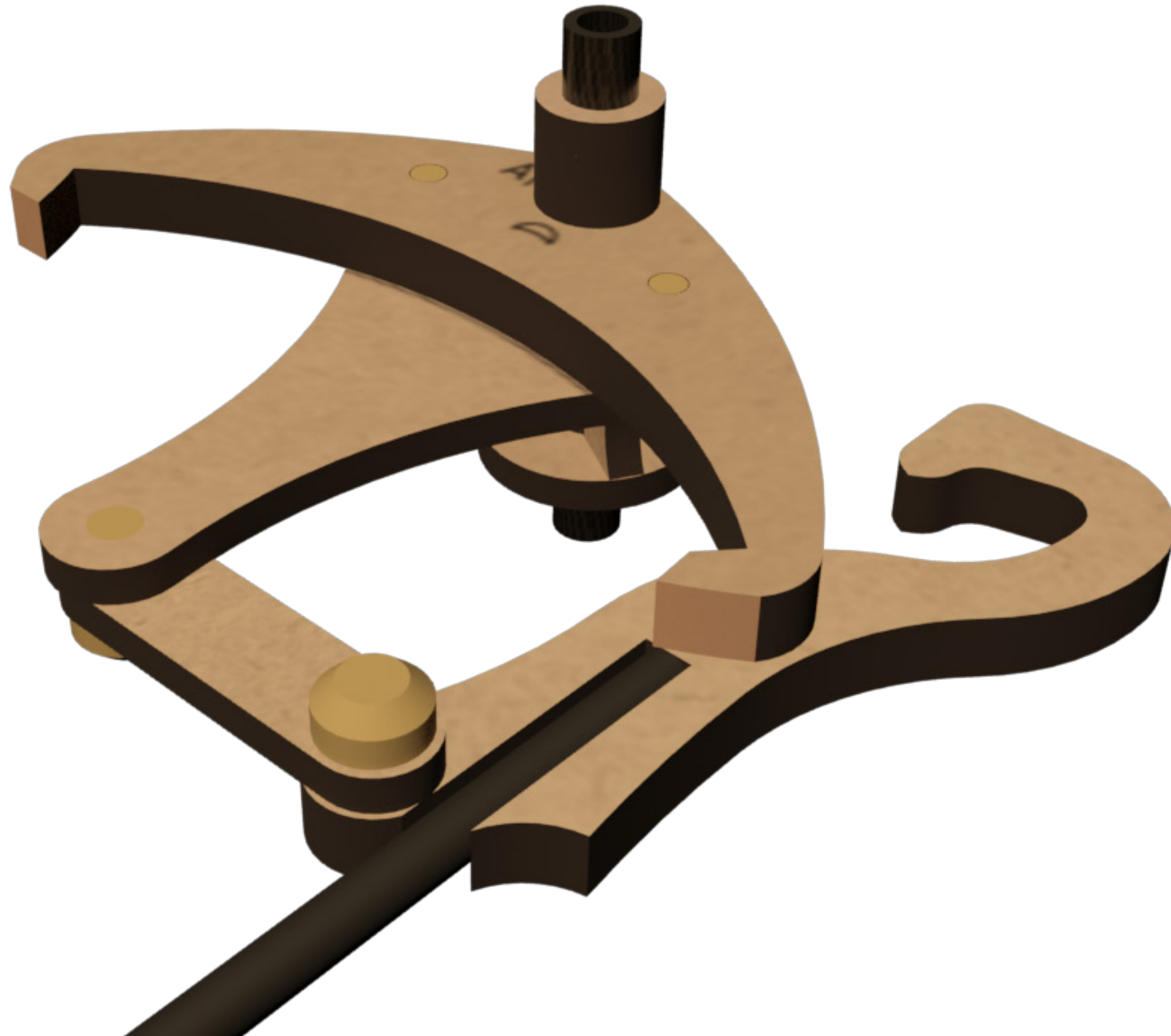
148. Connect the pendulum to the pallets by pressing an axle pin through the back of the crutch (BI) and through the pallet backing plate.

There should be a gap roughly the thickness of a sheet of paper between the head of the axle pin and the crutch (BI)

The crutch must be able to pivot freely.



149. Trim and sand the axle pin flush with the surface of the pallet backing plate (BJ).



150. Tie a figure-of-eight knot in one end of the counterweight cord. Thread the other end through the hole in the spool thumbwheel (CD) from the back face inward.

Pull the cord through until the knot is secured against the outside face of the spool thumbwheel.

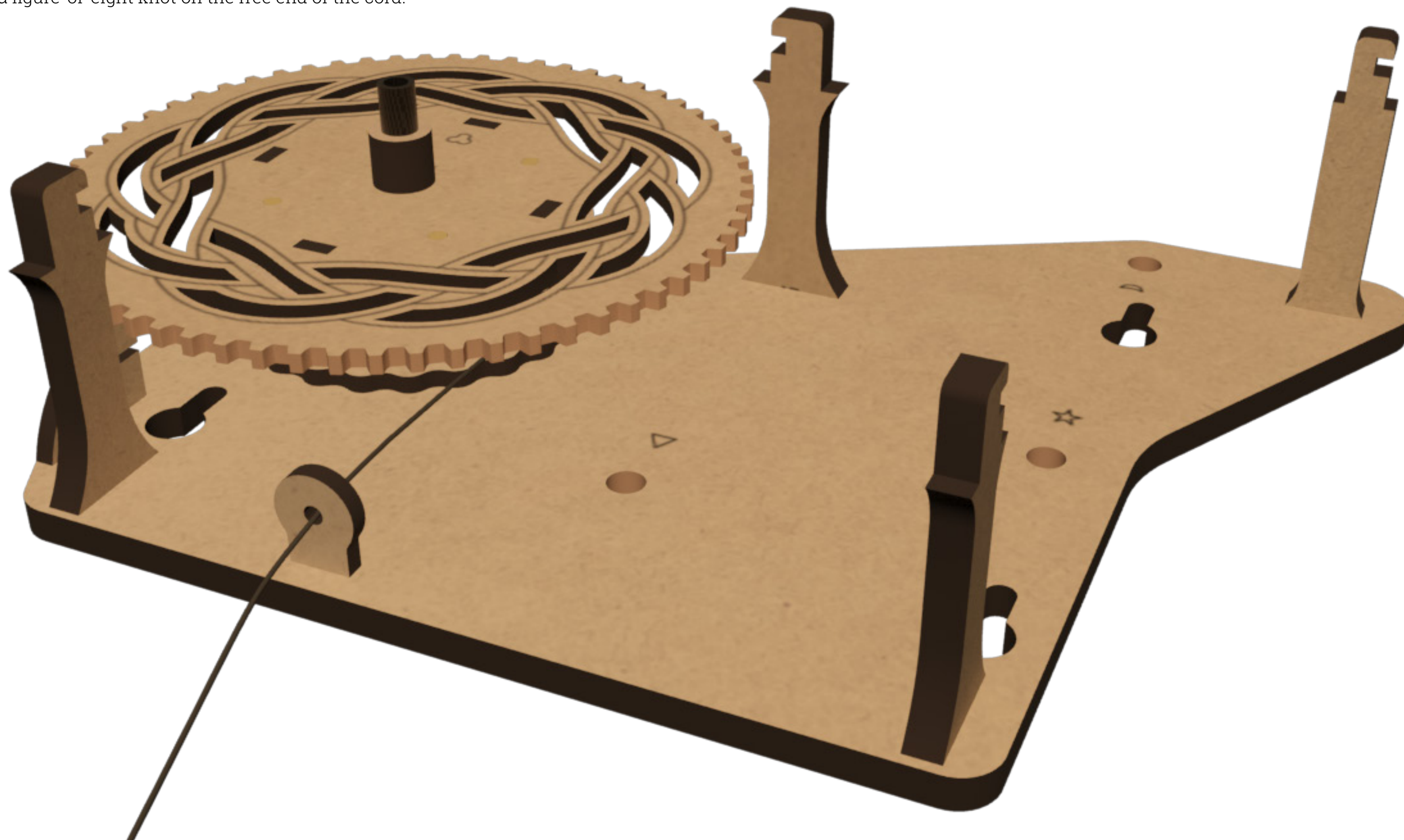
Seize the knot with a drop of CA glue and pull it tightly against the spool.

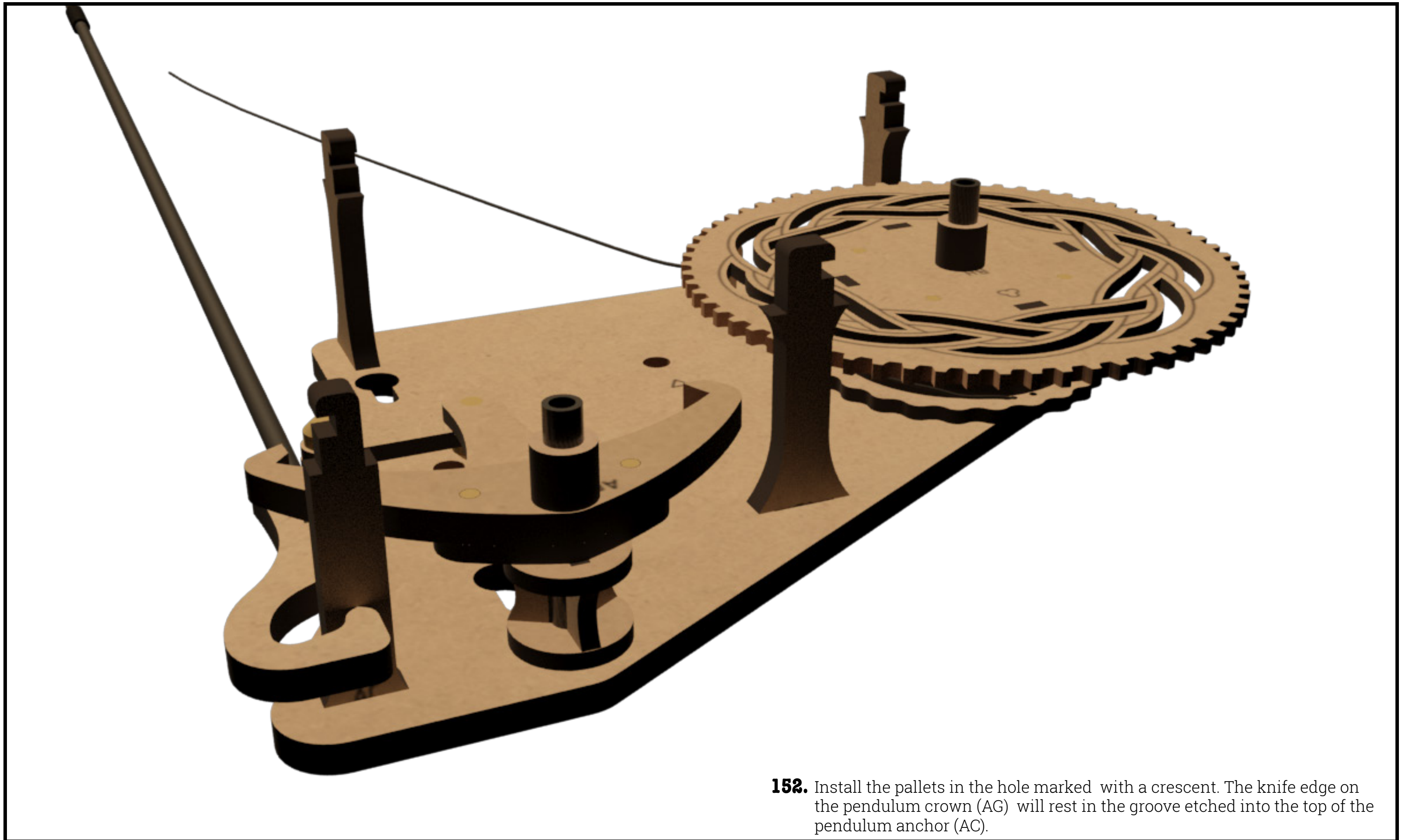
Trim any excess cord from the knot.



151. Thread the other end of the counterweight cord through the counterweight cord guide (BB) as shown.

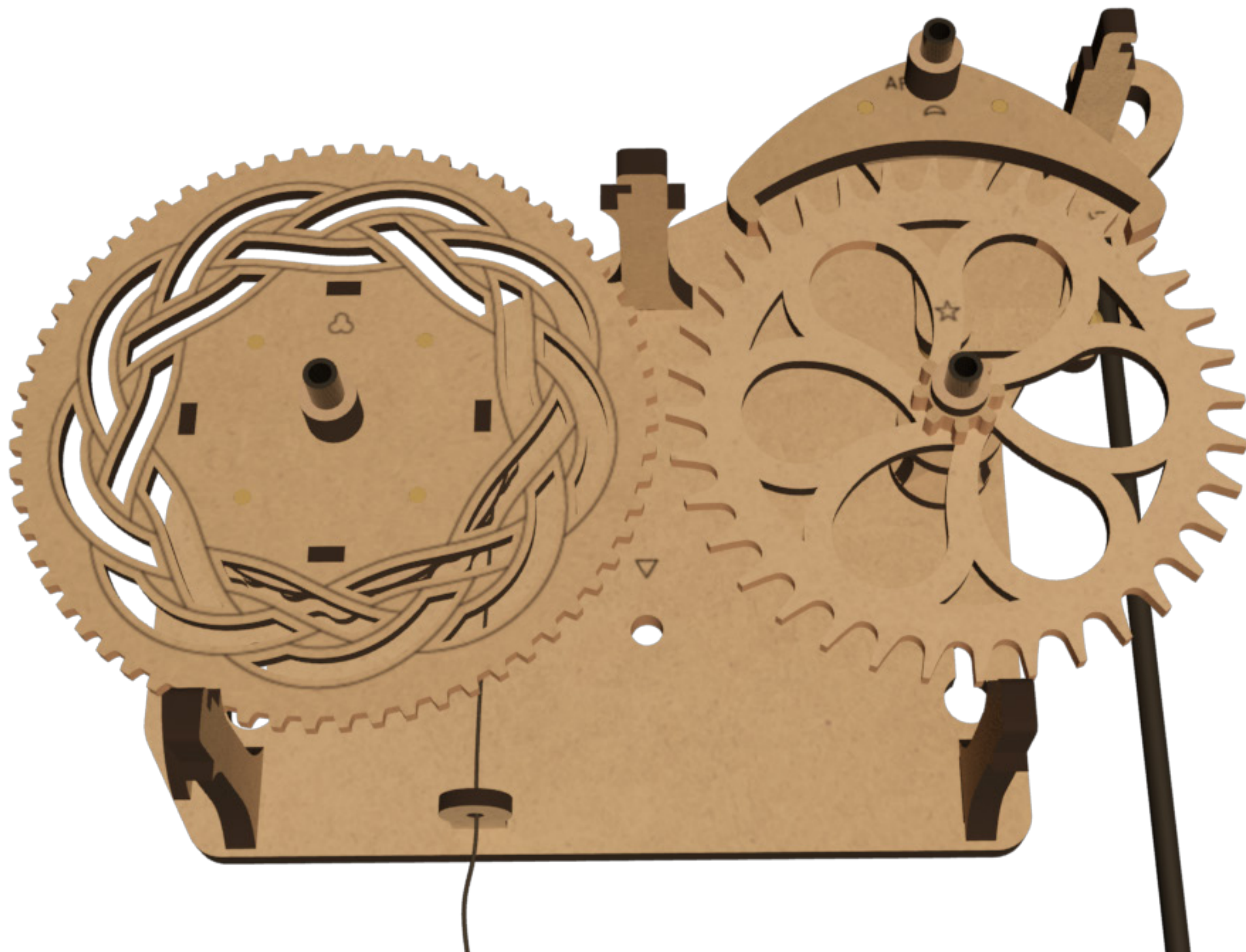
Tie a figure-of-eight knot on the free end of the cord.



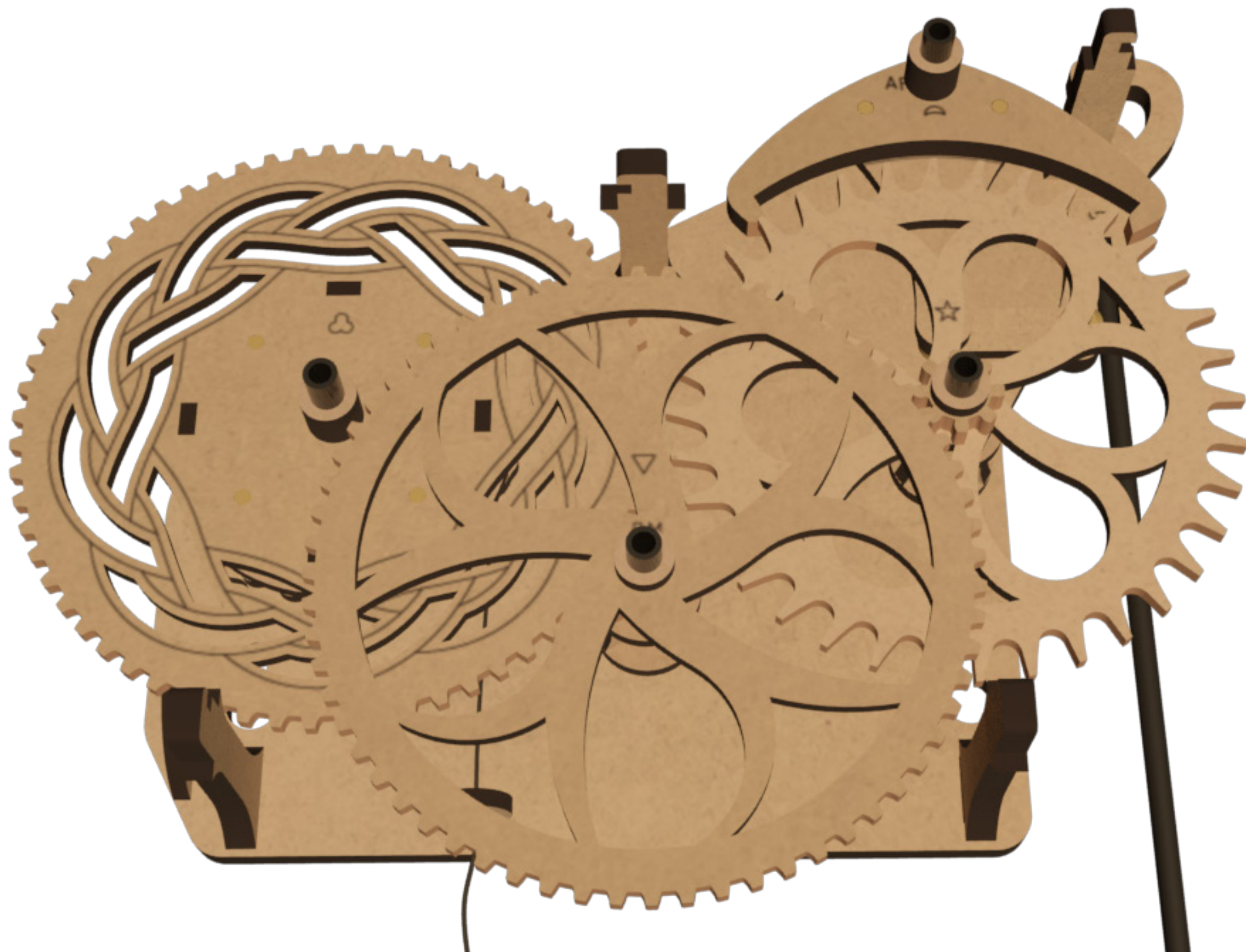


152. Install the pallets in the hole marked with a crescent. The knife edge on the pendulum crown (AG) will rest in the groove etched into the top of the pendulum anchor (AC).

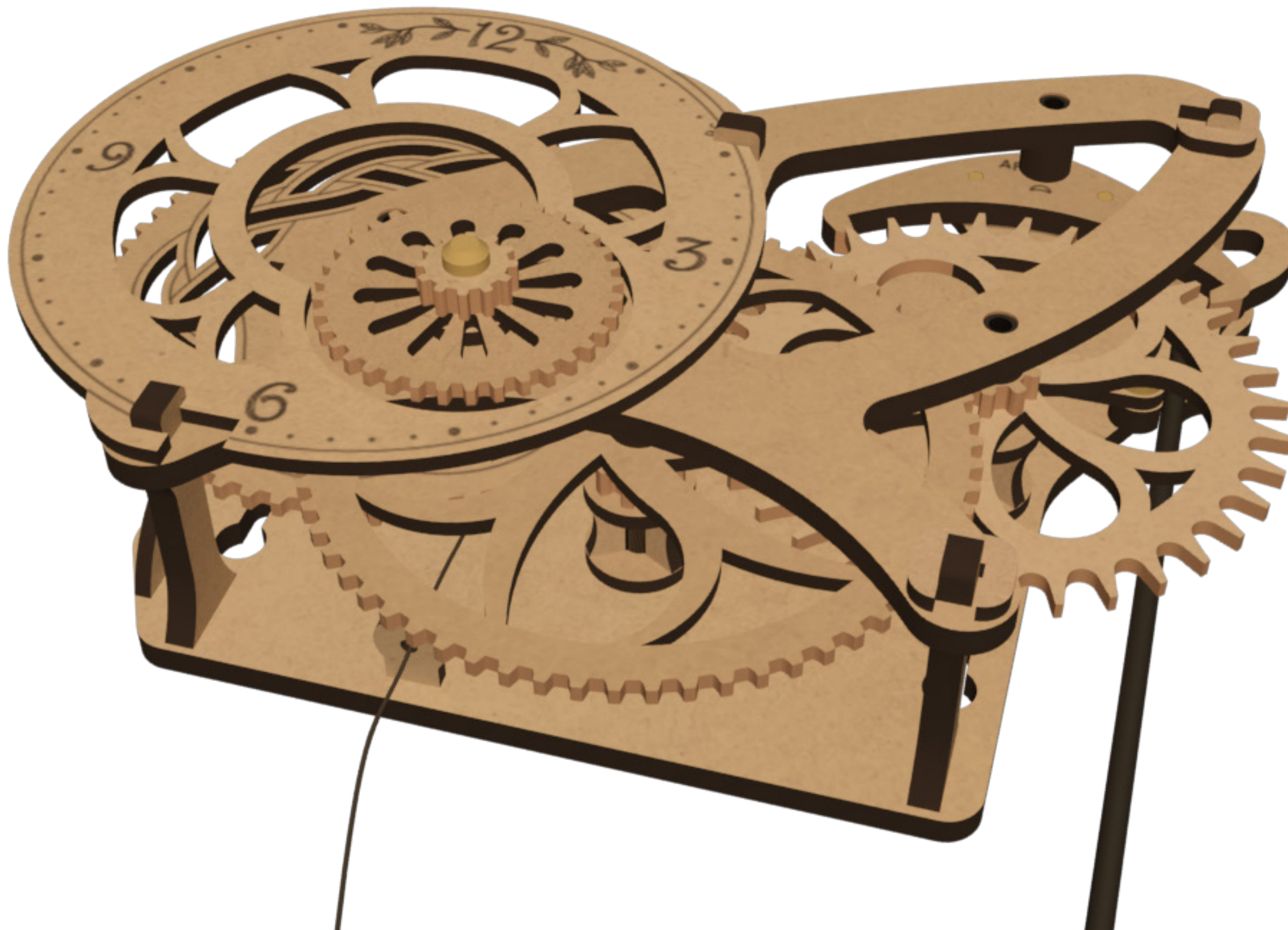
153. Install the winder wheel into the hole marked with a club, and the escape wheel into the hole marked with a star.



154. Install the second wheel into the hole marked with a triangle.



155. Install the faceplate (AD) using the dial face (BC) and retainer clips (DH).



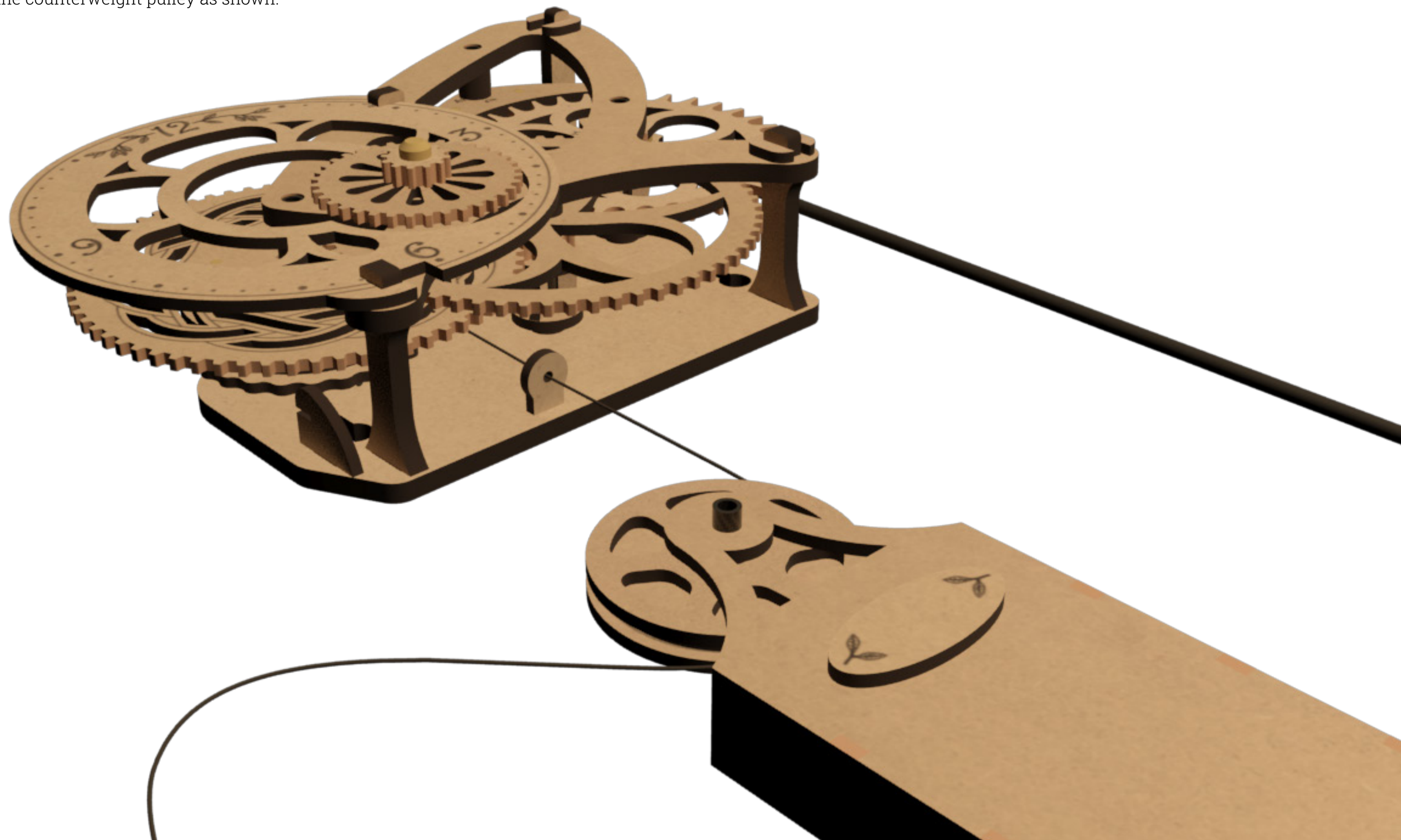
156. Hang the clock on the wall Step 1

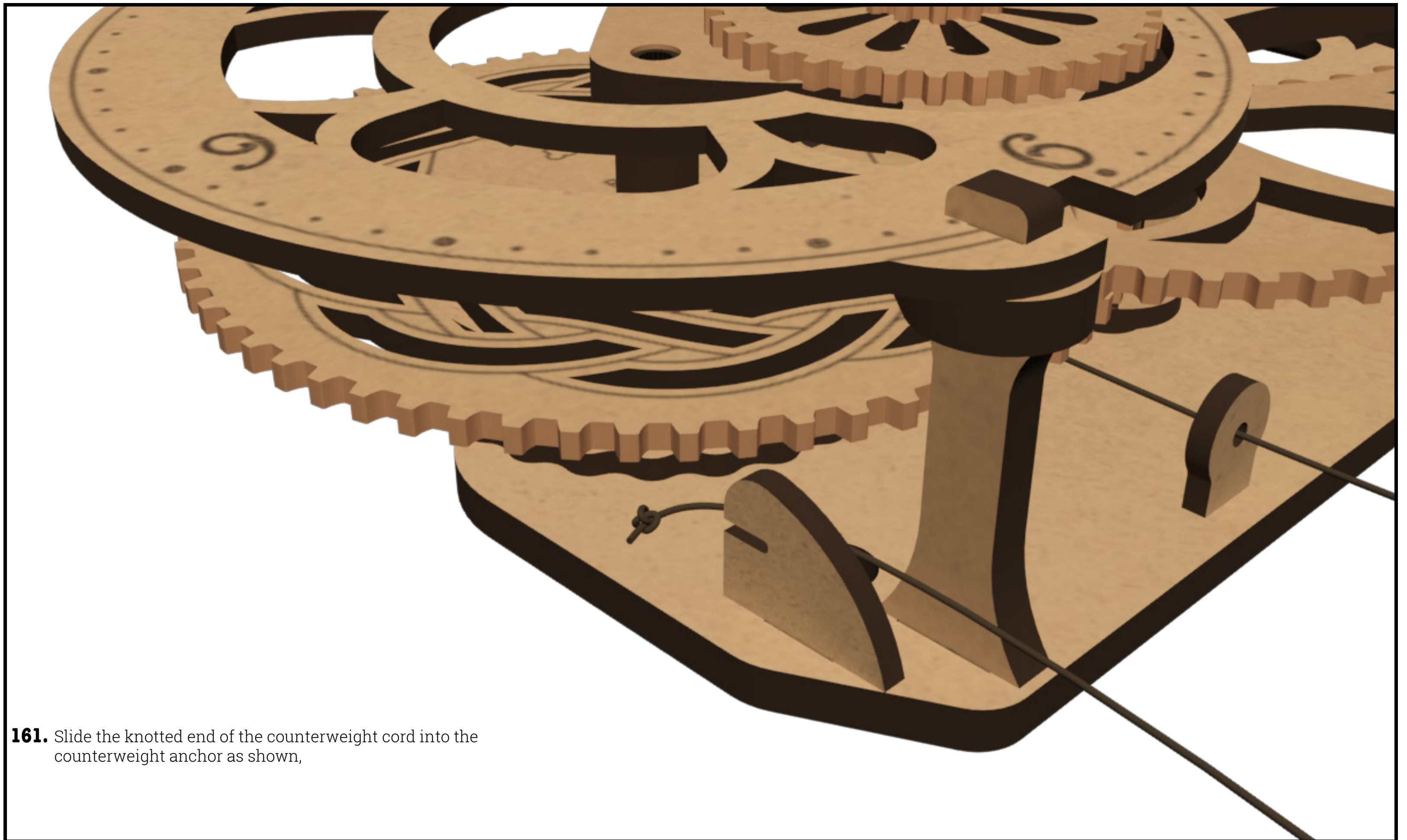
157. Hang the clock on the wall Step 2

158. Hang the clock on the wall Step 3

159. Hang the clock on the wall Step 4

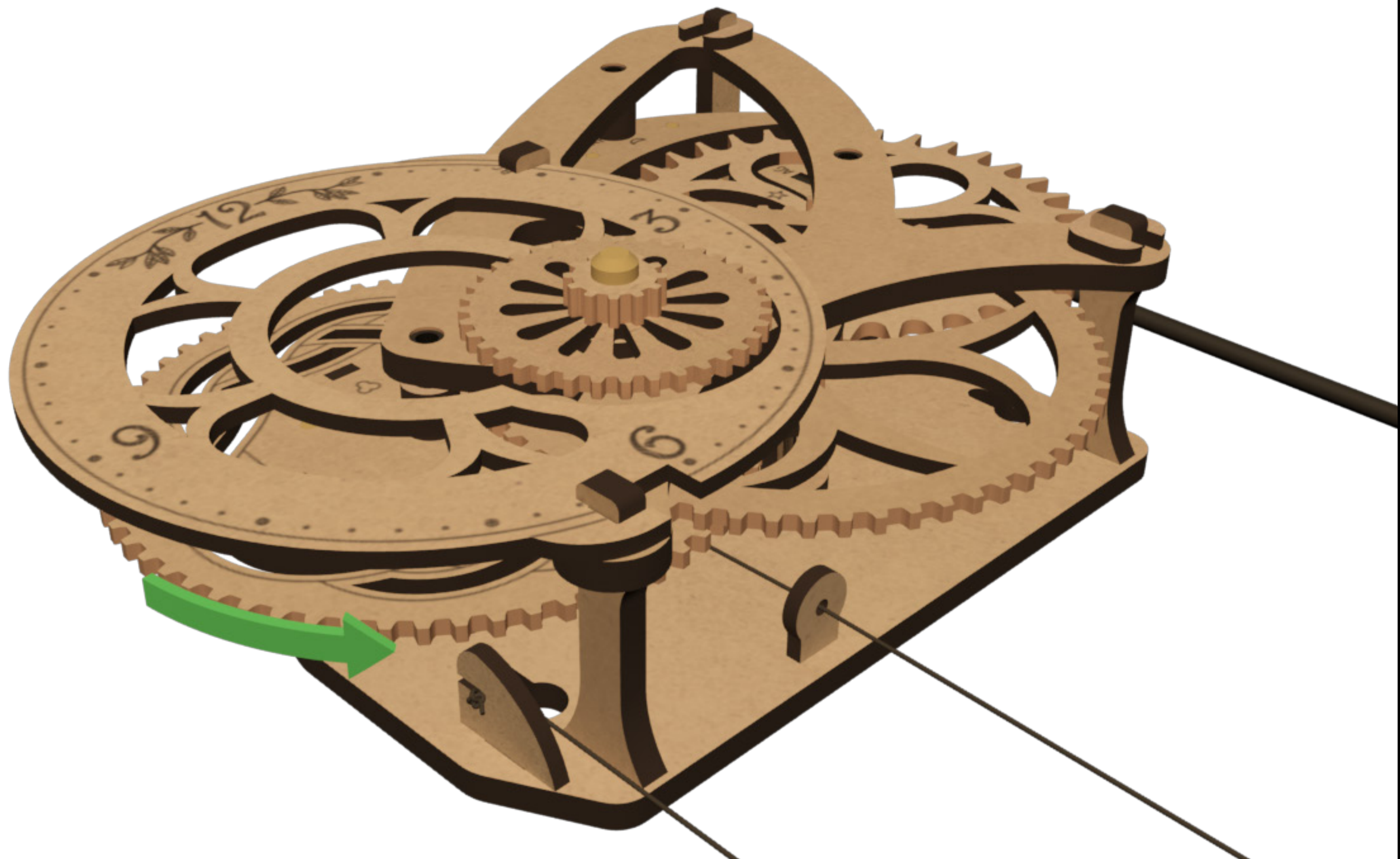
160. Thread the free end of the counterweight cord through the counterweight pulley as shown.



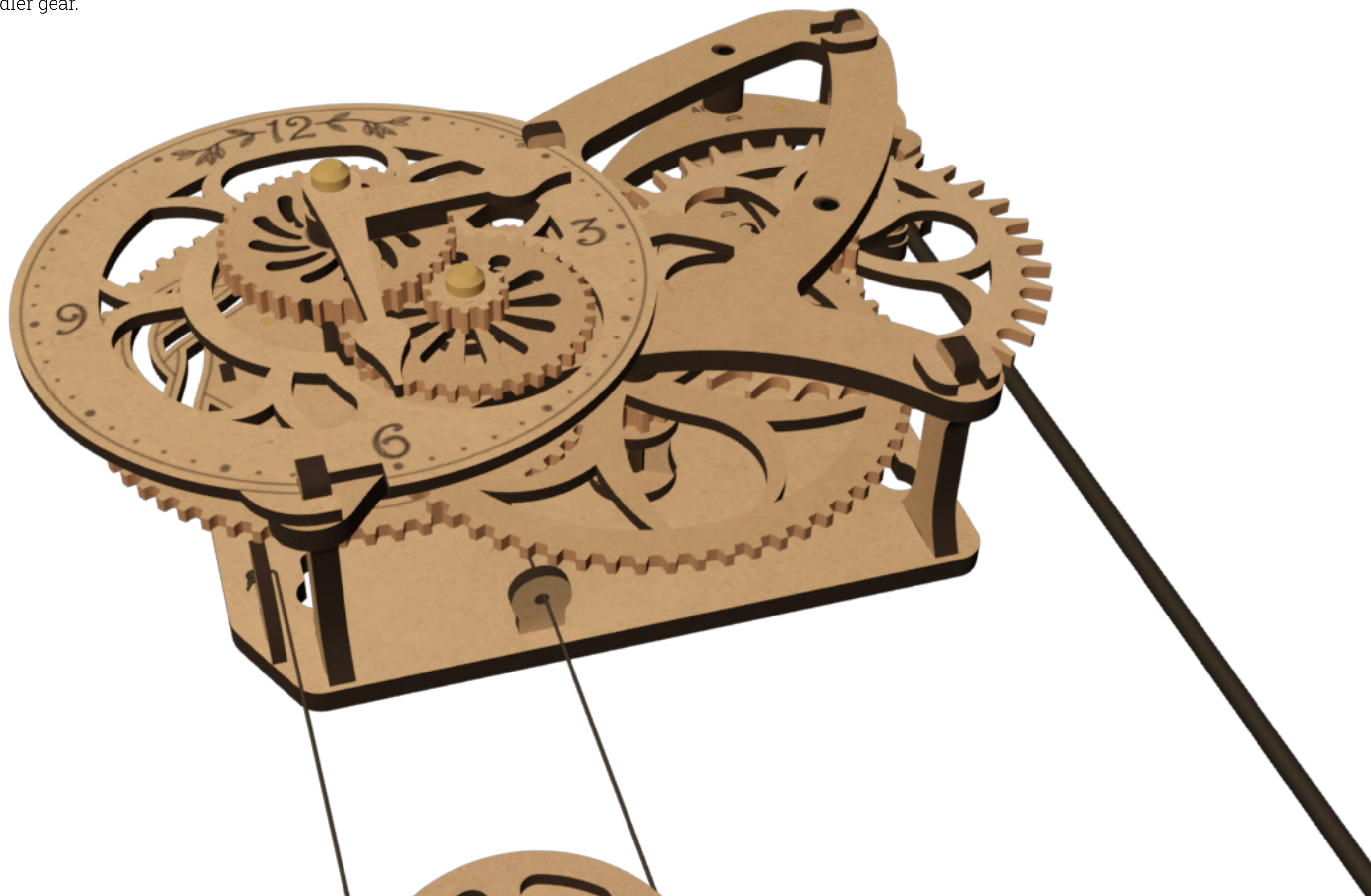


161. Slide the knotted end of the counterweight cord into the counterweight anchor as shown,

162. While supporting the counterweight, turn the spool thumbwheels counterclockwise to wind the clock.



163. Press the dial train rod into the center of the winder wheel carbon fiber tube. Ensure the minute gear pinion is engaged with the idler gear.





164. Place the knife edge of the pendulum crown (AG) into the groove etched in the counterweight anchor.

