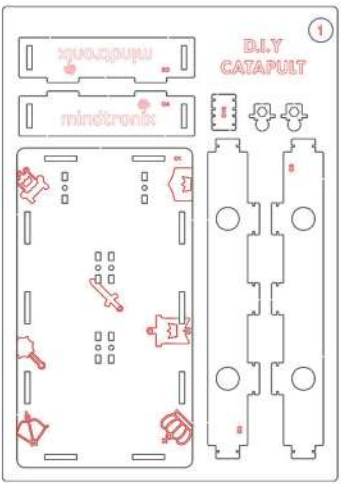
DIY CATAPULT

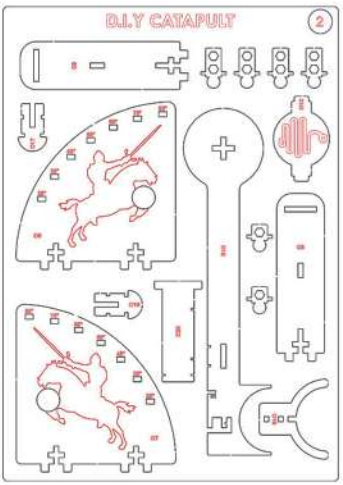
SCREWDRIVER

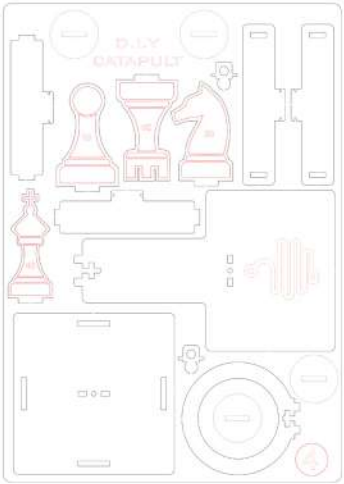
PLASTIC BALL X 1

RUBBER BALL X 1

MAGNET



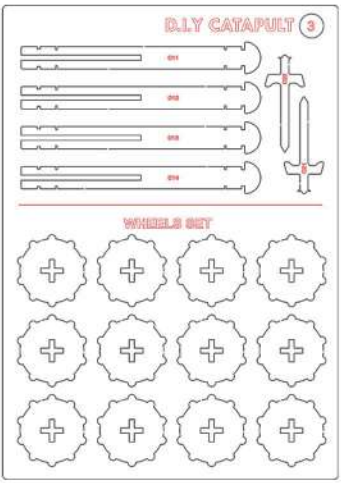




(M3 X 12 SCREWS) X 8

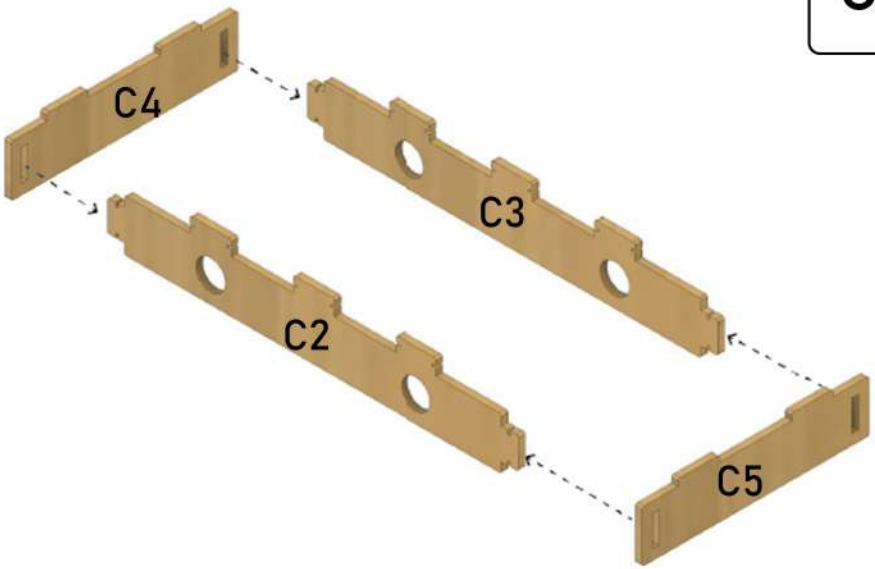
RUBBER BANDS
SMALL X 15

RUBBER BANDS
BIG X 5



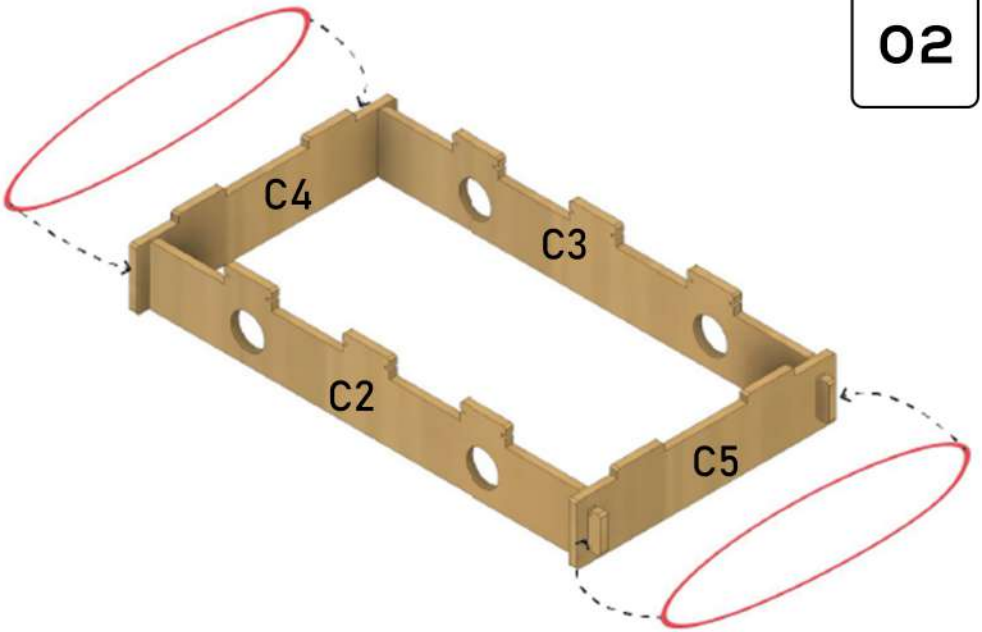
CATAPULT

01



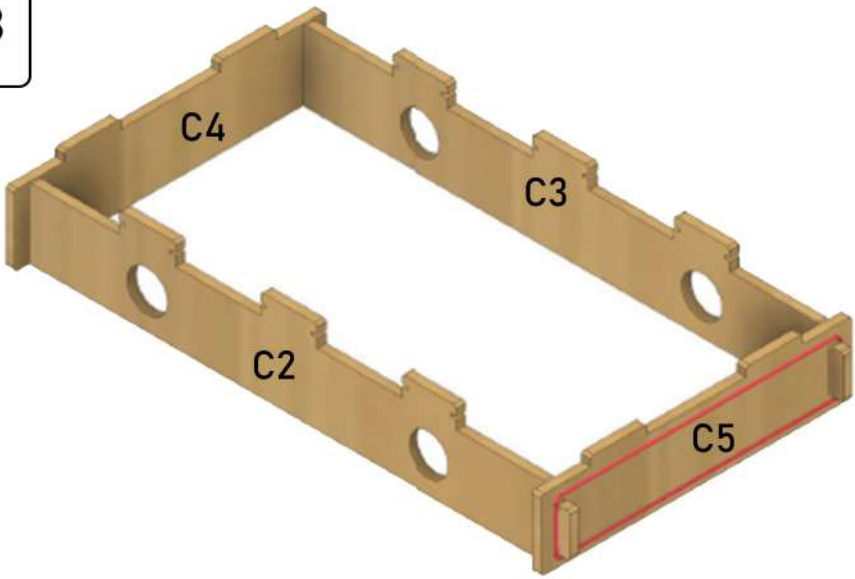
Join the blocks C2, C3, C4 and C5

02



Lock the joints using rubber bands

03



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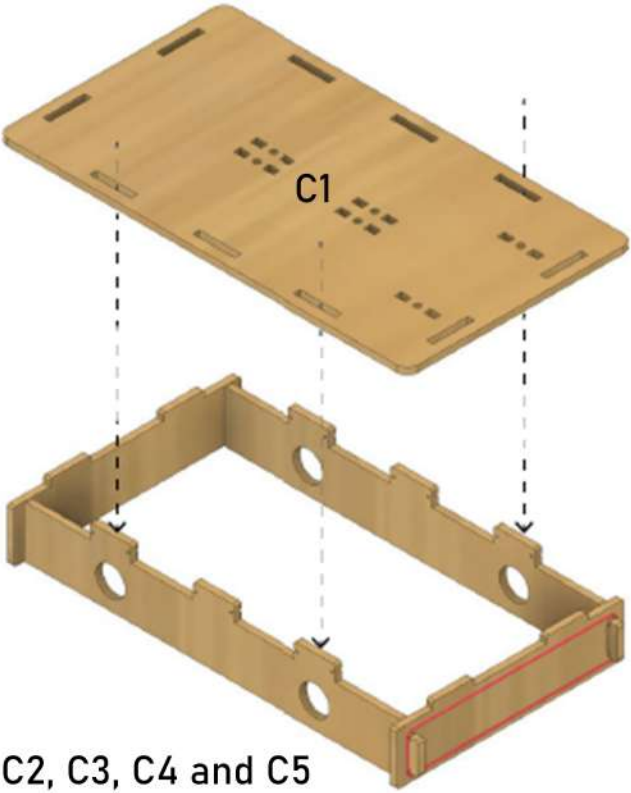
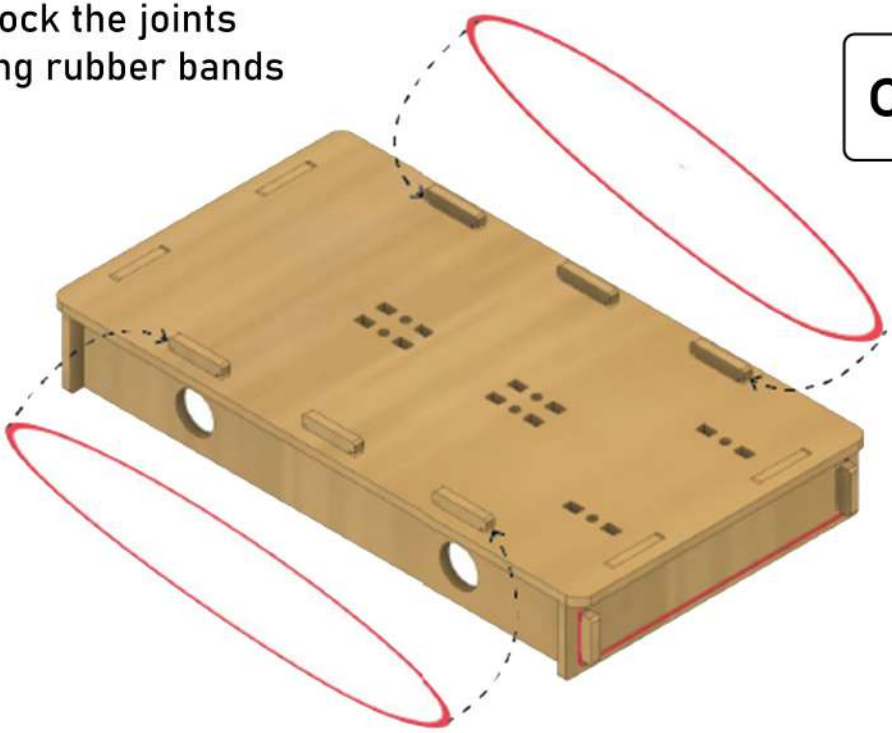


Insert C1 on C2, C3, C4 and C5

05

Lock the joints
using rubber bands

06



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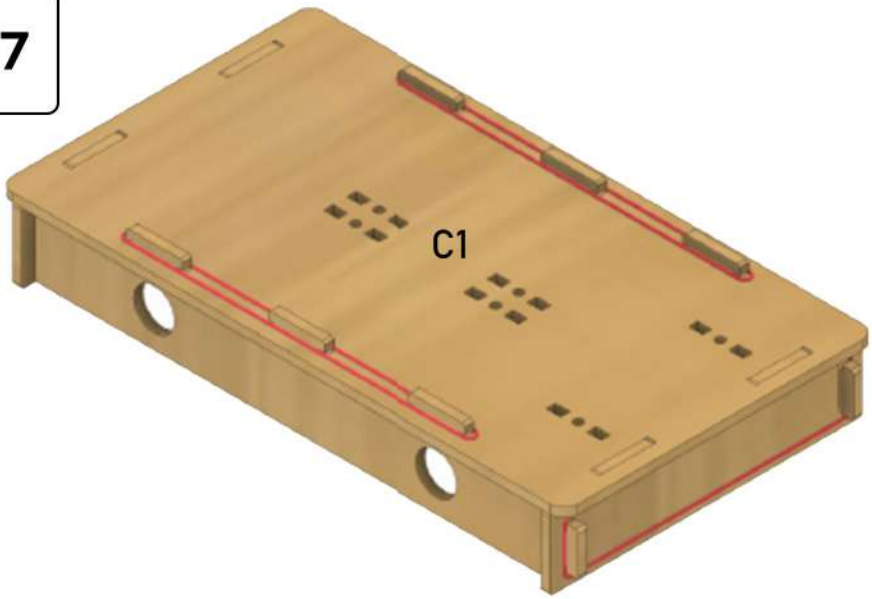
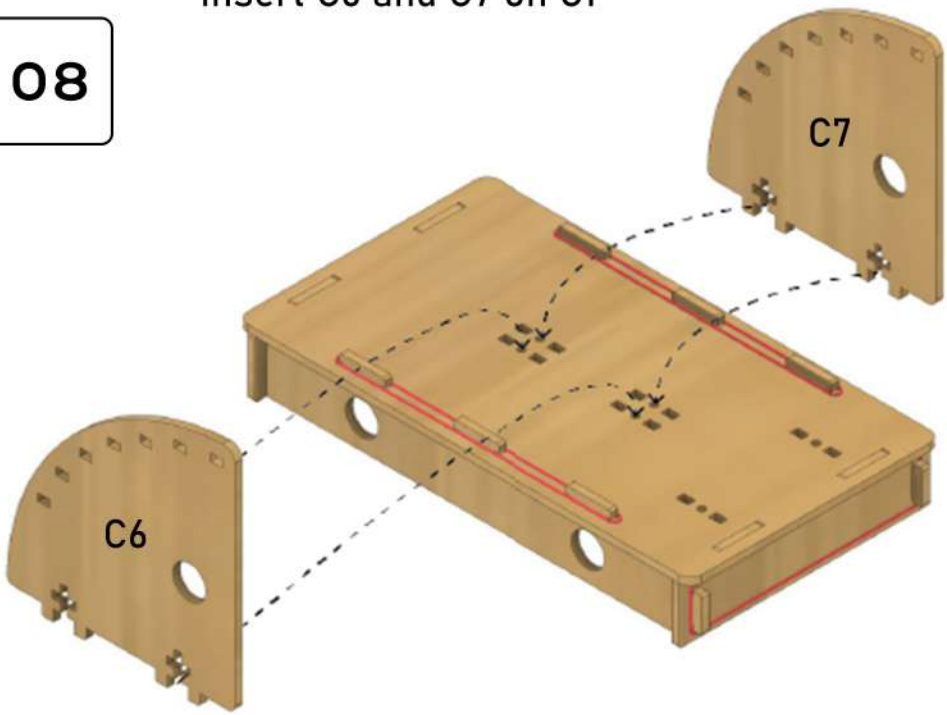


Insert C6 and C7 on C1

08



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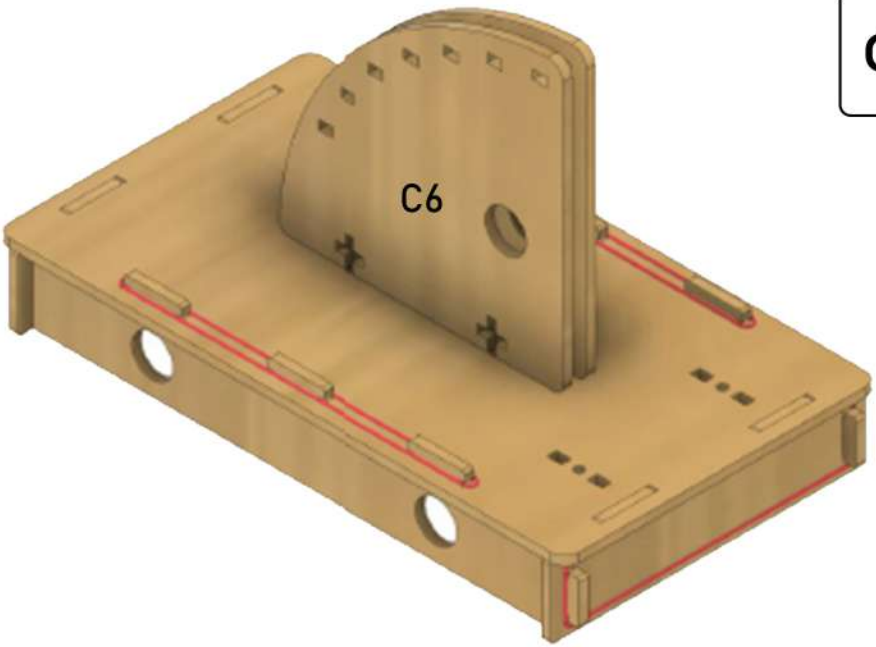

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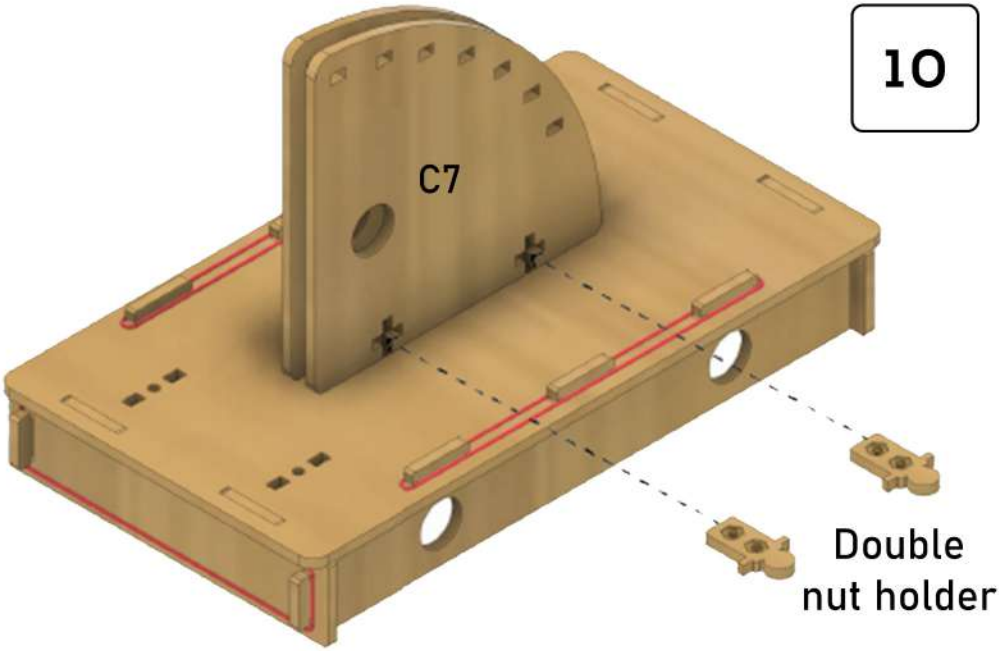
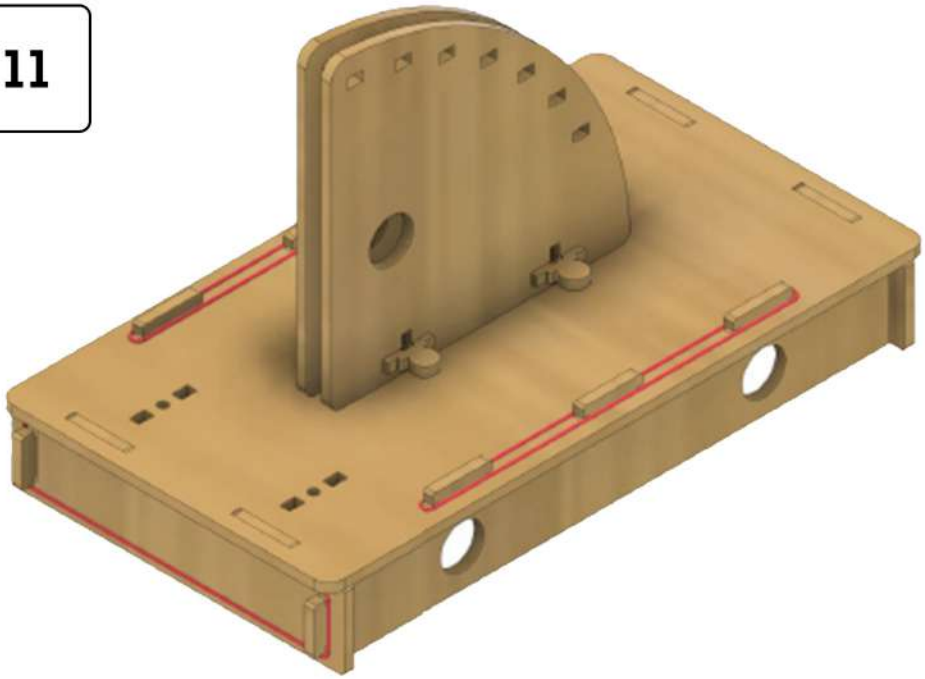


Insert Double nut holders to C6 and C7

11



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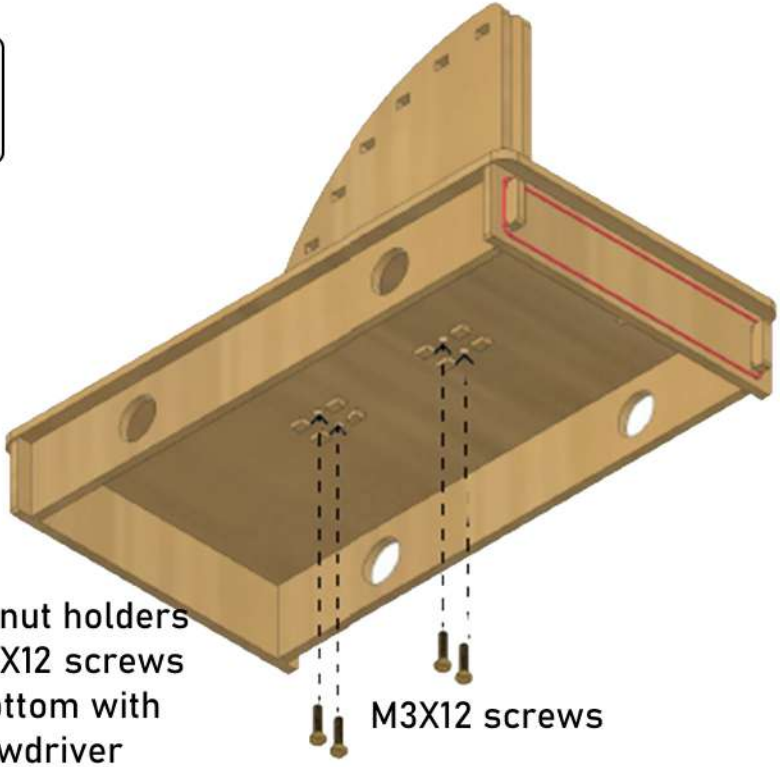
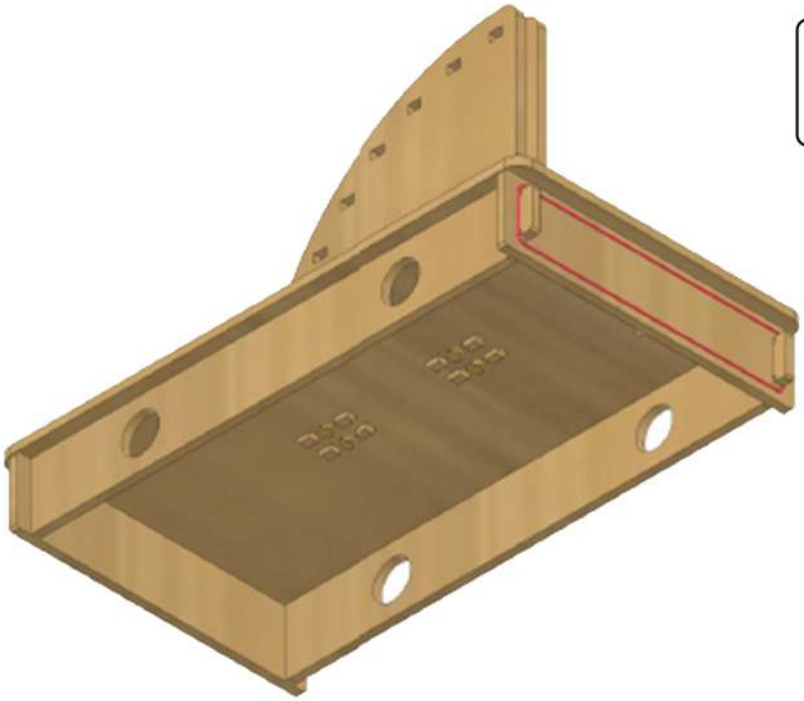


Lock the nut holders using M3X12 screws from bottom with screwdriver

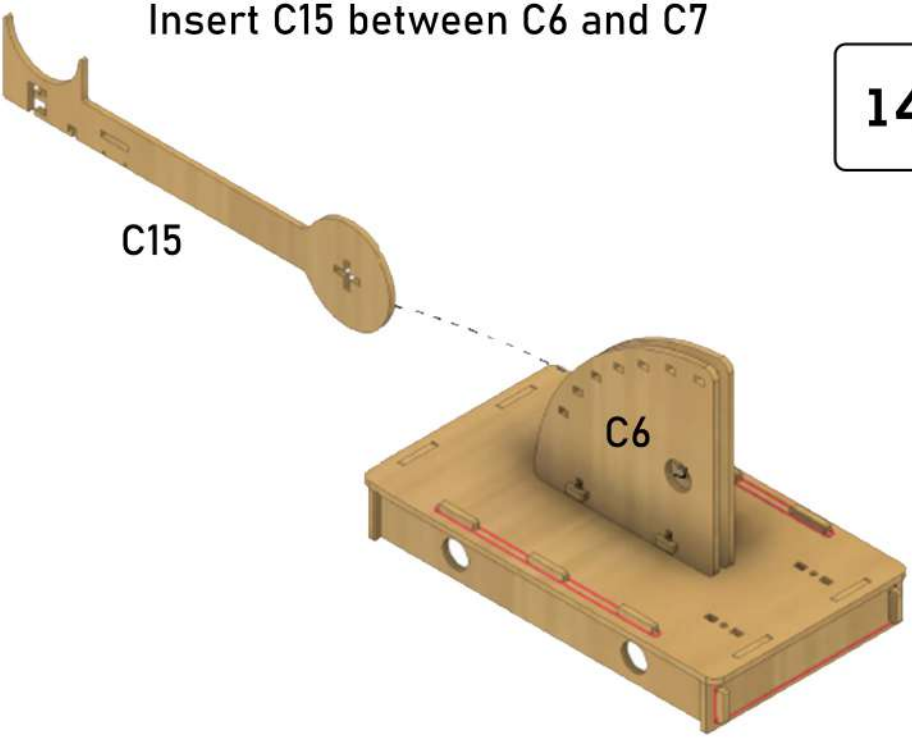
M3X12 screws

13



Insert C15 between C6 and C7

14



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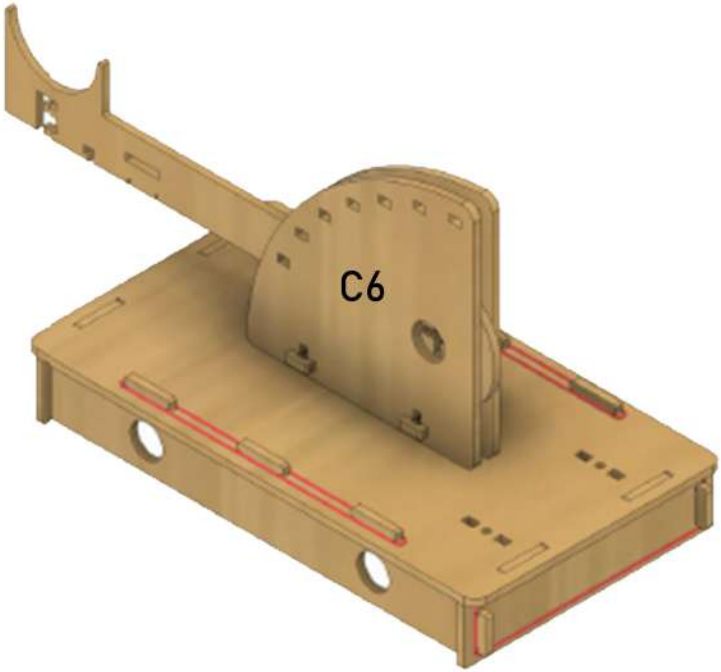
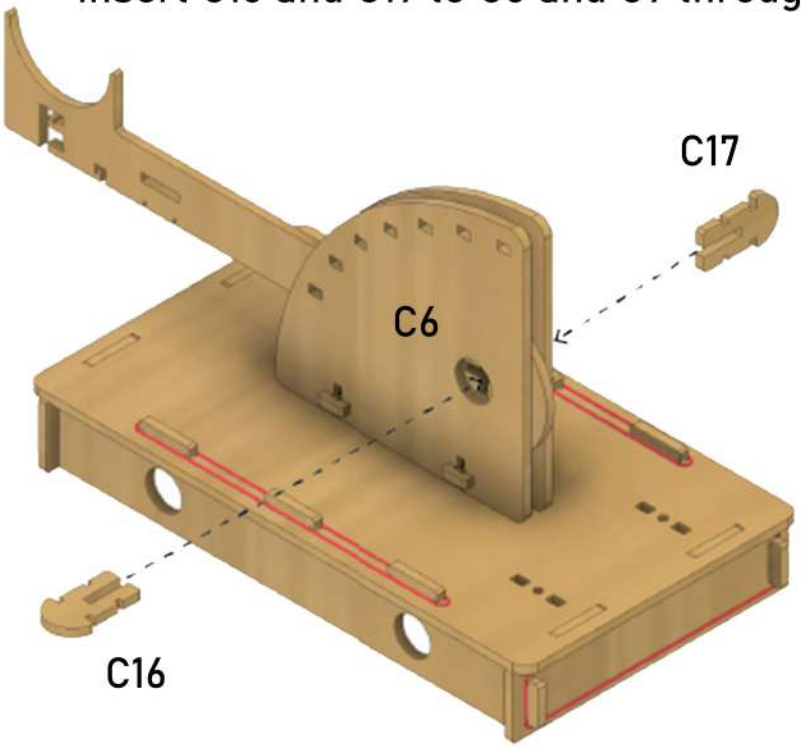


Insert C16 and C17 to C6 and C7 through C15

16



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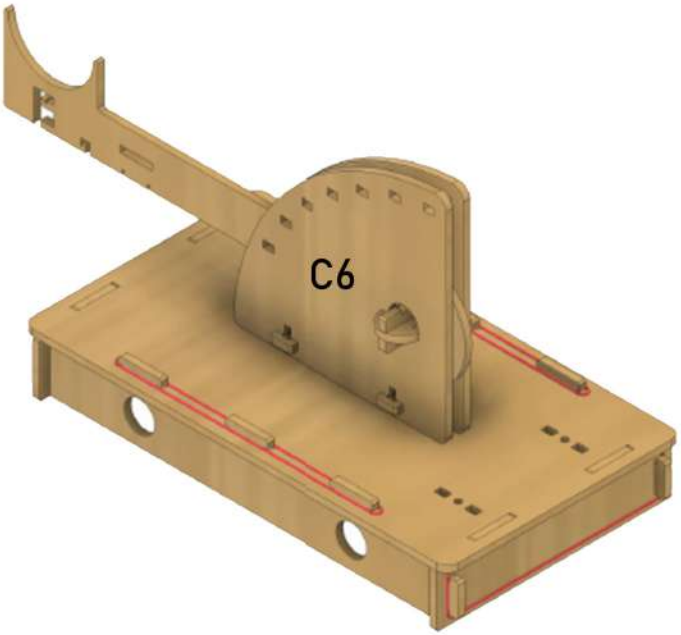
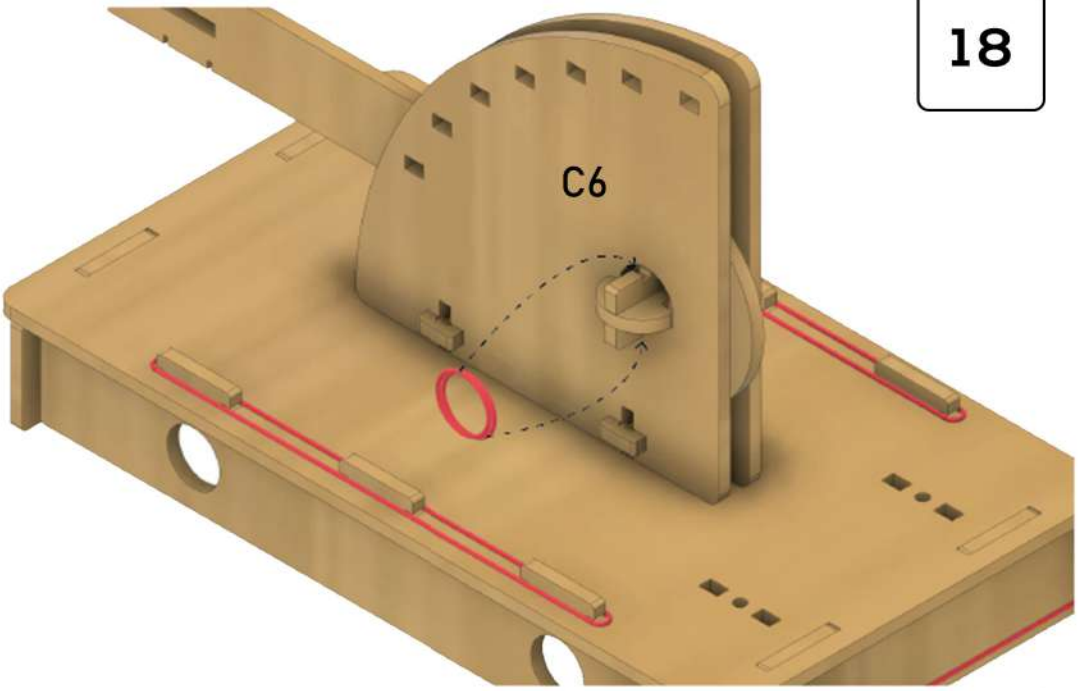


Lock C16 and C17 on both sides using Rubber band

18



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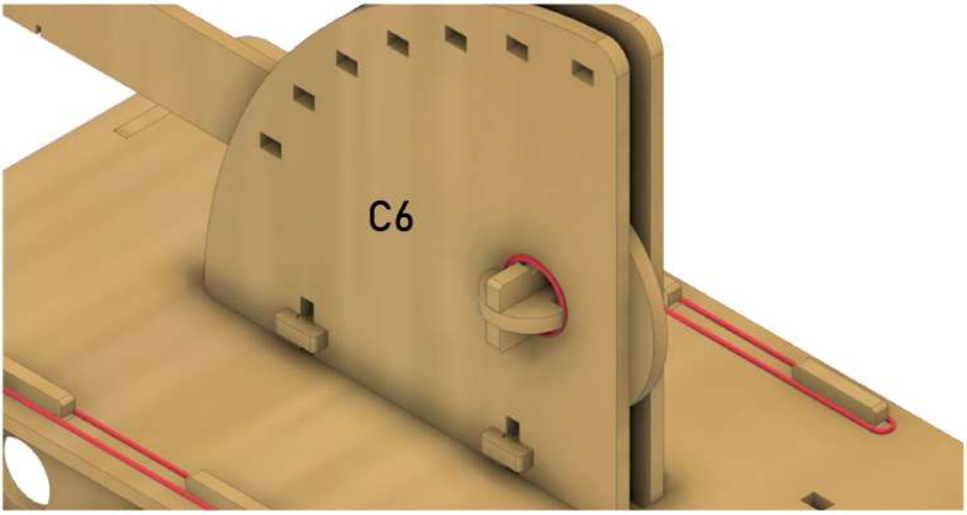

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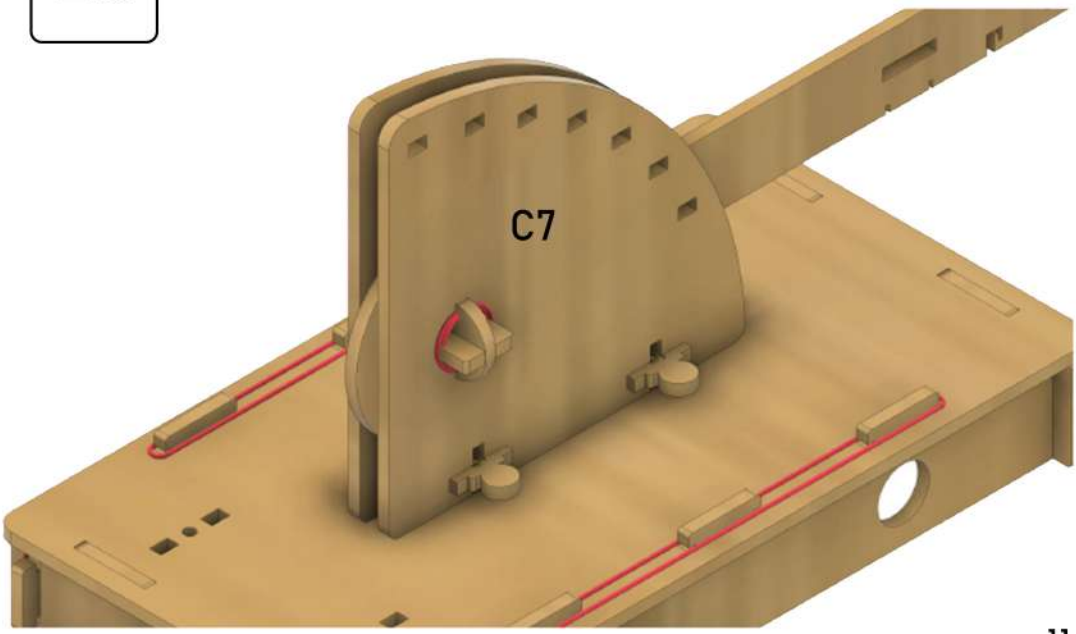

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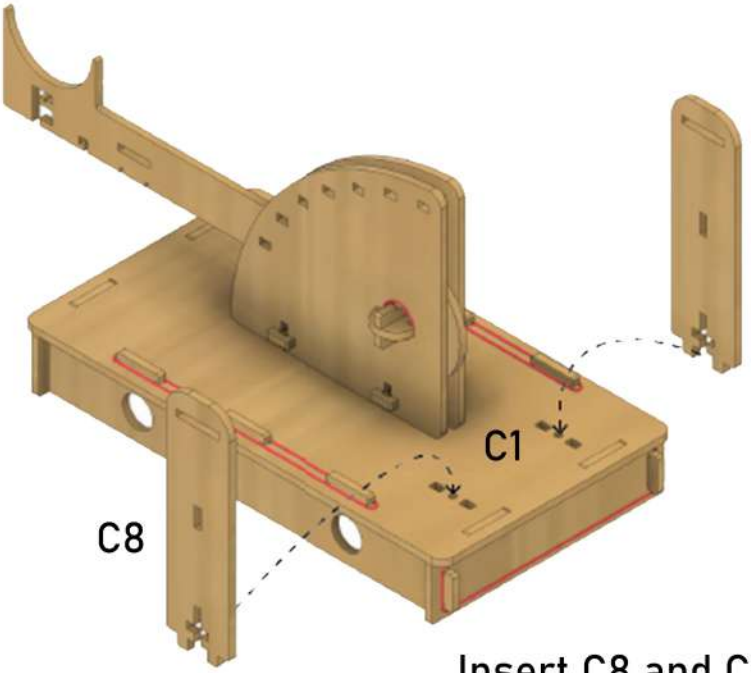
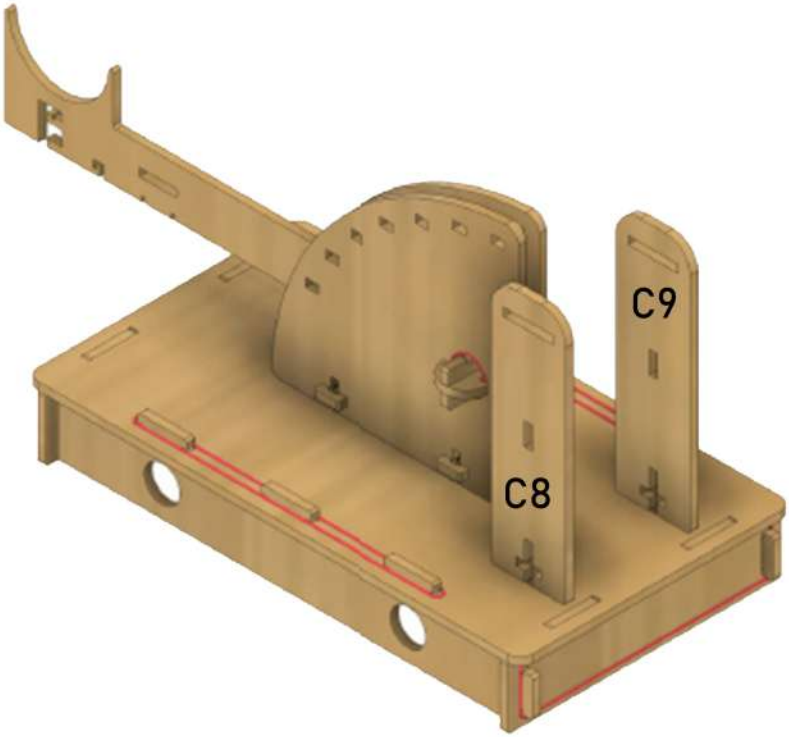


Insert C8 and C9 on C1

22



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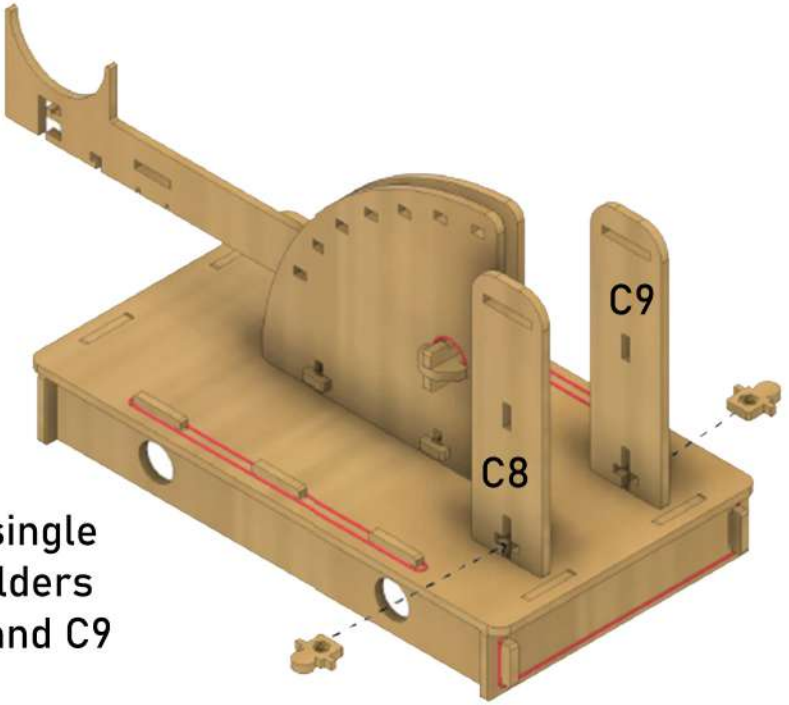
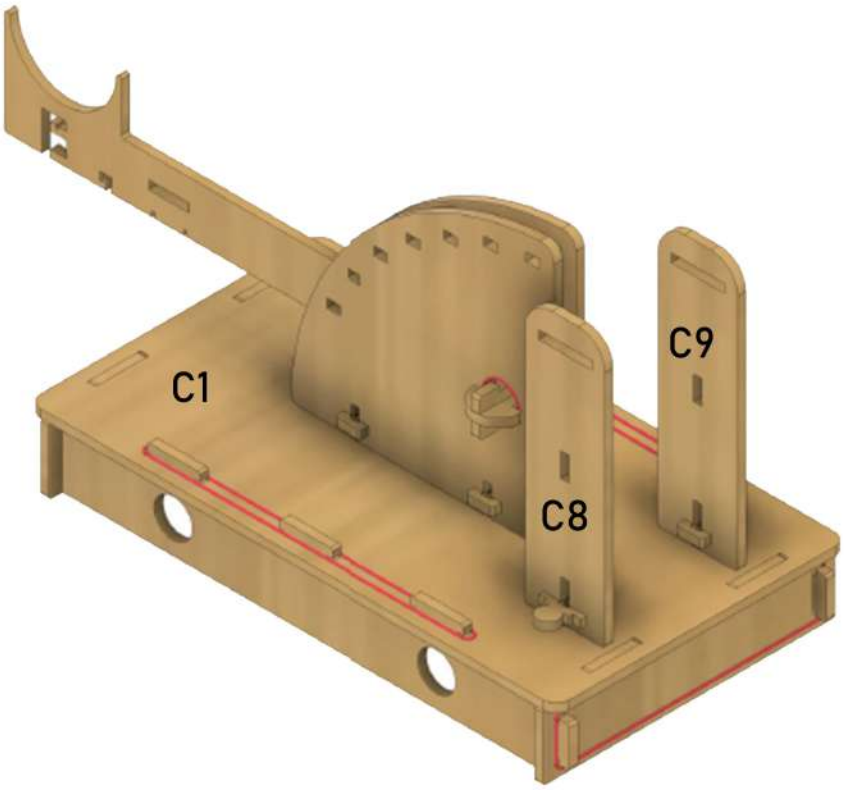


Insert single nut holders to C8 and C9

24



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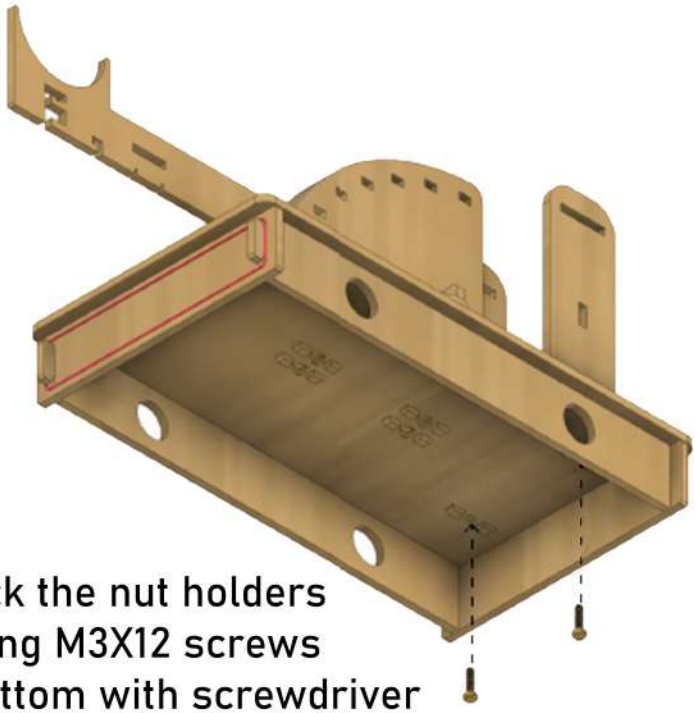
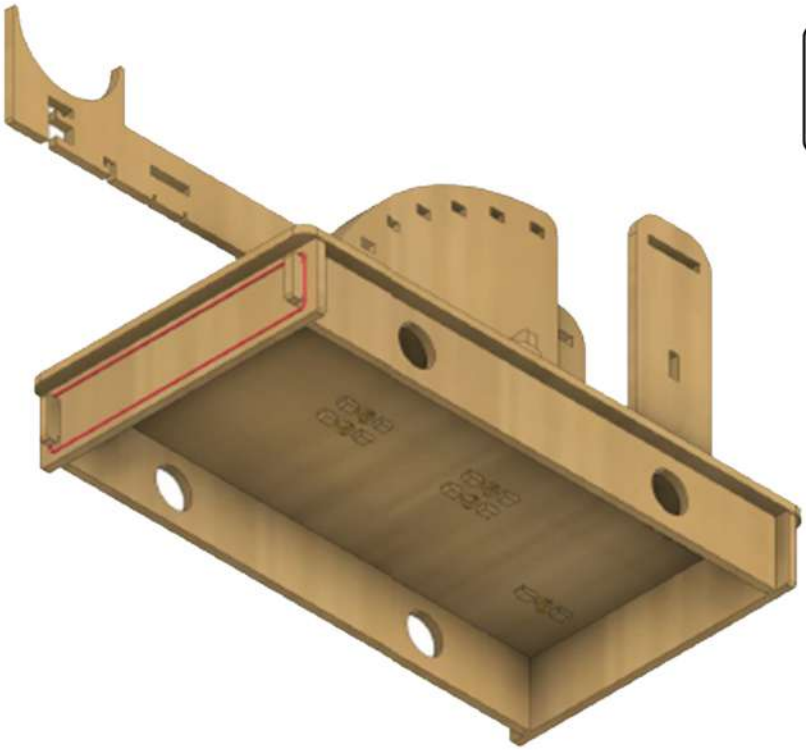


Lock the nut holders
using M3X12 screws
from bottom with screwdriver

26



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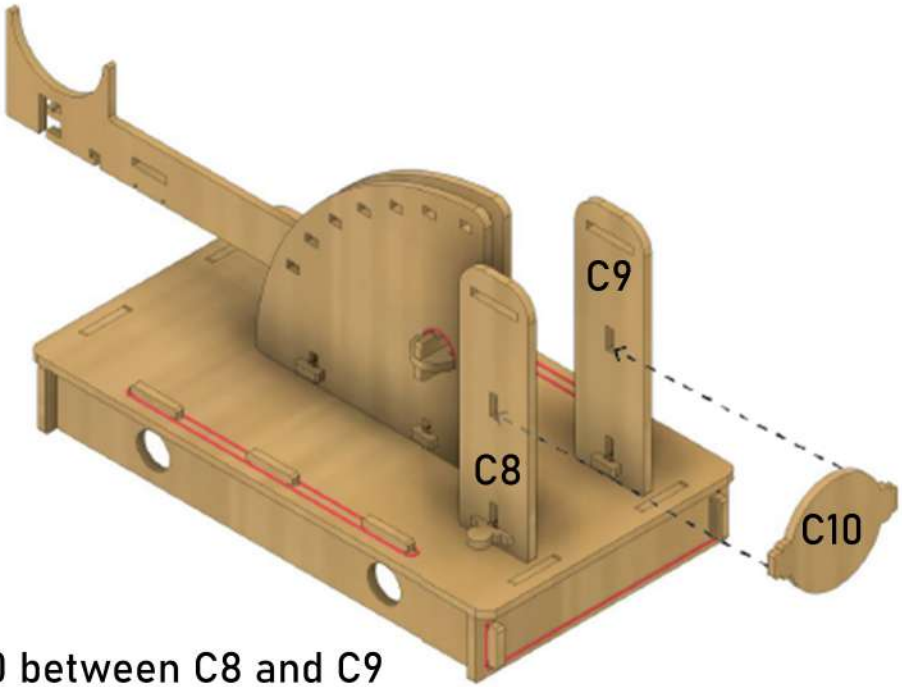
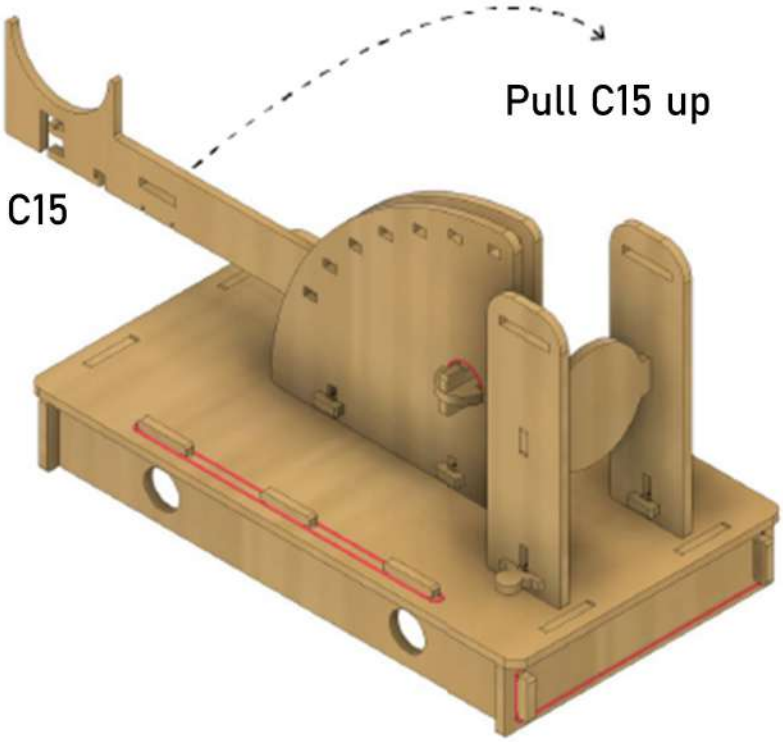


Fix C10 between C8 and C9

28



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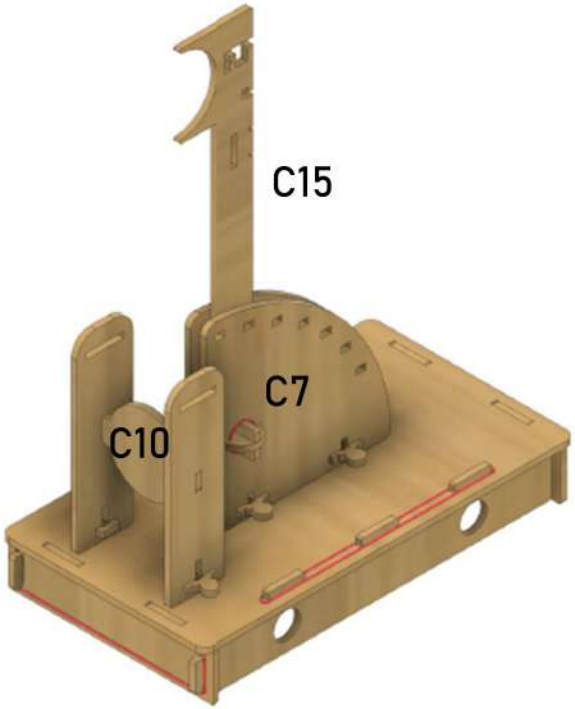

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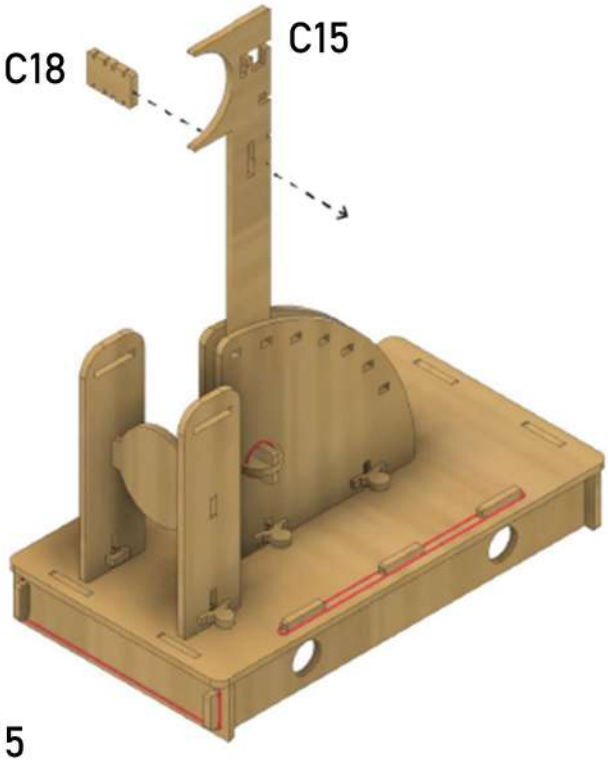
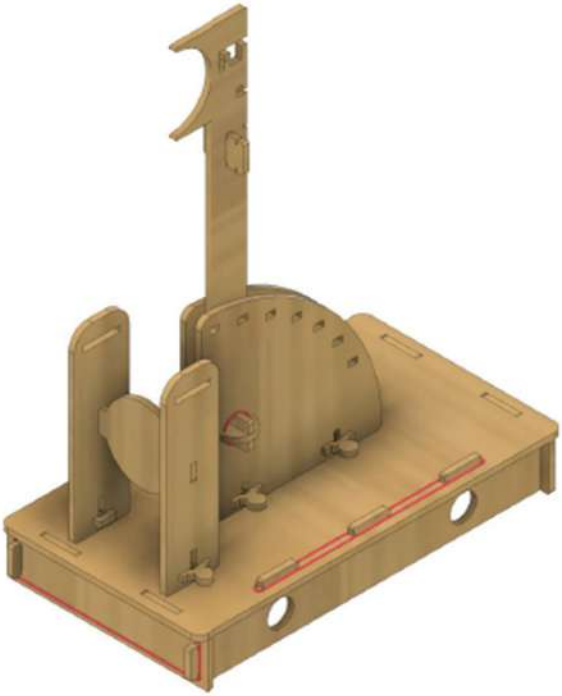


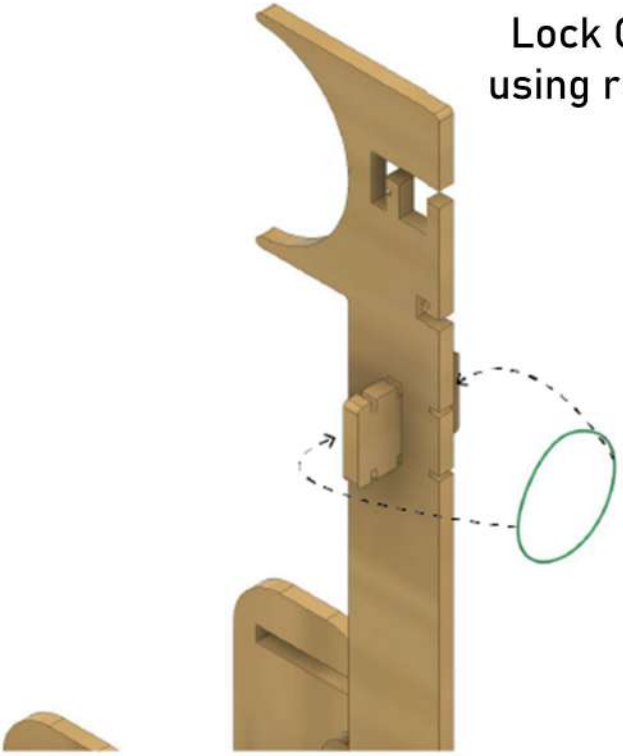
Insert C18 to C15

31



32

Lock C18 to C15
using rubber band

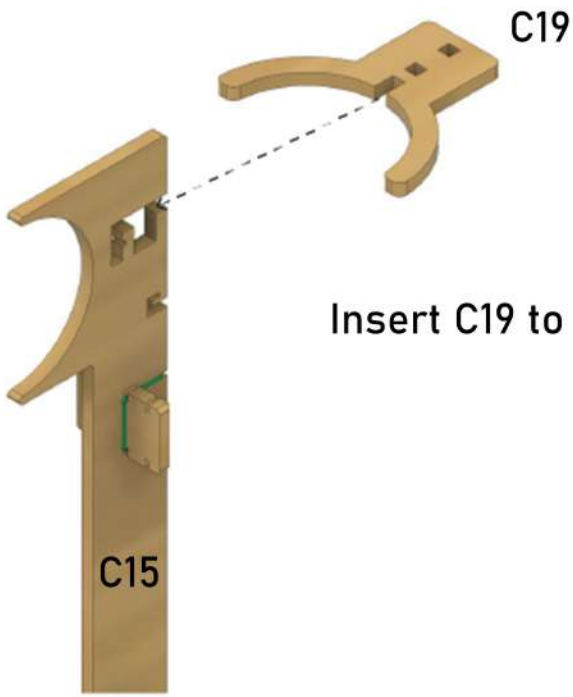


33

Lock C18 to C15
using rubber band

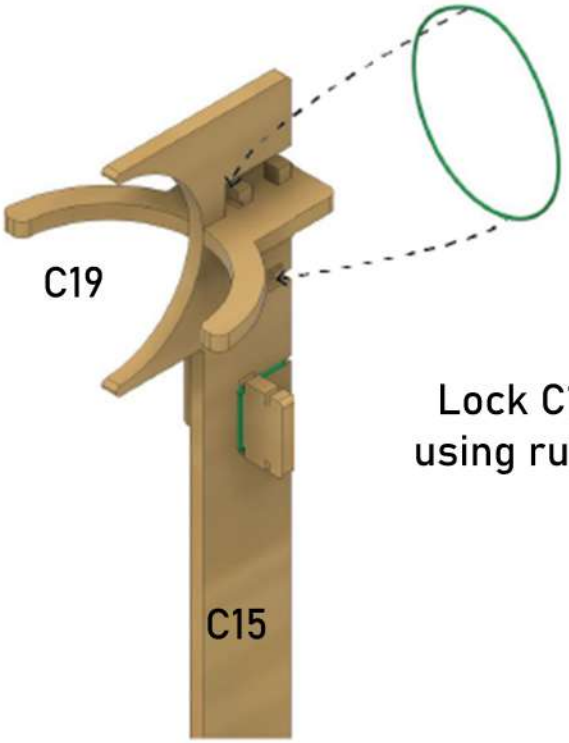
34

35



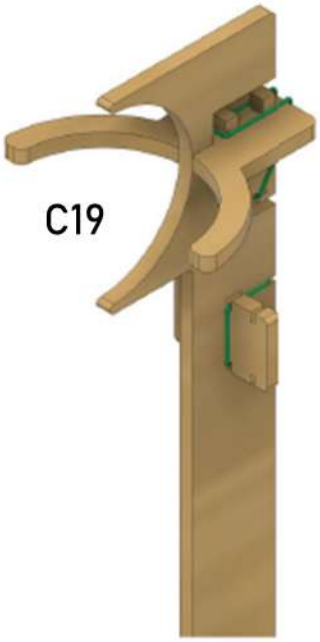
Insert C19 to C15

36



Lock C19 to C15
using rubber band

37



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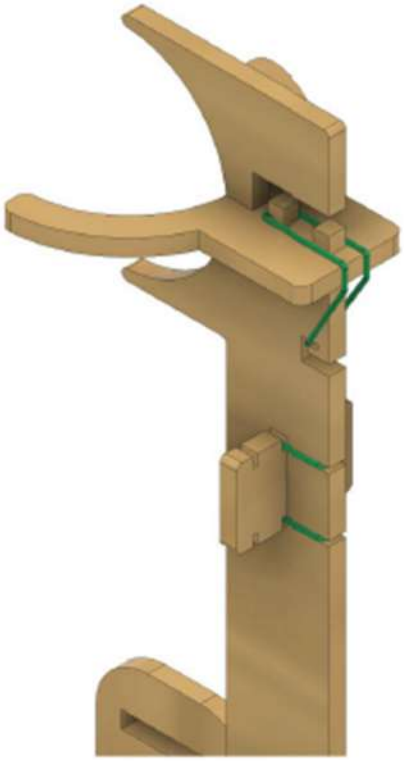
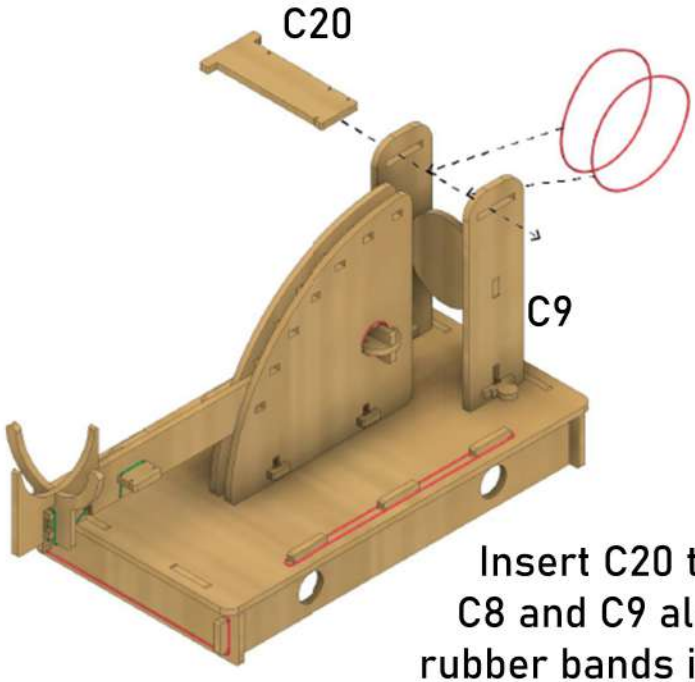


Lock C19 to C15
using rubber band

39



Insert C20 through C8 and C9 along with rubber bands in between

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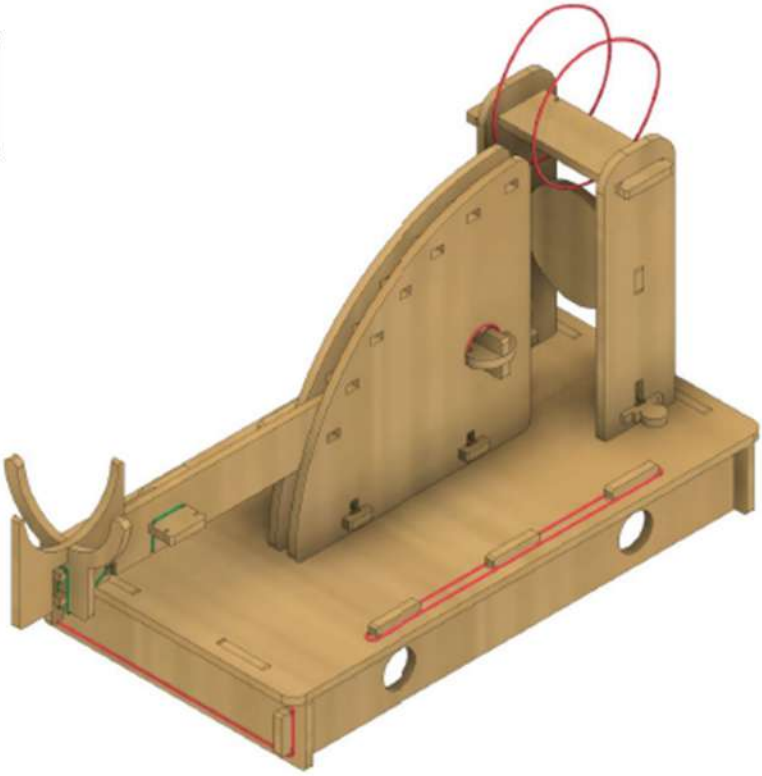
40



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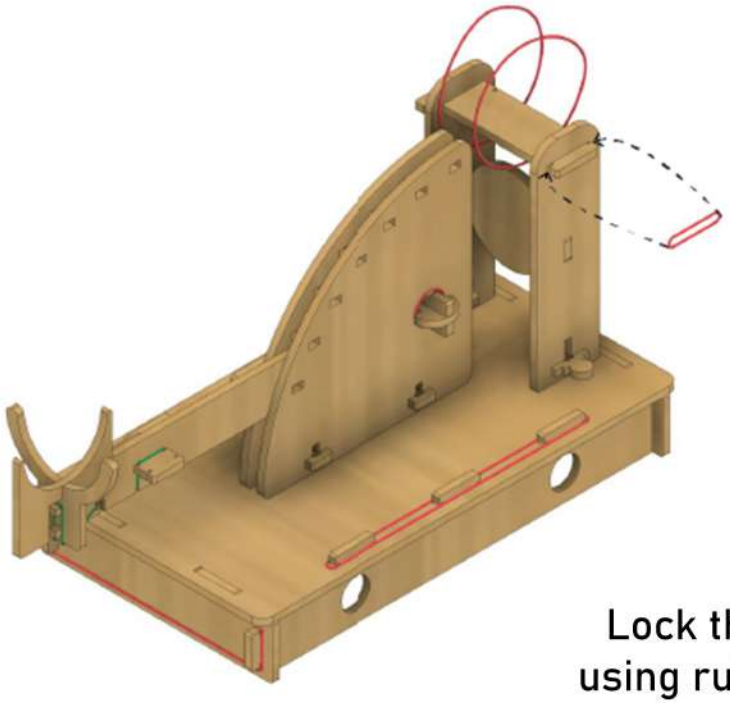
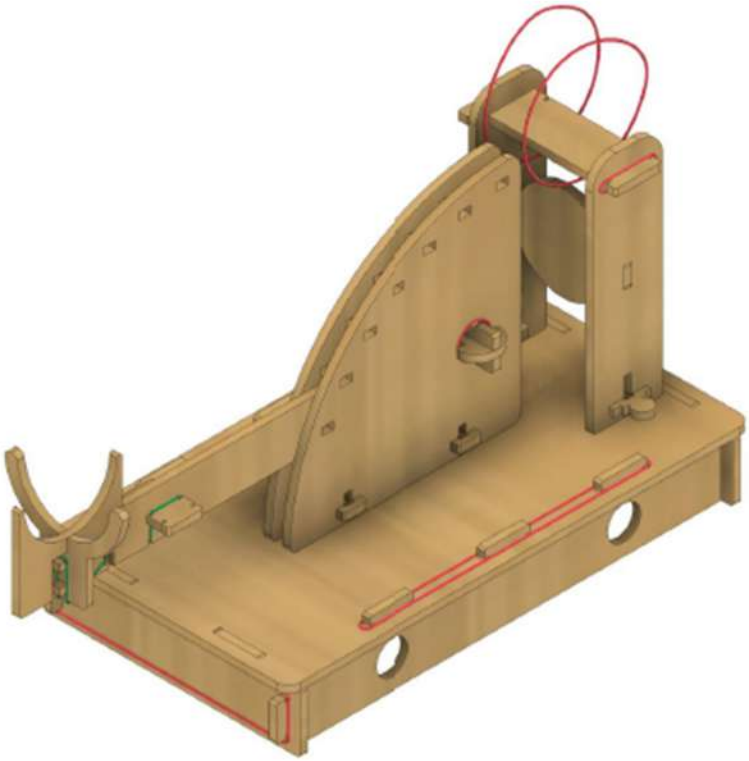


Lock the joints
using rubber band

42



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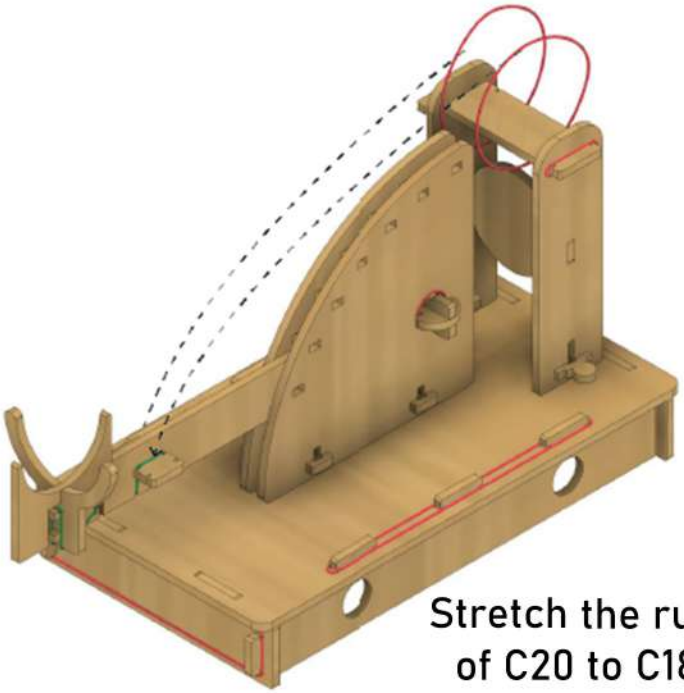
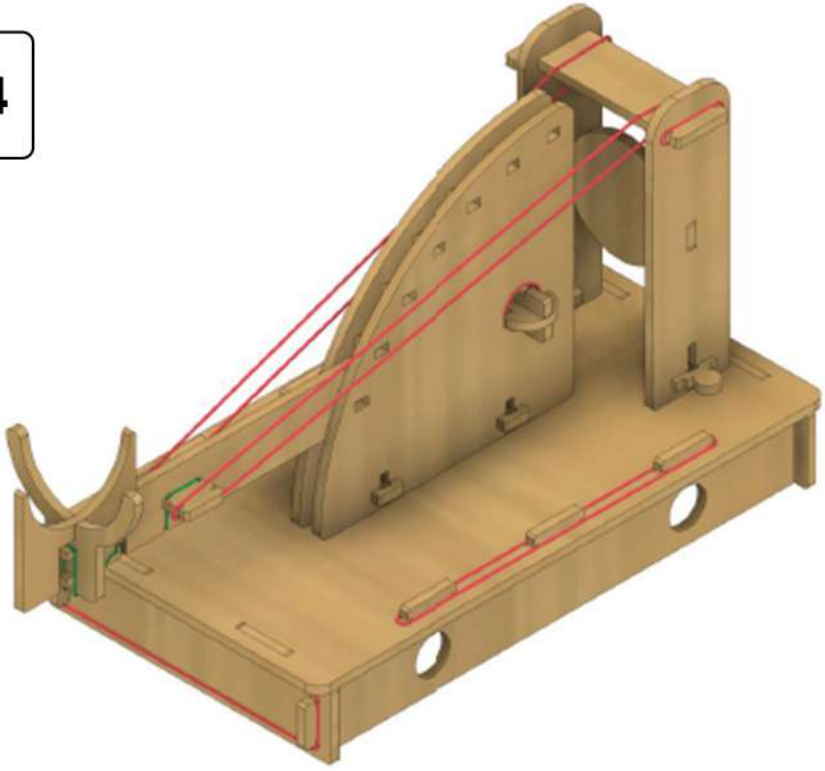


Stretch the rubber bands
of C20 to C18 and lock it

44



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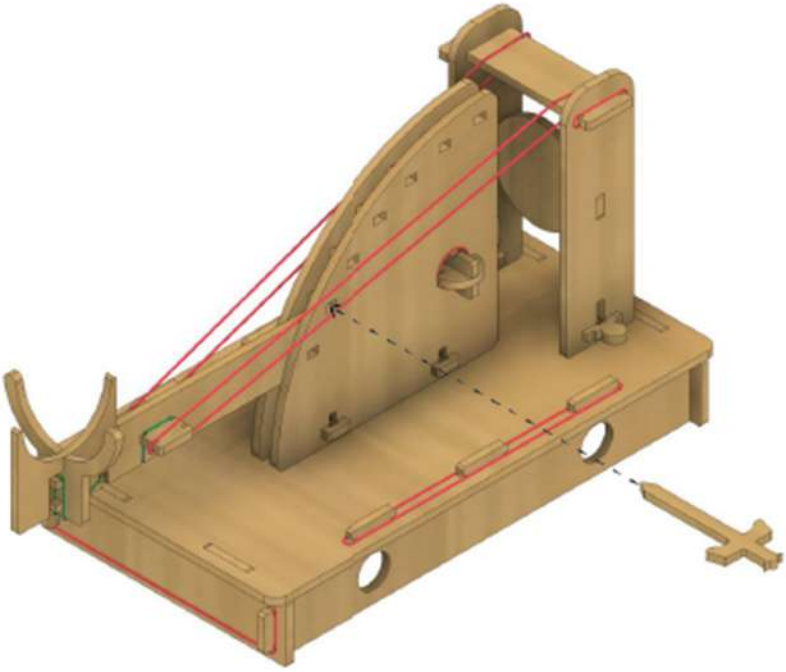

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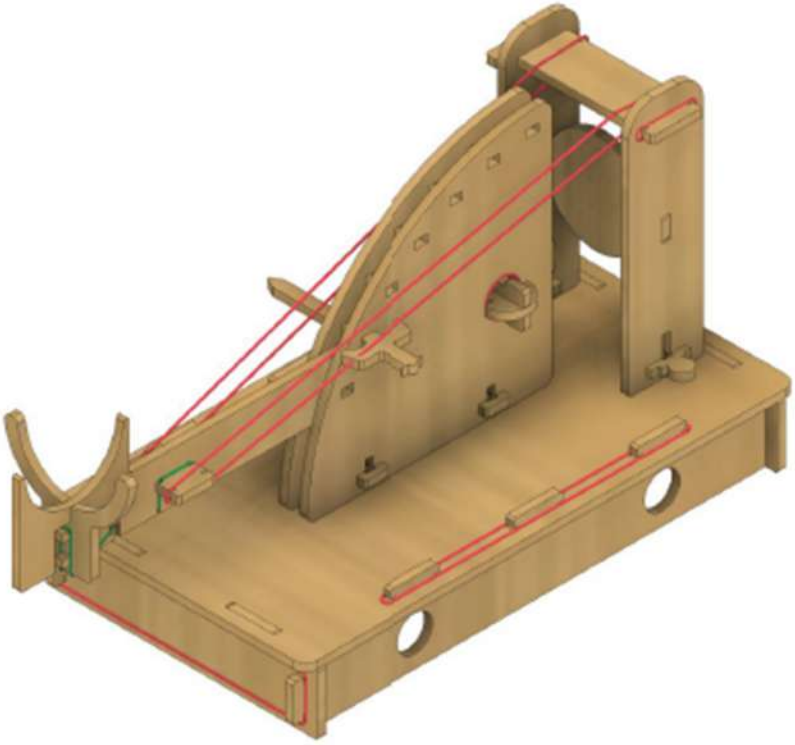

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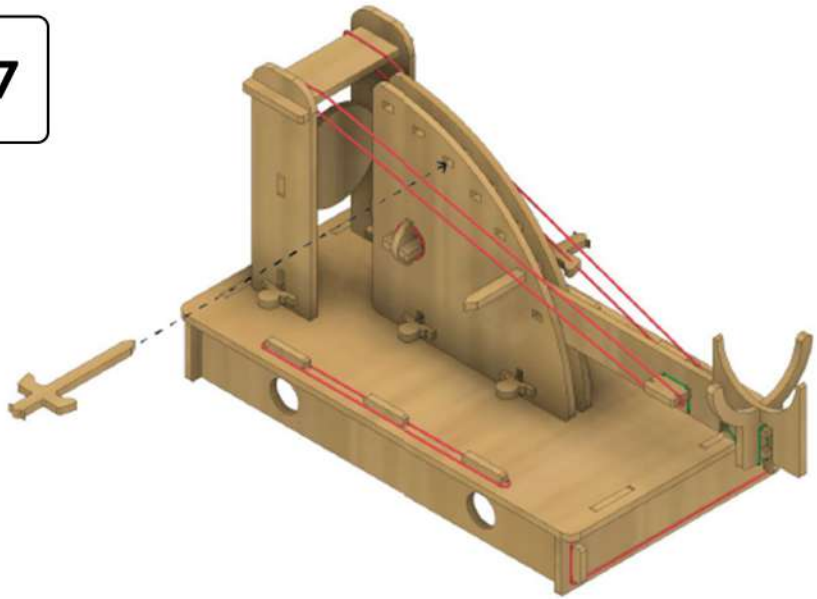
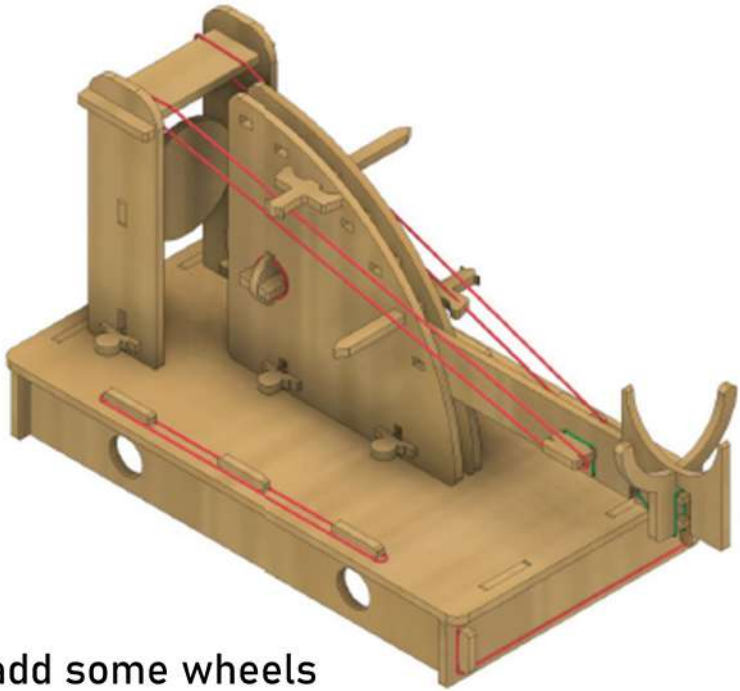


Insert another tiny sword at your selective angle which is the stopping angle (Where catapult stops)

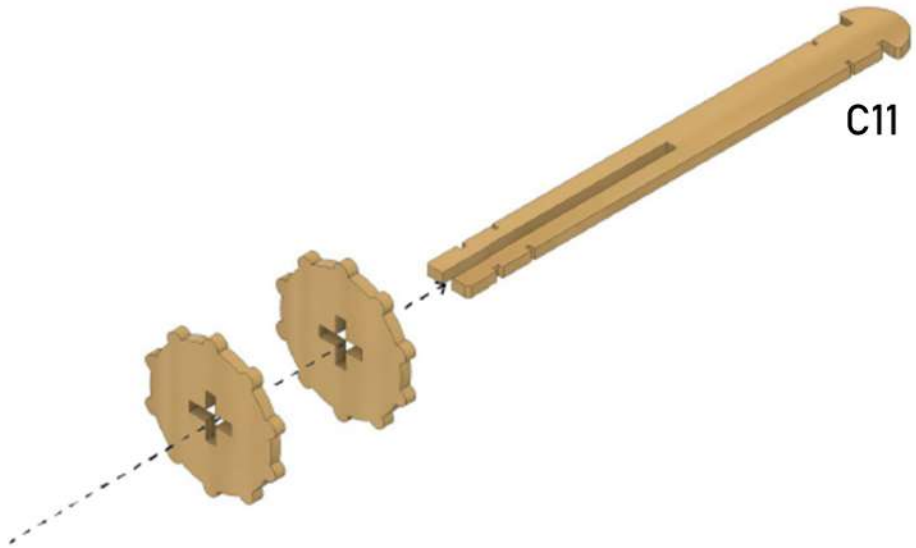
Now, the catapult is ready

48



Let's add some wheels

49

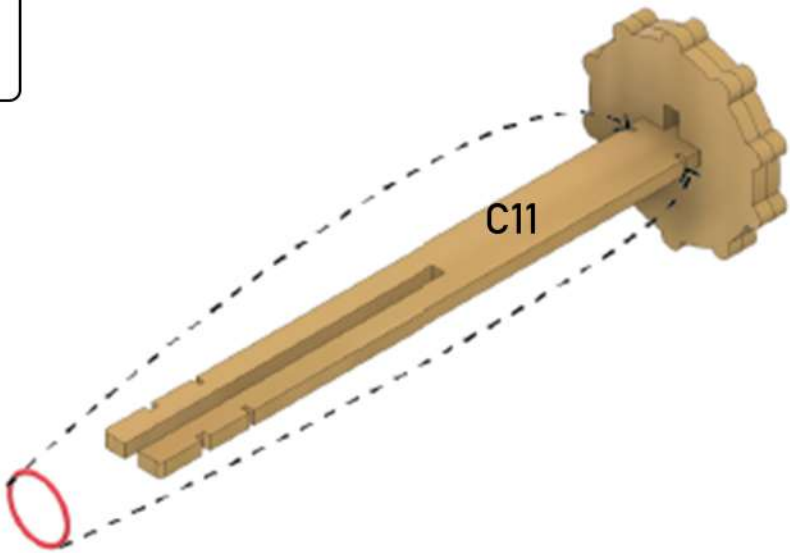


Insert two Gear wheel to each of C11, C12, C13, C14

50

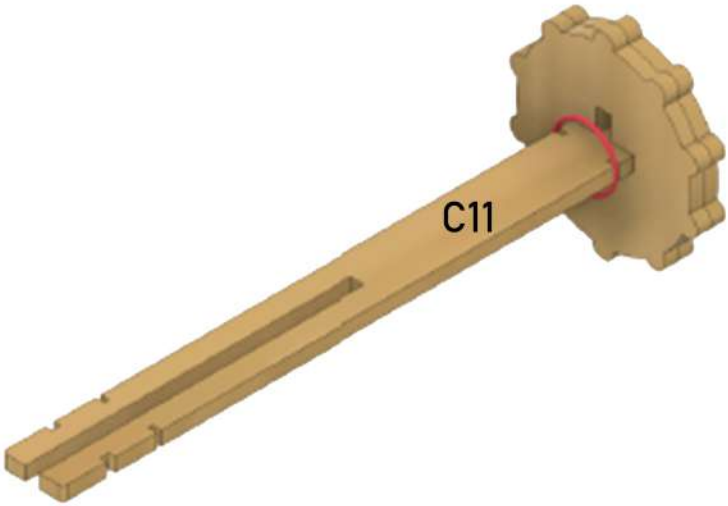
X3

51



Lock the joint using rubber band (For C11, C12, C13, C14)

52



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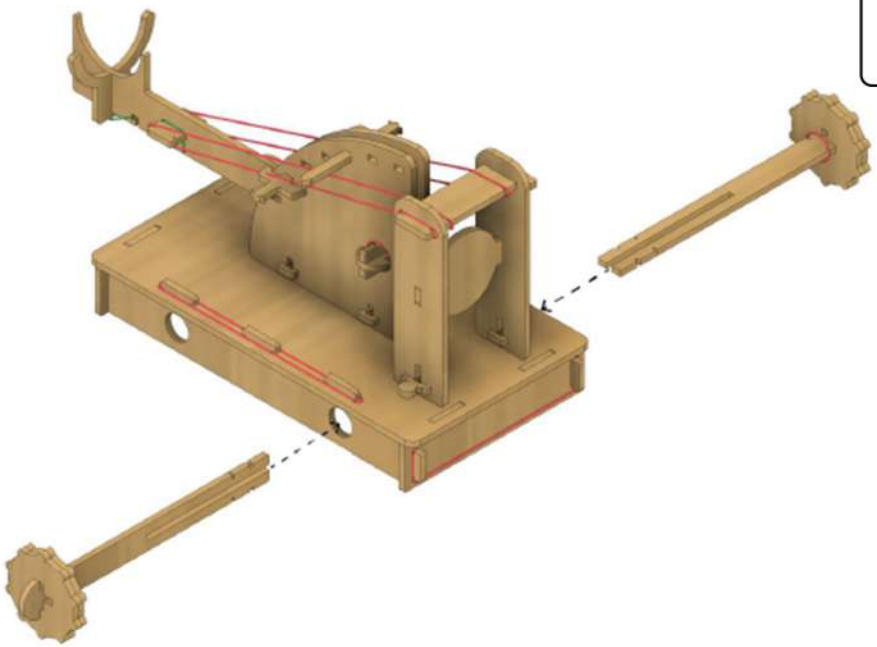

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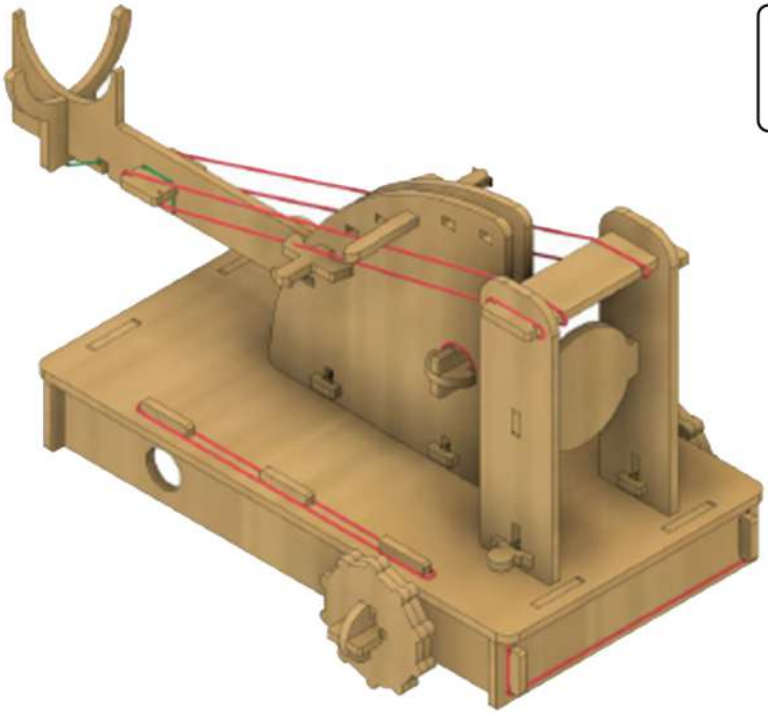

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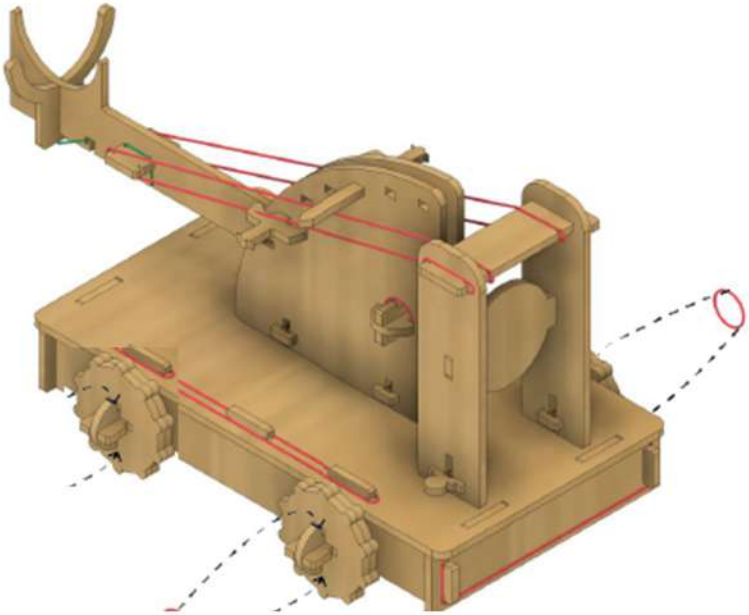
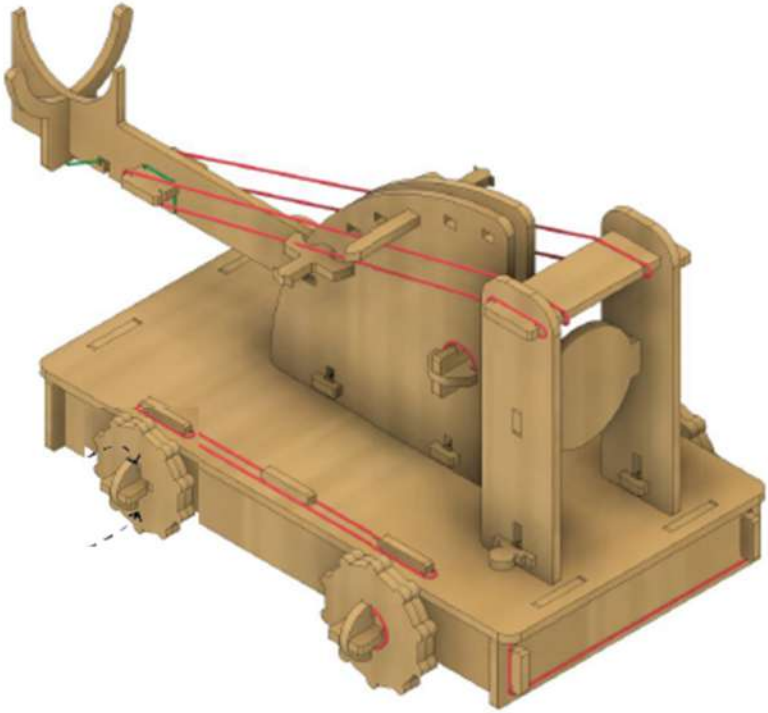


Lock the joints using rubber bands

56



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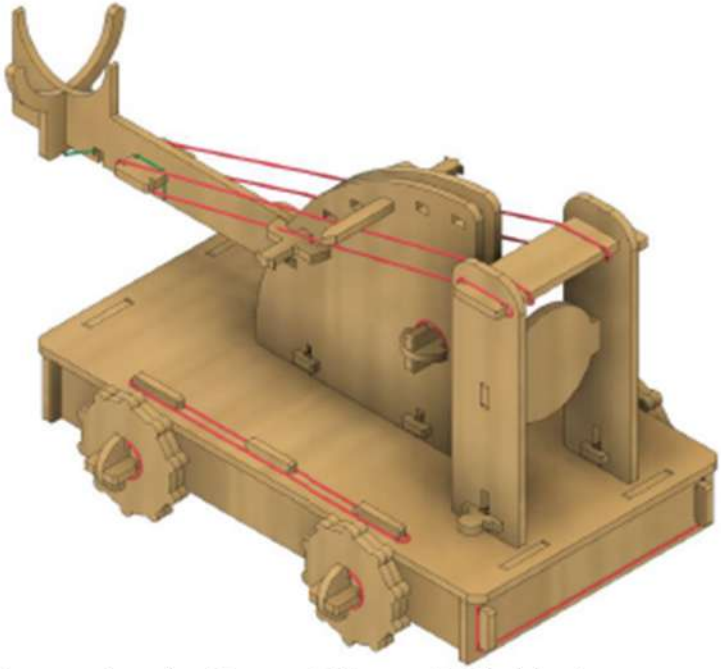
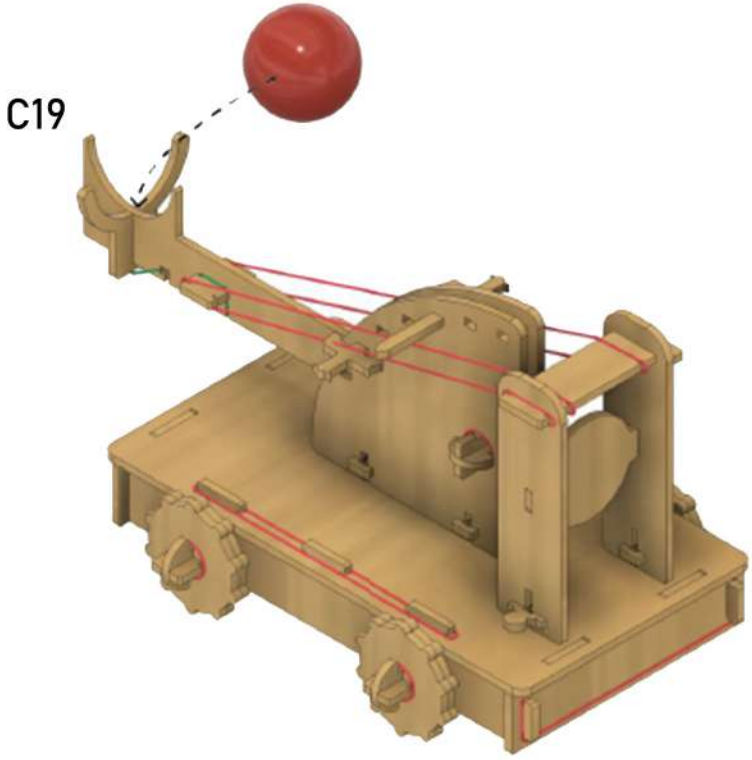


Now, place the ball on C19 and Hold the catapult base with your one hand and remove the Trigger sword.

58



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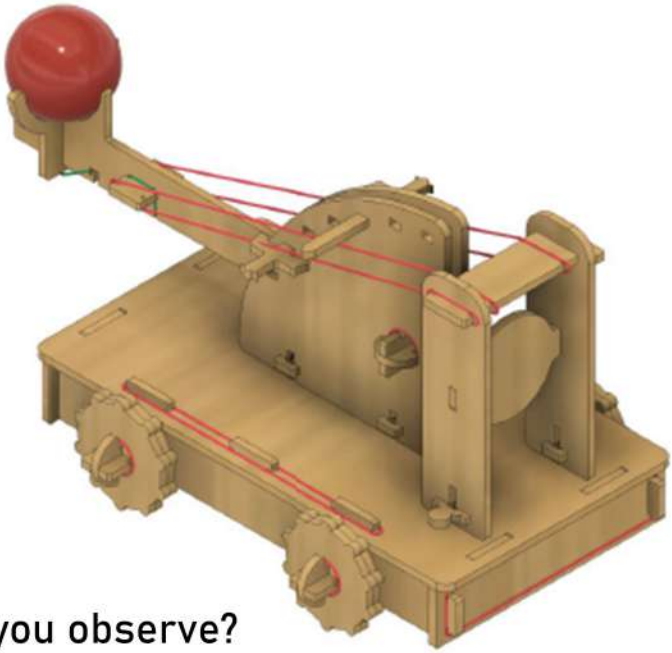
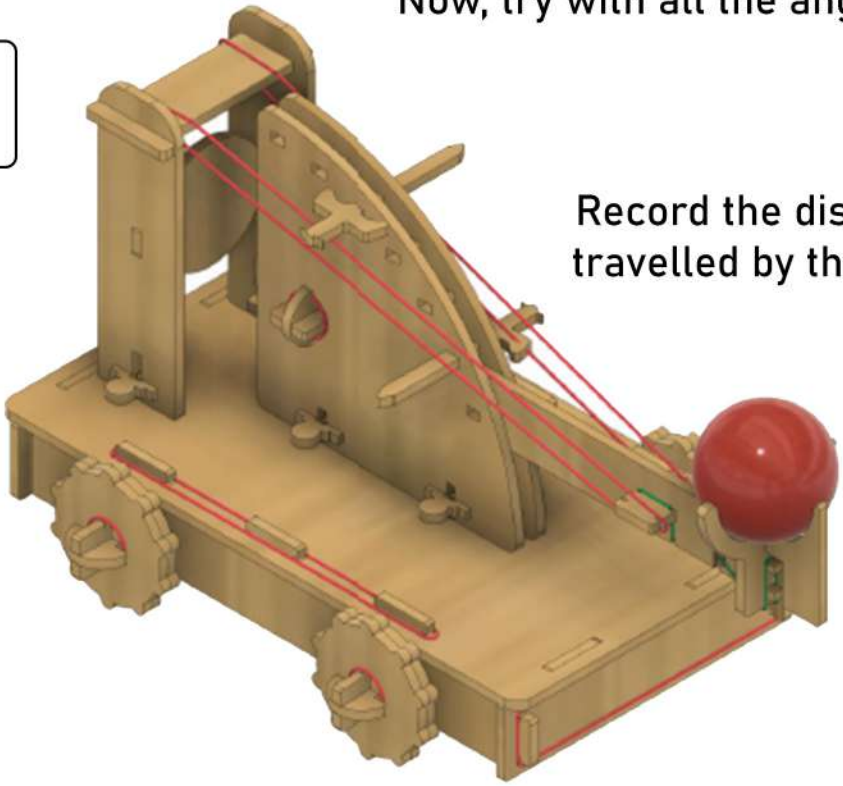


What did you observe?

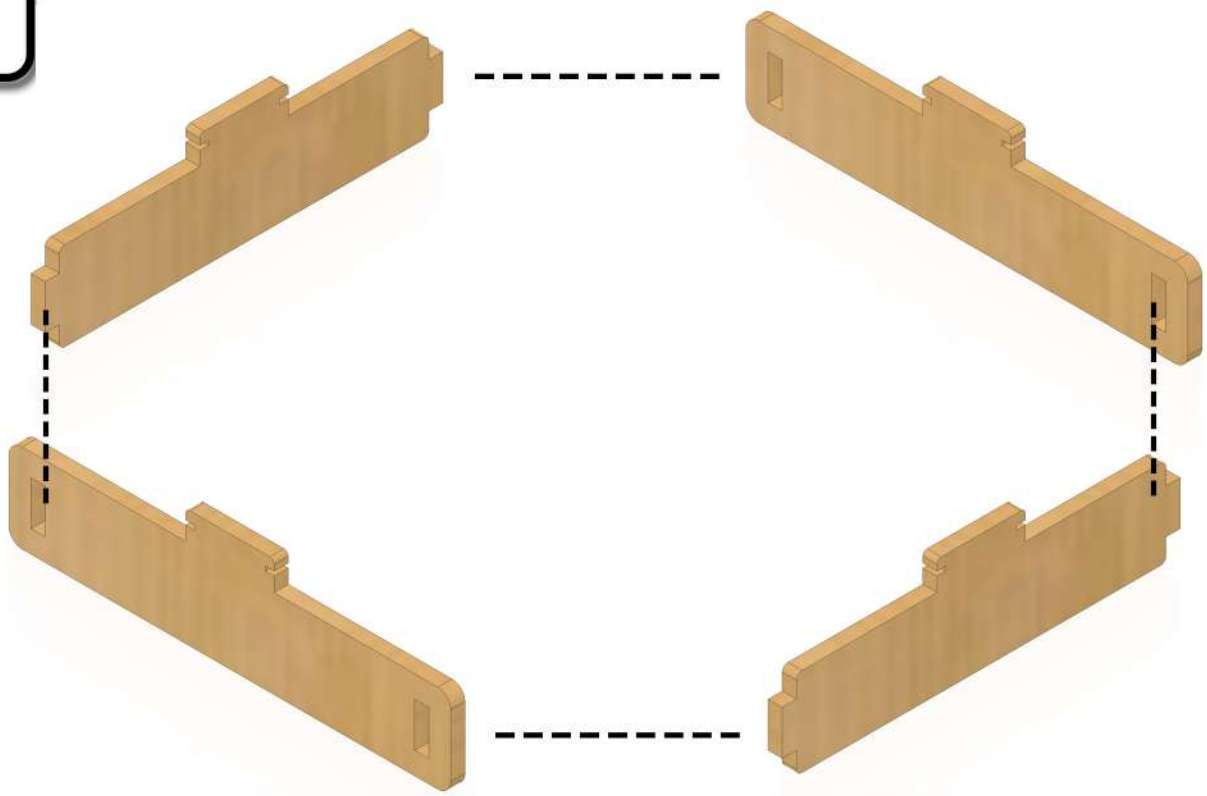
Now, try with all the angles.

60



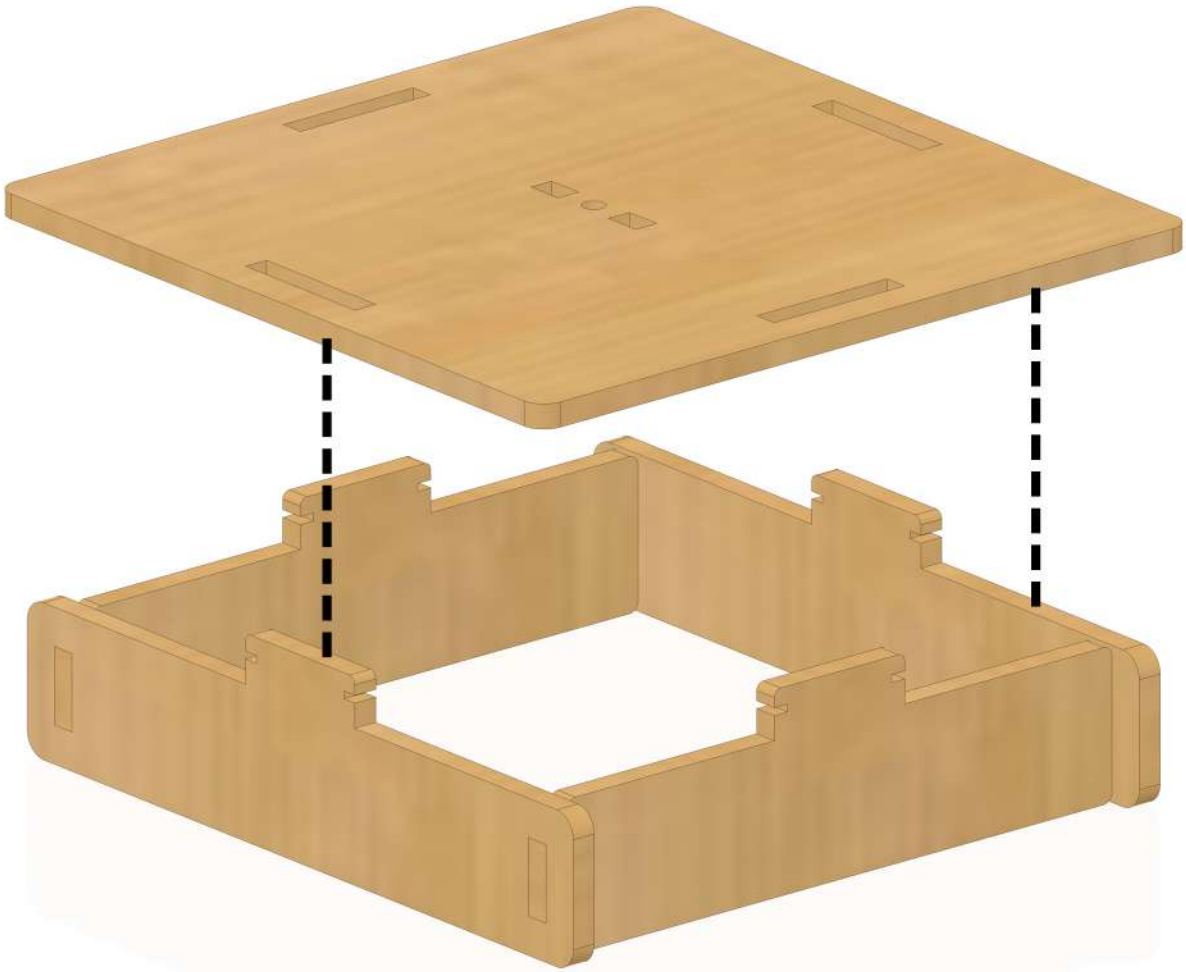
Record the distance travelled by the ball.

61



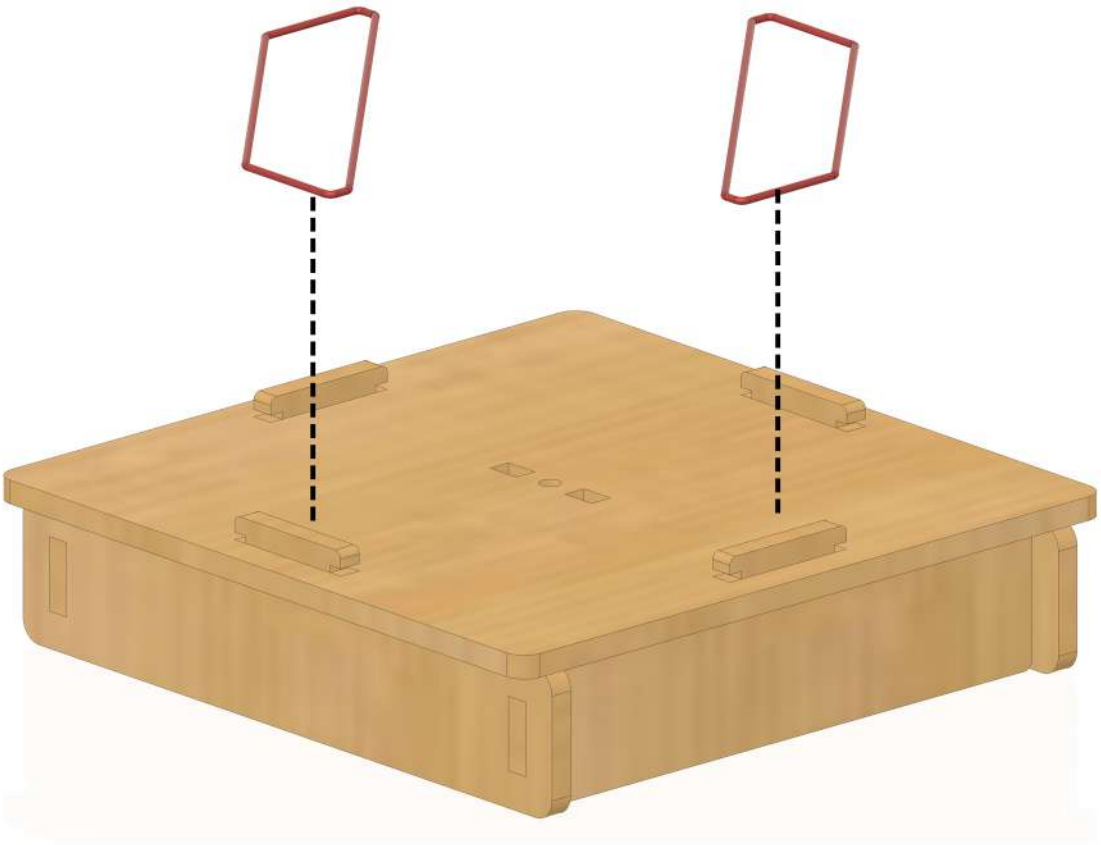
Connect the joints

62



Insert the block as shown

63



Lock the joints using rubber bands

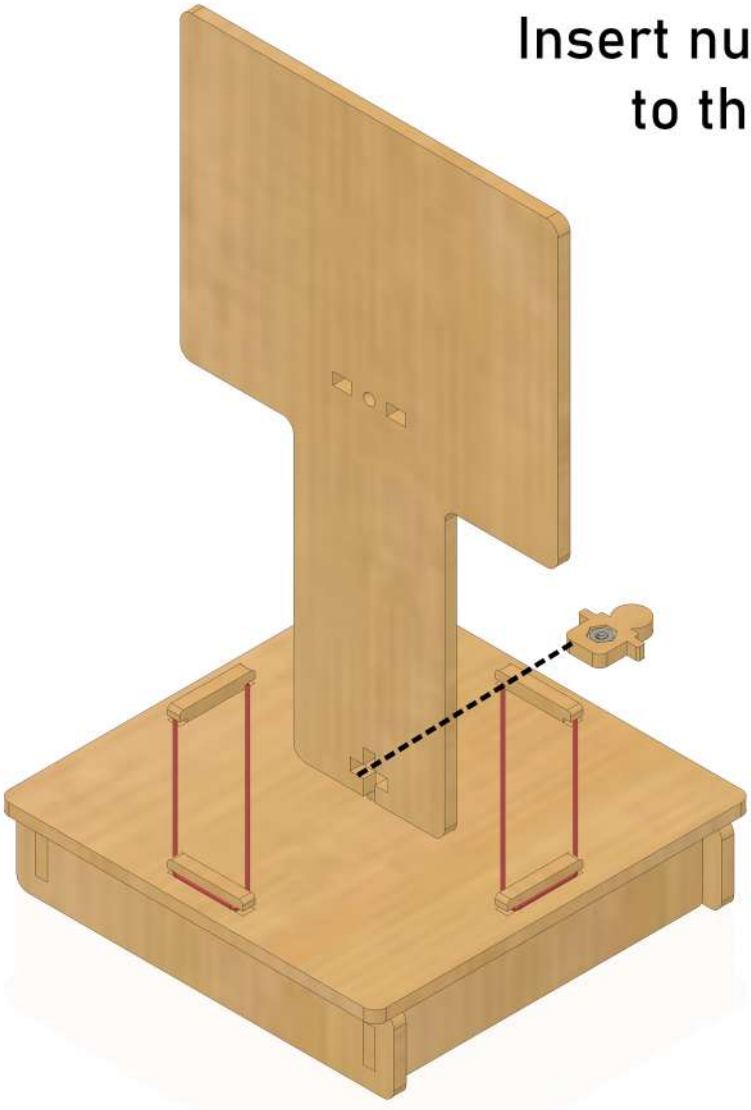
64

65

Insert the block as shown

66

Insert nut connector to the block

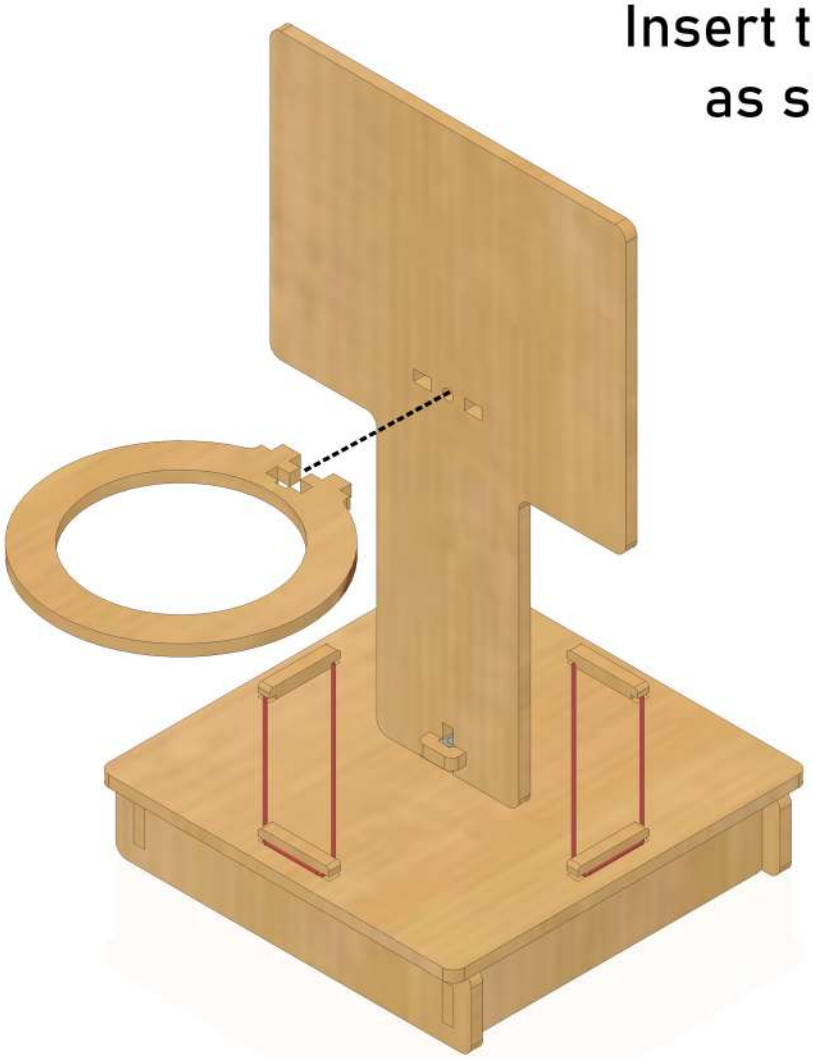


67

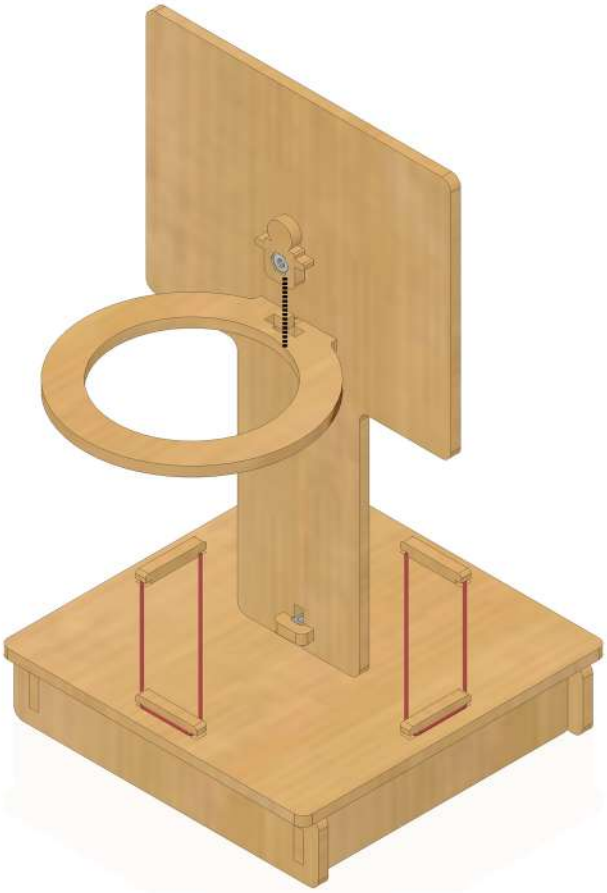
Lock the nut connector using M3 nut

68

Insert the block as shown

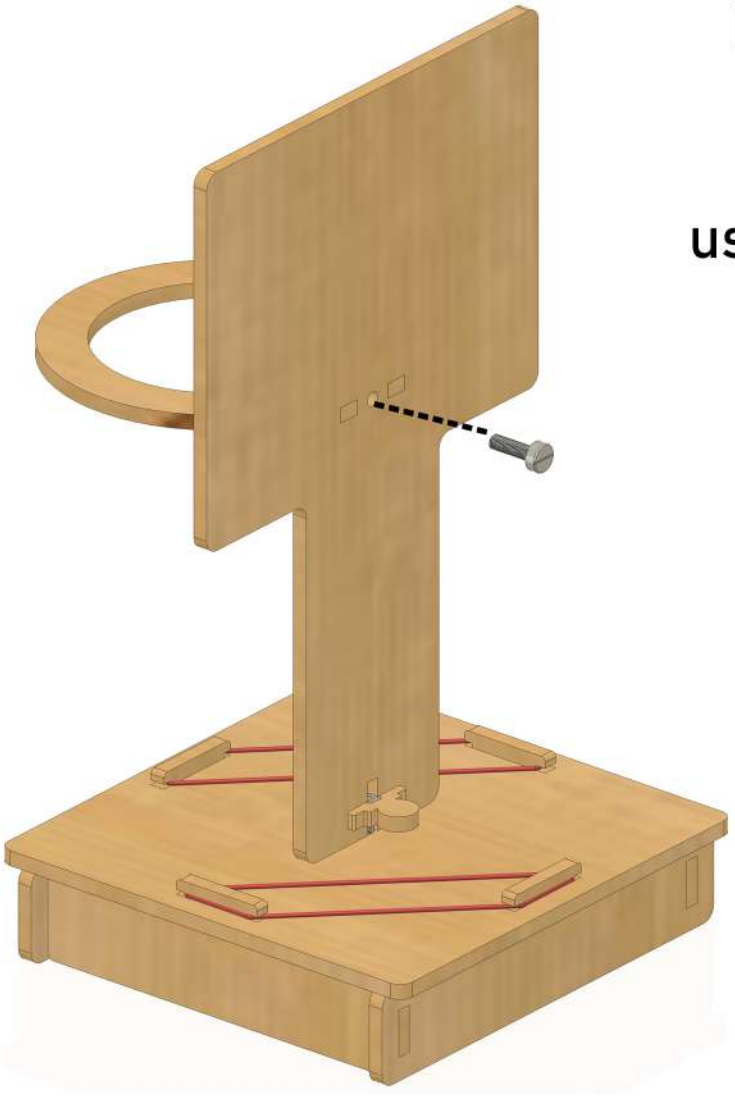


69



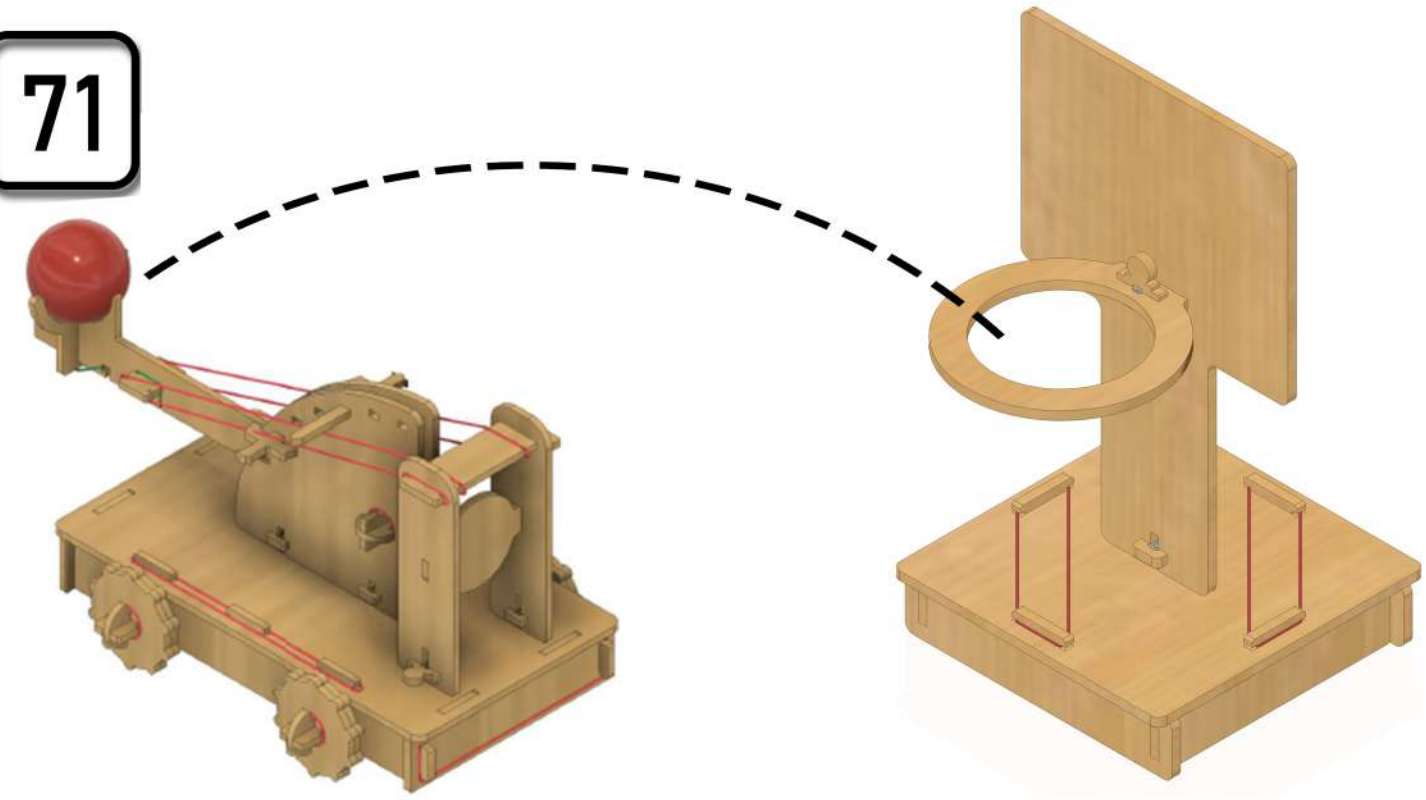
Insert nut connector to the block

70



Lock the nut
connector
in the back
using M3 screw

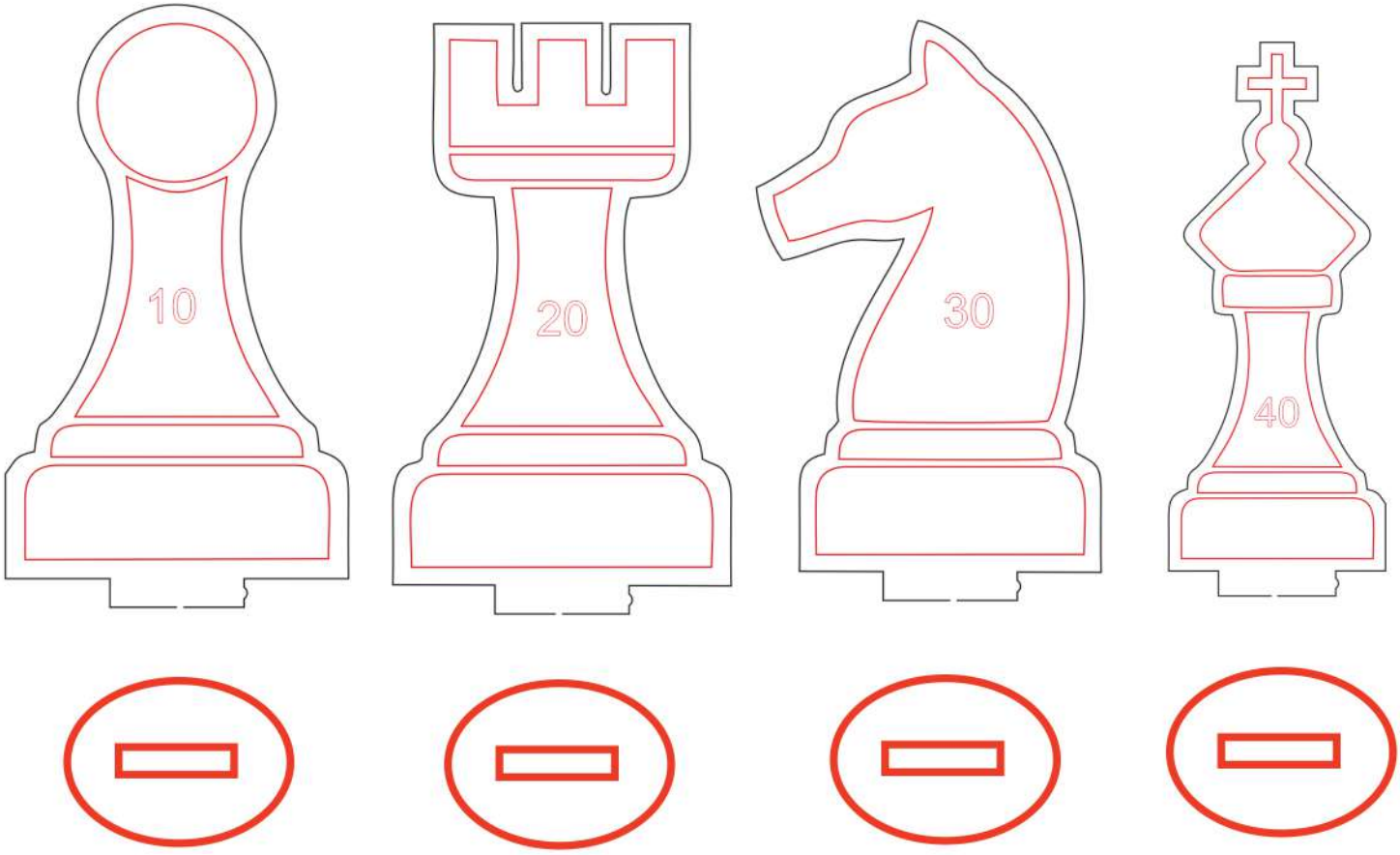
71



Now, play with the catapult with your friends
Try to throw ball through the basket

72

Insert the chess coins as shown. Play with the catapult. Try to hit the coins using the ball and Catapult



CATAPULT

AIM

To build and understand the working of a Catapult

INTRODUCTION

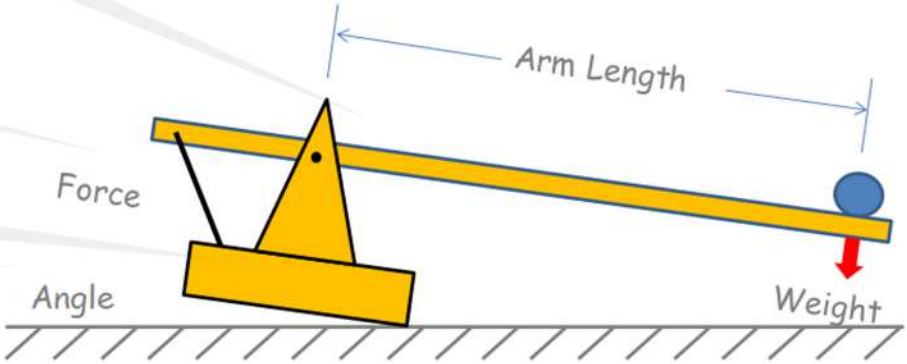
Have you ever played with a Catapult? Have you ever watched ancient War movies? This is the most common ancient War weapon. Let's build it and understand it's working.

WHAT DO YOU NEED?

MDF base board, Supports, Axle, Catapult hand, Spring, Screws, nuts, Washer, Plastic ball, Rubber ball

PROCEDURE

- Build the model as per building instructions.
- Follow the instructions and observe the motion of Catapult.
- Try different weight balls and different angle positions to understand the motion
- What did you obvserve? When you try with different weight balls and different angles.



Factors that affect motion:

- Weight
- Force
- Arm Length
- Release angle

THEORY

A catapult is a launching device that allows us to experimentally observe projectile motion.

When you prepare the catapult to launch, you add energy to it. This energy is stored in the launching device as potential, or stored, energy. The catapult you are about to make uses elastic potential energy stored in a wooden stick as you bend it. When you let go, this stored energy is released, converted into energy of motion and transferred to the missile (the launched object), which then flies through the air.