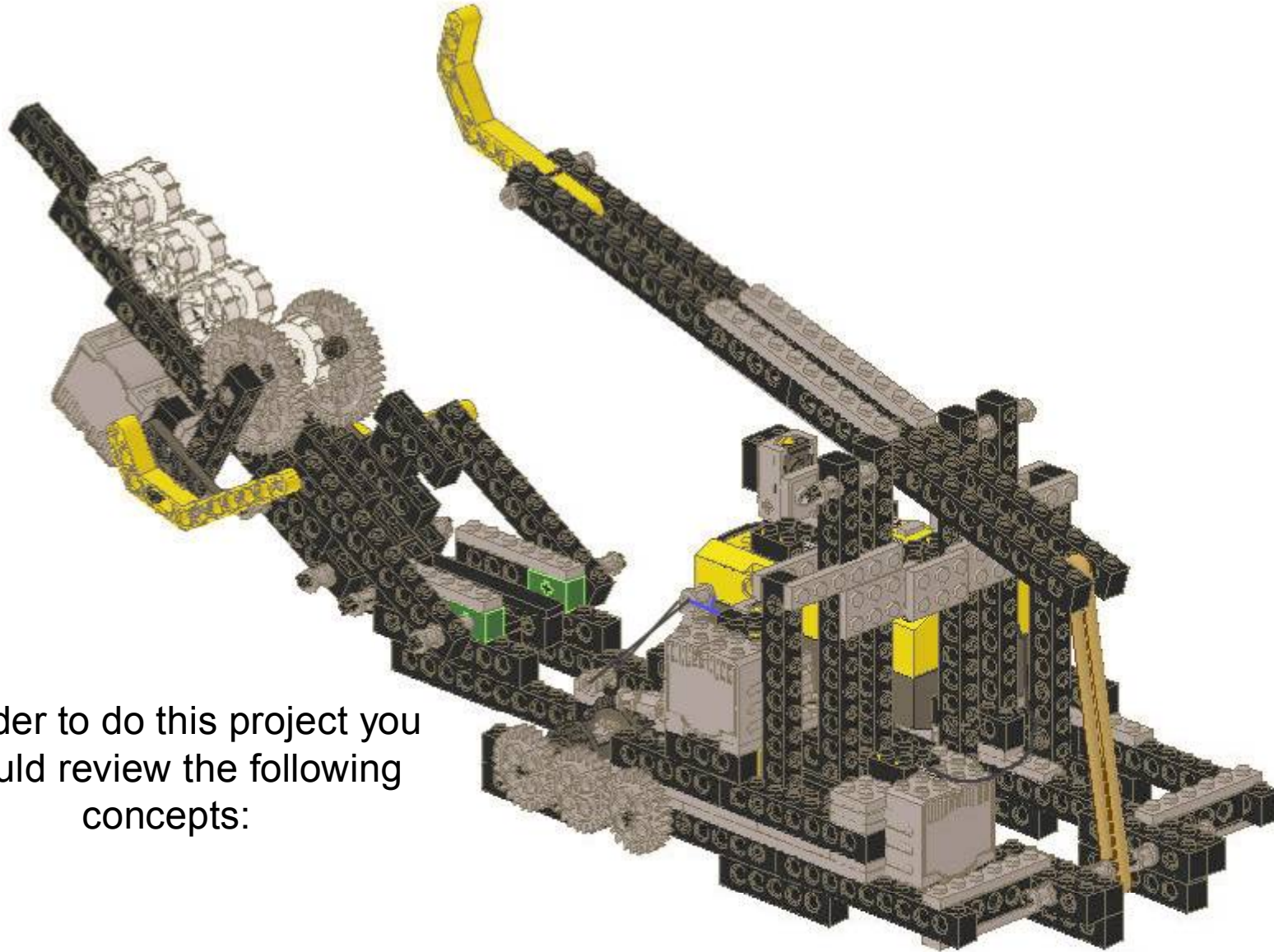
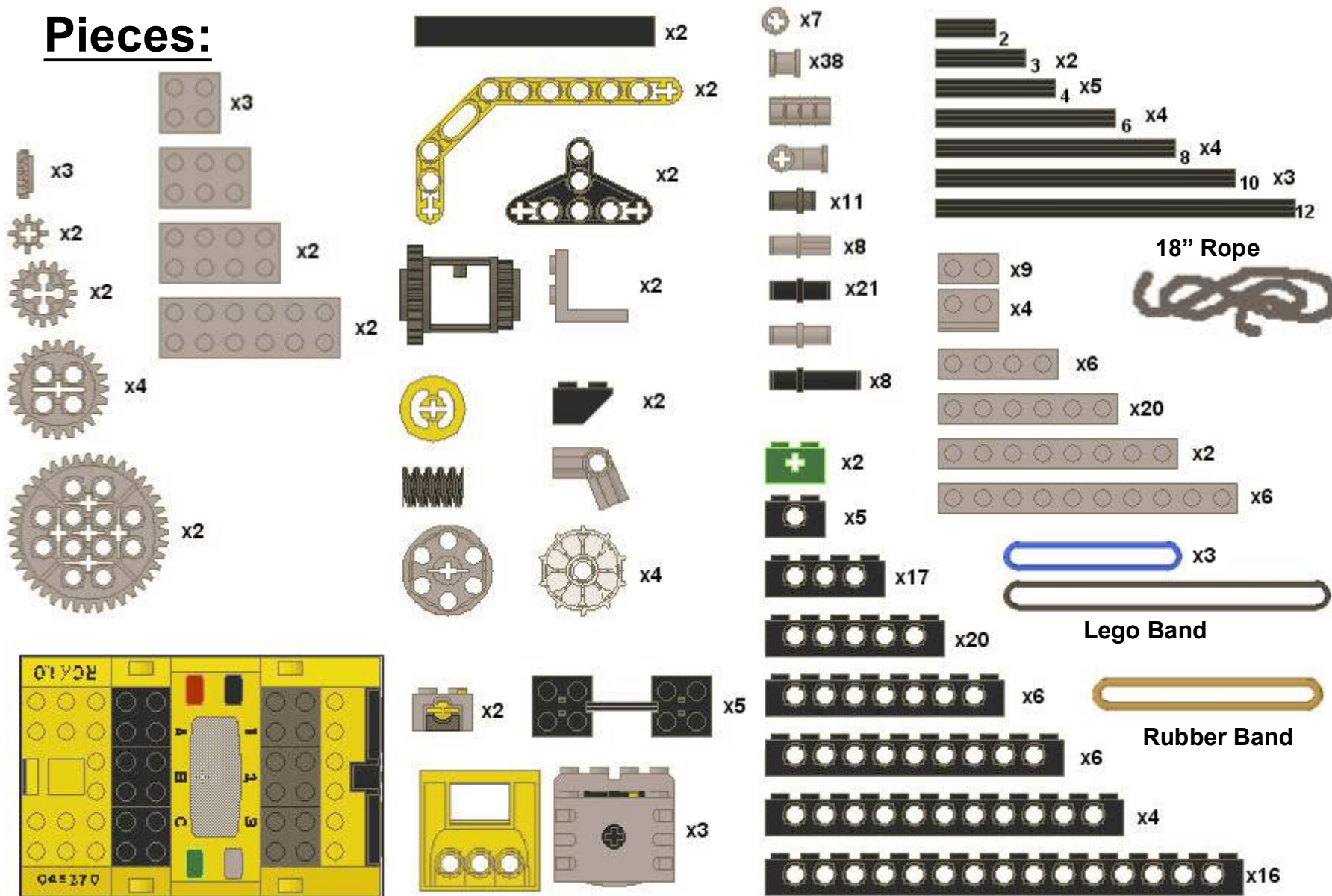


Catapult



In order to do this project you should review the following concepts:

Pieces:



Catapult: Arm

1



Pieces:



4



x5



x2



x2

Catapult: Arm

2



Pieces:

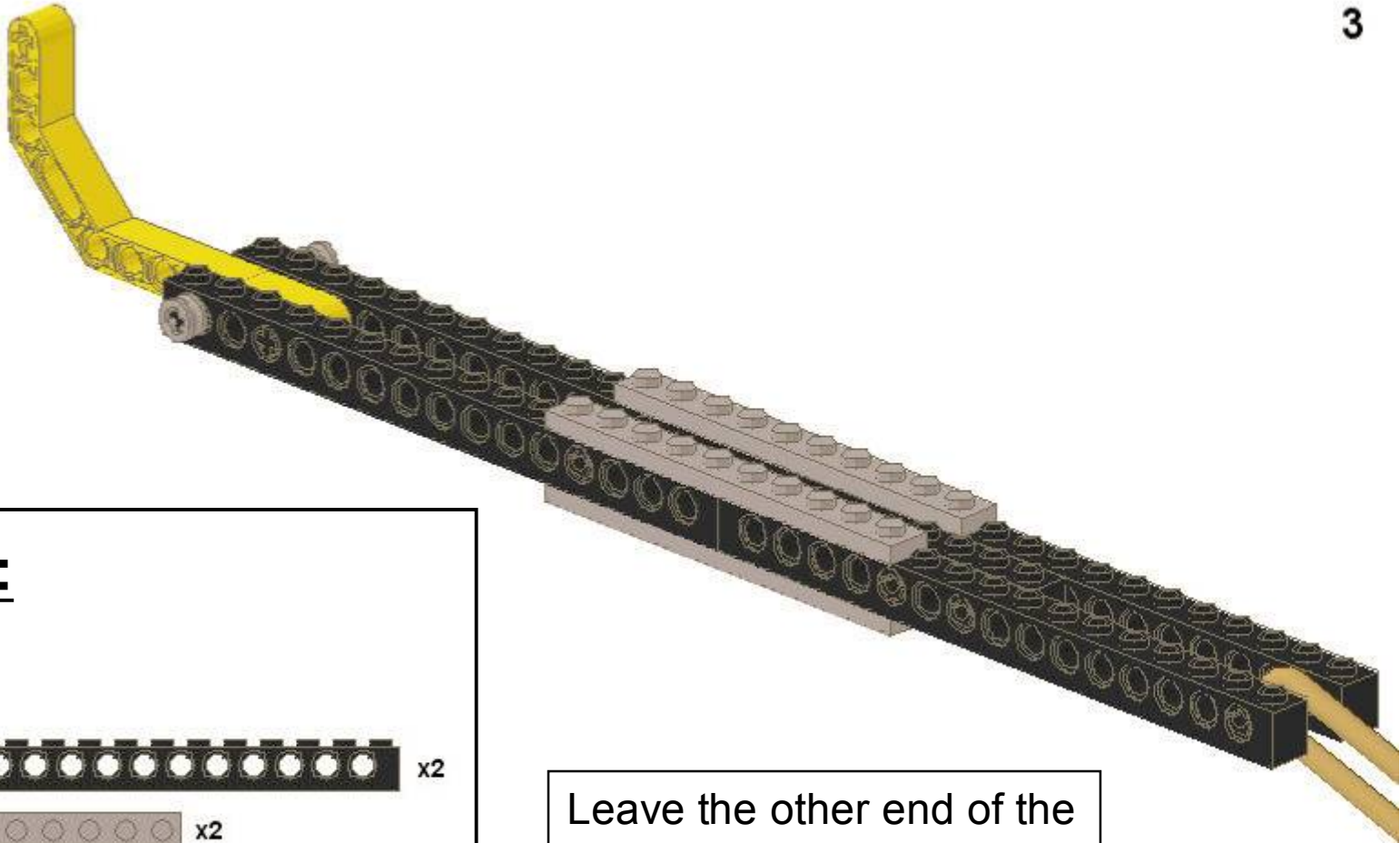


One or more rubber bands,
about 2-3 inches long.



Catapult: Arm

3



Pieces:



x2

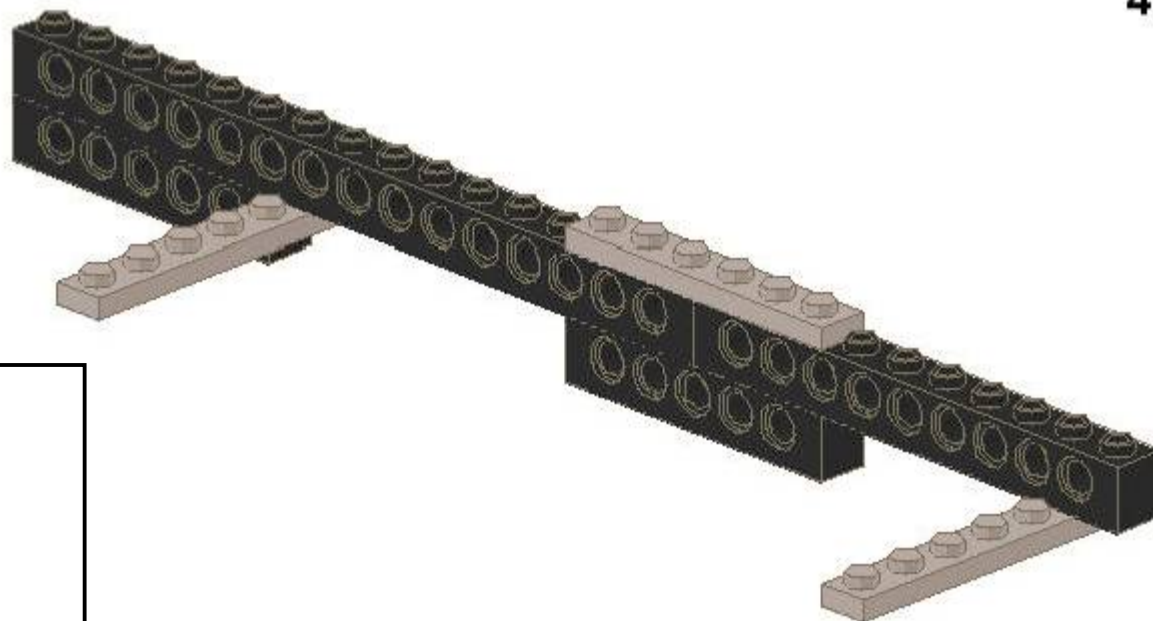


x2

Leave the other end of the rubber band loose for now

Catapult: Right Side

4



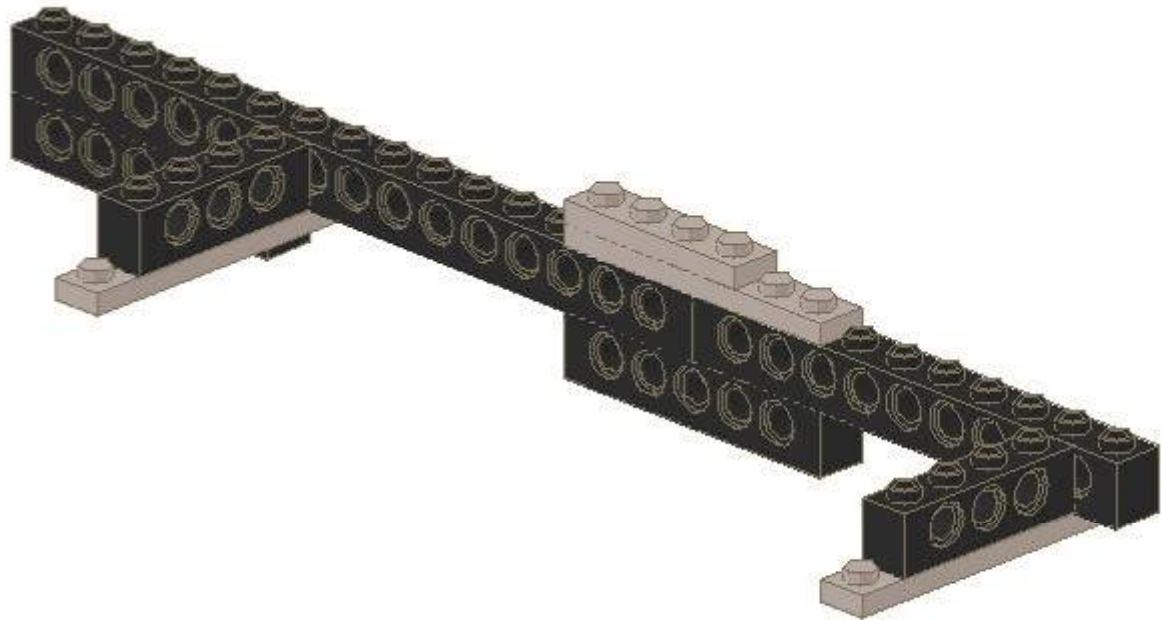
Pieces:



Catapult: Right Side

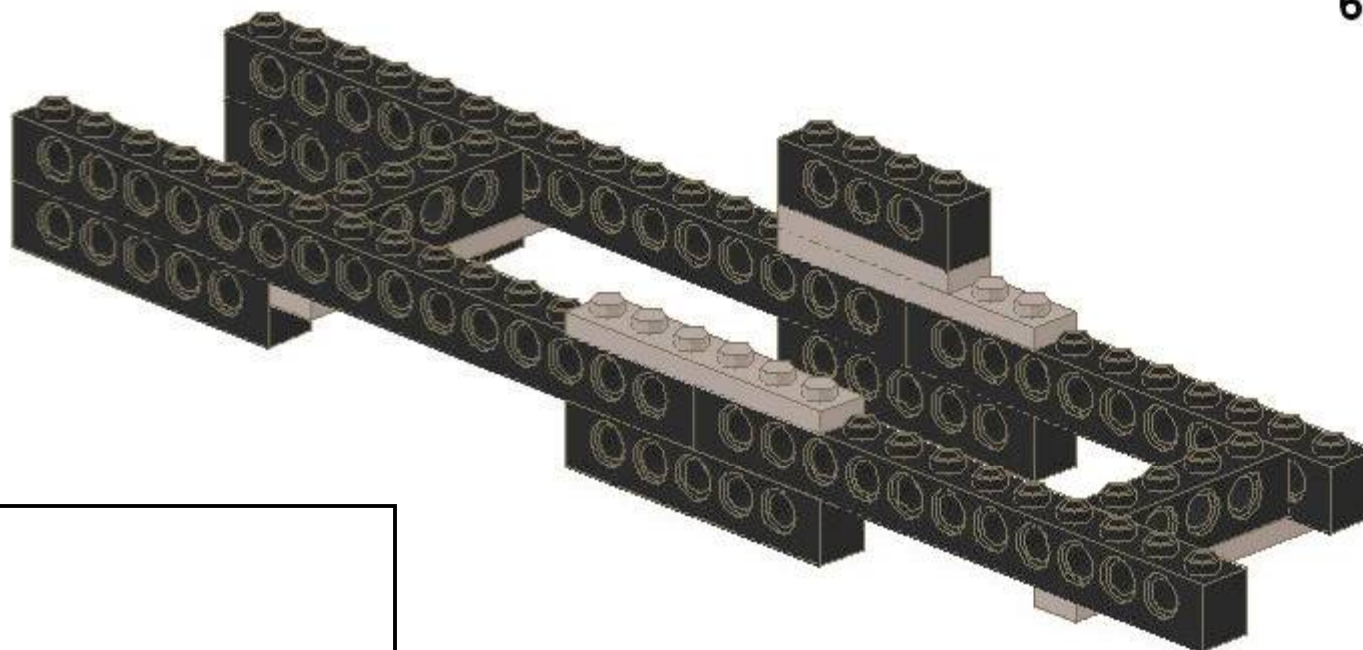
5

Pieces:



Catapult: Right Side

6

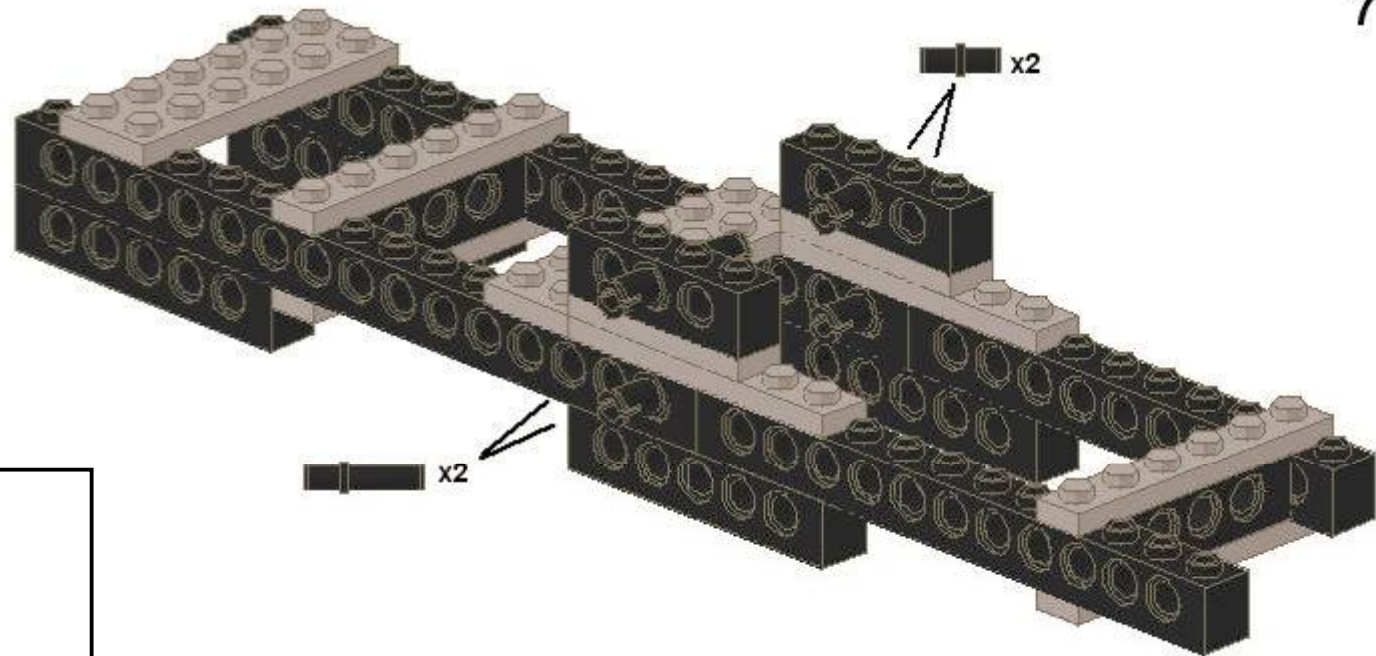


Pieces:



Catapult: Right Side

7



Pieces:



x2



x2



x2



x2

Catapult: Right Side

8

Pieces:



6



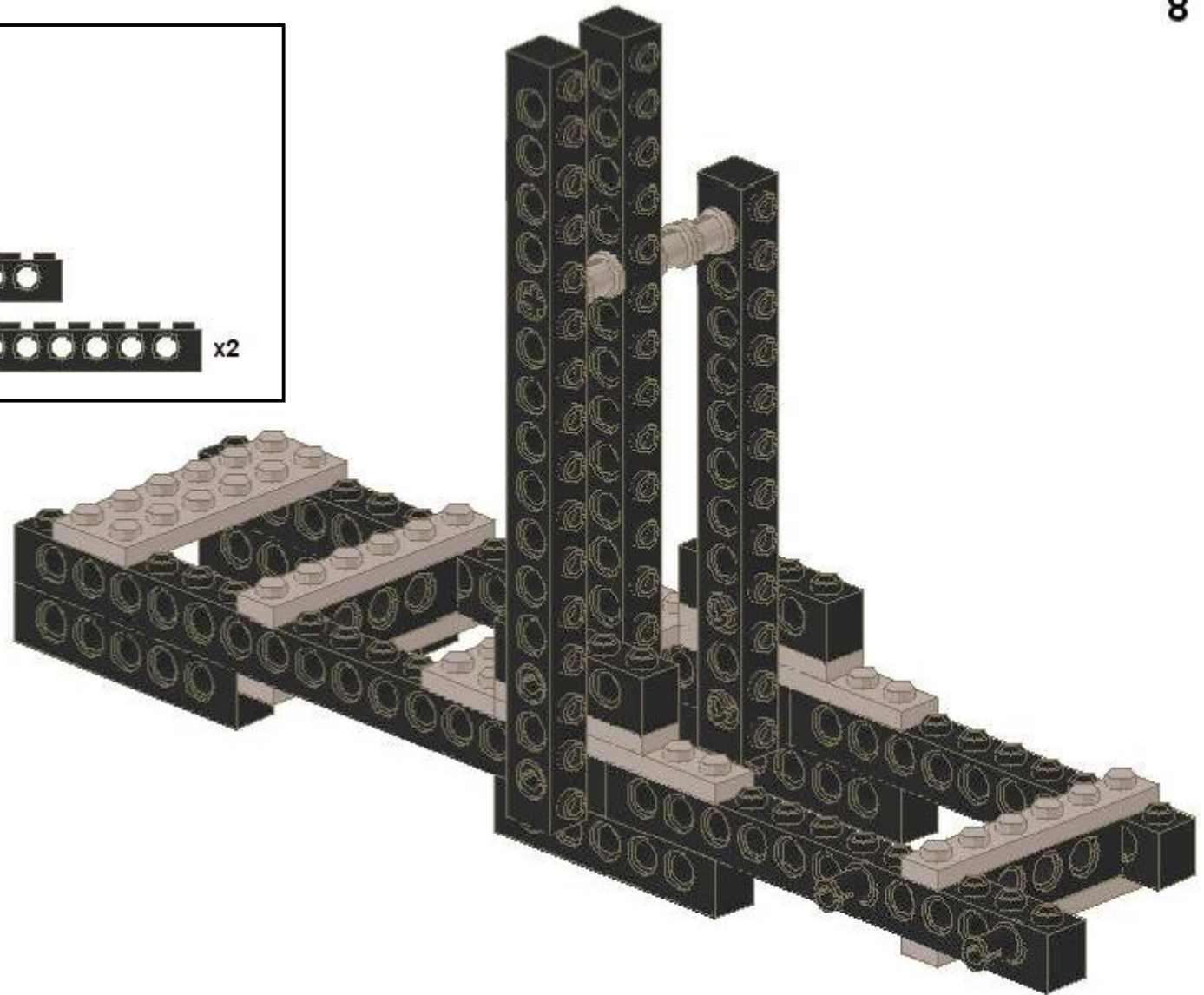
x3



x2



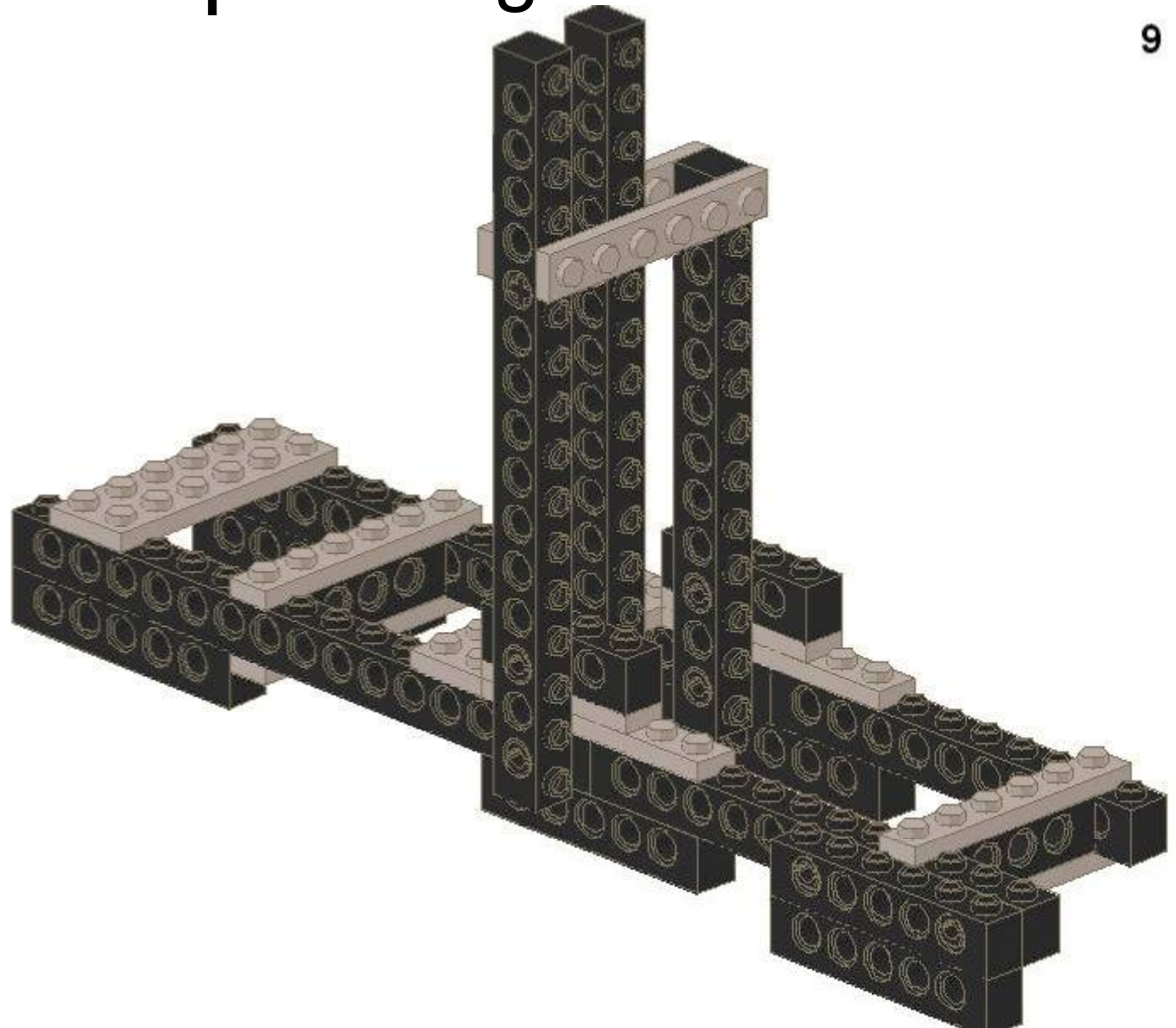
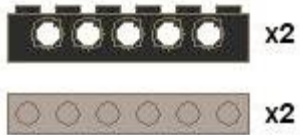
x2



Catapult: Right Side

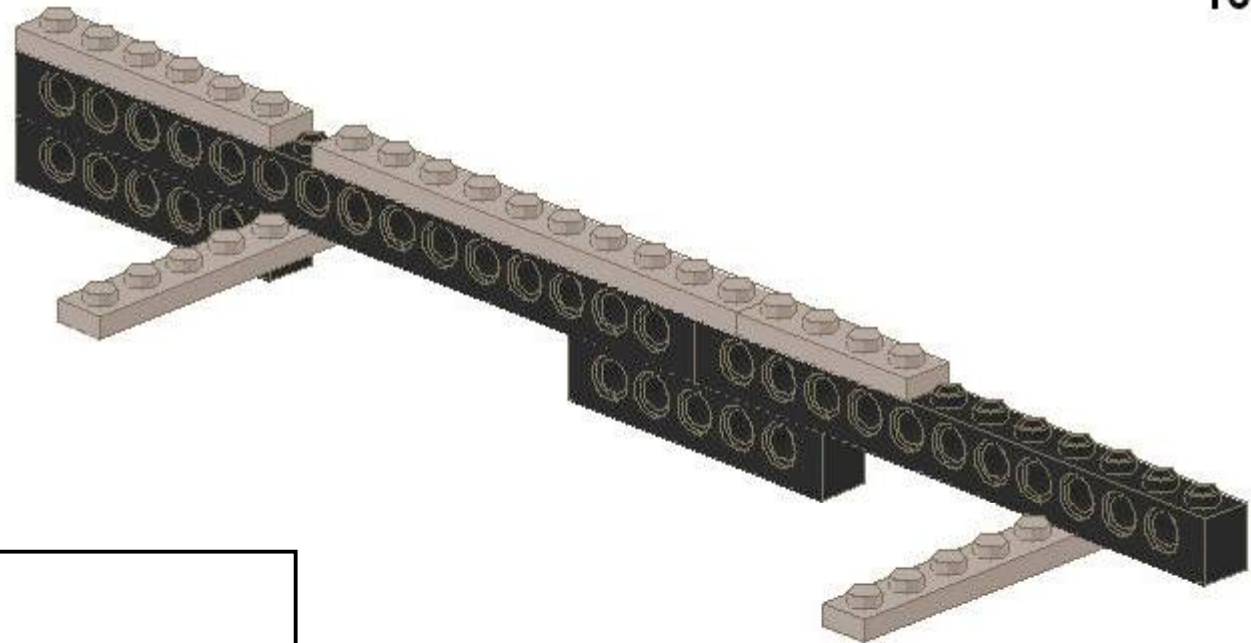
9

Pieces:



Catapult: Left Side

10



Pieces:

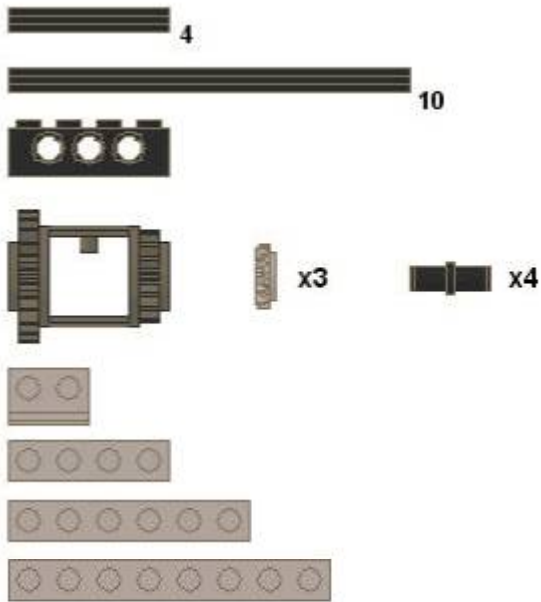


Catapult: Left Side

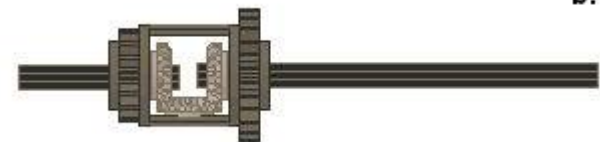
11



Pieces:



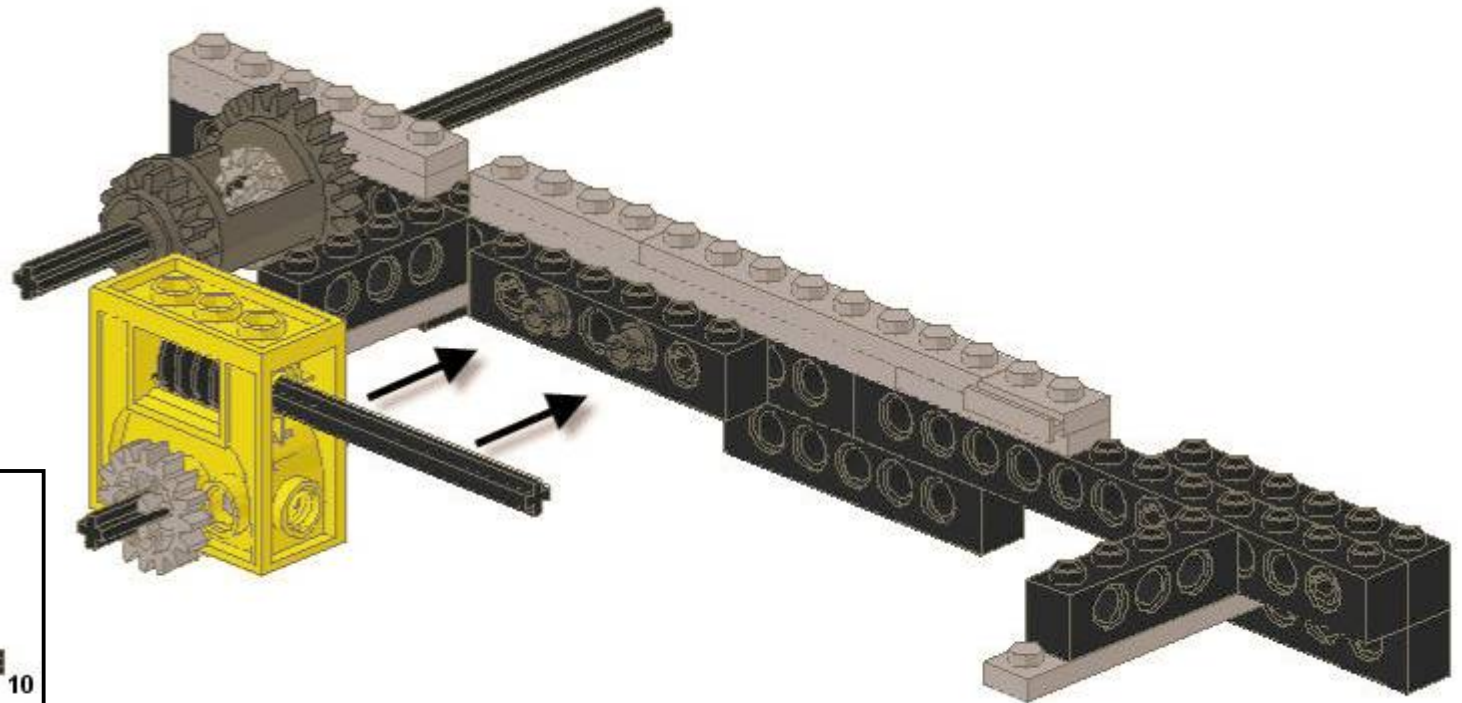
a.



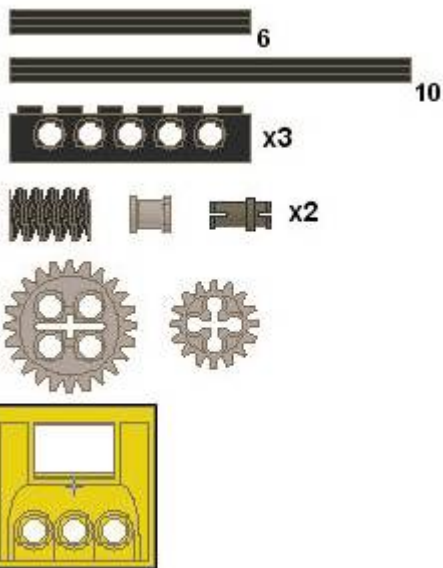
b.

Catapult: Left Side

12

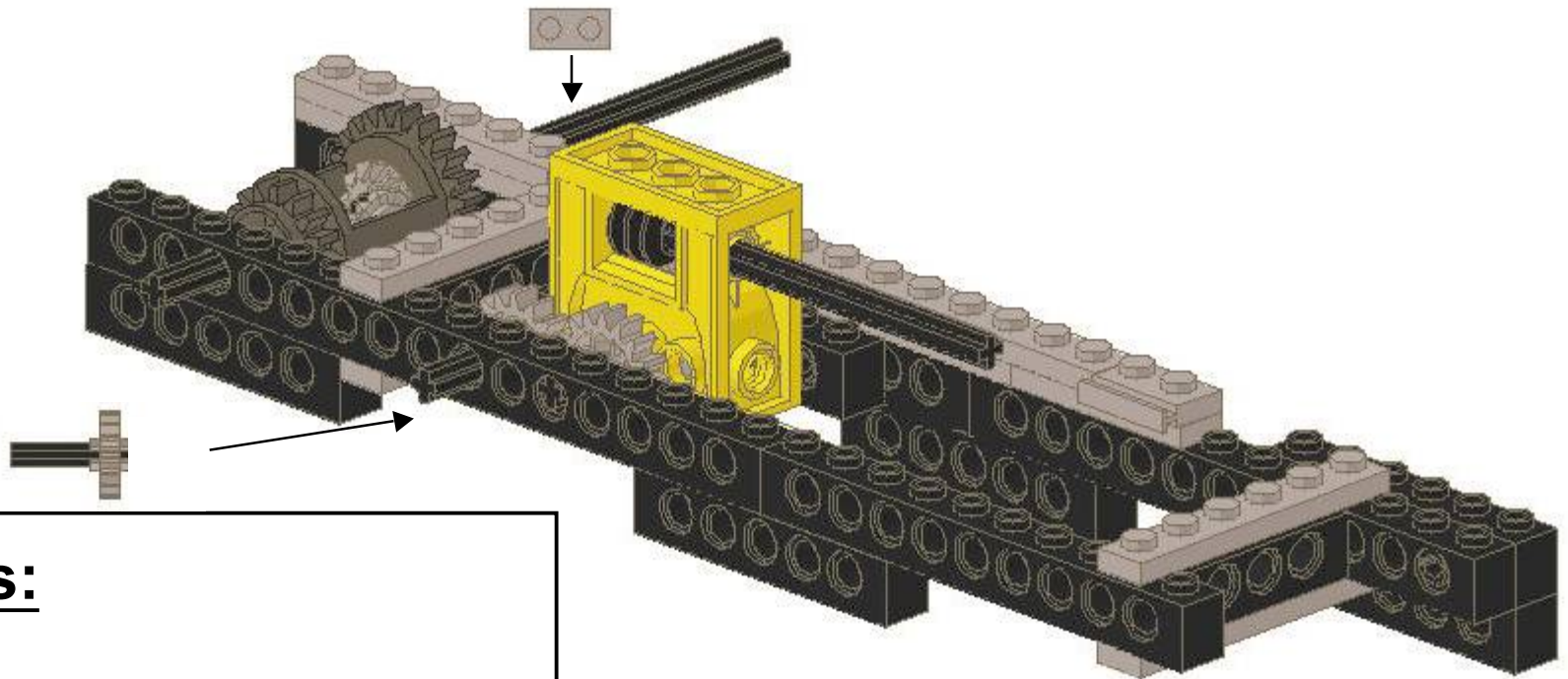


Pieces:



Catapult: Left Side

13



Pieces:



3



x2

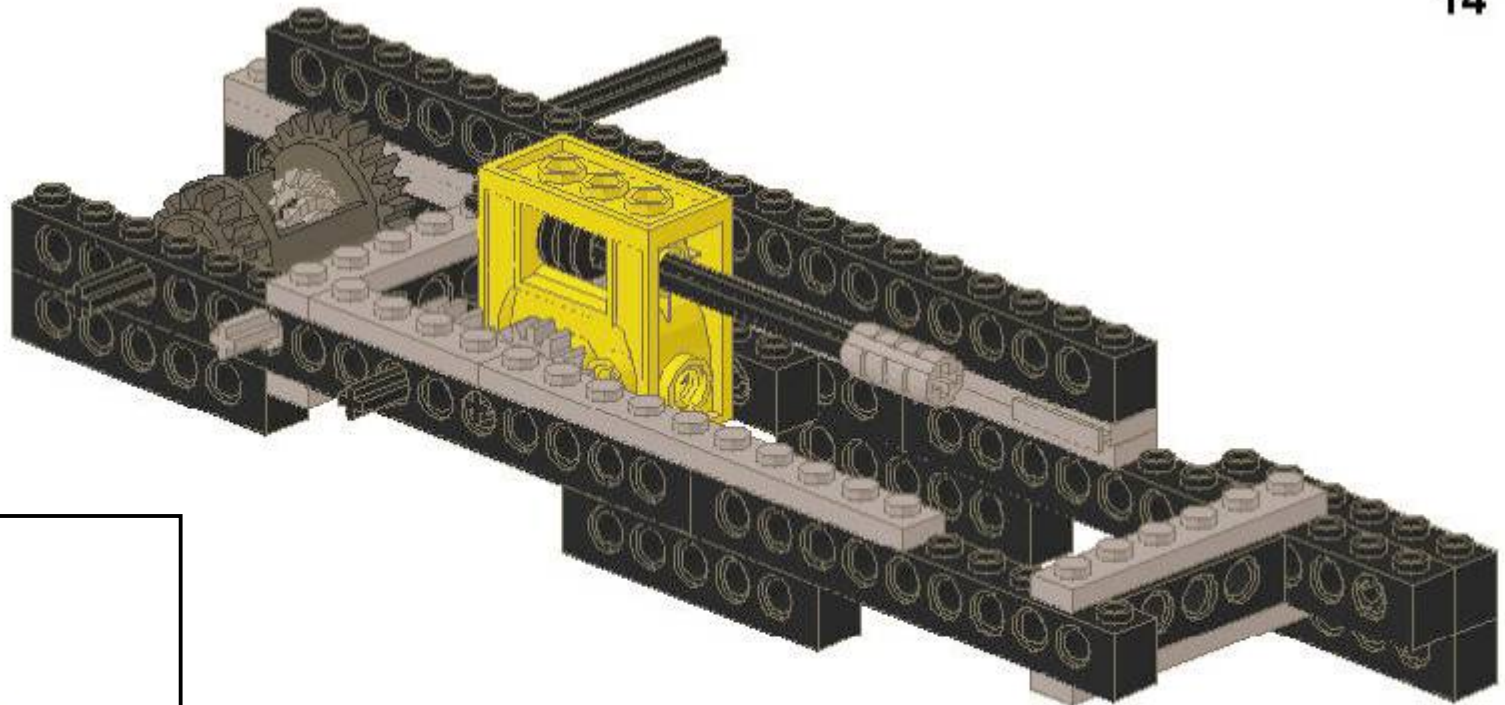


x2



Catapult: Left Side

14

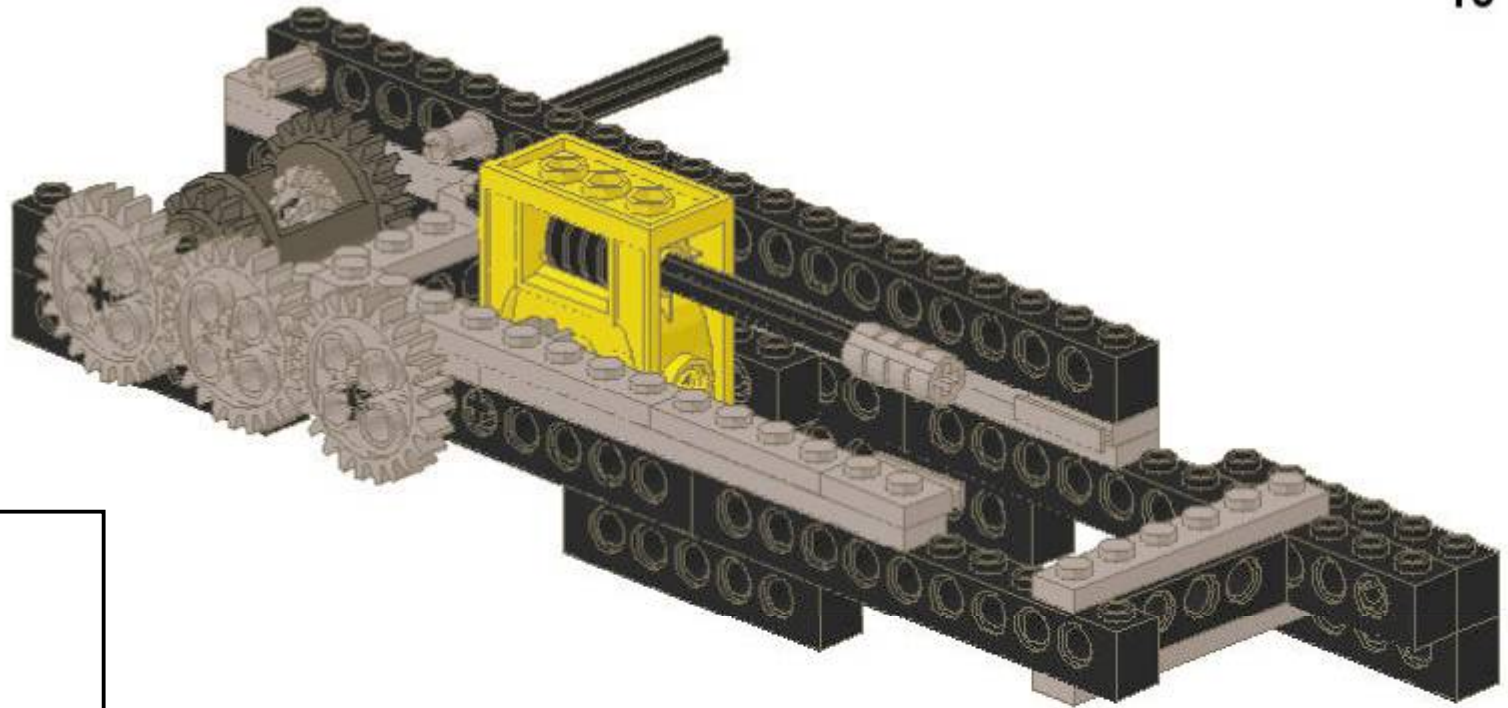


Pieces:



Catapult: Left Side

15



Pieces:

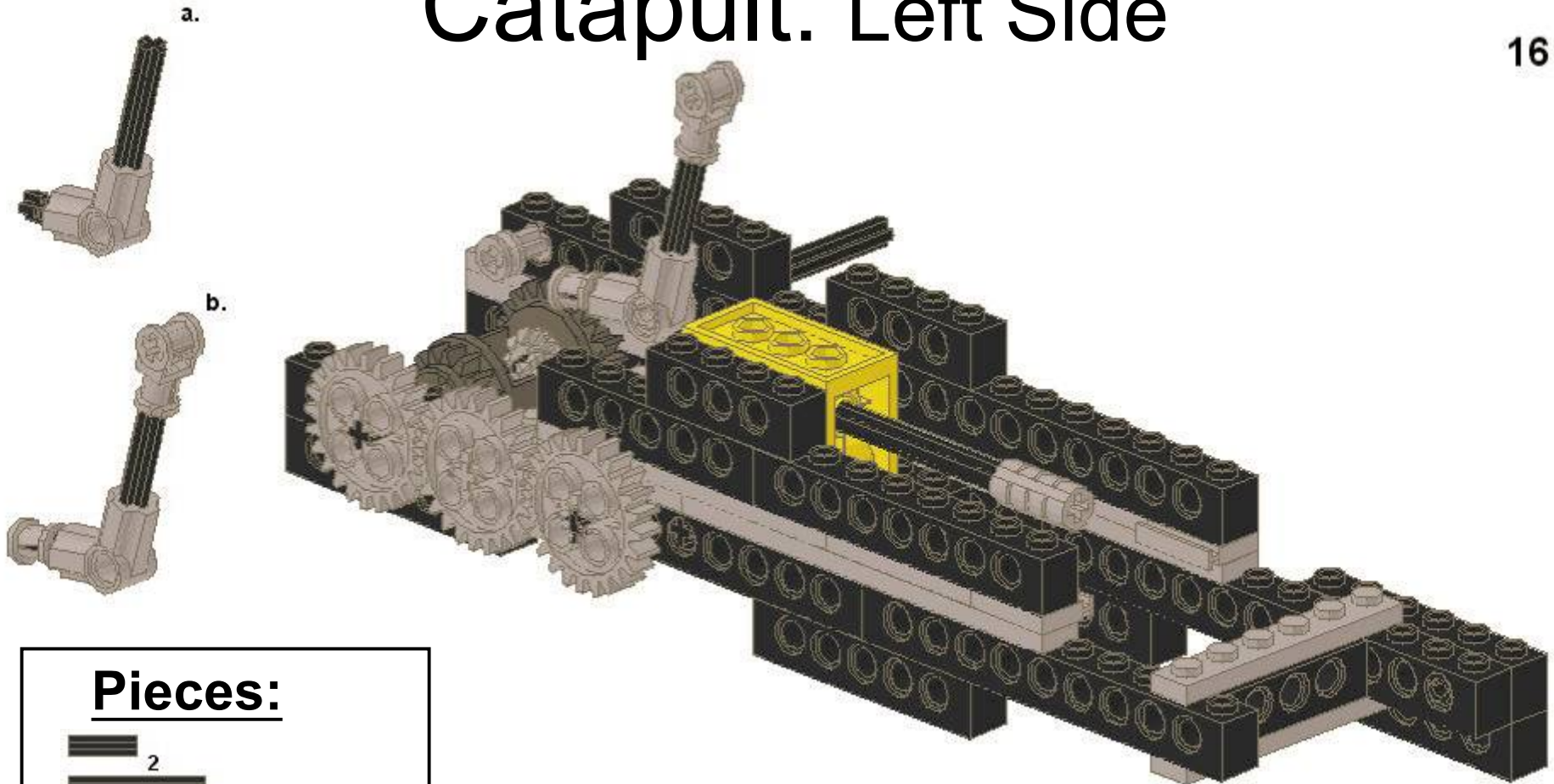


x3

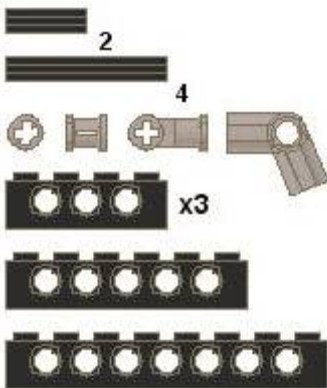


Catapult: Left Side

16



Pieces:



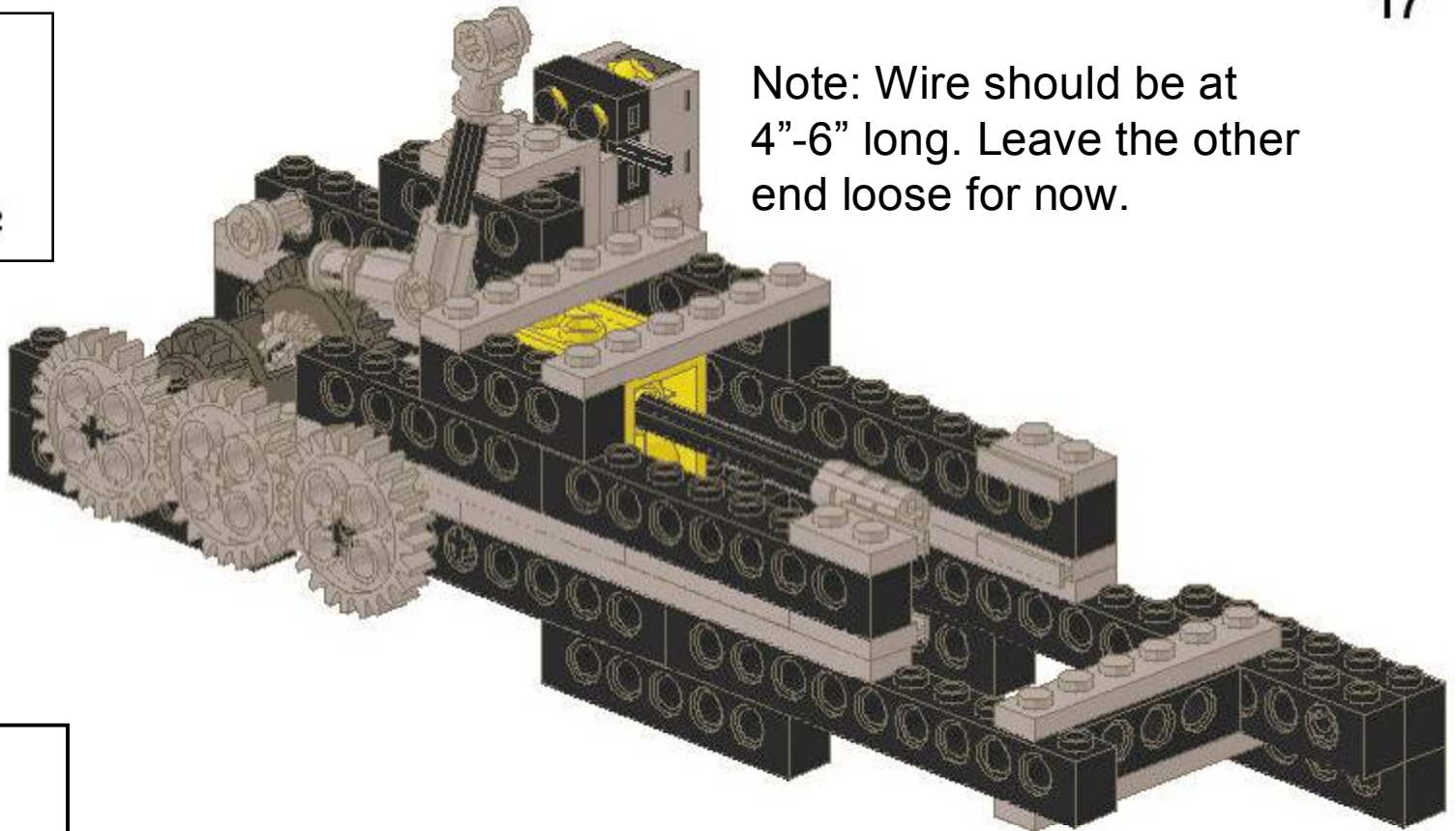
Catapult: Left Side

17

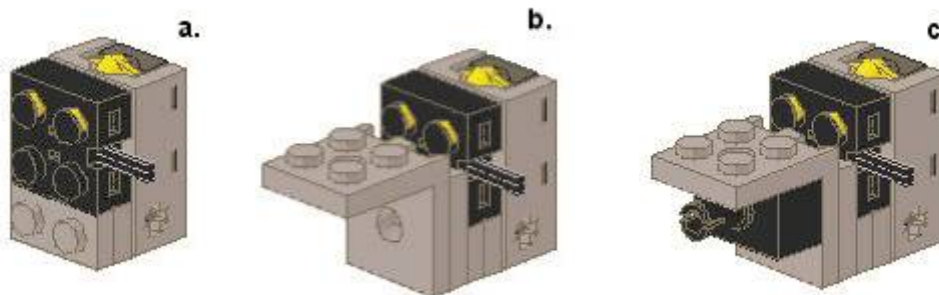
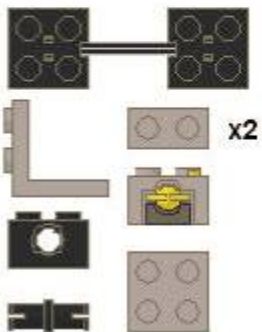
Pieces:



Note: Wire should be at 4"-6" long. Leave the other end loose for now.

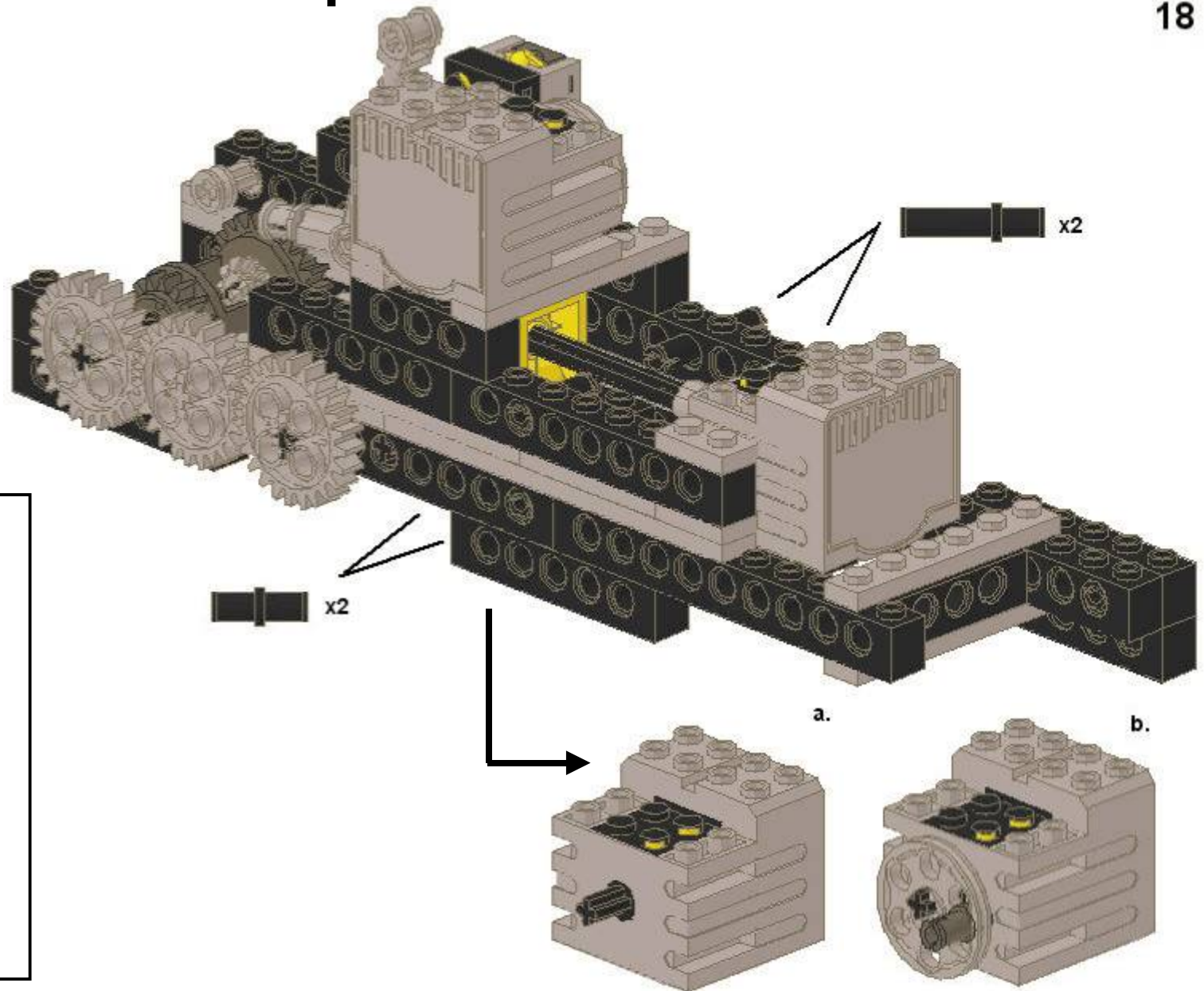


Pieces:

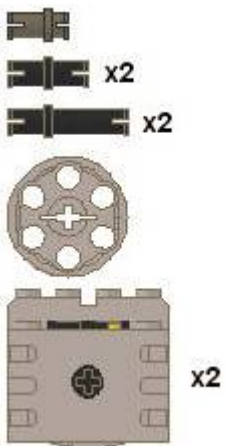


Catapult: Left Side

18



Pieces:



Catapult: Left Side

19

Pieces:



6



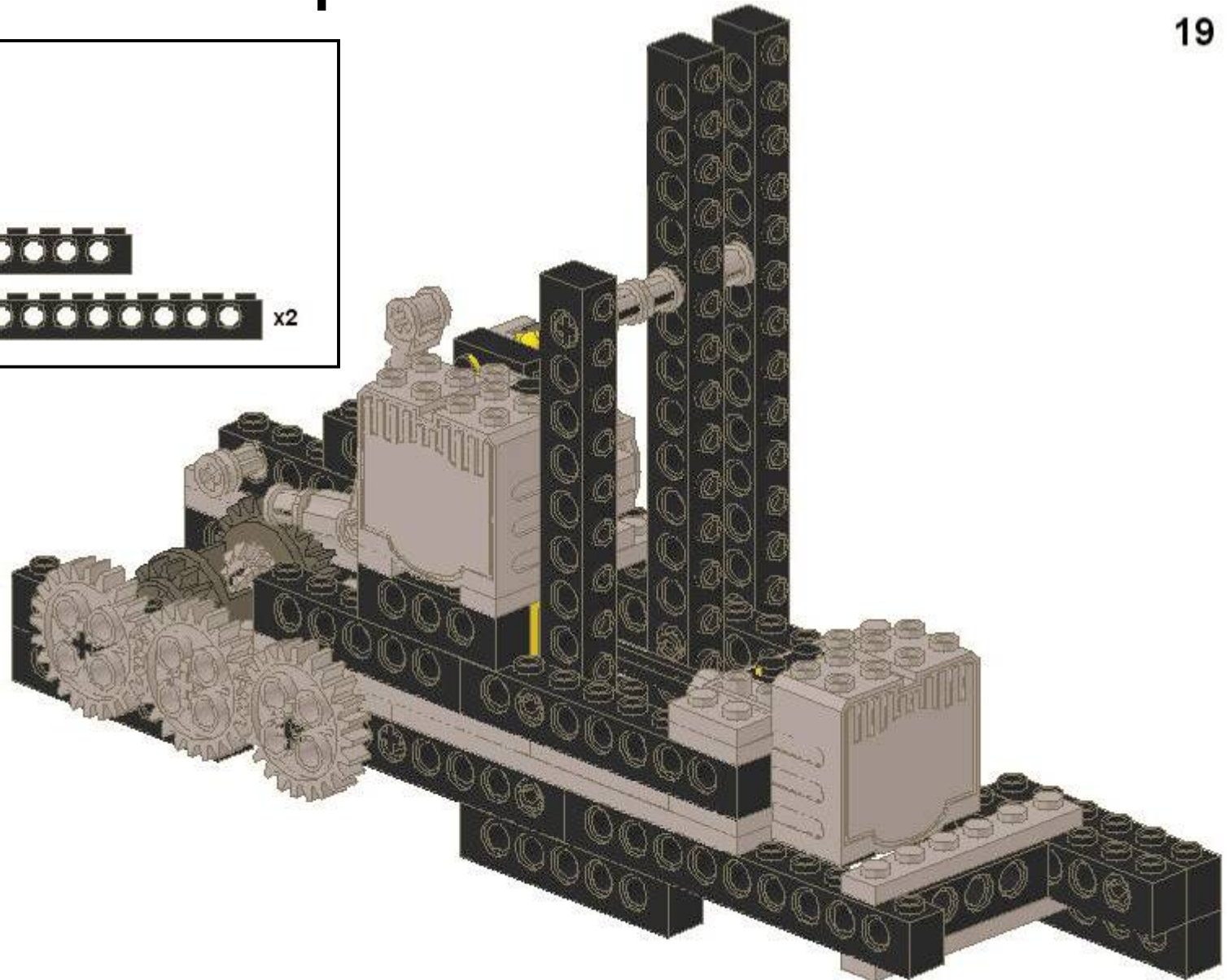
x3



x2



x2



Catapult: Left Side

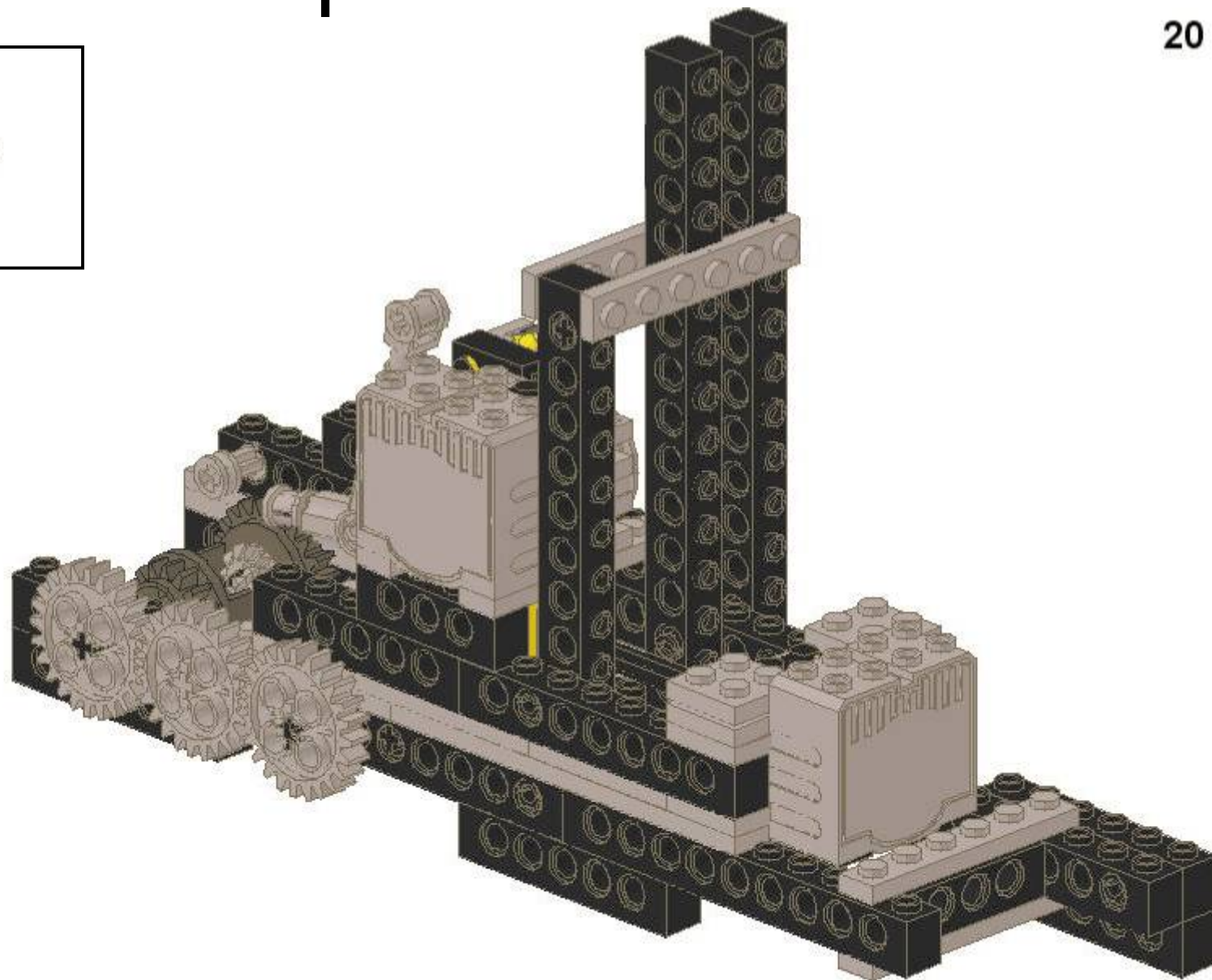
20

Pieces:



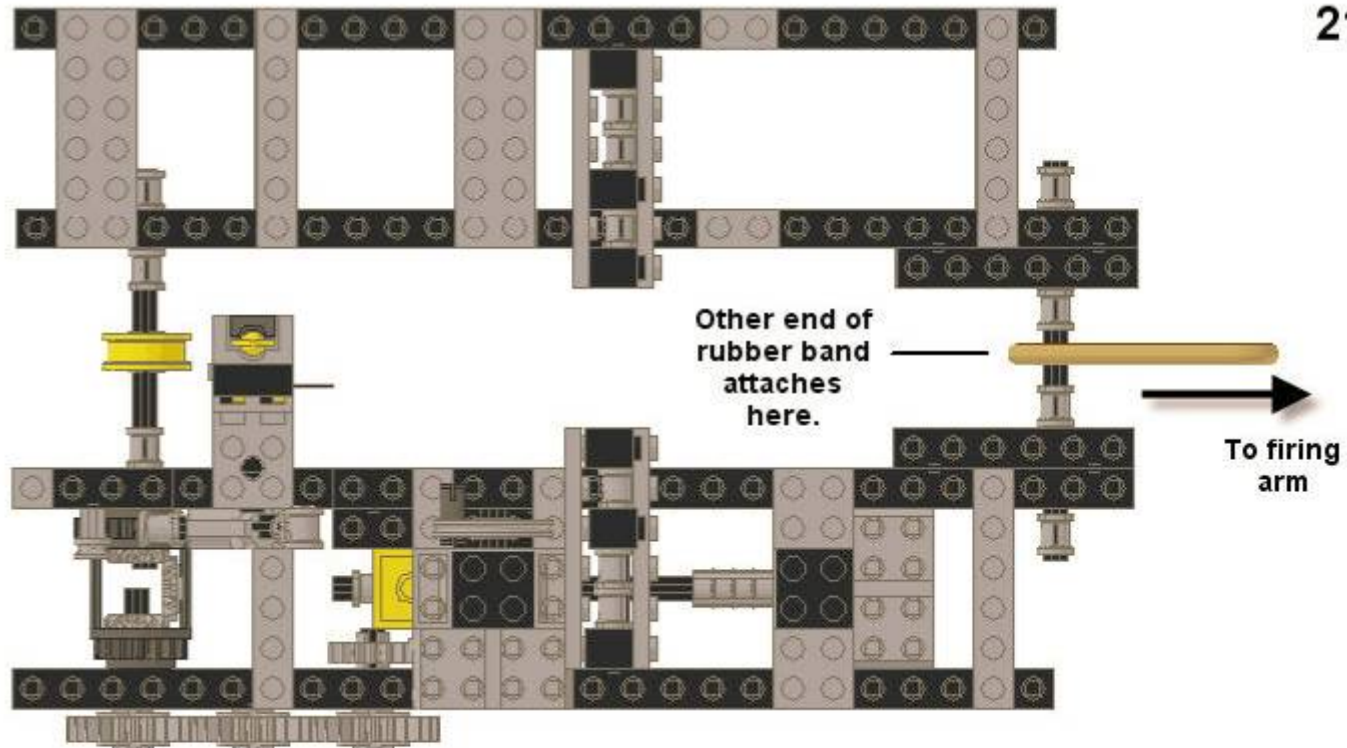
x2

x2



Catapult: Assembly

21

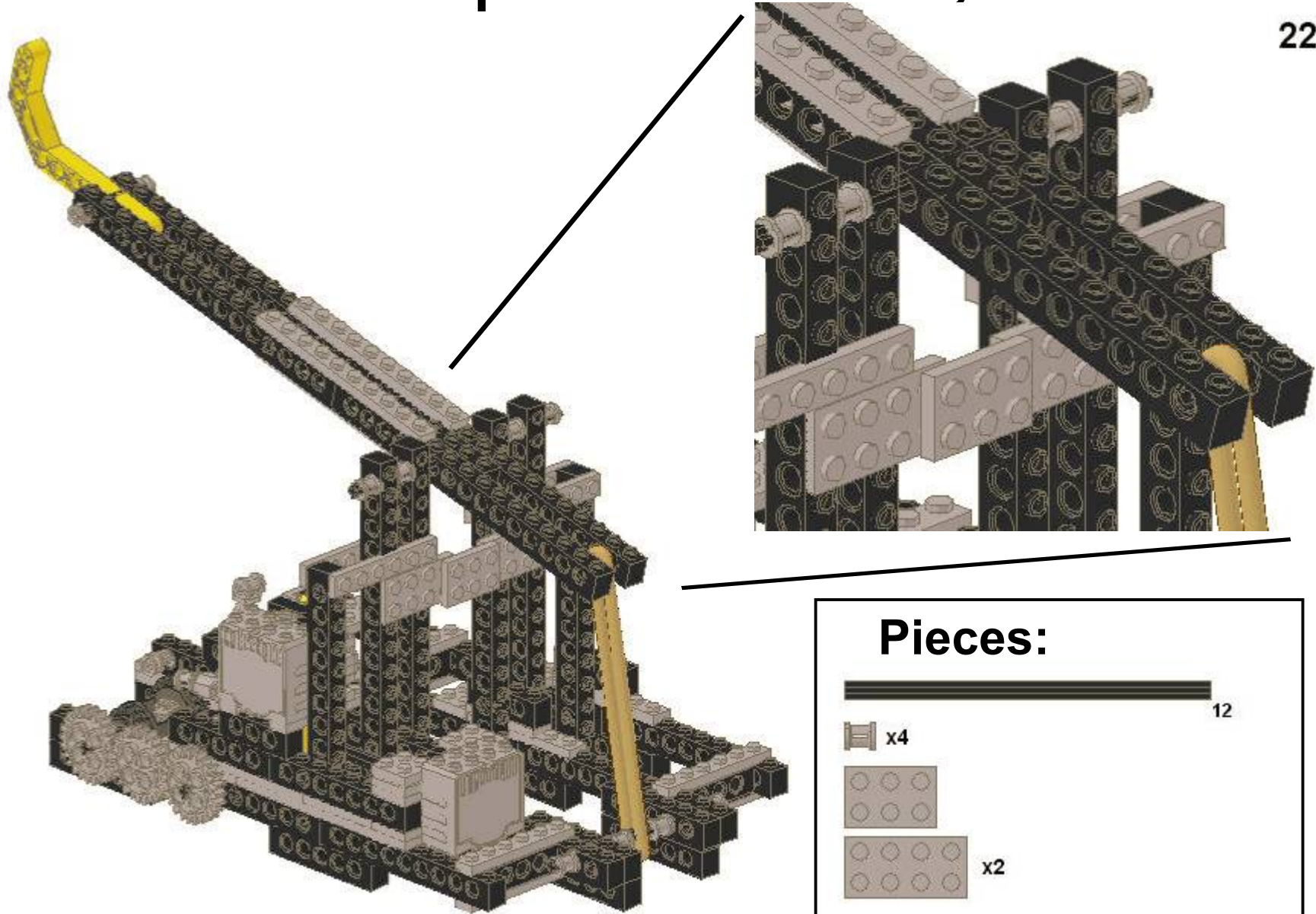


Pieces:



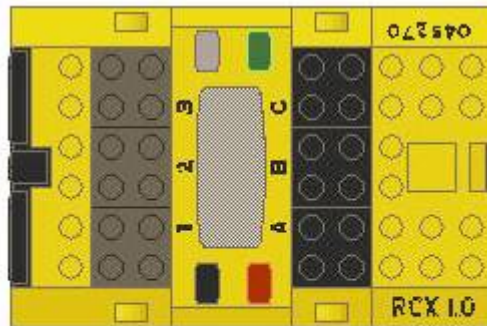
Catapult: Assembly

22

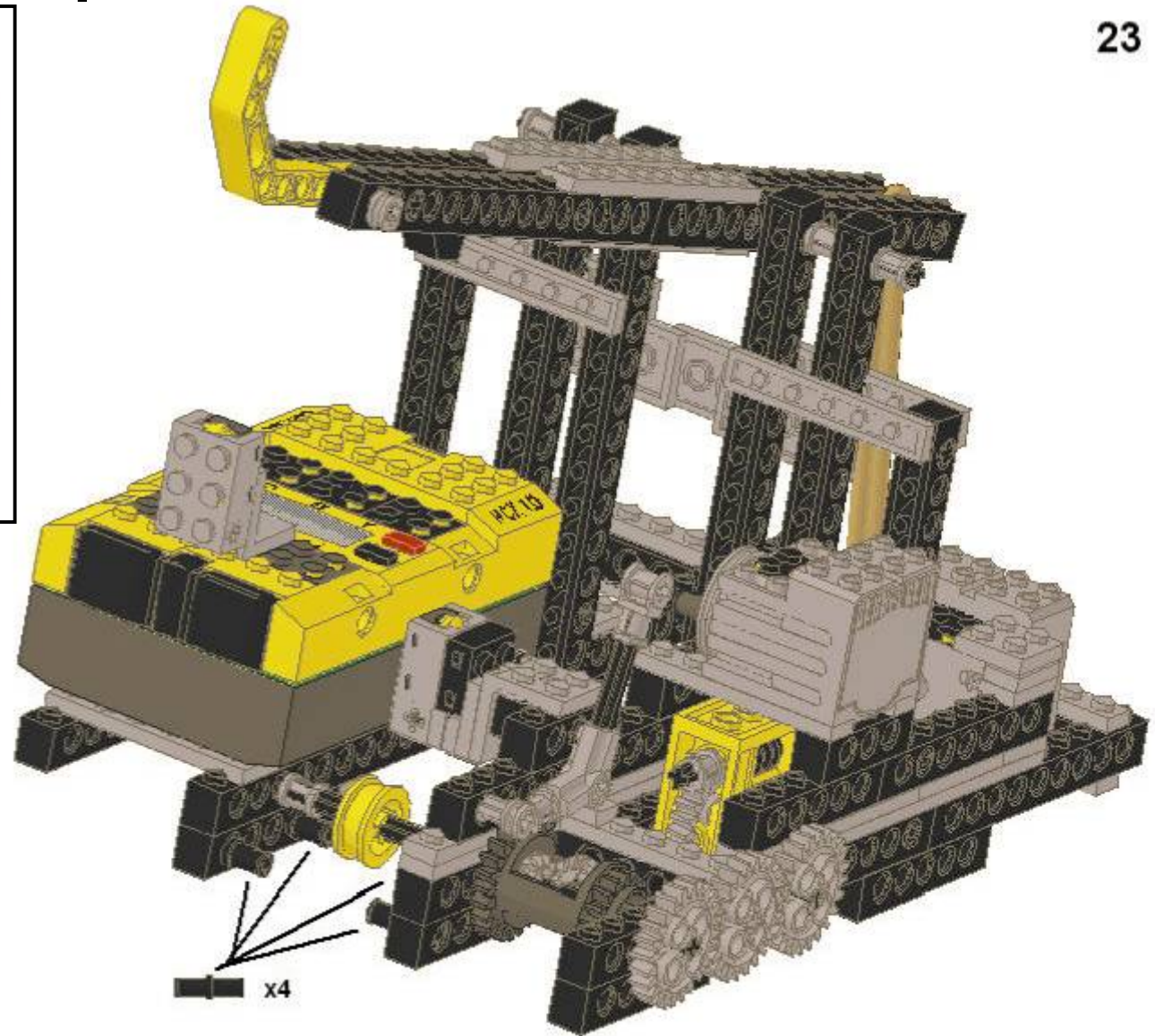


Catapult: Ammo Loader

Pieces:

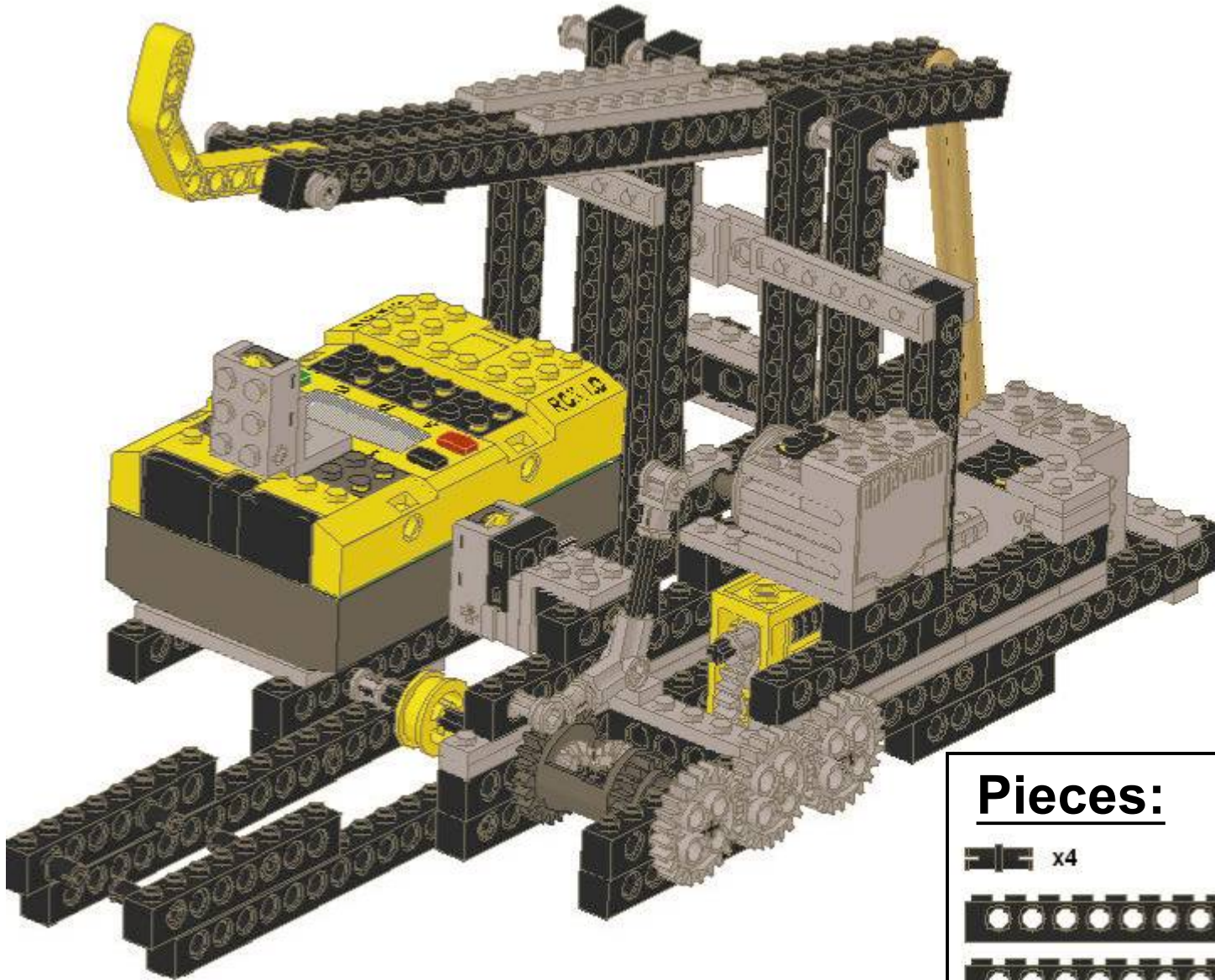


x4



Catapult: Ammo Loader

24



Pieces:

 x4

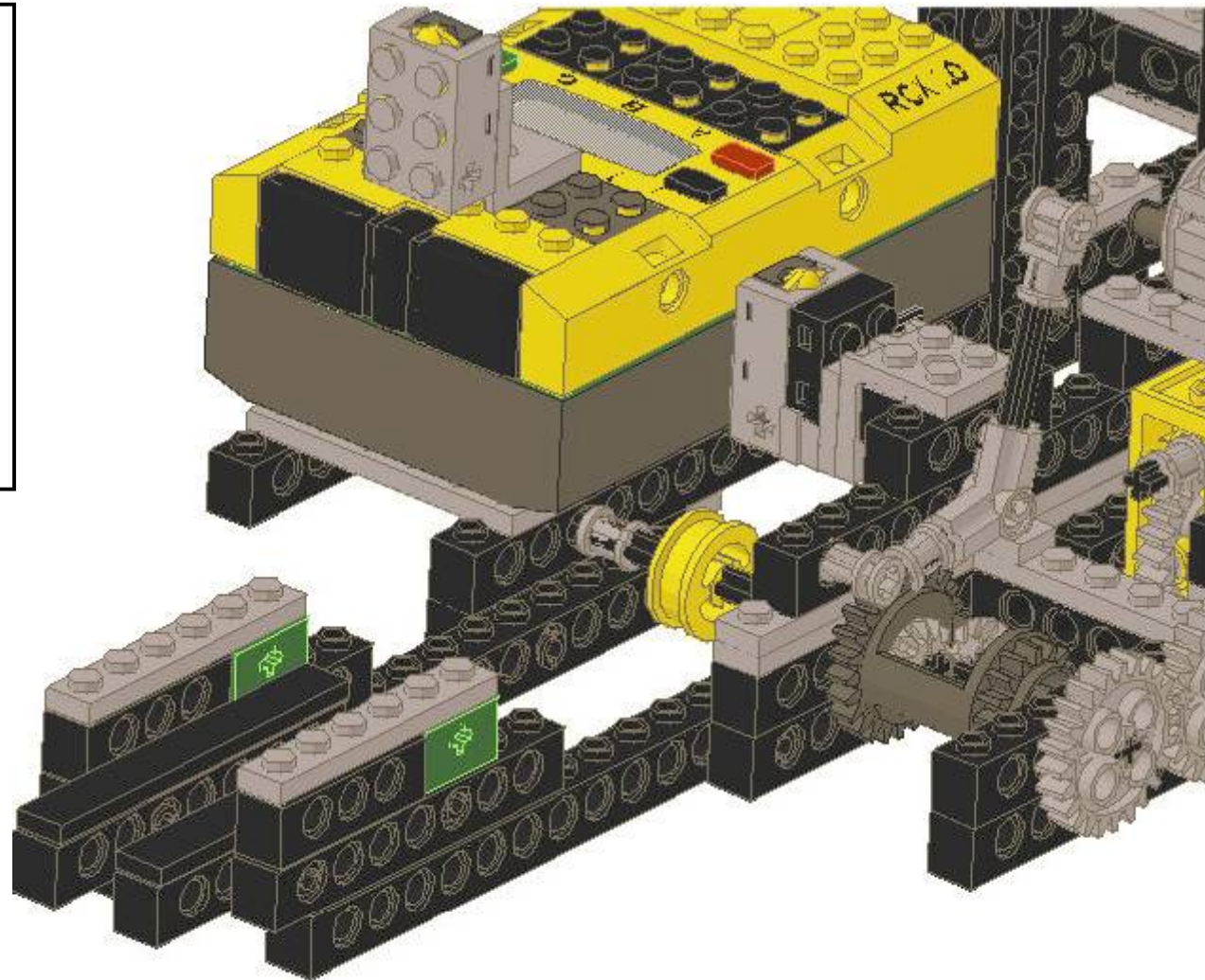
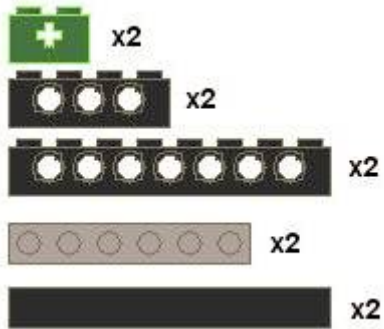
 x2

 x2

Catapult: Ammo Loader

25

Pieces:



Catapult: Ammo Loader

Pieces:

8 x3

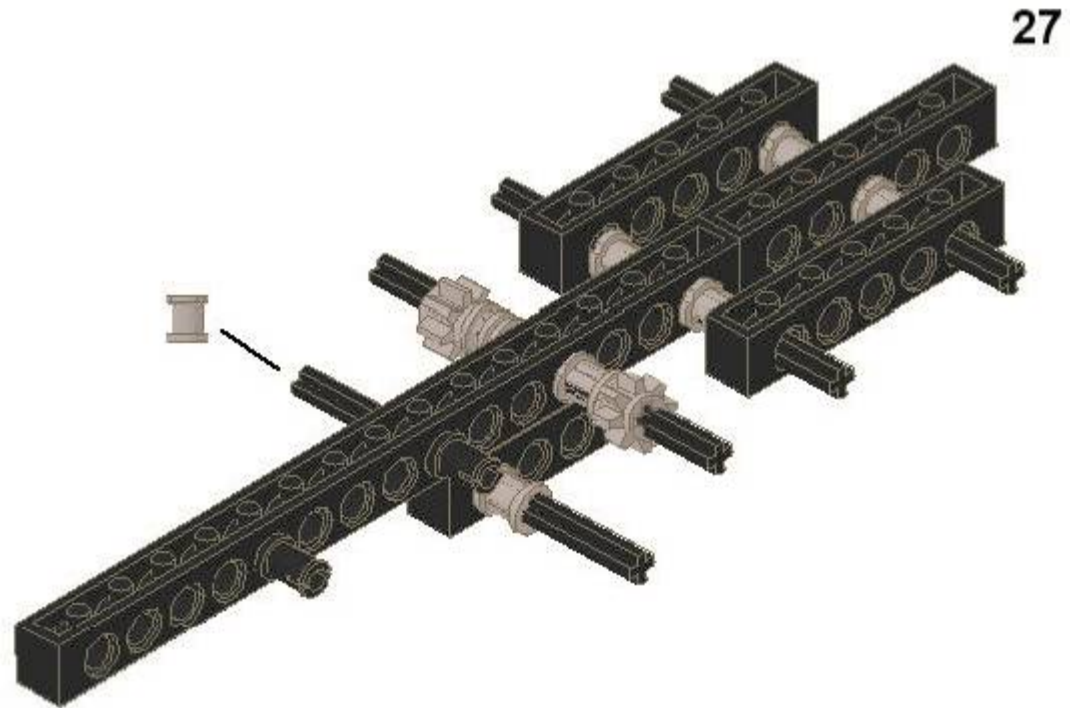
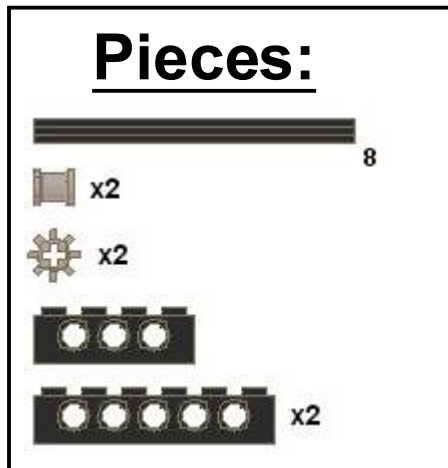
x5

x2

x2

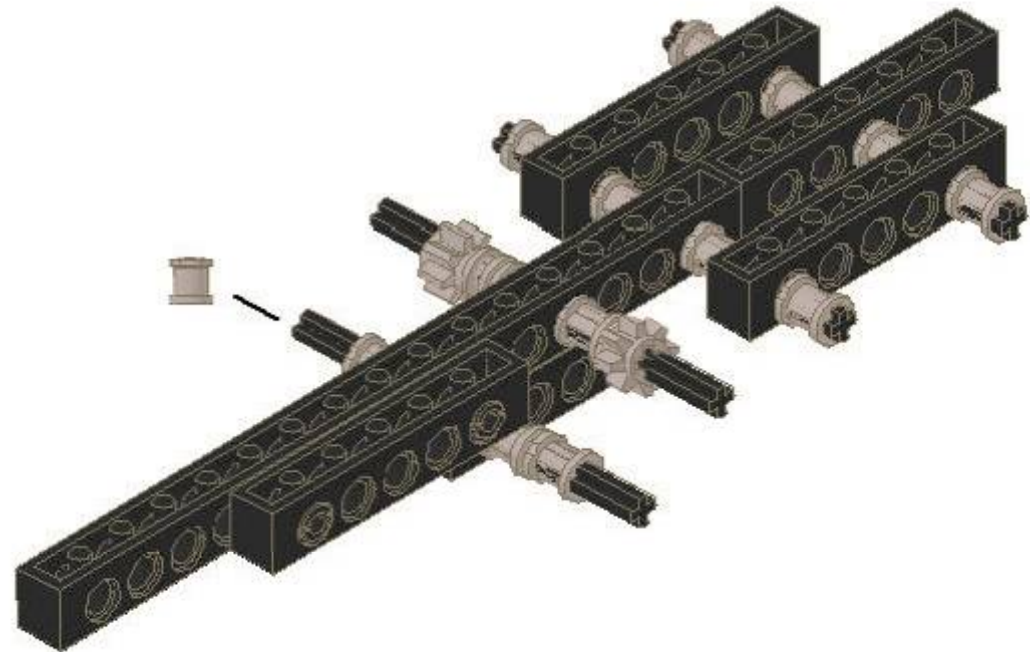


Catapult: Ammo Loader



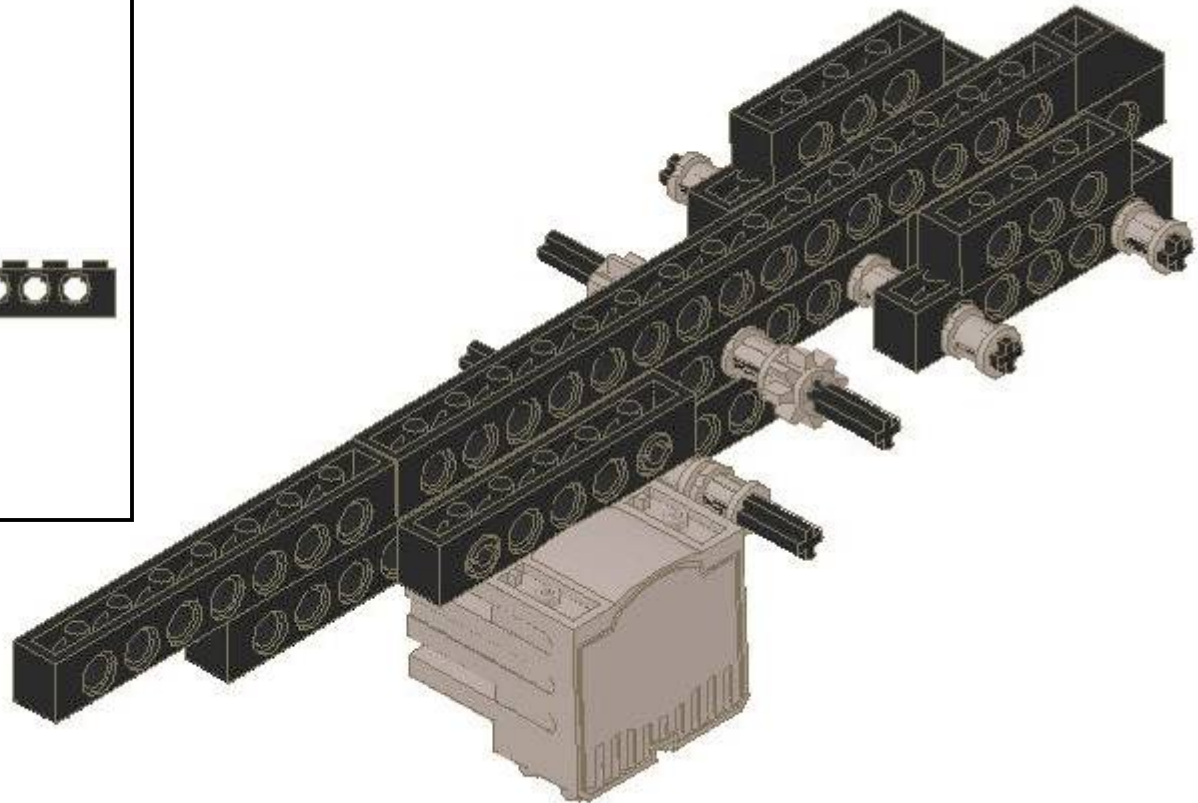
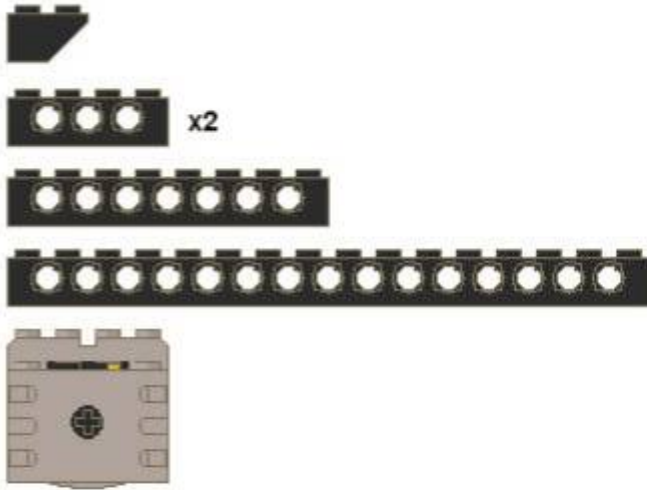
Catapult: Ammo Loader

Pieces:



Catapult: Ammo Loader

Pieces:



Catapult: Ammo Loader

30

Pieces:



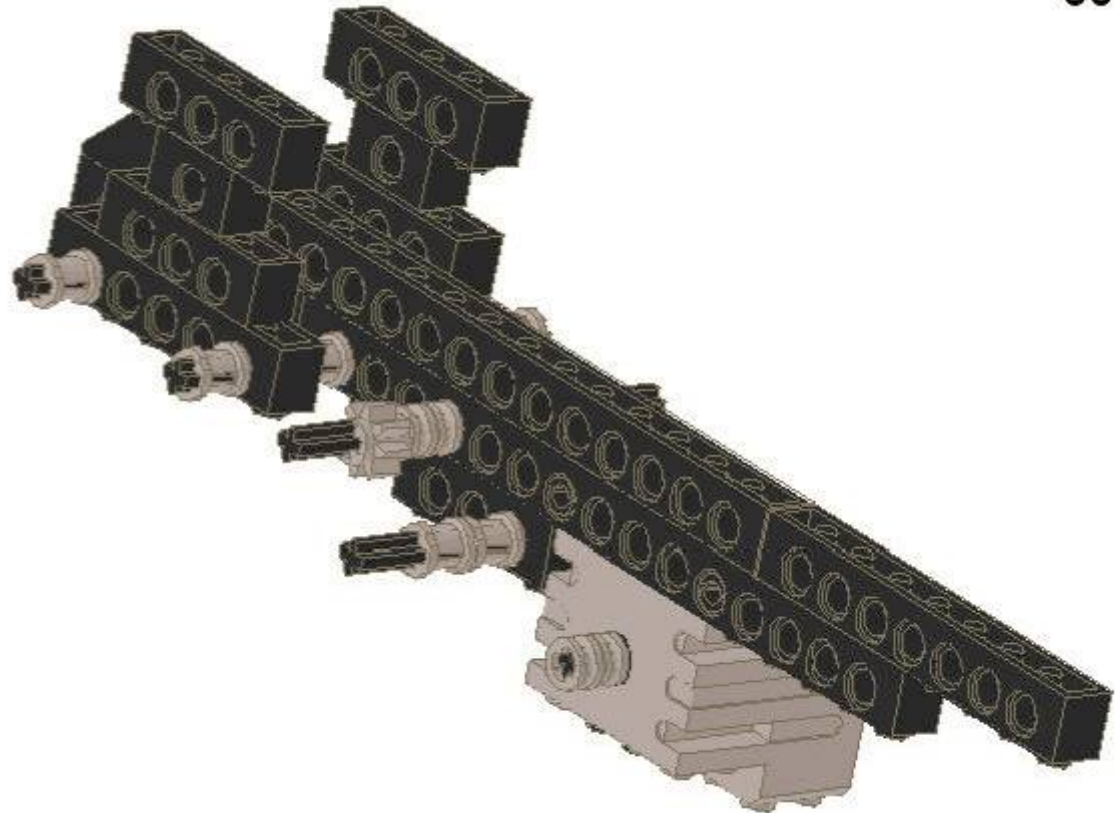
x2



x2

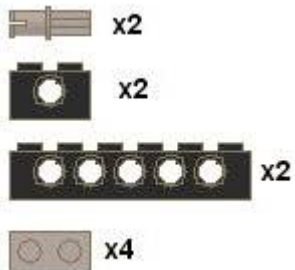


x2



Catapult: Ammo Loader

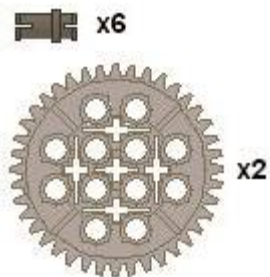
Pieces:



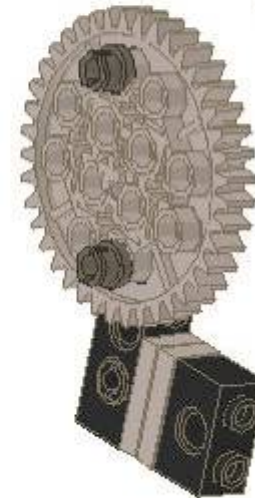
31



Pieces:



32



Catapult: Ammo Loader

33

Pieces:

 x2

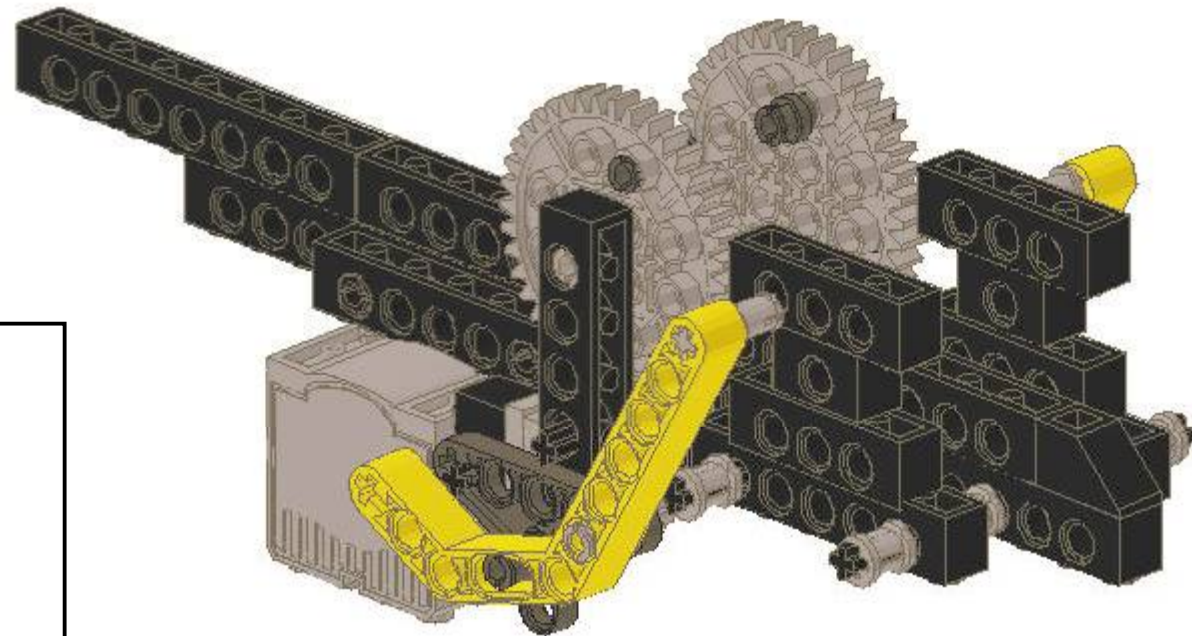
 x2

 x2



Catapult: Ammo Loader

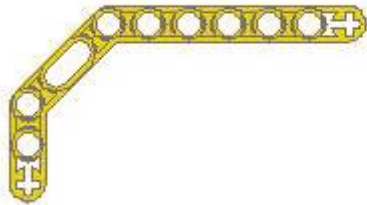
34



Pieces:



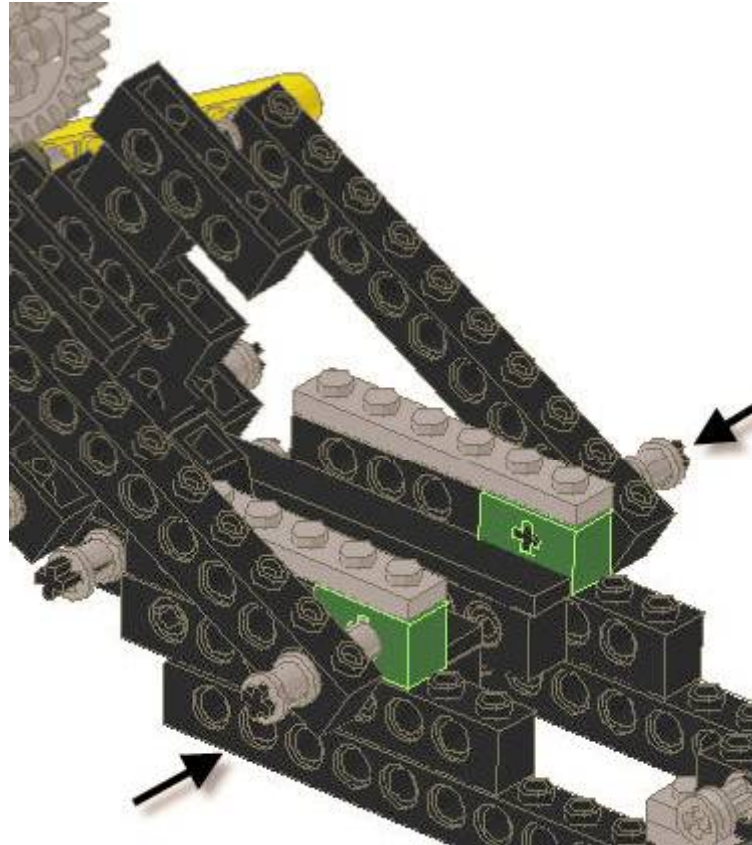
x2



x2

Catapult: Assembly

36



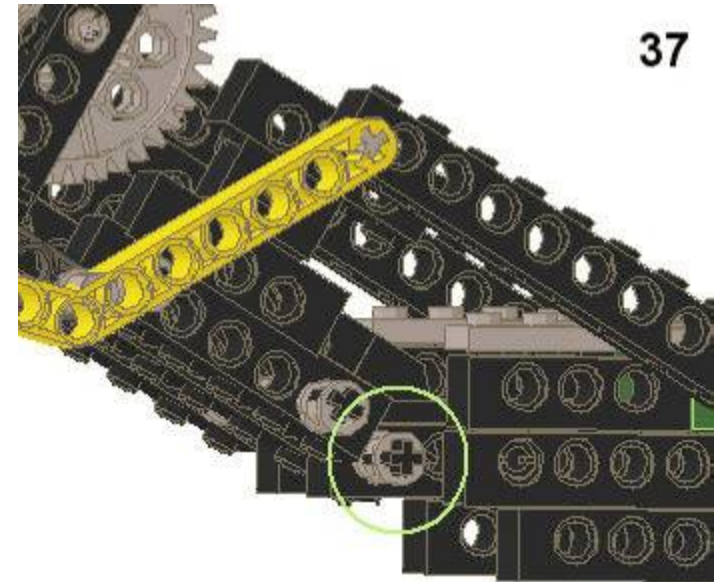
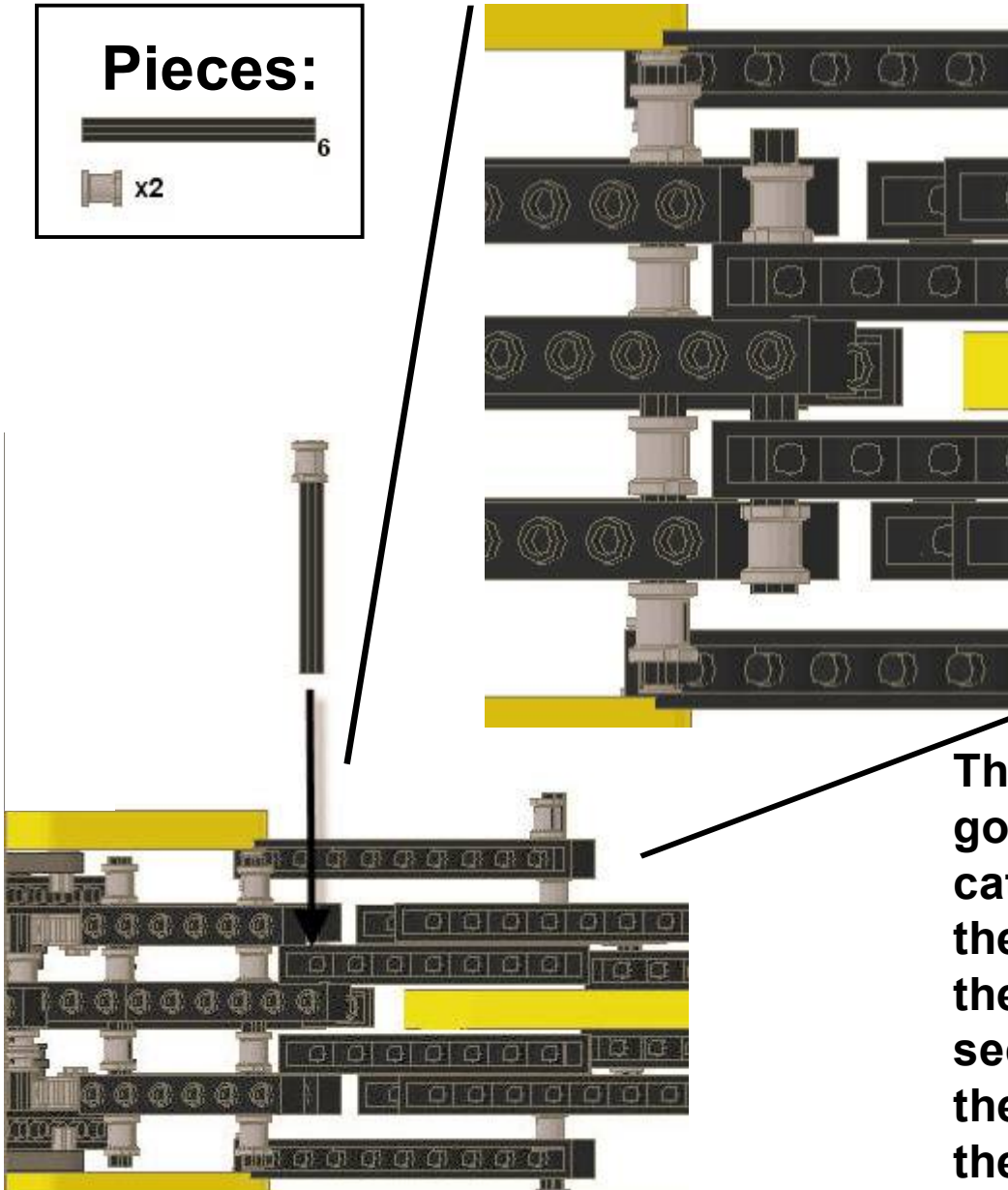
Insert the axles from the arms of the ammo loader into the green bricks on the back of the catapult

Catapult: Assembly

Pieces:



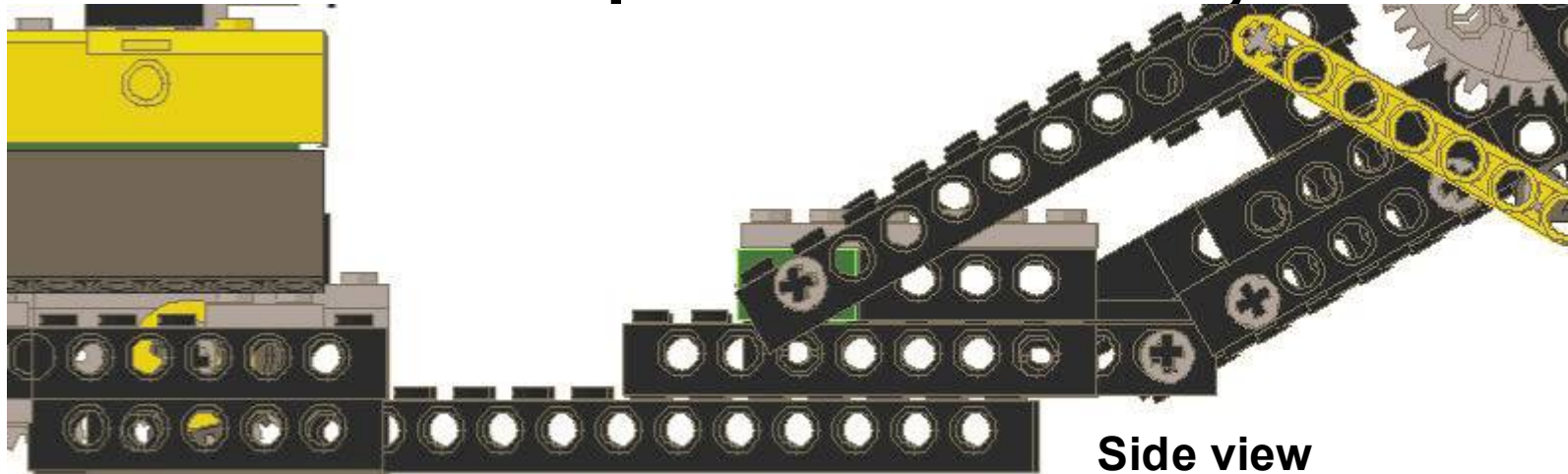
x2



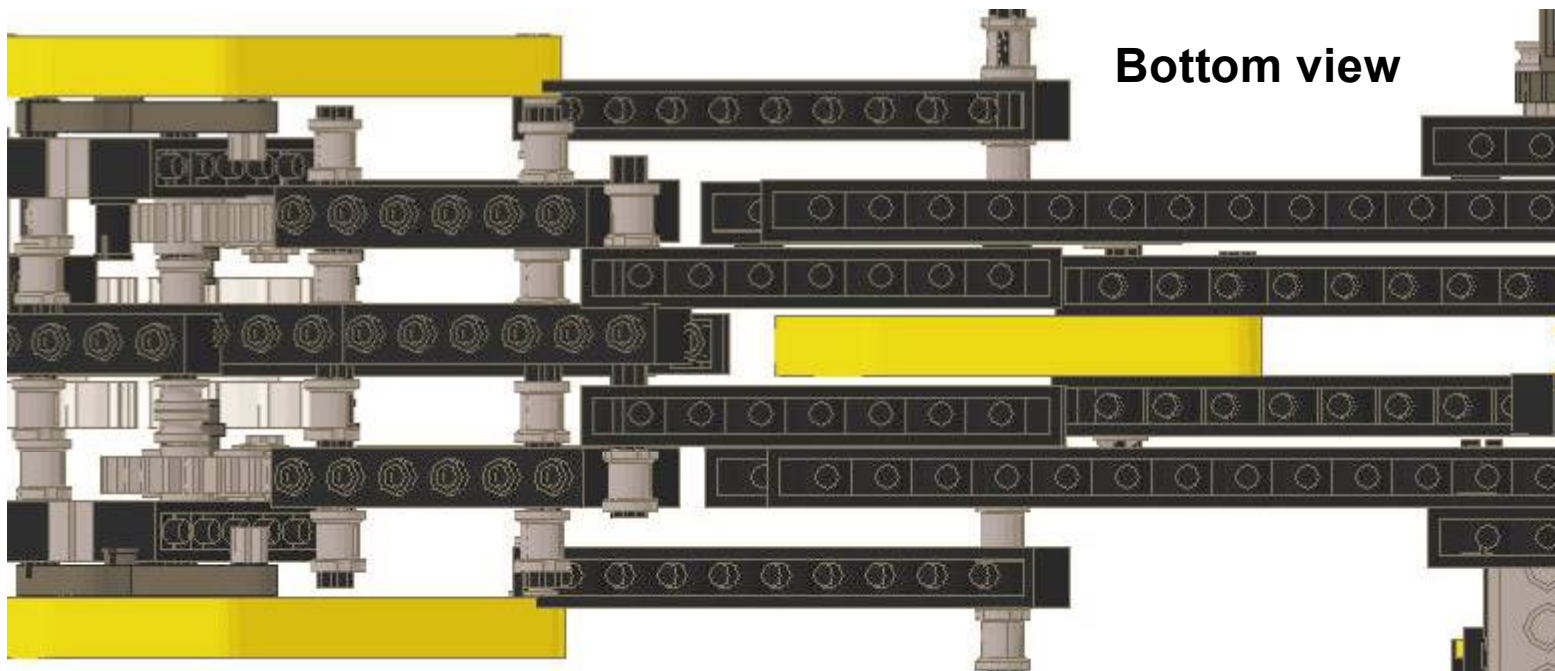
The final pin to attach the ammo loader goes through the last hole on the catapult just below the smooth plates to the hole on the ammo loader just below the sloped brick. When connected and secured on each end with a bushing, the ammo loader will be at an angle to the rest of the catapult.

Catapult: Assembly

38



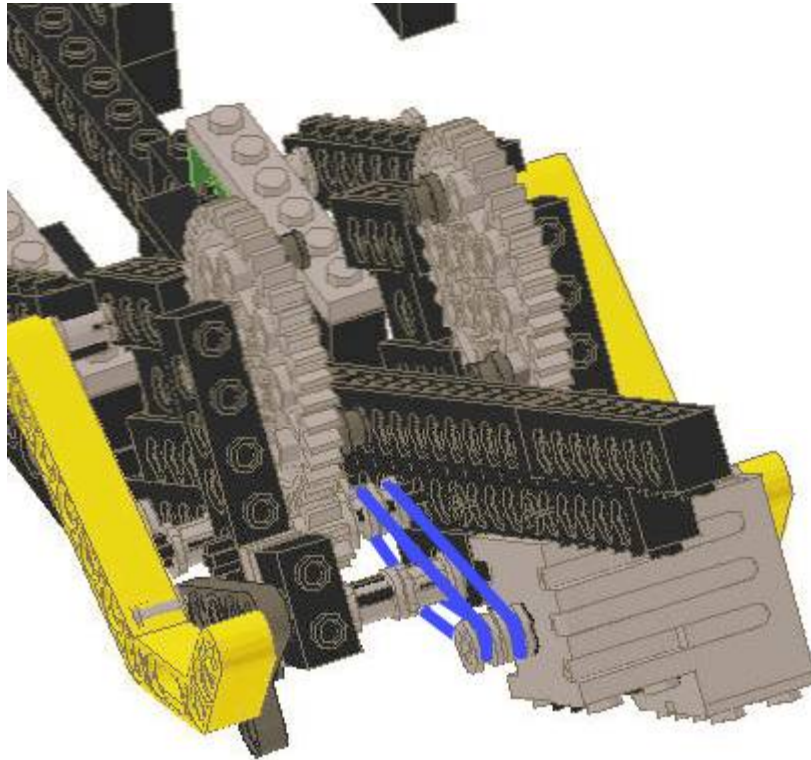
Side view



Bottom view

Catapult: Assembly

39



Pieces: Lego rubber bands

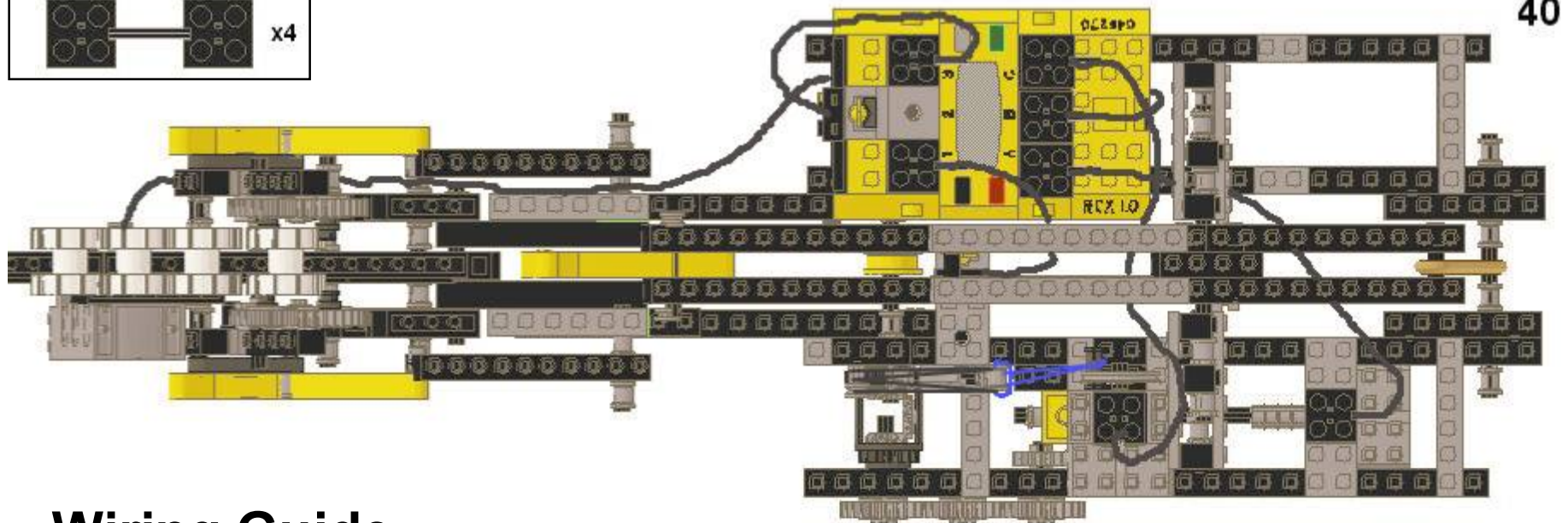


x3



Note: When the motor is in the position above, the lever arm should be locked into the differential gear. When the motor is turned halfway, the lever should be free from the differential. If this is not the case, readjust the bands.

Catapult: Wiring

Pieces:

Wiring Guide

Port 1 connects to the touch sensor under the arm.

Port 3 connects to the touch sensor on the rcx.

Port A connects to the motor on the front of the catapult.

Port B connects to the motor on the ammo loader

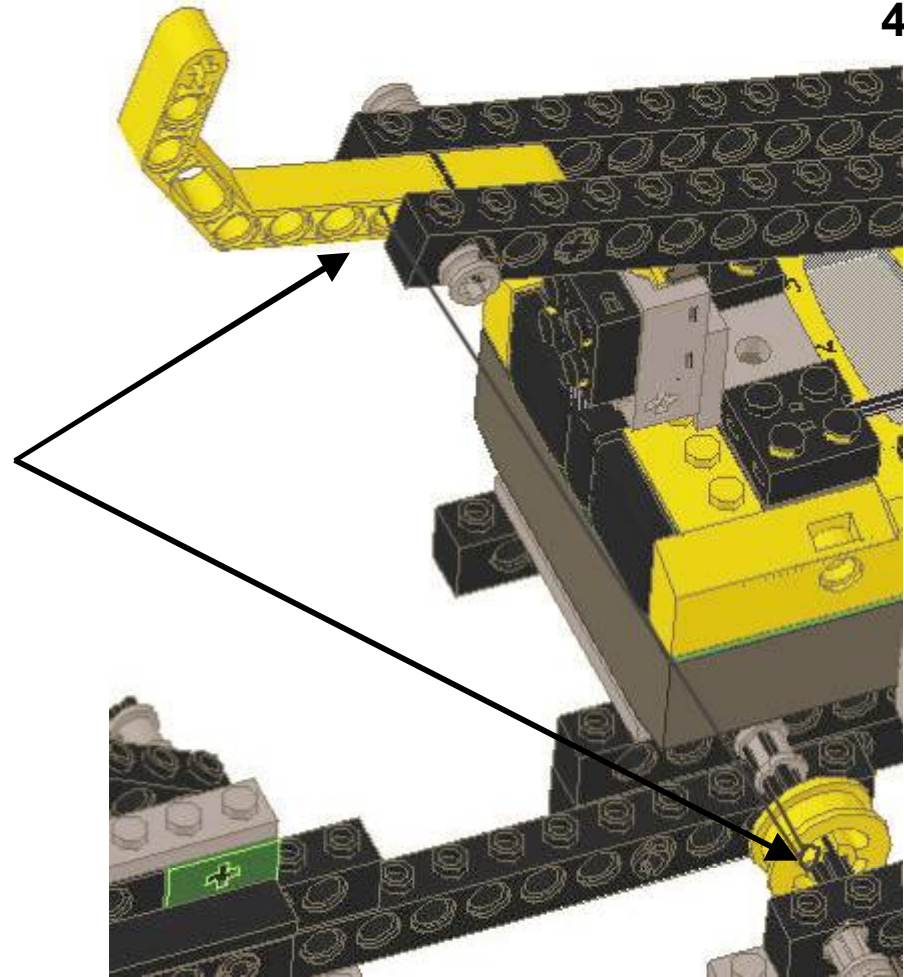
Port C connects to the motor on the middle of the catapult

Catapult: Assembly

Pieces:

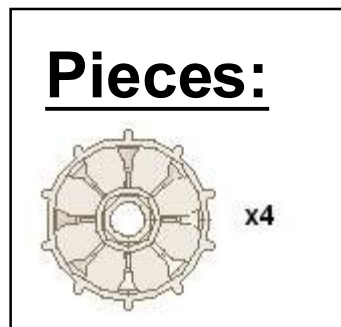
18" string

The sting is tied at one end to the angled arm and at the other end to the yellow cylinder.

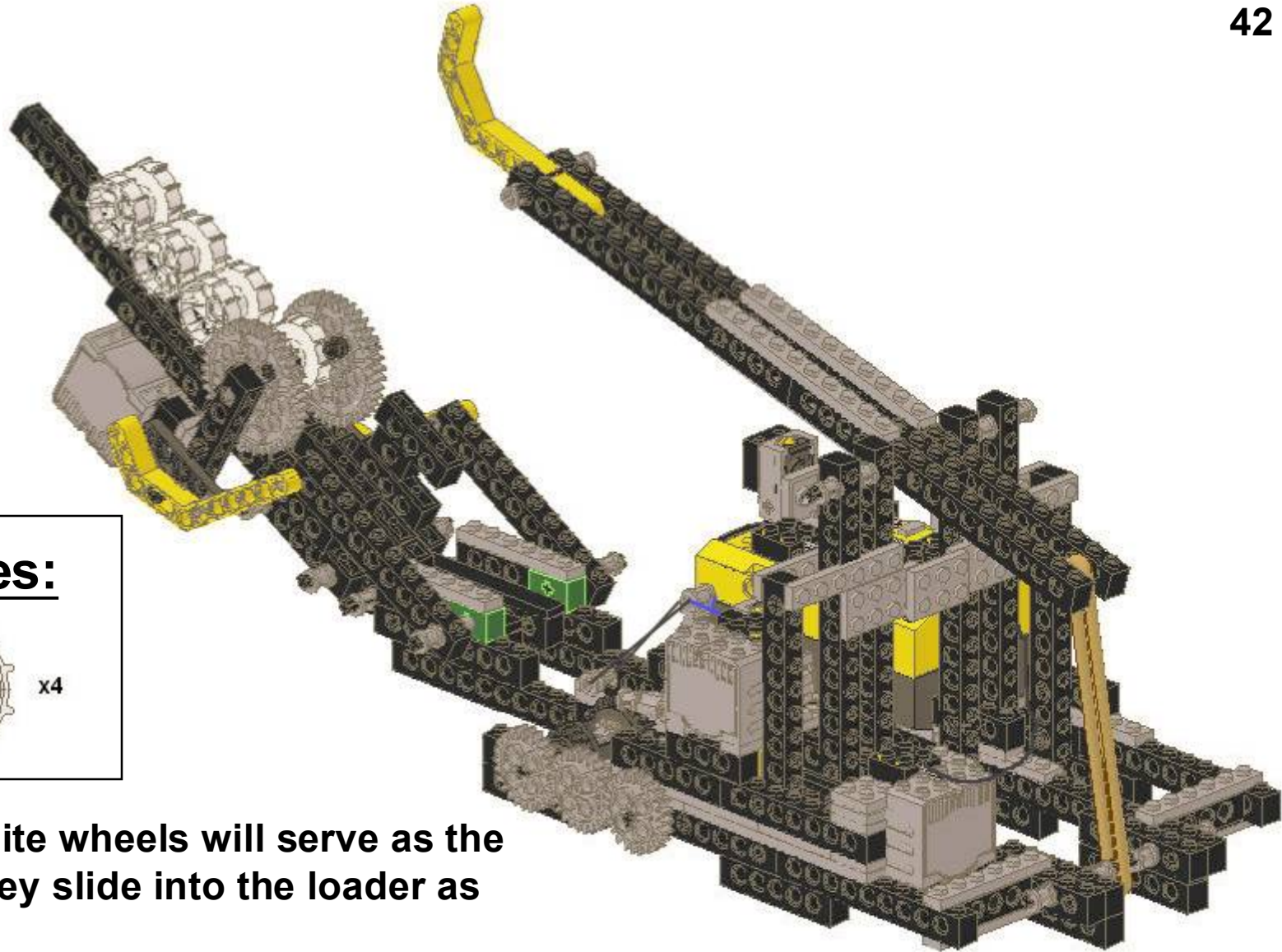


Catapult: Assembly

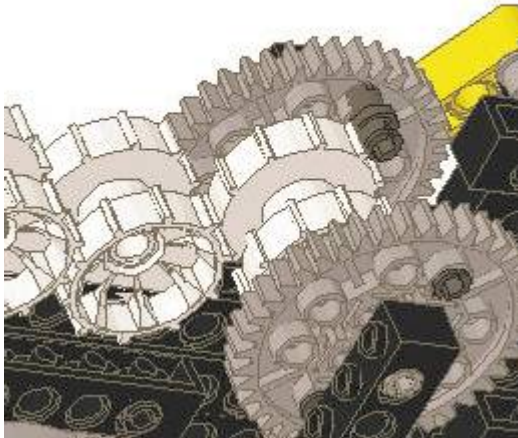
42



These white wheels will serve as the ammo, they slide into the loader as shown.



Catapult: Final Notes

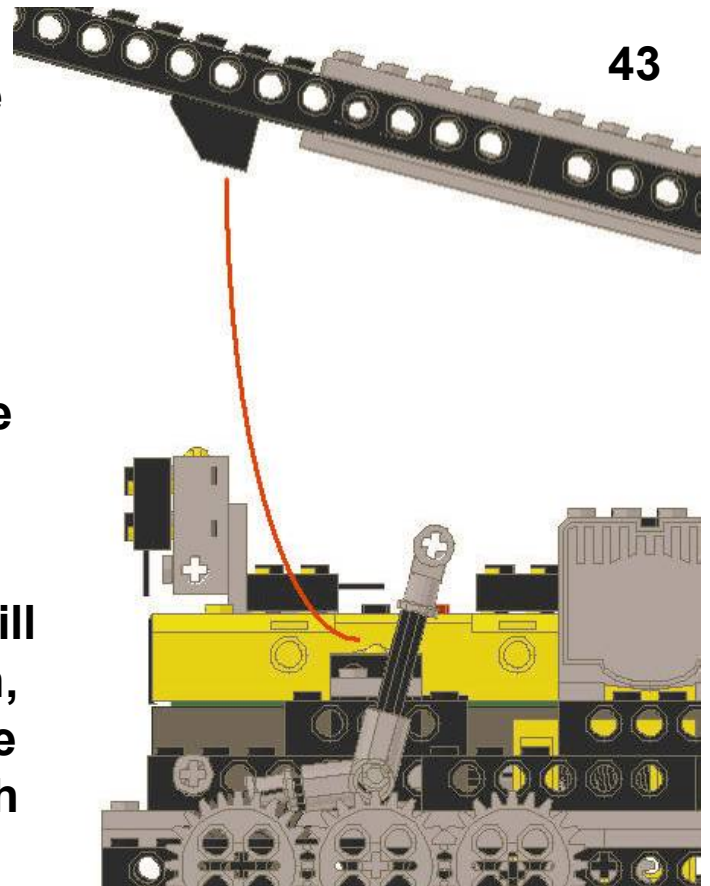


1. Make sure that when the arm is pulled down, the sloped brick hits the touch sensor.

2. The gears on the ammo loader work best if they are in the position shown.

How it works:

When the program below is run, the firing arm will wind down until touch sensor 1 is pressed. Then, motor A will stop and a single white wheel will be moved from the loader onto the arm. When touch sensor 2 is pressed, motor C will move. This will pull the firing lever, and release the arm. The catapult will then reload itself automatically.



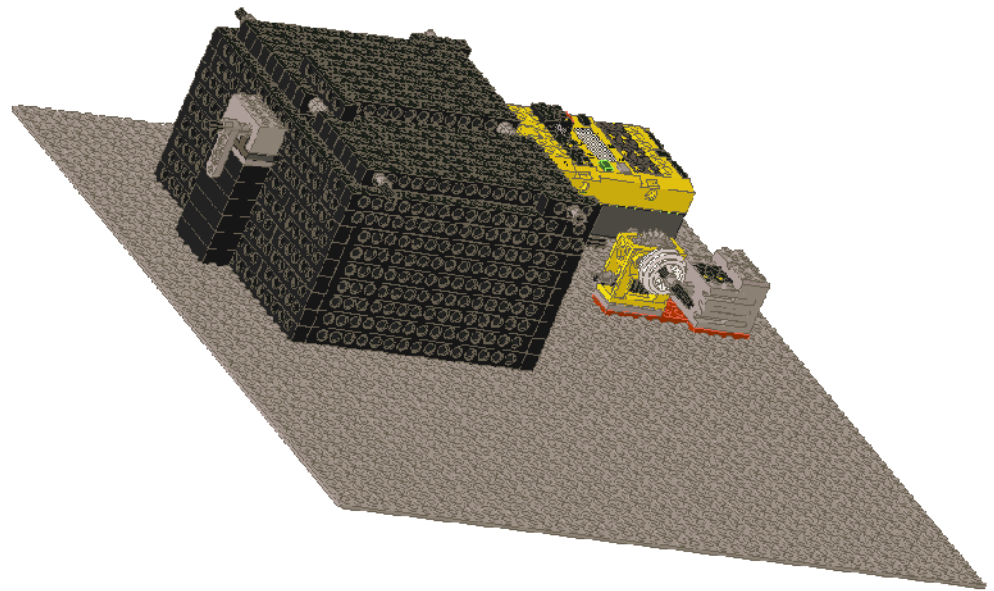
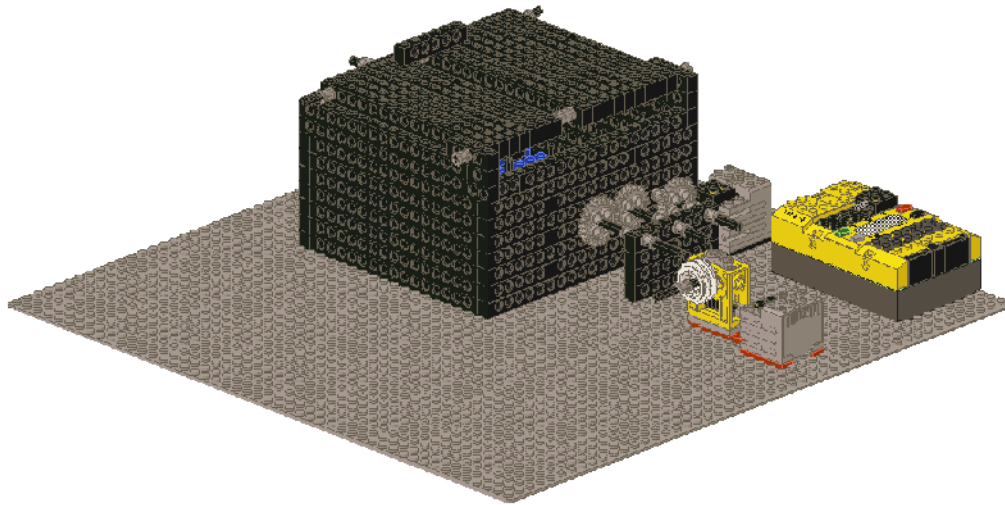
43



Building Kinetic Sculptures

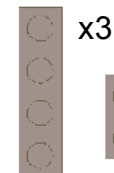
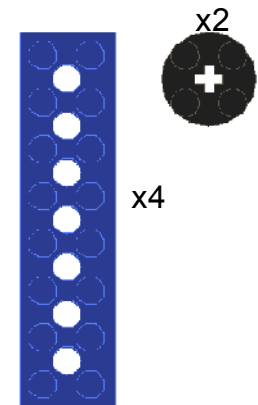
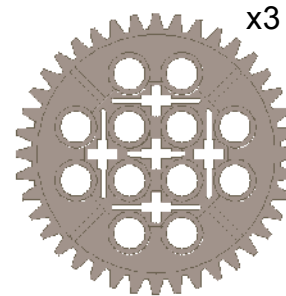
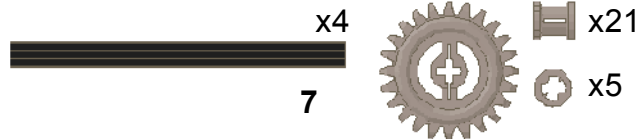
Moving Parts

Building a Music Box



Building a Music Box

Pieces: BOX



Building a Music Box

Pieces:



x16



x17

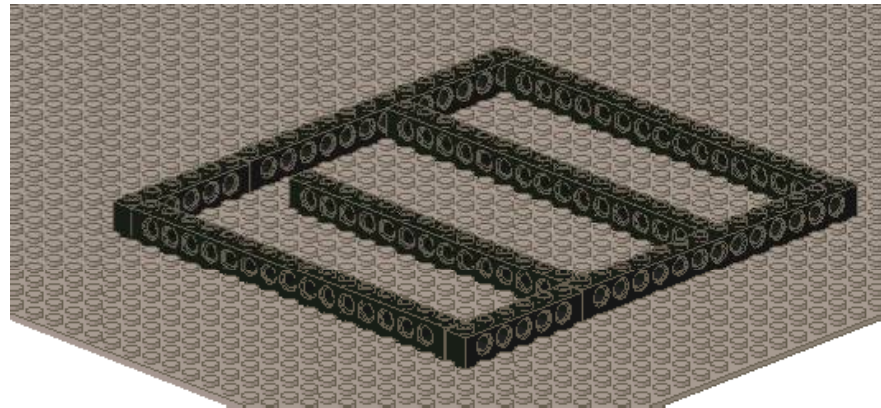


x17

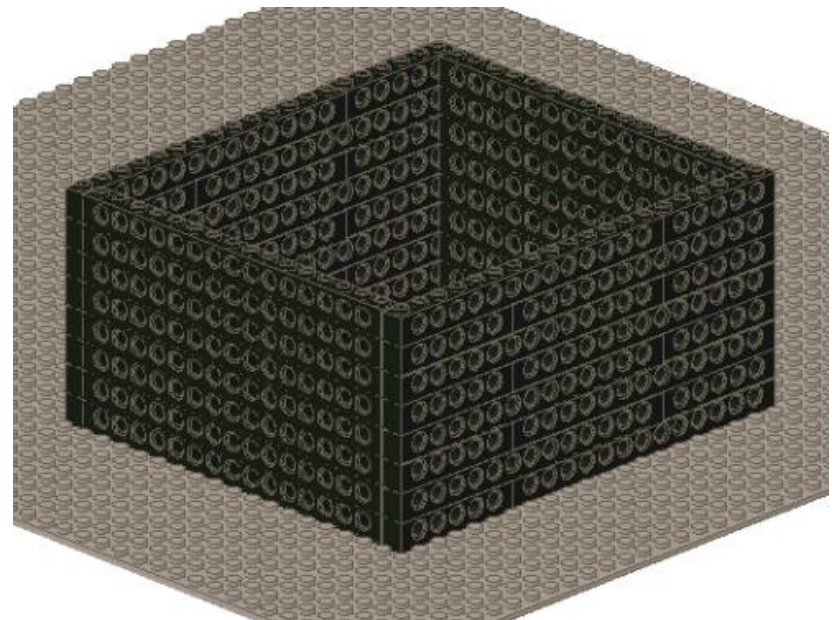


48X48 plate

1



2



Building a Music Box

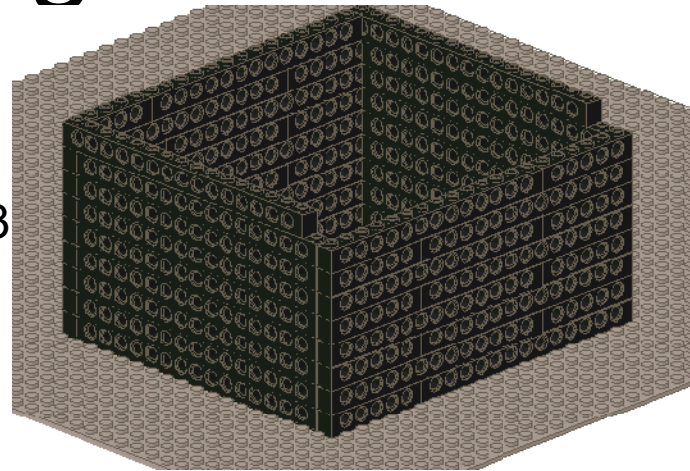
Pieces:



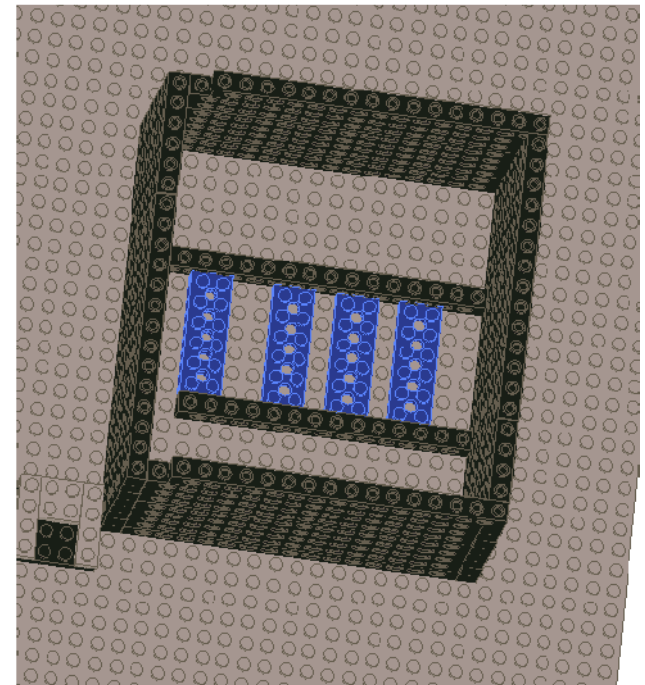
x2



3

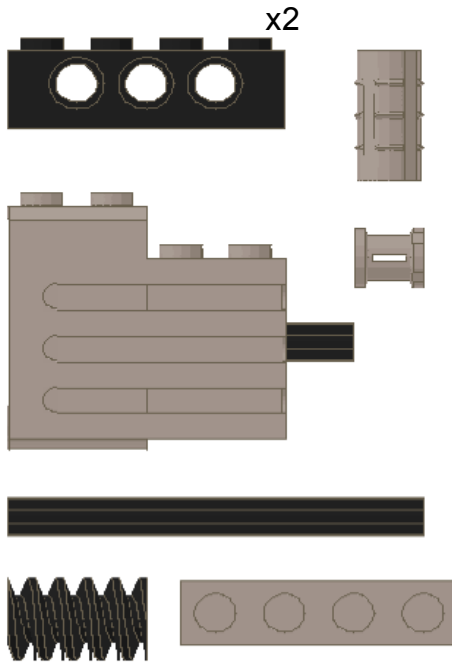


4

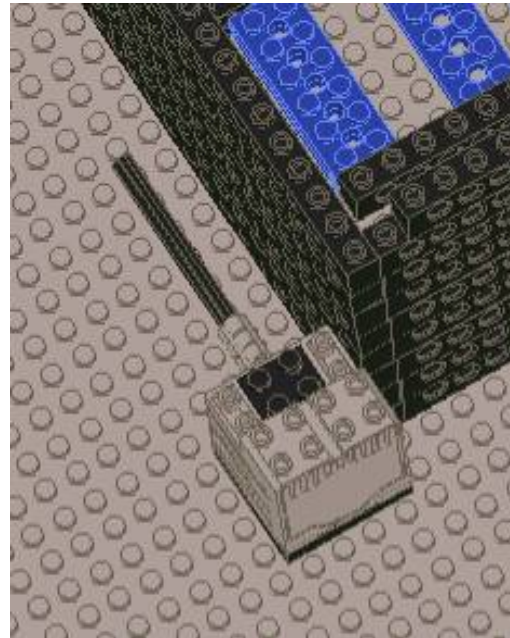


Building a Music Box

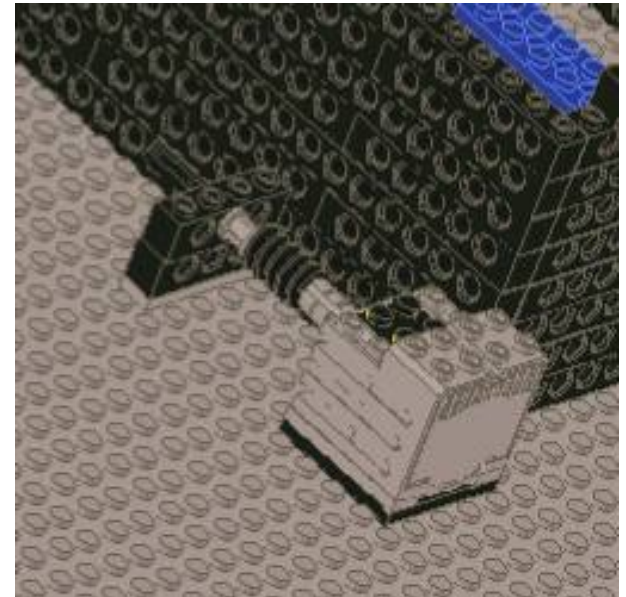
Pieces:



5



6



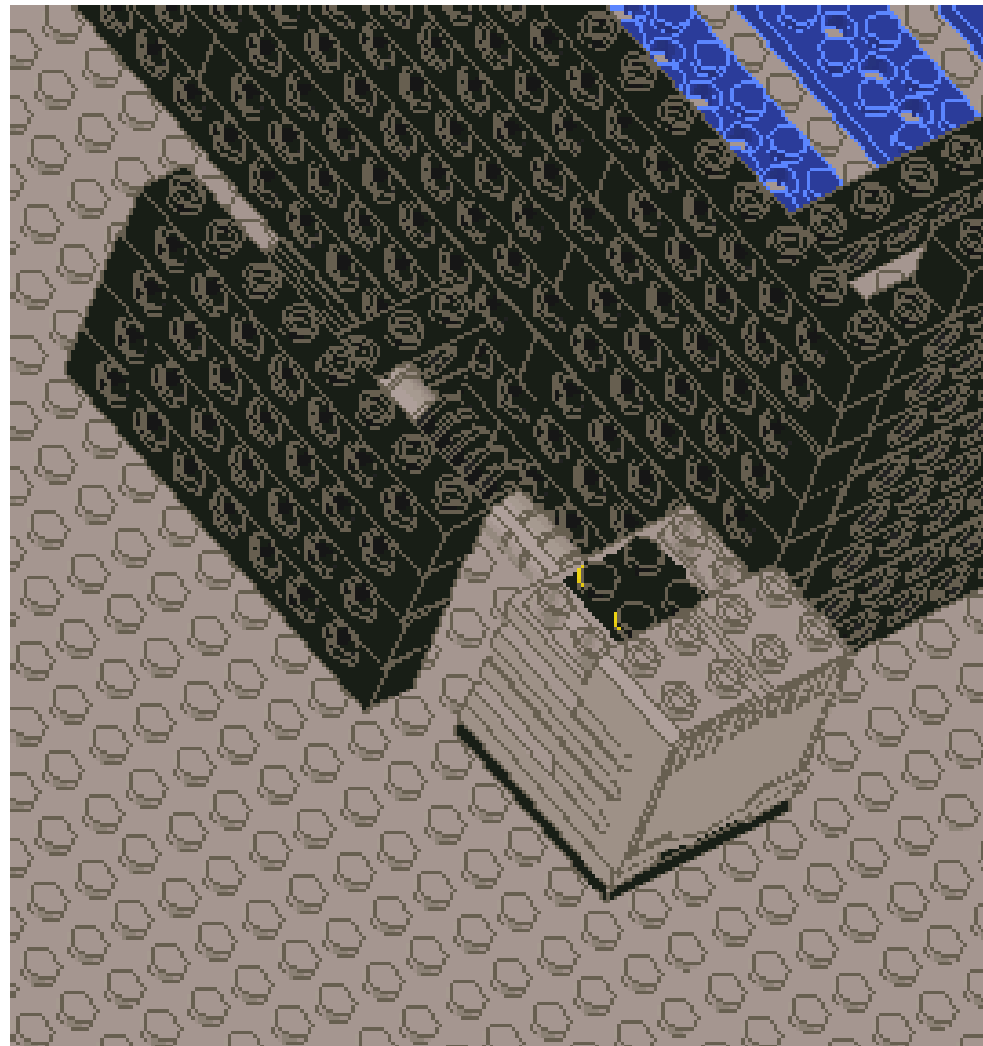
Building a Music Box

Pieces:



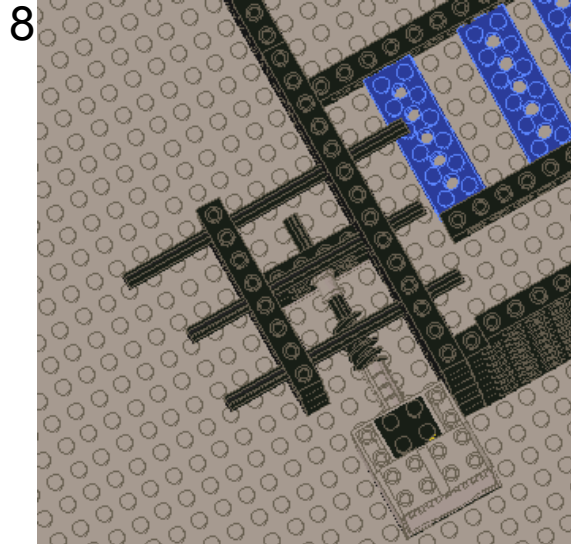
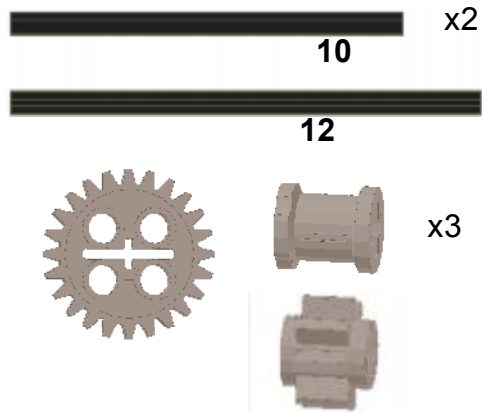
x4

7

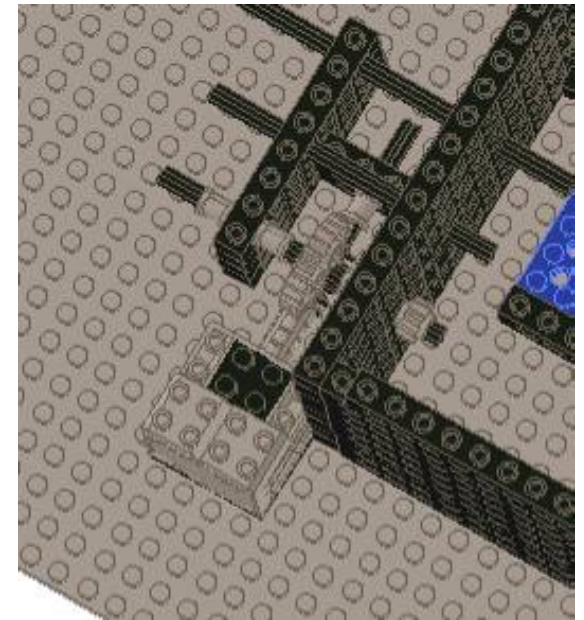


Building a Music Box

Pieces:

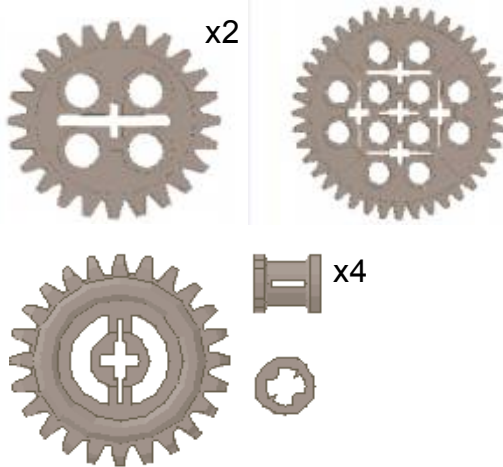


9

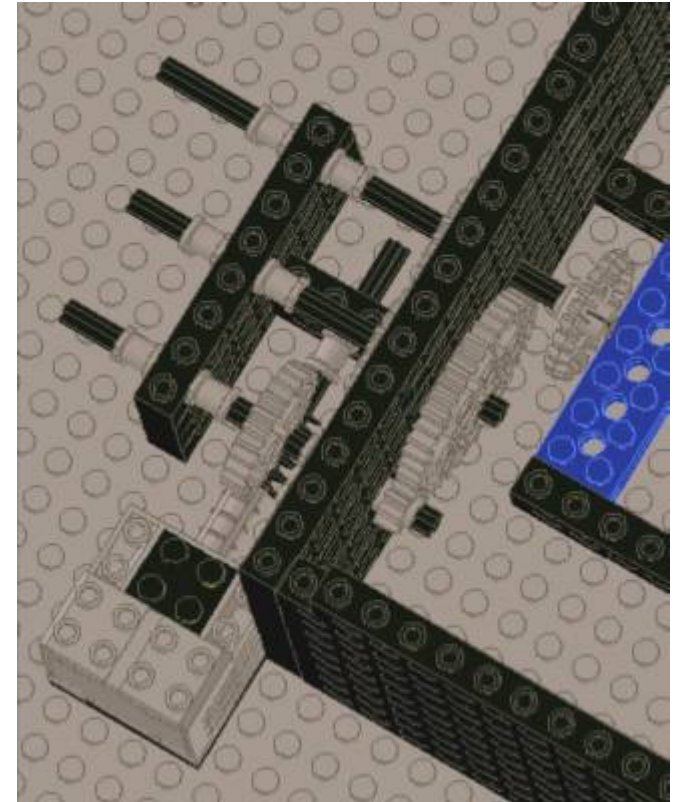
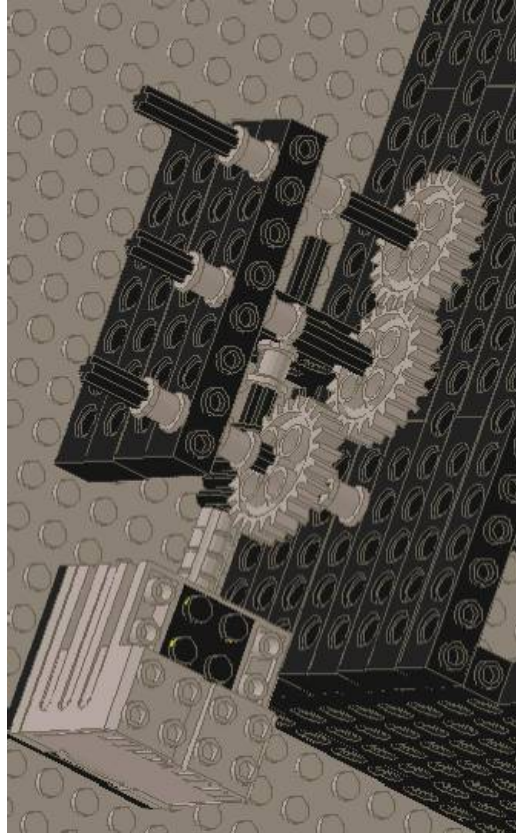


Building a Music Box

Pieces:



10



2 views

Building a Music Box

Pieces:



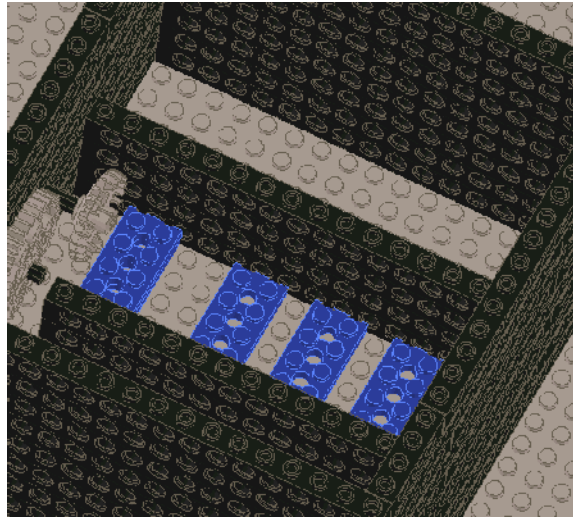
x2



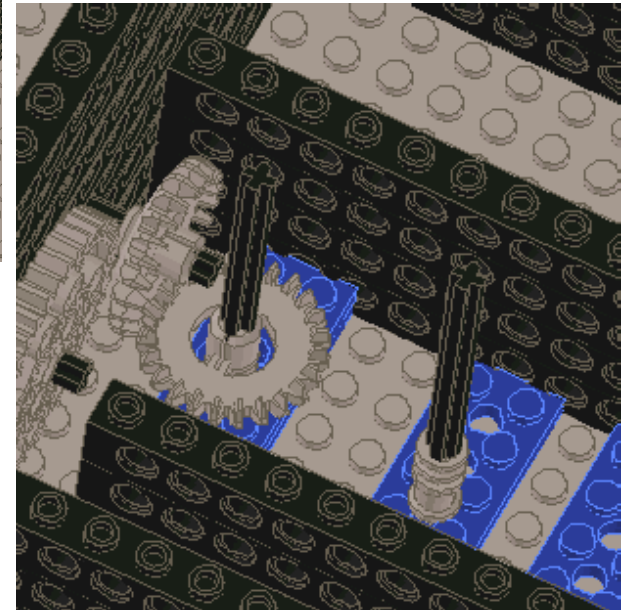
x2

x2

11

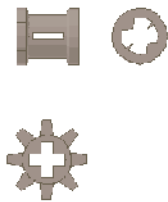
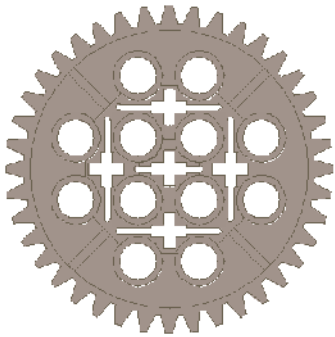


12



Building a Music Box

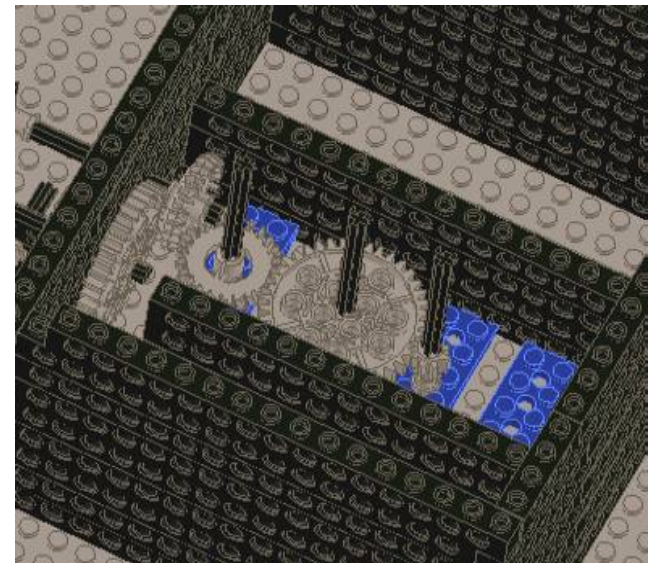
Pieces:



13

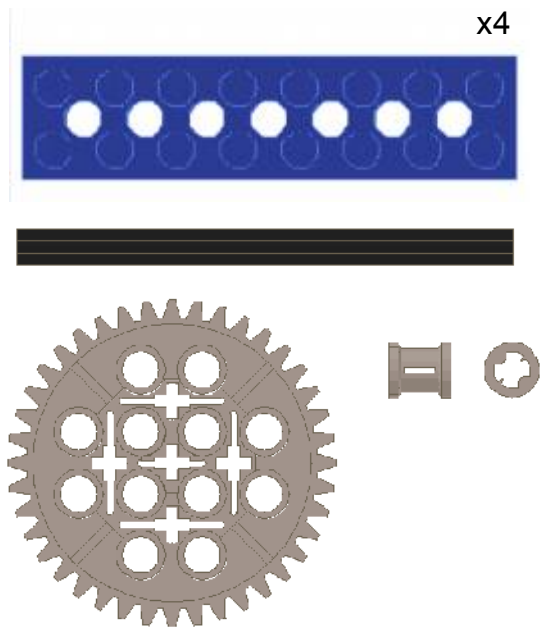


14

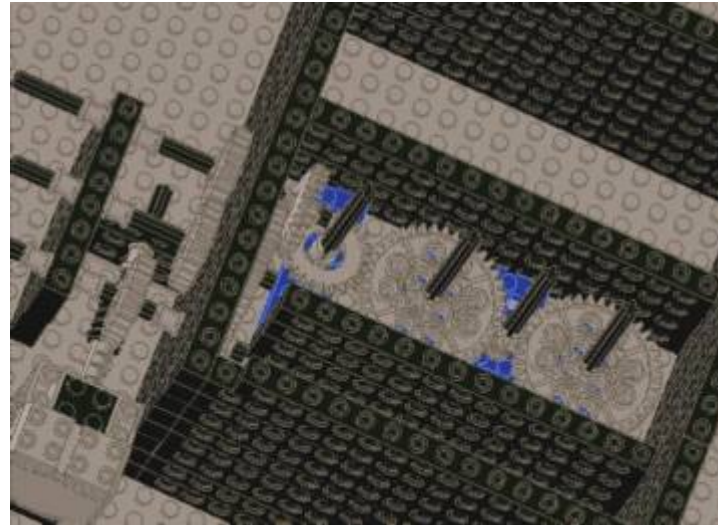


Building a Music Box

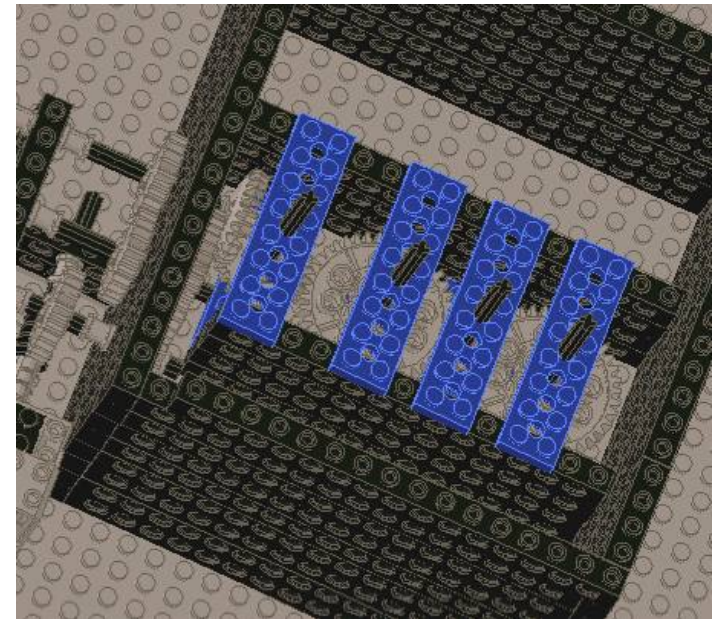
Pieces:



15



16



Building a Music Box

Pieces:

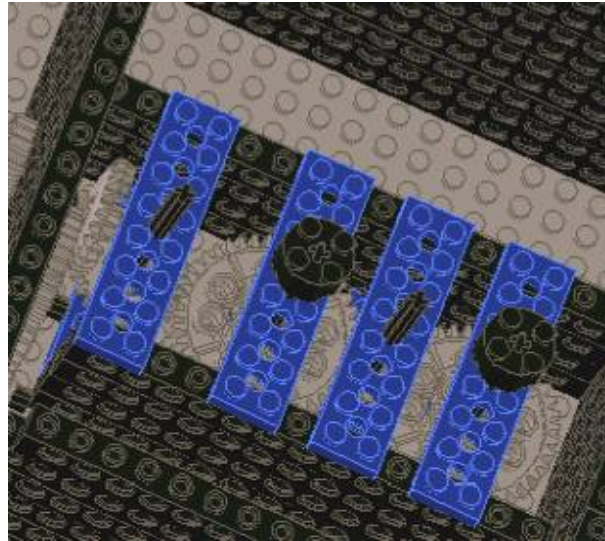


x2

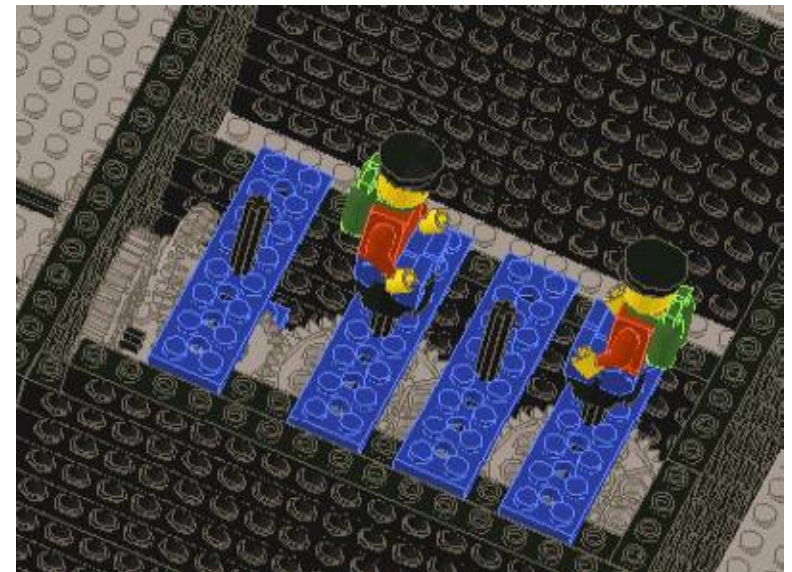


x2

17

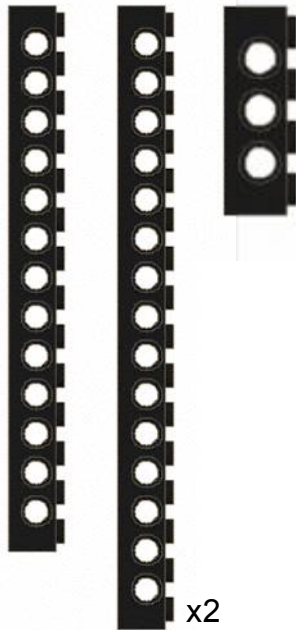


18

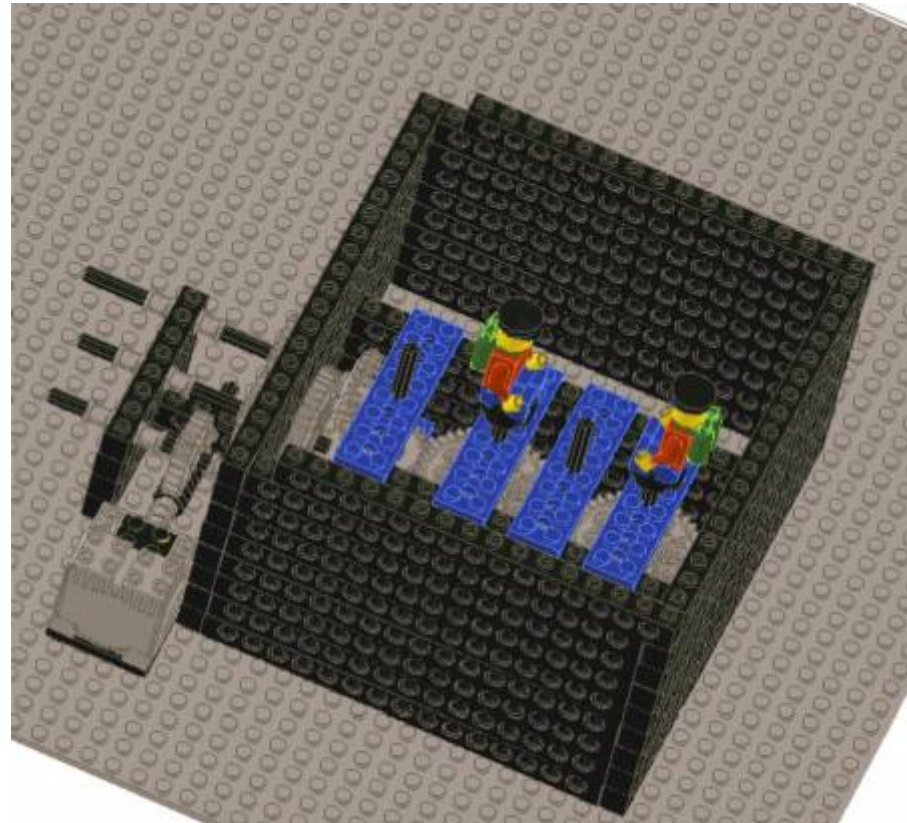


Building a Music Box

Pieces:



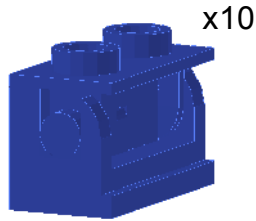
19



Note: From this point, you can build one of two tops. The first top will just open and the second top is motorized to open when the music box has been cranked.

Building a Music Box

Pieces: TOP #1



x10



x36



x22



Building a Music Box

Pieces:



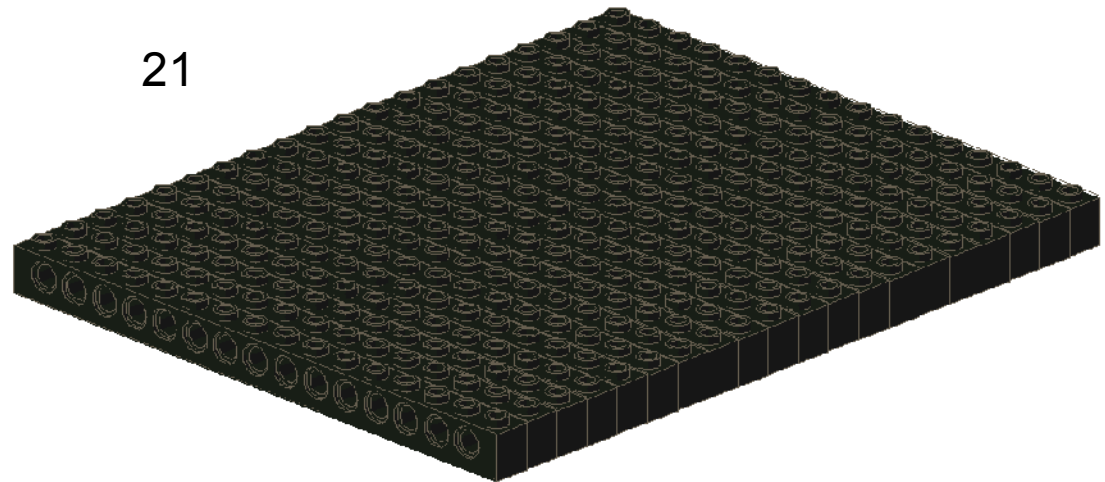
x36

x20

20

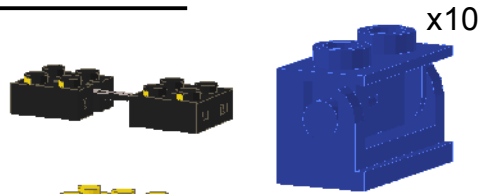


21



Building a Music Box

Pieces:



22

