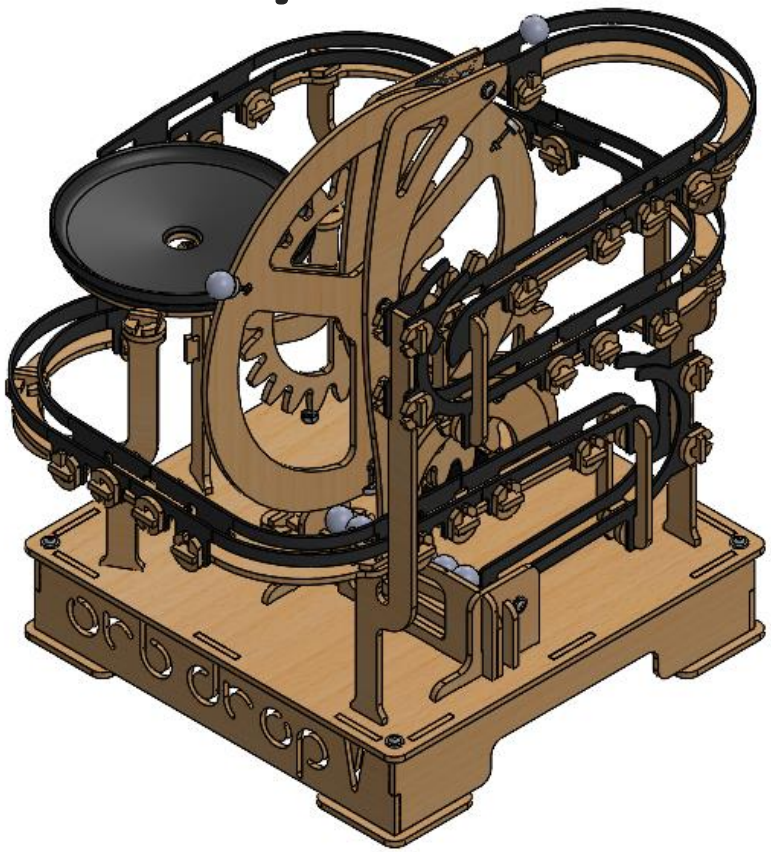
Orb Drop 5
Assembly Instructions



BY SPINPAL

Orb Drop 5 | Wood/Plastic	
Component	**Qty.**
Auto | A1 - A9	9
Base | B1-B6 (4x B6)	9
Curves | C1-C6 (4x C2, C5b)	7
Gears & Wheel | G1, G1b, G2, W1	4
Rails | R1-R7 (a/b all)	14
Rail Connectors (3x RC, 2x RCb)	5
Supports | S1-S5 (S1, S2, S4, S5, S5b, S5c)	6
Twists (~30 extra)	120

LED Light Kit (Add-On)	
Component	**Qty.**
RGB LED Strip	2
Male to Male Jumper Wire, 11.8"	2

Power Adapter Kit (Add-On)	
Component	**Qty.**
USB 2.0 Male to DC 5.5x2.1mm Jack	1
DC Power Jack Adapter Connector	1

Orb Drop Stout (Add-On)	
Component	**Qty.**
Wood Main Plate	2
Wood Top Plate	2
Bearing	1
3/8" #2 Wood Screw	8
1/2" Steel Balls	8
Aluminum Standoff #8-32 x 5/16	1
#8-32 x 0.75" Threaded Stud	1
Black Thumb Nut #8-32	2

Orb Drop 5 | Hardware	
Component	**Qty.**
Wood Sheets – 1, 2, 3, 4	4
Plastic Sheets – 5	1
1/2" Steel Balls	5
2" #4-40 Screw	4
1-1/4” #4-40 Screw	2
1" #4-40 Screw	4
3/8" #4-40 Screw	2
1/4” #2 Wood Screw	9
#4-40 Lock Nut	16
#4 Washer	22
#4-40 T-Nut	2
Magnet w/ Countersink Hole	3
1/2” #2-56 Flat Head Screw	3
#2-56 Square Nut	3
Spacer (1/4" OD, 1/8" L, #4)	3
Spacer (3/16" OD, 7/16" L, #4)	3
GM3 - Gear Motor 3 - 90 degree	1
Rocker Switch	1
3xAA Battery Holder	1
Male to Male Jumper Wire, 3.9"	1
Spade Wire Connector	2
Alligator Clips	2
Motor Gear 9T	1
Flat Funnel	1
1/16" Hex L-Key	1
Nail File	1

Leveling Kit (Add-On)	
Component	**Qty.**
2-1/4" #4-40 Screw	4
Round Base Weld Nut #4-40	4
Rubber Bumper	4
Bubble Level	1

Step 1 - Base

Prior to assembly, punch out all wood/plastic pieces on all sheets and separate into groups of like components

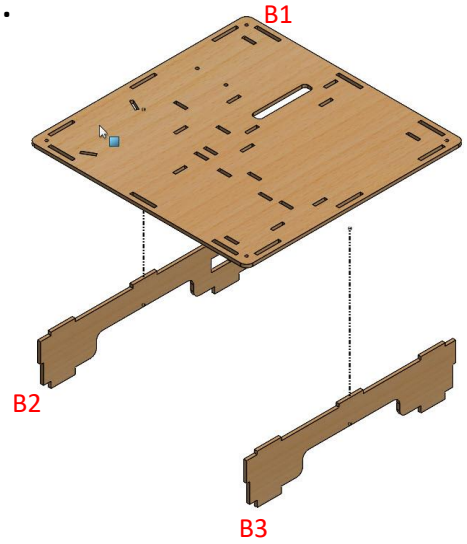
A. Insert Base Left/Right, B2 and B3 into Base Top B1

B. Insert Base Front/Back, B4 and B5 into Base Top B1

C. Insert (4) Base Corners B6 on Base

D. Secure corners using (4) 2” #4 Screws, (4) Washers, and (4) Lock Nuts

A.



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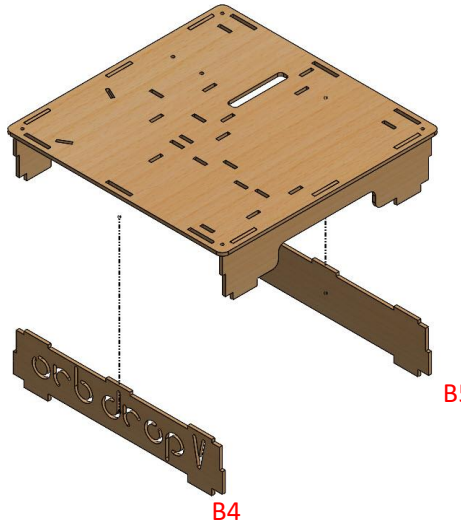

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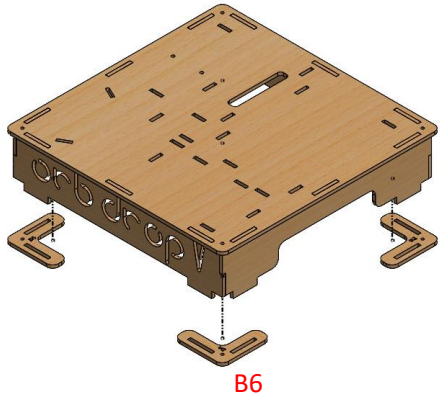

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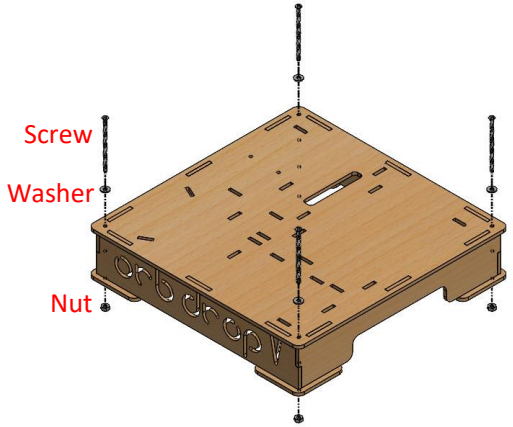


Step 1 - Base

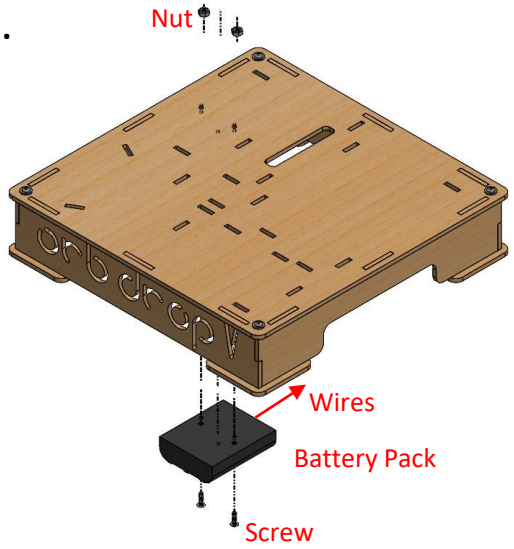
E. Attach Battery Pack into Base using (2) 3/8” #4 Screws, and (2) Lock Nuts. Ensure the wires are exiting towards the back.

F. Slide the two Motor Mounts A9 and A8 together by aligning the grooves.

G. Attach Motor to A8 using (2) 1” #4 Screws and (2) Lock Nuts.

H. Motor attached to mount.

E.



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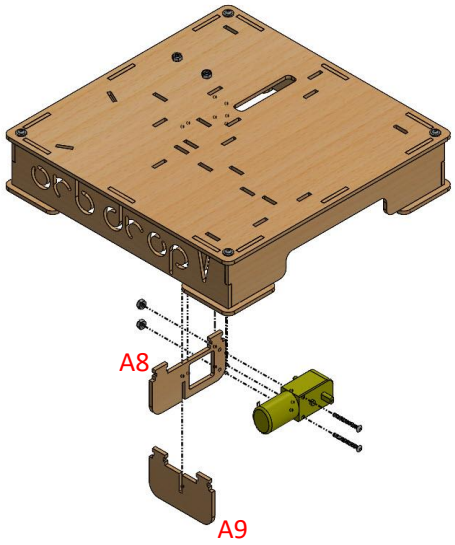

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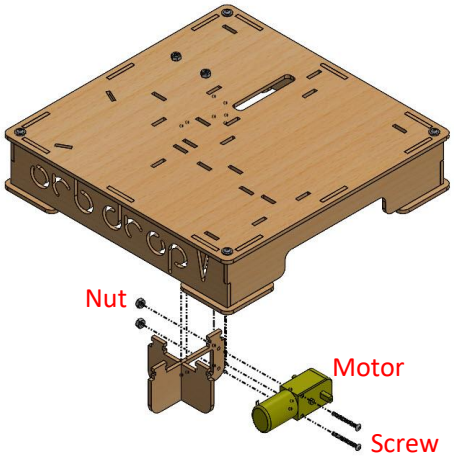

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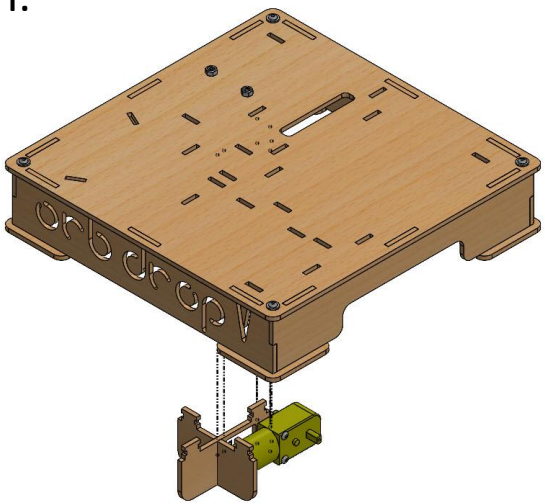


Step 1 - Base

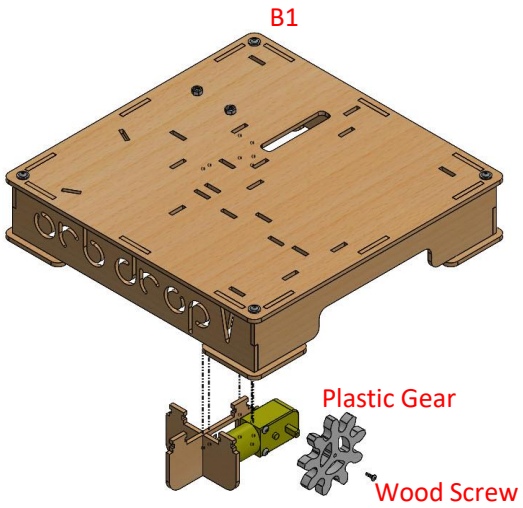
I. Attach Plastic Gear to Motor using (1) 1/4” #2 Wood Screw.

J. Insert Motor Assembly into Base. Align A8 and A9 labels with labels in the Base.

K. Add (4) Twist Locks to Posts. See next page for more details on how Twist Locks attach.

L. Motor Assembly attached to Base.

I.



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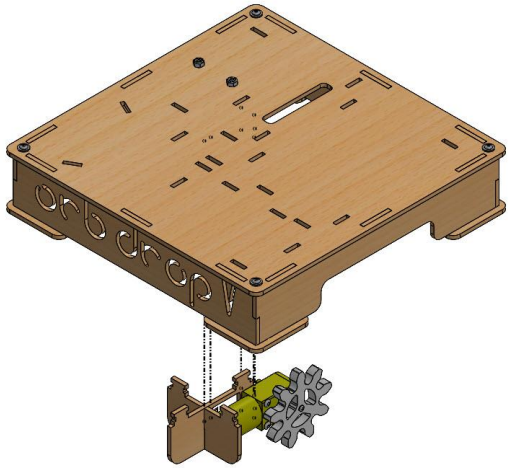


K.

L.

Step 1 - Base

M. Standard Twist Lock Post.

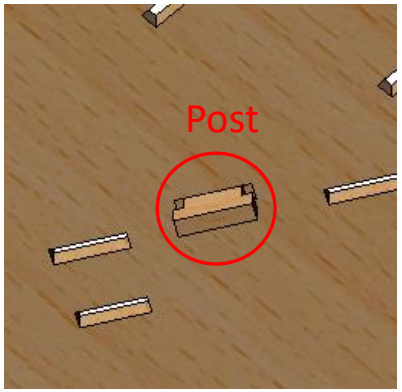
N. Slide a Twist Lock onto the Post from the side.

O. The Twist Lock should be completely seated against the Post

P. Rotate the Twist Lock 90 degrees to Lock it in place. A Twist will only rotate in one direction so review the geometry to determine which direction to rotate.

Due to the large quantity of Twist Locks most of them will not be shown throughout the instructions, but the Twist Lock process will be used on almost every step moving forward.

M.



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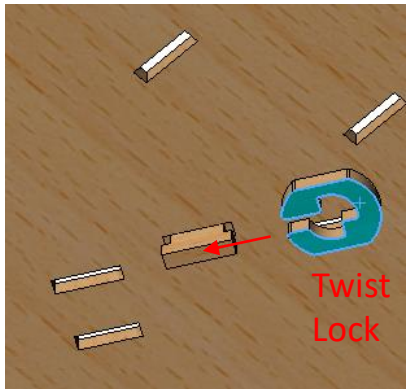

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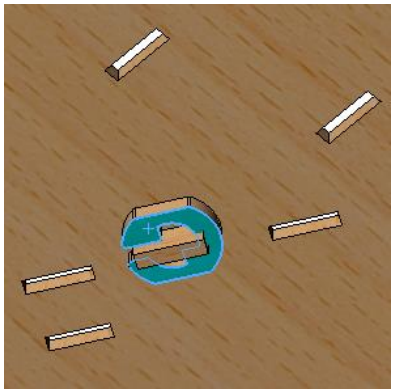

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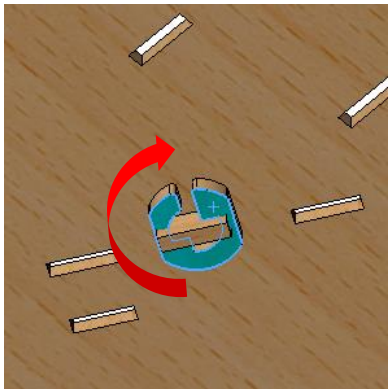


Step 1 - Base

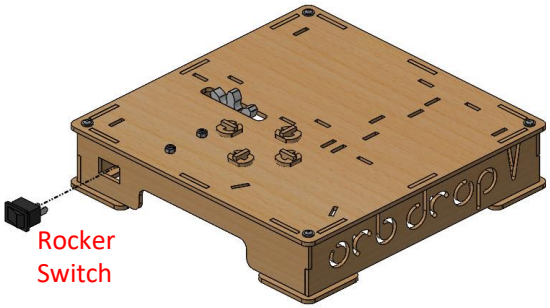
Q. Press Rocker Switch into left side opening in the Base.

R. Crimp Spade Connector to end of Black Wire from Battery Pack. Then, slide on to Rocker Switch Post #1. Next, Crimp Spade Connector to one end of White Wire (the supplied loose wire could be many colors). Then, slide on to Rocker Switch Post #2.

S. Crimp Alligator Clip to other end of White. Then, clip it on to bottom Motor post #3. Next, Crimp Alligator Clip to end of Red Wire from Battery Pack. Then, clip it on to upper Motor post #4.

T. Motor Wiring Complete. If Motor is not rotating in the correct direction switch the posts the (2) Alligator Clips are clipped to on Motor.

Q.



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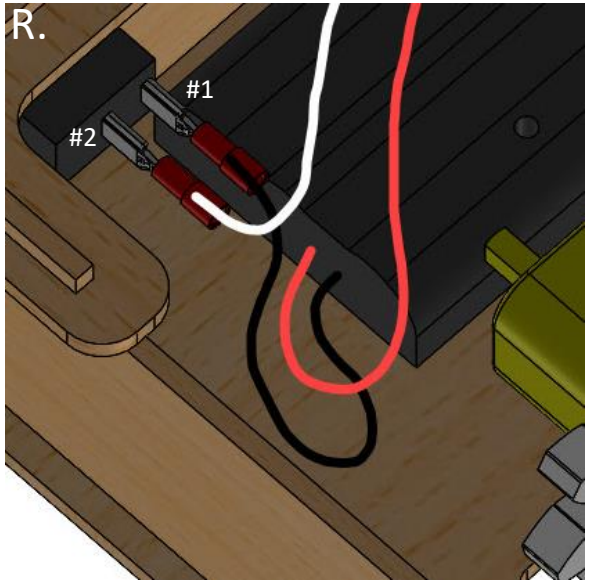

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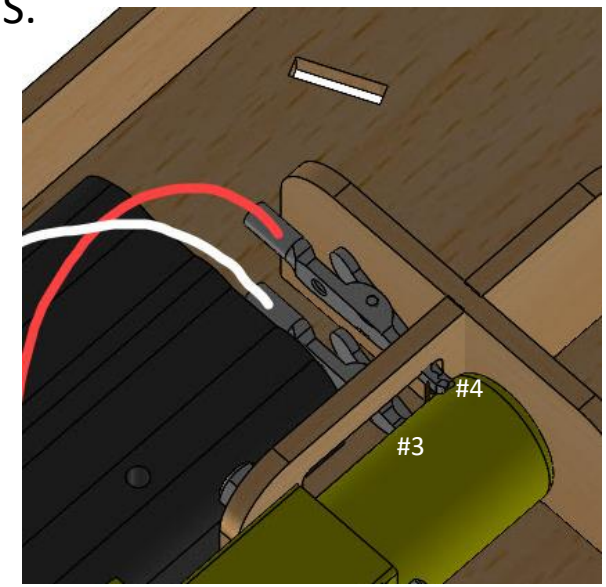

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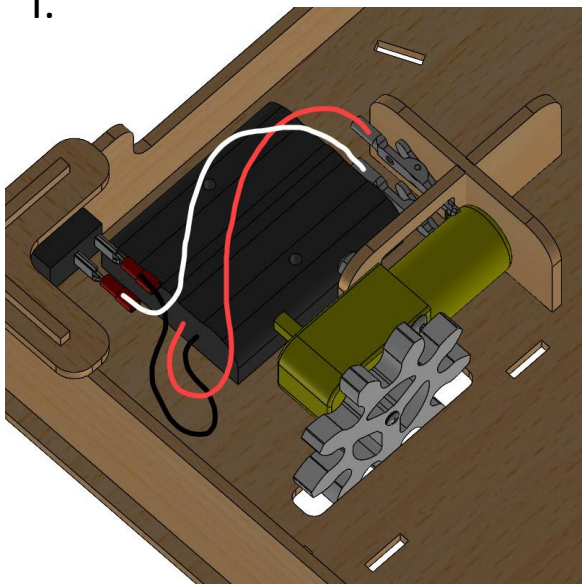


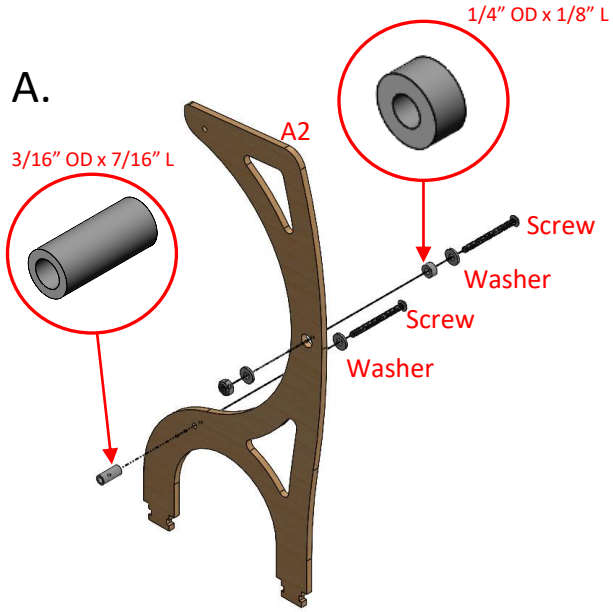
Step 2 - Lift

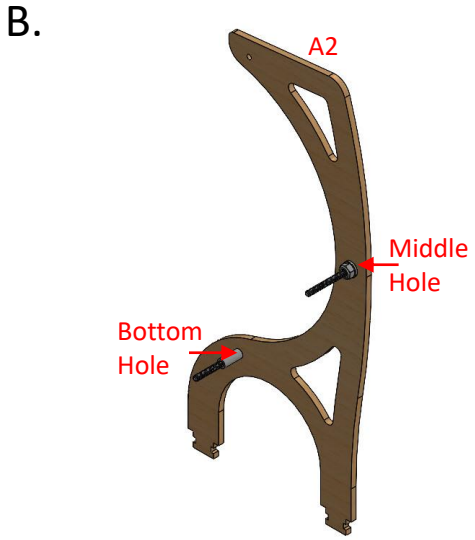
A. Add a 1-1/4” #4 Screw, Washer, and 1/4” OD x 1/8” L Spacer to Middle Hole of A2, Secure with another Washer and #4 Nut. Once tightened the Screw should be able to rotate freely.

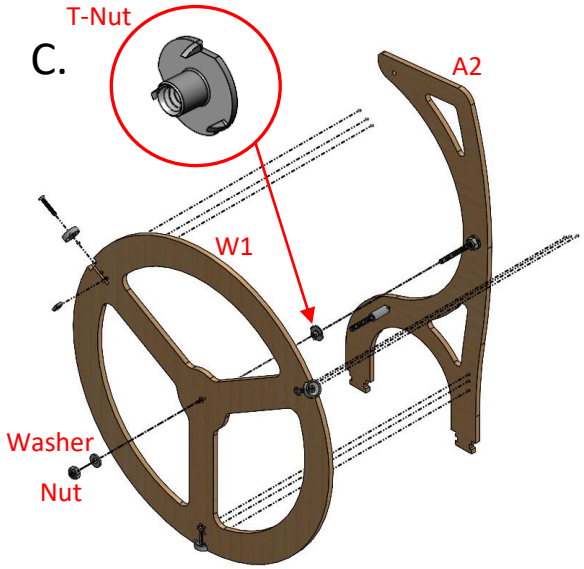
B. Add a 1-1/4” #4 Screw, Washer, and 3/16” OD x 7/16” L Spacer to Bottom Hole of A2. This will be secured in later steps.

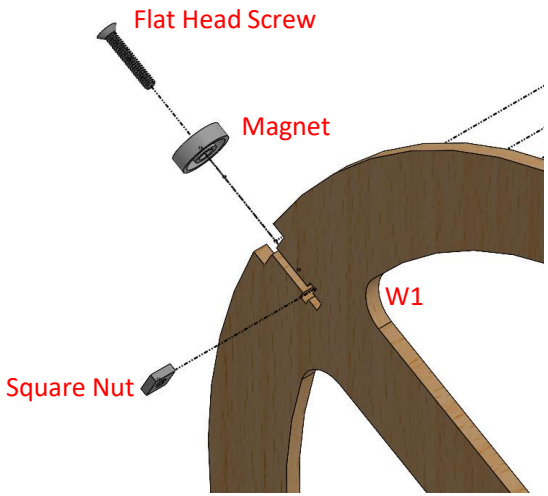
C. Press T-Nut into backside of Wheel W1, ensure it digs into the wood and sits flush.

D. Attach Magnet to Wheel W1 using a 1/2” #2 Flat Head Screw and Square Nut inserted from the side.









Step 2 - Lift

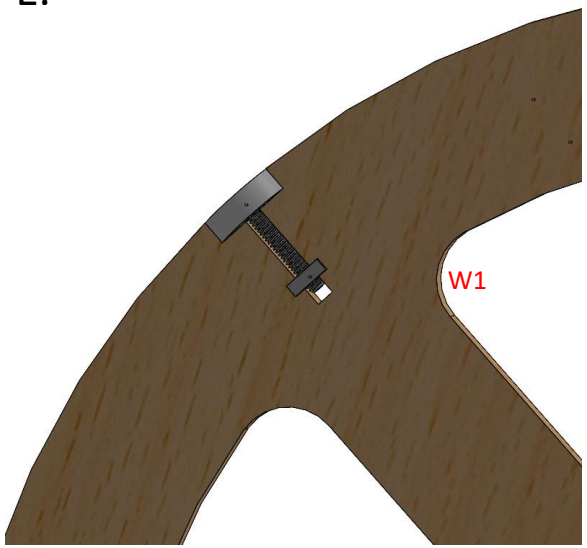
E. Magnet attached to W1, repeat twice on the other locations on Wheel.

F. Thread Wheel W1 to A2 Middle Screw and secure with Washer and #4 Nut.

G. Add a Washer and 1/4” OD x 1/8” L Spacer to Middle Screw of A2 where W1 is already attached.

H. Secure A1 to both the A2 Middle Screw and Bottom Screw with Washer and #4 Nut. Once tightened the Wheel should be able to rotate freely.

E.



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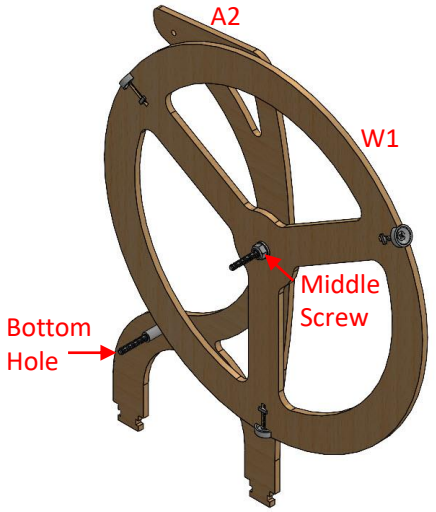

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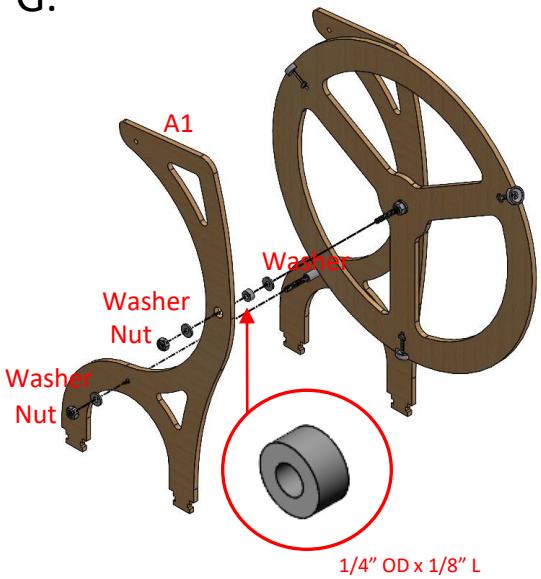

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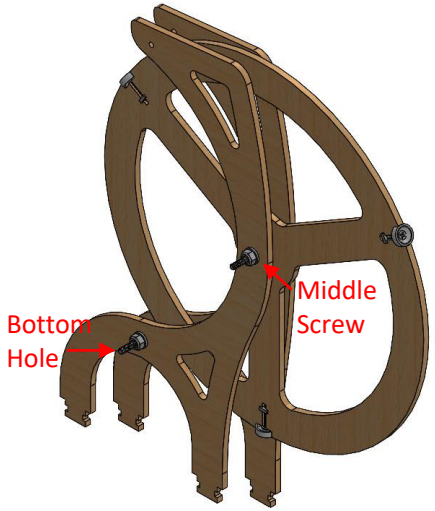


Step 2 - Lift

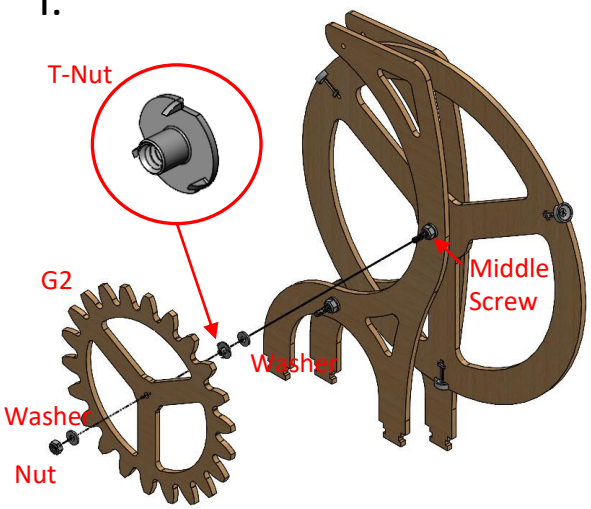
I. Press T-Nut into backside of Gear G2, ensure it digs into the wood and sits flush.

J. Add Washer to A2 Middle Screw, then thread Gear G2 to A2 Middle Screw and secure with Washer and #4 Nut. Once tightened G2 and W1 should be able to rotate freely together.

K. Attach Gear Ring G1b to Gear G1 using (5) Wood Screws.

L. Add a Washer and 1/4” OD x 1/8” L Spacer to Bottom Screw of A2. Secure Gear G1 Assembly to the A2 Bottom Screw with Washer and #4 Nut. Ensure the Gear G1 and G2 mesh when tightening.

I.



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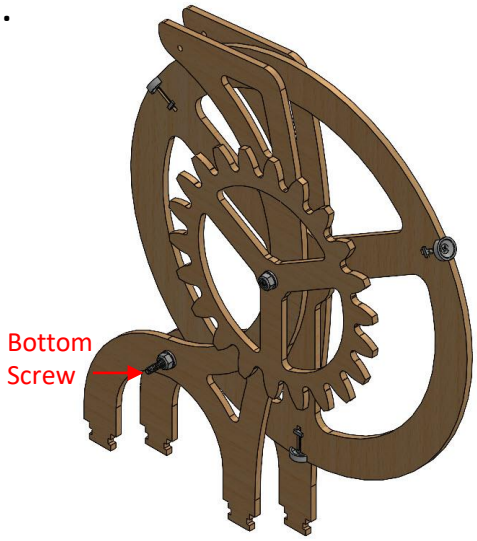

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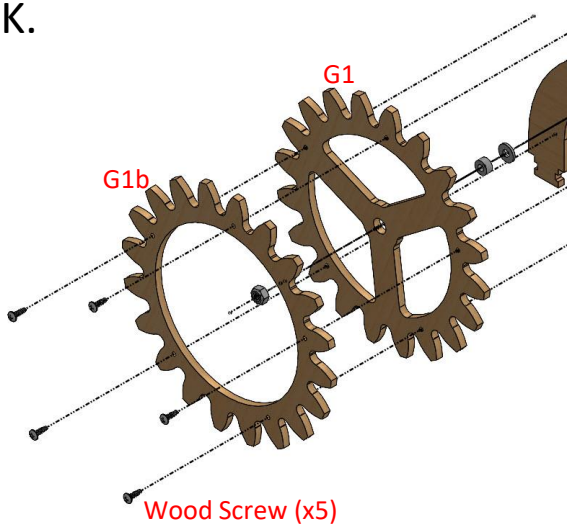

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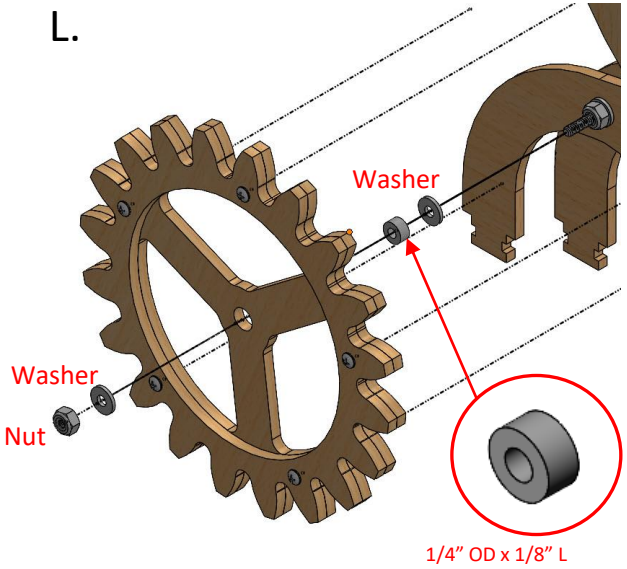


Step 2 - Lift

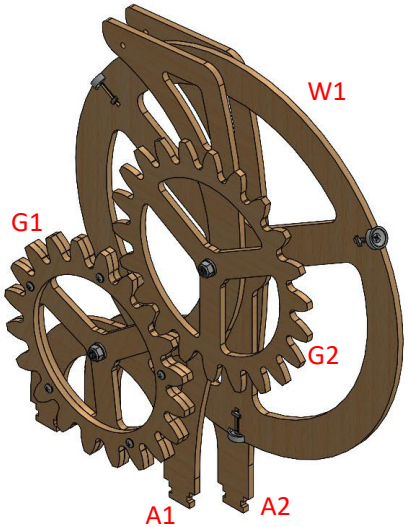
M. Once tightened G1 should be able to rotate freely and drive G2 and W1.

N. Insert Lift Assembly into Base.

O. Align A1 and A2 labels with labels in the Base.

P. Add (4) Twist Locks to underside Posts.

M.



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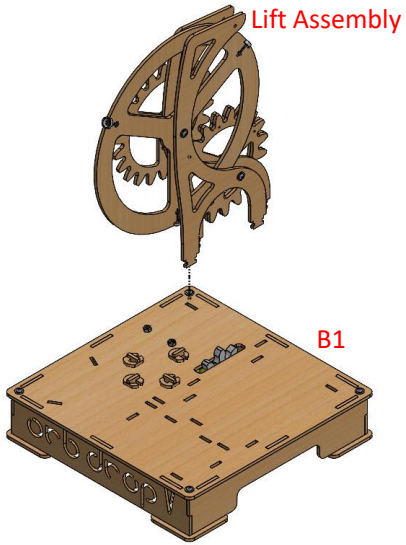

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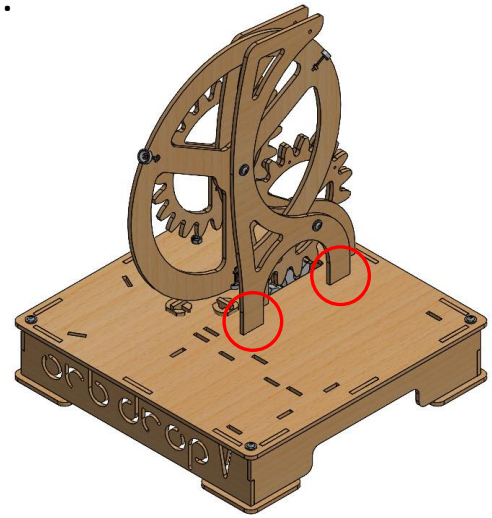

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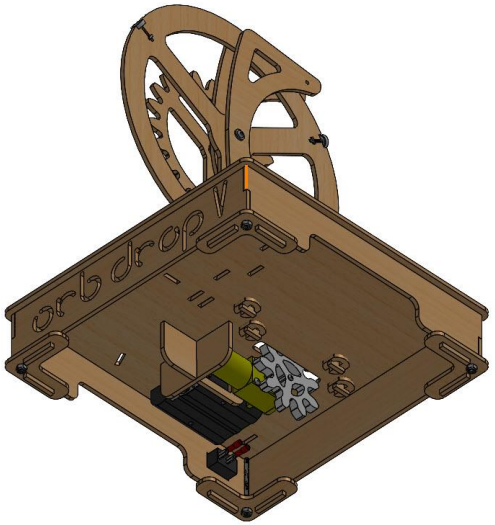


Step 3 - Track

Rail and Curve labels will always be positioned at the start of the Rail (top to bottom). The “a” rail will be longer than the corresponding “b” rail and positioned on the outside of curves. The “b” rail will be positioned on the inside of curves. The label at the bottom of the Support will align with the labels on the Base.

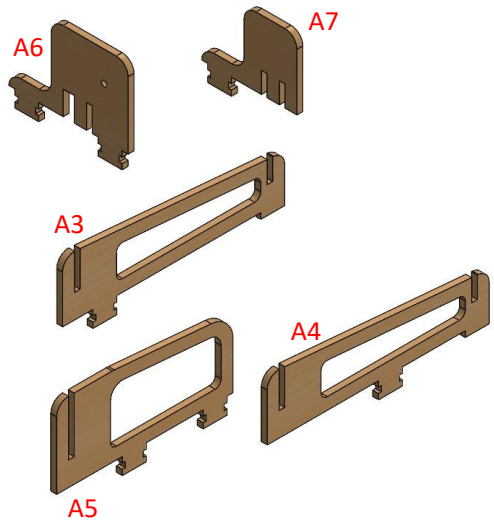
A. Position A3 and A4 next to one another. Then, slide A7 into the end grooves of A3 and A4.

B. Position A5 up against the side of A3.

C. Slide A6 into the top grooves of A5, A3, and A4.

D. Orb Hopper Assembly complete.

A.



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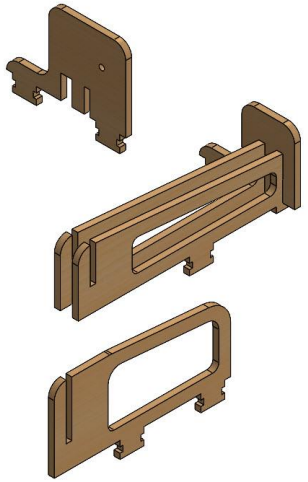

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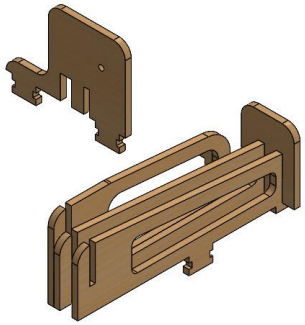

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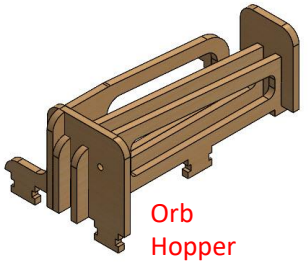


Step 3 - Track

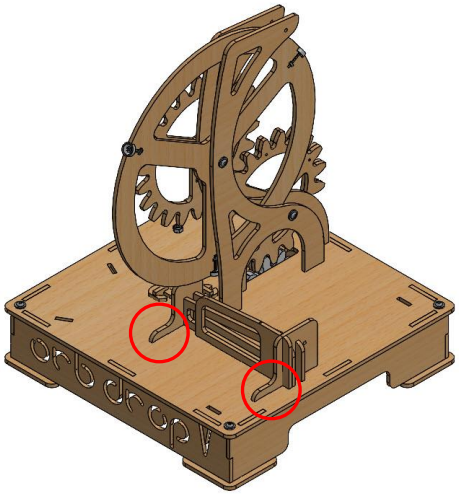
E. Insert Orb Hopper Assembly into Base. Align A3-A7 labels with labels in Base. Add (7) Twist Locks to underside Posts.

F. Attach (2) R7b Rails to RCb Rail Connector. Add (4) Twist Locks to Posts.

G. Connect both R7b and R7a Rails together using (2) C2 Curves. Add (4) Twist Locks to Posts.

H. Attach Rail 7 Assembly to Orb Hopper Assembly using a 1” #4 Screw, (2) Washers, 3/16” OD x 7/16” L Spacer and Lock Nut.

E.



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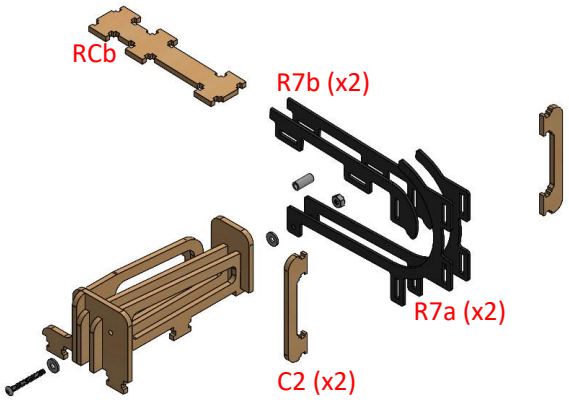

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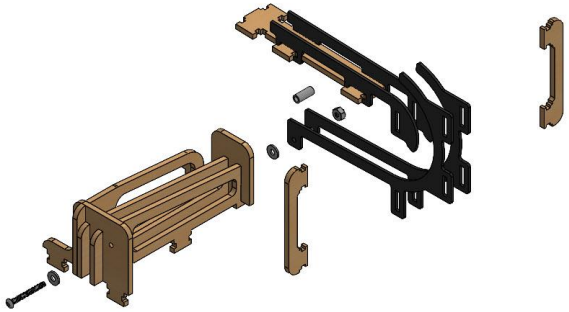

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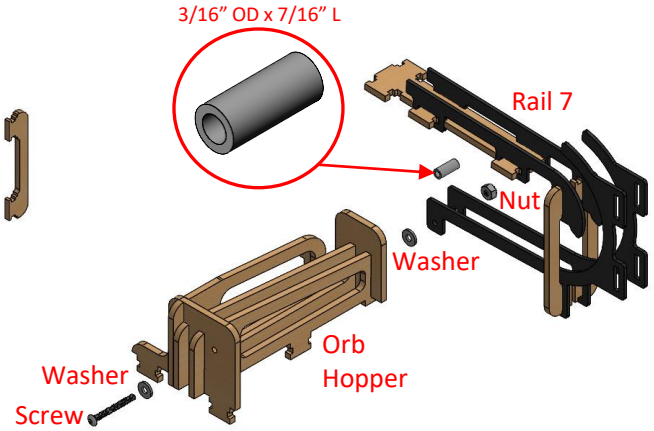


Step 3 - Track

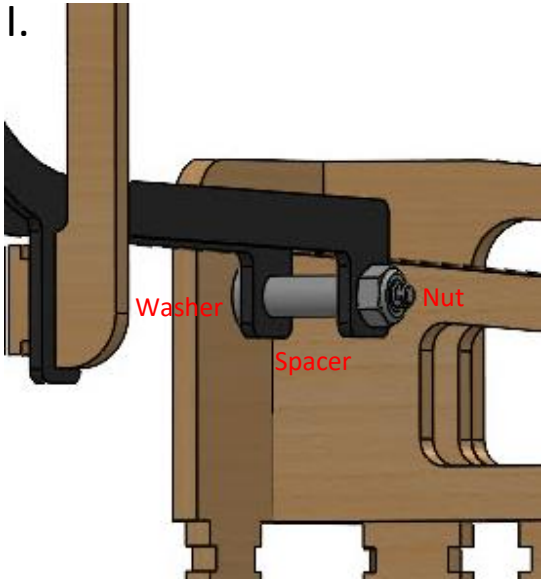
I. There should be a Washer on both sides of A6, Spacer between the R7a Rails and Lock on Nut on the outside.

J. Rail 7 Assembly attached to Orb Hopper Assembly

K. Insert Support S1 into Base by aligning the labels and attach both R7a to S1. Add (5) Twist locks to S1, (1) to underside Post.

L. Attach Curve C6 to Rail R6a and R6b. Add (4) Twist Locks to Posts.

I.



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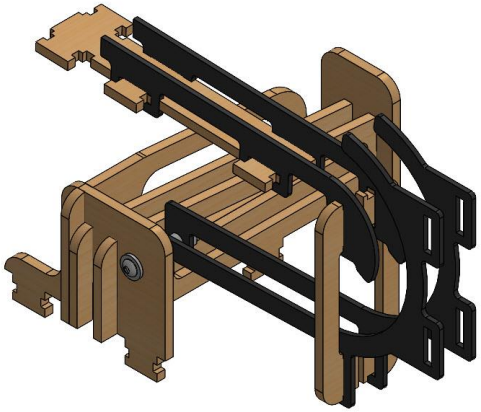
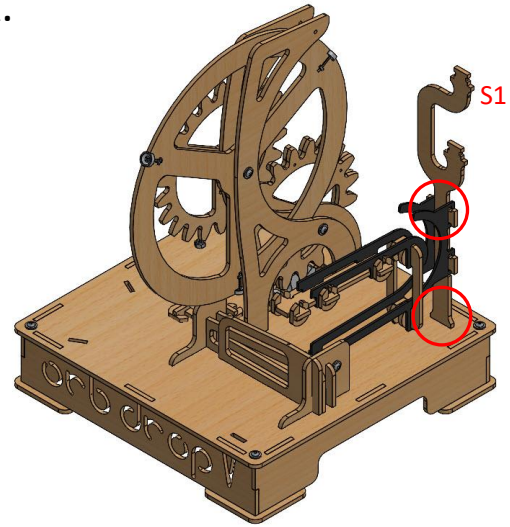


K.



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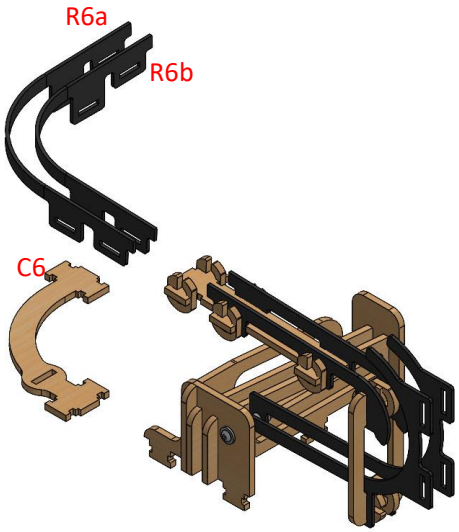


Step 3 - Track

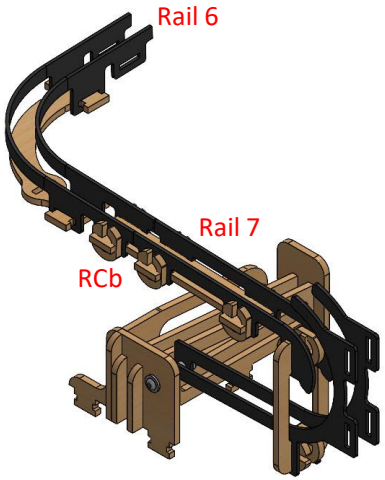
M. Connect end of Rail 6 to RCb from Rail 7. Add (2) Twist Locks to Post.

N. Insert Support S2 into Base by aligning the labels and attach C6 to S1. Add (2) Twist Locks to S2, (1) to underside Post.

O. Attach Curve C5 and Rail Connector RC to Rails R5a and R5b. Add (6) Twist Locks to Posts.

P. Connect Rail 5 Assembly to Rail 6 using the other end of Rail Connector RC. Add (2) Twist Locks to Posts.

M.



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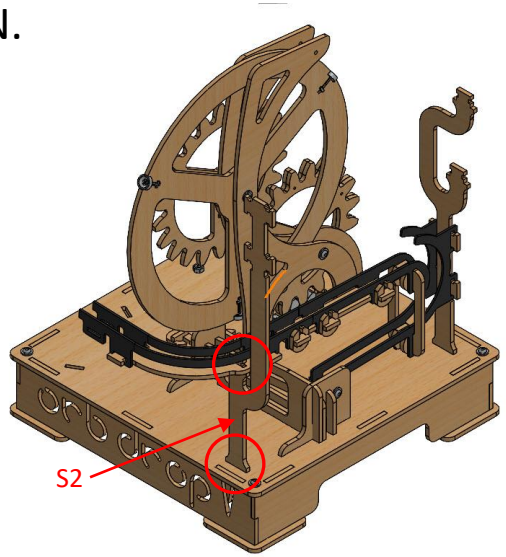

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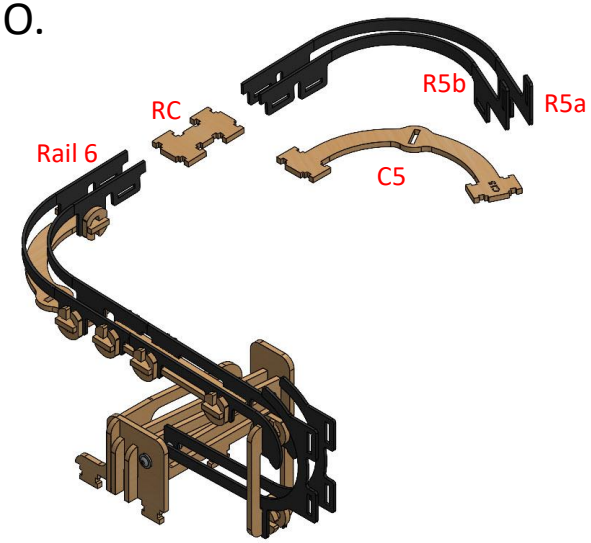

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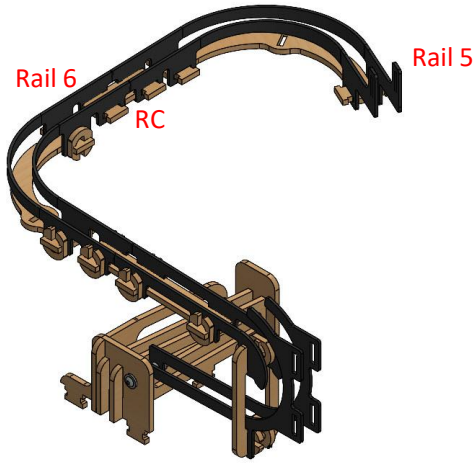


Step 3 - Track

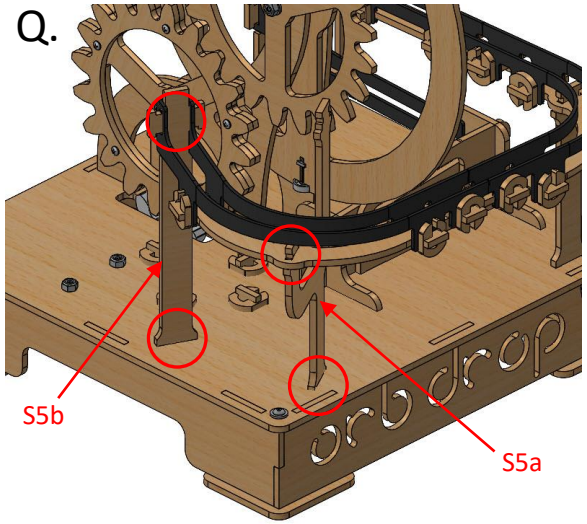
Q. Insert Supports S5a and S5b into Base by aligning the labels. Attach Curve C5 to S5a and Rails R5a/R5b to S5b.

R. Add (2) Twist Locks to S5a, (1) to underside Post. Add (3) Twist Locks to S5b, (1) to underside Post.

S. Attach Curve C5b to Funnel using (3) Wood Screws.

T. Funnel orientation over Rail 5 Assembly.

Q.



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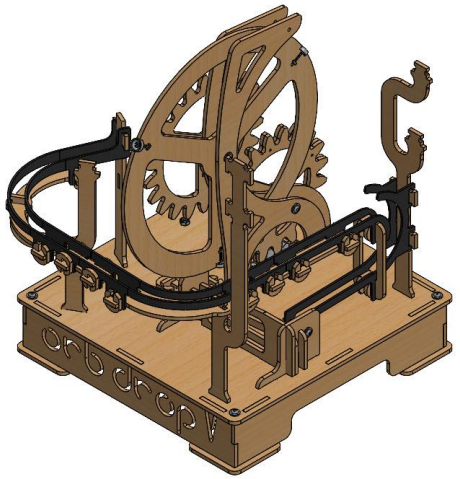
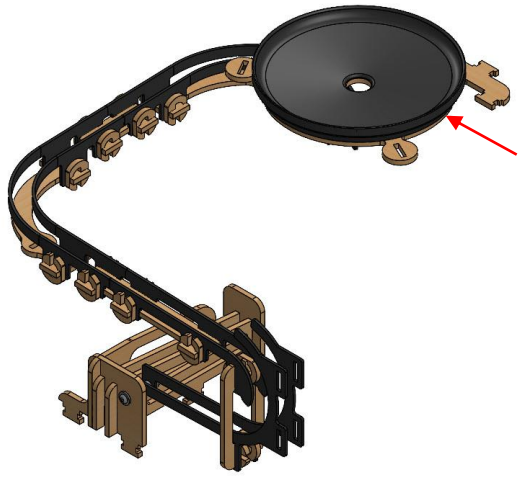


S.

T.



Step 3 - Track

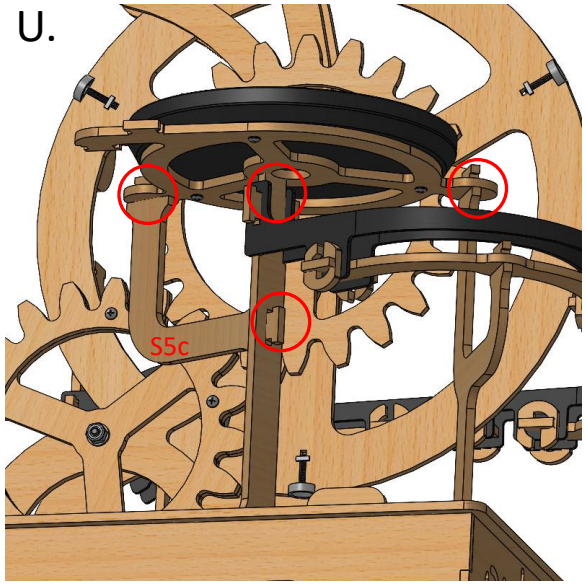
U. Attach Support S5c to middle of S5b and add Twist Lock. Drop Funnel Assembly on top off S5b by aligning the center slot. Attach Curve C5b to S5c and S5a top Posts. Add (2) Twist Locks.

V. Funnel Assembly attached to Full OD5 Assembly.

W. Attach Curve C4 to Rails R4a and R4b. Add (4) Twist Locks to Posts.

X. Connect Rail 4 Assembly to Curve C5b. Add (2) Twist Locks to Posts.

U.



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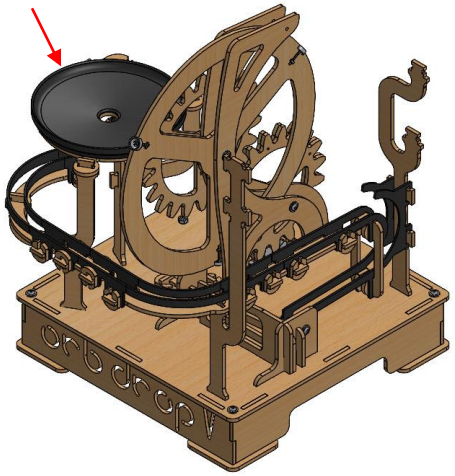

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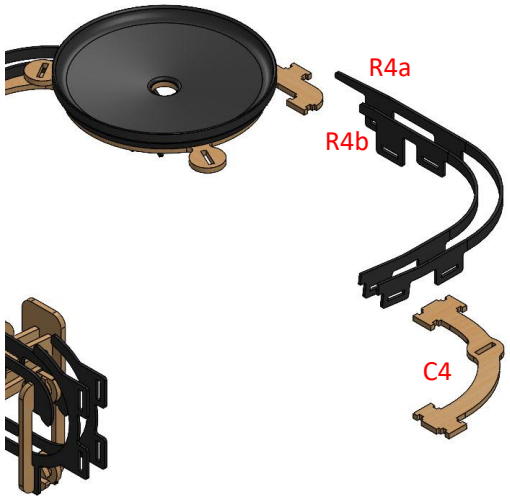

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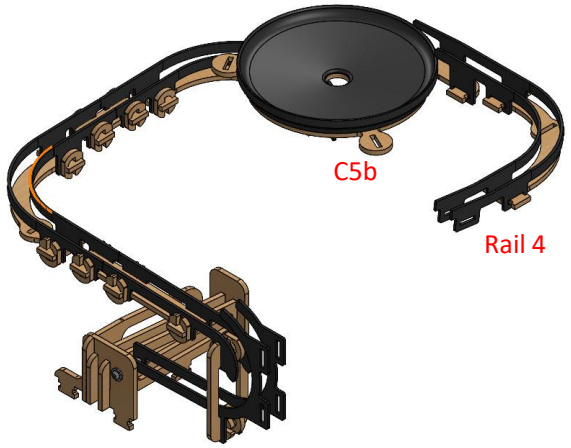


Step 3 - Track

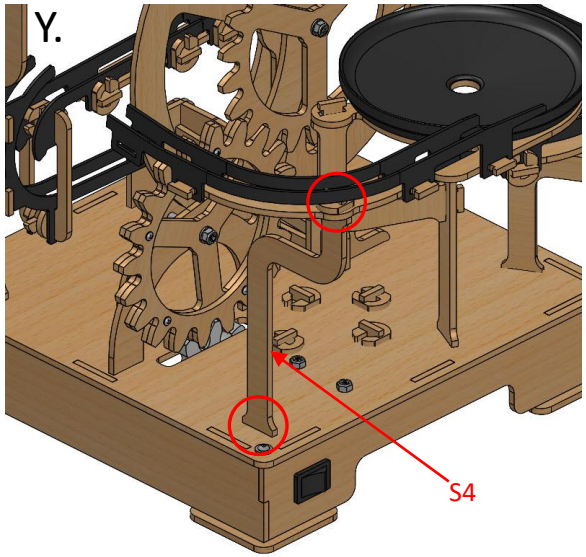
Y. Insert Support S4 into Base by aligning the labels. Attach Curve C4 to S4. Add (2) Twist Locks to S4, (1) to underside Post.

Z. Attach Curve C3 and Rail Connector RC to Rails R3a and R3b. Add (6) Twist Locks to Posts.

AA. Connect Rail 3 Assembly to Rail 4 using the other end of Rail Connector RC. Add (2) Twist Locks to Posts

BB. Attach Curve C3 to S1. Add (1) Twist Lock to Post.

Y.



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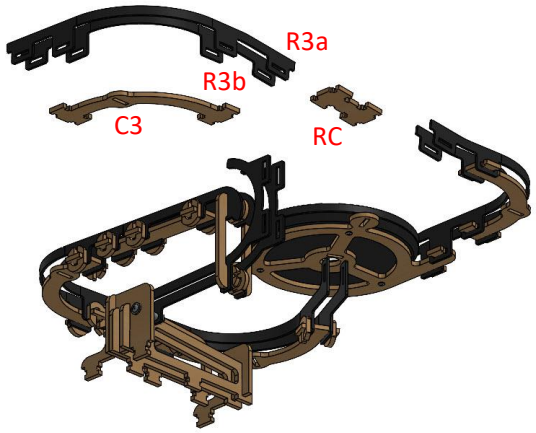

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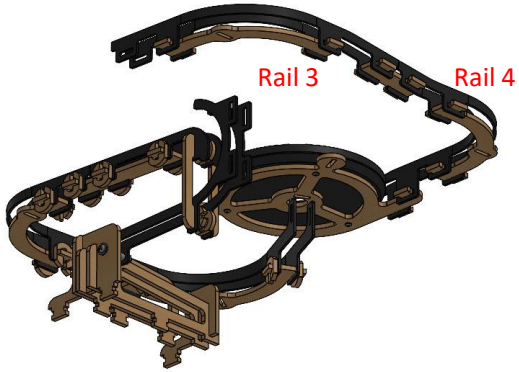

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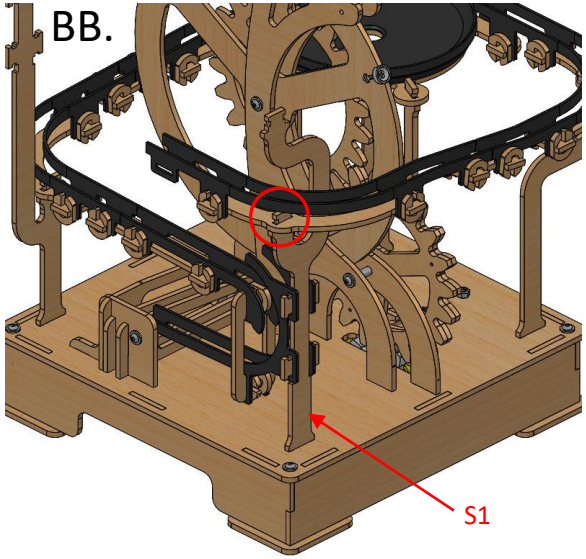


Step 3 - Track

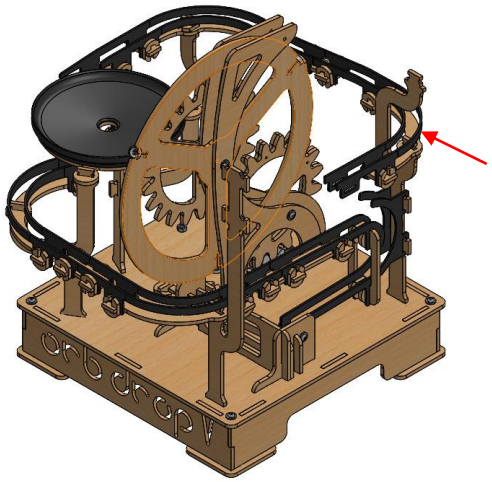
CC. Rail 3 Assembly attached to Full OD5 Assembly.

DD. Attach (2) R2b Rails to RCb Rail Connector. Add (4) Twist Locks to Posts.

EE. Connect both R2b and R2a Rails together using (2) C2 Curves. Add (4) Twist Locks to Posts. Attach both R2a to Rail Connector RC. Add (2) Twist Locks to Posts.

FF. Connect Rail 2 Assembly to Rail 3 using the other end of Rail Connector RC. Add (2) Twist Locks to Posts.

CC.



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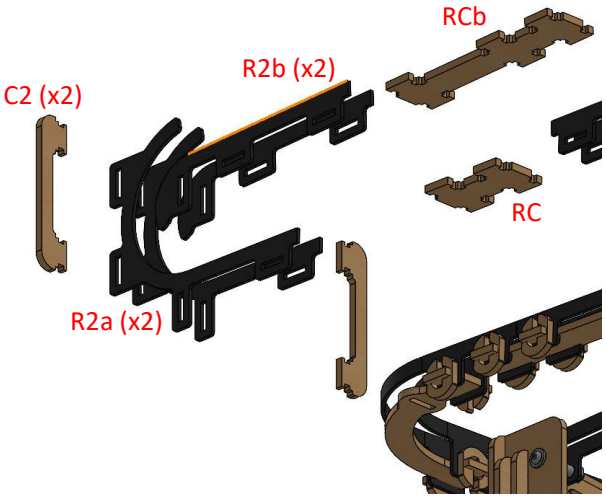

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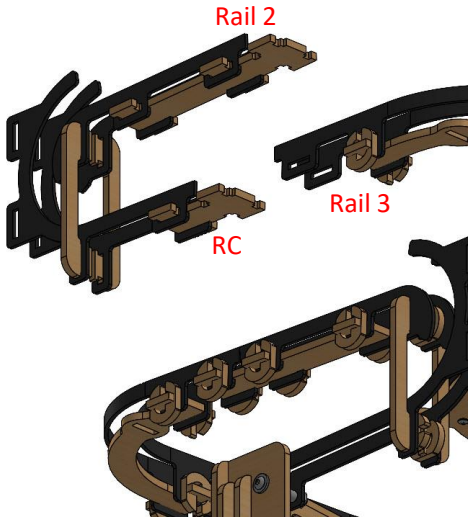

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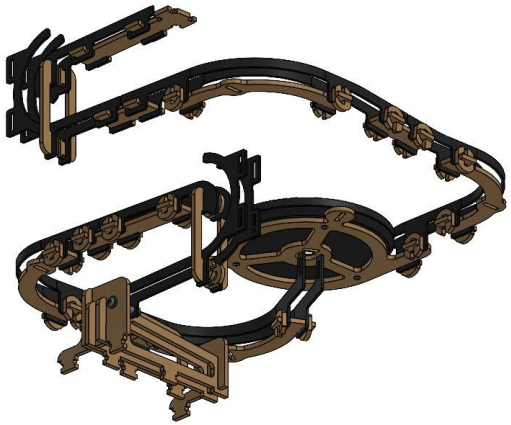


Step 3 - Track

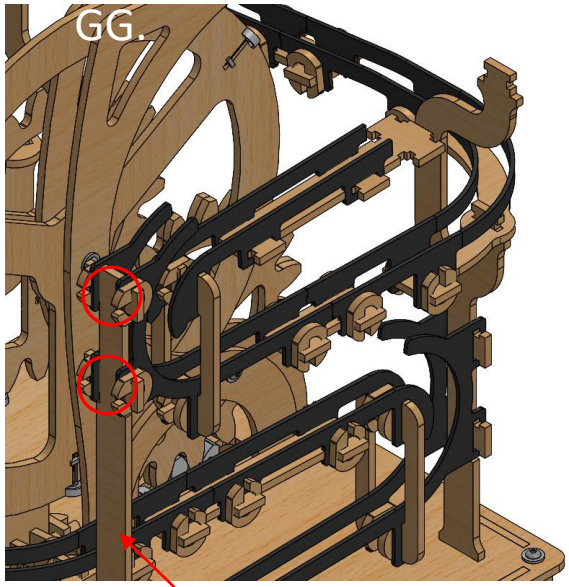
GG. Attach both R2a to S2. Add (4) Twist locks to Posts.

HH. Rail 2 Assembly attached to Full OD5 Assembly.

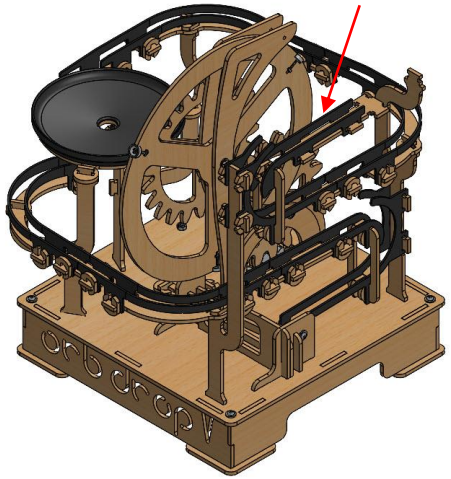
II. Attach Curve C1 to Rail R1a and R1b. Add (4) Twist Locks to Posts.

JJ. Connect end of Rail 1 to RCb from Rail 2. Add (2) Twist Locks to Post.

GG.



HH.



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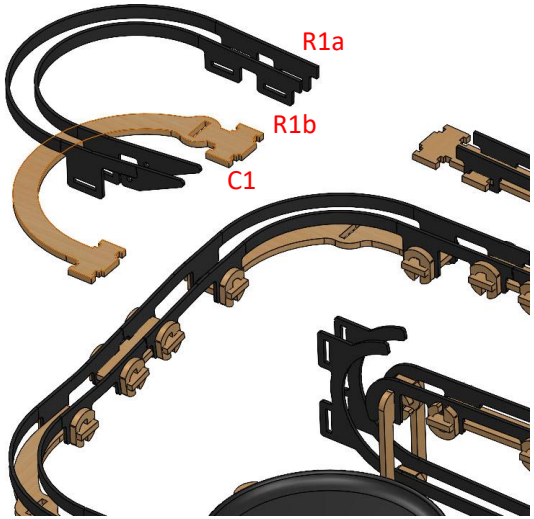

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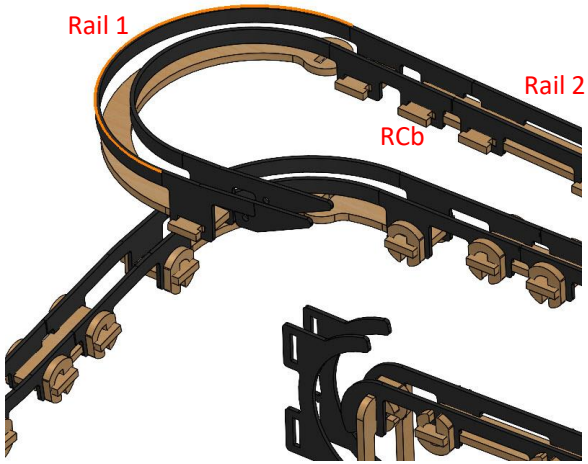


Step 3 - Track

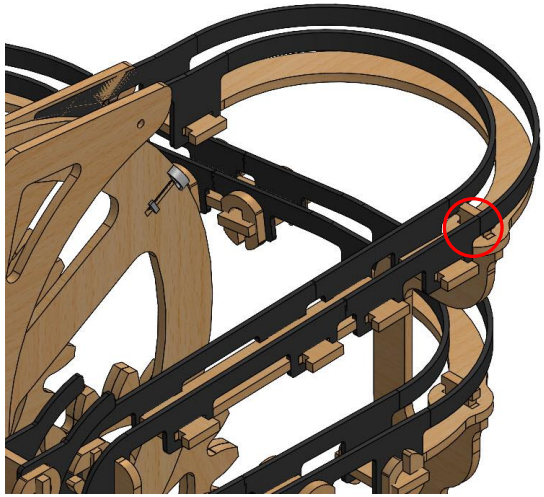
KK. Attach C1 to S1. Add (1) Twist Lock to Post.

LL. Attach Rail 1 Assembly to Lift Assembly A1 and A2 using a 1” #4 Screw, (2) Washers, 3/16” OD x 7/16” L Spacer and Lock Nut.

MM. R1a should lay inside A1 and R1b should lay inside A2 with the Spacer in between the Rails. Add a Washer to the Screw and slide through the whole assembly. Secure using a Washer and Lock Nut.

NN. Rail 1 Assembly and Lift Assembly connection.

KK.



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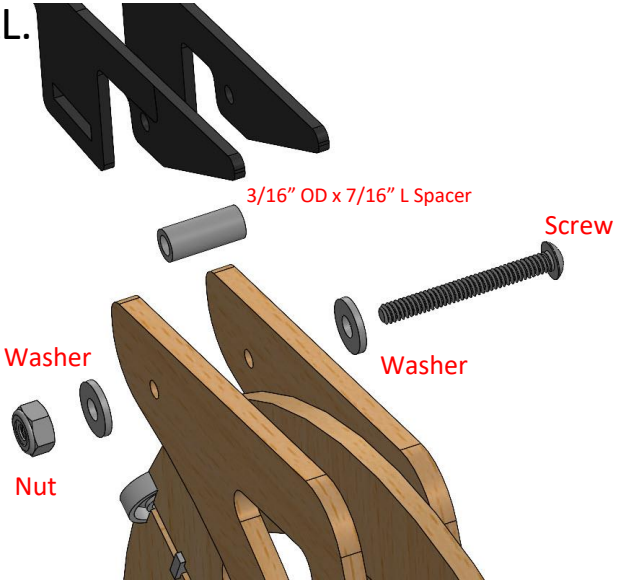

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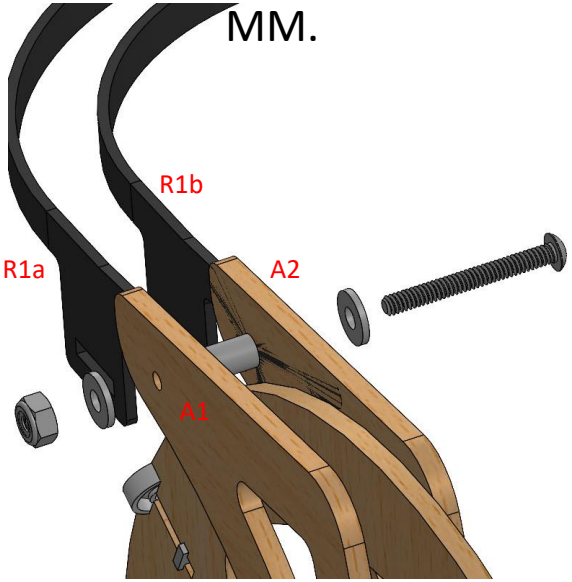

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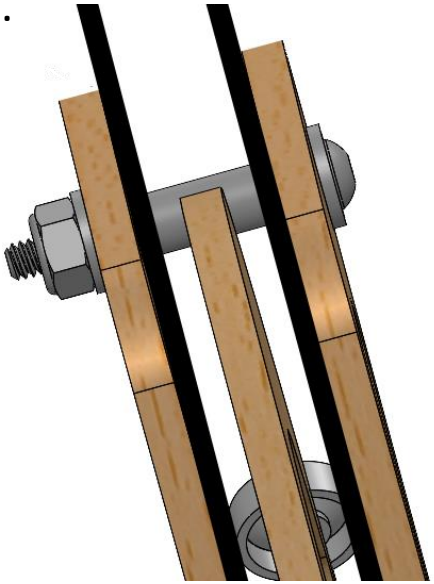
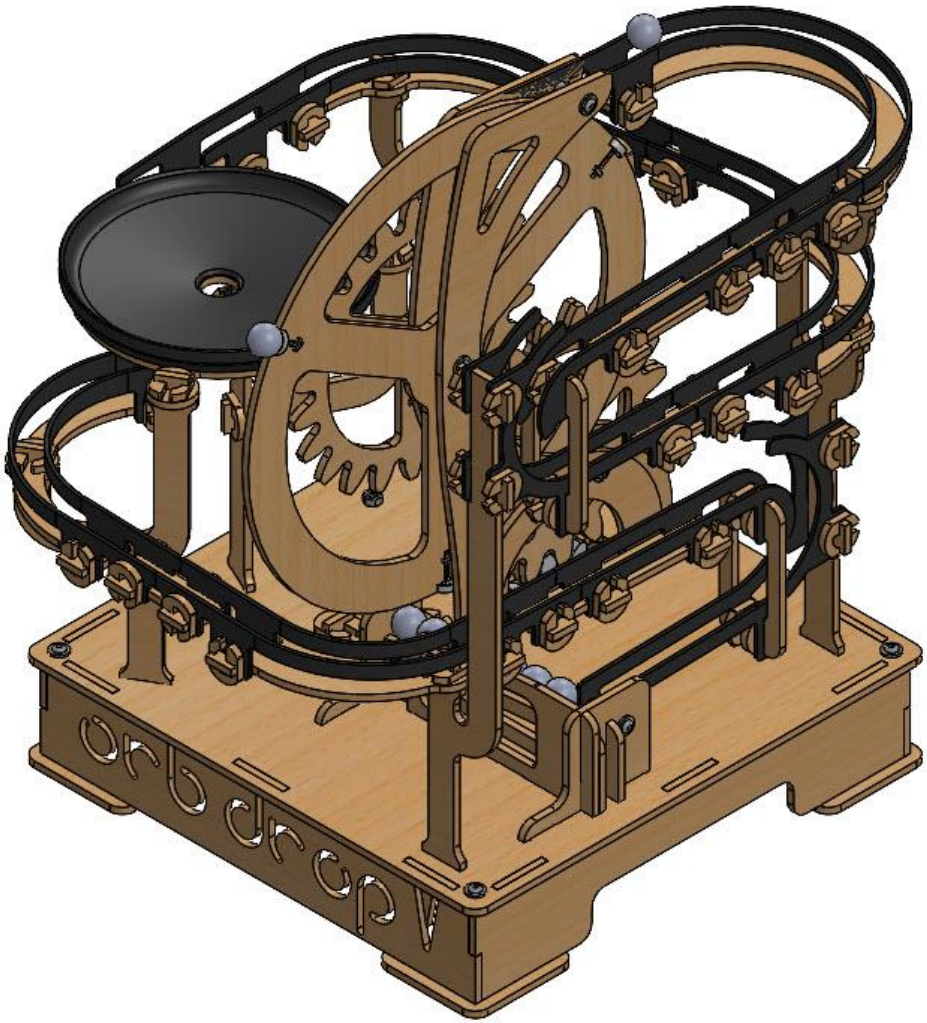


Step 3 - Track

OO. Congratulations you have completed your Orb Drop 5 Marble Run! Add some Orbs and turn on the power.

If any supports or components are not solid enough, ensure they are in the correct position. Then, add glue to connection points as needed to lock in place.

OO.



Orb Drop Stout

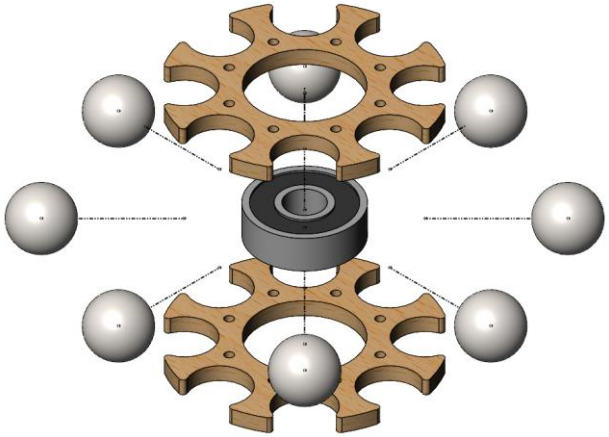
A. Assemble Orb Drop Stout

B. Press Bearing into center of Main Plate 1, Add (8) Orbs to Main Plate 1

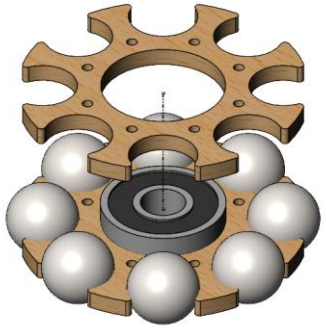
C. Press center of Main Plate 2 onto Bearing

D. Secure Top Plate 1 to Main Plate 1 using (4) 3/8” #2 Wood Screws

A.



B.



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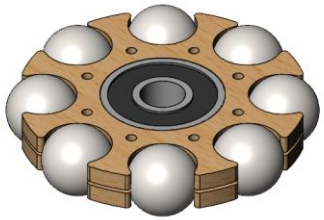
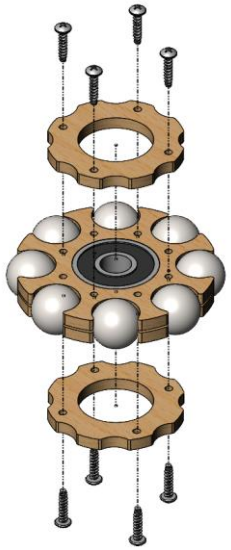


D.



Orb Drop Stout

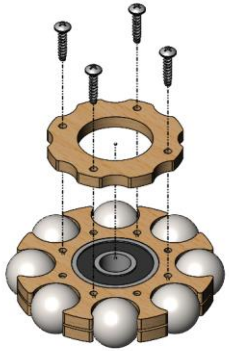
E. Top Plate 2 holes should be rotated 90 degree from Top Plate 1 holes to ensure (4) new holes are used

F. Secure Top Plate 2 to Main Plate 2 using (4) 3/8” #2 Wood Screws

G. Add (1) #8 Stud, (1) Aluminum Spacer, and (2) #8 Thumb Nuts to Bearing

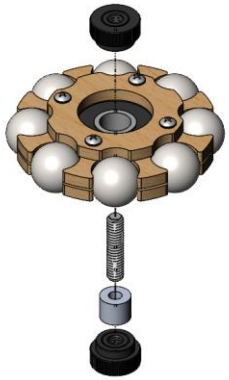
H. Congratulations your Orb Drop Stout is complete!

E.



F.

G.



H.