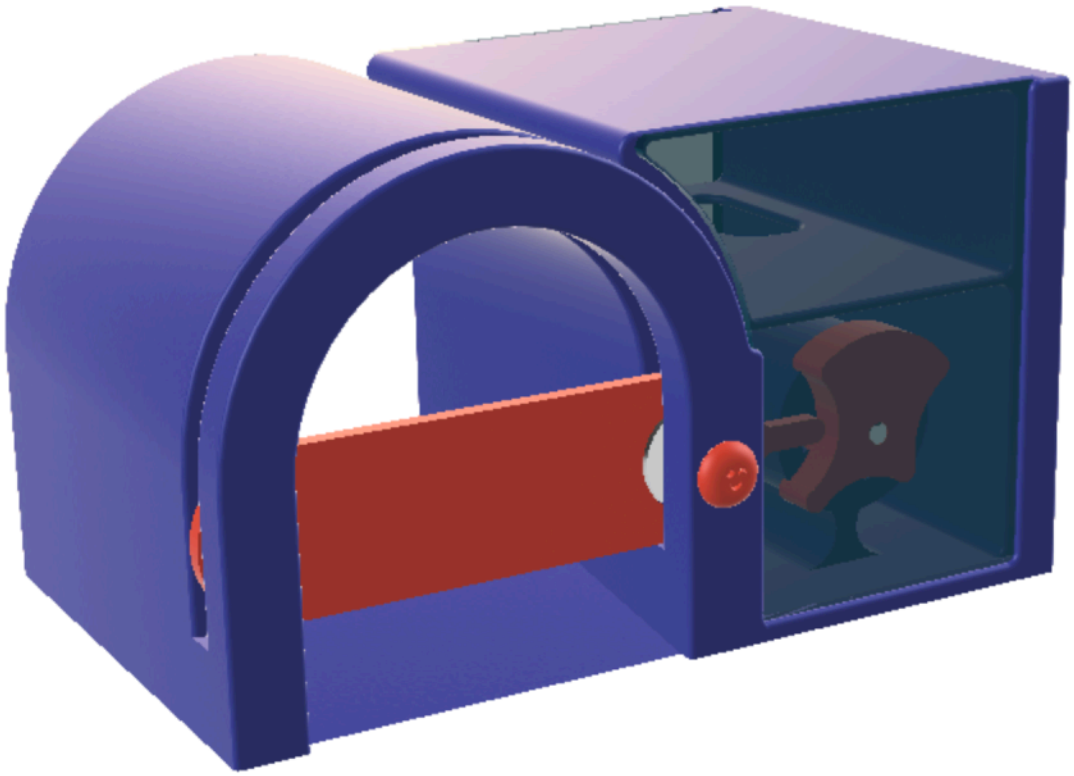
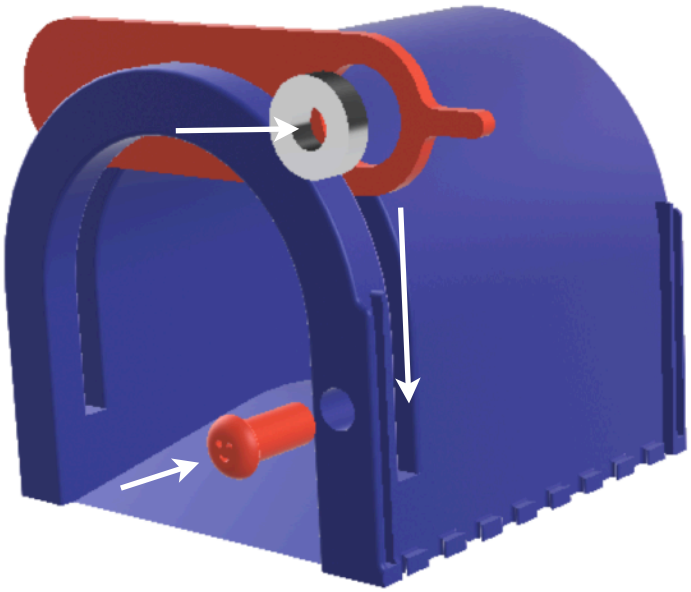


Tools and Supplies:

- 3D Printing Filament
    - *Note: This model was made to spec for the Dremel Digilab 3D45 Printer using 1.75 mm PLA Hatchbox Filament*
- Gorilla Super Glue Gel
- x1 Greartisan DC 12V 20RPM Motor (Product Link)
- x1 PWM DC Motor Speed Controller (Product Link)
- x1 ALITOVE DC 12V 1A Power Supply (Product Link)
- x1 Bearing 0.5” Bore (Product Link)
- Solder and Soldering Iron
- Clear Acrylic Sheet

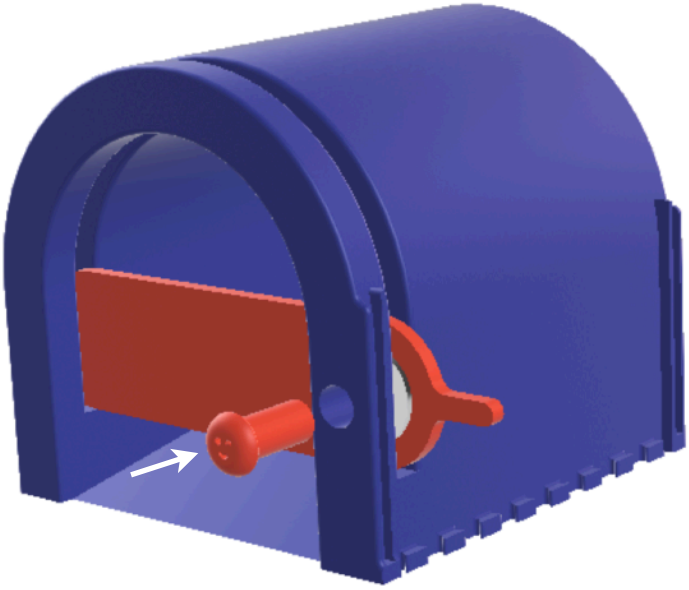
Step 1: Press fit the bearing into the toll booth paddle.

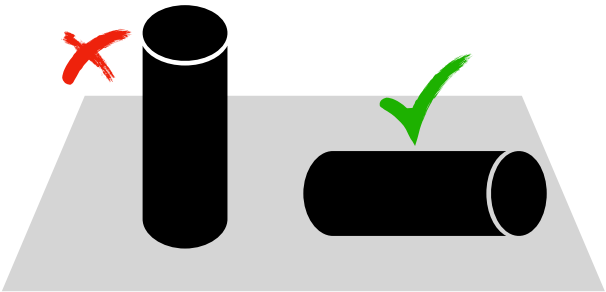
Step 2: Slide the joined paddle and bearing into the tunnel slot.



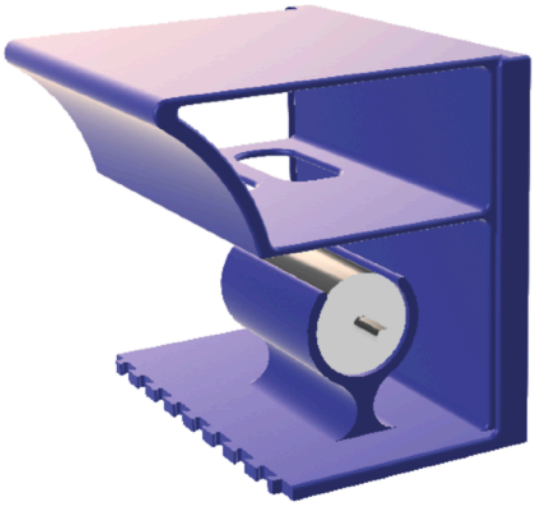
Step 3: Insert the bearing peg to both align the paddle and bearing to the tunnel pivot point, and to secure the toll booth arm into place.

Note: Do not 3D print the bearing peg vertically. Instead, print it longwise:

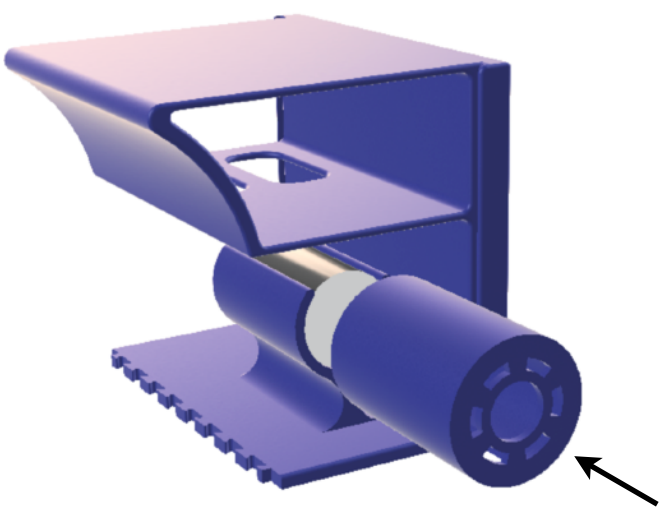


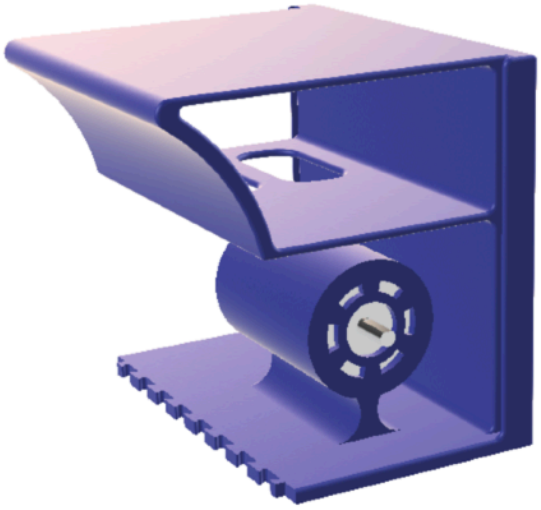


Step 4: Insert the motor into the stand in the motor housing.

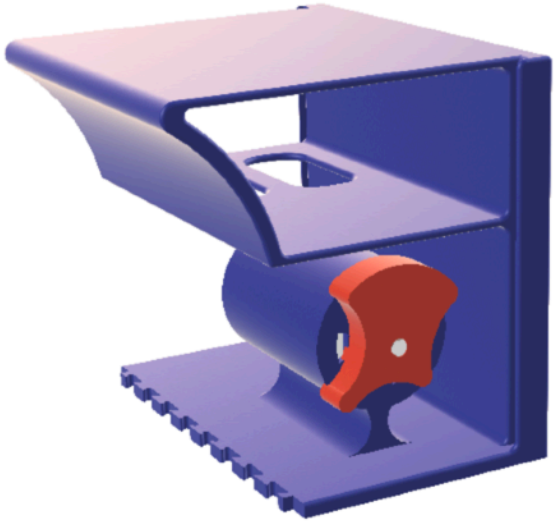


Step 5: Slide the motor cover over both the motor and the stand. There are windows in the cover to which the motor can be bolted to for rotational stability.



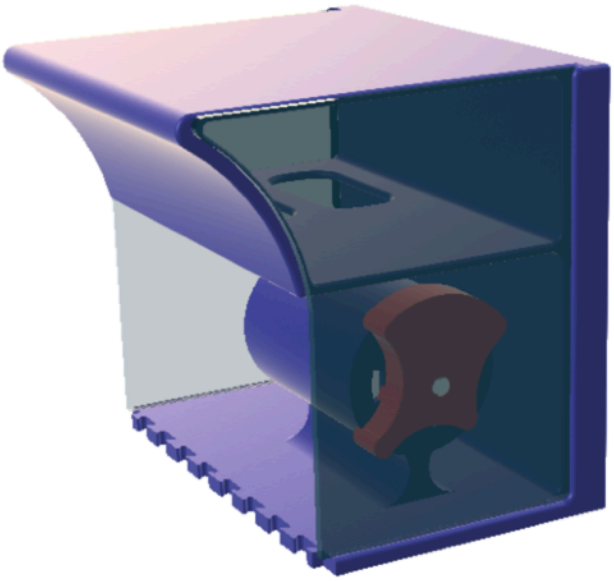
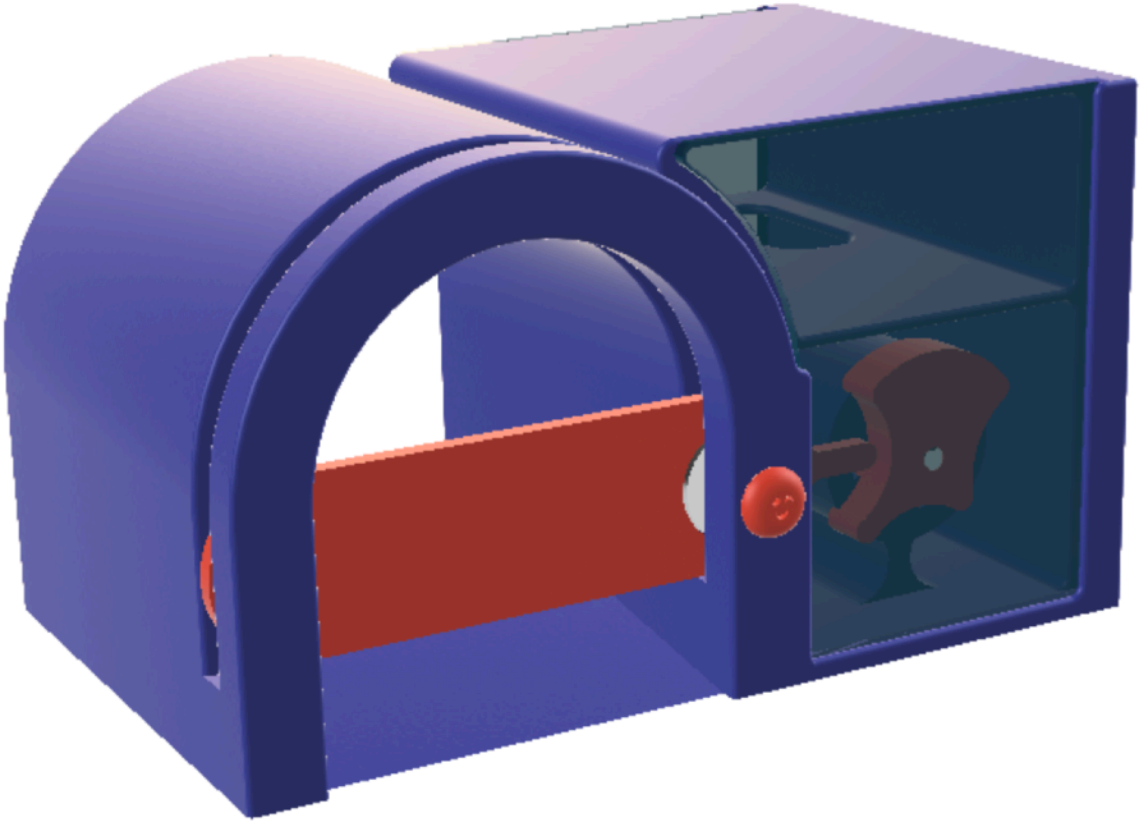


Step 6: The CAM can be installed directly on to the motor shaft. The hole in the cam is a direct fit for the D-shaft of the motor to transfer the torque.



Step 7: Solder the wires between the motor, speed controller, switch, and power source plug. The speed controller and switch can be stored in the upper deck of the motor housing.

Step 8: Using a laser cutter, jewelers saw, or other tool, cut out two sheets of clear acrylic to serve as the protective shield for the toll booth.



Step 9: The two halves (tunnel assembly and motor housing assembly) simply join together at the base plate. An additional layer of glue can be applied to the underside of the arch on the motor housing for additional hold and stability of the overall toll booth assembly.