

Iron Man Arc Reactor

by Asia_K

https://www.printables.com/@Asia_K

https://www.thingiverse.com/asia_k/designs



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Materials

Note:

The original arc reactor design includes 10 copper rings. However, if you use a 200 mm hot glue stick (as I did), there's only enough space for 8. The first column of the parts list shows the amount of material needed for 8 rings. If you have room for 10, look at the last column. STL files for parts A-L & wire molds are available on printables.com (<https://www.printables.com/model/1527225-iron-man-arc-reactor>) and thingiverse.com (<https://www.thingiverse.com/thing:7248703>), list below.

Parts:

1x	Hot glue stick	$\varnothing \sim 11.2$ mm, ≥ 200 mm, transparent	
14x	LEDs	3mm, white	16
4x	Thin cable	/	
/	Copper wire	$\varnothing 0.8\text{-}1$ mm	
/	Brass wire	$\varnothing 0.8\text{-}1$ mm	
/	Steel wire	$\varnothing 1$ mm	
/	Heat-shrink tubings	different sizes	
5cm ²	Mesh	black, e.g. mosquito net	
2x	Screw	3mm <u>head</u>	
1x	USB cable	/	
1x	Resistor	100 Ω	
8x	Part A1	black	10
8x	Part A2	black	10
8x	Part B1	dark grey	10
8x	Part B2	dark grey	10
1x	Part C	white & light grey	
1x	Part D	dark grey	
3x	Part E	dark grey	
1x	Part F	grey	
1x	Part G	grey	
1x	Part H	grey	
1x	Part I	grey	
1x	Part J	black	
1x	Part K	light grey & black	
1x	Part L	light grey & black	

Tools & Other Things:

Hot glue	Knife	Bowl with hot water
Super glue	Wire cutters	Wire molds (29, 25.5, 22, 18.5, 15mm)
Soldering iron & tin	Pliers	Blue paint
Masking tape	Lighter	Drill & bit 4mm
2x zip ties	Tweezers	Marker

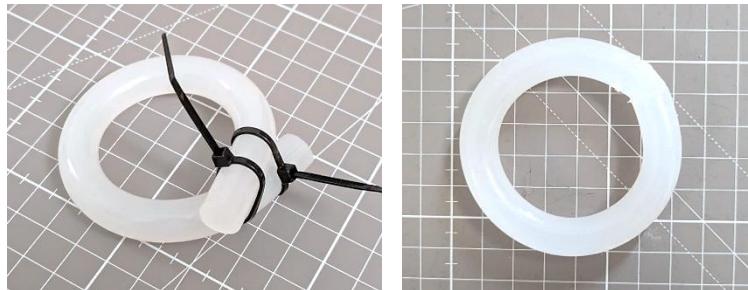


Instructions

Step 1

Materials

- Hot glue stick
- 2x zip ties
- Bowl with hot water
- Lighter
- Knife

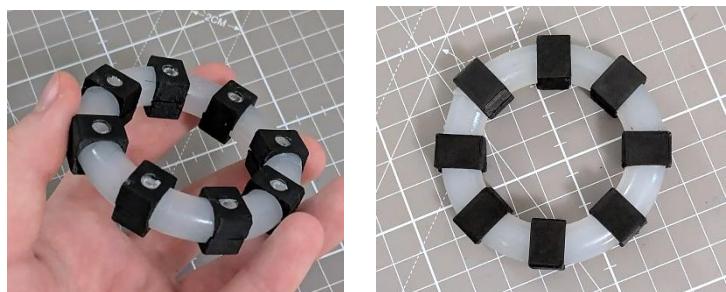


- Make a circle from the hot glue stick and secure it with zip ties. Place it in hot water for a few minutes and then put it in the freezer.
- Remove the zip ties and cut the ends of the glue stick to form a closed circle. Use a lighter to melt the glue and join the ends together.

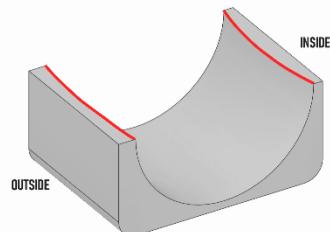
Step 2

Materials

- 8x part A1
- 8x part A2
- Super glue
- Drill
- Drill bit 4mm



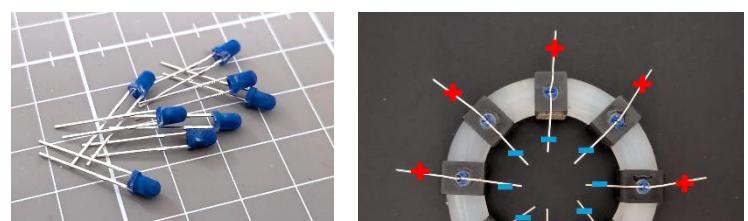
- Glue A1 pieces onto the circle at equal distances.
- Use a 4 mm drill bit to make holes for the LEDs.
- Glue A2 pieces to the circle from the other side.



Step 3

Materials

- 8x LEDs
- Paint
- Super glue



Use white LEDs and paint them blue. This way, the light will appear light blue, rather than the darker shade you would get from using blue LEDs.

- Paint the LEDs, let them dry and put them into the holes in the circle.
- Secure them with super glue.

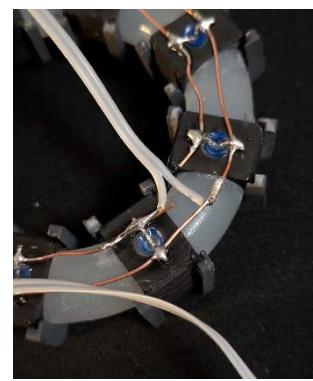
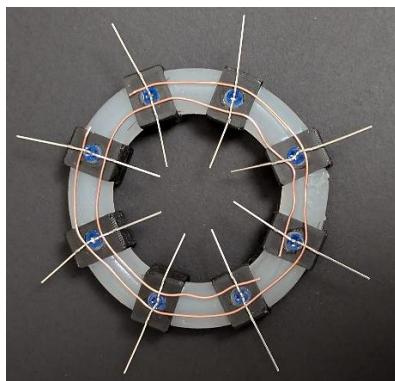
J

Step 4

Materials

- Copper wire
- Soldering iron & tin
- Wire cutters
- 2x thin cable

- Make 2 circles with copper wire. Put them under the LEDs' legs. Secure them with soldering tin.



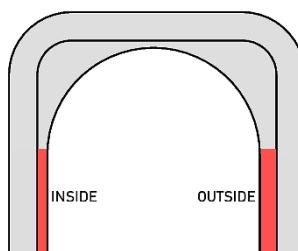
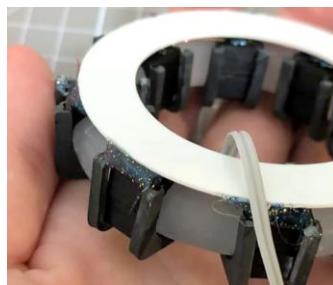
- Connect one cable to one circle and the other one to the other circle. (On the second photo there are already part C pieces from step 5, just ignore them)

Step 5

Materials

- 8x part B1
- 8x part B2
- 1x part C
- Copper wire
- Super glue
- Wire cutters
- Hot glue

- Glue parts B1 and B2 onto the circle, next to the A2 pieces.
- Use hot glue to isolate the LEDs, then glue part C to the back of the circle.
- Fill the holes with hot glue. You can paint the glue black to make it look nice.
- Wind the copper wire around the A pieces. Secure it with hot glue on the back.



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Step 6

Materials

- 1x part D
- 3x part E
- Steel wire
- Wire mold (15mm)
- Wire cutters
- Pliers
- Super glue
- Soldering iron & tin

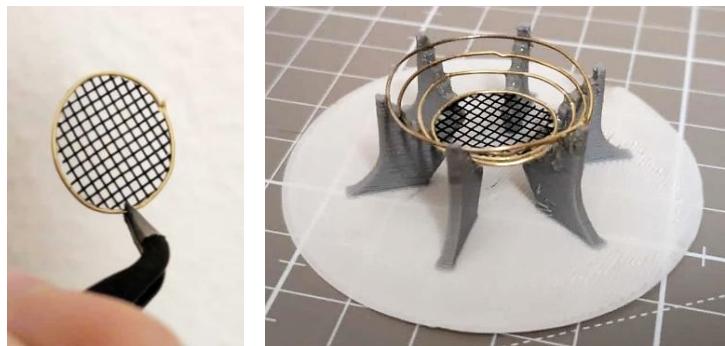


- Glue the E pieces to part D.
- Use a wire mold to make a ring and place it on top of the E pieces.
- Cut the heads off the screws and glue them onto 2 of the E pieces. (If the cut isn't close enough to the head, use a needle and a lighter to make holes in the E pieces.)
- Using a soldering iron, make 4 tin blobs and glue them to the last E piece.

Step 7

Materials

- 1x part F
- Wire molds (29, 25.5, 22, 18.5mm)
- Brass wire
- Wire cutters
- Mesh
- Super glue
- Knife



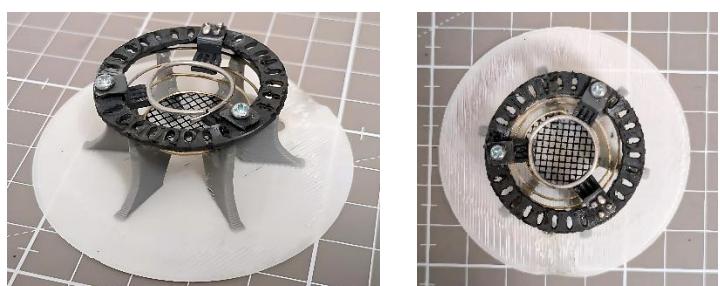
- Using wire molds, make 4 rings.
- Cut the mesh and glue it to the smallest ring (18.5 mm).
- Glue the rings onto part F, starting from the 2nd step from the bottom.

Step 8

Materials

- [Step 6]
- [Step 7]
- Super glue

- Glue [step 6] onto [step 7].

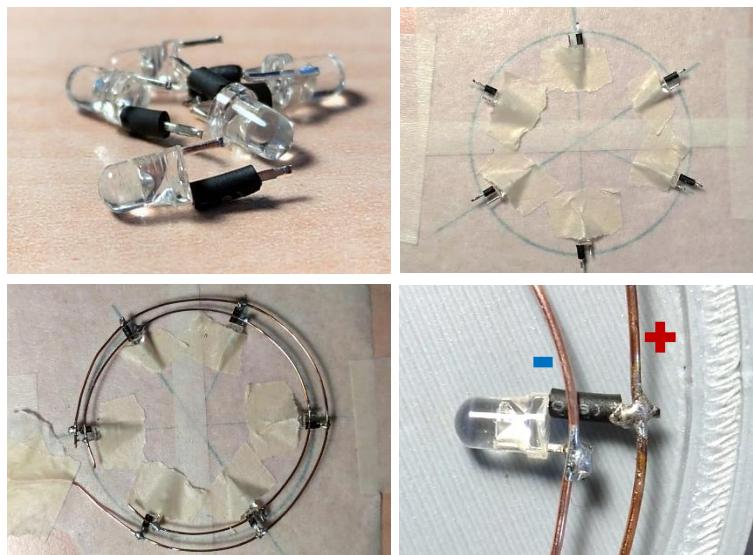


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Step 9

Materials

- 1x part G
- 6x LEDs
- Copper wire
- Wire cutters
- Soldering iron & tin
- Lighter
- Masking tape
- Hot glue
- 2x thin cable
- Heat-shrink tubings
- Marker



- Shorten the LEDs' legs and place heat-shrink tubing on one of them [photo 1].
- Draw a circle ($\varnothing 55\text{mm}$) on masking tape. Place it upside down and secure it with tape.
- Stick the LEDs to the circle at equal distances.
- Connect the LEDs with two copper rings (= step 4).
- Connect one thin wire to one ring and the other wire to the other ring.
- Put the LEDs into part G and secure them with hot glue.

Step 10

Materials

- 1x part H	- [Step 5]	- Steel wire
- 1x part I	- [Step 8]	- Super glue
- 1x part J	- [Step 9]	- Hot glue

! Make sure to put the cables into the holes



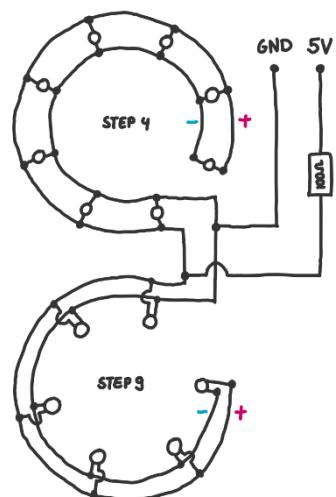
- Glue the pieces together: ([Step 5] → [Step 8] → [Step 9] → H → I).
- Use hot glue to fill the gaps between [Step 5] and [Step 8]. Attach part J.
- Cut the steel wire into small pieces and glue them onto the A pieces [photos].

Z

Step 11

Materials

- [Step 10]
- USB cable
- Resistor
- Soldering iron & tin
- Heat- shrink tubings
- Lighter



- Connect all cables as shown on the drawing. ($O=$)
- Isolate and secure everything with heat- shrink tubings.

Step 12

Materials

- Part K
- Part J
- [Step 11]



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3D-Printed Parts

[S] → needs supports



A1



A2



B1



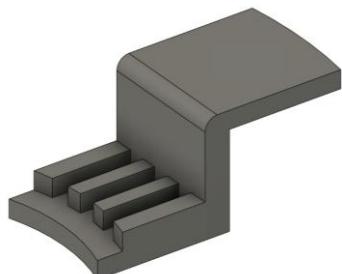
B2



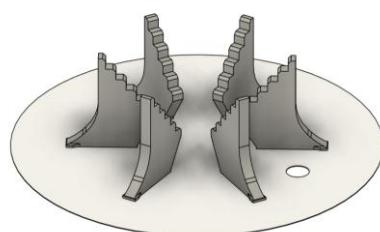
C



D



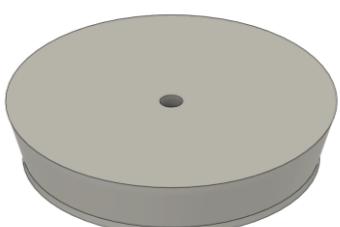
E[S]



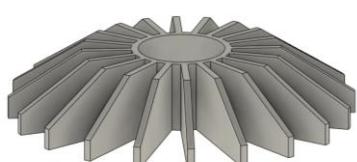
F



G



H



I



J



K[S]



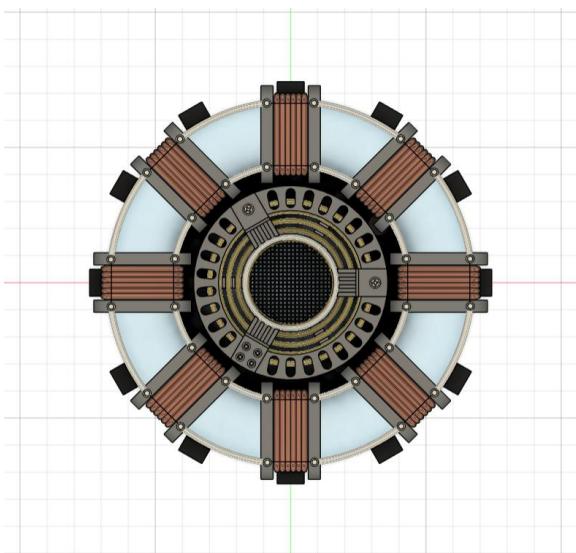
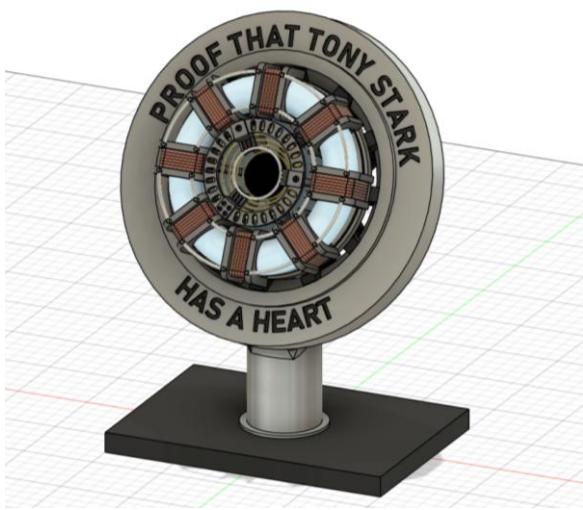
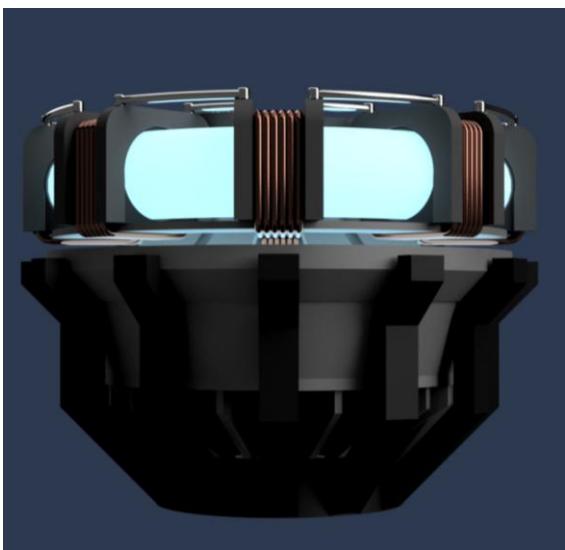
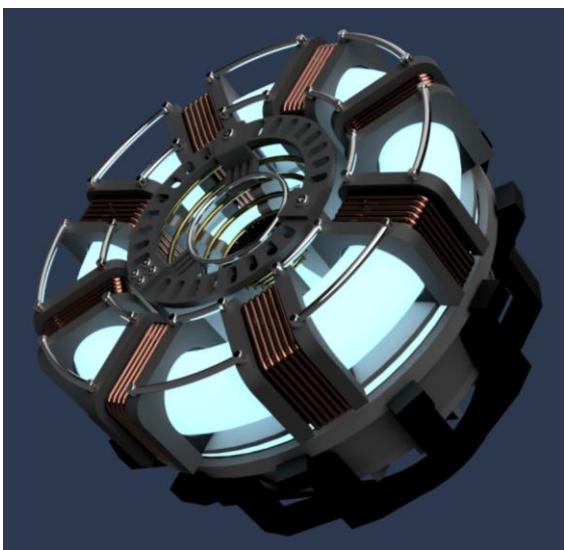
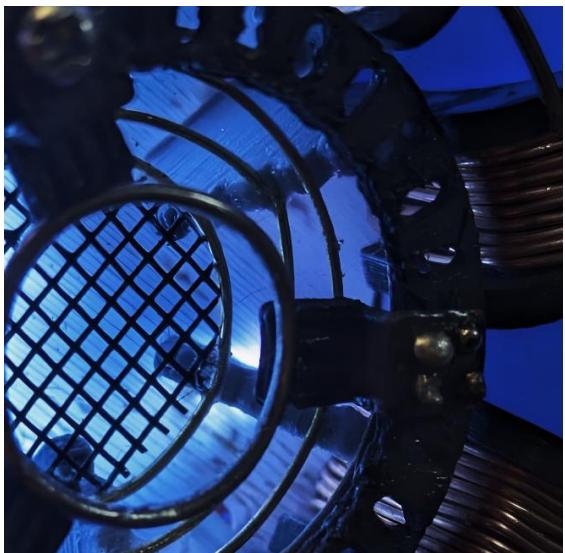
L



Wire molds

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Photos, Renders & Screenshots



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