

Handheld fan



duration: 30 - 45 minutes
age: from 7 years

Make a working hand fan.

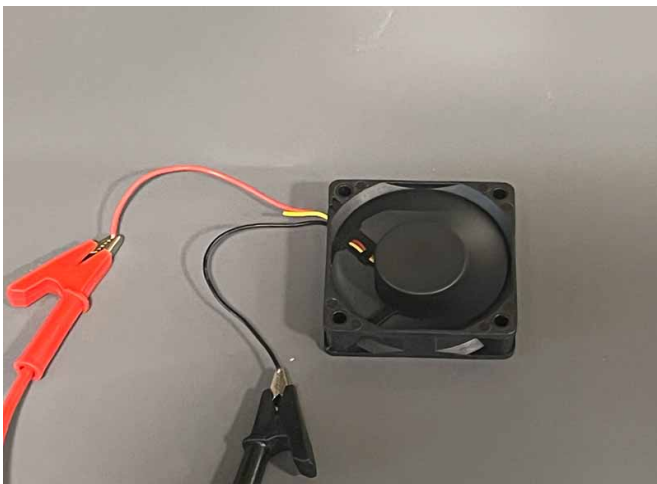
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tools

- laser cutter
- awl
- soldering iron
- wire cutters
- wire stripper
- caliper
- drill with 4mm bit

materials

- wooden plate
 - fan
 - cable ties
 - push button
 - 9V battery connector
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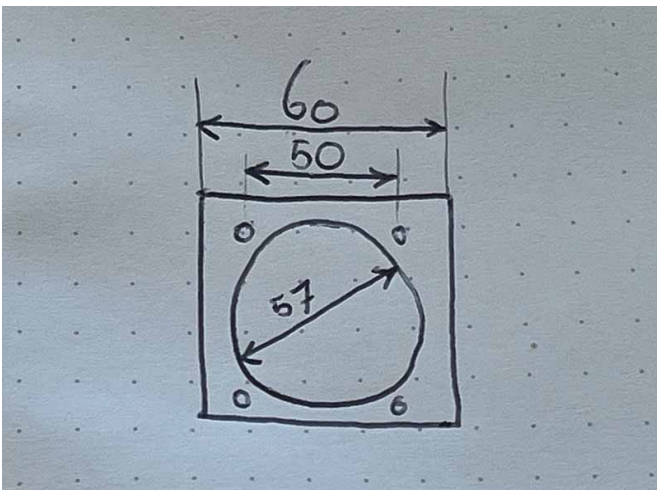
1 Test the fan

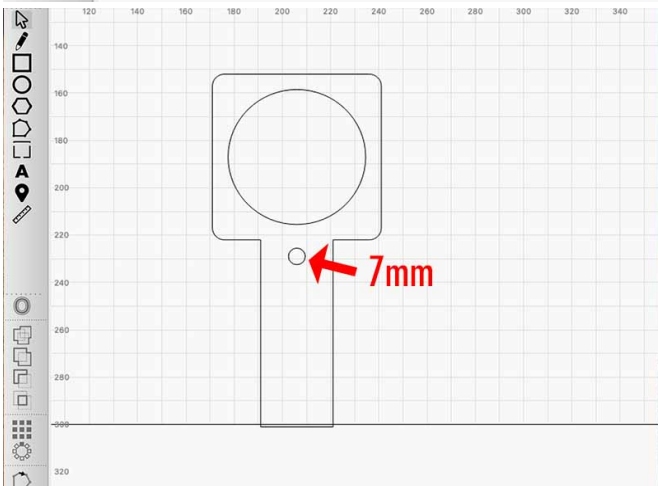
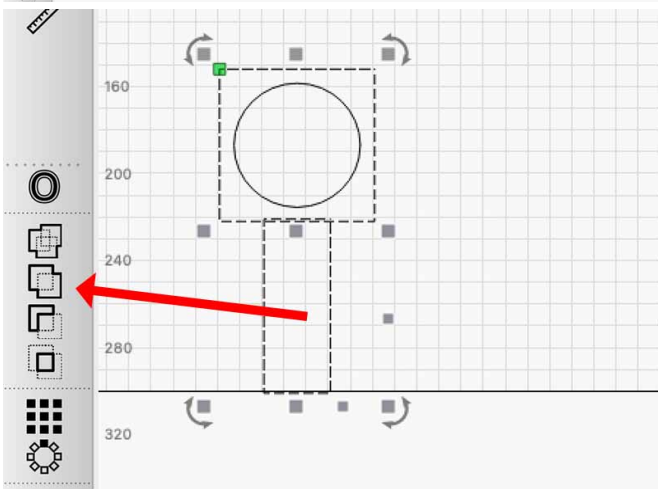
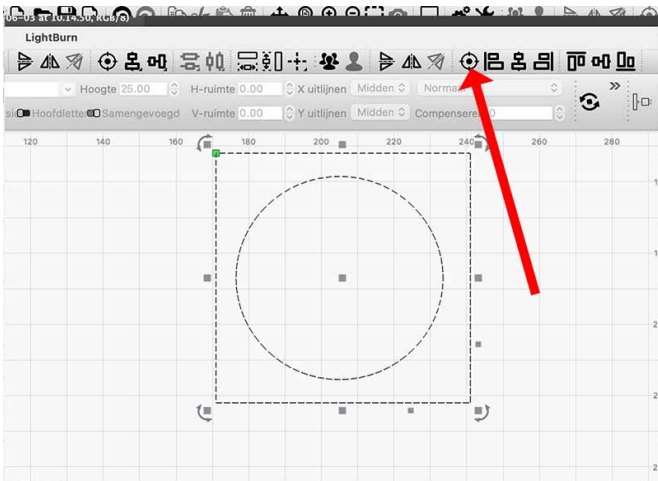
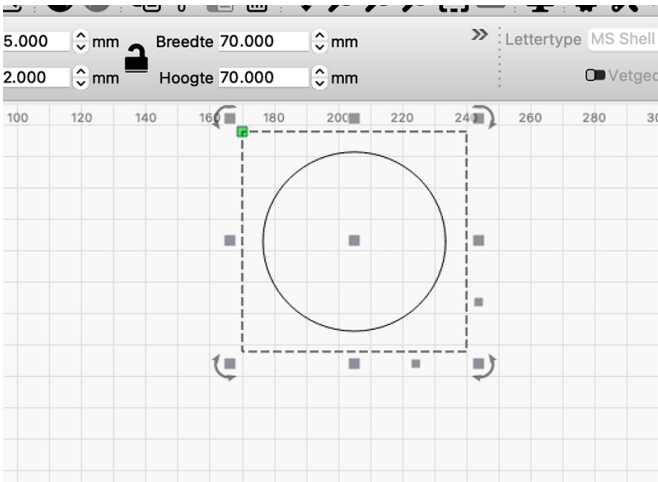
- Test the fan to see if it works with 9 volts.
- Most fans have an arrow indicating which way they blow. If not, mark it on your fan now.



2 Measure and sketch

- Measure how big your fan is.
- Make a small sketch and write down the required dimensions.





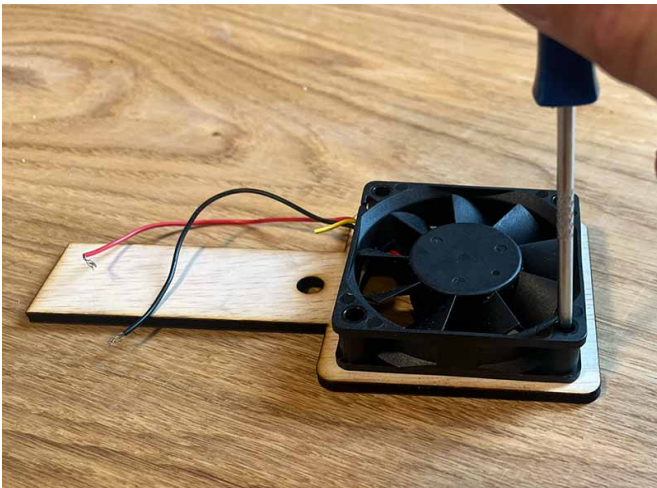
3 Draw your design

- Open LightBurn and draw a circle. By entering the width and height you can ensure the size is exact.
- Make the outer edge slightly larger than the fan. This gives extra strength.
- You can center the hole using the align button. (2nd photo)
- You can combine the handle and the top with the `combine` button. (3rd photo)
- Finally make a hole for the button. It should have a diameter of 7mm.



4 Cut out the design

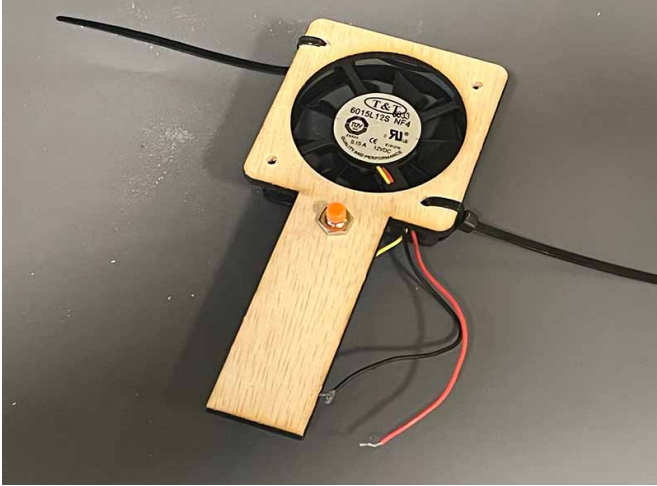
- Use the laser cutter to cut out your design.



5 Mark and drill holes

- Use an awl to mark the positions of the holes.
- Drill holes at the marked spots.





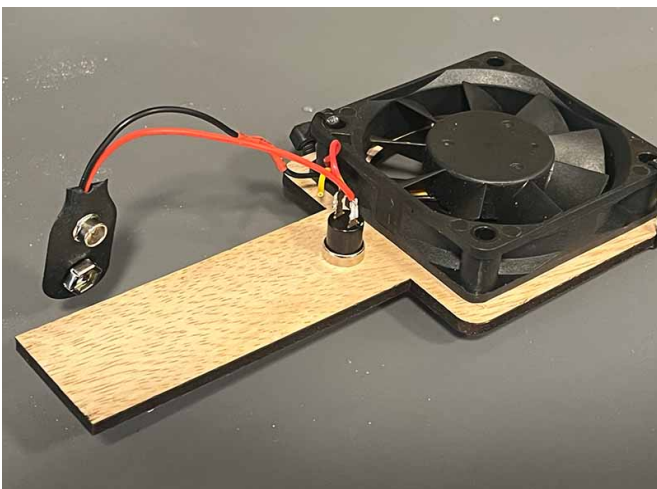
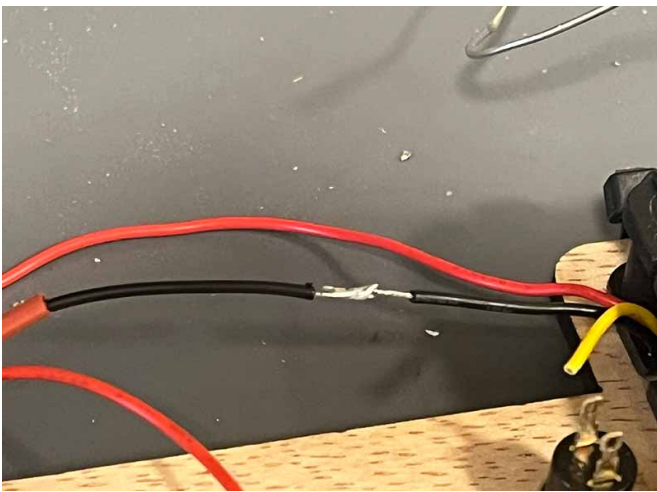
6 Assemble

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- Make sure the fan is blowing in the correct direction when you attach it.
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- Use cable ties to fasten the fan to the wooden plate.
 - Screw the button into the hole.



7 Soldering

- Cut the wires of the fan and the battery clip to length.
- Strip the ends.
- Slide a piece of heat shrink over a black wire and solder the black wires together.
- Solder the two red wires to the button terminals.





8 Insert battery

- Place the battery and tape it to the handle.



9 Done!

- Your hand fan is ready. Let the summer come!