Instructions:

Bristlebot

Dan Goldbacher
Fred Bloss
Jake Jacavage
Gary Daddario

Table of Contents

Intro 1

Parts and Supplies 1

Tools 1

Estimated Time 1

Instructions:

- Steps 1-5 2
- Steps 6-10 3
- Steps 11-12 4

Appendix 5

Glossary 6

Works Cited 7

A “Bristlebot” is a small mechanized toothbrush designed to bring great visual stimulation from old spare parts. Although not capable of cleaning your teeth, the “Bristlebot” is sure to bring out your creativity and fill your afternoons with endless entertainment. The instructions listed below represent a detailed outline showing you how to assemble a “Bristlebot.” We hope you enjoy our instructions and the “Bristlebot” you create using them.

Parts and Supplies (Fig. 1):

1 toothbrush with angled bristles

1 pager motor

1 3v battery

1 roll of double sided foam tape

1 coil of solder

2 pieces of electrical wire

Figure 1
Overview of tools and supplies needed.

Tools (Fig. 1):

1 Soldering gun

1 pair of wire cutters

Note: The parts and supplies listed are sufficient for the production of one bristlebot.

Estimated time to build: 20 min.

Glossary Terms: Anything highlighted in red is defined in the glossary on page 6.

Blue Steps: These steps are only required if wires are not already connected to the motor.

Instructions:

1. Plug in the soldering gun to heat up for later use if soldering.

CAUTION: Soldering gun is hot. Do not place your fingers near the tip of the gun while soldering.

2. Use the wire cutters to cut off the toothbrush head at the base. (See Fig 2)

Figure 2
Cutting off the tooth-brush head

3. Tear off a piece of foam tape the same length as the toothbrush head.

4. Apply the piece of foam tape to the back of the toothbrush head.

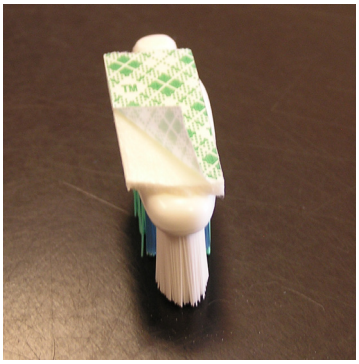

Figure 3
Double sided foam tape placement

5. Peel back the paper on the foam tape to expose its sticky surface and set the toothbrush head aside. (See Fig 3)

Note: Steps 6 and 7 involve the process of soldering. If you do not know how to solder, see Appendix A for instructions.

CAUTION: Soldering gun is hot. Do not place your fingers near the tip of the gun while soldering.

6. Solder one end of a piece of electrical wire to the left lead of the pager motor. (See Fig 4)

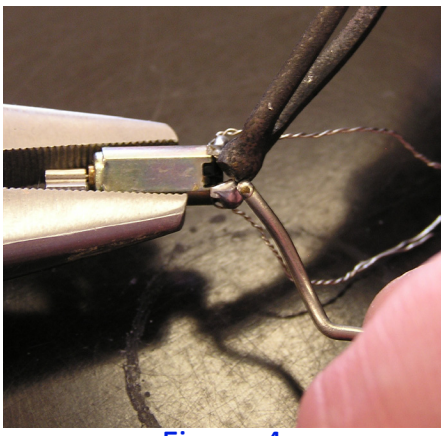

Figure 4
Soldering overview

CAUTION: Soldering gun is hot. Do not place your fingers near the tip of the gun while soldering.

Note: The word solder in step 6 refers to the process, not the material used.

7. Repeat step 6 for the right lead of the pager motor.

Figure 5
Motor placement

8. Attach the pager motor to the foam tape on the back of the toothbrush head. (See Fig 5)

9. Place one strand of electrical wire down on the foam tape near the end of the toothbrush head.

10. **(Optional)** Place a piece of solder over the wire placed in step 9 to better stabilize the bot. (See Fig 6)

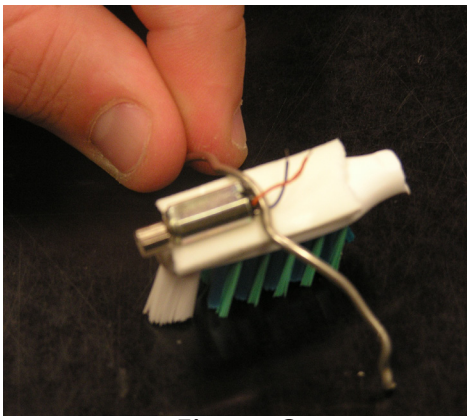

Figure 6
Stabilizer placement

11. Place the 3v battery on top of the wire positioned during step 9. (See Fig 7)

12. Attatch the other strand of electrical wire to the top of the battery using a piece of foam tape to hold it in place.

Figure 7
Battery placement

That's it! Set down your bristle bot to watch your creation in action.

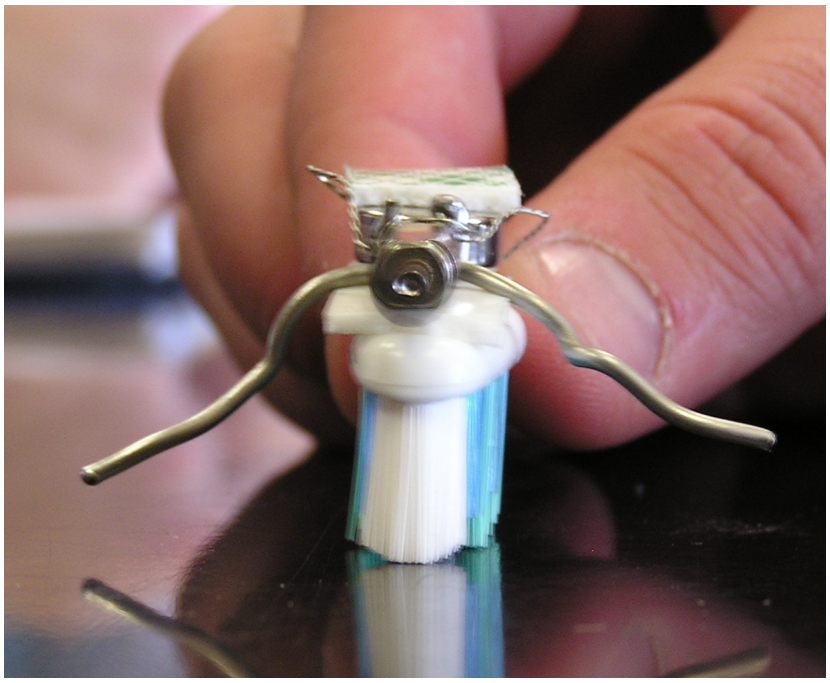

Figure 8
Final Product (Modifications are encouraged.)

Have Fun!

Appendix A

Soldering Instructions for BristleBot:

1. Place one end of electrical wire onto the desired location for soldering. In this case, the location is at the leads of the motor.

2. Pick up the coil of solder and transfer it to the same hand holding the wire in place.

Note: This can be tricky. You need to find a position you feel comfortable with.

3. Pick up the soldering gun in your free hand and apply a little heat to the area wished to be soldered.

CAUTION: Do not place your hands near the area being soldered;  you can get burned. The same applies for steps 4-6.

4. Touch the end of the coil of solder to the area being heated to melt it onto the wire at the motor lead.

5. Remove the coil of solder when enough of it melts onto the wire to completely cover it.

6. Take away soldering gun when wire appears attatched.

7. Blow on solder to cool it quickly, it will harden almost immediately.

Glossary

Double sided foam tape: Used to hold everything onto the toothbrush head.

Electrical wire: Used to run an electric current from the battery to the pager motor.

Leads: The flaps on the motor you solder the electrical wire to.

Solder: The material used to join the electrical wire to the leads of the pager motor.

Soldering: The process of joining objects together with solder.

Soldering gun: The tool used to heat and melt the solder to join the electrical wire to the leads of the pager motor.

Wire cutters: Tool similar to scissors that will be used to cut off the toothbrush head.

Works Cited

Hewes, John. “Soldering Guide.” The Electronics Club. <http://www.kpsec.freeuk.com/solder.htm> 2010. Web. 24 March 2010.

Windell. “Bristlebot: A Tiny Directional Vibrobot.” Evil Mad Scientist Laboratories. <http://www.evilmadscientist.com/article.php/bristlebot> 19 December 2007. Web. 23 March 2010.