

<http://www.hiddenmickeys.org/Imagineering/Fireflies.html>

# Fireflies

Building "Disney-like" Fireflies is really quite simple. All you need you can find at any electronic store, such as [Radio Shack](#).

**Note:** Since this project uses electricity, young children should be monitored by adults when building this project.

**Difficulty:** Beginner hobbyist

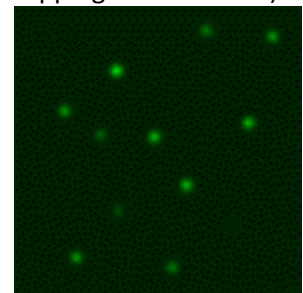
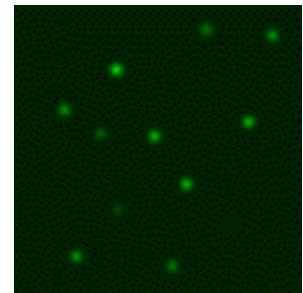
## Parts List

- 12 volt transformer for up to eight fireflies
- Tiny hobby lamps (Radio Shack part: 12-v micro lamps 272-1092), commonly called grain of rice light bulbs, the kind used in miniature work that have two wires extending from them.
- Insulated single core wire, the tinier the better (Radio Shack part: blue wrapping wire 278-503). Allow eight feet per firefly displayed
- Thin cardboard, 3" X 1.5" per firefly
- Black felt tip pen
- Black electrical tape
- Speaker wire of necessary length to reach
- 6' or taller ladder
- Electric fans, as many as needed to propel the fireflies

## Building Instructions

Always keep bare wires apart from each other so they will not short and always unplug the transformer when connecting wires so you will not short the transformer.

1. Take the transformer and make sure that it is unplugged at both ends



2. If necessary, cut off plug end that would normally go to calculator, etc.
3. Remove 1/2" insulation from the two low voltage ends.
4. Repeat these instructions for each firefly you wish to display:
  1. Take eight feet of the single core, tiny insulated wire and loop it in half tying a knot six inches from the two ends.
  2. Tie knots every foot or so to keep the wires together until you reach the loop. Alternatively, you may tape the two wires together.
  3. Cut the loop, making two wires four feet long and tied together.
  4. Remove insulation 1/2" from the four wire ends.
  5. Blacken the cardboard card on both sides with felt tip pen
  6. Punch a hole in the center of card.
  7. Place one bulb wire through hole in card so that there is a wire on each side.
  8. Tape down the wire on each side with a small piece of electrical tape.
  9. Connect the tiny insulated wire, that you tied together, to the bulb wire, one end per side, by twisting and cover all exposed wire with electrical tape. You can solder these for a stronger connection.
5. Repeat as you imagine the right amount of fireflies for the scene you are creating:
  1. Make sure the transformer is unplugged.
  2. Determine the length from where the transformer will be plugged in to the firefly you are installing and cut the speaker wire accordingly.
  3. Remove 1/2" insulation from each end.
  4. Connect the transformer wires and the one end of the speaker wire together by twisting and covering with electrical tape.
  5. Affix the speaker wire above the scene you are creating, using tape or thumbtack, taking care not to short the wires. You can attach to the ceiling, hang the wire from lamps, or tree branches.
  6. Cut speaker wire where you decide to hang the firefly. Remove 1/2" insulation from both ends of the speaker wire.
  7. Connect speaker wire and firefly wires together.
  8. Use the electric tape around the first wire connection, and next around the other wire connection, ending with one black tape wrap and a descending firefly.
  9. Turn on or plug in the transformer to see your lit firefly. If the firefly does not light, recheck the wire connections.
6. Sometimes, if an object is too near, they can "flashlight" onto the firefly, spoiling the effect. To adjust the intensity of the fireflies lower the voltage, if there is a switch, or to create a smaller light aperture with electrical tape being applied over a portion of the bulb or paint the bulb or a portion of the bulb.
7. Plug in small electric fan(s) and place them in as hidden an area as possible, point the fan(s) at the fireflies in order to get the right amount of movement.
8. If the air current of the fan is limited, a lighter material can also be used in place of the cardboard.
9. Wait until dark, or make it dark, and you have the best of Disneyland in your own backyard...