

LED Picture Frame

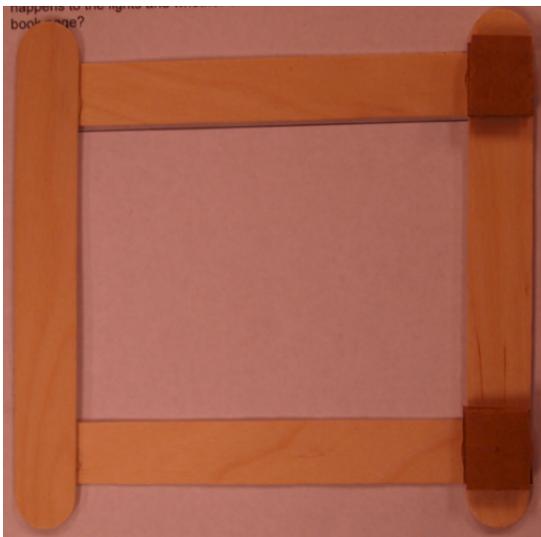
How to Build It:

Materials:

- Jumbo Craft Sticks
- Beads or other arts and craft supplies
- Magnet
- Reed Magnetic Switch
- Insulated wire
- AA batteries
- AA battery holder
- Markers
- Soldering iron/Solder
- Hot glue gun
- Dremel drill

Procedure:

1. Use hot glue to attach 4 jumbo craft sticks in a rectangle that is 4 inches wide and 6 inches long.
2. Next you will need 4 cardboard squares that are 1/2" by 1/2" to be used as spacers for the craft sticks.
3. Glue the cardboard pieces together so you have two stacks of two pieces of cardboard.
4. Glue one stack of cardboard on either end of one side of the rectangle you made in Step 1.
5. Glue another craft stick on top of the two cardboard stacks.
6. Glue a craft stick to bottom of the craft stick from Step 5. This will create a holder for the magnet.



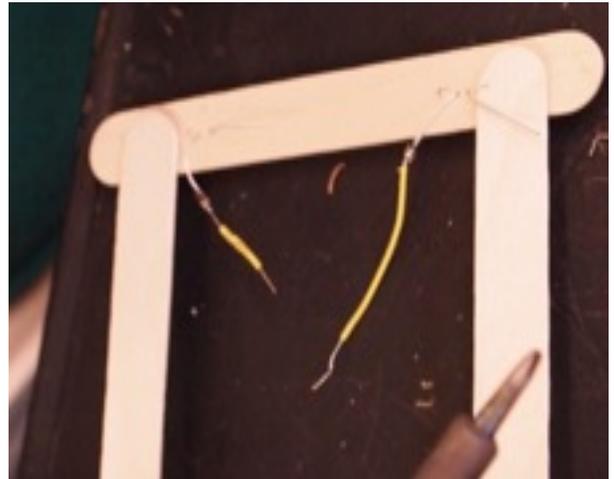
- 7.
8. Decorate the frame with markers, beads, buttons or other arts and craft supplies.
9. Use a drill to drill two sets of holes in the top of the picture frame. The holes should be as far apart as an LED light bulb.
10. Poke an LED light through both sets of holes
11. Be sure to mark which side of the light is + and which side is - with a pen or pencil. The long leg is + and the short leg is -.



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11. Solder a short yellow wire to the + side of the LED on the left side of the frame.
12. Solder a long yellow wire to the + side of the LED on the right side of the frame.
13. Solder a green wire to the – side of both LEDs.
14. Solder the magnet switch to one of the green wires.
15. Solder the other green wire to the magnet switch at the same place as the first green wire. There should be two green wires attached to one side of the magnet switch.
16. Solder the black wire from the battery pack to the other side of the magnet switch.
17. Solder one yellow wire to the red wire from the battery pack.
18. Solder the second yellow wire to the same place on the red wire as the first yellow wire. There should be two yellow wires soldered to the red wire of the battery pack.
19. Attach the picture to the picture frame.
20. Use hot glue to attach the battery pack to the side of the picture frame.
21. Make sure the magnet switch is behind the holder.
22. Use hot glue to attach the magnet switch to the bottom of the picture frame.
23. Put batteries in the battery pack.
24. Put a magnet in the holder and slide it back and forth. The lights should come on.



How it Works:

A parallel circuit connects both LEDs to the battery so that they shine with equal brightness when the lights are on. The switch in this project is a reed magnetic switch. Inside the glass tube are two thin pieces of metal, one of which is attracted to magnets. The holder at the bottom of the picture frame allows a magnet to slide back and forth. When the magnet is over the switch, the magnetic field attracts one piece of metal to it, pulling it up against the piece of metal that isn't magnetic or doesn't flex. When the two pieces of metal bump into each other, the circuit is completed because electricity can flow from one side of the switch to the other and the light turns on!

Experiment!

What happens when you connect these lights in series?

Sometimes magnets disappear, which makes it a lot harder to turn on the lights! What other type of switch could you use?