

HO Campfire Flicker

A micro-controlled model railroad project

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Hobo Campfire on Author's Layout

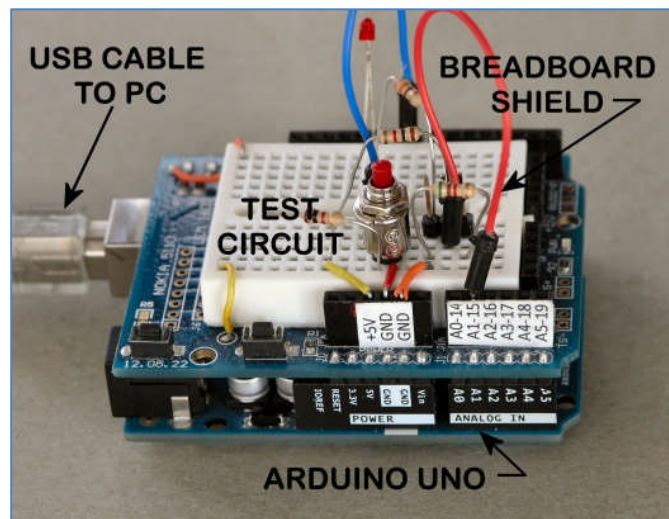
Everyone wants a hobo camp adjacent to their railroad mainline. A search on the internet will bring up several commercial kits for flickering fire simulations. These vary in price from \$15 to \$25. However, for far less \$, a simple project can be constructed by the modeler who would like to experiment with current day electronic circuits. A reasonable representation of a flickering campfire can be modeled using a bright miniature yellow LED. This is a simple

job for micro-controllers such as the popular Arduino series. The

project described in this article was built for around \$5 - a good price to perhaps sprinkle many such hobo camps around a layout. The micro-controller can be programmed to control a variety of seemingly random flashes. My project is set to run a bright randomly timed ON/OFF flickering LED representing the sputtering campfire.

Building the campfire

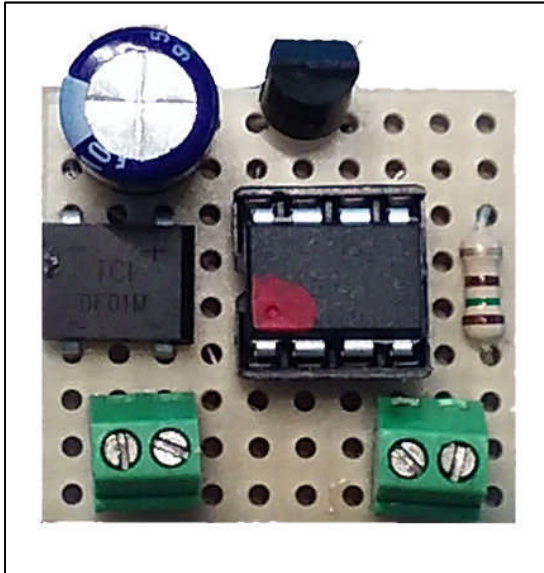
I constructed my campfire using one small size yellow LED with portions tinted with red nail polish. Some articles describing a fire simulation suggest using several LEDs of yellow and red. Although this multi-LED approach may yield a better simulation it is not suitable for a small campfire. I mounted my single LED in the layout and cemented random sticks surrounding the LED to represent fire wood. The simulated campfire is constructed using a small LED with very fine wire attached to the (shortened) LED leads and then cov-



Hardware/Software development platform

ered with shrink tubing. The assembled demonstration fire is shown in the photo. Simple and easy.

The electronic circuit



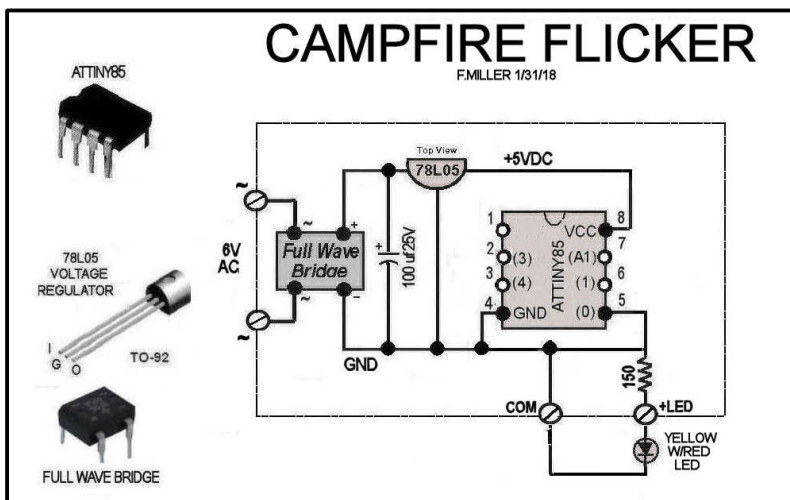
Complete assembled unit

All of my Arduino micro-controller projects begin by developing the program code (called “sketches” in the Arduino world) and preliminary electronic circuit on an Arduino UNO with a plugged in Bread-board “shield.” This starting point “workbench” facilitates easy changes in software and the controlled circuitry. The “sketch” is developed using the free Arduino development system (IDE) running on a PC. The software is written, compiled, and then downloaded to the UNO for testing using the provided simple menu controls and a USB cable to the UNO. Rather than use the larger

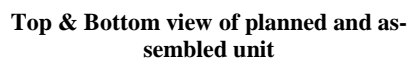
Arduino UNO for the completed project, I generally move the software to smaller micro-controller chips. In this case an inexpensive 8-pin chip called an AT-TINY85 was used. The Arduino IDE can be used to program the ATTINY85. A stand-alone circuit board then is designed and assembled to house the micro-controller chip and parts.

The developed circuit is shown below along with the parts list for the project. The software and additional programming advice is available from me just for the asking. For those modelers interested in building the campfire control board, but not in learning the Arduino world of micro-controllers (shame, shame!), I would be glad to make pre-programmed ATTINY85 chips available at a cost plus shipping

basis. Wiring the control board, however, is left to the modeler.



The parts can be acquired from a number of online electronic parts suppliers. The parts list shows the part numbers from the Jameco.com source.



Some parts available in minimum quantities of 10