

# Shedding a little light

by DAVE CLARK

A working lamp is a safety requirement of every railway operation and 16mm narrow gauge railways are no exception. Following numerous requests from Facebook 16mm group members, DAVE CLARK describes his method of making his working lamps.

Photos by Dave Clark.



Lamps have been a part of railway operation ever since the first days. However my line, the Walmington-on-sea railway (based on the tv series dad's army!) had no lamps, I reassured myself that this was correct, after all there was a wartime blackout!

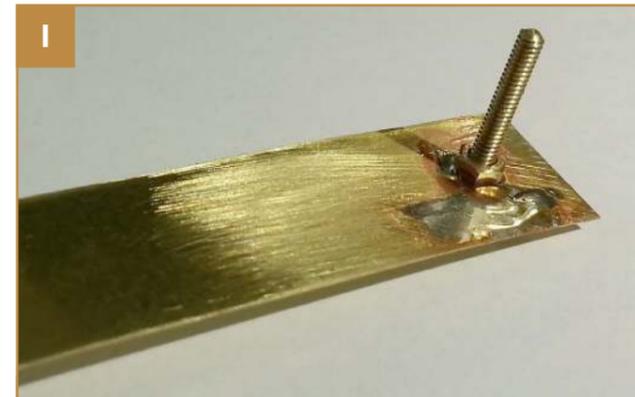
Now this situation would have happily remained had it not been for a visit by a friend with his loco. When it was ready to depart the steaming road a beautiful working lamp was added to the front. Now this was a work of art, and most

importantly being self contained it could be used with procedural correctness that captain Mainwaring would approve of.

That was it, I had to have one (or maybe more). A quick look on the web revealed two problems. One, it was out of stock and two, its quality is reflected in the price (and quite rightly so). This situation gave me time to ponder, could such a thing be made from scratch? Certainly it was electrically simple, just two watch batteries a switch and an LED, the question was could I build the

lamp to a prototypical size? Eventually using the lamp body as part of the circuit and building the switch from scratch, I was able to produce a lamp measuring 12mm high x 10mm wide, representing 9 inch x 7½ inch possibly a little over scale but close enough for me.

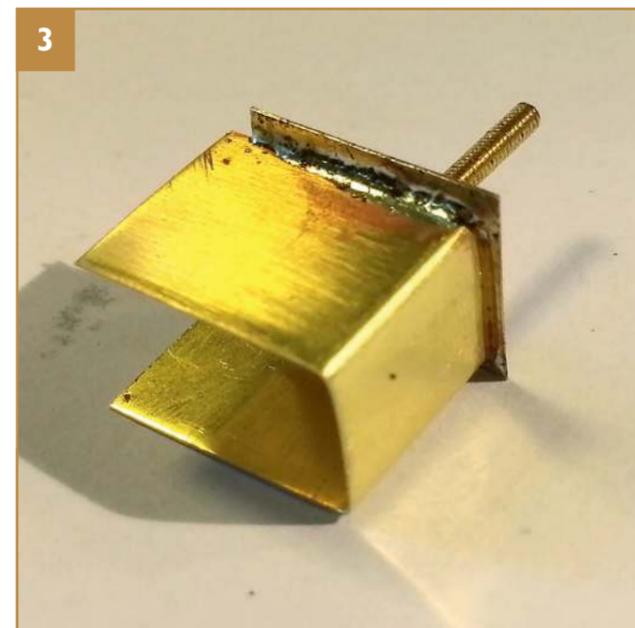
After a little experimentation I have devised this method of making working lamps, they aren't quick to make, about 4 hours of fiddly work and soldering burns should see you with a working lamp! See below for details of how to make one.



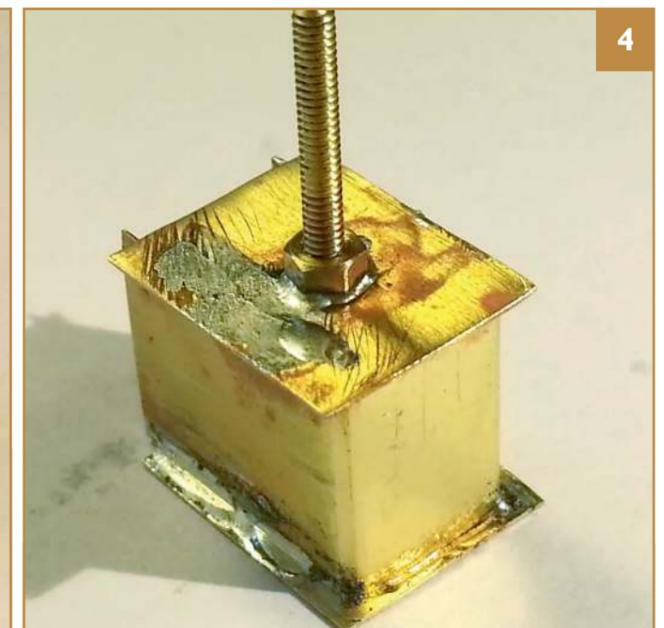
1. Take a strip of brass shim (approx 0.2mm thick and 11mm wide). Drill a hole to take a 10BA bolt dead centre and 6mm from the end. Solder the nut of the bolt into place and check that you haven't soldered the bolt solid. Screwing this bolt up and down will make the switch portion of circuit. Cut off the end of the strip with the bolt to a length of approx 14mm.



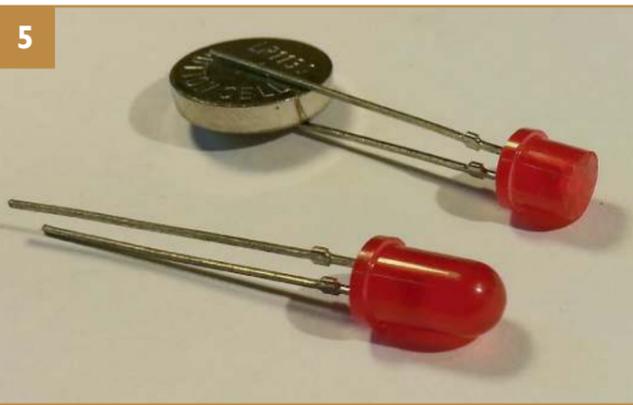
2. Take the strip and bend it into a 'u' shape with two 90 degree corners as shown in the photo. This will make the front and sides of the lamp, the folds should leave you with a front measuring 9mm wide, cut the sides to approximately 14mm length. These are oversize, but it's best to trim the lamp down when completed.



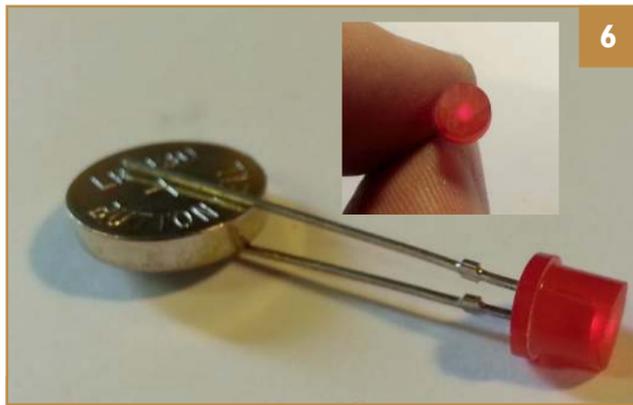
3. Solder the parts from steps one and two together to make the upper part of the lamp body. It's worth taking a little time to make sure that the sides are square. Don't worry if the lamp top is slightly off centre, you can use a file to trim the lip until it's all square.



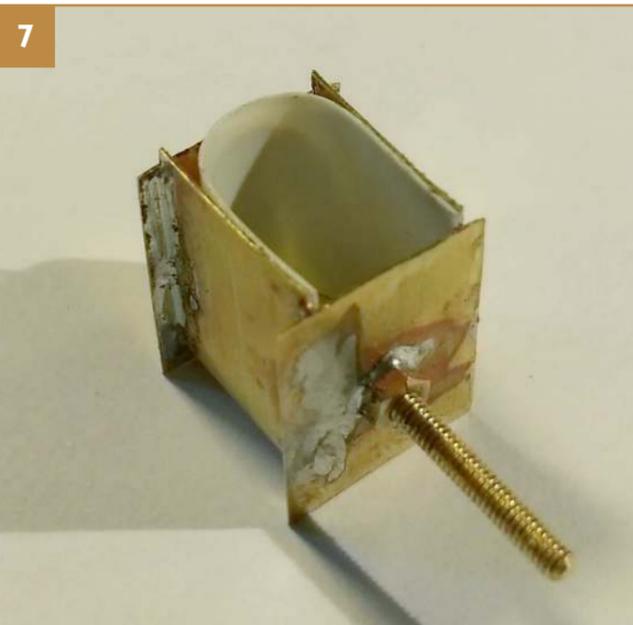
4. Cut another length from the strip and use it to make the base, solder it in place completing the lamp body. If you have got this far then you will probably have burnt fingers. The good news is that the worst of the soldering is finished.



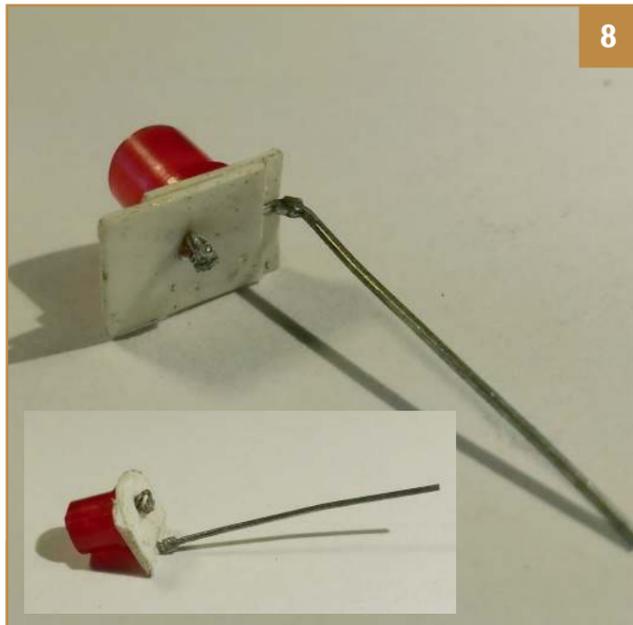
**5.** Prepare an LED by cutting the front off it. The working part of an LED is actually in the middle. If you hold it up to the light and look through it you can see the internal wires. Cut off the front just ahead of these wires. You don't have to do this, but it improves the look of the finished lamp.



**6.** Having cut your LED you can polish up the front a little if you wish, and it's a good idea to put the leads across a watch battery just to check its still working. Connect the longer wire of the LED to the positive side of the battery, if all is well one battery should give dull glow from the LED.



**7.** Cut a strip of very thin Plastikard and create a 'u' shape in the bottom of the lamp. Super glue this in place and drill the hole for the LED in the front of the lamp. This should be dead centre and just the right size so that the body of the LED fits through but not the collar at the base.



**8.** This next bit is fiddly. The longer LED lead needs bending to a right angle directly away from the shorter lead, this must be done as the lead emerges from the LED case. About 1mm above the LED bend the lead back to the original direction. Trial fit the LED in the lamp, with the switch bolt fully up. The lead you have just bent should just clear the bolt and give enough space below to allow room for the batteries.

When you are happy with the fit, build up the back of the LED with a couple of strips of Plastikard and fit a square of Plastikard a slightly larger size than the LED with the shorter lead protruding through the middle. This short leg is then cut to make one of the battery contacts.

contact and check the contacts to make sure they are all clean and not insulated by superglue. If you still can't get it to work it is possible that you got the LED wires the wrong way around. Don't panic and throw it all in the bin – just put the batteries in the other way around.

**9.** Cut the long LED lead so that when fitted the end of the lead will be under the bolt through the lamp top – see the diagram in *Figure 14*.

Super Glue the LED into the lamp body and insert a small strip of plastikard to complete the top of the battery compartment, dividing the batteries from the longer LED lead.

Having spent all this time burning and super gluing yourself you might want to test your lamp before going any further. Insert 2 AG3 batteries into the compartment with the positive side facing the rear of the lamp, hold a short wire between the rear of the lamp and the rear of the batteries, now when you screw down the bolt on top the LED should light. If it doesn't work, make sure you are pushing the batteries against the front



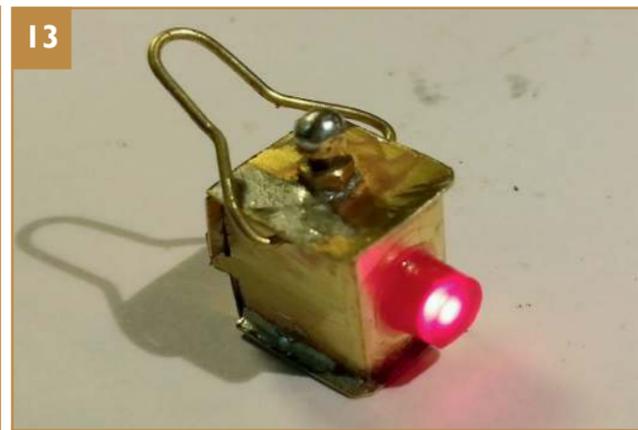
**10.** Now using a slitting disc in a mini drill trim the back of the lamp level with the rear of the batteries, leave two lugs, as per the picture, to secure the lamp rear.



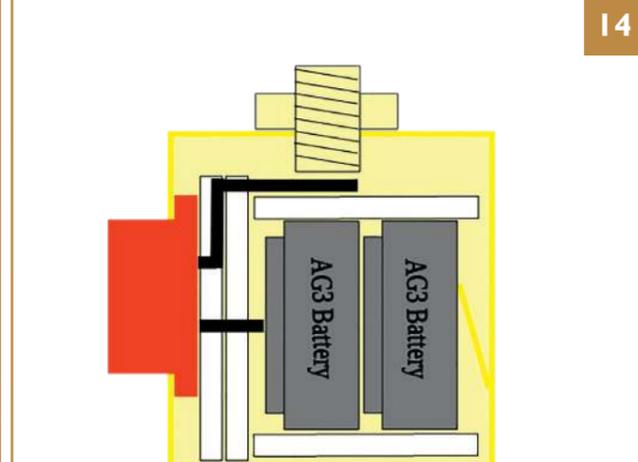
**11.** Cut the T shaped rear as per the picture and solder a small contact on the inside made from phosphor bronze strip.



**12.** Finished lamp in the brake van



**13.** You can now assemble and test you lamp and decorate it as you see fit. I decided to trim the switch bolt and solder a nut to represent the vent on a oil lamp and add a handle. Finally paint and enjoy.



**14.** Cut away showing the lamp assembly.