

PULMAN LANTERN BY S.J. LEVI – FULL RESTORATION

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I bought this unusually-designed lantern at an antiques auction a few days before the first Covid lockdown. I've only ever seen one other lantern the same as this before. It was made by Samuel J. Levi and Co. sometime around 1890 and they called it 'The Pulman Lantern' (Fig. 1). It was a patented design. The lens assembly contracts into the body of the lantern to make it compact when transporting it – perfect for lanternists. I thought an article outlining its restoration would be of interest.

I started by completely dismantling the lantern. It's the only way to clean and re-polish everything effectively. This is the stage when any wood repairs are done. There was some fire damage above the doors that needed sanding down and the wood also needed bleaching on those areas (Fig. 2).

I could have replaced both burnt sections, but it's difficult to match up the colour and grain of the wood – especially when the sun has bleached the mahogany to a yellowy-green. When mahogany is freshly sanded, the natural red in the wood is exposed and the contrast between the replaced pieces and the original sun-bleached part would be very obvious.

I then removed the two top sections as they were loose anyway and applied a two-part wood bleach to the burnt areas and any areas that had needed sanding. I used an industrial strength paint and varnish remover to take away all the old French polish. This works well with medium-grade steel wool, rubbing in the direction of the grain of the wood.

All traces of the animal-based glue on those sections needed to be scraped off. I then re-glued them back in place with a quality PVA wood glue. Sash clamps on both sides were used to clamp everything in place and left for 24 hours. There were pieces missing from the edging of the doors by the hinges, so I made new pieces for those.

Once all the case repairs were done, I brushed four or five coats of shellac sanding sealer onto the external side of the case. This fills the wood grain. They used to use plaster of Paris for this and then wood stain to colour it, but I don't like this method because it leaves white in the grain as the stain fades over time. After 24 hours of drying time, I used 500 grade wet-and-dry to dry-sand the sanding sealer coat flat. I used to be in the automotive industry so I've carried over techniques and materials I learned about there to perfect French polishing. The sanding sealer comes off nicely as dust and doesn't clog up the paper.

Traditional Button French polish was then wiped over in coats using a lint-free rag wrapped around a small pad of cotton wool to act as a reservoir. Clear methylated spirit (meths) was used to thin the



1. The Pulman Lantern (left)
2. Fire damage above the doors (above)

French polish to a spreadable consistency. The purple variety of meths can actually taint your polish, so it's best not used. Several coats are needed, leaving half-an-hour between each coat. I had to be careful not to get French polish on the wooden runners of the contracting base – I used raw linseed oil on these instead.

The French polish needs to be left for two to three days (the longer, the better) before the next stage. I used 1000 grade wet-and-dry paper (used dry) to take off any pimples in the finish or lines left by the application cloth. The polish stays soft for weeks, so you have to be careful not to press your fingers too hard into the finish, otherwise you can end up with fingerprints left behind!

If you want a satin-like finish (which I always go for) you then rub the finish lightly with ultra-fine steel wool, each time going in the direction of the grain until it's completely matt all over. Then finish with a wax polish. There's really no need to use expensive furniture waxes; I used to work for a leading barometer restorer many years ago and I was taught to use Cherry Blossom shoe polish (other shoe polishes are available) with a soft shoe brush. It works well and gives a nice finish that doesn't make the piece look newly French-polished. However, if you do want to go for an ultra shiny mirror-like finish, then car paintwork cutting compound (coarser than T-Cut brand – other brands are available) works well, finishing off with the shoe polish to remove any dried white residue left over from the cutting compound.

The discoloured brass parts (Fig. 3) have to be rubbed down using 500 grade wet-and-dry paper used dry. This is a laborious job but if you want nice shiny brass, you have to put the time and effort in. You can use industrial paint/varnish remover and medium grade steel wool to remove the original lacquer, to save sanding that off. I always like to rub out the original file/sanding belt marks to make the brass better than it left the maker's workshop. A random orbital (DA) sander with a 360 grit pad works really well on heavily pitted/tarnished flat areas if you have access to one, as does spinning and sanding the round parts in a lathe.

All lenses have to be removed, otherwise they can get damaged by either the rubbing down or the polishing stage (they have to be cleaned anyway). Access to a bench polishing mop will be required to polish the brass. They can be bought for less than £100 at online marketplaces. This is a messy job best done outside if you haven't got any air

extraction equipment. Leather gloves are needed too as the brass gets really hot and can sometimes snatch on the mop. I personally prefer not to finish the brass with lacquer as I find that if the lacquer gets broken (such as on the telescopic part), oxidation starts creeping under the lacquer. Lacquer can also make the moving parts stiff and put stress on the rack-and-pinion mechanism. Instead I think it's better just to clean the brass with Duraglit

3. Restoring the brass elements





4. The new chimney (above)

5. The new brass lens cover (right)



6. The lighting system

every three months. Once it's been highly polished, it's easier to keep clean. If I was to use lacquer, then I would be inclined to use one of the modern two-pack clear lacquers with hardener used in the automotive industry, as they don't go yellow with age and also dry super-fast. You will need an organic vapour mask to spray this though, as it's really harmful to breathe.

I had to make the chimney, as it was missing (Fig. 4). I used 0.5mm thick mild sheet steel as original Russian iron is not easily available. I invested in a swaging vice-

mounted bead roller, slip roller and sheet metal folder to make the chimney, using a cardboard template to get the shape right initially. The rest of the tinware was sand-blasted to remove old paint and rust and was then re-sprayed satin black. Heat-proof black can be used, but as I planned to use LED lighting that runs cool I thought it was rather pointless.

I also had to make a brass lens cover out of 1.5mm thick brass sheet and turn a brass knob on my lathe as they were also missing (Fig. 5).

I had to make a lighting system for this one as nothing came with it. I mounted a reproduction Bakelite bulb holder onto a sliding brass base, then wired it up to reproduction three-core braided gold cable with a reproduction inline lamp switch. I used a clear 11.2W LED bulb for illumination (Fig. 6).

Assembly takes time. It's best if you take a few photos as you're dismantling the lantern, especially for the lens configuration. Very often screw holes in the wood case will have become loose – the best solution for this is to fill the old hole with a sharpened matchstick glued in, then use a sharp bradawl to make a point in the newly plugged hole so that the screw will go back into the same position. I



7. The finished lantern



always have to use this method when reattaching doors. Plus, the case goes out of shape with time so the holes sometimes need moving. You might have to do this more than once before you get the doors to hang correctly. If you don't, the edges may break off the doors, or there may be big gaps where they should close. The rack and pinion mechanism can be lubricated with Vaseline.

The finished lantern is shown in Fig. 7.

(See Mike's website www.woodcraft.biz for your magic lantern needs.)