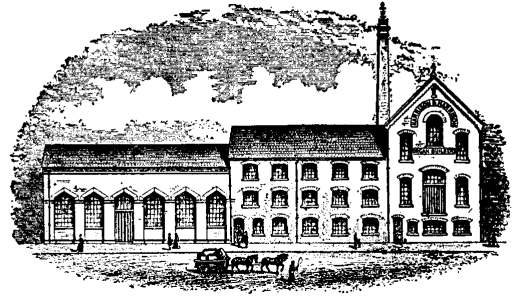


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The Organ of King's College Chapel, Cambridge

Method for Repairing Collapsed Façade Pipes

Report by Nigel Turner (Pipemaker)
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The metal shop at Harrison & Harrison has just repaired three badly collapsed façade pipes from the organ of King's College Chapel, Cambridge. When we consider the age of these pipes, which date back to the eighteenth century, the necessity for repair, or even an overhaul of all the East and West front pipes, is not surprising.

Each of the front pipes that we attended to required new tips, rounding-out of the bodies and minor soldering repairs. The addition of zinc liners to the inside of the feet and lower body will see these pipes standing proud into the next century.

In addition, we repaired some reed and string pipes from inside the organ which needed new tips and feet.

We removed the feet from all three of the front pipes and replaced the damaged tips with new ones in plain metal. Removing the feet enabled us to fit the zinc liners inside. The liners give extra strength to the tired pipe metal and minimise the risk of further collapse.

Great care was taken to avoid disturbing the gold leaf on the pipes. We avoided removing the ears of the pipes to minimise damage to the gilding.

Once the foot of each pipe was cut off from its body, we removed the languid (a metal plate across the inside of the pipe). After flattening the languids they were found to be in a suitable condition to be refitted once the liners were in place.

Removing the collapsed pipe tips makes it easier to round-out the rest of the foot. Once rounded out, we made a paper pattern of the foot from which we could form the shape of the zinc liner. The paper patterns enable a very close match to the taper of the foot with allowance being made for the thickness of the metal.

For the feet that were less badly damaged, we were able to make an exact replica by cutting along the solder seam, opening up and flattening out the tip and then tracing around the shape onto the new metal.

The photographs below illustrate these processes.

Photographs



A foot has just been removed from a front pipe



*Pipe body with foot removed.
Note that the pipe ears are still in place*



The damaged tip of a pipe foot



*A pipe tip removed and flattened.
The shape can now be used to prepare a new tip in pipe metal*



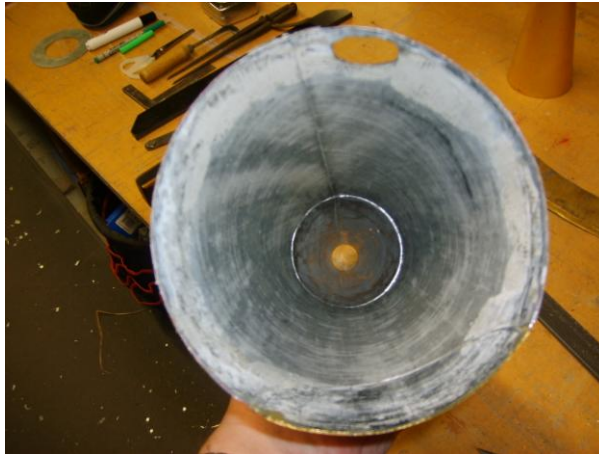
*A new tip formed from the pattern of the original.
With the foot now in one piece, a zinc lining can be fitted*



*A zinc liner before it has been soldered into the foot.
The same taper or pitch of the foot is recreated for
the liner by making a paper outline of the pipe foot shape.
The tight fit of the liner inside the foot holds the tired metal in place
and stretches the foot metal taut adding strength back into the pipe*



*Paper patterns used to produce the zinc liners and new pipe tips
(the old tips are shown in the middle)*



The inside of a pipe foot without a liner in place



The inside of a foot with a liner in place



Pipe bodies are repaired by rounding them out on a mandrel, taking care not to distort the pipe face on the end of the mandrel. After this, any splits on the seams or cracks caused by fatigue are repaired



The liners for the bodies are made in the same way as those for the feet. The body shown here was so badly damaged that it had to be cut across its length so that a full liner, that also provides support behind the pipe face, could be fitted. The other pipes only required open-cylinder liners that could be inserted after the pipe feet were removed



*The mouths of the three front pipes after repair
(before re-gilding)*



*Another view of the repaired front pipes, before re-gilding,
showing the new pipe tips*



*Some pipes of the Tuba stop (from inside the organ)
ready for repair*



New tips for pipes of the Violes stop



New tips for resonators of the Pedal Ophicleide stop