Case study

on the restoration

of the

1735 Richard Bridge Organ

at

Christ Church Spitalfields

Wind Supply and Trunking

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Wind Supply and Trunking

Wind system

In 1997 the organ was found having two large double-rise reservoirs and feeders and a very large electric blowing plant (two-stage pressure blower). From the original organ the wind trunks of the Great largely survived. The trunks of the Choir had been turned a quarter turn and also re-tailored into a long trunk running from the Choir bottom board to the bellows. Another trunk of a different material supplied the other soundboard. These original trunks are made in an oblong cross section of Pine thick narrow boards glued in between thinner Oak wide boards.

The Choir bottom board with the original trunk hole blocked up and a new hole made at right angle to it

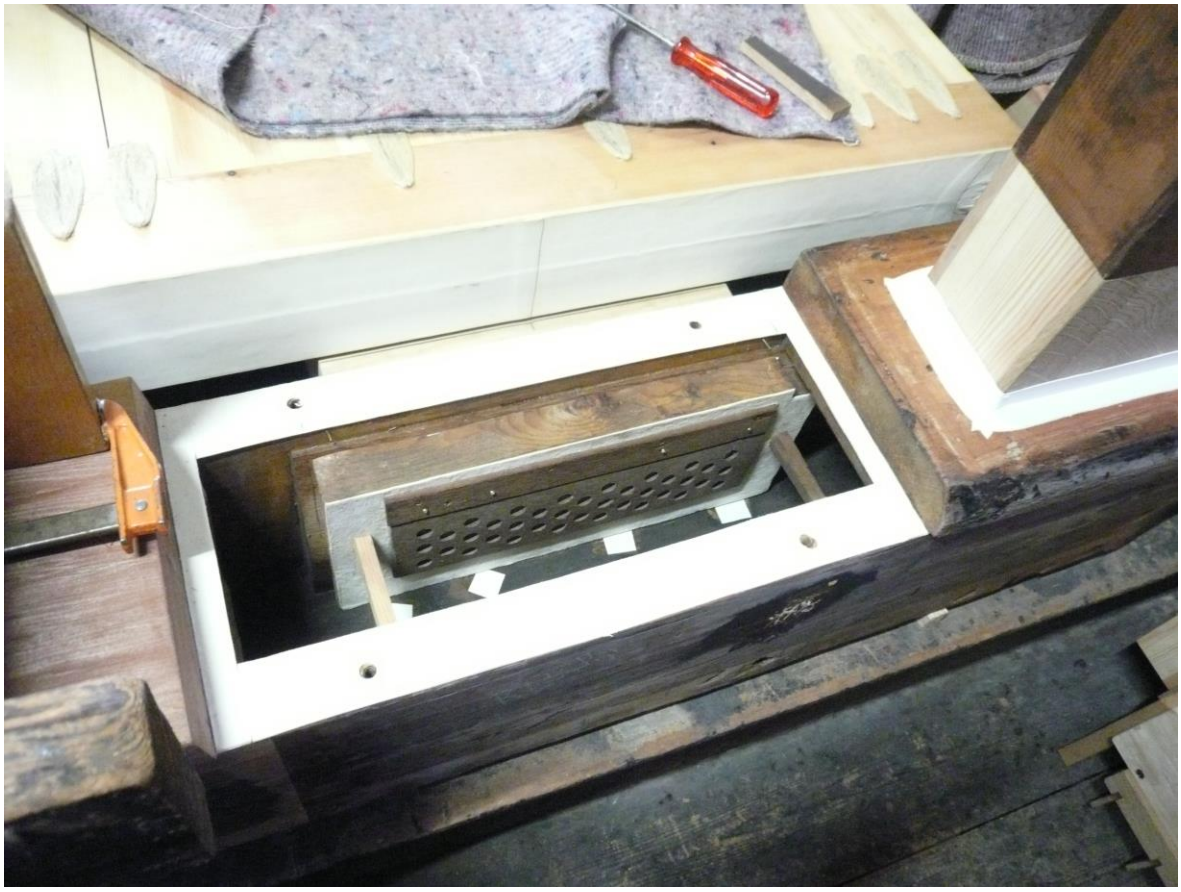
The Great has two trunks (+2600mm long) with an inside cross section of approx. 222mm x 98mm. The Choir has two trunks that branch off about 755mm from the top of the Great trunks with a cross section of 190 x 91mm.

Other significant finds were the three fragments of the thick walled main trunk where the bellows originally would have been connected to. This trunk was originally positioned on the higher floor level behind the console. Nail holes in the floor corresponding with holes in the trunk prove this. In one of these sections we were very fortunate to find an original removable valve-seat with non-return valve. This valve was used as model to reconstruct the other non-return valves in the main trunk and the intake valves in the new bellows.

Two of the three fragments of the original main trunk

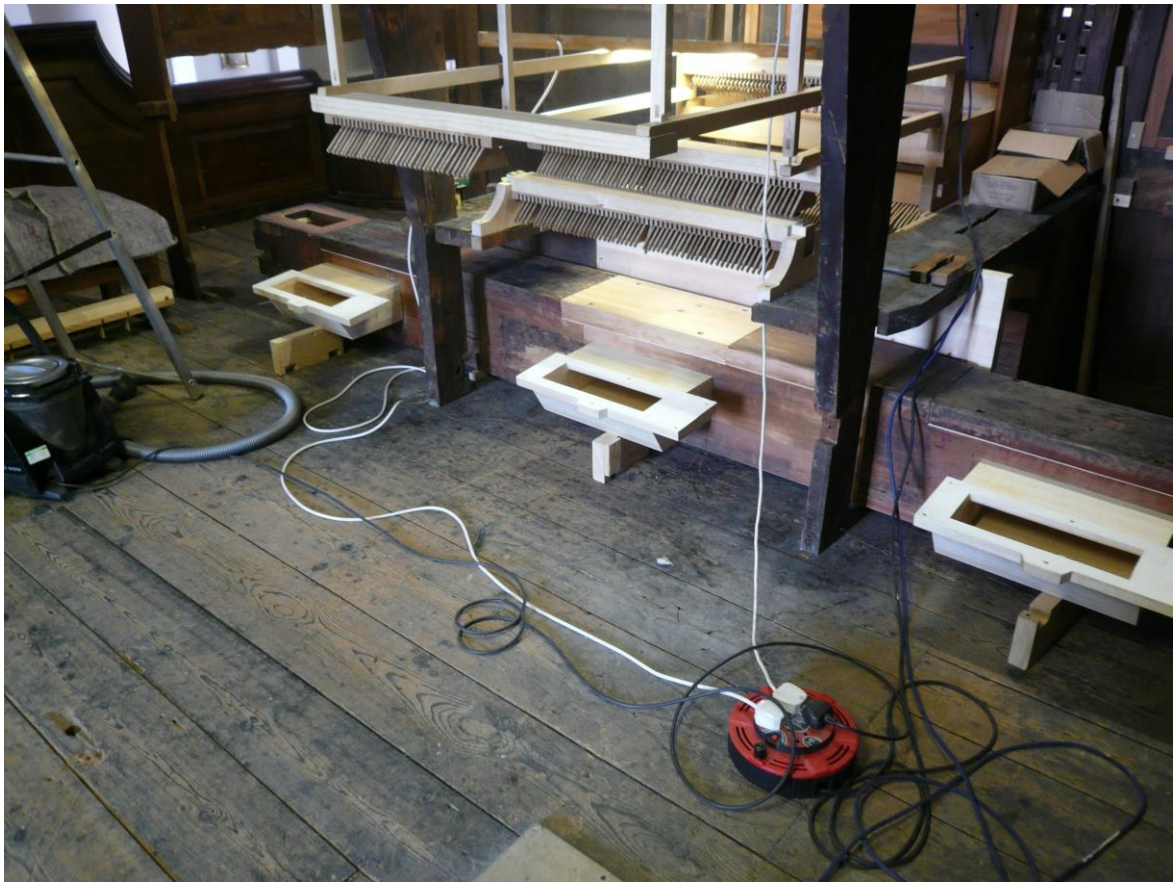
The non-return valve, a fortunate survival

Installed wind system with service hatch removed showing the restored non-return valve



The inside cross section is 204 x160mm with a wall thickness of 49 / 58mm.

The main trunk on the floor, running across the organ under the action assembly, with the bellows outlets in place (Note the new middle non-return valve service cover)

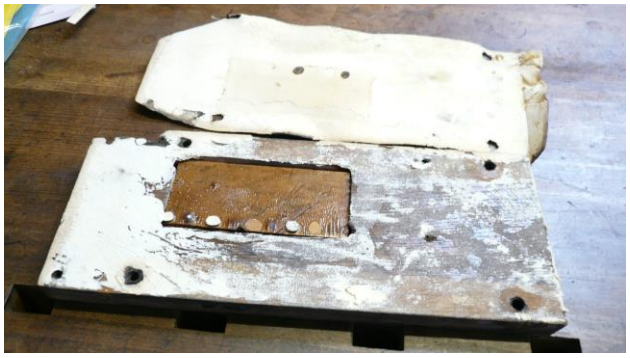


The Swell trunk was reconstructed with an internal cross section of 134 x 60mm after the size of a blocked up hole which was discovered in the Bass face-board of the Great wind box.

We can be reasonably certain that the trunking system should be reconstructed as such:

A main trunk with three removable covers over three removable non-return valves, with at either end an aperture in the top connecting via the long Great trunks with the Great soundboards, and via the Choir trunks branching off, with the Choir Soundboards. The Swell would be fed through the hole in the Great face-board.

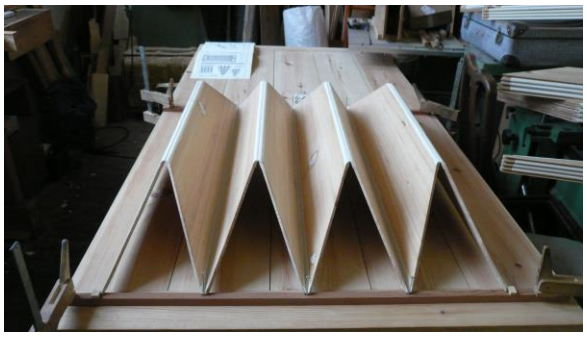
Outer section of the bass faceboard with a blocked-up trunk hole

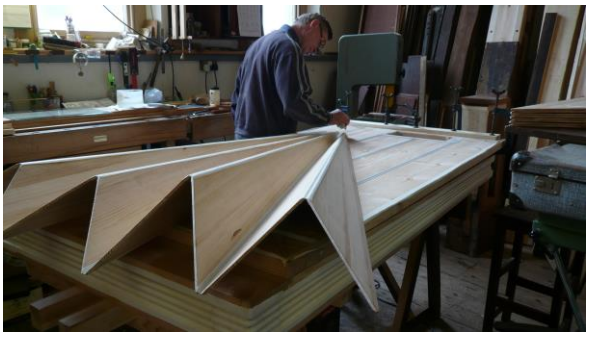


Bellows

The size of the bellows was determined by the available space, which worked out to be one by two metres. A set of three, with each four inward folding sets of ribs was made.

Bellows under construction by Marek Matuszyk

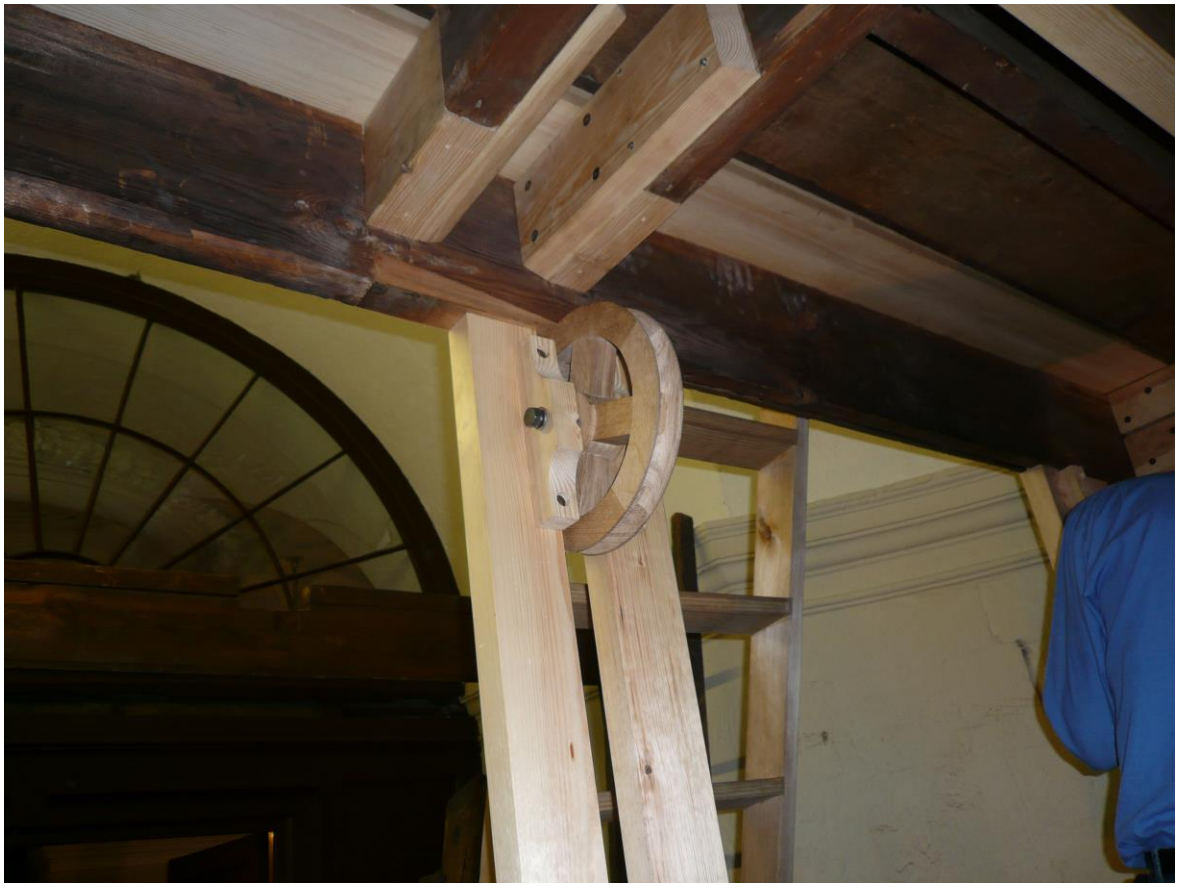




Finishing touches to the leatherwork

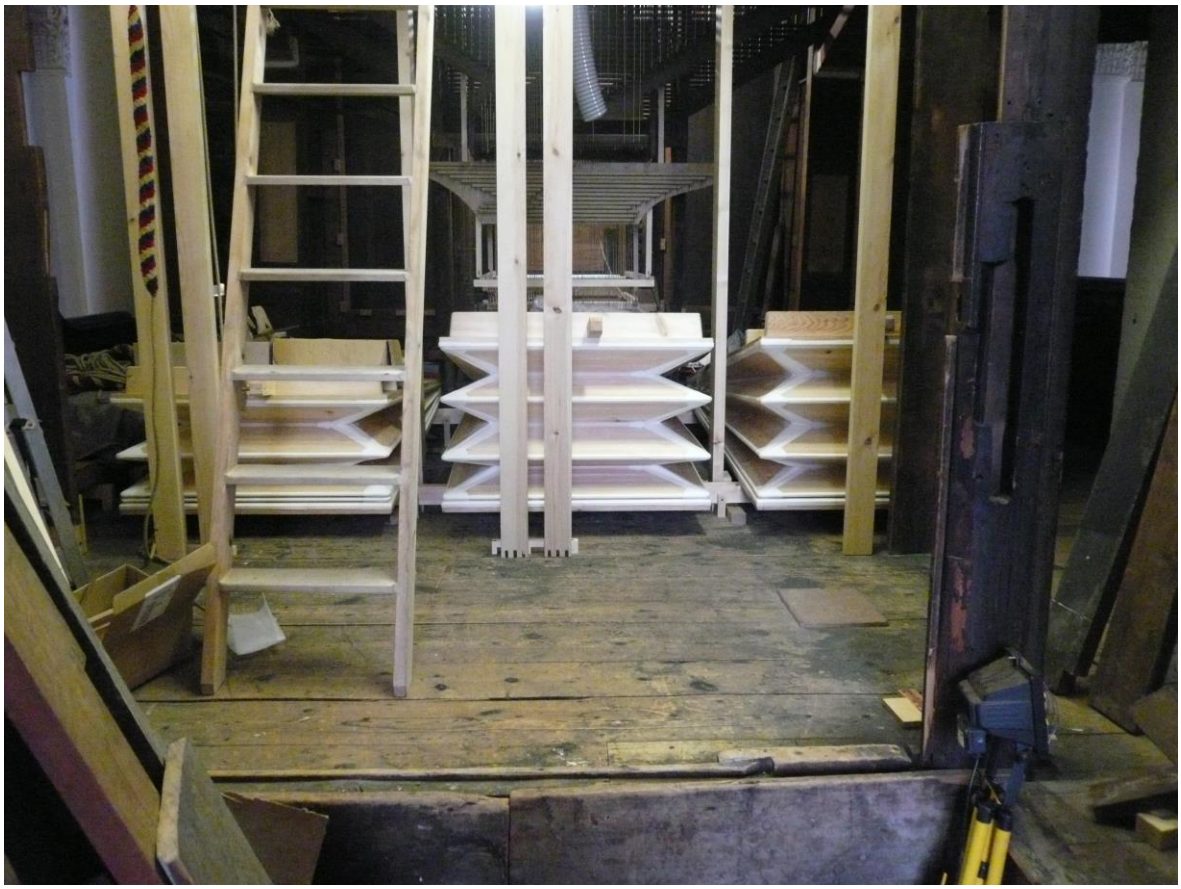
A wedge shaped cut-out in one building-frame upright confirmed that the original bellows would have been placed with their hinges towards the front of the organ. This arrangement meant that hand-pumping could be done best by pulling them up with ropes and pulleys. Levers over the top as shown in some illustrations of similar bellows, would be pointing the wrong direction.

The new pulley for the hand pumping of the bellows (note the extensions of the Choir soundboard supports to their original length)



By employing a second pulley at the bellows attachment, the force required to raise the bellows is reasonable. Keeping the organ supplied with wind manually is not too demanding. The size of the non-return valves is such that at least two bellows have to be supplying at the same time, in order to be able to supply enough wind for the full organ.

The testing of the wind system



An electric blower is also available. This feeds into the main trunk, while it operates a device opening the non-return valves inflating all three bellows.

The Pedal has its own separate wind system, having no connection to the Bridge organ itself. The only effect the Pedal department has on the original wind system is, that because of the presence of the five largest Pedal pipes since 1837, there is a slight shift in the position of the reconstructed bellows to where they originally would have stood.

The resulting wind is stable and copes with varying demands very well. The trunk sizes are generous but not overly large, and the three bellows give the organ a very long breath, making the fears that the organ would have an unsteady wind (as reported in the Christian Remembrancer 1833 in an anonymous letter) seem unfounded.