

FIXING CRACKS ON A DOUBLE BASS BACK

JAMES HAM describes an innovative method to solve a common restoration problem



James Ham makes double basses and has been repairing stringed instruments of all kinds in Victoria, Canada, since 1972

Traditional hide glue has been the adhesive of choice for luthiers for as long as stringed instruments have been made. Among the properties that make it uniquely suited to making and restoration is the fact that it can be

reactivated at any time – from hours to centuries – after its original use so that it will re-adhere to wood or to newly applied hide glue. This reactivation may be brought about using either hot water or, as I will describe here, steam.

Flat-backed instruments such as gambas and some double basses almost inevitably suffer cracks because of the fact that wood shrinks very little in the longitudinal direction of the log from which it came, but quite a bit in the radial direction (quarter-cut), and even more in the tangential direction (slab-cut). When the flat back is glued to the rib garland and further restrained from shrinking by longitudinal cross bars, eventually something has to give – and the result is an open crack.

Cracks can sometimes be closed and glued if the back is freed from the ribs and cross bars, thus removing the stress that caused the cracks. But

sometimes cracks are so wide that even if it were possible to close them, the resulting stress would cause them to reopen or cause new cracks nearby.

On older instruments, cracks may have had previous repairs with varying qualities of workmanship and may have been subjected to the unwise use of synthetic glue. In such cases, cracks must be filled by the insertion of new wood. One method of doing this is to use a saw, scraper or knife to open the crack further and create edges that are straight and clean enough to enable the fitting of a wooden insert or 'splint'.

I prefer to minimise the removal of original wood from old instruments and I have found an alternative method of fitting and gluing splints into these open cracks. Many woodworkers are familiar with the trick of removing a dent by applying a wet cloth and pressing a hot soldering iron against the cloth, which forces steam into the crushed wood fibres causing them to puff up and regain their original shape. If a splint is made slightly too thick to fit into a crack, then compressed enough to be inserted, and then shot with a jet of steam, the wood will swell to fill the crack. If hide glue is applied to that splint and allowed to dry completely before the splint is compressed, the splint will be bonded by the reactivated glue after it has swelled to fill the crack.



ALL PHOTOS: JAMES HAM

A steam cleaner used for household tasks is the starting point for this process

[1] There are many brands and models of steaming tool used for household cleaning, any of which will provide a directed jet of steam suitable for doing this job. If your tap water has a high mineral content, you should use distilled water.



[2] Using the steamer to remove old glue and dirt from the area of the crack

[2] To begin the repair, I remove the sources of stress that caused the crack by freeing the back from the ribs and cross bars. In this case, the cross bars were not original, so I chose to remove them entirely. Sometimes this would be enough to allow the crack to close so that it could be glued without the need of a splint. On this instrument, some of the cracks could simply be cleaned and reglued, but some needed splints. I will describe the process of installing a splint in one of these cracks. The steamer, aided by a stiff brush or scraper, is useful in removing old glue and dirt from the area of the crack.



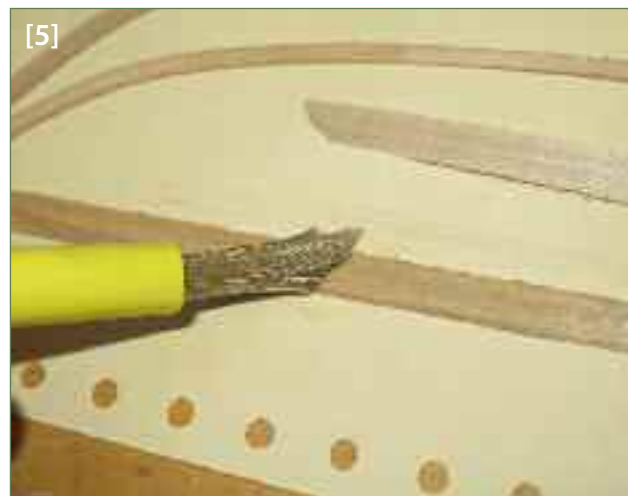
[3] Old synthetic glue can be seen in the crack prior to its repair

[3] Old reinforcements have now been removed and synthetic glue can be seen in the crack. If the glue is water soluble, the steamer and a stiff brush will work well to clean it out. It is vital to remove any synthetic glue, dirt or foreign material from the crack, but old hide glue isn't a problem: it will be completely compatible with new hide glue.



[4] Scraping the splint to thickness

[4] I use poplar or basswood to make the splint, because maple is more difficult to compress and doesn't recover its shape as fully when steamed. Basswood is the most compressible but not quite as strong as poplar. Both basswood and poplar are good for retouching. If I use this method for filling rib cracks, I bend a piece to the rib curvature before sawing off pieces for the splint and scraping to thickness.



[5] Applying hide glue to the splint before compressing it

[5] I put waxed paper on my workbench before brushing glue on to the splint. When the glue is dry, the splint is ready to be compressed with a roller.



[6] Using a roller to compress the splint against a hard surface

[6] The roller that I use to compress the splint is a bearing and shaft salvaged from an old electric drill. When the glue on the splint is dry, I roll it – applying lots of pressure – against a hard surface.



[7] The splint inserted into the crack prior to steaming

[7] After rolling the splint, I try it in the crack to find the best fit. Before rolling, it didn't quite go into the crack, but now it fits snugly all the way along.



[8] Steaming on each side swells the splint and reactivates the glue

[8] I clamp a plywood block at each end of the crack to ensure accurate alignment of the crack edges until the splint is glued in. Alternatively, temporary cleats (each with a notch to accommodate the splint) may be glued over the crack to maintain the spacing and alignment. In my experience, because the steaming only takes a few seconds, the varnish is not greatly affected. Sometimes clouding occurs, which may disappear with drying or can be reversed with the judicious use of an alcohol- or turpentine-dampened cloth (both of these are common ingredients in commercial violin polishes). As always, I advise experimentation on scrap before trying any technique on something of value.



[9] The repaired crack reinforced with cleats

[9] After the splint is glued in, I trim it and reinforce it with cleats.

NEXT MONTH >> Gregg Alf looks at how to make good purfling corners