

Schaff Piano Supply Company Presents:

# Brass Rail Repairs

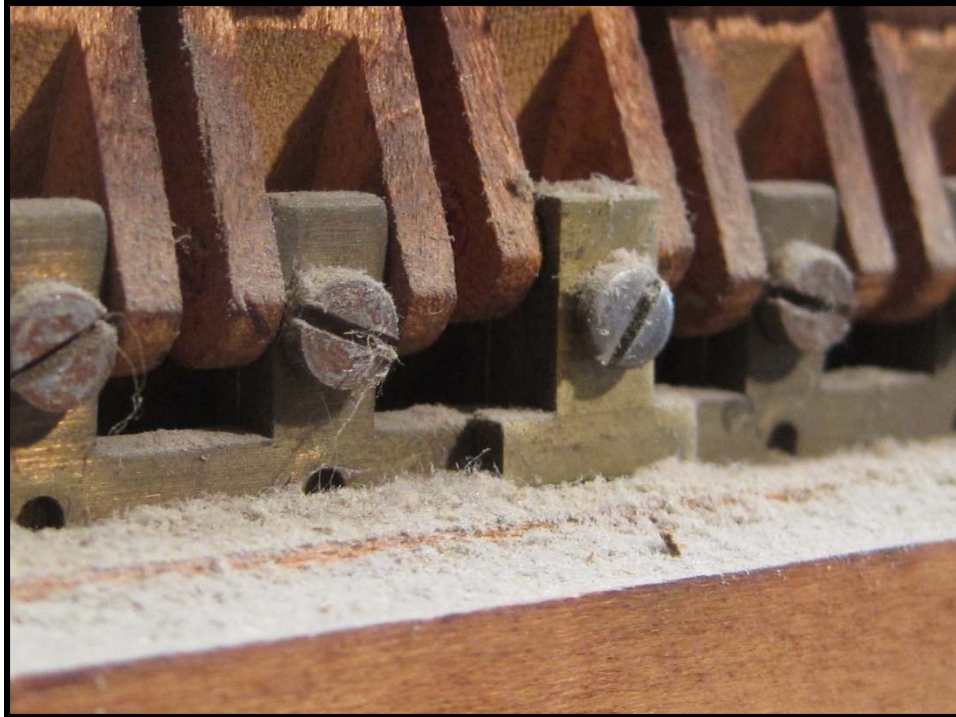
## Diagnosis and Repair Procedures



Action Work

By Chuck Behm

## Brass Rail Repairs



### -Rationale-

Vintage upright pianos equipped with brass rail flanges are oftentimes in need of repair. Brass butt plates are prone to breaking at the screw hole, while the tongues of the brass rail itself most often fail either at the line scored into the brass to keep the center pin in place or at the screw hole. When either part cracks or breaks entirely, a note no longer works correctly. At best, the corresponding hammer is wobbly—sometimes to the point where the hammer begins to hit the wrong strings. At worst, the hammer butt becomes unattached from the rail altogether, and the note quits playing at all. Sometimes, in fact, several notes in a row will quit working, as the hammer becomes wedged in the action.

The good news is that not only is it possible to repair such problems by replacing the offending broken parts, but a long-term fix involving total replacement of the rails and the complete set of butt plates is also possible. By giving the owner the choice of a low-cost repair of actual broken parts, or an investment in the future of the piano by installing a whole new brass rail system, you are providing a valuable service to your customer.

## -Diagnosis of the Problem -



*With action parts out of the way, problems are obvious.*

If one or two notes of a brass rail action aren't working and the owner is concerned with keeping costs to a minimum, repairs are usually possible on the spot. Fixing what's obviously broken does require removing the action from the piano, so it's a good idea to at least give a cursory check of all the notes for developing problems to avoid call-backs in the near future. By grasping each hammer and wiggling the hammer from side to side, loose hammers will signal a problem—usually with a crack forming in a butt plate, but also sometimes show a problem developing with a tongue of the rail itself.

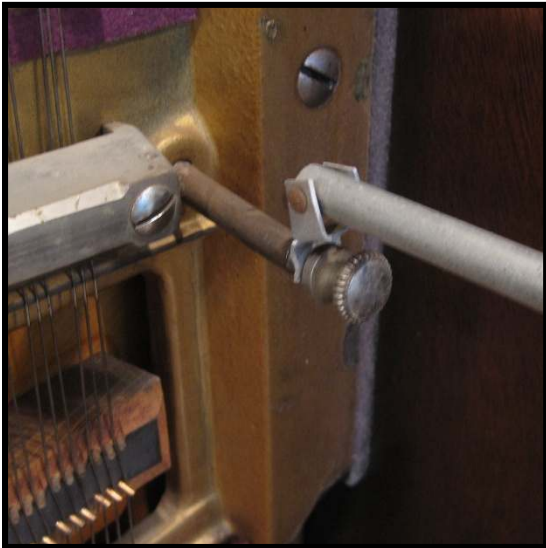
In cases where the owner is interested in a long-term fix for the problem, a diagnosis of the severity of the problem is necessary. To do the job right requires a partial disassembly of the action, as shown in the photo above. To see what's going on the hammer and damper assemblies both need to be removed from the action. If this work is to be done in the shop (strongly recommended) a diagnosis of the problem may be done with extreme accuracy. The findings may be communicated to the owner with photos sent (if necessary) via email.

## Action / Brass Rail Repairs



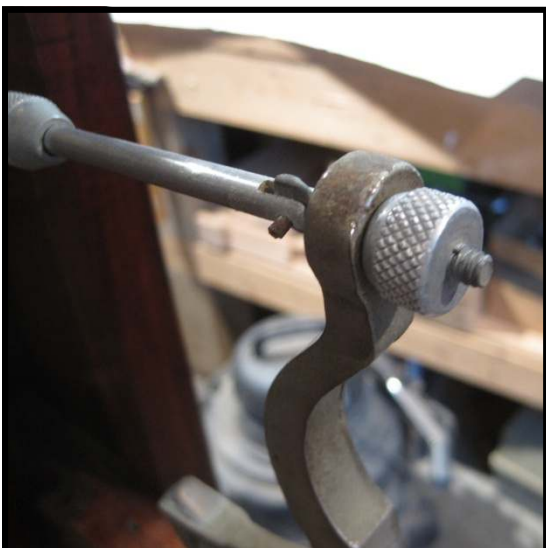
**Preliminary step 1:** If the repairs to the action are to be done in the home, remove the action and place on a suitable surface. If no other surface is available, the key blocks on either side of the key may usually be used to rest the action brackets on.

**Caution:** *Avoid damaging the finish of the key blocks by placing a piece of cardboard under the action brackets as has been done in the photo on the left. .*



**Preliminary step 2:** Secure the action by using an [action post extension \(Cat. No. 297\)](#). Slide the adjustable end of the extension onto the end of the action bracket bolt and secure with the bolt knob.

**Note:** *If you have transported the action to your shop for an extensive job, use the action post extension with one end attached firmly to the wall behind your bench.*



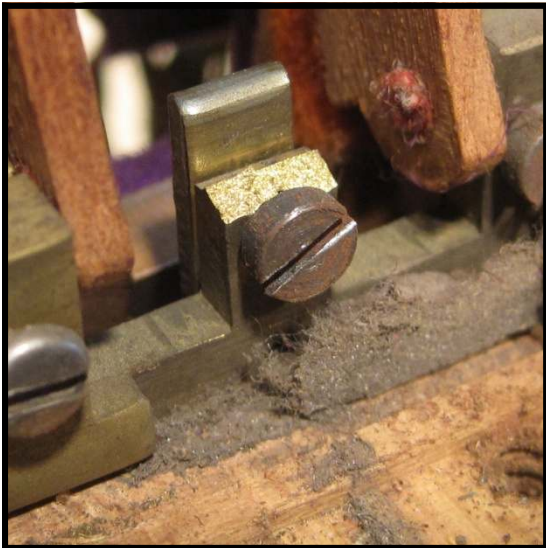
**Preliminary step 3:** Insert the threaded end of the action post extension through the hole in the action bracket, and tighten down the nut on the extension. You're now ready to work on the action without having to worry about bumping the action and having it crash to the floor.

## Action / Brass Rail Repairs



**Preliminary step 4:** To investigate all but the top treble, dampers will need to be removed. If you are inspecting individual problem notes, at the very least remove the damper assembly directly in back of the hammer butt / flange tongue. An 8" slotted flange screwdriver (Cat. No. 34) coupled with a combination handle (Cat. No. 26) works well.

**Caution:** *If you remove more than one damper, number the damper assemblies as you remove them to avoid confusion.*

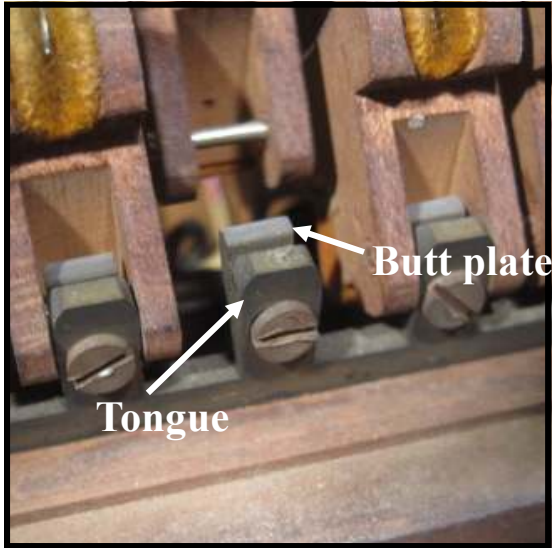


**Preliminary step 5:** Once the appropriate damper/s have been removed, a closer inspection is possible.



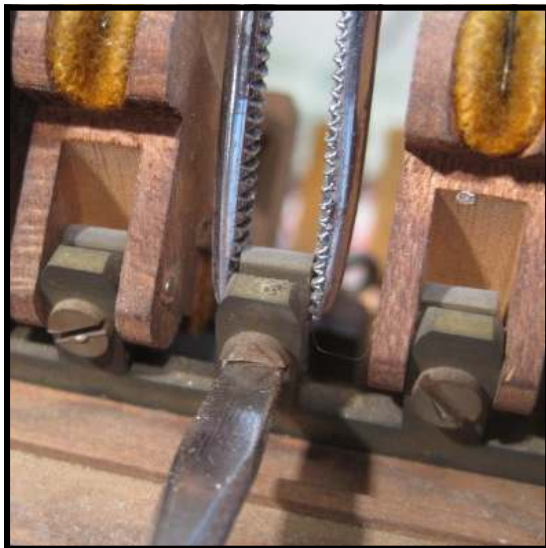
**Preliminary step 6:** Remove the built-up dust with a paint brush or a blast of compressed air to get an even better look at the situation.

## Action / Brass Rail Repairs

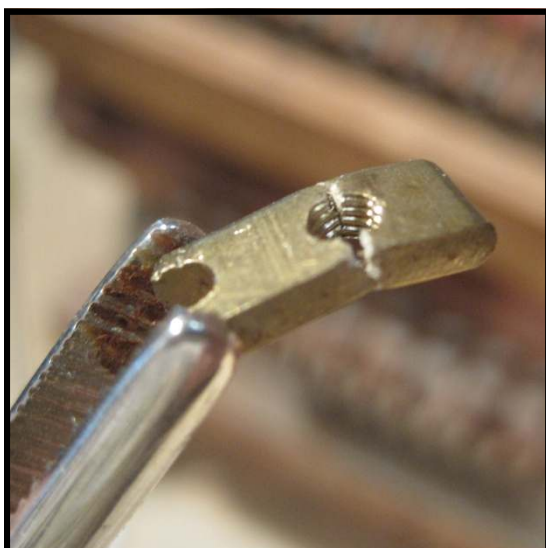


**Diagnostic Tip # 1:** *If a hammer is wobbly or out of position altogether, indicating a problem, but the tongue of the brass rail appears to be intact, there is most likely a faulty butt plate to blame.*

Loosen the butt plate screw a few turns, if necessary, and lift the hammer assembly out of the way to access the suspected butt plate.

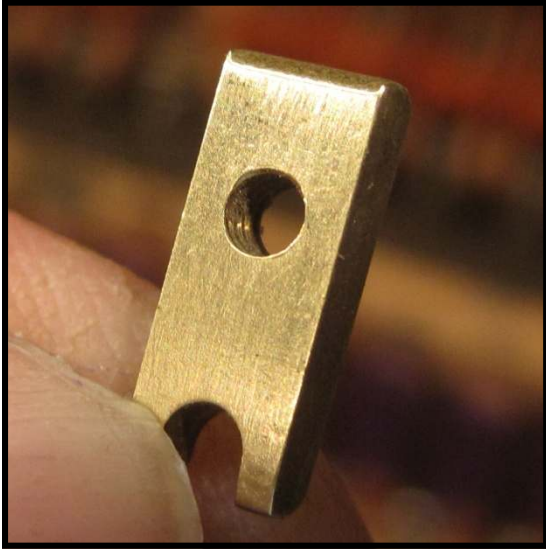


The easiest way to remove the butt plate is to grip it with a pair of [8" tweezers \(Cat. No. 160C\)](#) while further backing the screw off with a small flat-bladed screwdriver such as a [6" piano action screwdriver \(Cat. No. 3274\)](#). As soon as you feel the screw release, carefully lift the butt plate out of the action.



**Note:** *This is what you'll typically find when the hammer is still in place but loose, and the corresponding tongue to the brass rail appears intact. A butt plate that has begun to crack at the screw hole will often be able to keep the center pin from coming completely out of position, but without anything resembling firmness. When the butt plate finally breaks, the hammer will ordinarily no longer work at all.*

## Action / Brass Rail Repairs



Schaff's threaded brass butt plates (Cat. No. 518A) and Kimball (unthreaded) brass butt plates (Cat. No. 518-1/2) are used to replace broken butt plates.

**Inventory Recommendation:  
100 each type**



For easy insertion into the action, first place a butt plate into Schaff's butt plate inserter (Cat. No. 128). With this tool, you will eliminate the problem of trying to hold a tiny part with your fingers of one hand while trying to start the tiny butt plate screw with your other hand.

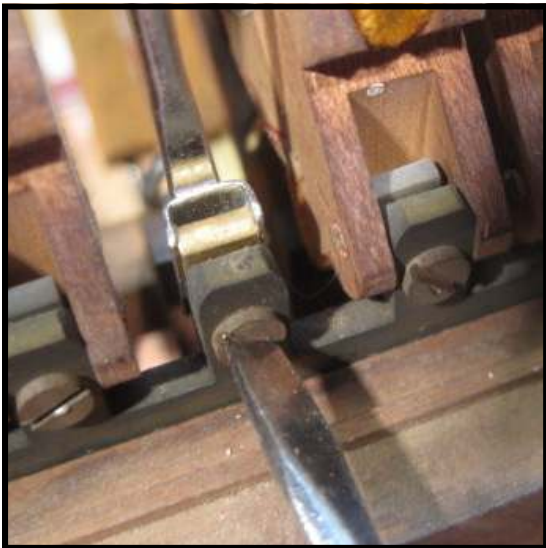


With the butt plate firmly in place in the butt plate inserter, putting it in exact position to start the screw is easy.

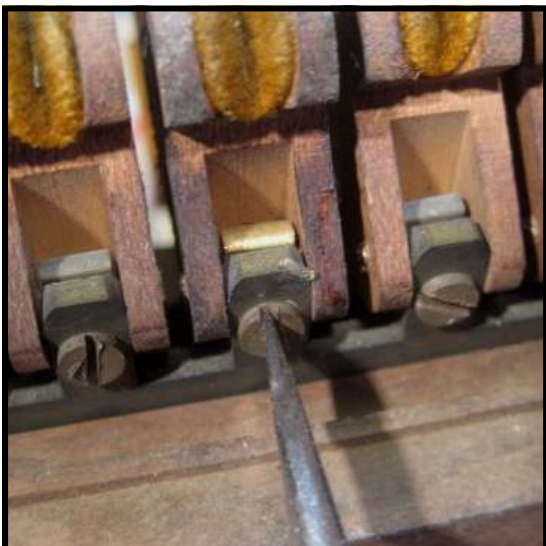
## Action / Brass Rail Repairs



While keeping the hammer butt assembly pushed back and out of the way, use the butt plate inserter to position the screw hole of the butt plate in line with the screw going through the tongue.



Start the screw and turn down until the butt plate is fairly close to the tongue. Leave room for the center pin of the hammer butt to slip into place.



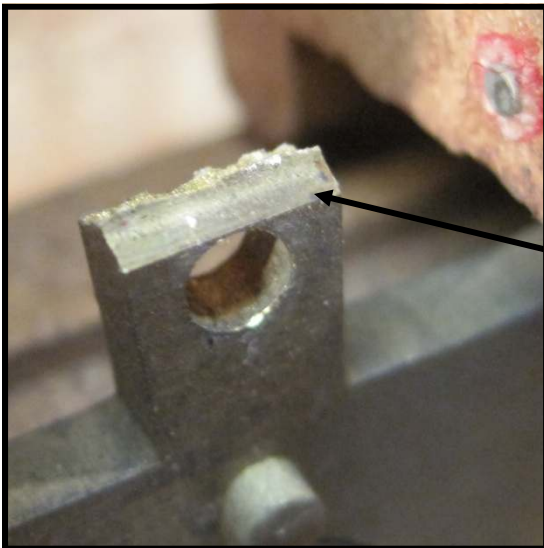
Pull up on the butt plate inserter to remove it, then slip the center pin of the hammer butt into place. Tighten the butt plate screw down until the hammer butt pivots without any wobble, but not so tight as to strip the threads.



## Action / Brass Rail Repairs

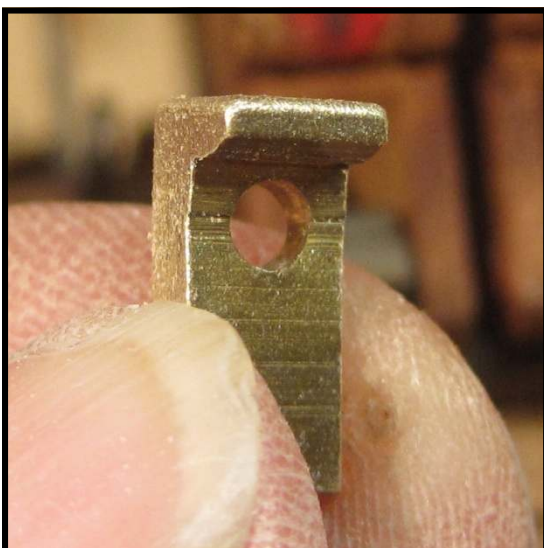


**Diagnostic Tip # 2:** A second problem area with brass rail actions are tongues that have cracked or broken off altogether. Many times the break occurs at the groove meant to hold the center pin of the hammer butt in place, which is a weak point.



**Checkpoint:** The view of the same broken tongue as seen from the front side of the action. Notice that lower half of the groove which holds the center pin in place is still intact.

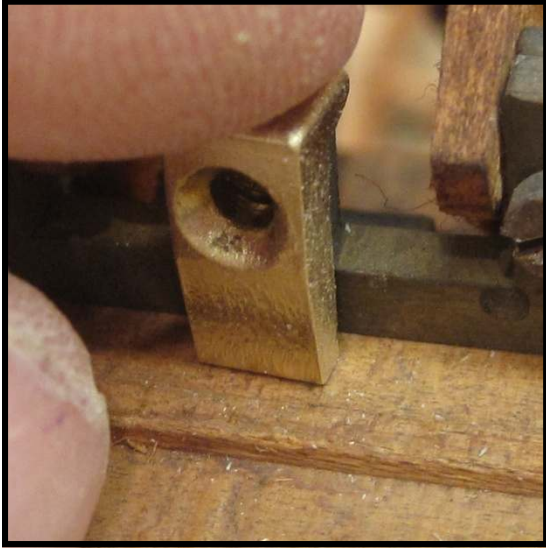
**Note:** If the bottom half of the groove is not intact, refer to the next diagnostic tip.



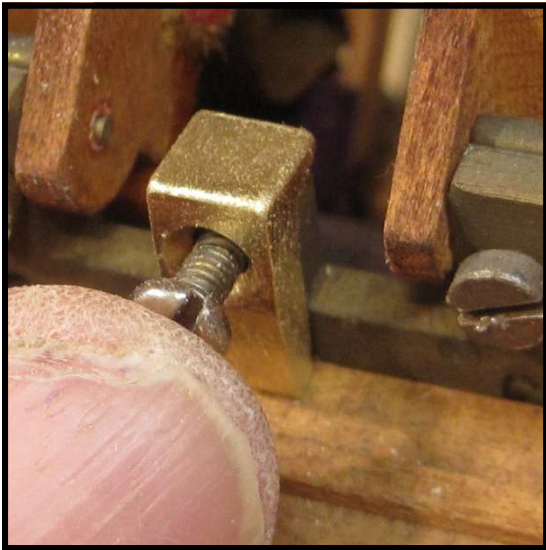
Schaff's [brass repair clip \(Cat. No. 513A\)](#) is designed to repair the broken tongue when half of the groove is intact. A [special Kimball repair clip \(Cat. No. 513KA\)](#) with a threaded hole is also available.

**Inventory Recommendation:**  
**12 each type**

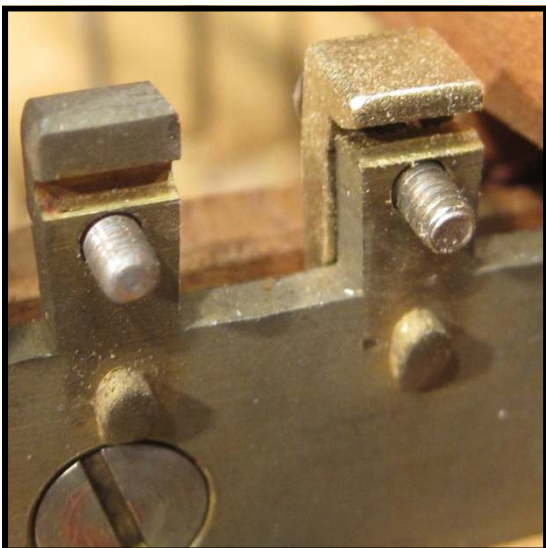
## Action / Brass Rail Repairs



Place the repair clip over the broken tongue and line up the hole in the clip with the hole in the remaining portion of the tongue. If you have trouble gripping the clip and holding it in place, use your pair of 8" tweezers.

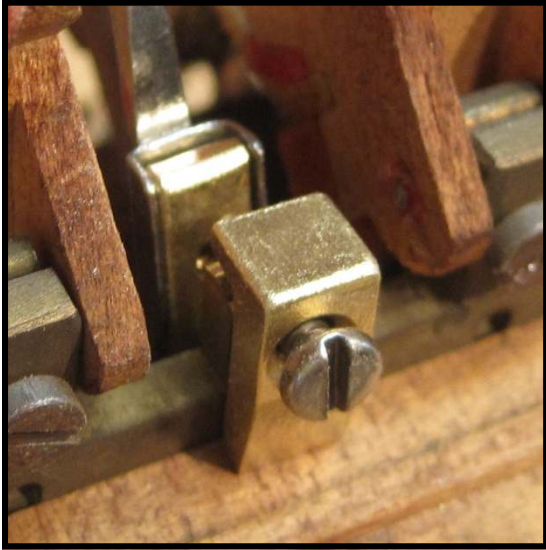


Insert a butt plate screw.

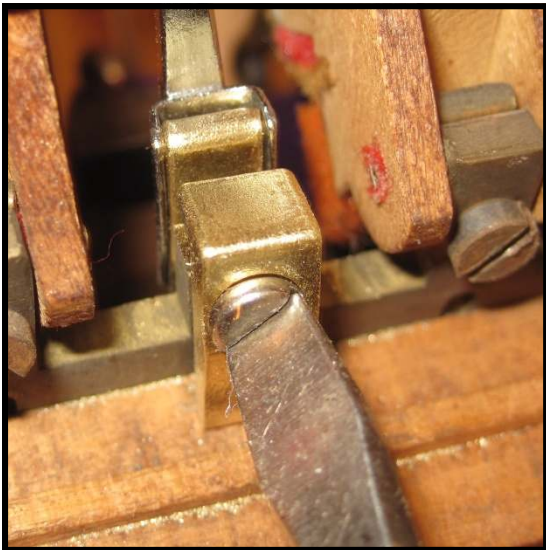


**Checkpoint:** *A comparison of an undamaged tongue with one which uses a repair clip to complete the groove as seen from the front.*

## Action / Brass Rail Repairs



With the repair clip in place and the screw inserted, line up a brass butt plate using your butt plate inserter.



Use your small screwdriver to begin the screw.



Don't turn the screw down all the way, but leave a little space between the top of the butt plate and the repair clip for the center pin to fit.

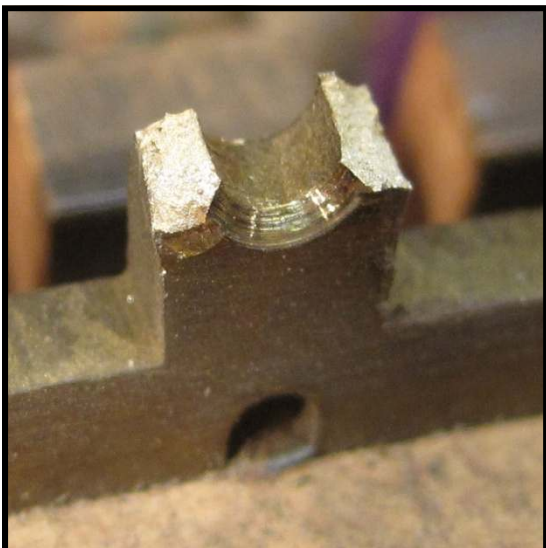
## Action / Brass Rail Repairs



After lining up the hammer butt assembly, slide the center pin into place so that it's in the groove. (If you've removed it from the action, you'll have to finagle the hammer past the hammer line. By turning it sideways and working it around, you should be able to get it back in place.)



Finish tightening the screw, so that the center pin is grasped firmly by the butt plate. The screw needs to be tight, but not overly tight.



**Diagnostic Tip # 3:** *In some cases, the normal repair clip won't work. When the tongue is broken at the screw hole, for example, the entire groove is missing, so a clip with just the upper half of the groove obviously won't do.*

## Action / Brass Rail Repairs

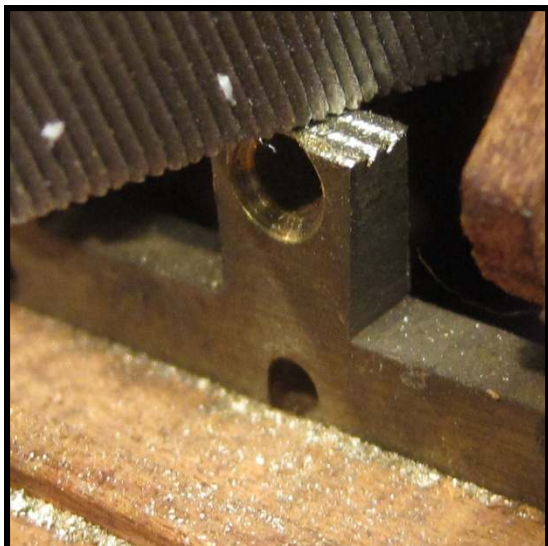


**Caution:** Don't assume that if a tongue has broken at the groove that you can always use the ordinary repair clip. An uneven break at the groove in which the lower half of the groove is damaged will make the previously mentioned repair clip (No. 513A) unusable.



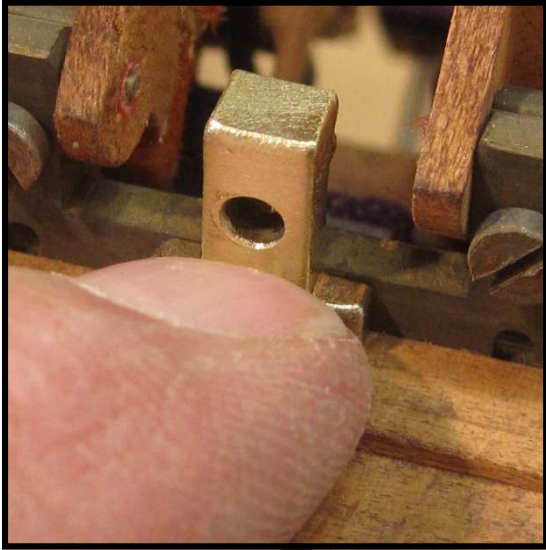
Schaff's [brass winged repair clip \(Cat. No. 513B\)](#) is designed to repair the broken tongue when the entire groove is missing or badly damaged. A similar [Kimball brass winged repair clip \(Cat. No. 513KB\)](#) is also available with a threaded screw hole for Kimball up-rights .

**Inventory Recommendation:  
12 each type**



When the break is at the groove but the lower level of the groove is damaged, the remaining surface of the groove must be filed away for the winged repair clip to fit properly. Use the edge of a [flat bastard coarse cut file \(Cat. No. 252\)](#) to mill down the upper surface of the tongue almost to the top of the screw hole.

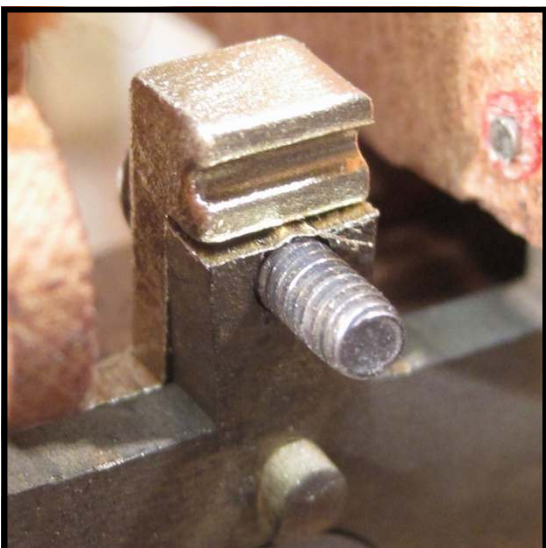
## Action / Brass Rail Repairs



Position a winged repair clip over the damaged tongue, making sure that the screw holes line up.



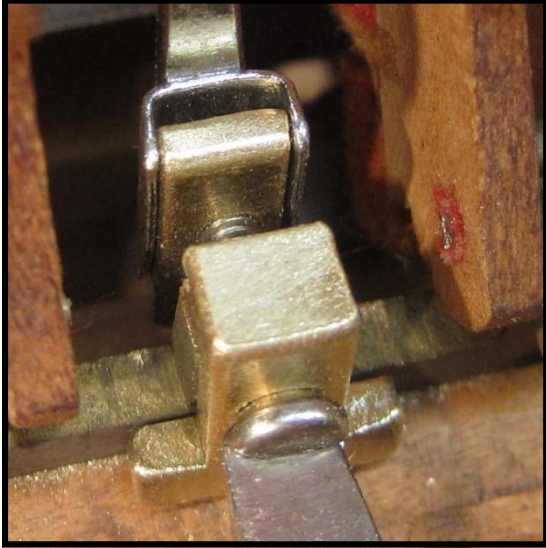
Insert a butt plate screw.



**Checkpoint:** A look at the front side of the brass rail, showing the placement of the groove of the repair clip.

**Caution:** If the break in the tongue is uneven and not filed down, the screw holes will likely not line up and the groove will be too high. Refer to final step on previous page.

## Action / Brass Rail Repairs



Use your butt plate inserter to line up the butt plate and begin the screw.



Turn the screw down (but not quite as far as shown in the photo). Leave room for the center pin.



**Checkpoint:** A look at the front side of the brass rail shows how the repair clip provides a secure base for the brass butt plate to attach to.

## Action / Brass Rail Repairs



Position the center pin of the hammer butt over the slot between the repair clip and the butt plate and push down.



Tighten the butt plate screw so that the hammer butt pivots without any wiggle but not so tight as to strip the screw hole.



***Diagnostic Tip # 4:*** When the tongue is broken off so low as to offer little if any support, neither of the previously mentioned repair clips will work.

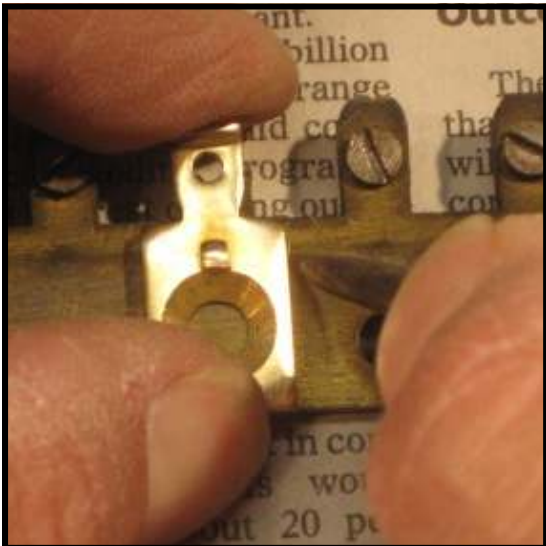


## Action / Brass Rail Repairs



Schaff's [repair flange \(Cat. No. 517\)](#) is designed to replace an individual tongue entirely.

**Inventory Recommendation: 3**



To do this repair, the brass rail section needs to be removed (instructions to follow). Once the section of rail has been removed, use an awl to scribe cut lines on the rail.

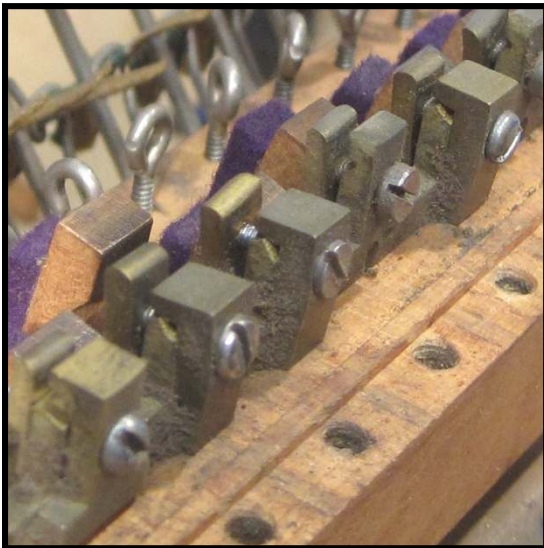


Cut the bad section of rail out using a band saw with a metal blade, or a small cut off saw intended for metal.

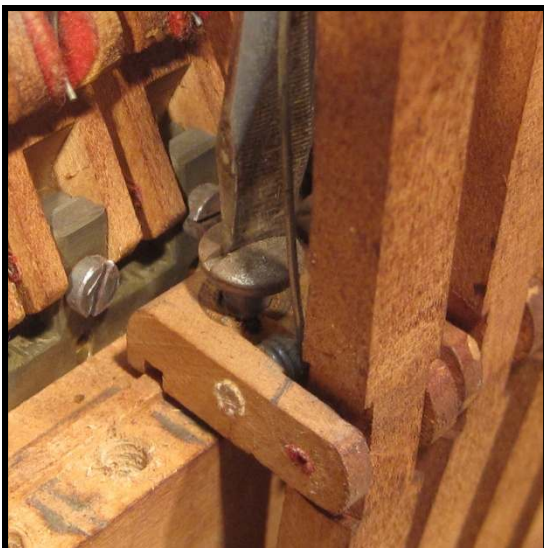
## Action / Brass Rail Repairs



Reinstall either half of the rail, then drill a pilot hole for the repair flange screw and install.



**Diagnostic Tip # 5:** *If the brass rail on the piano you're repairing has had a history of problems with tongue breakage, as did the subject piano for this article (28 repair clips had been installed by other technicians down through the years), it is time to give consideration to replacing the brass rails entirely by taking advantage of Schaff's duplication service. . Doing so will eliminate the problem of notes which suddenly stop working to deal with down the road.*



To access the brass rails for removal, you must first remove all the dampers, starting on one end of the action and working your way to the other.

## Action / Brass Rail Repairs

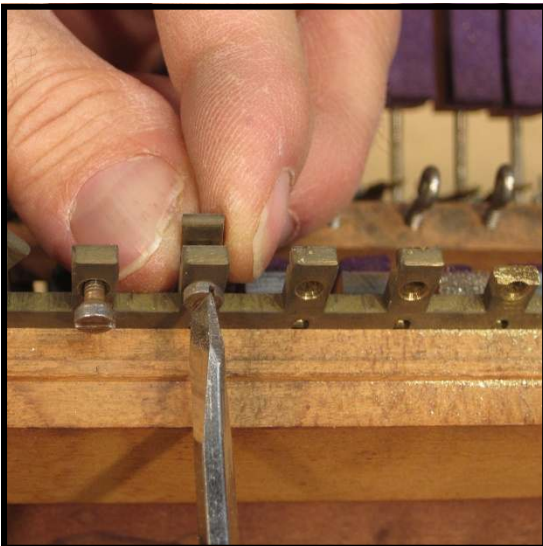


Stack the damper assemblies (after numbering them) in an orderly fashion and put them to one side for the time being.



Hammer assemblies are also removed from the action. Number them as well and place them aside.

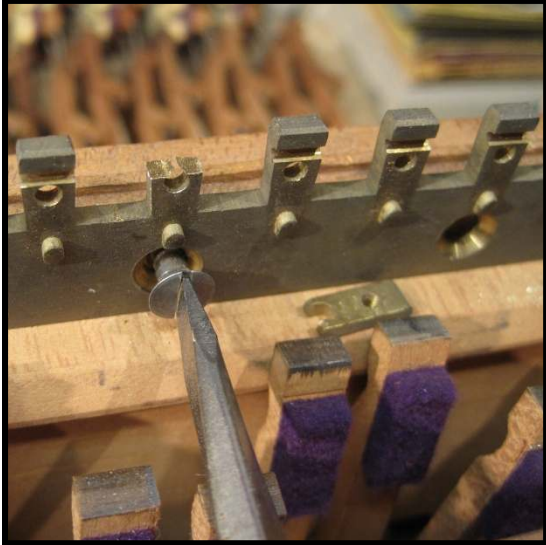
***Note:** If the hammers are badly worn, this would be the ideal time to suggest replacement. With the brass rails sent out for duplication, sample hammers could be sent as well for duplication.*



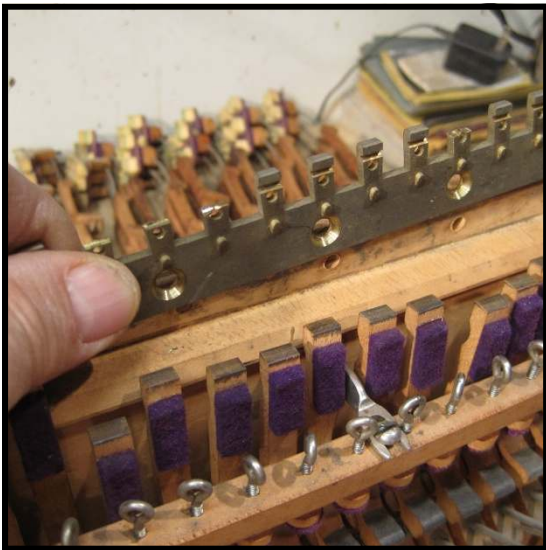
Remove the old butt plates to expedite the duplication process.

***Caution:** Saving century old butt plates for reuse is probably not the best idea, especially if any of the butt plates were cracked or broken.*

## Action / Brass Rail Repairs



Remove the flat head screws which affix the brass rail to the hammer butt rail. Put these screws in a safe place.

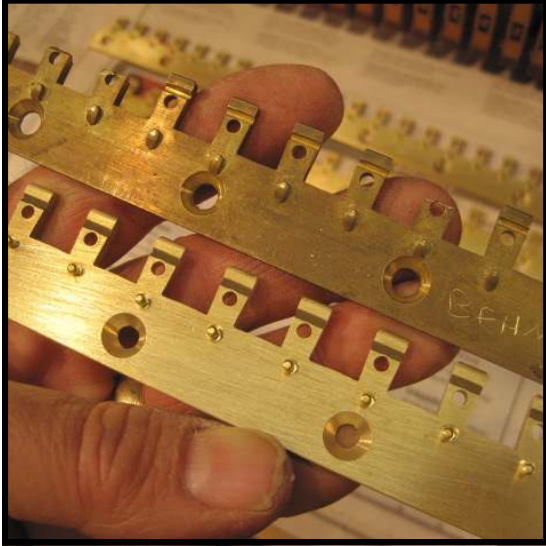


Remove each section of the brass rail to package together to send to Schaff.



As a precaution, scratch your name in each rail with an awl. Package the rails and send off to Schaff with your name, address and customer number. Schaff will return the old rails, along with your new set of [duplicated brass rails \(Cat. No. 595\)](#).

## Action / Brass Rail Repairs



*Checkpoint: One of the new rails and the old rail which it was patterned after. This new brass rail should be around until the next century without causing any problems.*



A full set of new brass butt plates and butt plate screws will be included with your order of a new set of brass rails to complete the installation.

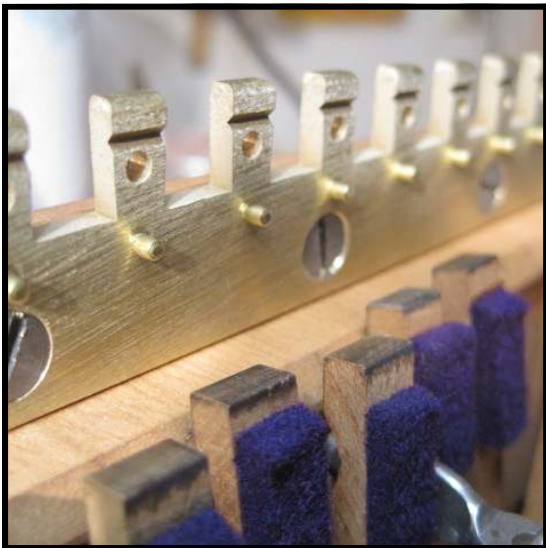


Find the correct location for each section of rail by lining up the screw holes and the overall length. The light portion of the hammer rail is where the old brass rail covered the wood.

## Action / Brass Rail Repairs



Turn in the screws on the ends of each rail first, then work your way in.

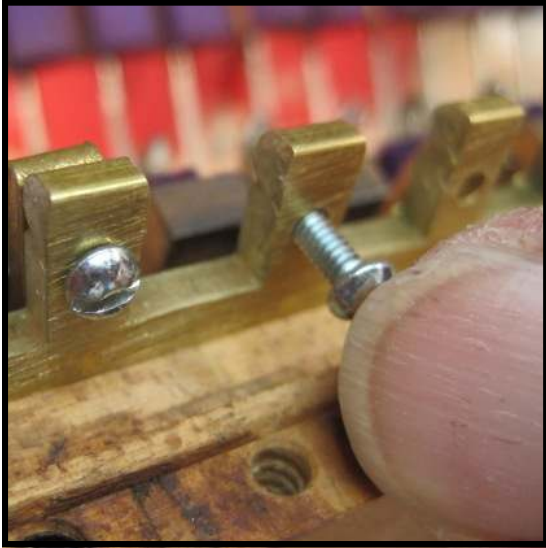


*Checkpoint: The front side of the brass rail, with the entire set of tongues intact after decades of problems.*



*Checkpoint: The back side of the brass rail. With the rail installed, the action is now ready for reinstallation of the hammer assemblies, the hammer rail, the hammer spring rail and the dampers.*

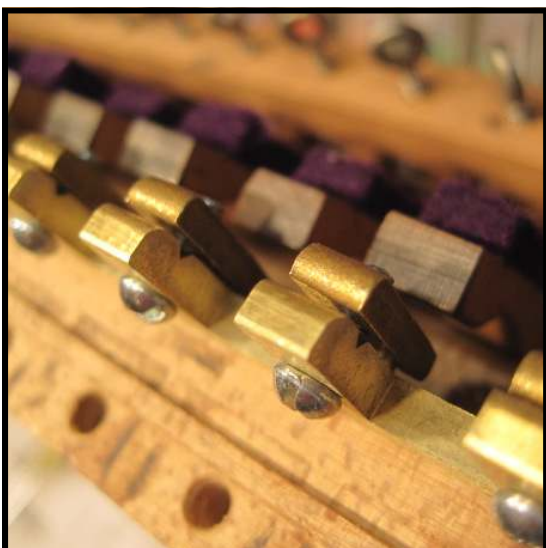
## Action / Brass Rail Repairs



Insert the new brass rail flange screws by pushing them through the tongues.



Use your butt plate inserter to grasp a butt plate while turning in the screw most of the way. Leave enough play that the center pin of the corresponding hammer butt will slip into place.



***Checkpoint:*** *With all the butt plates installed, you're ready to blow the dust off the hammer assemblies that have been waiting to be returned to the action. Or, if you've sent in for a new set of hammer heads from Schaff and you've gotten the new ones back, it's time to go to work installing those.*

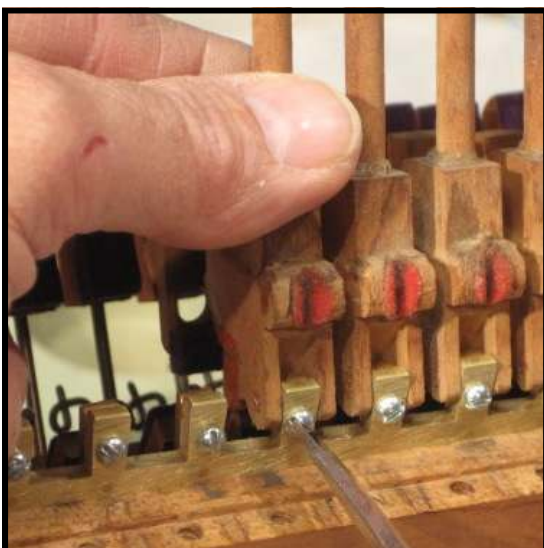
## Action / Brass Rail Repairs



Now is the time to reinstall the hammer rest rail, if you had removed it. If the rail needs cleaning or polishing, or if it needs refelting, do it now before reinstallation.



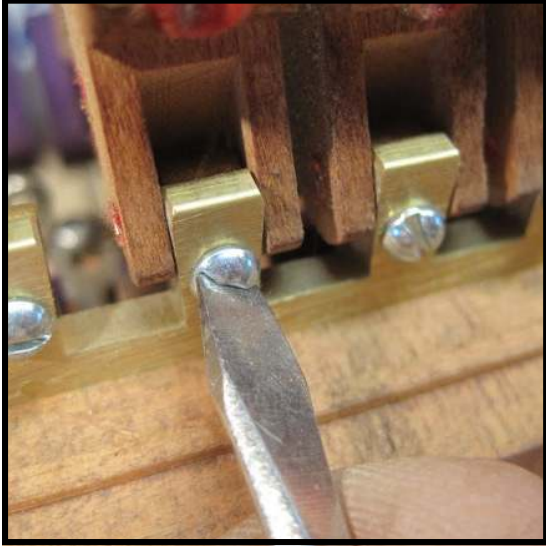
On most rest rails, the three right hand brackets are pushed into place, then the left hand bracket is bent back into position.



With the hammer rest rail installed, the hammer assemblies may now be put back in place.



## Action / Brass Rail Repairs



Tighten each screw down snug, so that the hammer butt pivots without any trace of wobbling, but not so tight as to strip the threads of the butt plate.



Once all the hammer assemblies have been returned, reinstall the hammer spring rail. Avoid jamming the ends of the springs up against the hammer butts, but instead try to have the springs veer off to one side or the other of each hammer shank.



Use your fingers, or a [spring hook \(Cat. No. 91A or B\)](#) to reinstall each spring in the groove of the corresponding hammer butt.



### Food for Thought

Any discussion of this type of repair work raises the question of whether or not dabbling in restoration of vintage instruments is a practical side-line for the serious tuner. Tuning, after all, is a more cut and dry way to earn an income. It may be argued that repair / restoration work is the ideal sideline to a tuning business for several reasons.

First of all, when you become the "go-to" technician in your area for all types of repairs, you will become invaluable to all sorts of customers (and to other technicians who want to stick to just tuning). If you're interested at all in growing your business (and your income), having the reputation of being able to fix whatever ails a customer's piano will keep your phone ringing.

Secondly, repair and restoration work brought home to your shop will enable you to plug the holes in your schedule with profitable work. Instead of sitting at home, wishing you were out earning a paycheck, you can use unscheduled time to get out to your shop and finish up the projects you've got underway out there.

A third great reason for learning to bring old pianos back to life is that the skill provides a hedge against hard economic times. I've seen a direct inverse relationship over the years between the state of the economy and the amount of work coming into my shop. When times are rough, people cut back on purchasing new in favor of fixing up the old.

Finally, having a well-rounded business profile will help prevent burn-out—the dreaded point in life in which your once vibrant zest for your career fades and loathing for what you do creeps in the door. I've embraced variety in my own career—tuning, repairing, restoring, and writing (whenever I find the time), and I love every minute of what I do. Tackling the challenges which any restoration project will throw your way will keep you young at heart and anxious for each new day to begin.

## Tools and Supplies

For your convenience, all the tools and supplies necessary to complete these repairs are listed with corresponding catalogue number.

### Tools:

Action post extension.....	Cat. No. 297
8" slotted flange screwdriver.....	Cat. No. 34
Combination handle.....	Cat. No. 26
8" tweezers.....	Cat. No. 160C
6" piano action screwdriver.....	Cat. No. 3274
Butt plate inserter.....	Cat. No. 128
Flat bastard coarse cut file.....	Cat. No. 252
Spring hook.....	Cat. No. 91A or B

### Supplies:

Brass butt plates.....	Cat. No. 518A
Kimball brass butt plates.....	Cat. No. 518 1/2
Brass repair clips.....	Cat. No. 513A
Kimball repair clips.....	Cat. No. 513KA
Brass winged repair clips.....	Cat. No. 513B
Kimball brass winged repair clip.....	Cat. No. 513KB
Repair flange.....	Cat. No. 517
Duplicated brass rails.....	Cat. No. 595

**To order, call Schaff Piano Supply at 1-800-747-4266**

Important note: Ordering information is given for the use of Schaff account holders only.

Notes on Procedures