Tucson Chapter (857)
Piano Technicians Guild, Inc.
http://my.ptg.org/tucson/home

April 2022

Recent Meetings—an Overview

I thought it might be helpful to look back over the past few tumultuous years. All chapters are required to meet at least three times a year and we've done okay, until the pandemic settled in.

February 2, 2019: All-day class, vertical regulation. Richard West, instructor.
February 13, 2019: Regular chapter meeting at Hachenbergs. Tech topic: Tuning, Bob Conrad, instructor.
April 6, 2019: All-day class at Hachenberg's shop, grand regulation. Richard West, instructor
April 17, 2019: Regular chapter meeting at Hachenbergs. Tech topic: Voicing. Kirby Tucker and Randy Prentice, instructors.
June 19, 2019: Regular chapter meeting at Hachenbergs. Chapter/national/world topics related to the upcoming convention.
July, 2019, PTG Annual Convention in Tucson.
October 9, 2019, Jack Phelps shop, A small group talked about various technical topics.

February 19, 2020, Regular chapter meeting, Hachenbergs; attendees talked about what they learned at the Annual PTG Convention.
May 1, 2020: Zoom meeting. Technical topic was lubricants. Bob Anderson, instructor.
Annual PTG convention cancelled

July 21, 2021, Zoom business meeting to discuss updated chapter bylaws
August 4-7, Annual PTG Convention, Orlando, FL, Richard West, Delegate, attended Council and Regional Caucuses virtually.
October 17, 2021, Zoom technical meeting with Rick Butler (Washington, DC chapter) and Maggie Jusiel (Roanoke, VA chapter). Topic: Aural Tuning.

Future concerns we could discuss: 1) It's important to welcome new people and avoid getting in a rut. New people bring in ideas from other professions and businesses. They bring questions and fresh perspectives to old topics. Seasoned technicians can learn through teaching. New members can learn our standards and come to appreciate the depth and breadth of full piano service. The big question is how can we be more welcoming. One way would be to mentor new members and encourage efforts to become RPTs. How do we do that on the chapter level? And who's willing?

2) Improving Zoom capability would keep members in touch regardless of pandemic developments. Plus, not all members want to drive to a meeting, but could attend virtually, assuming we can offer good quality meeting coverage virtually.

April 7, 2022 Meeting—
Tucson Bible Chapel, 1802 E. Grant Road, Tucson

Lisa Weller, Western Region, Regional Vice President, came to Tucson to meet in person with our Tucson Chapter. Refreshments included pizza and drinks and good conversation prior to the meeting.

Members in attendance: Bob Anderson, Randy Prentice, Richard West, and Rick Woodruff.
Guests attending: D. Evans, Sarah Hong-Soto, and Jack Phelps.

Old Business: Meeting in person gave attendees a chance to catch up and talk about recent events and how we were affected here in Tucson. It was an important conversation. Members here and throughout the country have left PTG for various reasons, not the least of which is inactivity locally. Some discussion was given to the application process and associated expense. For our non-RPT Colleagues, paying dues becomes debatable, when there's so little chapter activity.

Lisa Weller was a good listener and wanted to know what she could do to help accommodate membership costs and other barriers. There were concerns about testing fees and associated expenses (cost of traveling to a test site, including possible hotel expenses).

New Business: Richard West said that it was time to select a delegate to the Annual convention which will be held August 3-6, at the Hyatt Regency Orange County, 11999 Harbor Blvd, Garden Grove, CA 92840. Rick Woodruff expressed interest in going to the convention, and, also serving as Tucson Chapter's delegate. No decision or vote was taken.

Treasurer's Report: Treasurer, Bob Anderson, reported that our chapter account balance is $3,158.54. He suggested that we might consider lowering our dues, since chapter activity is reduced. No action taken.

Technical Topic: "Why're you wire bending?" Lisa had several handouts—a couple Journal articles and a class handout. The class handout is included at the end of this newsletter.

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GRAND DAMPER SERVICE IN THE HOME

Karen de Bergh Robinson 6/5/94

The grand damper system is designed to stop the excursion of the string after it has been set into motion by the hammer. Depending on how the system is engaged it may also effect the color of the piano tone. It is basically a simple system, mostly gravity operated, and requires optimum condition of its working parts in order to function properly.

I. TERMINOLOGY

A. Naming the damper system - please see page 8 of this outline.

B. Special terminology to be used in this class

1. Centering - spacing the damper head so that it is centered over the string(s). Correct at bend #1.
2. Squaring - maintaining horizontal orientation of damper head - correct at bend #2.
3. Walking - when damper moves sideways in its upwards travel. If walking is observed throughout the damper's travel - correct at bend #3 (upper dog-leg). If felt is on damper head and walking is observed only to the point that the felt is clear of string -correct with centering.
4. Rocking - When front and back of damper heads do not lift evenly from string. Correct by bending damper head in appropriate direction. (May also be caused by improper alignment of underlever top posts to guide rail. Ideally top posts will be directly underneath guide rail (front to back). If not, front to back bends at dog legs may be required to be introduced/removed/ adjusted.)
5. Twisting - damper head twists when lifting off string. Correct by supporting top post, then grabbing damper wire with pliers just above top post and twisting in appropriate direction.

II. ASSESSMENT

A. Inspect existing damper system for problems.

1. Dampers allowing ringing, or upper partial to "bleed" through?
2. Dampers noisy in operation.
3. Underlever timing with end of key?
4. Underlever lift on shelf?
5. Relationship of underlever to key end felt correct? (side to side, and front to back).
6. Check dampers for walkers, rockers, twisters.
7. Free movement of damper wire through guide rail?
8. Spacing of heads?
9. Guide rail bushing holes centered between strings?
10. Damper heads clearing plate?
11. Damper wires clearing strings?
12. Do the top post screws have bushings (sockets), or do the screws work directly in the wood top posts. IF NO SOCKETS ARE PRESENT, PROCEED WITH CAUTION. RECOMMEND INSTALLATION OF SOCKETS.

B. Condition of Back Action
IF BACK ACTION IS REMOVED CHECK THE FOLLOWING ITEMS
1. Inspect shelf glue joints and repair as necessary.
2. Check pinning of top flanges. Should be quite free - enough to fall of own weight but without any wobble. Clean, shrink, or re-pin bushings as required.
4. Check pinning of underlever flanges. Should be approximately same as whippen flange (3-6 grams). No wobble. Take appropriate action.
5. Split flanges - re-glue or replace.
6. Check flange to shelf joints. If screw joints -tighten screws. If glue joints test integrity with sloyd knife in space between flanges. Rule of 6 -if 6 are loose re-glue all!
   a. Before removing any flanges, mark location. Drill locating hole for brad. Use transfer punches to measure spaces between top flanges.
   b. If removing whole set drill for 6 X 3/4 pan head screws, and measure spaces between top flanges before removing. Then re-glue using screws as clamps.
7. Peen leads.
8. Clean spring slots. Clean springs as necessary. Check and replace spring felt pad if indicated.
9. Sockets
   a. Ream top posts with #47 drill. (Use damper wire to make certain socket screws are not too far in.) (sockets may be reamed manually in piano using #47 drill in a pin vise. support top post!)
   b. Install sockets if they are not present. THIS IS A SHOP OPERATION.
10. Check sostenuto tabs. Lube, re-pin, adjust spring tension as indicated. If tab is binding on wood of top flange, file top flange (Swiss needle files). In piano level spring tabs with shims, adjust front to back alignment by push, pull on top post.
11. Check old underlever shelf felt, and shelf and pitman leather. Moth-eaten? Contaminated? Hard?
12. Clean pivot pins. Replace punchings if deteriorating. (shelf should be free between end blocks but with no sideways play).
13. Check and adjust spring tension on individual underlevers. Measurement taken with coil of spring 1/32" above flange. Tension should be even with a gradual lessening into treble.
14. If shoemakers pegs, tap in to secure springs.

C. Inspect up-stop rail.
1. Check felt at bottom of rail. Moth-eaten? Hard?
2. Rail cracked or warped? If warped may rattle against belly rail (add an extra felt rectangle between each screw slot to prevent rattles). Warped horizontal will make stop rail regulation difficult.
3. Check felt on back of rail along side screw slots. Replace if missing or damaged.

E. Inspect Wires.
2. Inspect wires.
   a. Clean with Flitz and, if necessary, #0000

refinishing grade steel wool.
b. Loose in heads - remove and reinstall with glue.
c. Burr at bottom of wire - file off burr.
d. Wire bent at point of contact with socket screw - straighten wire.
e. Not long enough for proper regulation - replace.
f. Corroded - replace.
g. Damaged where passes through guide rail - replace.
H. Vandalism - damper wires badly misshapen - damage usually above guide rail. Reintroduce centering and horizontal of damper head.

3. If any replacement wires are required -
a. Remove old wire.
b. If bends 1 & 2 of replacement wires do not match the old bends - straighten and re-bend. Or work from other end of wire if long enough.
c. Glue replacement wire into head being careful not damage finish of head. Allow to dry.
d. Clean with Flitz.
e. Do NOT cut wires to length before dry fitting in the piano.
f. During installation of damper in piano measure angle of string relative to guide rail using protractor. = plane of damper head relative to plane of bends 3,4.
g. Create bends 3,4 with bending jig
or
f. Place damper in piano.
g. Make bends 3,4 with bending pliers, making vertical orientation consistent with neighboring wires.
h. Dry fit damper in piano and cut off excess length. (Long enough to end below socket with 1/4 - 1/2" to spare. Not so long as to bottom in top flange hole.)
i. File burr smooth.

General principal: correct orientation of damper head is horizontal. Angles of bends 1 & 2 are equal. Ideally angle of bends 3 and 4 are also equal.

F. Check guide rails.
1. If bushings are worn, missing, contaminated and noisy, or too loose, they may have to be replaced. 1.
a. Tear felt bushing cloth to proper width.
b. Pull felt strip through hole leaving 1 1/2".
c. Apply small amount of glue to outside of end of strip.
d. Pull felt strip to countersink.
e. Cut felt flush with top of guide rail.
f. Burnish felt into hole.
g. Size with bridge pins.

III. FELTS
A. Felt fibers are organized in bundles. Grain orientation may be either vertical or horizontal.
B. Horizontal - side grain will compress and need more regulation. Vertical - end grain needs less follow-up regulation but may become noisy.
C. Flat felts
1. horizontal - side grain contacts string

2. stitched felts concentrate weight of damper head.

D. Unicords
1. Use horizontal grain - bottoms of vertical grain will tend to flare out.
2. Check wedge groove for even cut and no obstacles.

E. Bicords
1. usually vertical grain = side grain because felt rests between strings.
2. Exception is where very narrow pointed wedge needed in bicord (horizontal can be cut finer and will hold shape). Or squeeze vertical grain felt.

F. Tricords
1. Vertical grain felt often recommended.
2. May also have satisfactory results using horizontal grain felts.
4. Clean groove.
5. Check for strings marks on either side of felt - should be at equal depth.
6. Remove excess wedge below string.
3. Use string in tricord slot.

Ideally tricord strings should be evenly spaced, and matched with evenly cut felt. Sometimes unevenly cut felt may be matched with unevenly spaced strings.

G. Felt is designed to rest on string so as not to excite bleeding-through of partials. Front felt at hammer strike point. Back felt placement critical and must avoid nodes of string or "bleeding" of upper partials will occur. General rule - do not move location and size of felts from that of original design.

H. Ideally pad felt and tricord should match so that bottom of the damper is in the same plane as the string and still lifts evenly at front and back of damper. If pad too thin can cut slot in tricord deeper. If pad too thick can peel pad. Best if felts are properly matched.

I. As a general rule, shorter lengths of felt will damp more efficiently than longer lengths. (weight concentrated on smaller area where it is needed most.)

G. Mark felt strips with pencil along one side prior to cutting into lengths. Will maintain alignment of felt on head.

H. Glue felt on with hot hide glue when possible, making certain felts are glued on square with side of damper head.

DO NOT UNDERESTIMATE THE IMPORTANCE OF HIGH QUALITY FELT.

IV. ORDER OF WIRE BENDING

A. Correct at bend #4 for free fall of top post when screw is loose and underlever not supported.

B. Correct at bend #3 for straight travel of damper throughout its travel.

C. Correct at bend #1 for correct centering.

D. Correct at bend #2 for horizontal placement of damper head.

E. Repeat steps A - D as required.

CAUTION - As older felts will have conformed to many years of placement, correcting wire bending may actually decrease damping efficiency.

IF YOU ARE NOT REPLACING DAMPER FELT PROCEED WITH WIRE BENDING WITH CAUTION - PERHAPS BEST DONE ONLY IF DAMPER IS NOT DAMPING PROPERLY.

V. REGULATION - FULL

A. Set underlever height
   1. Using height block set samples in each section.
   2. Check samples with action in piano. 1/3 to 1/2 hammer travel to beginning of dampers lift is standard. We prefer to regulate to 1/3 key dip (just under 1/2 hammer travel) in most instances. Use key "dip" jig, or plastic gauge to measure beginning of damper travel relative to key travel.
   3. Re-set samples until desired damper timing is achieved. (May vary slightly from section to section.)
   4. Set all underlevers to determined height. (sometimes old screw marks on wire will influence height. Check with block and repeat if necessary.)
   5. Holding top post firm with parallel pliers, firmly tighten down screw.

B. Straighten all twisters
   1. Once screws have been firmly-tightened do not loosen screws again.
   2. Hold each top flange firm with parallel pliers, grab damper wire just above top flange with vise grips, and straighten twister.

C. Check all dampers and make fine adjustments for walkers, rockers, and side to side level of head.

D. Do a preliminary check of problem dampers. Piano must be up to pitch and strings must have been leveled. (See section on trouble-shooting). Correct obvious problems.

E. Regulate underlevers for even lift on underlever tray.
   1. Viewing the underlevers from the keybed, select the earliest to lift with tray. (Usually in pitman area). Verify that it is at height previously set.
   2. Working outwards from the earliest damper, place temporary shims (front-rail punchings cut in half) under each underlever between shelf and felt. (very light and quick depression of sustain pedal will reveal subtle differences.) Choose punchings so that all underlevers lift at the same moment.
   3. Replace temporary shims with permanent shims. Use Front-rail punchings cut to 1/8 round. Glue in place with front edge flush with front of shelf.
   4. I prefer to set approximately 12 temporary shims at one time, replace with permanent shims, and check consistency of lift before continuing on to next set of 12. Do not inadvertently taper lift as you progress along shelf.
   5. DO NOT REGULATE UNDERLEVERS TO SHELF BY REMOVING WOOD FROM SHELF OR UNDERSIDE OF UNDERLEVER!

F. Final check of all damper bends. *The closer you are to completion of regulation, the more you will* ***see.***

VI. REGULATION - QUICK

A. Check overall timing of dampers to ends of keys. Check if damper tray has significant warpage.

B. Select several dampers to use as samples and set to correct damper timing.

C. Block up underlever shelf to just support sample dampers.

D. Adjust balance of underlevers to shelf.

E. Straighten twisters.

VII. REGULATING THE DAMPER UP-STOP RAIL

A. With action in keybed select samples - first and last sharp in each section, depress key with very firm pressure, clip wooden clothes pin (bottom sanded square) to each sample damper head to hold damper at maximum travel height.

B. Remove action and set up-stop rail so each sample (sharp) damper just winks.

C. On older damper actions with fixed sustenuto tabs allow 1/16" additional free play.

VIII. REGULATING THE PEDALS

A. Damper (Sustain) pedal

1. Allow 1/16" to maximum 1/8" lost motion before lifting earliest underlever.
2. Set upper limit of pedal travel - depress pedal until natural key when lightly tapped will no longer move its damper, but sharp when lightly tapped will still cause its damper to "wink".

B. Sostenuto pedal

1. Blade at rest should be at 5 o'clock, 1/16" above tabs, 1/16" out from them.
2. Blade engages should be at 3 o'clock, 1/16" under tabs.
3. Check sostenuto
   a. Wiggle pedal -- does not cause dampers to wink.
   b. Depressing damper pedal does not catch any tabs.
   c. Depress damper pedal, then sostenuto pedal, release damper pedal. All dampers should stay elevated.
   d. Depress 1 key and hold up with sostenuto. Play remaining keys firmly - should not hang up on rod.

C. Shift pedal

1. Should have no lost motion, and move action to miss one string of each unison.
2. In action that shifts to the right, the underlevers must be oriented to right side of key end felts, so that the underlever will still be engaged by the correct key when the shift pedal is engaged.
3. In the event that a key engages more than one underlever, first determine that the action is properly located. If the action is correct and not binding, it may be necessary to move the underlever rail. Will require wire bending. Isolated incidents may be corrected by traveling individual underlevers or (careful! - not to be taken lightly!) trimming key end felt.

IX. TROUBLESHOOTING

LOOK AT DAMPERS. EXCELLENT LIGHTING MANDATORY! USE SMALL SQUARE TO JUDGE WALKERS AND HEAD TILT. USE MIRROR TO VIEW TOP OF HEADS AND SEATING OF FELTS ON (BETWEEN) STRINGS FROM REAR. ADDITIONAL CLUES -BOTH SIDES OF FELTS FLARE OUT EVENLY (UNICORDS), WIRES MOVE APART SLIGHTLY BUT EVENLY (BICORDS). WIRES DON'T RING THROUGH UPON PLUCKING. USE LIGHT REFLECTION ON DAMPER HEADS TO FINE-TUNE FRONT TO BACK LEVEL.

LISTEN - PIANO MUST BE UP TO PITCH AND STRINGS LEVEL BEFORE FINAL EVALUATION OF EFFICIENCY OF DAMPING CAN BE MADE.

A. Install action and check all dampers. Listen to each individual damper using both hard and soft blows, and releasing key both quickly and slowly. Also, strum strings, first with the pedal released, then with the dampers up and slowly releasing pedal.

B. Isolate reason for any leaking or noisy dampers. Pluck string with hammer at rest to isolate offending string on bicord or tricord. Or use wedges to determine which string continues to sound.
   1. Stings not level, or evenly spaced. Strings rusty.
   2. Irregular spacing between tricord strings.
   3. Tricord felt uneven.
   4. Tricord felt requires string in slot.
   5. Damper head not level side to side.
   6. Wire bending problem, damper head walking, rocking, tilted. Head twisting on lift.
   7. Damper spacing incorrect. (in V-bar section may be able to move strings - check string alignment with hammers.)
   8. Felts rubbing one another (monocord or pad felts).
   9. Damper wire binding at guide rail. Wire corrosion, tight bushing.
   10. If both outside strings leak on tricord, felt may need to settle deeper on strings - cut slot deeper. (common on large pianos with tricord wires widely spaced.
   11. Irregularity on surface of felt.
   12. Mismatched combination felts.
   13. Incorrect size or placement of felt on damper head.
   14. Flange centers too tight.
   15. Flange centers too loose.
   16. Felt deformed, contaminated, poor quality, wrong dimension.

   MAKE CERTAIN YOU ARE DIAGNOSING THE CORRECT DAMPER. YOU MAY BE HEARING THE PARTIAL OF ANOTHER NOTE!

C. Other problems
   1. Bass damper wires hitting strings. Check bends 3,4, or replace with flattened wire, or move hole in guide rail (plug, drill, re-bush).
   2. Damper wires hitting strings throughout - move guide rail and adjust wire bends.
   3. Dampers hitting plate - adjust wire bends, or reshape head.
   4. Clicks - loose screws, leads.
   5. Unglued underlever flange - re-glue in piano IF it can be reached, otherwise remove entire system to access tray.
   6. Up-stop rail not properly adjusted, or rattling against belly rail.
   7. Guide rail incorrectly located.
   8. Noises may be coming from area of piano above the damper section, non- speaking lengths of strings, or a lower damper not damping properly and leaking an harmonic.

<u>The grand damper system is basically a simple gravity operated system. If all parts are intact and adjusted and regulated properly you should experience very few of the aforementioned problems.!</u> *Good luck!*

DAMPER NOMENCLATURE

1. Damper Head
2. Damper Lining felt
3. Damper Felt
4. Damper Guide Rail
5. Damper Guide Rail Bushing
6. Damper Wire
7. Damper Top Post
8. Damper Set Screw
9. Sostenuto Rod
10. Sostenuto Tab
11. Damper Underlever
12. Tray felt (upper)
13. Damper Tray
14. Tray Felt (lower)
15. Damper Up Stop Rail
16. Damper Up Stop Rail Felt
17. Damper Underlever Flange
18. Damper Underlever Rail

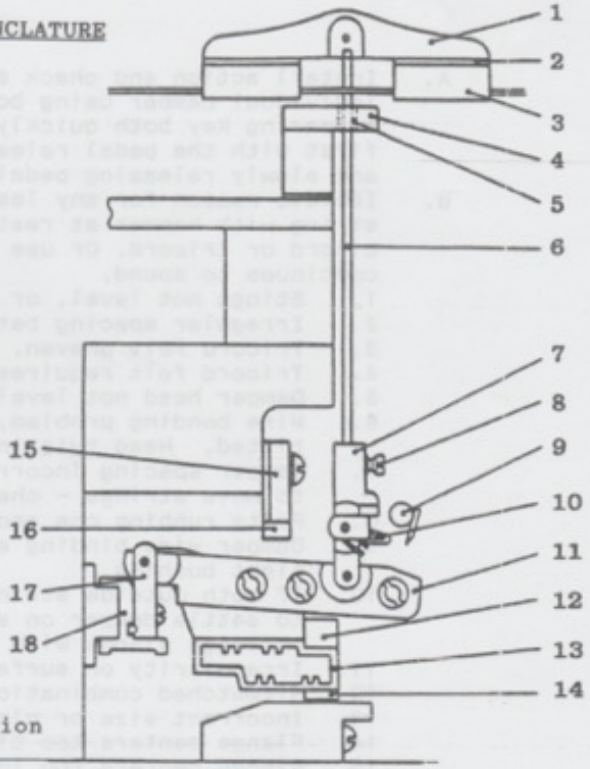

Diagram -- courtesy of Yamaha Corporation

GRAND DAMPER WIRE BENDS WITH NUMBERED IDENTIFICATION