Piano Technicians Journal

July 1984

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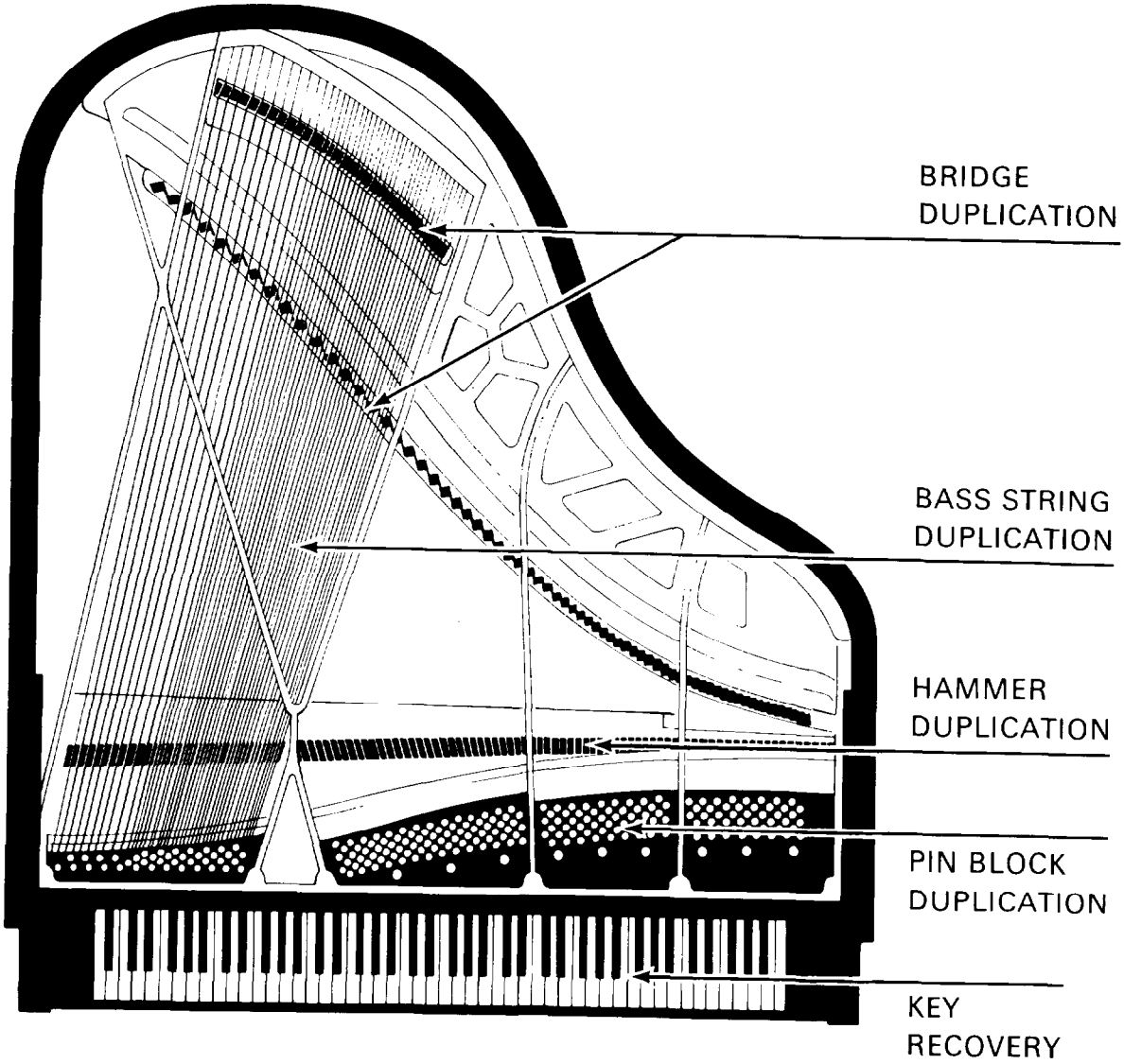

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Remember the Foundation!

Donations to the Piano Technicians Foundation may be sent in memory of one who is deceased, or in honor of a person who has been a special inspiration or made a significant contribution to the profession or to the Guild.

The Foundation has three categories: **The Steve Jellen Memorial Library, The Piano Technicians Fund for Research and Development** and **The Piano Technicians Scholarship Fund.**

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The President's Perspective

Ernest S. Preuitt
President

Cooperation, Loyalty, Enthusiasm, Truth

Having been a member of the Piano Technicians Guild for more than 20 years, I have quite a number of *Journals* from the past. Recently, one of our good local members died, and I was given a stack of old *Journals* dating back into the 40s. Typical of all piano service people, I have spent quite a bit of time reading and re-reading many of these issues.

At one of my few recent moments of relaxation, I thought it would be appropriate to check the issue of August 1982 to see what I had to say in the first issue during my presidency of the Guild.

The message I had at that time actually was written on Memorial Day, some five weeks before I was elected. Probably a first and a last happened when, in July, I was elected President while lying in a hospital bed minus a gall bladder. My main thought at that time was directed toward growth, technical mastery, corporeal entity and companionship.

I believe over these past two years, we as a Guild have shown progress in all these facets. Growth in numbers is down some, but growth in industry and knowledge has been good, for we are much better known and respected. The greater number of regional and chapter technical seminars has vastly improved our individual mastery of piano service.

Cooperation, loyalty, enthusiasm and truth have made the Guild mean more to us. While we still differ on many subjects, our companionship with our fellow technicians is stronger. This is quite evident during our recent change in management, as criticism was heard only in a very few instances.

I do feel that, on review, we will find that the past two years have been good. Fiscal responsibility has been uppermost in the minds of all members of the Board. We think we have made a good beginning, and will know for sure in two or three years. We have had a Board that was not afraid of work, for long hours sitting around a table have produced results. Many sacrificial hours on the road and at the desk at home have paid off, even though at times they left us feeling exhausted and exasperated. I feel, though, that none have regretted the time spent and would do it again—as indeed some of them are!

After nine years on the Board, I am looking forward to joining that prestigious group of Past Presidents. The past two years have at times been quite frightening, but through counseling with many local friends and business acquaintances, and excellent cooperation from eight members of the Board, I have escaped a heart attack or a recurrence of stomach ulcers. I would really enjoy starting it all over again, but it is time for young and enthusiastic people to assume leadership.

My parting message to you is to take interest in what your Board of Directors is doing, not to pry and to find fault, but to ask questions and cooperate. Always check first with your RVP about any questions you may have, for that is one of his responsibilities to the membership in his region. He will give you the answer or, not knowing, he will find the answer and communicate it to you. Your president, vice president and secretary-treasurer are there to carry out the day-to-day duties, but will be more than willing to help out when they can.

Further, I would ask all of you to be patient with our new management firm. I am confident that when we get to know each other better, we will be on firm ground and we will continue to be a bigger, better and more viable organization.

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Executive Director's Message

Barbara Parks
Executive Director

Giving The Customer His Money's Worth

I'm sure you've heard the phrase, "Don't sell the steak, sell the sizzle," and I'm sure we've all bought the sizzle a few times, only to find that the steak should have been on the bottom of someone's shoe.

Nevertheless, there's an important point here. A salesman who deadpans his way through a presentation won't make too many sales, even though his product can slice, dice and cure the common cold.

It's all a matter of perceived value, of going beyond filling the customer's need to making him believe that he has received something extra for his money. In other words, there's more to making a client feel that his money has been well-spent than just doing the job for which he pays you.

We all know someone who has a successful, money-making operation despite the fact that he's a little shy in some of the technical areas. Our tendency, especially if we're not as successful, is to accuse him of being a little shady or doing shoddy work.

But maybe it's just the way he presents himself to the public. Maybe he wears a tie when he visits a client's home. Maybe he's quicker to return calls. Maybe he smiles a lot and makes small talk when it's called for. Maybe the way he conducts himself makes people value his services more highly.

In an ideal world, we would be judged by what is in our hearts, not by our exteriors. Our brains, our skills and our special talents are the criteria by which we should be weighed, not something so transient (and ridiculous) as whether or not our suit is pressed.

But people do judge other people by their exteriors. We can't help it. It's part of human nature to categorize people, to put them in a pigeonhole so they're easier to deal with. Unfortunately, most people are lazy about it. They look for easy labels, and once they pin one on, they're very reluctant to replace it with a more accurate one.

What does all this have to do with tuning a piano? Absolutely nothing. What you wear, how you conduct your business affairs have absolutely nothing to do with your ability to do the job.

But it does have something to do with keeping your clients satisfied. If you act like a professional, they will treat you as one.

Of course it's hard to go from working in the shop to a tuning without wasting a lot of time cleaning up. One successful technician suggested that smocks would be a good way to go. They're a badge of respect for technicians in other fields. Whether you're covering up your working clothes or protecting your dress clothes, you'll still project a professional appearance, he argued.

Remember, the client feels (rightly or not) that he's paying a lot of money for a professional's expertise. Looking and acting like a professional is just another way of giving him his money's worth.

Kimball Promotes Reuter

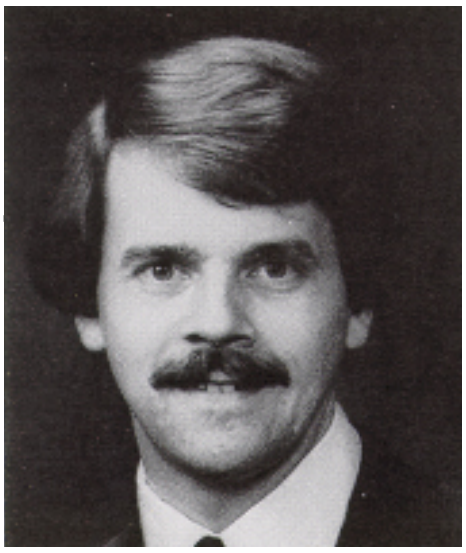
Piano Technicians Guild member Raymond Reuter has been appointed professional products manager by Kimball International Keyboard Division.

Reuter, who joined Kimball in 1980, assumes nationwide responsibility for the sales of professional piano instruments for the keyboard division. These include Bosendorfer pianos and Kimball Viennese Edition professional grand and upright pianos.

Before being named professional products manager, Reuter served Kimball initially as a service representative and later as national piano service manager. Reuter has two years related industry experience as a private music instructor and piano technician. He also served for five years as a band and choir leader for various Wisconsin schools. A Wisconsin native, he is a music education graduate of the University of Wisconsin.

Kimball International Keyboard Division, supplier of pianos to the '84 summer Olympics, manufactures a full range of piano models, from upright to grand for both home and institutional use, and organs, with state-of-the-art computerized technology. The firm also produces Bosendorfer pianos, Conn pianos and organs, and Krakauer console pianos.

Kimball International Keyboard Division is headquartered in Jasper, Ind. Other domestic facilities are in French Lick, Ind., and Berlin, Ohio.



Ray Reuter

INDUSTRY NEWS

Ward To World's Fair

Guild member Elizabeth Ward, head of the technical piano department and tuner for Kelly Ward's Pianos and Organs, has been named official piano tuner for the New Orleans World's Fair. She was selected by Kimball Piano Co., supplier of pianos for the World's Fair.

Ward will be responsible for maintaining and tuning pianos in all the fair's pavilions and for all concerts and musical events at the fair.

A Registered Tuner/Technician and 1976 graduate of Grayson County College, Ward is a past president of the Guild's North Central Louisiana Chapter. She is the daughter of Mr. and Mrs. F.M. "Kelly" Ward of Alexandria, La. Kelly Ward is a past president of the Guild.

Young Chang Names Chandler

Young Chang America, Inc., has appointed Ray Chandler to the post of national service manager for technical services.

Chandler, a Guild member, formerly operated his own piano rebuilding and servicing business in Salt Lake City, Utah, where he served as technician for the Utah Symphony. He also has been an instructor at Piano Technicians Guild seminars.

Chandler may be reached at 675 West Victoria St., Compton, Calif. 90220, telephone (213) 637-1411.

Kohler Introduces Celeste Grouping

The Legendere is the first in a new grouping of Kohler pianos designated Celeste. Replacing the Concerto Series, they enter the market at the same pricing but with design refinements,

"Although the Concerto Series proved its popularity for 11 years, I felt today's consumer demand for value created the need for fresh designs," said Alan D. Slivinski, Kohler's vice president of marketing. "The new Celeste pianos have been ingeniously styled to achieve a seemingly low silhouette, yet they are 41 inches high."

The Legendere is crafted in walnut. Other models will be in cherry, pine and oak.

The International Scene: Our Man In South Africa

Fred Odenheimer
Chairman, International Relations Committee

JOHANNESBURG, SOUTH AFRICA—Hazards of South Africa: a man driving at night runs into a hippo crossing the street. He stops his car and the angered hippopotamus bites into a tire, causing it to go flat. The driver leaves his car to inspect the damage, but the enraged beast charges the car, pushing it across the street and causing $2,000 worth of damage. (Taken from the April 6, 1984, edition of *The Star,* a Johannesburg newspaper.)

Johannesburg, I am told, is a city of some 1.5 million, but when I looked into the yellow pages, there were very few piano dealers advertising and not many technicians listed.

The Rand Exhibit, the most important fair with national and international exhibits and retail operations, agricultural and home economic displays, could probably be compared to one of our state fairs. I spent a day there talking to various exhibitors and taking a look at some of the merchandise, especially (naturally) musical instruments on display and for sale.

Organs I saw exhibited were Technics, Eminent, Thomas, Hammond, Yamaha and Kawai. Pianos were Yamaha, Kawai, Young Chang (also under the name of Bernhard Steiner), Steinways from Hamburg and, surprisingly, two small Kimball spinets. There also was an import from Poland, Lindbergh, with heavy touch and poor tone.

Dictmann is a piano factory in South Africa owned by Ibach. They produce a very fine piano (uprights only—their grand is manufactured by Young Chang) with actions coming from Renner or Herrberger Brooks and hammers from Renner or Japan. They used some Pratt Read actions in the past, but they became too expensive.

I also talked at length with the Kawai distributor in South Africa, who told me that there is neither a trade organization nor an organization for piano technicians, although he thought it would be good if some kind of an organization were in existence.

Yesterday we were taken to Sandton Shopping Center. It is of a size that we have never seen in the United States. It is multistoried, all indoors and very beautifully arranged. There are 250 establishments with six major department stores and, on this particular day, lots of people shopping. We went to Sandton Music and had a short talk with one of the owners, but the store was very busy, and naturally customers are more important.

Pianos carried were Dictmann, Steinway, Yamaha and Rippen. Quite possibly I did not see everything, since I did not want to disturb ongoing or prospective sales.

Coming Events

Date	Event	Site	Contact
July 2-6	1984 Guild Convention	Hyatt Regency Indianapolis	Guild Headquarters (816) 444-3500
Sept. 30-Oct. 2	South Florida Regional Convention	Ft. Lauderdale	Mort Zack 3210 Holiday Springs Blvd., Apt. 304 Coral Springs, FL 33065
October 19-21	Texas State Convention	Waco Hilton Waco, Texas	Martin Wisenbaker 808 Cordell, Houston, Texas 77009
October 26-28	Central Illinois Seminar	Ramada Inn Champaign, Ill.	Cindy Genta 907 Anderson Urbana, Ill. 61801 (217) 328-2691
Nov. 1-4	New York State Convention	Ramada Inn Clifton, N.J.	Brad Renstrom 67 N. Greenbush Rd. West Nyack, NY 10994 (914) 358-6995
Nov. 16-18	North Carolina State Convention	Radisson Convention Center, High Point	Anthony Thompson 407 Woodlawn Ave., Greensboro, N.C. 27401 (919) 274-1922 (919) 274-3407

THE
TECHNICAL
FORUM

Vertical Rebuilding

Jack Krefting
Technical Editor

The keyboard is one of the most important aspects of any rebuilding job, primarily because we expect to simply recondition the keys rather than routinely replacing them. In case of natural disaster or vandalism we might have to replace them, but ordinarily we wouldn't. With this in mind, let's consider reconditioning first.

Figure 1 indicates the nomenclature we will use for this discussion. The keytops will receive attention first, not that they are more important than other parts of the keys, but because they are the most visible parts and one must start somewhere.

Traditional ivory keytops are generally 0.025- to 0.030-inch thick, a point to consider when replacing them with another material. If the ivory is in reasonable shape, by all means take the trouble to save it, because there isn't all that much ivory left. Here's one suggested method of recovering using ivory cement wafers by the Hale vulcanizing process:

By this method the key may be prepared, vulcanized and finished within 15 minutes. There's no waiting for glue to dry, just prepare,

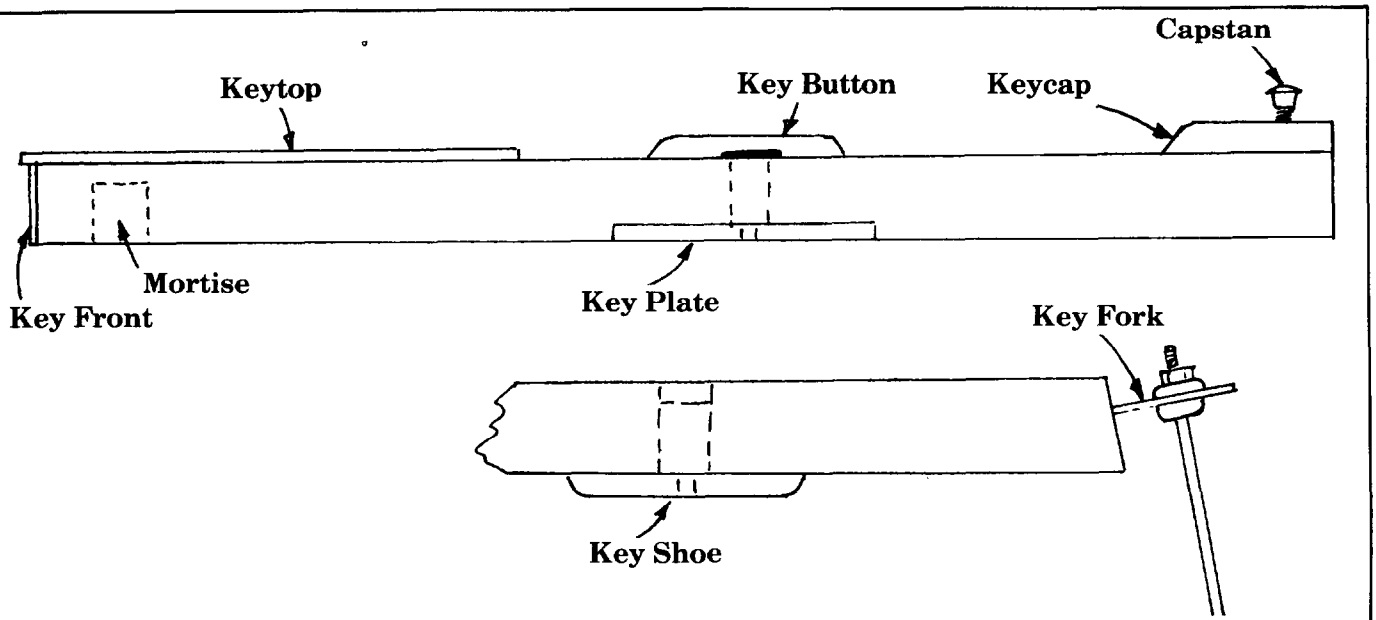


Figure 1

then vulcanize, wait a few minutes for plate to cool and remove clamp.

Dip a wafer into cold water with a pair of tweezers until it is completely covered. Do not soak it longer than a few seconds. The water should be cold, not hot.

1. Stand the wafer on edge against any convenient object to allow the water to soak into the surface, but do not allow it to stand too long. When ready for vulcanizing, the wafer should be limp but without a show of water on the surface. Much of the success in using ivory cement wafers depends upon the proper amount of water present at the time of vulcanizing, and the beginner should give careful attention to this requirement.

2. After dipping the wafer in water, and while waiting for it to soften, carefully clean both the key and the ivory with a knife or sandpaper file. Be careful to remove all foreign matter from the ivory, and especially lumps of cloth, glue or oily surfaces from the key. Make sure the edge of the tail, where it is to join the head, is clean.

3. Apply the wafer under the ivory and clamp into position with the solid brass plate of the Hale Ivory Clamp. Make sure a good joint is secured between the head and tail by having the clamp bear at a slight angle. One of the great advantages of this process is that the ivory does not slip and slide around as with liquid glue or cement. The ivory usually goes into place easily but sufficient time should be taken at this stage to make sure the edges are even with the key, the joint is correct, and the ivory is otherwise just as it should be when finished. Tighten the clamp firmly.

4. Sterno Canned Heat (solidified alcohol) is used as a means for heating the plate. This can be purchased at any hardware, drug or sporting goods store. Apply a lump the size of a large pea to each end of the plate and ignite. This will burn for two or three minutes, during which time some of the cement will be seen to ooze out from under the ivory. As soon as the plate is cold, the clamp may be removed.

Note: while the above process is suggested as the most practical and quickest way to attach ivory, the plate may be heated on a stove, steam radiator or in hot water instead of with Sterno. The advantage of Sterno lies in the fact that the ivory is adjusted to position with a cold plate, without haste, and the heat of the burning lumps on the plate penetrates evenly and to the proper degree for best results without loss of time. The Hale Ivory Clamp is equipped with a solid brass plate, which holds the heat necessary for rapid work and will not rust like the iron plates formerly used.

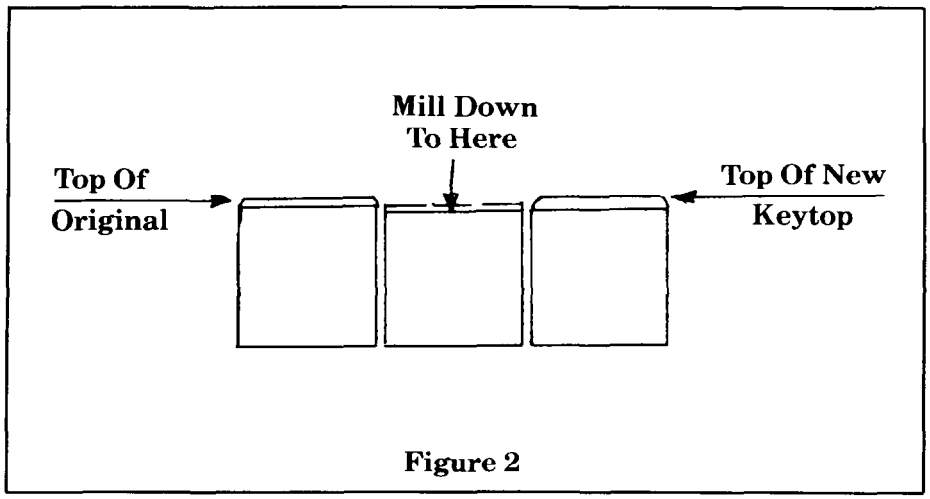


Figure 2

If the decision is made to replace the ivory with plastic, the technician should be aware of the necessity of milling down the keys first (see *figure 2*) by an amount equal to the difference between the thickness of the new material and that of the old, assuming of course that the new material will always be thicker. If the old ivory was, say, 0.025 inch and the replacement plastic is 0.060 inch, the wood under the ivory should be trimmed 0.035 inch; if the new top will be 0.095 inch thick, remove 0.075 inch of wood.

If too much wood is left on the key, the result will be a larger dimension from the top surface of the new keytop to the bottom surface of the key, which means that not only will the fallstrip not clear the new keytops, but also the sharps will bury between naturals at full dip unless they are raised considerably with balance rail punchings. This also will make the wood behind the sharp tops interfere with the fallstrip, and could lift the front bushings of the sharps off their pins. If the technician tries to fudge such a situation by lowering the key height, it may not be possible to get full key travel and aftertouch.

If too much wood is removed, the result is just as bad—worse, in fact, because it's harder to fix—in that the keys are suddenly too low in relation to the fallstrip and to their neighboring sharps. Raising the naturals lifts their front bushings off the keypins, allowing the keys to slap together. Yet if the keys are lowered to get onto the pins, full travel isn't possible. And raising the keypin out of the front rail won't do it either, because now at full dip the pin will hit the top of the mortise.

Another common fallacy is the assumption that the sides of the keys are precisely perpendicular to the top surface. Some technicians use a table saw to cut the keys down, using the side of the key on

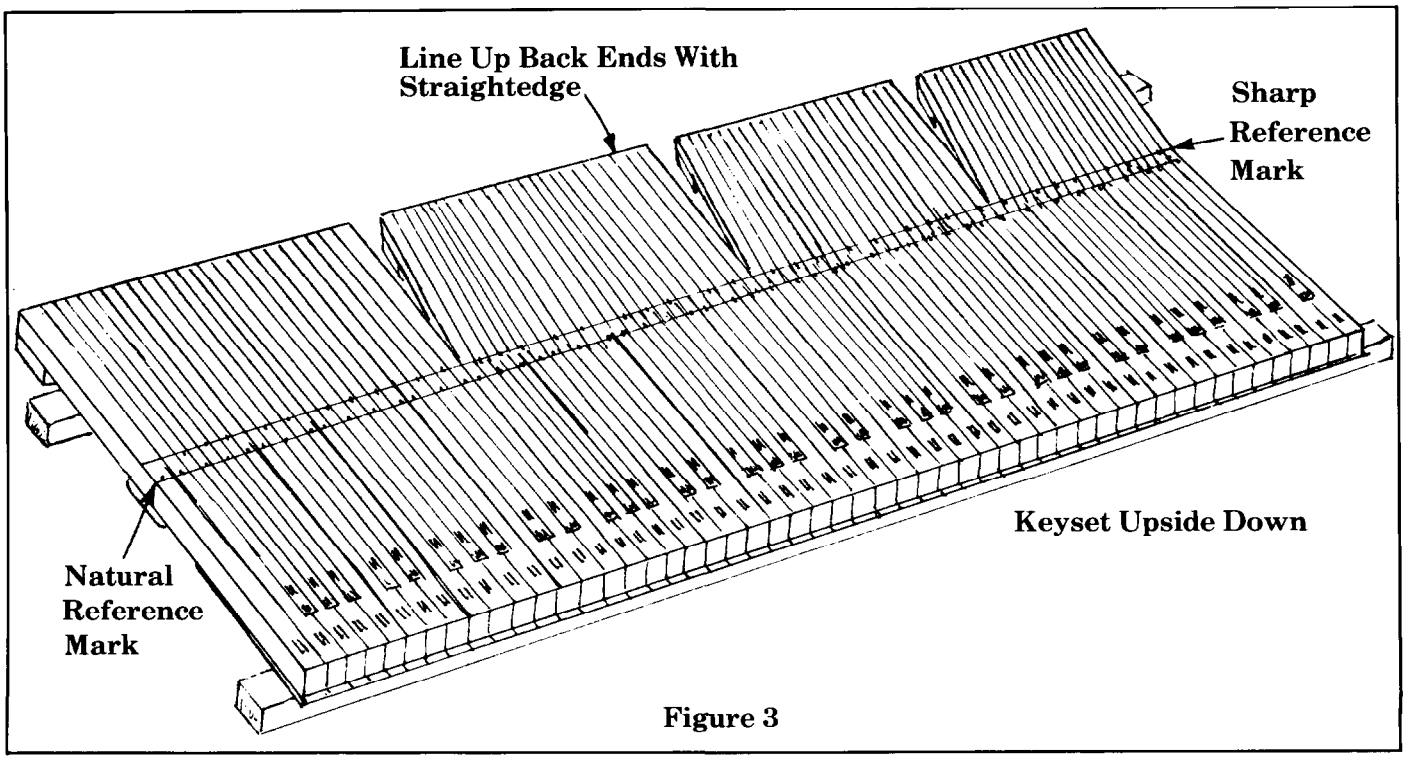


Figure 3

the table as a point of reference, and when the job is finished all the naturals are high on one side like roofing shingles. Any significant sideward bend of the balance rail pin to compensate for this error will result in excessive friction and sluggish touch.

When the new material has been installed, there is always a bit of filing to be done on the sides or at the sharp notch, or around the front corners, but by all means don't overdo it. About the only thing uglier than an excessive radius on the keytops is an excessive gap between keys, and there is no excuse for either condition.

Similarly, if new fronts are to be installed, be sure there will be adequate keyslip clearance. In short, restore the playing surfaces as necessary, but be sure that when the job is done the keys will outwardly be exactly the same size and shape as they were when new.

New sharp tops are available in ebony and in plastic, in a variety of lengths and heights. The length of replacements should be as original for the sake of fallstrip clearance, and the height should be such that when the sharp tops are 1/2 inch above the natural tops, the wood of the keys behind the keytops is level from sharps to naturals, or as nearly so as seems practical. Most sharp tops can be removed by the application of heat or steam, accompanied by a twisting or prying motion. However, if the piano is relatively new and the keys were made by Wurlitzer, do not attempt this method because the plastic sharp tops have studs which penetrate the key. The approved Wurlitzer removal method is described in detail in our *Piano Technicians Journal* Forum of October 1979.

One of the biggest problems of key restoration is when the balance rail pin holes in the bottoms of the keys become elongated so the keys can move forward and back. Sometimes the damage is so extensive that it becomes necessary to replace all the key plates or shoes, or to install plates where none had existed. Just be sure not to change any external dimensions, though, or there will be serious regulating problems later. Adding a shoe might seem like a great idea, for instance, but doing so will raise the fronts of the keys by about twice the thickness of the shoes, and the geometry will be altered to the point that it will not work.

Suppose the holes are very badly elongated, so badly that it is difficult to tell exactly where the original hole center was located, and we have decided to add a hardwood key plate. First of all, it is almost always possible to find a few keys at the ends of the keyboard that are relatively undamaged, and if so, these keypin holes can be used as reference points. If not, then measure from the center of the whip cushion to the center of the balance rail pin, and transfer that dimension to the end keys, using the capstan centerline as a starting point and making a reference line as shown in *figure 3*. Then line up all the keys with a straightedge upside down as shown, drawing parallel lines on the key bottoms to indicate the area to be routed out for the new plate.

The key plate should be of hardwood, no thicker than 1/8 inch, and glued up so the grain will be running fore and aft on each key. Before routing away the key material, be sure to preserve hole reference marks on the sides of end keys, sharps and naturals, where they can be seen later. Double check the alignment of keytails and be sure the keys are firmly clamped to the bench, and then carefully rout out the designated area. Glue and clamp the new key plate into position, and when the glue is dry, scribe two lines on the bottom of the plate, one for naturals and one for sharps. This line will be used to drill the new holes, and will accurately locate the fore-aft pin position.

Saw the keys apart with a bandsaw or saber saw and sand the

sides of the new key plates flush with the sides of the keys. Locate the side-to-side position of the balance pin holes next, using one of several methods. If a new balance rail will be made, the holes will be drilled in keys and balance rail at the same time, just as when making a new keyboard. We will cover this in a month or two, so we'll skip it for now.

If the existing balance rail will be used, pull out all the balance pins and chalk the rail with blue carpenter's chalk, lampblack or some similar transfer agent. Lay the keys in position on the frame, front rail bushings over front rail pins and with the reference marks on the sides on the end keys lined up with the ridge in the rail. Be sure the tails are straight—align one key with the action and the rest with a scale stick—and that the space between keys are uniform. Double-check the fore/aft alignment of all keys with a straightedge front and rear, and clamp the keys to the keyframe.

Turn the assembly upside down and give the balance rail a sharp rap to transfer the chalk to the new key plates. Another way of doing this, if the rail was drilled all the way through, is to drill starter dimples in each key plate, right through the rail, being careful not to enlarge the holes in the rail. Drill all holes in the key plates after removing the balance rail, because the holes in the keys must be larger than those in the rail. We will elaborate on that when we talk about replacing the entire keyboard.

If the keys are not so badly damaged as to require new plates or shoes, or if only a few of them need repair, *Figure 4* illustrates one method. Use either the straight reference line as shown, if one has been drawn, or simply pull and push on the key while it is on the keyframe, noting whether it protrudes forward or behind its neighbors, and shim accordingly. We will continue with key repairs next month.

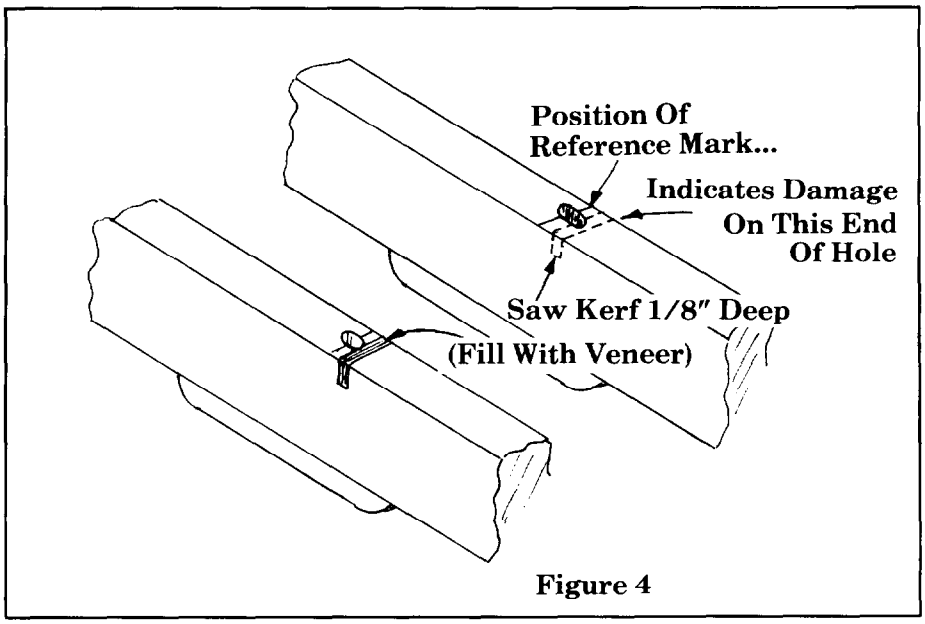


Figure 4

Polyester Finish

Q *I have tried to touch up an ebony polyester finish, using a commercially available kit and following directions to the letter, but if you look hard enough you can always spot the repair. What are the problems that these shiny finishes will present in a few years, especially when people want their pianos rebuilt and refinished?*

A I suppose it is proper to consider this question here, even though most of us aren't refinishers, because sooner or later these polyester-finished pianos will require rebuilding; and at that point, the majority of us who are rebuilders will have to deal with the situation.

Polyester resin, when mixed with a hardener, hardens by chemical reaction rather than by evaporation as is the case with most finishes. Because it is so viscous in its liquid state, it goes on in one or two very thick coats as opposed to the multiple thin coats of lacquer. Polyester can be sprayed on or flowed on with special "waterfall" equipment, either of which leaves a rough, lumpy surface which is subsequently ground flat and then buffed to the desired sheen. Even after the grinding and buffing, the polyester coating is very thick in comparison with other piano finishes.

The main advantage claimed for polyester is durability and resistance to damage, although equally important from a manufacturing standpoint is the fact that polyester can be applied over anything; good veneer is not required, nor is it even necessary to sand the wood before applying finish. It is like a thick coating of epoxy added to the outside of the wood.

Another possible advantage of a hard finish would be reflection of sound, especially on a grand where the hard finish on the inside of the rim and underside of the lid should aid in projection of sound.

On the other hand, it is so thick that it cannot be used with fancy carving or moldings, and all edges and corners have to be rounded off. There is apparently no such thing as a crisp edge with polyester, let alone the possibility of any ornamental woodcarving. And while the repair of a cracked or damaged polyester finish is not impossible, it is difficult and almost always the repair can be seen later no matter who did the work. One has only to know that the finish has been repaired.

My greatest concern as a rebuilder, however, is the fact that there is no solvent or stripper for polyester. Once applied, if it must be removed for any reason whatever, it must be ground off with an auto body grinder or its equivalent. To grind off the hard plastic without digging into the relatively soft wood that is typically used underneath, one would need some sort of equipment that is certainly not now part of the typical rebuilding shop, if indeed it is available at all. Then, too, without good hard veneer underneath, it would be necessary to either reveneer the entire case or refinish it in polyester again, which requires more special equipment. The only alternative would be to rebuild the piano and make patches in the original finish as necessary; whether this would be acceptable to the customer is another matter entirely. Reader comments are invited.

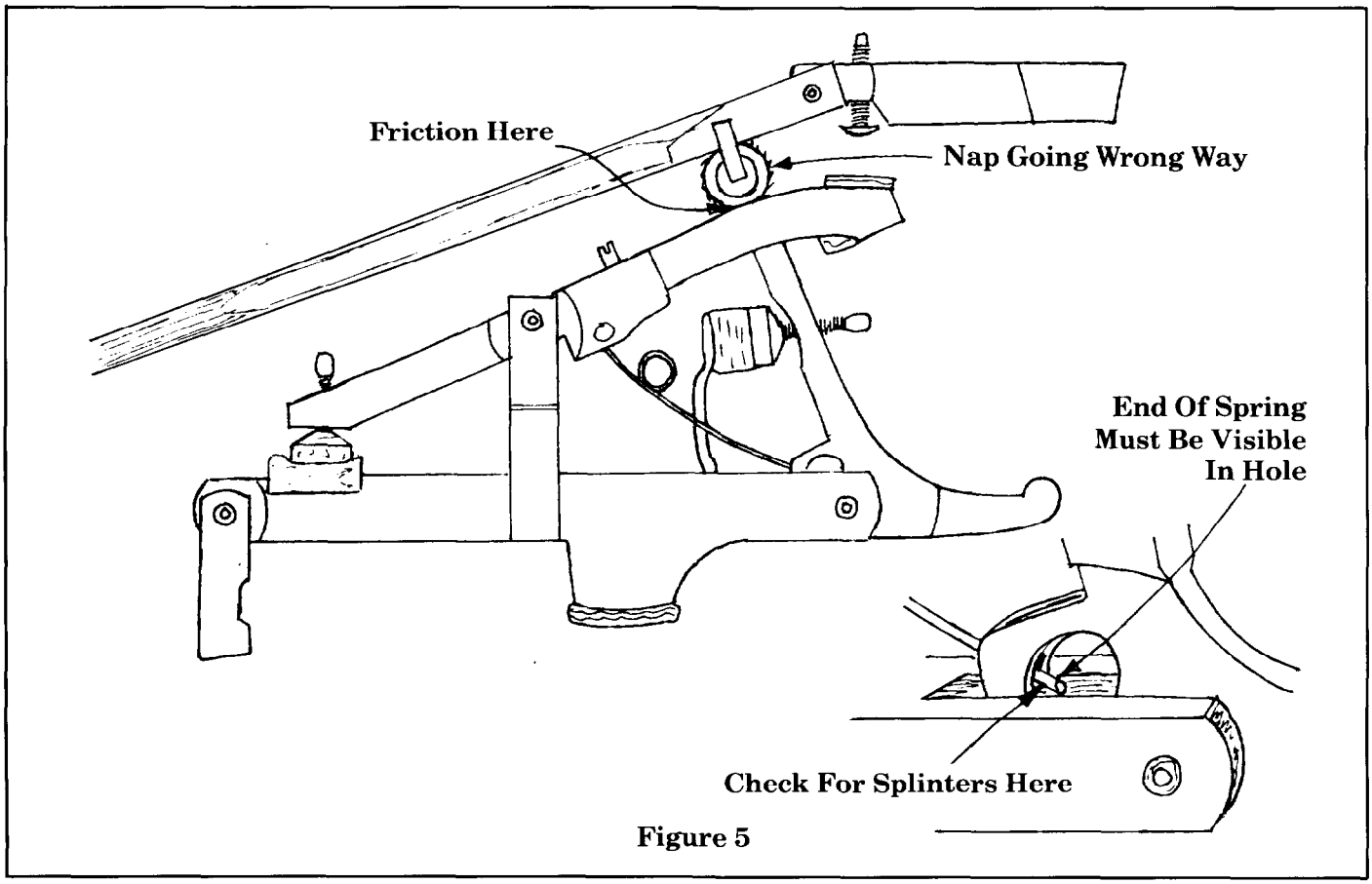


Figure 5

Repetition Height Stability

Q *In the "Sign of Four," Sherlock Holmes said that when you have eliminated the impossible, whatever remains, no matter how improbable, must be the truth.*

The impossible: A 20-year-old seven-foot grand, from one of the top makers. It has a single, dual purpose spring with one unsupported coil, for both repetition lever and jack. Three very particular technicians, with more than one hundred years combined experience, attacked it according to the factory manual. No go. We could not set the repetition lever height to be stable without almost throwing the hammers out of the piano on the "rise on release." They really jumped. We did "things" to that actiontrain, locations and the spring, that no single technician, sane or otherwise, would consider in his wildest dreams. No go. We picked up a new 5'8" piano action of the same make, same problem.

The improbable: We called the factory and explained the problem carefully. They asked if we had adjusted the hammers off the rail. That did it. The youngest loaded up both the seven-foot and the 5'8" actions and drove 600 mile to the factory. The factory techs, after all kinds of lubrication and adjusting and standing on one foot then the other, came out with the statement that all "good" pianists like the springs to be strong, and left it there.

The truth: This action cannot be regulated in this present form. When the repetition spring is set strong enough to ensure repetition, the rise on release is so violent that the drop screw must be low to hopefully stop the hammer from hitting the strings, the back check catch on a soft blow is intermittent, and the action feels heavy and springy. No wonder imported pianos are making such inroads on American production. Can anyone help?

A Elementary, my dear Watson! There's too much friction somewhere in the action, otherwise there would be no problem maintaining the height of the lever without excessive jumping of the springs.

Check the knuckle nap to be sure it is smooth when rubbed in the direction of the hammer, and rough toward the flange. If there is any question about the smoothness of the knuckle, apply unscented talc. This will make it very smooth without gluing down the nap, which is what happens when any liquid-based lubricant is applied. Never use anything greasy.

Figure 5 illustrates some of the potential trouble spots on a typical wippen—this one has more rubbing friction than a Schwander type, but less than a butterfly type—and we should pay particular attention to the end of the spring that rests in the jack, since that is where the rubbing occurs in this design. The spring must not be bent so that it binds in the groove, and it certainly cannot be too long or too short or it will also bind. Check for wood splinters in the groove, cleaning it with a pencil if necessary. The pencil cleans and lubricates at once.

If the knuckle nap is backward, remove the knuckle and glue it in correctly. If the jack tip is not very smooth, sand it clean and burnish graphite into the wood with a burnisher or the side of an upholstery needle. This should take care of the problem, assuming of course that the action centers are free and that there is no physical interference between adjacent moving parts.

Hammer Boring Distance

Q *I hope I may have a few minutes of your time to discuss a problem I have encountered with a set of hammers I had bored for a nine-foot Mason and Risch.*

Samples of the old hammers were sent away and returned with the new set of bored hammers. When the new hammers were tested in action, several problems were evident. The hammer shanks had a severe downward angle from being parallel with the keybed, and the hammer, which was at right angle with the shank, was far from being at right angle with the strings. A couple of other problems as a result were rough letoff (the jack seemed to dig into the knuckle), and slower repetition.

Action measurements taken are as follows: string height from keybed is 21.3cm in tenor and treble, and 21.9cm in the bass. hammer flange center pin from keybed is 16.8cm. From this it would figure the hammers should be bored at 4.5cm in the tenor and treble and 5.1cm in the bass. The hammers sent were long by 8mm. from the center of the bore to the top of the hammer.

My understanding is to have the shanks as close to parallel with the keybed and strings and to have the hammer at right angle with both the string and shank. However my supplier says this does not matter and that I should stick with the longer bored hammers as the manufacturers had done.

I feel somewhat confused as to what I should do. What problems will occur if I try to use a shorter bored hammer to obtain the parallel shank and a hammer at right angles with the string and shank? I realize that the hammers may be angled slightly forward on the shank so they hit the strings at right angles, but in my case this would be a ridiculous amount. Can I compromise, or go for either the longer bored or the shorter bored hammers?

A If the supplier faithfully bored the new hammers to the samples sent, one can hardly fault him because the hammers don't strike the strings at 90 degrees; indeed, one of the reasons for sending samples is to be able to duplicate the original set. If the old hammers were severely undercentering, and it sounds as though they might have been, one can only assume that this has been a problem with the instrument for a long time, ever since the installation of that particular set of hammers. Ordinarily this would have been spotted by the fact that the hammers would have worn off-center, but certain circumstances, such as a very dirty action that is very rarely played, could have made that difficult to determine.

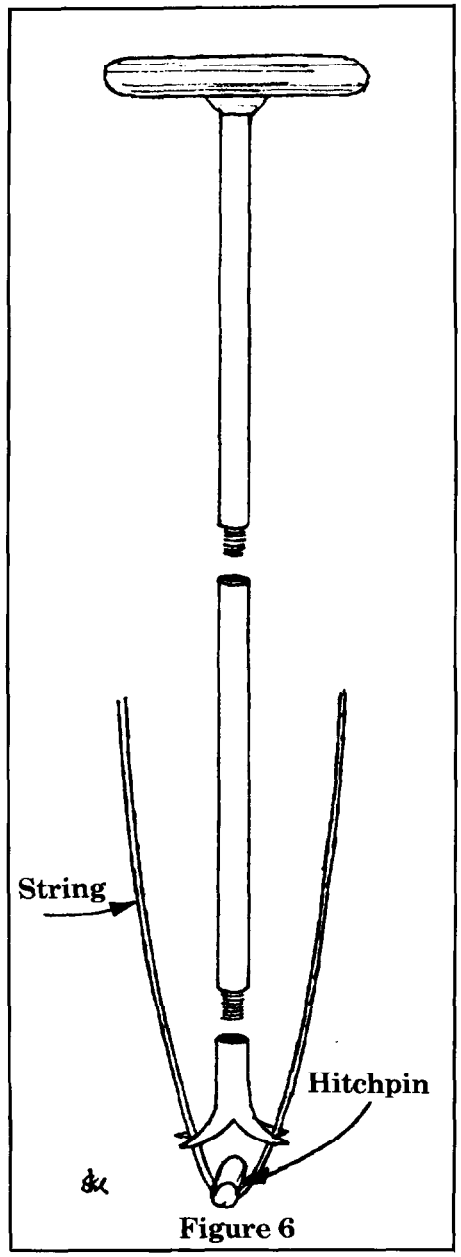


Figure 6

Look for some reason why the hammers were hung in this manner, such as a clearance problem with agraffes—old Weber grands had agraffes all the way up, and the hammers were severely angled to compensate, for instance—or an unusual sostenuto or backcheck design, or a hammer-flange center that is unusually high. Finding nothing of the kind, one might begin to suspect that the previous hammer installer was less than competent.

Before jumping to such a conclusion, however, try to determine whether any possible reason exists which would preclude hanging the hammers at the proper angle. If none offers, bore one hammer at a distance equal to the string height minus the hammershank centerpin height plus 1/16 inch to allow for wear and filing. Make sure that it will regulate out, and that it can be hung at that angle and still hit the proper strike point, and then proceed with the rest.

A set of hammers which has been bored incorrectly is not ruined, so long as the holes can be plugged and the felt was not affected. The suggestion from here would be to plug and rebore rather than scrap the hammers or live with a radical undercentering situation.

Multi-purpose Tool Contest

Glen Hart has an interesting variation on a familiar theme:

My gadget is made from a steel sectional gun cleaning rod. I use it to hold drop stickers in place when removing a drop action—nothing new. But I have taken the small end piece which holds the brush, split it on the end and notched it so it looks like this (see figure 6). This is a great tool for placing strings over hitch pins in pianos without having to remove the action. The length of the tool is changed by the number of rod sections used which is determined by how far down into the piano you have to reach. It also has a nice handle. This idea is not new either, but using the gun rod may be. At any rate, it sure works well for me, fits nicely into a kit, and is now a multi-purpose tool.

Glen Hart
Grand Junction, Colorado

Steinway Wippen Conversion

Charles J. Greve of Pittsburgh, Pennsylvania, has written with his method of modernizing old Steinway wippens. Here's Charles:

Old Steinway wippens contain no spoon, no regulating button on the jack, and the old repetition springs have usually lost their strength. A new set of wippens

costs about $635 but converting them costs less than $100.

You will need new springs, jacks, off-set spoons, #19 and #19 1/2 center pins. The off-set spoons are available from Tuners Supply Co. #665A. In tools, you will need a center pin remover, a single-edge razor blade, and a sanding paddle or a narrow-belt sanding machine.

First, note that wippins #1 to about #40 take .036 springs, and the balance take .032. Make sure you make the new springs so that the heavier ones go to the bass and tenor wippens. Secondly, the jack fork in the wippen will be too narrow to accept the new jack, so both sides of the inside of the fork must be sanded so that the jack fits loosely, but not too loosely.

Remove all center pins and the felt in the slot of the repetition lever. With the razor, cut on both sides of the coil of the spring and save the little felt bushing that comes out with the spring. I reinsert this in the new spring to avoid any chance of noise occuring later.

You will note a notch just behind the fork of the wippen. Drill a 3/32 inch hole just a tiny bit behind the point of this notch, and drill it all the way through. With a pair of pliers, insert the spoon in the hole part way as you won't be able to get it all the way in with the pliers. Then, buy a cheap pair of slip-joint pliers and with a hack saw, cut a slot in the end of one of the jaws, the slot being just wide enough to accept the spoon. Open the pliers to their widest and approach the spoon from the fork. You will now be able to squeeze the spoon into place with splines going fully into the wood.

Insert the spring coil into its slot and re-pin with a #19 1/2 center pin. Insert the jack and pin with a #19 center pin. Insert the spring in the jack and then install the repetition lever using a #19 1/2 center pin. With pliers, bend the spoon backwards or forwards so as to set the jack approximately where it will lie under the knuckle. Final regulation of the jack position will be done when the action is assembled. If the jack is off-center or rubbing against one side of the repetition lever, this is easily corrected. If the jack is rubbing the left side of the slot, place the right side of the wippen on a solid surface and gently tap the top of the jack with a small hammer. The jack's center pin will bend down slightly, allowing the jack to center in the slot. Too hard a blow will drive it to the other side, and repinning is suggested before you begin again. Make sure the repetition lever is adjusted for height before installation. Spring tension will be adjusted when the wippen is installed in the piano, and I find that if you adjust each one as it is installed (with the hammers in place), it is much easier because the spring is readily accessible.

Our thanks to Charles, as well as all of this month's other contributors, for the able assistance. We always need help, as I have said before, and because our technical writers are each writing for a limited number of issues we are always looking for additional talent. If you would like to write a series of technical articles, please sent me a rough draft of the first article together with a rough outline of the remaining articles, and we'll see what can be worked out. Please send all technical material for publication to this address:

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Cincinnati, OH 45202

If The Action Has A Problem, It May Be Something That You Felt

Susan Graham
San Francisco Chapter

If new hammers, shanks and flanges are installed in an action, is it rebuilt? If the blow distance, let-off, drop and backchecking are adjusted, is it regulated? No. Other parts of the action, particularly in the wippen, are as subject to wear as the hammers. They also need to be refurbished or replaced. Worn and dirty parts are noisy, unreliable,and difficult to adjust, making good regulation impossible. Even if no one piece of felt or leather is in too bad a condition, the combination of moderate wear on several parts can add up to a "just can't seem to get it quite right" action.

In this article, I'll try to explain some of why this is so, and offer suggestions about what to replace and how to go about it. As with damper systems, thorough inspection and replacement of wippen parts leads to a better understanding of how the action works. Such an understanding is beneficial in making minor troubleshoot-and-tweak adjustments as well as more complete regulation. I will caution that replacing wippen felts and leathers will usually throw the action so completely out of whack—especially if it has been periodically readjusted for wear—that it may seem impossible to regulate. It is always advisable to work through the entire replacement and regulation process on one or two samples before proceeding with wholesale rebuilding.

> "Even if no one piece of felt or leather is in too bad a condition, the combination of moderate wear on several parts can add up to a 'just can't seem to get it quite right' action."

One extremely critical part is the knuckle (yes, I know the knuckle is not part of the wippen but it functions as such). Quite simply, worn and flattened knuckles make good regulation impossible. There is too much contact with the jack. The knuckle should be a circle to which the plane of the top of the jack forms a tangent, creating only a small area of contact. The flatter the knuckle, the more of it that rests on the jack, creating excessive friction.

The knuckle is supported by the jack as well as the repetition lever—even though we think of the lever as supporting the weight so the jack is free to return, the jack actually must assist to support the hammer at rest. Jack height in the window (and spring tension) must

be carefully adjusted so that these parts work together correctly.

If the knuckle is worn unevenly—and usually the jack digs a deeper groove than do the frames of the repetition lever window—this adjustment is impossible. The jack will not "wink" the hammer assembly since wear has created space between the jack and knuckle, resulting in lost motion, an unsupported hammer and a wavering hammer line. If the repetition lever is lowered to take up the space, the jack will hang up on return. A flattened knuckle also has more contact with the repetition lever, creating even more friction.

The combination of flat knuckles and hammers reduced by filing means that the capstans must be turned up further to achieve proper blow distance. The flat knuckle also allows the hammer to rest slightly closer to the wippen—in effect, the action is compressed. These create trouble in making other adjustments.

Since the wippen at rest is now already through part of what should be its travel space, there may be insufficient adjustment in the let-off button, or the drop screws may need to be raised so high the tops scrape the stretcher or pinblock. It may be necessary to increase key dip to get sufficient travel distance for the wippen to complete its cycle with aftertouch. This creates the risk of blocking jacks (jacks jammed against the felt at the front of the window when the key is completely depressed. The wippen and hammer also are in a different relationship to the backcheck, which can make checking difficult.

So, back to the start of all this—the knuckle. Replacing the shanks when installing new hammers speaks for itself. Just the knuckles themselves can be replaced, or they can be drycleaned. They also can be bolstered, although with the good quality, relatively inexpensive knuckles available, bolstering seems hardly worth the trouble.

To replace knuckles, I do not remove the shanks but simply take the stack off the keyframe and tip it up on the front edge so the shanks fall forward with the hammers resting on the bench and the knuckles exposed. I soften the glue joint with a heat gun and use a pair of end cutters to pull the knuckle free by squeezing with the cutters as if I were trying to cut the core off flush with the shank. These end cutters have rather substantial jaws—about 3/8-inch thick with a fairly blunt taper—and they pry the knuckle loose without much effort.

It's important not to twist or rock them, however, since this will most likely break the shank. Have a few extra shanks handy—I average one breakage per job, but it goes so quickly I still prefer this method to the safer but time-consuming technique of cutting the knuckle apart.

Although acetic acid will dissolve the glue joint, I don't recommend it. It stains the shank and tends to wander into the centerpin bushing. The knuckles absorb a great deal, which is wasteful, and quite often after using acetic, I've had more trouble getting the core free because the knuckle body comes off the core and nothing is left for leverage against the shank.

After the knuckles are removed, I clamp the shanks in the long aluminum clamp (a Jaras tool available from Schaff) and sand lightly to clean up the shank. I install a knuckle at each end of a section, and use a straightedge to align the rest.

Install the knuckle with the grain of the buckskin oriented so the jack will work against the grain as it lets off, and will fall back with the grain. I find that the very slight drag of the buckskin as the jack trips out gives a little more control to the action, and a little more power to the blow. I don't want the grain to impede the return of the jack.

Hot hide glue works best for me for this job—it sets up quickly so clamping is not necessary. Sometimes there is a gap if the new core is not long enough to fit all the way into the slot, but this does not seem to create trouble. If the side-to-side fit is loose, I shim with paper. There is quite a lot of gluing surface between the shank and the body of the knuckle, so they do not seem inclined to come loose if sufficient glue is used here as well as in the slot.

Knuckles can be drycleaned with the action in the same position. Soak them with drycleaning fluid (such as Renuzit), use rags to blot up loose dirt, brush them in the direction of the nap with a lightweight suede brush (not a steel wire brush which will permanently roughen them), blot again to remove scale and to smooth down the nap, let them dry and brush again. It may be necessary to repeat the process.

Cleaned knuckles may squeak. Apply thinned DAG or Slipspray to the repetition levers and soapstone or powdered teflon to the knuckle. *No grease graphite!*

To bolster, I use a 1/8-inch strip of thin bushing cloth. Pull it through with a yarn needle between the leather and the core where the knuckle is flat. If the cloth won't go through, yarn can be used. Trim flush with a razor blade, but do not use glue. "Season" the bolstering when the stack is on the keyframe by holding the hammers and tapping on the keys so the jacks bump against the knuckles a few times.

Another item which needs attention is the repetition spring. If the spring rides in a groove on the underside of the lever, as in a Steinway, both the spring end and

the groove need to be cleaned, since they collect dirt and are frequent targets of the grease graphite enthusiasts.

It is not necessary to remove the wippens. Use a spring hook to pull all the springs free of their grooves and to one side so the end is exposed. Clean them with Brasso. Inspect for kinks—these springs should not have sharp bends in them—and straighten them out. Turn the action completely over, resting on the hammers and the flange rail with the jacks toward you (springs still removed from the grooves). Use a pointed stick or similar tool which will reach between the wippens and gently scrape the groove. I use a small screwdriver which is blunted and smoothed so it won't scratch the wood.

Push debris completely out of the slot—the spring rides back and forth and its rest position may also be changed in regulation. Then use a pencil carved down flat to reach in and apply a little "lead" to the surface of the goove. This is all the lubrication needed. Such cleaning is tedious, but can have an enormous effect on the feel of the action. Otherwise, the spring has to be too strong because it is sticking in the groove—or is kinked so it is digging into the wood instead of sliding.

The action will "kick" as the key is released and backchecking is unreliable. While the action is still upside down with the spring free, flick the jacks to test the pinning. Even though the bottom half of the spring is still engaged in the jack, most of the tension is removed and the sluggishness will be easy to detect and treat. Roll the action back over and reinstall the springs, jiggling each one side-to-side to be sure it catches in the groove and not to one side.

If the spring is anchored by cord, inspect it for fraying. If you need to replace one and don't have the silk cord, use dental floss. If the spring is the Renner type which passes through a window in the repetition lever post, check that it does not contact the wood. Check the ends of springs where they insert into the slot of the jack to make sure they aren't long enough to scrape the back of the jack itself—there is an inspection hole for this purpose. The spring may squeak in the jack groove, but Slipspray will stop it.

All of these springs are anchored by a pin passing through a coil somewhere in the spring; this coil should be wide enough to restrict side-to-side play. If it is not, use a screwdriver to expand it as if it were a coil spring you were pulling open. (This is opening the coil side to side, not expanding the diameter which is done to strengthen it when necessary.)

Moving to the back of the repetition lever, we find some sort of adjustment button. This raises and lowers the lever so that it and the jack (and the knuckle) are in the proper relationship. Sometimes there is a punching on both the button and the wippen body, sometimes only one part is felted. These felts should be brushed clean or replaced if they are worn or moth-eaten (this is a favorite moth home). This is necessary so the fine adjustment of the lever can be made and will be stable, which is difficult if the punching has flattened on one side, as it tends to do.

If these felts are worn or hardened, they may also click. They are simple to remove with acetic acid (disengage the spring) and should be replaced with the same type and thickness of material. The same is true for the jack adjustment button which contacts the spoon. Also check the screws for these buttons and glue-size them if they are loose or they will click.

A frequently neglected wippen attachment is the drop screw leather. If these are worn, it can be difficult to adjust the drop. If they are hard, it can create a click as the key is released and the repetition lever is thrown upward by the spring. These leathers or felts can be drycleaned and brushed when the shanks are removed. They can also be replaced but must be trimmed carefully or they will rub.

The wippen cushion takes a beating. This is usually action cloth, sometimes with bushing cloth underneath centered where the capstan contacts. The outer cloth is glued only at its ends. At the least, these cloths should be drycleaned and brushed. They can be bolstered like the knuckes, or the entire cloth replaced. This can also do a lot to improve the feel of the action, and to reduce key return noise. If the cushion is worn, it also affects the geometry of the action since the capstan must be turned very high. It is also possible for excess friction to occur because the capstan has dug into the felt. (A different but related problem is burrs on the capstan—buff these off.)

Replacing all these little bits of stuff is certainly not the glamour aspect of a job, and most actions will work with considerable wear. However, if an action is to be truly "rebuilt," or if fine regulation is desired, the sum of all these little parts can add up to a big difference in the final result.

Music, Theory And Tuning In 18th-Century France

Jack Greenfield
Chicago Chapter

Growth of Musical Activity

Musical activity in 18th-century France was centered in Paris, not spread out as in Germany or Italy. The opportunities in the large cosmopolitan city attracted musicians and composers not only from France but from foreign countries as well. By the middle of the century, Paris had become an important center of composition and publication. Music printing was growing into a big business supplying the increasing number of amateur musicians who took lessons and played in the home.

Public orchestra concerts increased after a series of programs was established in Paris in 1725. The French public developed an even greater liking for opera, their own and that brought in and presented by Italian performers and musicians. The Opera of Paris had two or three singers for every role, many dancers, and employed nearly 100 or more singers and musicians in the orchestra and chorus. The support staff included dozens working as choral and ballet masters, accompanists and stage hands. Audiences showed their approval or disapproval with the same vigor as the crowds at today's sports events. Followers of French opera had heated arguments with the followers of Italian opera.

"Audiences showed their approval or disapproval with the same vigor as the crowds at today's sports events. Followers of French opera had heated arguments with the followers of Italian opera."

Harpsichord Composition

After Francois Couperin died in 1733 and Rameau published his 1736 collection of harpsichord pieces and then devoted himself almost entirely to opera and music theory, other clavierists gained popularity teaching, performing and composing. Although some were highly regarded then, today none of the French keyboard composers who wrote in the period

between Rameau and Camille Saint-Saens in the next century are considered any better than second rate. Two harpsichordists highly regarded in Paris were Johann Schobert (who died in 1767) and Gottfried Eckard (1735-1804). Schobert was from Alsace, Eckard from Germany. Schobert wrote many keyboard pieces and some chamber music in which strings played accompaniment to the keyboard instrument which is featured. He is credited with originating orchestral keyboard effects. Eckard's pieces, initially published in the 1760s, were among the first in France composed for either harpsichord or piano. Some pieces contain markings for crescendo and diminuendo, *f, p, pp* and other dynamic shadings suitable for the touch-responsive capabilities of the piano. Mozart's comments in a 1772 letter to his sister indicated his high opinion of Eckard's music. Among others with similar views, Charles Burney, the prominent 18th century historian, classed Schobert and Eckard with Handel, C.P.E. Bach and Scarlatti. Today, Schobert and Eckard are placed much lower.

Rameau Establishes Principles Of Harmony

By 1731, in addition to his fame as a harpsichordist, Rameau had also become a leading composer of opera and an authority on music theory. He continued at these activities and finally, during the closing year of his life, he spent most of his time writing theoretical essays. Always a perfectionist, even on his deathbed in Paris in 1764, he reproached the priest who had come to administer the last rights for his bad chanting.

Rameau is considered the foremost French musician of the 18th century. He is rated highly for his work in instrumental and orchestral composition as well as theory. Rameau established principles of harmony which clarified musical practice and have been the basis of musical composition for more than two hundred years. He considered chords to be the basic elements of musical composition, not melodic lines or intervals. Initially, he derived triads in terms of monochord string divisions. Later, after becoming more familiar with the acoustical research of Joseph Saveur, he indicated the correspondence of sounds derived by divisions of the strings to the overtones of the harmonic series. He expanded triads to seventh and ninth chords by adding thirds and was first to recognize the identity of chords through all their inversions. He initiated the concept of tonic, dominant, sub-dominant and the relationship of other chords establishing tonality and the change in their function for modulation.

> "Eckard's pieces, initially published in the 1760s, were among the first in France composed for either harpsichord or piano."

Rousseau's Work In Music

Around 1740, another aspirant for fame as a composer, Swiss-born Jean Jacques Rousseau (1712-1778) appeared in Parisian musical circles. He had had little formal instruction in music and was largely self-taught. In spite of his determination and desire and his study throughout his career, he never acquired more than an elementary technical skill in musical composition. His talent was greater with words and he became more famous as a writer of literature and political philosophy than as a musician.

After writing several simple operas with easily-remembered and sung melodies, he gained popular success as a composer by 1752. In spite of this, he led a faction which attacked French opera such as Rameau's as inferior to Italian. He also wrote on music theory opposing Rameau's views on harmony. The two became bitter opponents and criticized each other in their writings.

Rousseau was one of a group of writers known as the *Encyclopedistes,* who participated in a massive project to prepare an encyclopedia under the editorship of Denis Diderot and Jean le Rond d'Alembert that would sum up all existing human knowledge. Rousseau wrote articles on music and political philosophy. The *Encyclopedie* consisted of 25 volumes with about eight supplements published one-by-one through a period of several decades beginning from 1751. The articles on music were the basis of a *Dictionary of Music* Rousseau later published in 1767. It became very popular and was also published in English translation.

Rousseau's vigorous views on social justice in his political writings helped increase the hatred of the French populace against the wasteful and scandalous rule of Louis XV and in the 1760s, Rousseau had to flee from France. After several years in Switzerland and England, he returned and spent the last few years of his life near Paris.

Rousseau's impact on music was much less than his influence on political and social history, although his "humanistic" philosophy of being guided by feelings and emotion rather than logic and reason is associated with the trend in musical style and other arts know as "Romanticism." His simple operas helped stimulate the growth of light opera known as *opera comique* and which used spoken dialogue instead of the recitative of Italian opera. His writings on music theory are valued today not so much for technical content but as references with historical information on the music of 18th-century France.

Harpsichord Making

The *Encyclopedie* contains considerable information on harpsichord building in 18th-century France. This and articles on other musical instruments were written by editor Diderot, who was himself an amateur musician and student of acoustics. Other contemporary documents add details providing us a fairly good knowledge of the subject.

Various documents show more than 60 harpsichord makers active in Paris during the 18th century. The finest instruments throughout the century were made by the Blanchets and their successors, the Taskins. The firm was started just before 1686 by Nicolas Blanchet and was passed on to his son, Francois Etionne Blanchet (I)

Remember!

Remember those who contributed so much to your career and to the development of the profession with a contribution in their names to the Piano Technicians Foundation.

Contributions can be designated to one of three funds within the Foundation: the Stephen Jellen Memorial Library, the Piano Technicians Scholarship Fund and the Piano Technicians Research and Development Fund.

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> "In 1772, Taskin (I) declined the prestigious position of keeper of instruments in the Palace and at Versailles for Louis XV because it meant he would have to give up his business."

(1695-1761), and then to his son, Francois Etionne Blanchet (II) (1729-1766), who died at an early age. It was then taken over by a Belgian assistant, Pascal Joseph Taskin (I) (1723-1793), who married the Blanchet (II) widow. The last in the line was Pascal Joseph Taskin (II) who continued when his uncle, Taskin (I), died.

When Nicolas Blanchet started his shop, French harpsichord builders were mainly engaged in conversions and rebuilding of Ruckers and other Flemish instruments highly valued for tone quality although their double manual transposing actions were obsolete. The typical conversion consisted of extending the keyboard, rebuilding the action and adding additional strings to give eight-foot and four-foot registers on the lower manual and a second eight-foot register on the recitative upper manual. Keyboard changes included modification of the short bass octave to a complete chromatic octave and extension on the treble side. By the 1730s, French keyboard compositions spread over a range of five octaves. New French harpsichords were designed in the same pattern as the converted Flemish instruments.

The French instruments, particularly those of the Blanchets and Taskins, were noted for fine actions with light touch. Taskin key levers were not weighted but were balanced by cutting away wood under the key heads. Clean, accurate workmanship minimized friction to provide a crisp, positive, controlled touch with most of the finger pressure transmitted as a force against the resistance of the string as it was plucked by the quill.

The Blanchet business continued to grow with no decline in high standards of construction after each succession. Instrument quality was even enhanced by the refinements of Taskin (I), believed by Hubbard to have built the finest harpsichords ever made. In 1772, Taskin (I) declined the prestigious position of keeper of instruments in the Palace and at Versailles for Louis XV because it meant he would have to give up his business.

Late in the century, as the threat to harpsichords by the development of the piano increased, the Taskins unsuccessfully tried to devise some means of overcoming the harpsichord's inherent dynamic inflexibility. They even built some pianos but could not match the success of another instrument maker, Pierre Erard, who started building harpsichords in Paris in 1768 before turning to pianos about eight years later.

Considering the five national styles as prototypes, many modern builders prefer the recitative French design as midway in complexity. The Italian and original Flemish instruments are too simple or inadequate for most of the repertoire. The last German and English instruments are too complex with extra unessential features which make them difficult to copy.

French "Ordinary" Temperaments

The tuning systems of 18th-century France known as "common" or "ordinary" temperaments were primarily modifications of 1/4-comma meantone temperaments while the more popular ones of Germany were generally derived from the Pythagorian tuning cycle. Except for little-used theoretical temperaments, in practical music the Germans used pure or reduced fifths only. The French popular temperaments, however, included two or three expanded fifths.

Mersenne's ambiguous tuning instructions of the 1630s were first interpreted as indicating that instead of the 11 1/4-comma tempered fifths and a single fifth 36 cents larger than just of regular meantone temperament, the excess would be divided between two expanded fifths. Regardless of what Mersenne had in mind, the use of modified 1/4-comma mean-

FRENCH BAROQUE "ORDINARY" TEMPERAMENT
RAMEAU'S VERSION

Tempering of Intervals (¢ from Just)

Intonation (¢ from C shown by Barbour)

Interval Tonic	E^b	B^b	F	C	G	D	A	E	B	$F^\#$	$C^\#$	$G^\#$ (A^b)
Fifth	+7	-5.5	-5.5	-5.5	-5.5	-5.5	-5.5	-5.5	0	0	0	+7
Major Third	12.5	0	0	0	0	5.5	11	16.5	29	36	30.5	25
Intonation	298	1007	503	0	697	193	890	386	1083	585	87	789

tone temperaments with two or three wider fifths became established in France. In further modifications, several pure fifths replaced some of the 1/4-comma tempered fifths to provide more gradual variations in interval size.

Earlier in his career, when he had composed most of his harpsichord pieces, Rameau recommended a modified meantone temperament he presented in a book published in 1726. According to Barbour's interpretation, (G#) Ab - Eb - Bb form a pair of wider fifths. The seven fifths formed by Bb - F - C - G - D - A - E - B are reduced by 1/4 comma. The circle is completed with three pure fifths formed by B - F# - C# - G# (Ab). Rameau stated that the variations in interval size were desirable because they conveyed differences in shades of expression. Later in his career however, he became a strong advocate of equal temperament. In Rousseau's discussion of temperaments, he commented that the keys could be identified by ear because of the variations in intervals of the "ordinary" temperaments. Rousseau also presented some modified just tunings which were no more practical than any earlier ones.

The table shows Barbour's figures for intonation rearranged in a sequence of fifths and gives values for the recitative tempering of the fifths and major thirds. Other versions of the French 18th-century "ordinary" temperament differ slightly in size, number, and placement of the different fifths. In one method for tuning the Rameau temperament aurally, C4 - G3 - D4 - A3 - E4 are tuned as equally tempered fourths and fifths so that C4 E4 form a pure major third the same as in regular 1/4-comma meantone temperament. At A 440 Hz, the theoretical beat of the fourths and fifths rates are in the range 1.8 to 2.7 per second. It is 3.0 for the major sixth, G3 E4. Relative speed is indicated by the following ratios, which are independent of starting pitch:

G3 C4: G3 D4 3:2, G3 C4: A3 D4 and G3 D4: A3 E4 8:9. After F3, Bb3, and B3 are tuned pure major thirds to A3, D4 and G3, F#3 - C#4 - G#3 are tuned as pure fourths or fifths and EB4 is tuned wider than pure so that Bb3 - Eb4 beats one and one half times as fast as Ab3 (G#3) - Eb4.

THE
ECLECTIC'S
NOTEBOOK

Hard Hammers

Christopher S. Robinson
Connecticut Chapter

Item four in last month's article deserves some explanation. Why would a single deep needle, driven all the way to the core felt of a hammer, actually *increase* volume and decay? The answer to this question is a tough one and, to be frank, is really conjecture since what in fact happens in each individual hammer is so very difficult to witness.

To begin with, placement of the needle is extremely critical. It must be positioned precisely between areas V and D on the subject hammer. While it is true that the needle will release tension felt in attack area A as it enters the felt, it is important to note that a greater quantity of compression felt is released at the core of the hammer *underneath* areas V and D than that which is released in area A on the surface. What happens is that the released felt at the core creates *increased compression* in both areas V and D, augmenting the differential between surface tension on the top layers of the felt hammer, and the desire of the material in the center to expand outwards. This is not dissimilar to inflating a rubber ball to obtain greater "bounciness."

"A hard hammer produces volume, and very little else, as many of this writer's colleagues have so painfully learned. Hard hammers will be loud whether the pianist plays the keys firmly or gently."

It was also stated in the last of these articles that the reader should be sure to keep in mind the difference between just plain "hardness" and the tension and compression differential. Here is a funny thing: *hardness* will definitely produce a loud noise, just as the wooden ball will yield a strident "clack" when thrown against a wooden floor. What hardness will very rarely do, however, is produce either a long decay period, or the coloration so necessary for "depth" in piano tone.

A hard hammer produces volume, and very little else, as many of this writer's colleagues have so painfully learned. Hard hammers will be "loud" whether the pianist plays the keys firmly or gently. Hard hammers emit the *same character* of tone whether the pianist strikes the keys or whether they are stroked. It is the resilience

of the *supple* piano hammer which permits varying tonal characteristics to be elicited by the player.

It is perhaps imperative to point out at this time to those who feel that the super-dense, super-hard, super-finished imported hammers are inherently superior to softer domestic hammers which have been "brought-up" with the use of lacquers or other hardening agents, that there is at least in one respect no difference between the two products. The imported hammers described above are densified using a second pressing operation in their manufacture *which shrinks and congeals the basic felt product at a point following the actual construction of the hammer.* To be specific, the felt is first drawn and pressed around the wooden molding in the usual manner. The set of hammers is then removed from the press, shaped on a backstand sander, and sliced apart into individuals just as all of us have learned at seminar classes.

The difference, however, is that the set of hammers is now returned to the press, heated to a temperature of 150 degrees or more, and allowed to remain there under pressure for the amount of time necessary to yield the finished product.

As a boy, I watched the hatter many times steam and block my father's felt fedora when it had lost firmness and required stiffening to restore its shape. There is essentially no difference between the way that the very hard imported hammers are produced and the manner in which my father's hat was reshaped!

This accounts not only for the uniformity and consistency of the imported units, but for their resistance to being voiced, as well as the not-infrequent inability of players to elicit color and depth from a piano so equipped. If volume is all we require, wouldn't it be wise to just drop the pretense and plug the instrument into an amplifier?

Of course, beauty is of little value if it cannot be enjoyed. Similarly, a piano must be heard—especially at the back of a 2800-seat concert hall in front a 90-piece orchestra!

So, at this point, how do we "bring a piano up", once we have exhausted the options discussed up to the present? We'll examine the answer in detail next month.

It's The Little Things That Count

Gerald F. Foye
San Diego Chapter

In a recent issue of the *Journal*, I mentioned the use of nut drivers for working on player pianos. Guess I'm a nut for nut drivers since I'm going to bring up the subject again.

A short 11/32-inch nut driver, with shank modified to fit your combination handle, is an important tool to loosen or cinch down the hex nut that stabilizes the keystrip on many popular spinet and console pianos. Sure, a pair of pliers, or even your finger, will work, for that matter. But the return call you make because that nut came loose and either caused an annoying rattle or jammed a couple keys can be expensive. It's a common occurence and one to avoid.

Other types of nuts, as on some consoles and most grands, are slotted. Logically the best tool to use on a slotted nut is a slotted screwdriver. It sounds foolish, but it works. Take a flat-blade screwdriver and grind or file a notch about 3/16-inch wide by about 3/8-inch deep. There again, modify the shank end to fit the combination handle and you're in business. If all this modifying of tools isn't within your capabilities, then do it the easy way—contact Wurlitzer for their tool. It's a simple metal stamping but it is convenient.

Occasionally a situation is encountered where the threaded support stud is not up high enough to allow room for the top, or locking, nut. This situation must be corrected or the bottom nut will be free to do its dirty work. One solution is to relocate (lower) the screw eye in the keystrip, if there is adequate room. Remove the screw eye, start another hole with a drill or an awl and replace the eye in the lower position. Another cure is the use of a dab of contact cement, or similar adhesive, to the thread just below the nut. Player piano leather nuts also work nicely since they will stay in place without turning.

As a precaution when tightening the top nut, watch for hammer movement indicating the keystrip is too low. On the other hand, should the keystrip be too high, there will be interference with the key cover. More reasons to double-check your work.

Back to the nut driver. That 1/4-inch size mentioned in a previous article on player pianos also fits lost motion adjustments on some spinets. But mainly I find the tool very useful for installation of mute or rinky-tink rails and related cables, Dampp-Chaser spring clips, trap springs and assorted purposes. That is, providing you carry a handful of #6 x 1/2 and #6 x 3/4 hex head sheet metal screws. The advantage is that I can use an awl for a starting hole, then use the nut driver to apply plenty of torque without slipping, even on a bit of an angle. I find them far more useful than standard slotted screws.

Hammers And Music

Ari Isaac
Toronto Chapter

Traveling around the country listening to many pianos, listening to many live and recorded concerts, I'm struck again and again by the poor tone of most pianos. The sound of a beautiful piano is, nowadays, a rare occurrence.

To be sure, the reason can't be found in a lack of effort by the pianist or by the technician, both of whom put forth their finest efforts. Why, then, do so many pianos sound unconvincing, unexpressive, powerful, strident, metallic, empty? Why did pianos sound so much better from 1900 to 1920? So much richer, so much more musical?

These questions and their contemplation are my constant companions. While I do not have the definitive answers to all of these questions, my thoughts have pointed in one direction; not the usual direction, but one which sheds new light on an otherwise obscure subject.

Some definitions are necessary before we can clearly consider pianos and musical tone. The piano, that instrument which, to many of us, expresses our professional life, is a 19th century instrument. The music which is played on the piano is, for the most part, 18th and 19th century music. Bach, Mozart, Scarlatti and Clementi were 18th century men. Mendelssohn, Schubert, Tchaikovsky, Chopin, Liszt and Brahms were 19th century people. They account, along with Beethoven, who lived in both of those centuries, for the bulk of the piano literature played today. These statements carry certain implications which we shall examine shortly.

Musical piano tone is generally assumed to be whatever piano sound we find subjectively pleasing. Nothing could be further from the truth.

"It sounds good to me; therefore it is good tone" is a ludicrous statement since it ignores a long and well-established tonal tradition which has evolved over a period of 200 years and which has some of the finest minds and talent in the history of musical instrument building among its practitioners. Incidentally, this tradition stopped 60 years ago, possibly because it reached its apex.

In judging the piano and musical tone, we come then to a well-known quantity. We can judge whether a piano possesses musical tone only by applying the standards used to judge art and particularly 19th-century art. These standards are integrity, profundity and engagement. (There are more standards, of course, but these will do for our subject.)

Next month we shall look more incisively at these standards and how they relate to piano hammers and tone production.

Each One Reach One

Membership Is Everybody's Business

Charles P. Huether
Vice President

We write each month about stimulating recruitment of new members, asking each member to keep alert for potential technicians who can add to our wonderful Piano Technicians Guild in skill and dedication.

There is another way in which we can help our membership grow besides recruiting. It is, perhaps, an even more difficult way to function.

Consider the effect of members withdrawing from the ranks. Some people drop out each year and, discounting deaths and retirements, there still is a body of people who leave for a variety of personal reasons. How many of you have tried to talk with someone who is leaving the Piano Technicians Guild for personal reasons? If you did and if you were able to get that someone to change his or her mind and remain a member, you have done a great service for the organization. Keeping an existing member on the rolls is, in some ways, even better than finding someone to replace the dropout. Administrative costs are eliminated. The value of an experienced technician is retained.

I know that we do not have a category in our President's Club to cover something like this. Putting the club and contest aside, we would be far better off if we could maintain our existing membership levels and then add to them.

Chapter presidents receive a regular list of potential membership drops as they are coming due. Ask the president of your chapter to share the list, in a quiet way, and see if there is something that you can do to convince dropees to remain on the rolls.

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June 1, 1983—May 31, 1984

Booster Club	Pts.	Mbrs.	Booster Club	Pts.	Mbrs.	Booster Club	Pts.	Mbrs.
Adams, Ron	1	1	Harteau, Daniel P.	1	1	Onesti, Ralph J.	3	1
Anderson, Mark S.	3	1	Hazzard, Nancy M.	8	2	Ousley, Robert L.	5	1
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Atherton, Olan M.	1	1	Heikkinen, Dale E.	6	2	Peake, David E.	1	1
Bailey, Benjamin	1	1	Heismann, Barry	1	1	Pennington, David L.	5	1
Baldassin, Rick	20	4	Hennessy, Frank P.	1	1	Perkins, Robert K.	6	2
Bennett, David L.	5	1	Herwig, Lewis F.	5	1	Person, Donald A.	4	1
Berg, Harry E.	1	1	Hess, Marty A.	1	1	Phillips, Webb J.	20	6
Bessette, Roland	1	1	Hitt, Henry L. Jr.	8	2	Potter, Randal F.	1	1
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Bianchi, John L.	1	1	Hofstetter, Robert A.	2	2	Prentice, Randy A.	2	2
Blees, Willem	21	7	Holder, Leopold	8	2	Preuitt, Ernest S.	1	1
Bordeleau, Edward	1	1	Hong, Yat-Lam	1	1	Privette, Richard V.	1	1
Bowser, Gary A.	3	1	Hopland, Ray	1	1	Quint, Richard B.	1	1
Brady, Stephen H.	5	1	Houser, Clarke M.	1	1	Randolph, Terry S.	6	2
Briggs, Arthur	4	1	Howell, W. Dean	1	1	Raskob, Richard	1	1
Briley, James E.	1	1	Huffman, Keith M.	1	1	Reed, William H.	5	1
Bunker, Mark E.	1	1	Jeschke, Alfred E.	14	3	Reeves, Robert A.	1	1
Capp, Richard M.	5	1	Johns, Barney J.	2	2	Reuter, Raymond A.	3	1
Churchill, Kenneth R.	1	1	Johnson, Eric A.	1	1	Rickey, Charles	1	1
Class, Kenneth A.	1	1	Jorgensen, Owen	7	3	Ritchie, Mark O.	6	3
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Craw, Stephen D.	3	1	Laghezza, Roger	4	1	Shank, C. Dean	1	1
Darling, Lindasue	1	1	Laird, Jon M.	2	2	Sierota, Walt	4	1
Davis, Steven W.	8	2	Lang, Anthony L.	4	1	Sims, James R.	4	1
Deptula, Walter A.	4	1	Leary, Janet	4	1	Sims, Willard L.	5	1
Doss, Harry W.	4	1	Lord, Joseph O.	1	1	Sivel, Richard F.	1	1
Drost, Michael A.	1	1	Lovgren, Christine	19	4	Snyder, Stephen H.	1	1
Dukes, Ernest F.	3	1	Lowe, Lawrence B.	1	1	Sorg, Herbert	1	1
Duncan, David R.	5	1	Lundell, Daniel D.	5	1	Speir, Leon J.	3	1
Eaton, Wendell E.	3	3	Marling, Harold S.	5	1	Stoffer, Phil	1	1
Eddy, Joe C.	1	1	Martin, Barbara M.	6	2	Stone, Patrick L.	4	1
Edwards, Wm. E.	5	1	Mastagni, Angelo F.	4	2	Stone, Sidney O.	15	6
Evans, George J.	5	1	Mayr, Vitus J.	4	1	Stopa, Frank J.	4	2
Flegle, Richard Sr.	1	1	McClure, Bob	3	1	Story, Mark E.	4	1
Flippin, C.D. Jr.	5	1	McKay, C. G.	1	1	Thile, Scott E.	1	1
Garrett, Joseph A.	5	1	McVay, James I.	3	1	Tremper, Fred W.	12	3
Geers, C.A.	3	1	Meehan, Joseph A.	1	1	Turner, Jeffrey R.	1	1
Geoghegan, Stephen R.	15	3	Moberg, Jonathan M.	1	1	Vandervalk, Alexander	1	1
Gilberg, Donald C.	5	3	Morris, Jere F.	1	1	Vanwinkle, Bill	3	1
Gist, Ronald T.	1	1	Motsko, William R.	5	1	Welch, Cyrus L.	1	1
Goetsch, Lawrence T.	1	1	Neal, Douglas R.	11	11	Welton, T.S.	5	1
Greenbrook, Reginald G.	1	1	Neie, Gary A.	2	2	Werneth, Carey W.	5	1
Grossman, Matt	13	3	Newhouse, Lawrence,	5	1	West, Richard E.	3	3
Gurnee, Daniel S.	1	1	Nye, Jonathan C.	5	1	Whaley, Denzil L.	1	1
Gustafson, David E.	8	2	Odenheimer, Fred	4	4	Wilkinson, Denis J.	1	1
Hale, Robert R.	4	1	Oliver, Edward A.	1	1	Whitaker, Craig M.	3	1
Harmon, Clayton C.	6	3	Oliver, Stanley	4	1	Woitasek, Walter J.	5	1

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May 1983—May 1984

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Clair L. Davies
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Dale E. Heikkinen
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Terry S. Randolph
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Carey W. Werneth
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The Auxiliary Exchange

From The President

By the time you read this, another convention will have become history.

As soon as one convention is over, we begin work on the one for next year. Perhaps you were unable to get to Indianapolis—but already you are making plans to join us next July in Kansas City. Kansas City is very centrally located and it's a beautiful city. I have already visited and even stayed in the hotel we will be using there. It is magnificent.

The 1985 convention will be an international one. Technicians will be coming from many parts of the world. If you start to make your plans early, tuck a little money away each week, it could be one of the finest vacations you have ever had. I hope that is just enough to whet your appetite for our convention next year. We are planning now—and we hope you are, too!

We want to take this opportunity to thank Julie Berry for the many months she has served as editor of the Auxiliary section of the *Journal*. Julie asked to be replaced a few months ago. She very willingly agreed to see us through the Convention month. Although we hate to see Julie leave us in this capacity, we do understand. It is a very demanding job, both in time and energy. Our sincere thanks to Julie for a job well done.

We are asking you to send us your thoughts about our Auxiliary page. We also would like you to tell us what you would like to see on it. We are always looking for good contributions, stories, events that happen to you or your chapter. Perhaps this year it can be "our" Auxiliary page—yours and mine. I'll be waiting to hear from you.

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President

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Editor, Auxiliary Exchange

JULIE BERRY
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Dear Friends And Members Of The Auxiliary

This is a special column for me, for it is the last one I will write as editor of the Auxiliary Exchange. I have enjoyed editing this column for the last three years, but there always is a time when a person should move on to another project. That time has come for me.

In my last column to you, I would like to encapsulate some thoughts about pianos and piano people and those of us who care about piano people.

Thank you for three years of fun. I'll be looking for you at the seminars and conventions. Best wishes for a happy summer.

Julie Berry

From The Customer's Point Of View...

I think the biggest mistake any of us make in our business is being unable to view a situation from the customer's point of view. Too many times, I have heard technicians lament about how dumb people are to go out and buy junky pianos. They say they have tried to educate the public but it's a lost cause. When a customer calls back to complain about something after the technician has just been there, many technicians immediately take offense and try to demean the customer's ability to judge a good tuning.

Sometimes the technician's spouse gets even more offended than the technician, to think that someone would criticize a good technician like that. When customers call us at the last minute with a tuning for a program that has been scheduled for months, we sometimes get huffy and bent out of shape. None of these attitudes do our customers, our businesses or our state of well-being any good.

The degree to which we are able to please our customers is often more critical to the success of the business than the tuning expertise of the technician, no matter what we would prefer to think. Just look at the situation in your town. Isn't there someone in the piano service business who has lots of business, many repeat customers, even

though he or she isn't a very good tuner and maybe not even a technician at all? I'll bet you also know of some proud and well-trained technicians with great ability to tune and repair pianos who offend and lose their customers and then wonder what happened.

It seems logical enough to see that we will all enjoy the business more if we enjoy working together with our customers instead of doing battle with them.

Don't wait until you need business to get business

In most areas there is not a surplus of people engaged in the business of tuning and repairing pianos. In some areas, it used to be considered a status symbol not to advertise in the Yellow Pages if you were a good tuner. Most of us seem to get the bulk of our business from word-of-mouth, repeat customers and institutional piano work. The flip side of this coin is that it makes us lazy when it comes to business building on a steady basis. Then, when the tide of calls for tunings ebbs a little, we tend to panic. Then is when we start to think about advertising, but then it is too late to advertise for immediate business.

It is important for us to see the long-range benefits of advertising. Few of us will need to do massive advertising, but we can all benefit from keeping the technician's name before the public. It might be a good idea to analyze the best places for you to advertise in order to reach the people you want for customers in your community. Once you have determined the places to advertise, then you can commit yourself to some modest publicity on an ongoing basis. If the piano teachers publish their directory in the fall but you never place an ad in the directory because you are always busy in the fall, you may be doing yourself a disservice. If you only advertise when somebody calls you up to solicit your ads, you may miss out on some of the best opportunities. You might end up sending lots of kids to country and western shows, getting your name put on the bottom of hundreds of stadium pillows and missing out on a well-placed $25 business-card-sized ad in a music-related directory.

You Should Run The Business Instead of Letting It Run You...

Some people think they are going to love being self-employed, and then it drives them bananas. That is because they let the business run them. You'll never get a decent vacation if you wait until the business dies down, because then you won't have any money. On the other hand, you'll have more money to spend on your vacation if you plan it during a slow season and work during the peak months. If you don't get a system for handling the paperwork, you will feel like it is closing in around you, and it won't be much fun to be self-employed.

If it bugs you to receive calls from customers when you are trying to get some time away from the business, then you need to do something about it. You can buy a phone answering machine, sign up with an answering service, get a private line installed or hire someone to take the calls and make the bookings for you. Whatever you decide to do, you should go ahead and do it before you start resenting all the people who call to give you business.

It's Nice To Have Friends...

One thing we find in the Guild and the Auxiliary is friendship. It is probably not the reason we joined, but it becomes one of the reasons we keep up our memberships. When it comes to your business, the people who will understand the best are other people in similar situations. It is important to be on friendly terms with the people in your local area, and it is really fun to be friends with other technicians and their families around the country.

This is an area where we in the Auxiliary serve an important function. A spouse who takes no interest in the technician's business and, in fact, begrudges the time the technician spends with other technicians will make it more difficult for the technician to prosper in business. A spouse who gets to know some of the piano people and makes some friends herself or himself will begin to see how much is to be gained from the friendships. Most of us have met a technician or two who function in a void, not even aware the Guild exists. Not only do these people sometimes practice their mistakes and limit their capabilities, but they don't have the supportive understanding from others in the trade.

It's important in life to maintain contacts and friendships with people from a variety of backgrounds. However, that variety should include a healthy sprinkling of friends from one's trade or profession.

Be Open To Change...

Not a lot changes with pianos from year to year. Not a lot changes with tools from year to year. Piano technicians themselves don't seem to change much from year to year.

Nevertheless, it would be wise for us to keep open to changes in the business. It is a good idea to keep open to changing tools or technology when something better comes along. Perhaps business stationery and cards should be changed from time to time to keep them looking good and to make sure they reflect the image you want to project with your business. As long as we keep open to change, we will be able to ride with the times and benefit from the best our business has to offer.

Now I have left with you all my most important thoughts about ways to run a piano service business. Thinking about our business and trying to figure out ways to make things run more smoothly has always been my contribution, my way of sharing Ron's love for piano work. For that reason, my column in this magazine has emphasized ways spouses can participate in the business. If you are one of the many spouses who helps make the business run, perhaps some of what I have written will relate to your situation. If you are someone who enjoys being with your spouse but doesn't want to participate in the business, perhaps my accent on business has given you a little insight into the technician's world. At any rate, it has been my pleasure to share my views with you through this column, and I thank you for having given me the opportunity to do so.

J.B.

Classified Advertising

CLASSIFIED ADVERTISING rates are 25 cents per word with a $7.50 minimum. Full payment must accompany insertion request. Closing Date for ads is six weeks prior to the month of publication.

Box numbers and zip codes count as one word. Telephone numbers count as two words. Names of cities and states count as one word each.

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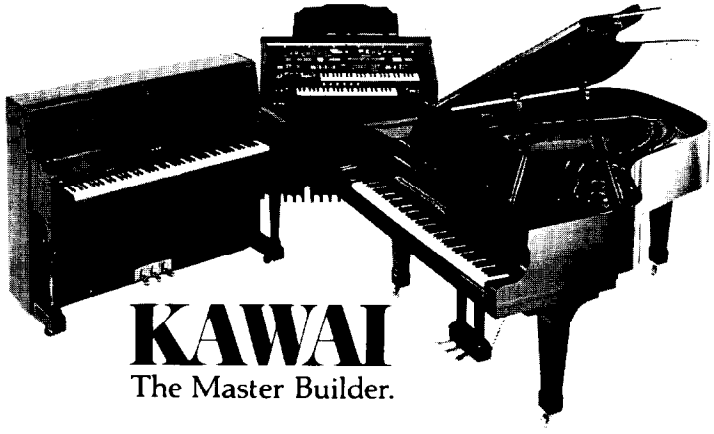

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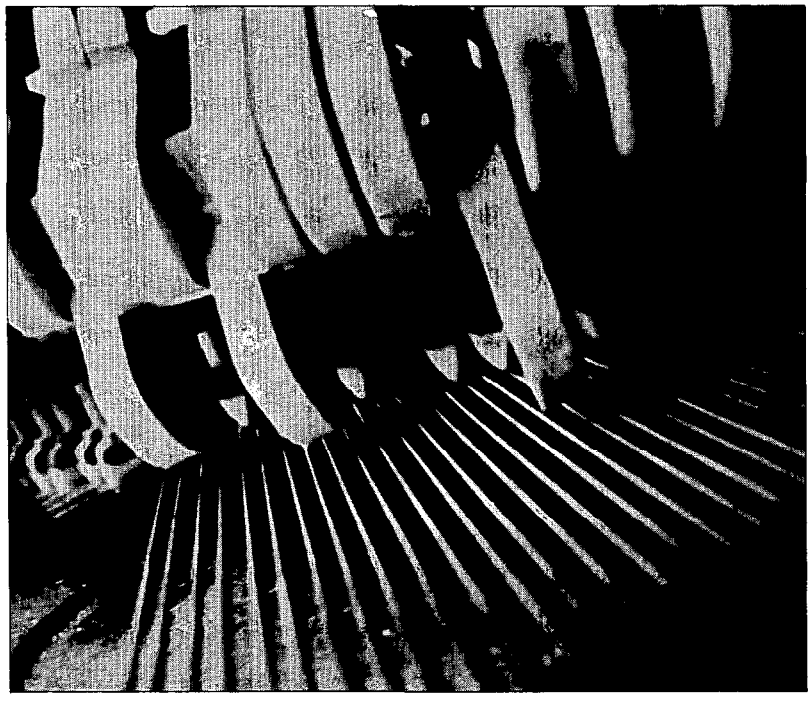

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