Piano Technicians Journal
February 1980

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STABILIZES TUNINGS
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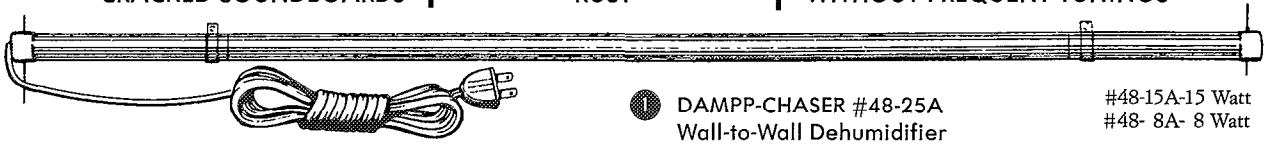

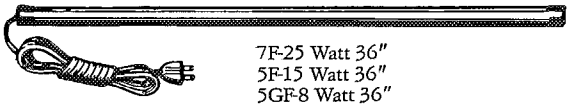

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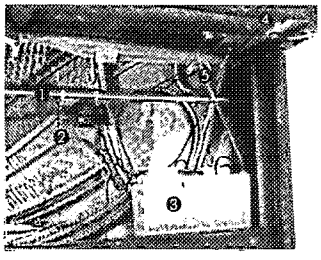

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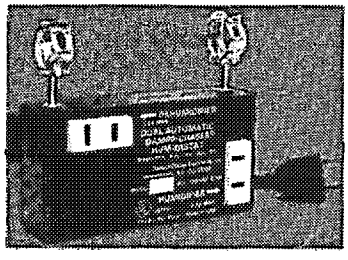

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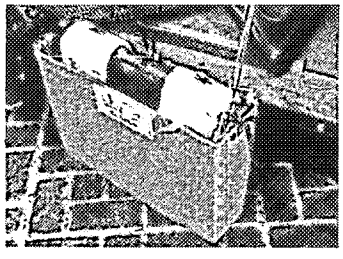

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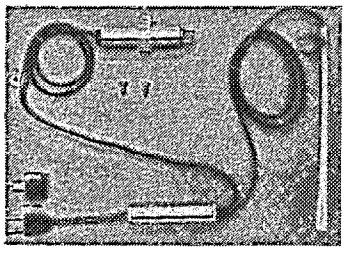

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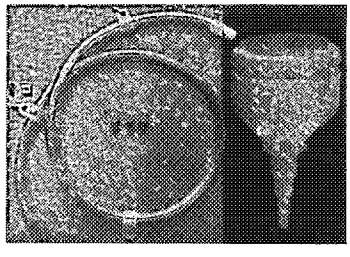

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Official Publication of the Piano Technicians Guild/February 1980 Volume 23 Number 2

Piano Technicians Journal

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Cover ... Decker Brothers upright with Janko keyboard (c. 1890).

THE PIANO TECHNICIANS GUILD, INC.
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Seattle, Washington 98109

Telephone: (206) 283-7440
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Office Hours: (Pacific Time)
8 am-5 pm
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Messages may be left after office hours by calling (206) 682-9700. Your call will be answered by a tape recording machine.

PIANO TECHNICIANS JOURNAL, the official publication of the Piano Technicians Guild, is published monthly and issued to members. Annual subscription price: $40 per year; $72 for two years; $3.50 per single copy. *Editorial Offices*: 113 Dexter Avenue North, Seattle, WA 98109. Telephone: (206) 283-7440 or 682-9700. **Closing date for copy and advertising is six weeks prior to date of publication**. Advertising rates are furnished on request.

Reprints of most articles are available from the Guild home office, 113 Dexter Avenue North, Seattle, WA 98109. Price per page (plus postage): Single copy, 25 cents; eight copies, $1.00; and 100 copies or more, $8 per hundred.

Second Class postage paid at Seattle. US ISSN 0031 9562 Foreign and Domestic.

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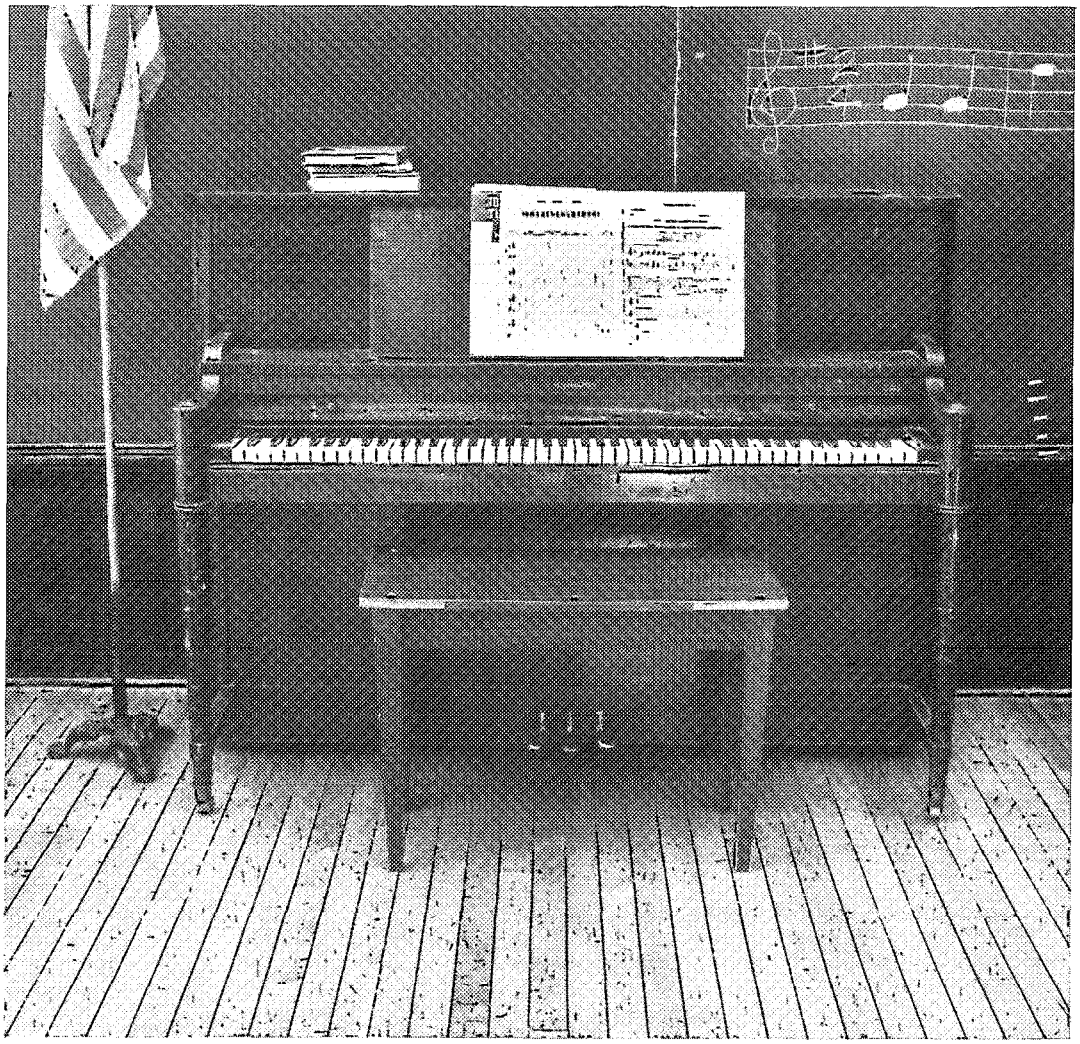

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EDITORIAL

Don L. Santy, Executive Director

Our guest editor once again is Chris Robinson of the Connecticut Chapter. His keen observations into the nature of those who practice the fine art of piano technology (and into the trade itself) are worthy of expression.

This time Chris discusses TIME; that elusive, irreplaceable and precious commodity we provide, combined with skill and talent accumulated over the years. He treats the subject with such gentleness and style that I thought perhaps you would like to share it.

As I sit here trying to write this column, I can't help wondering about that old tyrant, Time.

Time, running out on us from the day we are born; worrying us all the days of our lives; metered out by the second, yet hanging over our heads like the sword of Damocles, suspended by a hair. Most of us regard time as an enemy, somehow to be defeated, as if it were possible to cast such an opponent from our path. But no, Time is always upon us, urging us on to our next task, nagging us through our appointed rounds. There exists in imagination a Shangri-La where Time does not consume its subjects. One often wonders if there were not an age or place where it did not exert such terrible power.

It is an explicable paradox in our modern society that the more quickly goods and services (and even culture) are produced, the less time we seem to have to benefit from them. Or perhaps I should say enjoy them. How could this be so? It is so easy to lose oneself in the race to obtain things worth having that we forget completely about becoming the things worth *being*.

All of this brings me, somewhat circuitously, to the subject of piano service. More and more, one hears among fellow piano people that one can't take too much time for this or that operation, or that doing a certain job in a given way won't be worth it, because of the time involved. Well, I wonder. I really wonder.

A discussion with a friend comes to mind. He couldn't believe the time I took to set a temperament. "You don't do that for every tuning," he said, "you can't spend that kind of time?" I was aghast. Here is a man who says that the only way to do a job is to do it correctly, and he turns out some very fine piano work. Yet he intimates that he will not spend the time to do as good a job on a tuning as he will for an action regulation. "Oh, yes I do," I assured him. And I meant it.

What do we have left of ourselves if we cannot take the care to do piano work as it must be done, with attention to every detail? We have a gigantic game of Beat the Clock, that's what.

What a fine machine is a piano! How dependent it is upon us, needing concentration, commitment and tender coaxing to bring out its splendid voice. And in giving ourselves to our jobs as they must be done, it is possible to make a friend of Time and suspend it for a moment, giving song to our efforts.□

Fraternally,
Chris Robinson

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PRESIDENT'S MESSAGE

Bob Russell, President

Is the Piano Technicians Guild an international or national organization?

The Guild is often referred to as national and/or international. We refer to a *national* officer, but his region may cover both the United States and Canada. We even have a national vice president whose area includes parts of Mexico, Canada, and the United States, yet we refer to him as a national officer. Our official magazine, The Journal, goes to subscribers all over the world and we have members of different classifications on several continents. We will go into the reasons for the diversification later, but again I ask the question, is the Piano Technicians Guild international or national?

Maybe we are a bit hesitant or even afraid to admit the fact that the Guild is indeed international in both thought and deed, but it is. I know this first-hand because I helped to strengthen the Toronto, Canada, chapter and I just sent a letter of encouragement to an associate member in Australia who is interested in organizing a Guild chapter there. The piano, its repair and building, knows no boundaries; it spans across languages and nationalities; its fascination travels over oceans and political beliefs.

Why is the Guild looked to by so many people as the vehicle to better themselves and learn more about pianos and their repair? I believe the reason is that the Guild is young. Young at heart, ideas, and enthusiasm, but also different in the manner that we educate our technicians. We have the freedom to learn our trade in any manner we choose. We can work in a piano factory; we can learn from some excellent independent schools; or we have the option to learn from an independent technician if we so desire. The Guild offers many seminars and conventions to help us become better technicians. We learn the aspects of our profession and the ways and methods of repairing all kinds of pianos. Our learning atmosphere is "free and willing to help". We have an open door to knowledge. Due to this open door atmosphere, the Guild is being sought out by technicians all over the world for membership and affiliation. We are encouraging these individuals because we have a great organization and we are becoming much broader in our thinking.

Yet, with all that I have told you, there are still technicians who ask, "Why should I affiliate myself with the Guild?" It seems that when something is so valuable, but obtain-able, to all qualified elements of our trade, its membership is questioned. Let us think both positively and factually; we *are* an international organization that is very interested and concerned for all.

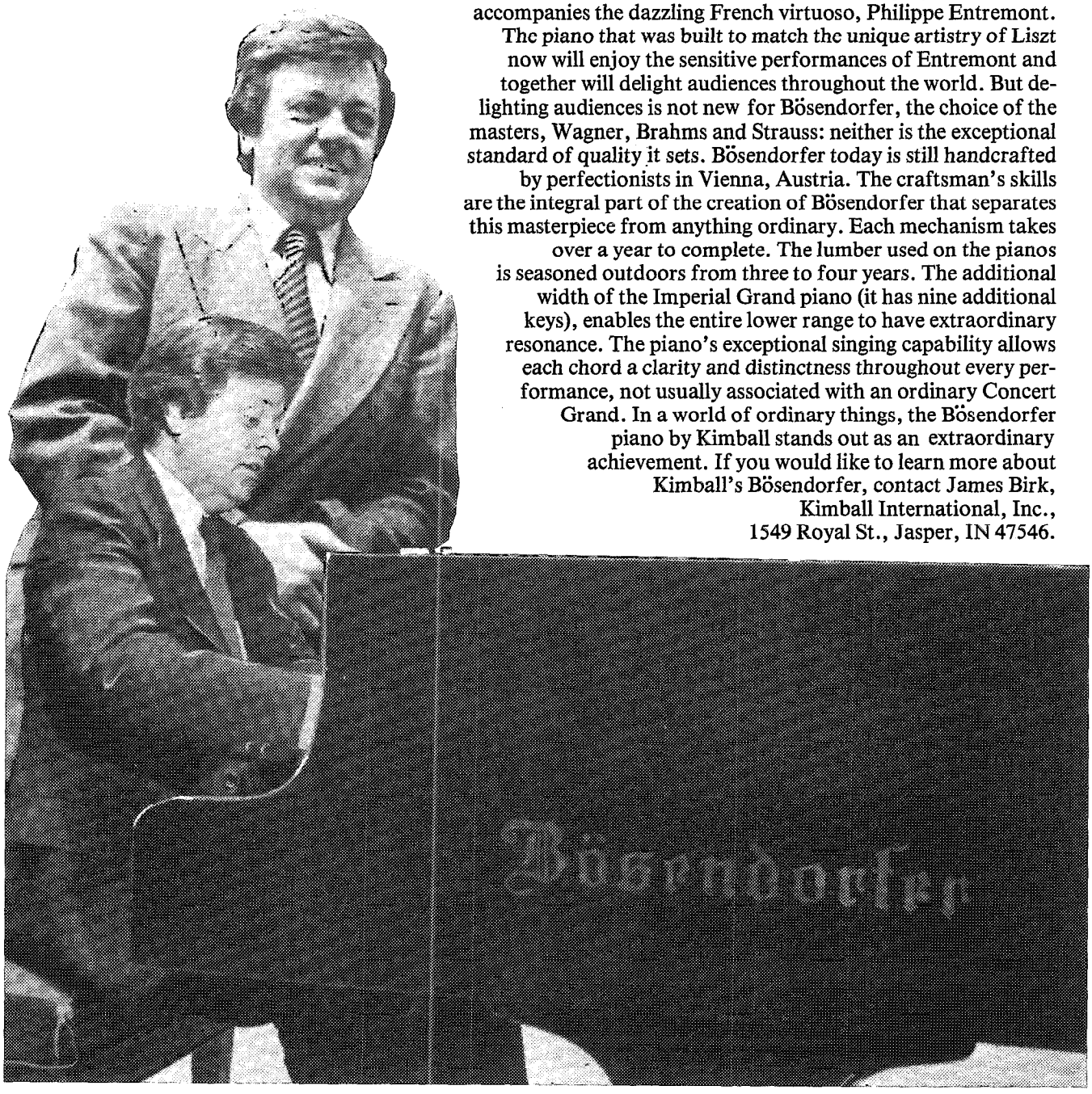
For you who can easily join, count your blessings and join ... for you who must make a tremendous effort, we encourage you and will help you with open arms.

We are an international Guild. Let us assume our obli gation in the world of pianos.□

A Man and His Piano

Philippe Entremont and Bösendorfer

The gleaming Bösendorfer piano by Kimball which has dazzled audiences with its beauty and magnificent singing qualities now accompanies the dazzling French virtuoso, Philippe Entremont. The piano that was built to match the unique artistry of Liszt now will enjoy the sensitive performances of Entremont and together will delight audiences throughout the world. But delighting audiences is not new for Bösendorfer, the choice of the masters, Wagner, Brahms and Strauss: neither is the exceptional standard of quality it sets. Bösendorfer today is still handcrafted by perfectionists in Vienna, Austria. The craftsman's skills are the integral part of the creation of Bösendorfer that separates this masterpiece from anything ordinary. Each mechanism takes over a year to complete. The lumber used on the pianos is seasoned outdoors from three to four years. The additional width of the Imperial Grand piano (it has nine additional keys), enables the entire lower range to have extraordinary resonance. The piano's exceptional singing capability allows each chord a clarity and distinctness throughout every performance, not usually associated with an ordinary Concert Grand. In a world of ordinary things, the Bösendorfer piano by Kimball stands out as an extraordinary achievement. If you would like to learn more about Kimball's Bösendorfer, contact James Birk, Kimball International, Inc., 1549 Royal St., Jasper, IN 47546.



Philippe Entremont, the music director and principal conductor of the Vienna Chamber Orchestra playing the 9'6" Bösendorfer Imperial Grand piano, the official piano of the Vienna Chamber Orchestra.

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YOUR BOARD in ACTION

A SPECIAL REPORT
by Southeast Regional Vice President
Walter Kerber

No Concert Today

The audience is hushed; the virtuoso appears and is greeted with applause; he bows, takes his place at the piano, and a burst of ear-shattering noise rises from his fingertips. Alas, no one came to tune the piano. The violins, the cellos, the flutes, the trumpets, yes, even the tympani were tuned by the musicians. But not the piano. The concert hall manager couldn't find a piano technician. At some time, some place, somehow a qualified technician failed to realize this was going to happen. He was concerned, yes, but only with the present. Not the future.

We all have a responsibility to the future as we live in the present. If we don't, some day there can be no present. Just think — without the piano technician music studios would close, concert halls would be empty, schools would be without music, and home music would be a thing of the past. A very meaningful part of our lives would come to a standstill and then disappear.

This is extreme logic, yet haven't you, too, heard the cry, "Where can I find a competent piano tuner?" *Sorry, lady, there aren't many of us left any more.* Oh, but there can be if you and I will do more in sharing our profession with others through association in the Piano Technicians Guild. Each person needs a beginning and for the piano technician, this is a good one. A community of the most knowledgeable people in the profession studying, teaching, developing and sharing piano technology.

You have an opportunity to perpetuate this profession, to contribute to its growth by spreading the WORD. Talk to your friends, to your competitors about joining the Guild. Tell them how they can grow in knowledge and musical stature. You will also see your business grow as a result of your leadership in developing better technicians for your community. Study the benefit brochures furnished by the home office. Add your own experiences and joys through membership and then you will be prepared to say to someone: "I have something to pass on to you that has meant so much to me; the opportunity to join the Piano Technicians Guild. It's an organization of the best and it is where you should be."

Try doing this. With a bit of practice you will be thrilled with your success. Carry an application blank in your tuning case, also in your car so you'll be ready when you hear the response: "I think I will join!"

NO CONCERT TODAY? Yes, there will be a concert because you thought enough to share membership in the Piano Technicians Guild with a person desiring a future in the field of piano technology. But don't wait. Start today and keep up the momentum for tomorrow.□


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THE TECHNICAL FORUM

Jack Krefting,
Technical Editor

SOUNDBOARD INSTALLATION

In the past year, probably three or four letters have been received requesting information on soundboard installation. The following letter from John Roncalio of Prince George, British Columbia, is typical:

"We are in the midst of rebuilding an 1885 Bechstein 7'4" grand. The soundboard has an inverted crown and numerous cracks and obviously requires a replacement. We can obtain soundboard material and rib stock from Posey Manufacturing in Washington State; however, we don't have the experience or information on crowning a soundboard. Has this topic been covered in some past issue of The Journal, *or is there a book available that adequately covers this topic? Is this job even within the scope of a modest shop to undertake, or should we know of a specialty shop that could duplicate and crown the soundboard for us?"*

Soundboard installation is probably the trickiest part of rebuilding; not because the actual installation is particularly difficult, but because so much overall piano knowledge is required. If it were simply a matter of getting a crown on it and gluing it into the piano, the job could be done by any semiskilled woodworker. It would look good, and it might even sound good if the woodworker happened to be lucky as well as skillful.

The same thing might be said regarding installation of a string or a hammer, since it seems to be generally accepted that tone quality is primarily determined by the soundboard, string and hammer. The big difference is that the incorrect installation of a string or a hammer is much more easily corrected than that of a soundboard. You can change a string or voice a hammer, but once a soundboard is installed it becomes a basic part of the personality of the instrument. It cannot be voiced or leveled or twisted; there are no adjustments that can be made to correct a mistake or inadequacy after the fact, other than starting all over with another new board. We cannot begin to evaluate the tone quality of an instrument until it is assembled, strung, regulated, tuned and voiced. If we then decide that deficiencies exist and that that the hammers and strings are not at fault, there is no recourse except to tear everything apart again and start over. The worst part is trying to decide what went wrong, and what changes in procedure will result in improvement. It's much more difficult than voicing, because you have to know how it will sound before you can hear it.

Crowning is one factor, grain orientation is another, rib dimensions and feathering must be considered and, of course, the board must be thinned to certain specifications for a balance between strength and flexibility. We are now getting technical, and we have not yet mentioned the rib angle, annular ring closeness as a strength factor in thinning, total anticipated downbearing load or bridge stiffness factors. Compression is certainly a factor, as is the angle of the rasten and its relationship to the radius anticipated by the designer when the plate patterns were sketched. It gets complicated even to talk about, let alone to do.

Aside from the knowledge required, there are practical cost considerations. A soundboard press must be manufactured, with suitable go-bars and related equipment; in addition, a hotbox must be installed to dry the material to a prescribed moisture content. The cost of this equipment, both in terms of dollar outlay and square footage requirements, makes soundboard installation impractical for the average technician. Even in intemperate regions, perhaps only one piano out of every ten that comes into the shop will require a new soundboard; in some areas that figure might be more like one out of 30 or 40. It makes little sense to tie up 40 percent of your floor space with equipment that will be used only five or ten percent of the time, let alone the cost of the equipment and materials needed. For occasional soundboard replacement, the average shop would be well advised to ship the piano to a larger shop where the special equipment is available.

On the other hand, there is probably a shortage of qualified bellymen in the country; an ambitious person could make a good living in some areas doing nothing but installing soundboards for the trade. He would need an insulated cooker or hotbox (**see figure 1**) with thermostatic heat control and good moisture content instrumentation. This could

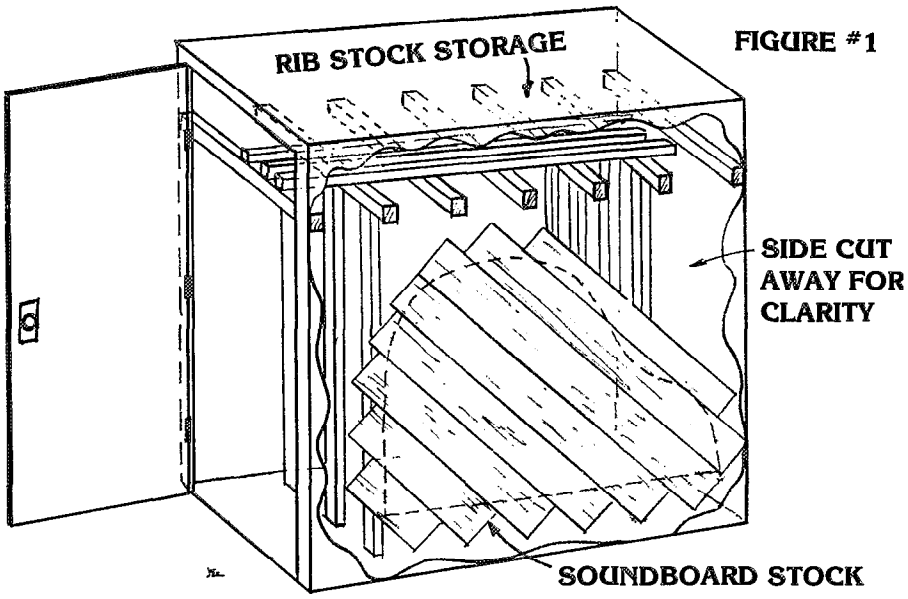


FIGURE #1

be homemade, but all safety precautions should be taken with wiring because the cooker could represent a fire hazard. Note the racks inside, designed to separate the wood so it will dry evenly all around.

A soundboard press is also required. All ribs must be glued to the board within a few minutes after it is removed from the cooker; otherwise too much humidity from the air will be absorbed by the board and it will not take on a crown. The moisture in the glue hastens the process also, so this exacting procedure must be done quickly or the board will be no good.

Assembled correctly, a flat board will crown itself after being glued to flat ribs, which is one way of making a soundboard. In this process, board and ribs are dried slowly in the cooker until the imbibed water content is approximately five percent. It is possible to dry the wood down to two or three percent, but this would produce excessive crown; and anything over six or seven percent would not produce enough crown.

As you know, wood shrinks primarily across the grain as it dries out, and expands again across the grain as it takes on moisture. **Figure 2** illustrates that a crown will appear naturally even if the ribs are flat, so long as they are glued to the board when it is very dry. After the glue has dried and the go-bars are removed, the board begins to take on moisture from the surrounding air, a more humid environment than that of the cooker. The board tries to expand, but the ribs glued to one side prevent that side from expanding. So the board expands the only way it can, on the unrestricted side. This uneven expansion bellies the board into a crown, with sufficient force to bend the ribs noticeably. The next illustration (**figure 3**) shows a soundboard shortly after the go-bars have been removed. Some of the excess crown will dissipate with the compression of downbearing, but the rest will remain in varying amounts according to the relative humidity of its environment.

Figure 4 illustrates a flat go-bar deck. For clarity, we are showing only one rib on the soundboard and just the number of go-bars used to clamp that particular rib; it must be remembered that all ribs must be clamped less than 12

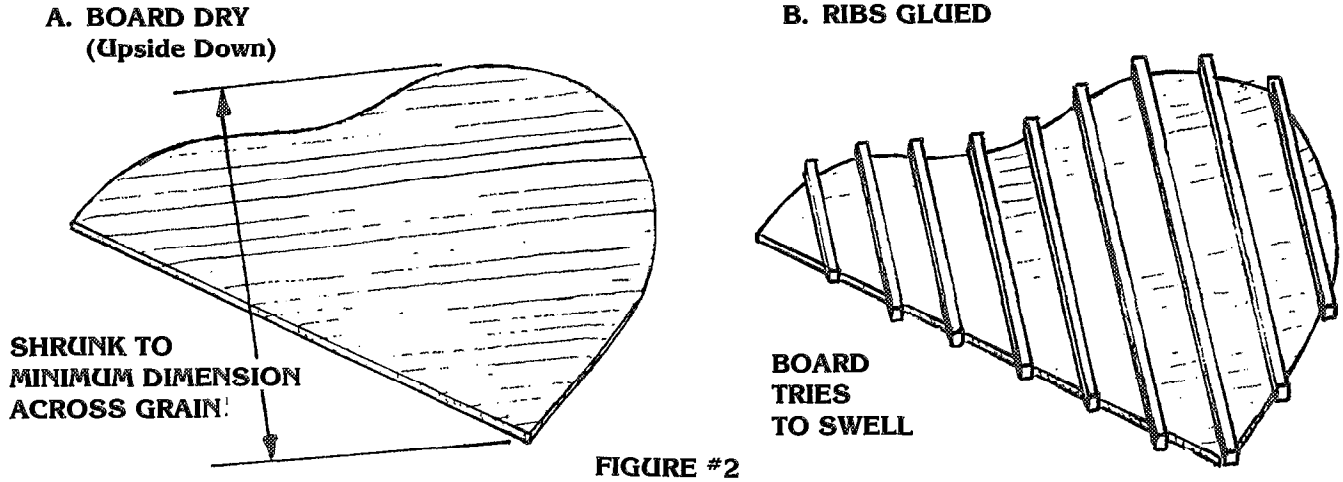
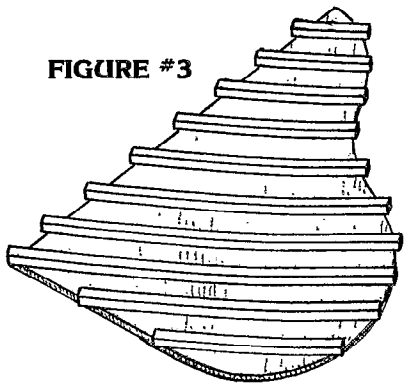


FIGURE #2

FIGURE #3



minutes after the board is removed from the cooker. Note the massive construction of the apparatus, necessary because of the great pressure exerted by the go-bars. If you tried to use the ceiling of your shop for this purpose, the pressure could literally lift the roof off the building. The corner posts are black steel pipe, and both decks are constructed of steel I-beams with a skin of steel plate. The plywood covering is not for strength but to provide a nonskid surface.

Some makers prefer to crown their ribs artificially by cutting a slight curvature into one edge. The theory here is that even if the board should dry all the way down there would still be some crown. If this method is used, obviously there must be a corresponding dish shape in the lower deck of the press, as shown in **figure 5.** The radius of this dish is generally 60 feet, or the amount of curvature that would be found on one part of a ball 120 feet in diameter. This is by no means an absolute, and of course the final crown will be determined not merely by this radius but also by the degree of dryness immediately before the ribs are glued in place. At any rate, the lower deck of such a press is more difficult to make than that of a flat deck. Special planes are used for this purpose (**see figure 6**), because an ordinary jack plane would not cut a concave shape. Dimensions must be constantly checked while hollowing out the dish, either with templates or depth gauges, to be sure of a perfect dish.

Another type of press can be made using one heavy arm along each rib with screw clamps at either end (**see figure 7**). This type is better for a factory situation where many identical boards will be built; but because of the difficulty of adjusting the spacing of the arms to correspond with various rib spacings, it is not generally seen in a rebuilder's shop. The traditional go-bar deck can be used for any size board, with any rib scale. The go-bars are usually of oak or ash, and each is marked with its individual pressure rating, as measured with a scale. The rebuilder can then select go-bars for uniformity, or space them along the rib according to the marked pressure rating, with weaker ones closer together for uniform clamping pressure.

Rib stock is usually rough-cut and oversized in cross-section to accommodate any rib scale, so a jointer-planer is another essential piece of equipment for the bellyman. Good sharp chisels and scrapers are also needed, as are planes and large calipers for thinning. Jigs must be made to relocate the bridges after the board is installed, and the list goes on.

I am certainly not trying to discourage anyone from entering this specialized area, because as I've said there is probably a shortage of skilled bellymen. But if a technician just wants to replace an occasional soundboard, or even three or four a year, it wouldn't be worth the investment. You know how you react when someone wants you to teach them to tune pianos so they can tune for friends or moonlight on weekends; you know it won't work, and you tell them that unless they want to make a total commitment to a career in piano service they might as well forget about learning to tune because they'll never acquire the requisite skill level if they practice only on weekends. Well, perhaps to a lesser extent, the same rule applies to soundboard installation. If you're going to do it, do it right. Read everything you can on the subject, sharpen up your tool skills by practicing planing on scrap pieces of clear spruce, and then make arrangements to spend two or three weeks

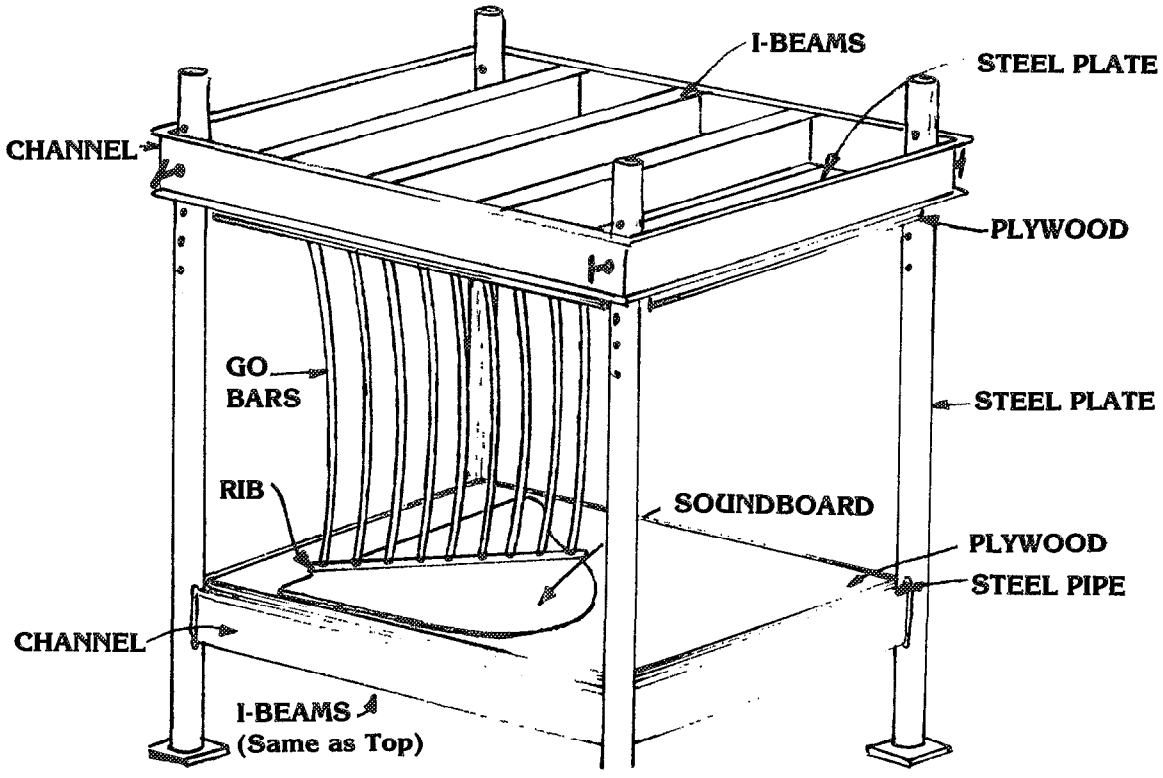


FIGURE #4

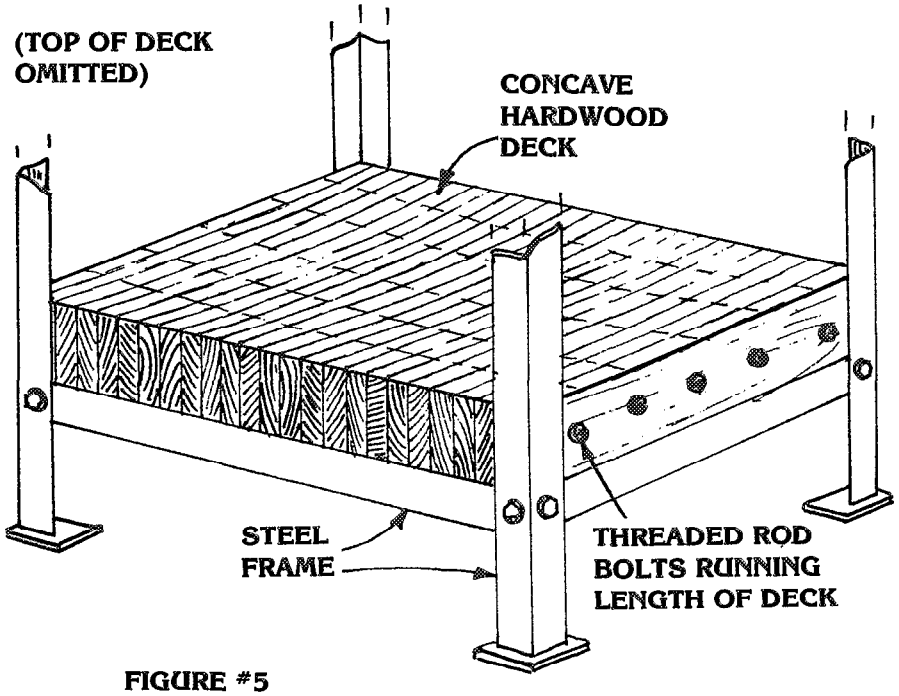


FIGURE #5

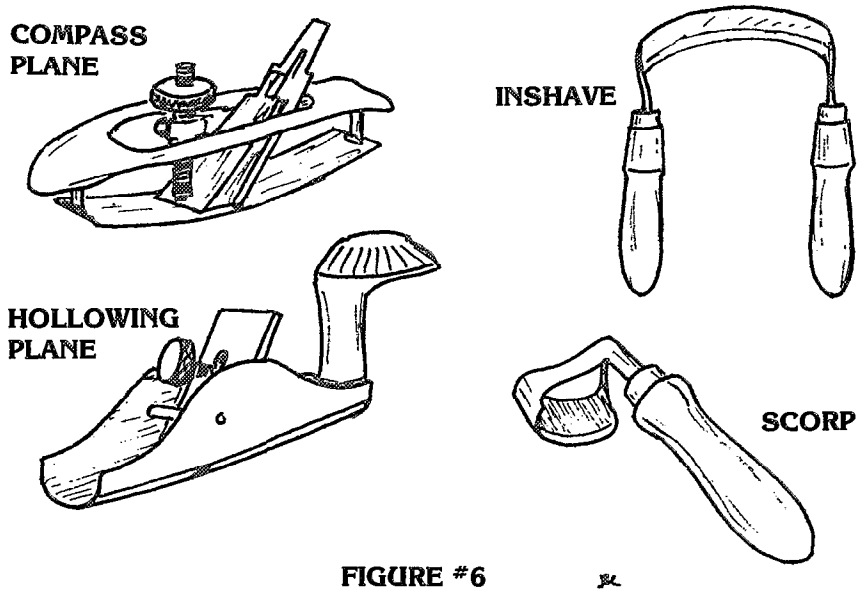


FIGURE #6

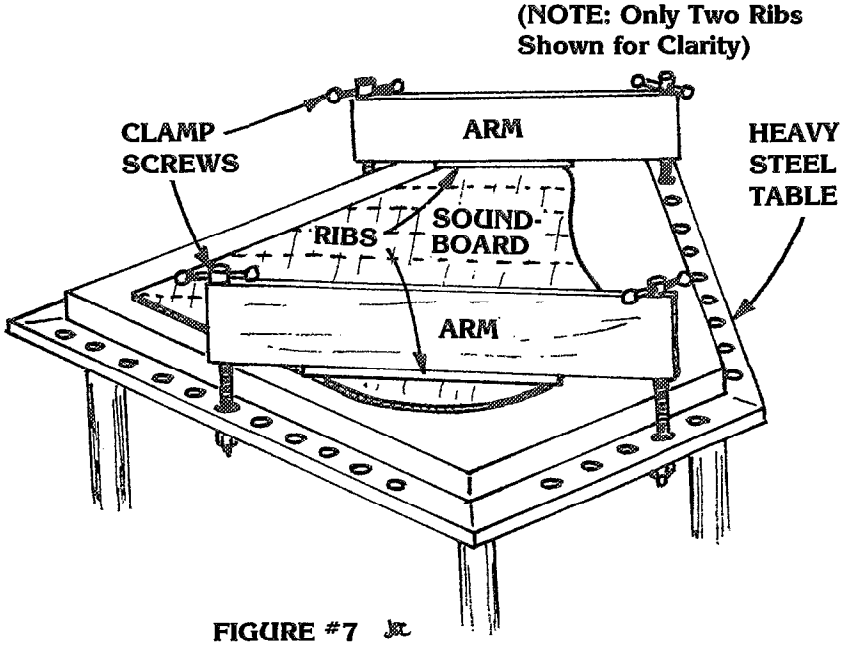


FIGURE #7

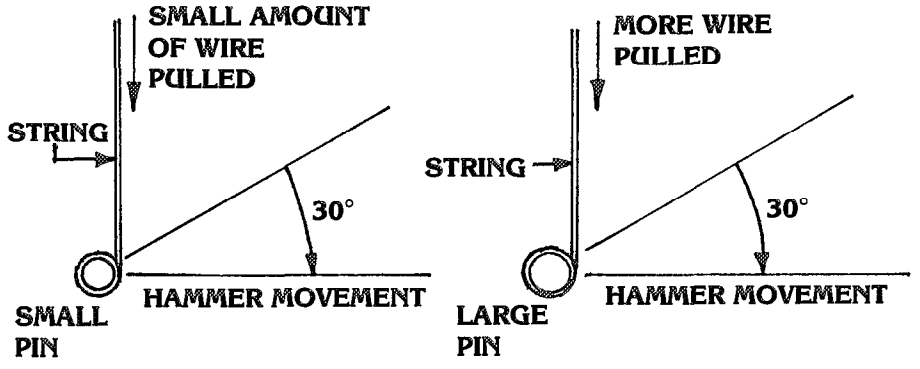


FIGURE #8

in the shop of a competent bellyman. The reading and other preparation is very important, but nothing can substitute for one-on-one instruction by a master. You should expect to pay the instructor amply for his time and trouble, because you will be underfoot even when you think you're helping; but above all, you should not expect to sidestep this personalized instruction.

This kind of specialized instruction, by the way, is never advertised. Tuning schools and textbooks don't get into it, but it is available to those determined to seek it out. No real master of the art can resist passing it along to another, provided he is convinced of the sincerity and aptitude of the applicant. If he isn't, he probably won't waste his time talking to you.

GLASSING PINBLOCKS

QUESTION: *"... Four or five years ago it seemed like all anyone could talk about was their latest glassing techniques. It was a prime topic of conversation at every seminar and people seemed to be in a frantic competition to see who could report the most fantastic success story. The only thing consistent about it was that none of the proponents could seem to agree on the technical details. Everyone had his own method and his own idea of when glassing was necessary or desirable. Now we don't hear anything about it, all of a sudden. Does that mean that it doesn't work? What happened to the idea?"*

ANSWER: I really don't know. I never subscribed to the idea anyway, because I never could see the need for it. The usual defense of the practice was that it saved a lot of time because careful fitting was unnecessary. All one had to do, according to the proponents, was to get a pretty good fit; then it was simply a matter of covering the flange and webbing with wax paper, mixing the ingredients, coating the flange area and fastening the block to the plate. It was left clamped overnight, after which the screws were removed and the block lifted

away so the wax paper could be taken out. The resulting fit would be perfect, we were told, and why settle for anything less than that? Besides, it was a great time-saver because fine fitting was unnecessary.

I have always felt that an extra half hour spent in fine fitting would do the job just as well, and there would be no worry about whether the glassing would stay in place after a few years because none had been used. In addition, the time-saving argument always seemed specious in view of the fact that preparing the plate and the mixture would probably take at least as long as fine fitting would; and then the plate had to be left fastened to the block for several hours, and then it had to be taken apart again to get the wax paper out, and only then could it be fastened into the piano. It was kind of a funny way to save time, when you think about it.

As to the argument that it improves the piano, I know of only one manufacturer of new pianos who uses the technique. It is used on an inexpensive grand, and the manufacturer has not attempted to tout glassing as an advantage, even though it is common practice to try to make a virtue out of any production change even if made strictly for reasons of economy. It is possible that other manufacturers are using the technique, but if they really thought it were advantageous we would have heard about it in their advertising.

The argument has also been made that since the resin doesn't react to humidity changes by shrinking or swelling, it is better because it is inherently more stable than wood. That may be true, but then one has to worry about the expansion differential between the wood and the glass, and what will happen to the joint when the wood undergoes dimensional changes with the seasons. Maybe it will hold forever, but then again, maybe not. I don't know, and for that reason if for no other, I would not recommend it. It seems so much simpler to just fit the block and be done with it. At least then you know what you have done, because you are working with familar materials.

STRINGING

William Salkin of North Hollywood, California, has six questions to contribute. We will take them one at a time.

1. "What are 1/0 tuning pins used for, and why are they not used in new pinblocks?"

ANSWER: The ideal tuning pin diameter might be 1/0 in some designs, but not in others. It has some obvious advantages, but as usual there are other factors to consider and compromises must be made. The biggest advantage of a small pin is that fine tuning adjustments are more easily accomplished because less wire is pulled in any given arc of movement of the tuning hammer, as illustrated in **figure 8.**

The next advantage of the smaller pin is that pins can be less crowded in the tenor, where stringing clearances tend to be tight anyway. Some pianos have two-string unisons where the designer would have preferred to use trichords, but couldn't quite crowd them in. More importantly, the smaller holes in the pinblock would mean that less of it would be drilled out, thus providing more stability in the pinblock. If the pins are so close to each other that the block is drilled like Swiss cheese, there just isn't much block left to give proper holding power. The fewer the laminations in the block, the more important this consideration becomes.

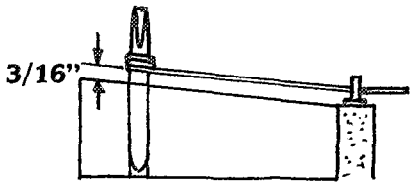
The major disadvantage inherent in a small pin is its increased tendency to spring and bend. It isn't as strong as a larger pin would be, obviously. And since it has a smaller surface area touching the block, the pin would have to have a tighter fit, a circumstance which increases the springing and bending during tuning.

From a theoretical standpoint, the 1/0 pin in an open pinblock might be ideal. Eliminating the plate web automatically allows the string coil to be that much closer to the block, so the springing objection is effectively minimized if not altogether nullified. The hammer is closer to the block, allowing a better feel of the pin, and torque compensation is greatly reduced because there is less of the pin out of the block. **Figure 9** illustrates this point.

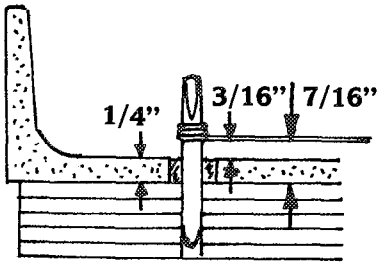
Although I believe there are still some European pianos being fitted with 1/0 pins, the 2/0 pin seems to be universal in the United States, probably because of closed blocks and relatively high tension scales.

2. "When unstringing a plate, isn't it just as important to let the tension down evenly as it is to raise it evenly when restringing?"

ANSWER: If the plate happens to be at full designed strength, and if it has been correctly installed without stress deformation, it probably doesn't matter. I have seen technicians cut strings off with the piano at pitch, starting at one end and working on down the scale, without apparent damage to the plate. On the other hand, you can't tell whether the plate is at full strength or whether



OPEN BLOCK, 1/0 PIN HAS EXCELLENT TUNING FEEL



WEBBED PLATE, 1/0 PIN WILL SPRING, TWIST

FIGURE #9

it is under unusual stress just by looking at it, so to be safe I always remove tension as evenly as possible. It doesn't take much extra time, and to me the risk of breakage is not justified by a small savings of time.

3. "What sequence of letting the tension **down** *would you recommend? I am looking for one that is safe and relatively fast."*

ANSWER: If a bass string pattern is to be made, this must be done while the piano is under full tension; otherwise the windings will recede from the agraffes enough to make the pattern inaccurate. This is also true of any wound strings in the tenor, and sometimes the bass strings must be removed to gain access to the tenor. Except for that circumstance, my usual procedure is to lower tension on every third or fourth pin in the bass and every sixth pin in the treble. That done, I lower every other bass pin and every third pin in the treble, followed by a general lowering of all the rest. The tuning hammer moves through an arc of approximately 90 degrees, so there is a dramatic lowering of tension throughout the scale by this time. Next, I cut off all wound strings and cut every sixth treble wire.

In the tenor and sometimes in the treble, there may not be enough clearance between tuning pins to cut the wire right at the pin, and it is not a good idea to leave excess wire sticking out. The protruding wire tail will cause trouble when the reversible drill is used, either because it may catch on neighboring pins and dangerously fly off the pin, or it may cause circular mars in the plate finish. To avoid this problem, I cut all the strings in the row nearest the agraffes first, and then remove that row of tuning pins. With that row of pins gone, it's easy to cut the wires in the second row, and so on. This method also has an added small benefit in that it allows the drill to cool off a bit between rows, while the next row of wires are cut.

4. "We have a plate with no strings and wish to measure the bearing. What readings do you think are reasonable, and which are excessive? I have little idea myself, and so am looking for some guidelines here."

ANSWER: In general, we might look for something approaching 1/16" at C88, 1/8" in the middle, 3/32" at the bottom of the treble bridge, 1/32" at the top of the bass and 1/64" at the lowest note. These readings are not to be considered absolute in any sense, because of the variables that may become important in any given situation. You must consider the moisture content of the soundboard, the ambient humidity when the readings are taken, the probable environment in which the instrument will be used, and the crown and resilience of the soundboard. A resilient board may require slightly more bearing in the middle to allow for the predictable loss of excess crown when tension is applied; a dry board will require somewhat less bearing than a swollen one, but you may have to add a little if the piano is likely to be used in an environment drier than that of your shop.

If possible, I prefer to set the bearing lighter than the figures listed above, on the theory that any amount over what is actually needed represents an unnecessary and undesirable restriction on the diaphragmatic freedom of the soundboard. In plain language, if you bind it down it won't vibrate as well. The ideal amount of downbearing, in my opinion, is the *least amount* that will still provide reliable sound transmission in the dry season.

Another reason that the figures listed above are not to be religiously adhered to is that the board may have an unusual crown radius. An old board may be relatively flat, and a new one will appear to have excessive crown. In some cases it is preferable to concentrate on getting the ends right even if the middle is wrong, because the ends won't move much with changes in tension and humidity. Just be sure that there is *some* crown and *some* bearing in the middle. You must have both, but with many old boards you don't need very much of either. Do not attempt to attain 1/8" of bearing in the middle if you have to radically increase bearing at the ends of the bridge to get it; you will only compound the problem by so doing. If the board has no crown, replace it. But if it has some crown, work within the limitations of that radius. If you don't push it, it will really sing for you.

5. "Under what conditions would you restring a piano with treble wire one half size smaller than the original? Would you advise this if the soundboard has required extensive shimming?"

ANSWER: I do not subscribe to the theory that scaling should arbitrarily be altered. Lowering tension almost always has a negative effect on tone quality, and the volume is also reduced. If the beams, rim and plate are solid there should be no problem with the original scaling; if they aren't, then the problem ought to be corrected before the new strings are installed.

Soundboard shims should not be a factor, because if they are installed correctly the board will be no weaker than a new one. If less downpressure is the goal, lightening the bearing slightly would be preferable to changing the stringing scale.

Very early in my career I took on a lot of square piano work, mainly because nobody else wanted it and it was about all I could get. I'll never forget a certain Chickering square built in 1823. It was a real dog, even for a square, but the owners loved it and wanted it rebuilt, and I needed the money so I did it. When it was finished and delivered, I went to tune it. To my dismay it had dropped dramatically in pitch even though the new strings had been tuned several times. Then I noticed that the left rear leg was a good half inch in the air. Worse, the twisting of the case was causing damper and hammer regulation problems. This particular piano might have derived some benefit from lower tension, as might any instrument with questionable structural strength, but there is no way of knowing whether a half-size reduction would have had any appreciable effect. I finally lowered the tension and bolted a piece of

angle iron diagonally across the bottom to keep it from folding up like a book, and that stopped the twisting.

6. "In restringing, some start with the tenor, pull it up to pitch, then string the treble and pull it up to pitch. Then they install the bass strings and pull them up to pitch. What do you think of this 'chipping' method? If you don't approve of it what would you recommend?

ANSWER: We are talking about two things here: stressing the structure and stressing the soundboard. In evaluating the method described, I would like to have the benefit of the technician's thinking as to why he or she would do it this way. Ordinarily, one would assume that such a method would place a very uneven stress on the piano, and would therefore be undesirable; however, there could be a good reason for it. When a new soundboard has been installed, the crown might be so high that there would be no stringing clearance between bridge and plate strut, and this downbearing in the middle might be necessary.

My own method is to start in the bottom of the tenor and work straight up to note 88, putting just enough tension on each string to maintain a coil on the pin; then I start with note 1 and work to the top of the bass. After leveling pins and checking all coils and beckets, I place a green paper front rail punching over one tuning pin of every C in the scale, and a pink one over every F. I pull all C's to pitch, then all F's, then all A's, and so on until the first chip is complete. This is done very quickly with a shortened, very light gooseneck hammer. The initial C is deliberately a shade sharp to the fork, and all intervals are picked out musically for reasons of speed; great accuracy is unimportant at this stage because the pitch drifts anyway. A second chip, done with somewhat more attention to accuracy and less to speed, completes the job.

The above method is certainly not the only way, and maybe not even the best way, but it works for me so I use it. I believe it stresses the piano fairly evenly, yet takes only a few minutes to do.

NEWSLETTER TECH REPRINTS

Our first reprint this month is taken from The Vancouver Beat. The subject is adhesives, and the author is Jim McVay.

"An adhesive is something we use between the two substances to cause them to stick together. The strength of an adhesive is determined by the amount of force required to pull those two substances apart. This is commonly known as bond strength and can be expressed as tensile bond strength, *which is seldom used, or* tensile shear strength. *The latter is the most commonly used to indicate the strength of an adhesive bond. Both of the above are usually expressed in pounds per square inch. Bond strength is also sometimes expressed as 'peel strength' or 'climbing drum peel strength'* **(see figure 10)**.

"The piano technician is usually concerned with tensile shear strength. In the case of epoxy he may be concerned with compressive strength. This is usually two to five times higher than tensile shear, and is also expressed in pounds per square inch.

"Bond strength is only one of the considerations that must be made by the piano technician when he considers an adhesive. When working on bridges ... the adhesive must transmit vibration, not absorb it. It is therefore absolutely essential to know the characteristics of your adhesive in its final state. Most white glues are not suitable, and most epoxies found in retail stores are not suitable for this work ..."

Our next reprint is from the San Francisco Chapter newsletter, "In Tune". Mark Schecter discusses problems sometimes encountered while attempting to communicate with pianists, and his view of exactly what causes a piano to play over its full dynamic range. Here's Mark:

"How piano, how forte? There is widespread misunderstanding among pianists and technicians about how the musician creates the different levels of volume for which the piano is named. Commonly it is thought to be differences in weight *of touch that results in piano-forte. In fact, the primary factor is* key speed, *which translates into hammer speed. Weight enters the picture as the mass component in the kinetic energy equation. The inertia of the key and action at rest (and its tendency to stay at rest) must be overcome to put the hammer in motion. However, this can be done at near zero speed, resulting in no sound as the jack lets off, and the hammer falls back onto the repetition lever or backcheck. More kinetic energy must be imparted to the hammer to overcome gravity and enable the hammer to bridge the gap between the let-off point and the string, resulting in the transfer of said energy to the string and causing it to vibrate.*

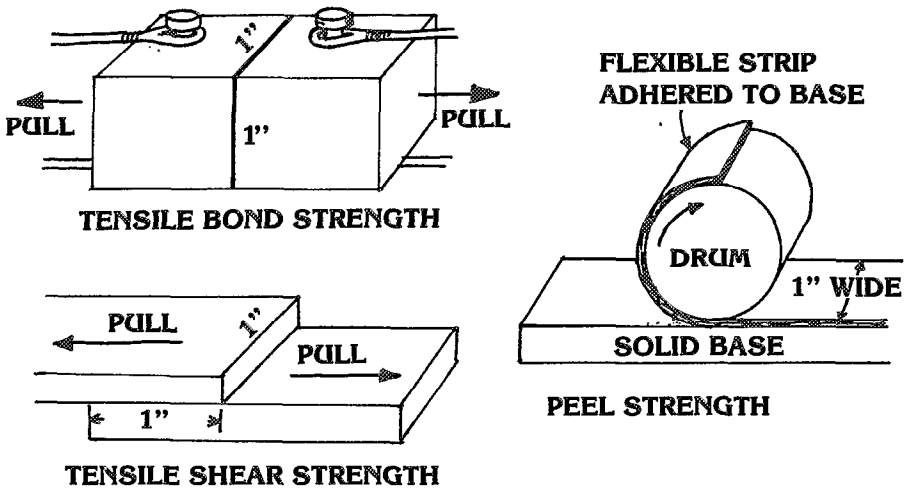


FIGURE #10

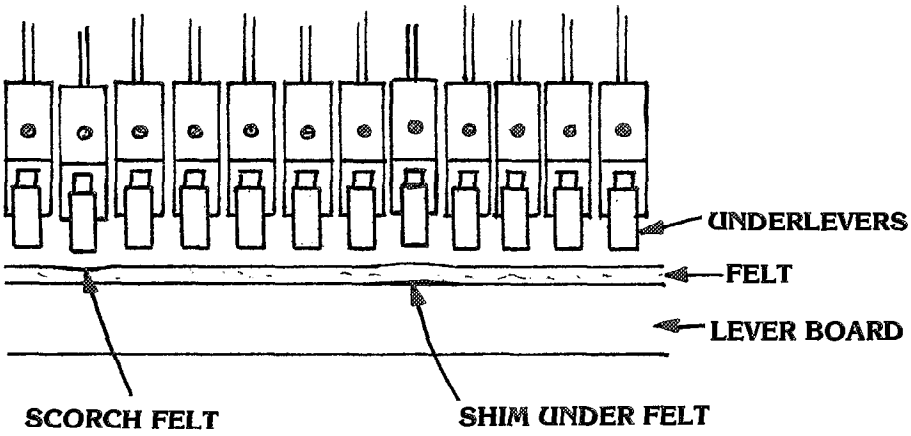


FIGURE #11

Since the mass involved in any given key is constant, the only variable is speed.

"This can be very useful when trying to determine the cause of difficulties in playing very softly. Often a pianist, thinking he must play lightly, *fails to move the key through its full stroke. This can create sound before let-off, allowing the hammer to bounce off the jack top, creating bubbling. Or it may result in no sound at all. Whatever the musical results, if the technician can ask the musician to* demonstrate *the problem he is having it will give an opportunity to observe the pianist's technique for this particular problem. Then, without passing judgment, he can comment that it is key speed, not finger weight, that determines loudness, and that playing piano or pianissimo is more secure if the key is taken slowly but surely all the way to the bottom of its stroke. This can easily be demonstrated for oneself in private and then for the customer. The savings in time otherwise spent in searching for non-existent mechanical defects are well worth the few moments it takes to observe the pianist, and discuss this idea."*

GRAND DAMPER LIFT

QUESTION: *"On a grand piano it is difficult to install the dampers so they all lift evenly with the pedal, unless the piano has a capstan for each underlever. If there are no capstans and the wires are nicked by the screws, making it hard to reposition them, what can be done? Is it necessary to replace the wires?"*

ANSWER: No, not unless they are really kinked badly. Normally we would consider the wires to be good until the plating wears off where the wire touches the guide rail bushing.

Whether or not the levers are equipped with capstans, it is important to set the top flange screws so that the underlevers are as evenly aligned as possible. This keeps the sostenuto tabs at a uniform height, and allows for uniform damper lift with the key.

After setting the screws as described above, check for evenness of lift with the pedal. The whole story will be told in the first quarter inch of pedal travel. Watch the damper heads while very slowly depressing the pedal; all heads should start to lift at exactly the same time, as though they were glued together. Reset the screws on any dampers that lift considerably early or late. Then it is time to make a fine adjustment on those that are *just slightly* early or late. This adjustment would be done with the capstans on a damper system so equipped.

If the tray has no capstans, slow the early dampers by scorching a bit of felt from the lever board or, alternately, by scraping wood from the bottom of the underlever Speed up the late dampers by inserting paper shims under the lever board felt at those spots (**see figure 11**).

Check the damper lift with the key. If the rest of the job was done correctly and the key end felt is of uniform thickness, very little will need to be done to provide uniform lift with the key. A gauge can be made which will stop the hammer at a point in its travel, the point where the damper should just start to move. This distance is usually specified as 7/8" or 15/16", depending on the make of piano. To correct for minor discrepancies, we adjust the thickness of the key end felt. Early risers may be scorched with a hot knife or trimmed with a razor blade. To speed up the late dampers, cut the felt in the middle as shown in **figure 12** and insert paper shim. This makes the end felt on that particular key a bit thicker without affecting anything else. Half a drop of glue on the shim will keep it from falling out if the piano is bumped around during moving.

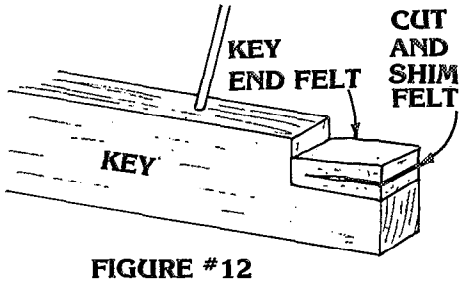


FIGURE #12

TECHNICAL TIPS

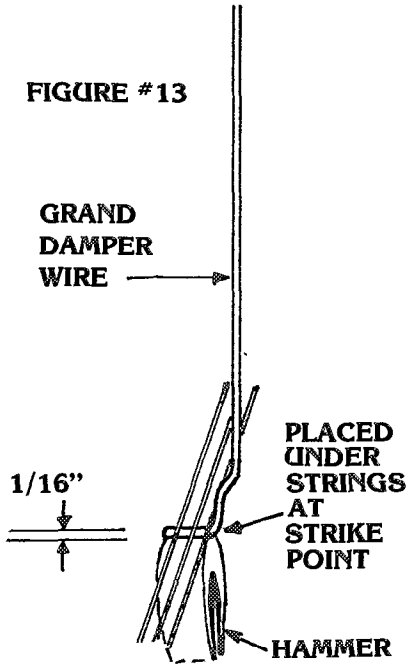
1. If you use a briefcase-type toolcase such as the Datamaster, available from various supply houses, you probably have also experienced the minor annoyance of having tools fall out of the pallets when the case is laid on its side. One way to avoid this is to cut a piece of inch-thick soft packing foam to the size of the pallets. Before closing the case, place the piece of foam on top of the tools in the lower half. When the case is closed, the foam compresses around the projecting parts of the tools, holding them in place.

2. The same idea applies to the plastic parts bins in the lower half of the case. These bins are very nice, but unfortunately the lids don't fit tightly enough to prevent punchings and other small parts from getting mixed up. This problem is easily solved by gluing a piece of 3/32" white semi-transparent foam to the inside of the lid. This is packing foam, the kind that furniture stores throw away

after uncrating new furniture. This soft foam is also excellent for protecting piano case parts around the shop. Your friendly neighborhood furniture dealer will give you all you want of the stuff.

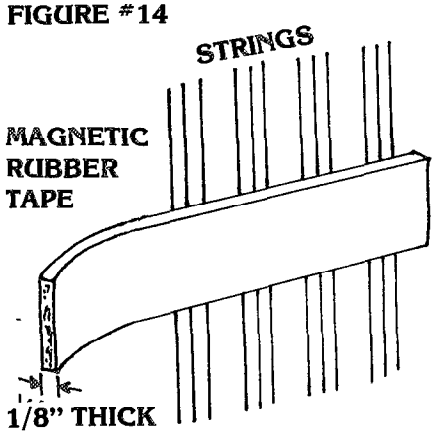
3. An extra grand damper wire takes up very little space in a toolcase, but can be very handy. Aside from its obvious use as a replacement, it can be used as a screw hole depth gauge, a probe for removing dropped butt screws from a vertical action, and an instrument for removal of foreign objects from under plates. In addition, since it happens to be 1/16" in diameter, it works beautifully as a grand letoff gauge (**see figure 13**).

FIGURE #13



4. Vertical letoff is generally set at 1/8", but the trouble with most gauges is that one hand is required to hold the gauge in position while the other hand turns the regulating screw, meaning that a third hand is needed to depress the key. For this reason we usually have to either eyeball the measurement or tape something to the strings, leaving a sticky residue. Now there is an alternative. Hardware and dime stores (dollar stores?) carry a rubbery, flexible magnetic tape which will stay on the strings (**see figure 14**) without leaving residue. Simply place a 1/8" strip on the strings at the strike line, turn all regulating screws up so the hammers block against the tape when the keys are depressed, and then regulate letoff this way: With one hand, depress the key until the hammer blocks; with the other, turn the screw down until the jack just kicks out. This magnetic tape is the type used to stick plastic signs on the side of a car. It is available only in lengths of four or six feet, so one strip would be enough for several technicians, who could share the cost.

FIGURE #14



TIP OF THE MONTH

The biggest problem with the spring clip bridle strap is that it has a tendency to become noisy after a while. President Bob Russell says that if the technician installs the clip with the cloth looped through the clip (**see figure 15**) that problem is eliminated. Thanks, Bob.

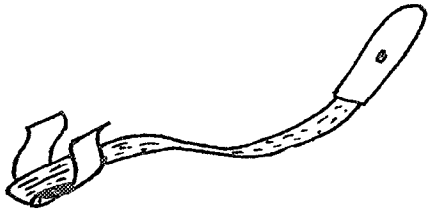


FIGURE #15

BASIC REBUILDING

Don Flippin of Memphis, Tennessee, has written to say that many of our discussions on rebuilding techniques assume too much prior knowledge on the part of the reader, and that he would like to see some more basic instruction in this column. It had been my feeling that we were already getting pretty basic, but maybe not. I would consider running a basic series on rebuilding if enough interest were expressed in the letters we receive each month, if only because of the deficiencies of published work on the subject. There is no book that adequately and accurately covers piano rebuilding in even basic terms, so maybe there is a need for a series like this.

However, if we should decide to commit the relatively large amount of effort and space required for this topic, it seems only fair that our readership should be consulted first. Please let me know what you think about the idea, because your responses will play a major role in the decision.

As always, we need articles, technical tips, comments and questions from our readers. If you haven't made a contribution to the Journal recently, why not do it now?

* * * * * * *

Readers may contribute material to the "Forum" by writing Jack Krefting, Technical Editor; 6034 Hamilton Avenue; Cincinnati OH 45224.

MARK YOUR CALENDAR FOR JULY 14-18 FOR THE 23RD ANNUAL PIANO TECHNICIANS GUILD CONVENTION & TECHNICAL INSTITUTE IN PHILADELPHIA. LOOK FOR ADVANCE REGISTRATION MATERIALS TO REACH YOU BY MARCH 1ST.

MORE on the 1980 TECHNICAL INSTITUTE

Ever wondered what "aftertouch" is all about? Well, whether you are an experienced technician, or if you are new in the field, complete understanding of aftertouch is a must. I am happy to introduce a brand new class to the technical institute in 1980. "*Aftertouch in Grand and Vertical Pianos*" will be presented by the Yamaha team of LaRoy Edwards, Jack Caskey and Kenzo Utsunomiya.

No doubt most of those who come to our conventions are piano tuners. The understanding of inharmonicity as well as harmonics is certainly essential. Dr. Albert Sanderson will not only explain inharmonicity, but show how to deal with it. On the subject of harmonics you can look forward to a class presented by Gary Schultz. He will clearly demonstrate how to listen for harmonics and use them to produce a better tuning.

Many newcomers to national conventions will appreciate the class on *Vertical Regulation and Servicing* presented by the team of Bob Hill, Lou Herwig, Cliff Andersen and Larry Talbot. This presentation has become somewhat of an institution at our technical institute. For those who would like to see a similar type program on grand regulation, we are happy to introduce a brand-new class presented by Roger Weisensteiner and his team. For this 3-hour, hands-on session, 15 *Schwander*, 15 *Pratt Read* and five Renner-type action models will be available.

Many of us have our little problems with grand dampers. Cliff Geers and Willard Sims will present another "hands-on" class covering the subject. I am happy to again welcome Norman Neblett with his highly successful presentation on *Voicing and Tone Regulating*.

There is hardly a tuner-technician who can afford not to know the subject of bushings thoroughly. Two classes will cover it. Evan Giller will conduct another "hands-on" session on key bushings, flange bushings and damper guide rails. Fred Drasche will completely cover the Steinway Teflon bushings in his "hands-on" presentation. For those who want to learn more about player piano work, Norman Heischober will pave the way to better player piano service in his classes on the subject.

Recently, the expression "hands-on" has been making the rounds at technical classes and seminars. It simply means "participation". More and more has the request for class participation or "hands-on" classes been voiced. In an effort to comply, I have tried to schedule more such classes than ever before. Hope you like it.

Next month, I will have a preview of the "special classes".□

Until next month,

Ernie Juhn, Institute Director

WELCOME TO WHERE IT ALL BEGAN!

The Philadelphia Chapter will be your host for our up and coming convention. Each convention has been bigger and better than the previous year. It will be quite a task to improve on the Minneapolis convention of last year, and we in Philadelphia will give it our best to make this convention a memorable event.

WELCOME TO WHERE IT ALL BEGAN!

With Ernie Juhn as Technical Institute Director, and the learning experiences from previous years, the classes will be great.

WELCOME TO WHERE IT ALL BEGAN!

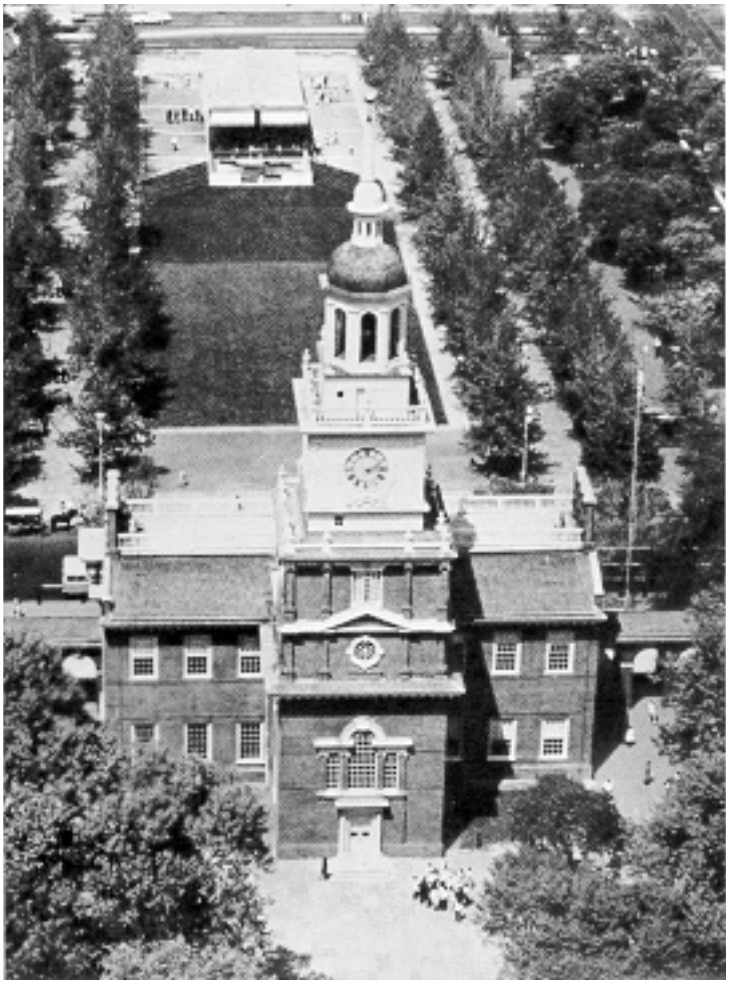
The site of the convention will be the Benjamin Franklin Hotel, which is practically a central location and within walking distance to many historical places. This should make it interesting for your families when the classes are in session. Or, better yet, allow a couple of extra days after the convention to take in the sights.

WELCOME TO WHERE IT ALL BEGAN!

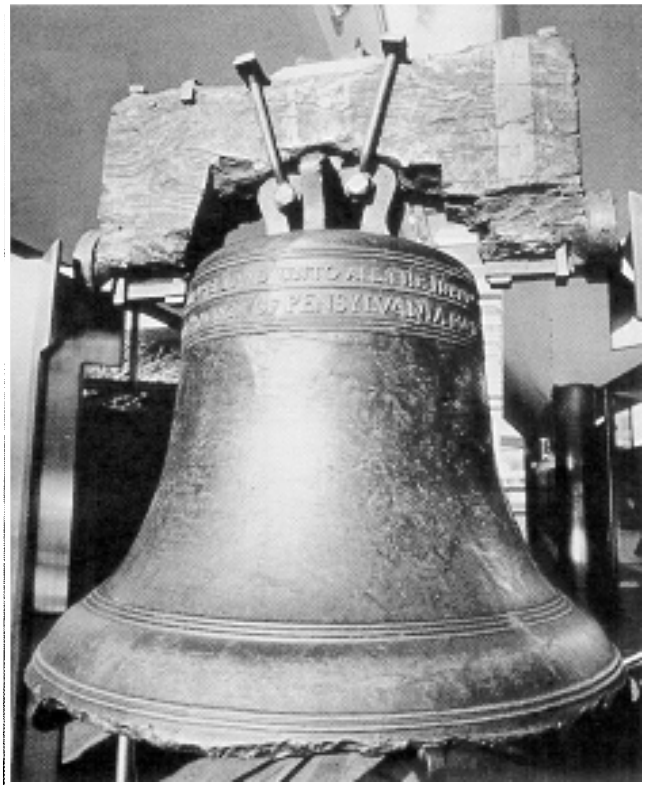
Let's start saving and planning now for this event in July. Only you can make this the biggest and best convention ever. □

Remember — WELCOME TO WHERE IT ALL BEGAN — Philadelphia in 1980.

— Walt Sierota. Local Host Chairman



Independence Hall (above) on the Benjamin Franklin Parkway (below left), and the famous Liberty Bell (below right).



Calculating Technician Part VI

Dave Roberts

The December/January articles in this series discussed electronic calculators and their value to the calculating piano technician. This month, let's return to the subject of string tensions and demonstrate the advantages of the programmable calculator.

If we have a copper wound piano string whose speaking length **L** is expressed in inches, core diameter **d** and overall diameter **D** expressed in mils, and pitch **P** expressed in Hertz, then the tension **T** can be calculated as described in the December issue:

$$T=\left(\frac{PLd}{20833}\right)^2 \left[1+0.89\left(\frac{D^2}{d^2}-1\right)\right].$$

If your programmable calculator is programmed to calculate tensions, you would typically key-in (as on a typewriter keyboard) the numerical values of **P, L, d** and **D**. However, instead of pushing a "comma" or "space" key between numbers as you would on a typewriter, you would press an "enter" button or a "run/stop" button or perhaps a "store into memory" button on the calculator keyboard, depending on the make and model you have purchased. The time it takes you to do this is roughly the time it would take you to type the same set of numbers on a typewriter keyboard. Having done this, you merely push a "run" button and the calculator does all the adding, subtracting, multiplying and dividing automatically, and displays the answer (tension) after about one second. Then you continue in a like fashion with the next unison, and so on.

Another time saving feature of the programmable calculator is the y^x button. With this button, you can raise any number **y** to any power **x**. For instance, the number **2** to the power **2** (i.e., 2^2) is just **2 squared**, which is **4**. This is easy, of course, but imagine trying to raise **2** to a power such as **8.167**. There is simply no practical way to do this except to use the y^x button on an electronic calculator. I point this out because, by using the y^x button, you can avoid the somewhat time consuming process of looking up the pitch **P** in a table prior to calculating string tension.

How? It turns out that there is another formula for string tension which is similar to the one we've been using. However, instead of requiring a knowledge of the pitch **P**, the alternate formula requires only a knowledge of the unison number **m**; i.e., the number of the note as it lies on the keyboard. Of course, you still have to know the values of **L, d** and **D**. This new formula is written as follows:

$$T=2^{\left(\frac{m}{6}\right)} \left(\frac{Ld}{802.6}\right)^2 \left[1+0.89\left(\frac{D^2}{d^2}-1\right)\right].$$

Notice there is no pitch **P** in this formula, but there is the number **m** in the power (or exponent) of **2**. This formula adequately predicts the tension for the strings in each of the 88 unisons (i.e., **m** = 1 through 88), provided the piano is tuned to standard pitch and has the standard 88-note keyboard.

Some of you may think this formula looks more complicated than our original tension formula, but a programmable calculator doesn't think so. The savings in time to you is that you now have only to key-in **m, L, d** and **D** instead of **P, L, d** and **D**. For instance, for C88 (i.e., **m**=88) it takes less time to key-in the two digit number 88 than to look up the pitch for C88 in a table (approximately 4186 Hz), and then key-in this four digit number on the calculator keyboard.

Let's illustrate the use of this alternate tension formula. Using the Bechstein string discussed in the December 1979 Journal, the unison number for **F1** is **m=9**, the speaking length **L** is **75 inches**, the core diameter **d** is **63 mils** and the overall diameter **D** is **145 mils**. In order to calculate tension using the alternate formula, you first calculate $2^{(\frac{m}{6})}$ then $(\frac{Ld}{802.6})^2$ and finally $[1+0.89(\frac{D^2}{d^2}-1)]$.

Next you multiply these three results together, as explained in previous articles.

We've already explained how to calculate the quantity in square brackets in the December 1979 issue. The answer is 4.83. The squared quantity in parentheses $(\frac{Ld}{802.6})^2$ is similar to the quantity $(\frac{PLd}{20833})^2$ which appeared in our original tension formula, and is

$$(\frac{Ld}{802.6})^2 = (\frac{75\times63}{802.6})^2$$
$$= (\frac{4725}{802.6})^2$$
$$= (5.89)^2$$
$$= 34.7$$

Finally, the quantity $2^{(\frac{m}{6})}$ is calculated by first calculating the exponent (or power) **m/6**, which is **9÷6 = 1.5**; then use the y^x button on your calculator to find **2** to the power **1.5**. On a Texas Instruments calculator, you would key-in the **2**, then push the y^x button, then key-in the **1.5** and finally push the **"equals"** button. The answer **2.828** ..... would then appear in the display. The string tension is therefore

T=(2.828.....)×(34.7)×(4.83)
= 474 pounds

which is the same answer we got using the original tension formula in the December 1979 Journal.

While it may not seem as if much time is saved in this example calculation using the alternate formula, try doing two or three dozen calculations or more. You'll appreciate the y^x button on your programmable calculator. The alternate formula doesn't save you much time if the calculator isn't programmable, but it does save you the aggravation of looking up the pitch for every unison you want to analyze.

In closing, I would suggest using an English micrometer or good quality dial caliper for measuring diameters **d** and **D**. Speaking length **L** should be measured with a steel tape subdivided into tenths of an inch rather than sixteenths or thirtyseconds, so you don't have to convert fractions to decimals before keying-in the string lengths on the calculator keyboard. Always be efficient and organized in your measurements and recording of data; otherwise, you lose the time advantage which you gained by investing in your electronic calculator.

Next month, we'll explain why a piano technician would want to know the tension in a piano string. Also, we'll introduce the factors involved in piano scale evaluation and modification, so stay tuned to this column ... □

IN THE FIELD...

Ben McKlveen

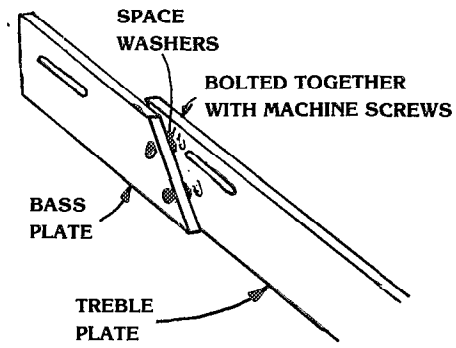
MAKE YOUR OWN UPRIGHT ACTION REGULATING JIG

Ned Dodson, of Colesville, Maryland, introduced an upright action regulating jig at the national convention in Minneapolis last summer. It is a clever and useful piece of equipment which has a variety of uses. For example, it could be used to bench regulate an upright action, hang hammers, regulate spoons, replace or regulate damper felts, or any combination of these things and do them all away from the piano.

The jig consists of two Plexiglas plates, one for the treble action and a smaller piece for the bass section. These two pieces bolt together in such a way that when they are properly mounted on threaded rod and secured with a combination of hex nuts and wing nuts, the Plexiglas plates can be made to hang at exactly string distance from the hammers. The jig is made in two pieces so that the bass plate can be bolted to the treble plate with a pair of 1" machine screws. By using spacer washers, the lower section may be positioned to match the overstrung bass strings. The plates are bored with ¼" X 3" slots so that almost any action with four brackets can be accommodated.

For hammer hanging, the mounting can be set at exactly string distance from the hammers. In addition, the Plexiglas can be marked with a felt-tipped marker to simulate string position and direction so that correction of side-to-side alignment of hammers, dampers or action parts can be made before new hammers are installed.

Since the Plexiglas is transparent, it allows complete visibility from the back side of the action while providing a simulated string — a boon to damper spoon regulation. □



Parts needed for construction are:

1 piece Plexiglas — approx. 40" X 6" X ¼"

1 piece Plexiglas — approx. 20" X 6" X ¼"

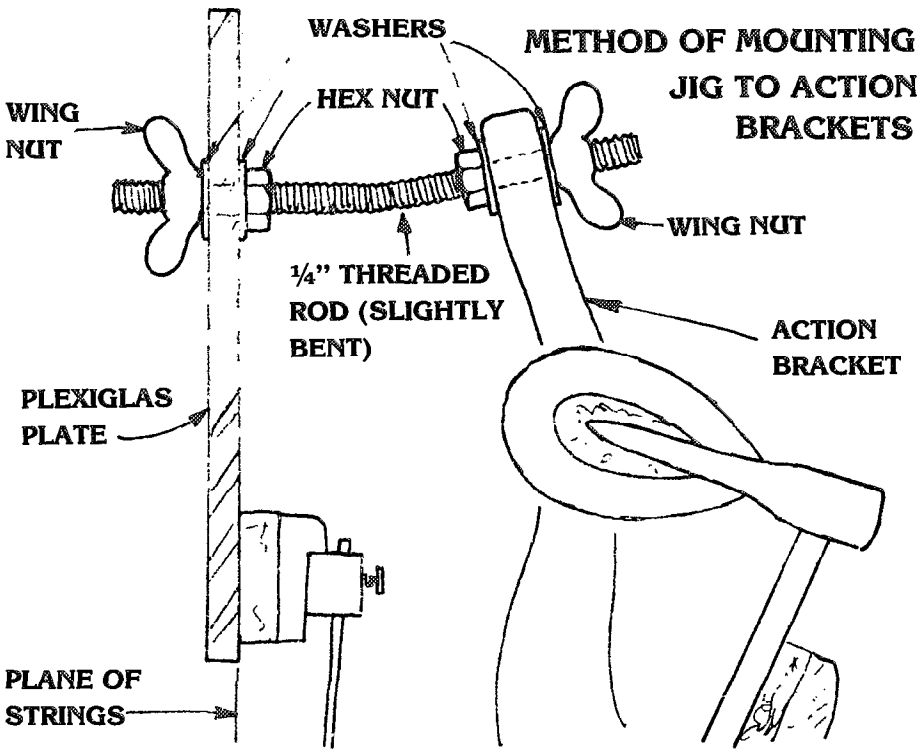
4 pieces — 4" X ¼" threaded rod

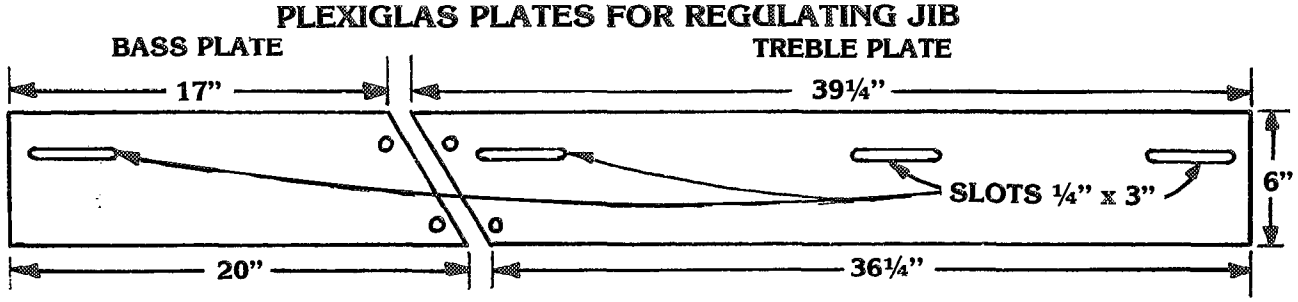
2 — 1" machine screws

10 — ¼" wing nuts

8 — ¼" hex nuts

10-15 — ¼" washers





Ring the Bell

Bell Ringers Club	Points
ABBOTT, William Jr.	6
ACH, Philip	3
BAIRD, John	18
BAKER, Dean	6
BALIGIAN, Agnooni	16
BARRETT, Bruce	1
BERRY, Ronald	5
BIBLE, Dana	1
BITTINGER, Dick	13
CATE, Allan	1
CLARK, Peter M.	1
CLOPTON, John	4
COLEMAN, Jim, Jr.	1
COX, Merril	1
CROY, Ronald	12
DANIEL, Pat	6
DOERFLER, Richard	1
DROST, Michael	18
DRAINE, Robert	23
ERBSMEHL, Charles	1
FISHER, Allen	6
FRANZ, Dennis L.	1
FRANZ, Earl M.	6
GERLER, Kenneth	1
GILLER, Evan	12
GOETSCH, Lawrence	12
GULLIXSON, Elisha	6
HARMON, Clayton	6
HARRIS, Vaughn	6
HART, W. D.	6
HAWKINS, Marshall	6
HEINDSELMAN, Lois	17
HESS, James	9
HILBERT, Felton, Jr.	1
HOHF, Robert	6
JOHNS, Barney	1
JONES, Joel A.	5
KAST, Frank	10
KERBER, Walter	12
KLEIN, William N.	1
KOFORD, Lyn	5
LEWIS, Max E.	6
LINDEMAN, Doug	23
MACCONAGHY, Henry	6
MACKINNON, Karl	1
MARLING, Harold	5
MARTIN, Barbara	1
MATTHEWS, John	1
McANINCH, Daniel	1
MEEHAN, Joseph	18
MEHAFFEY, Francis	11
MEISSNER, Walter, Jr.	6
MOONAN, William	1
NICHOLSON, Steve	1
OLIVER, Stanley	1
PEARLMAN, Sam	1
PERKINS, Robert	6
PETERS, George	12
PHILLIPS, Webb	5
POTTER, Randal F.	5
REITER, Michael	6
RICHARDSON, James	11
RILEY, Martha	1
ROE, Eugene	6
SANDERS, John	6
SEABERN, Paul	4
SCHEER, Bob	6
SCHNEIDER, William	6
SCOTT, Dennis	1
SELLER, Marion	10
SERVISS, Kenneth	6
SEVERANCE, Davie	7
SHELL, Roger	6
SMITH, Arthur	1
SNYDER, Cecil	5
SNYDER, Willis	4
SORG, Herbert	6
SPEIR, Leon	6
STONE, Sid	6
SWARTZ, Vern	1
TAYLOR, Kendal	9
TITTLE, Martin	1
UPHAM, Russ	1
WALKUP, Kenneth	6
WARMINGTON, Carl	6
WEST, Richard E.	6
WHITTING, Ted	4
WICKSELL, Carl	1
WIGENT, Don	6
WILLIS, Aubrey	7
WINTERS, Kenneth	4
WOODS, Edwin	5

President's Club

DRAINE, Robert	28
LILLICO, John	70

Restorers Club

BITTINGER, Dick
HAWKINS, Marshall
SCHEER, Bob

VON DER WERKSTATT

Priscilla and Joel Rappaport

A Basic Approach to Key Leveling

Somewhere near the beginning of everyone's regulation procedure in both grand and uprights is key leveling. We must concern ourselves here with two main things: (1) What is the correct key height, and (2) how do we level a keyboard so that it is a stable part of our regulation?

The key height must fulfill several requirements. The keys must not be suspended above the front rail pins, but must "sit" on them so that the key bushing guides the key on the pin as the key is depressed. At least 10mm distance between the bottom of the front of the key and the front rail punching should be allowed for the dip so that punchings can be added later when regulating the dip. The key height must fit the case parts. The fallboard with the fallboard felt should allow about 1mm space between it and the leveled keyboard. The fallboard is an excellent clue as to where the key height should be. In most factories the fallboard is custom made to the piano after the action is regulated. The key slip (if it is still straight) will also provide a good guide in setting the key height. Using the above requirements that we have just mentioned, we find that the height of the key from the top of the key slip to the bottom of the key top covering will fall somewhere between 17-21mm. This varies from manufacturer to manufacturer. The *PTG Action Handbook* with manufacturers' specifications is also a good reference.

Before we can actually level the keys, we must first concern ourselves with several stages of preparatory work. First, a grand keybed should be prepared so that it is flat (there are exceptions to this, like the Bosendorfer keybed which is slightly hollow) and clean. Then the frame must be fitted to the bed and the glide buttons, if present, adjusted. There is an excellent description of this in the October 1979 "Tuner-Technicians Forum" by Jack Krefting. In an upright, the frame should be correctly positioned and securely screwed down. Sometimes shims made from card or veneer are inserted between the frame and the keybed to make large corrections in the height of the front, middle or back rail so that the key meets the basic requirements before the leveling procedure.

Key bushings should be in good condition and the keys eased. Make sure that the key is not binding around the front rail pin in *both* the up and down positions. At the balance rail pin, the key should move freely, but not wiggle excessively from side to side. Pulley keys should be remedied (*Piano Technicians Journal*, June 1979), and the holes in the bottom of the keys should fit the balance rail pin. See the diagram showing the key cross section. The bottom of the hole (A) should fit the pin, whereas the top of the hole (B) should be a little larger, allowing the key to move freely. If the top of the hole (B) is too tight, the key will feel "mushy" on the balance rail pin. See the June 1979 article for the remedy to this. The keys should all be in good shape — no loose buttons, loose sharps, or loose leads. Check for warped keys and oxidized leads which may rub adjacent keys. If a key is warped, sand or plane some wood away. If leads are loose or protruding, tighten them up or file the portion sticking out so that they are flush with the side of the key.

When the preparation is completed, we do the first key leveling of a grand piano with the frame in the instrument and leveling weights on the keys. Two types of weights are available: those with nails sticking out of the bottom which are driven into the key, and those with a clip which hangs the weight on the backcheck. Both kinds approximate the weight of the whippen, hammer and shank, and allow us to level the keyboard without having to remove the action stack every time you wish to take out or put in punchings. We use the former type of lead weight for the following reasons: (1) We get a more accurate leveling with the weight placed closer to the capstans and (2) most of the time, there are no backchecks in the

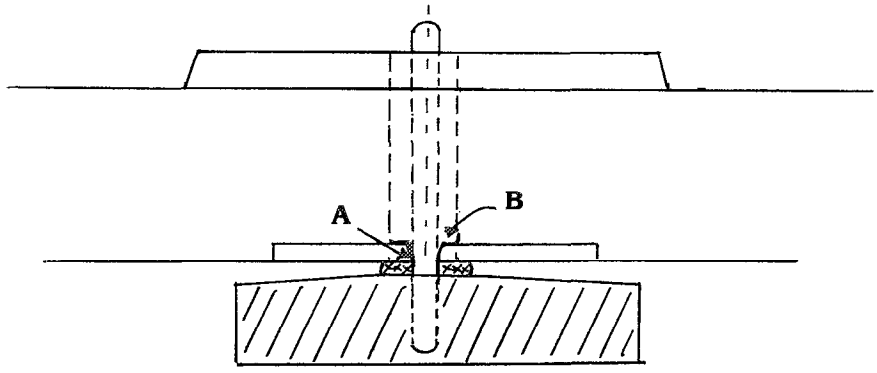
keys, since the old ones are removed early in our grand action rebuilding procedures. (This makes the keys easier to handle in the prep work.) In an upright, of course, we do not use these weights. We use the action, remembering first to take care of any lost motion. If we didn't do this, the front of the key would drop a little on its own and our leveling would be inaccurate. Each time you go through upright leveling, lost motion adjustments should be checked and corrected.

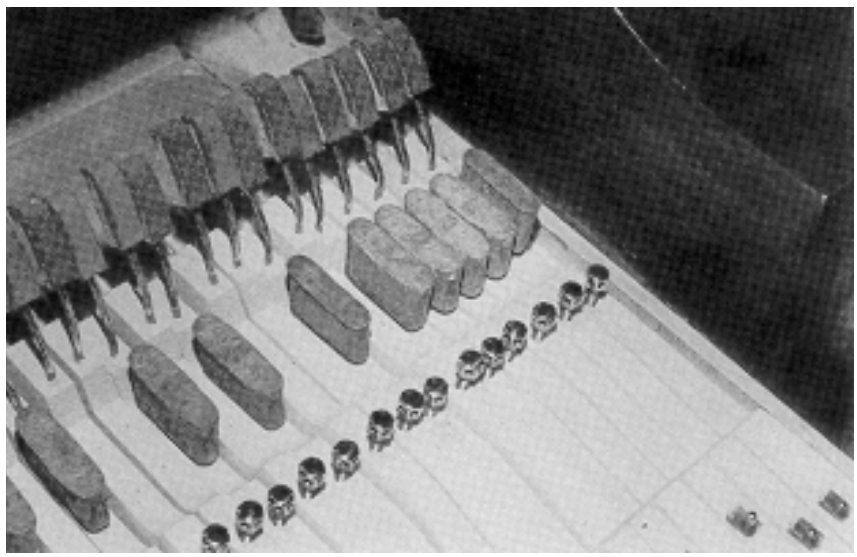
Beginning with the white keys, we set the key height at both ends of the keyboard. Picture #2 shows that the key height above the keyslip in this particular piano is around 18mm. A full-length straightedge is used to level the remaining white keys. A shorter straightedge can also be used to level half the keyboard at a time if a middle white key is also set at the correct height. Beginning at one end of the keyboard and working to the other, we choose a punching that will, when inserted under the balance rail felt punching, raise the key to the desired height, as shown by our straightedge.

A good eye and judgment here plays a major role. The distance between the straightedge and the key is judged by eye and a punching is chosen. We do not fill up the gap between the straightedge and the key with a punching. If we did that, the key would end up too high, due to the approximate 2:1 ratio of the segments of the key. If several punchings are required, stack the punchings from thick to thin so that the thickest paper or card is on the bottom and the thinnest on the top. Picture #8 illustrates this clearly. Try to use as few punchings as possible. The substitution of a card punching for five paper punchings will increase the stability of the leveling job. Lift the key off the balance rail pin so as not to stress or enlarge the hole and place the paper under the felt (Picture #7). Carefully place the key back on the balance rail pin and check for accuracy.

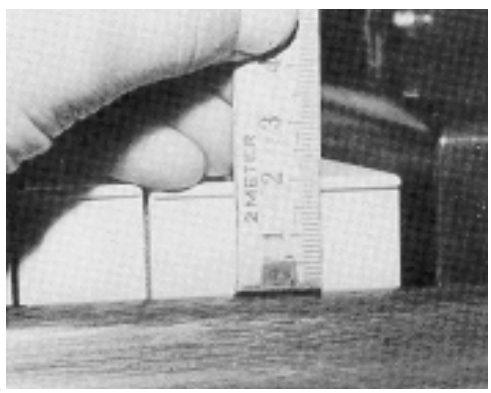
If a key is too high there are two things you can do: (1) Remove a paper punching or (2) plane the key slightly as shown in Picture #13. Make sure the bottom of the key is planed in right angles to the sides. A word of caution: do not plane too much off the bottom of the key! If the wood supporting the balance rail hole becomes too thin, the hole will become enlarged, resulting in pulley keys. The thickness or depth of the wood for the bottom key hole should be around 2-3mm. This is enough to give the hole some support and yet allow free movement. (See diagram.)

If most of the keys are too high and no punchings are under the felt, then change the thickness of either the balance rail felt punchings, or the back rail felt, or both. Putting a thinner felt punching at the balance rail is obvious, but if you already have thin punchings on there or if you are out of thin punchings or at the balance rail there are half-round bearings instead of punchings, try gluing on a slightly thicker back rail felt. This will effectively lower the front of the key as the back of the key is raised. As we have mentioned before, the key height with only the

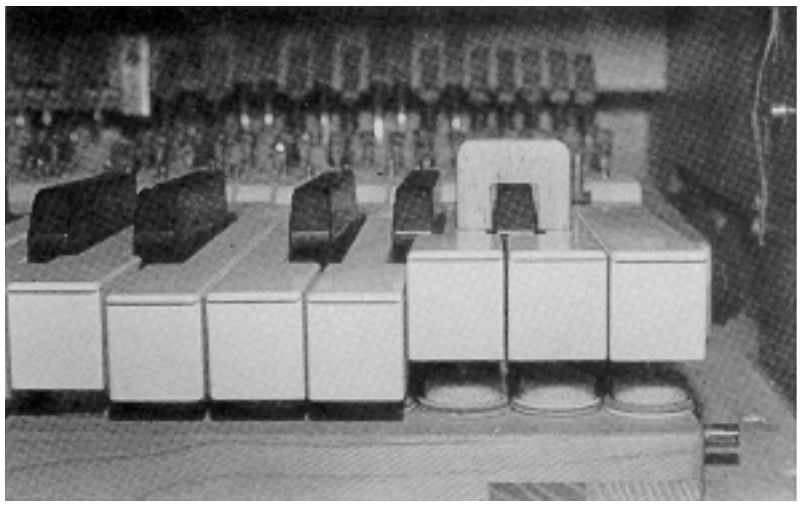




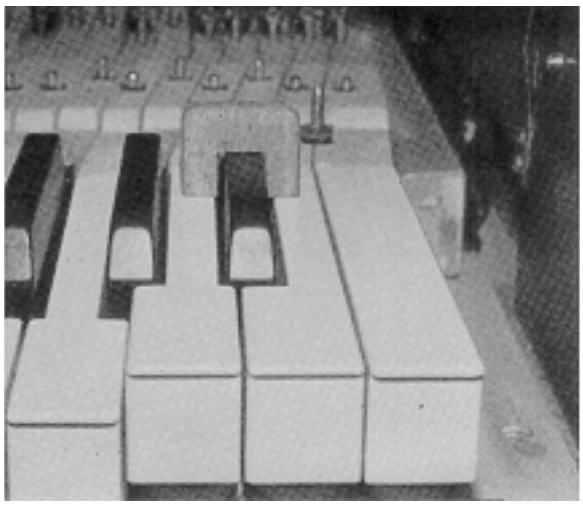
#1. Lead weights in place — tapped in with a hammer. The group at the end is for setting both black and white key heights.



#2. Distance between key slip and bottom on key covering can be anywhere between 17-20mm.

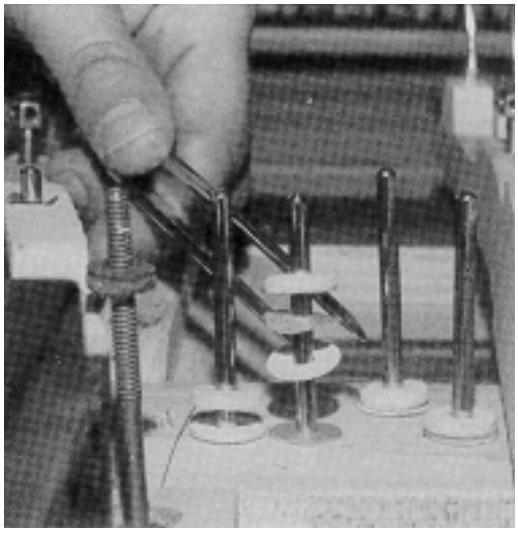


#3. Setting a guide key for the black key height. Cutout in wood gauge is 12mm.

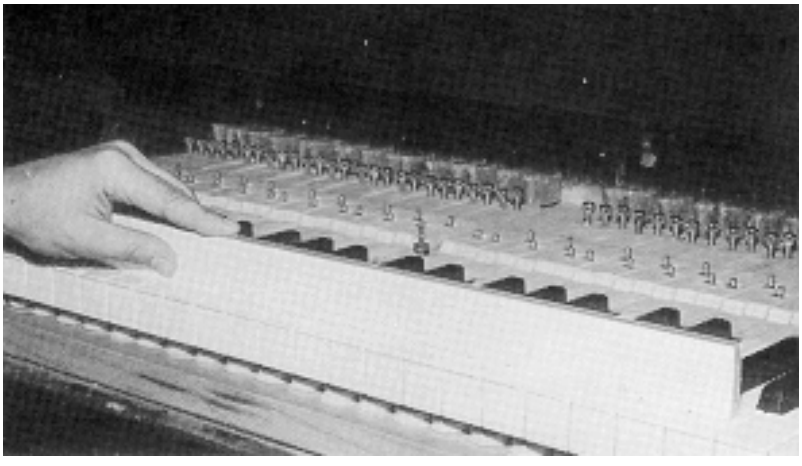


#4. **WRONG.** Black key height is not measured at the back of the key, but at the front.

#5. A straightedge forms a line from guide key to guide key. Straightedge can be straight across or slightly hollow to conform to your wishes or manufacturers' specifications.

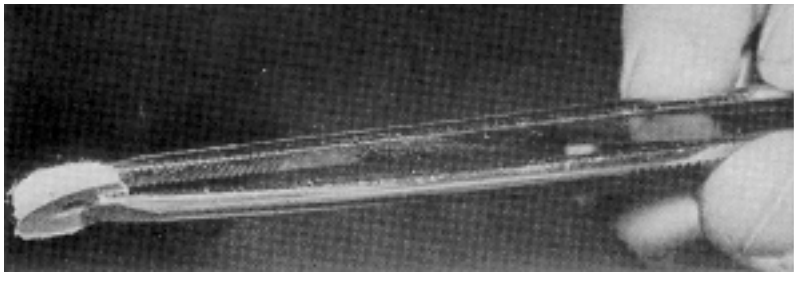


#8. Paper punchings are placed in order with the thinnest on top.



#6. Another method: using a shorter straightedge with guide keys at the ends and in the middle. Short straightedge is easier to handle and keyboard is leveled one-half at a time.

#9. After placing punchings on pins and replacing keys, brush buttons down with hand to minimize the "*accordion effect.*"



#7. Inserting punchings with tweezers. The paper punching is placed **under** the felt punching. Note filed tip of tweezers to facilitate removal of punchings from balance rail pin.

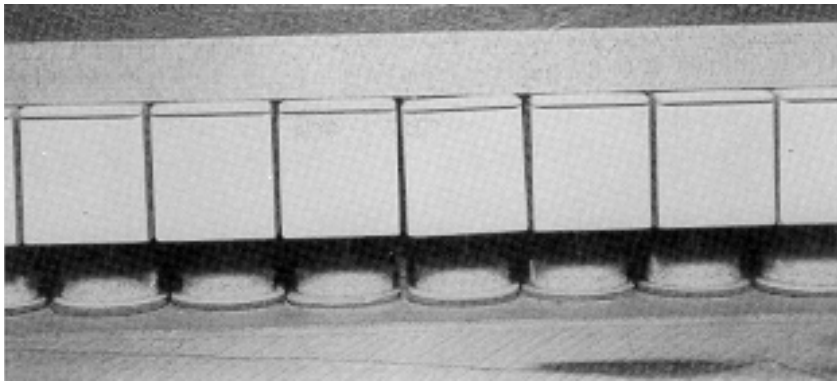
felt punching should be low enough so that you have to put in *some* paper punchings to achieve your chosen key height.

The keys are "squared" during the leveling procedure as shown in Pictures 10 to 12. The balance rail pin is hit to the right or left (*not toward the back of the piano!*) to make the top of the key covering meet the straightedge evenly left to right. A screwdriver or a piece of wood can be used. However, be sure **no** marks or burrs are left on the balance rail pin and no damage to the bushing or button of the key has occurred.

Using leads on the end black keys, the height of the blacks is established. (See Picture #3.) This gauge on the front of the black key shows the black key at the correct height above the whites - 12mm. Then the weights are transferred to the black keys and the same procedure is followed.

The second leveling that the action gets involves using the exact same procedure, but that the stack is substituted for the weights. Here refinements in the leveling are made. The keys are again squared and spaced so that the distances between the white keys are consistent and the blacks lie in the middle of their neighboring whites. The key spacing tool should be free of sharp edges, as this may burr the front rail pin and cause the bushing to wear out quickly.

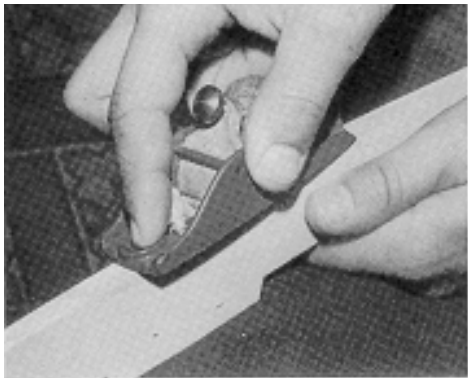
Leveling is one step that we are all concerned with, as it lays the foundation for everything else we do in regulation. A good leveling job will also look good, establishing two parallel lines, that of the leveled keyboard with that of the keyslip.□

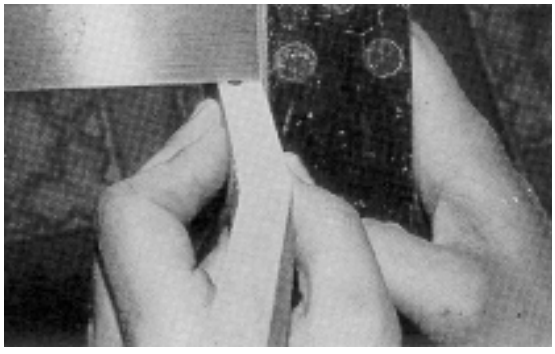


#10. Now is a good time to square up the white keys.

#11. Pin is tapped to straighten key. Pressure should be only in a left or right direction, not front to back.

#12. If a sharp screwdriver blade puts knicks in the pin, a piece of wood can be used in the same way.





#13. The bottom of a key can be planed away but use caution: do not make the wood too thin at the balance rail hole.

#14. Also the key bottom must remain in right angles to the key sides.

Dr. Albert E. Sanderson

BOOK REVIEW:

"*Intervals, Scales and Temperaments*"

"*Intervals, Scales and Temperaments*" by Llewellyn S. Lloyd and Hugh Boyle, is a strange book. Part I consists of a collection of articles on musical acoustics and intonation that were written for a number of different journals by British physicist Lloyd in the late '30s and early '40s. They have been collected for republication by the other author, Boyle, who has himself written Part II of the book, mainly to supplement the first. Unfortunately, the book has all the faults that one might expect from this process of assembly; that is, it does not form a coherent whole, but rather skips around, covering its assortment of subjects in a disconnected manner. The chapters inevitably overlap frequently, and we find the same material covered repetitively in two or three chapters.

The material in this book is mainly of historical interest, since it appears quite dated to the modern reader. Many of the chapters are nothing but polemics against equal temperament, and describe the evils of equal temperament and the harm it has done to the training of musicians' aural abilities. ["Many a singer is brought up suddenly by a bang on the piano."] I'm beginning to think that some of these anti-equal temperament authors have never heard the gorgeous sound of a perfectly tuned concert grand, slightly stretched octaves and all, in equal temperament.

Supporting this view, in Part II we read of Bach's tuning that "it never took him more than a quarter of an hour to tune a harpsichord or clavichord." From this the author concludes, "Thus it would appear that Bach knew exactly what kind of temperament was best suited to his music, and also how to tune it to his satisfaction with speed and efficiency." This is a very charitable interpretation of the evidence; one could also reasonably conclude that Bach wasn't at all fussy about his temperaments! Certainly *no* temperament can be tuned with precision on unstable instruments such as these in one quarter of an hour, and this passage indicates to me how little the author (Boyle) knows about the actual tuning of keyboard instruments. I do not believe it is possible to gain the full benefits of equal temperament tuning (of pianos especially) with a sloppy tuning. The maximum resonance and reinforcement among the higher partials that makes the instrument seem to shimmer and sparkle is possible only when the instrument is very carefully tuned in equal temperament.

This book was definitely not written for a piano tuner's tender ears. There are many instances of writing that grate, but one will suffice. On page 16 we have, "The reader will recall the wearisome repetition of fifths and fourths by the piano-tuner." Well, I never! Also, inharmonicity is treated as a disease. On page 168, "Pipe organs do not suffer from inharmonicity." Nor do the poor suffer from an embarrassment of riches.

There is a section on mathematical terms and operations that is ludicrous. There is no mention of modern calculators, and operations such as how to use four- and seven-place tables of logarithms are described. Such tables are no longer published because even an inexpensive pocket calculator will give the ten-place logarithm of any number in a fraction of a second. The pedantic tone of this section is too much to bear — the reader is treated as a complete idiot. On page 258 we learn, for example, "Thus 5–2 is not the same as 2–5, nor is 2÷5 the same as 5÷2." I'm sure that most piano tuners already know this. Do you suppose this could have been written for the serious first grade student?

Home Pianos
— Squares, Uprights And Other Verticals

Jack Greenfield

(This is the third and final part of Jack Greenfield's article on the history of the piano.)

Origin of the Square Piano

The square piano, a compact form more practical for the average home than the wing-shaped pianos of Cristofori and Silbermann, originated in Germany as a successor to the clavichord. In the early 1700s, simple cheaply-built clavichords had widespread popularity. The oldest existing example of an early square piano is an instrument dated 1742 in a museum in Nuremberg, built by Johann Socher.[1]

Origin of the Vertical Piano

The first vertical pianos may have been built a little earlier. Jean Marius' 1716 designs included a vertical piano-forte type instrument.[2] However, no actual instruments were built to these designs. If the date is authentic, a vertical instrument in a Leipzig museum dated 1735 is the oldest example of this form. A vertical piano reported to have been built in 1739 by Domenico del Mela in Italy is no longer in existence but information on its design is on record. The dates of 1740 and 1745 are definite for vertical instruments in museums in Berlin and Brussels. C. E. Frederici is known to have built the 1745 instrument; authorities do not agree on whether he built the 1740 instrument.[3]

The first vertical pianos were basically Cristofori or Silbermann-type pianos stood up on end with more or less minor modifications. These instruments were similar in construction to clavicytheriums — the name applied to vertical harpsichords. Instruments built this way were top-heavy and too tall for most homes and attracted much less interest than the horizontal pianos.

Development of Square Design and Production

The popularity of the square piano spread rapidly as a result of the work of Johann Christopher Zumpe.[4] Zumpe had been trained by two of the foremost keyboard instrument makers; first by Gottfried Silbermann in Germany, and then by Burkhardt Shudi, the prominent London harpsichord builder, after migrating from Germany in 1760.

Zumpe designed a simple economical instrument with a Cristofori-Silbermann type action modified by omission of escapement and checking to reduce cost. The case was an oblong horizontal shape similar in form to the clavichord. Zumpe started his own shop to sell his pianos in 1766. In spite of the instrument's faults, it was readily accepted and sales rose so rapidly that Zumpe was unable to meet the demand for his pianos. This created the opportunity for other instrument makers to make pianos to fill orders Zumpe had to turn away. Other German immigrant piano technicians now started competitive shops in London and established harpsichord builders started to make pianos, too.

Although Johann Sebastian Bach had written music to demonstrate the advantage of the "well-tempered" scale with 12 notes to the octave several decades earlier, mean-tone temperament was still the custom in England. Zumpe experimented with a keyboard containing 17 notes to the octave.[5] This was done by dividing the black keys and adding additional strings for the extra notes. A Zumpe piano with such a design is still in existence and is owned by the firm of John Broadwood and Sons. The Smithsonian Institution collection includes a 1770 Zumpe piano with 12 note octaves.

As piano making expanded here, England became the leader in production and this encouraged work on advancements in design. Several major improvements in square pianos occurred in the 1780s:[6]

1. In 1783, John Broadwood introduced a radical change in construction. The stringing pattern was changed by moving the tuning pins from the right side to the left side of the back of the case, the case was made more substantial and the stringing heavier. The result was greater resonance.
2. Broadwood and other manufacturers worked on improvements in Zumpe's first action which had become known as the "English Single Action." An action patented in 1786 by John Geib, a German technician making pianos for the London firm of Longman & Broderip, was the most successful improved action for square pianos and it became known as the "English Double Action."

The firms of Broadwood and Kickman which had been prominent builders of harpsichords, applied some of their ideas in harpsichord design to their pianos and established features which have been used since then.[7] One innovation was front key pins to guide the key instead of the conventional harpsichord rack and slotted rear guide system. This made possible individual dip adjustment by varying thickness of felt or card punchings placed at the base of the front pin. The use of ivory naturals and ebony sharps in English harpsichords also became the standard pattern for pianos.

The builders who started making square pianos in France and the United States during the last decades of the eighteenth century copied English designs. At

first, Parisians preferred Zumpe instruments, but the Erards made such excellent instruments that they soon gained the favor of their countrymen.

Early Development of Vertical Design and Production

The vertical piano first began to receive serious attention in the 1790s.[8] In 1795 William Stodart, a London piano maker, obtained a patent for an "upright grand" which was more or less a regular grand set in a cabinet standing vertically on a stand. The space on the right between the bent side of the piano rim and the case contained shelves. In 1798 a Dubliner working in London, William Southwell, patented an instrument which was primarily a vertical square piano. The hammers were placed near the upper ends of the strings and were connected to the keys by rods or "stickers"; this was an early form of the upright sticker action.

The problems of unstable top-heavy weight distribution and excessive height of preceding vertical piano designs were avoided in pianos introduced in 1800 by Matthias Müller, a piano maker in Vienna, and John Isaac Hawkins, a young English engineer who had settled in Philadelphia.[8] Hawkins was "a Jack of all trades" and an adept mechanical tinkerer with a wide range of interests. He was not a piano maker himself but his father worked on pianos in England.

Müller and Hawkins originated the idea of bringing the piano down to the floor and eliminating the wasted space below the keyboard of "upright grands." Upright grands with grand-type up-striking actions had to be raised to key-level height. Müller and Hawkins used down-striking or "front-to-back" striking actions; Müller's piano was about 72½" high and Hawkins' was about 54½".

Hawkins showed much originality elsewhere in his design. He defied the tradition against use of heavy masses of metal and had the soundboard suspended in a metal frame braced by iron bars. The tuning pins were true screws set in a metal pinblock and the hammers and dampers were mounted in a light brass frame. The bass strings were coiled like springs.[9]

Hawkins made only a few of these instruments. One of his most distinguished customers was Thomas Jefferson, who purchased a piano for $264 in 1800, the year in which he was elected to his first term as president. The piano arrived at Monticello in the summer of 1800. It had travelled through much rain during shipment from Philadelphia and was badly out of tune on arrival. Fortunately, Jefferson had acquired the skill to tune and service the keyboard instruments in his home which were played by his wife and daughters. However, he found that Hawkins' piano would not stay in tune for long, and after two years he sent it back to Hawkins in Philadelphia. The other pianos Hawkins built had also turned out to be failures and Hawkins now gave up piano making. He returned to England in 1803 but came back to the United States again in 1848.[10]

There are two Hawkins pianos still in existence in the Smithsonian and in the Broadwood London collections. Müller's pianos attracted little attention.

The next stage in development of vertical designs was the 1807 invention by Southwell of the cabinet piano,[11] with strings reaching to the ground and a down-striking sticker action. Southwell improved his 1798 sticker action with escapement and better damper position. His action was adopted by others and became known as the English Sticker Action. With straight-string vertical strings, cabinet pianos were approximately six feet tall.

In Vienna, development of the tall vertical piano took place with the "Giraffe" upright, so named for the shape of the curved top rim. Introduced in 1799, it became the most popular model for several decades. Although the instrument was nearly eight feet high, the action was below key level. The action was usually a "hängende" German action which could be considered a type of "drop" German or Viennese action.[12]

Vertical pianos were also made in lyre, harp, pyramid, and other even more unusual forms. Some continental manufacturers equipped their pianos with "attachments" operated by pedals for sound effects, such as "cymbals," "triangle," "bells" or "drums." A strip of parchment covered wood resting against the bass strings was used to obtain a "bassoon" tone. Some pianos had as many as seven or eight pedals.[13]

The upright grands and cabinet pianos achieved some commercial success in England during the first two decades of the 1800s, but several objections created an interest for smaller pianos. The tall, clumsy instruments were too bulky for small rooms. When used for performances, the player's back was to the audience and a singer sang into the instrument instead of out into the room. Upright grands cost 10-15% more than regular grands and did not meet the desires of buyers interested in low-cost instruments.

Robert Wornum Starts Trend To Small Pianos and Invents Tape-Check Action

Robert Wornum, who opened a London shop at the age of 30 in 1810, built a small piano in 1811 that had the most influence in setting a new style. Wornum's 39" piano had diagonal stringing stretching to the ground. Diagonal stringing used many years earlier in vertical pianos by Frederici also appeared in an 1802 patent by Thomas Loud of London. Loud is not known to have built any pianos with this idea until 20 to 25 years later. Wornum continued to work on improvements in the small upright and introduced advanced models in 1813, 1818 and 1828, some with vertical stringing.

Wornum's pianos quickly changed the trend of piano production in Europe away from the squares and tall verticals to low compact uprights.

Wornum's early pianos used the English Double Action of square pianos. Wornum spent

much effort on improvement of action design and finally developed the tape-check action he patented in 1842.[14] It is surprising to note he considered this action first for grand pianos, at least five years before his 1842 patent for the upright. Wornum's invention of the tape check action is comparable in importance for upright pianos as Erard's action for grands. Wornum's action was soon adopted by other piano makers in England, France, Germany and the United States.

The Smithsonian Institution has an 1812 Wornum small upright piano.

Jean Henri Pape's Advancement of Piano Design

In France, there was as much interest in small pianos as in England. Pleyel began to build pianos patterned after the Wornum designs in 1815. Jean Henri Pape, who had begun his career in 1809 at the age of 20 years working for Pleyel, obtained his first experience with uprights while with this firm. Pape's family background was German like that of Pleyel, Erard, and other piano makers in France. Pape is responsible for originating important design changes that advanced the upright and pianos in general.

After leaving Pleyel and before opening his own shop in Paris in 1818, Pape spent about one year getting experience in the English piano industry.

Pape's most important achievement was the introduction of overstringing in a design he patented in 1828.[15] He built a 39" piano he called a "console" upright. The longest bass strings, overstrung across the treble, were almost as long as the diagonal of the case and much longer than on previous pianos so small. In addition, the placement of the bass strings over the treble strings produced a different tone quality, rich in overtones.

Overstringing was adopted for upright and square pianos in the 1830s by several manufacturers in the United States, England and Germany, and became widely used by the late 1840s. In 1853 Steinway offered the first grand with overstringing. Other important introductions to piano making by Pape include:

1. First to use tempered steel wire regularly for stringing, 1826.[16]

2. Patented use of felt containing a combination of sheep's wool with rabbit hair, 1826; modified his method of covering the hammer; and in 1839 he designed the cover of tapered layers of felt used today.[17]

Pape conceived many new ideas and had 137 patents to his credit. Unfortunately, much of his efforts went to waste because he preferred to go on to new projects before working out practical applications of older ideas and many of his inventions were impractical without any possibility of commercial acceptance.[18]

Pape built fine, artistic, light, compact pianos with pleasing but not powerful tone. His grands were not popular for concert work. He was highly admired as a technician and his factory drew young men from all over Europe who wished to study with him. Carl Bechstein was one of his students who later became a famous piano builder.

As design improvement continued during the second quarter of the 1800s, European manufacturers shifted production to small uprights and the output of squares and tall vertical models rapidly dwindled. In 1851, 80 to 90 percent of the production of English firms was upright pianos and five to ten percent of production was grand pianos.[15] In Germany, where the small upright had gotten a later start in the 1830s, manufacture of the square piano was ended by 1860.[19]

The situation was different in the United States where square pianos retained their popularity much longer. Cabinet pianos

were made here as early as 1813 and small uprights as early as the 1820s. The public was not receptive to these and United States manufacturers preferred to devote attention to improving the square, while Europeans were changing to small uprights.

An important contribution to piano design in the United States was the one-piece cast iron plate initially invented for the square piano in 1815 by Alpheus Babcock, a progressive builder who did most of his work in the Boston area. He was ahead of most of the industry in modifying his square plate to incorporate overstringing in an 1830 patent, two years after Pape introduced overstringing in uprights.[22]

The one-piece overstrung cast iron plate gave the square piano a surprisingly full tone, but the heavy mass of metal required huge legs for support. Extension of the keyboard made the instrument longer. To avoid the appearance of a large rectangular box on legs, manufacturers adopted elaborate case styling giving the instruments an appearance considered grotesque today.

By the early 1860s, in contrast with the small uprights European builders exhibited at trade fairs, the deficiencies of United States square pianos became more evident:

1. The square piano consumed more materials than the upright and required more floor space.
2. The square had inherent faults that could not be overcome. The gap in the middle of the structure for hammer passage made the structure weak; the bass keys were shortest and the extreme treble keys were longest, opposite to the needs of leverage for strength of blow.
3. The action of the square was inferior to the Wornum tape-check upright action as well as the Herz-Erard grand action.

There was no justification for continuing the manufacture of the square since the upright was a more economical and compact design for small homes and the grand was far superior where a finer instrument was desired.[23]

Final Phase of Upright Design

At this time the European manufacturers preferred to build upright pianos with the same composite frames as their grands. An 1836 patent by an English builder, Wheatley Kirk, was the first for a complete metal frame for upright pianos, but it attracted little interest. In the United States during the period from the 1830s to the early 1860s, most builders were improving their squares with one-piece metal plates and neglecting the upright. The few that showed interest in improving the upright with one-piece metal plates included the Boston builders Timothy Gilbert, who received a patent in 1841, and one of his pupils, Edwin Fobes, with a patent in 1853.

After the end of the Civil War in the United States, there was a rapid shift from production of squares to uprights.[19] With the background of experience in using the overstrung scale and full iron frame in square pianos, builders applied the same principles to produce superior upright pianos. This was the final phase in completion of the design of upright vertical instruments used since then. The rapid rise of the American upright to popularity was marked by the emphasis on them and the scarcity of squares in the manufacturers' exhibits at the 1876 Philadelphia Centennial. Except for the instruments from the few firms that built their own, or still imported actions from Europe, the new uprights contained actions from the action manufacturing company established in 1874 by Otto Wessell, Adam Nickel and Rudolph Gross after they left Steinway. Previously, most upright — as well as grand — actions were imported.

The United States uprights were more powerful instruments and larger — most models were 48" to 58" high — than the previous European uprights. By 1880 the American upright design was adopted by many European builders, and by 1890 only a small number of square pianos were being made in the United States. By the end of the century, production of squares terminated.

Piano builders and designers have continued their investigations on piano construction. Some of the results have been changes in materials and methods of production. There is better understanding of the theory of scale design at present, and case styling has gone through many changes. However, there have been no significant advances in the basic principles of action design and instrument construction of vertical pianos or grand pianos for over one hundred years.□

FOOTNOTES

[1]Rosamunde E. M. Harding, *The Piano-Forte* (New York: Da Capo Press 1973, reprint of 1933 edition), p. 39.
[2]Ibid., p. 14.
[3]Ibid., pp. 30-34.
[4]Arthur Loesser, *Men, Women and Pianos* (New York: Simon and Schuster, 1954), pp. 219-221.
[5]Harding, p. 66.
[6]Ibid., pp. 54-66.
[7]Wolfgang Joachim Zucherman, *The Modern Harpsichord* (New York: October House Inc., 1969), p. 42.
[8]David S. Grover, *The Piano* (New York: Charles Scribner & Sons, 1978), pp. 130-133.
[9]Harding, pp. 222-223.
[10]Helen Cripe, *Thomas Jefferson and Music* (Charlottesville, University Press of Virginia, 1974), pp. 74-75.
[11]Harding, pp. 226-232.
[12]Ibid., pp. 232-234.
[13]Ibid., pp. 124-150.
[14]Ibid., pp. 245-247.
[15]Grover, pp. 138-139.
[16]Grover, p. 115.
[17]Helen Rice Hollis, *The Piano* (Vancouver, David and Charles, 1975), p. 83.
[18]Loesser, pp. 407-409.
[19]Alfred Dolge, *Pianos and Their Makers* (New York: Dover Books, 1972 — Reprint of 1910 edition), pp. 55-57.
[20]Loesser, p. 462.
[21]Daniel Spillane, *History of The American Pianoforte* (New York: Da Capo Press, 1969 — Reprint of 1890 Edition by Author), pp. 37, 40, 41.
[22]Harding, pp. 204-212.
[23]William B. White, *Theory and Practice of Piano Construction* (New York: Dover Books 1975 — Reprint of 1906 edition), pp. 20-21.
[24]Spillane, pp. 91, 170.
[25]Harding, p. 565.

Your Security Blanket

Eloise Ross

It is exciting to be in on the beginning of a new decade. We can't help but believe the '80s will be good *to* us and good *for* us. It is a challenge we accept to make the world a better place for *all*. If we believe and if we work at it, it will be so.

There are already changes to consider; i.e., the experience in the Supplemental Group Life Insurance has been so good (the insureds are living longer) that the premiums have been reduced a bit, especially in the "older" ages. The new rates were effective January 1. Why not enroll now? The coverage is $10,000 level term in addition to the $1,000 provided by the Guild. Look for further information next month. If you can't wait, read about it in the July issue of the Piano Technicians Journal.

The second change is to be effective February first. In this case the insureds are living longer, but they have been sick and/or injured often, thus have had excessive medical care expenses.

In reviewing the copies of claims paid we noted some time ago that quite a few members have exceeded the $2,000 limit (remember, after your deductible has been satisfied you only pay 20% of the first $2,000, with a maximum of $400) and the company has been paying 100% of the remaining expenses. Thus the rates for the medical portion (only) of the Comprehensive Health and Dental Plan have been increased; the dental and life rates remain the same.

It is always difficult for the "well" ones to accept an increase of any kind. But believe me, be thankful for good health, for with good health we can work and solve any other problems that might occur. If you know anyone who has been sick or injured and a recipient of health benefits, you will know what a great relief it is to have had good coverage, and it is a proven fact that patients get well faster when there is less "stress" about money matters.

The February statements will reflect the new premiums along with the balance to bring your "lag" month up to date.

We will also insert an offer with the cost to add occupational coverage for expenses incurred due to an "on the job" injury.

The Comprehensive Health and Dental plan is one of the very best on the market. Even with the increase in the medical rates, the premiums remain lower for the benefits provided. Remember, the excellent dental coverage is included, as is life insurance for the member.

Be Happy.□

THE AUXILIARY EXCHANGE

Luellyn Preuitt

Greetings at this time of Hearts and Flowers! **President Jewell Sprinkle** asks, "May I share with you a Legend of the Valentine? — Long, long ago a priest named Valentine owned a beautiful garden where children came to play.

"One day, this kind priest was imprisoned for life by the king, but he couldn't forget the children. He sent them a white dove carrying a note addressed 'to the children I love'. And with the note he sent them the key to his garden so they could continue to play in it. For the rest of his life he remembered all his friends with messages carried by a dove, and these became known as the first valentines.

"February is a good month. It carries the promise of winter's ending and a new year of growth with the spring. Last month Agnes Huether gave us some beautiful memories of past conventions. Now I would like to tell you about a few historic places of interest, about which you will be learning in future issues of Auxiliary Exchange: Independence Square, Independence Hall, Liberty Bell, Congress Hall, Old City Hall, Elfreth's Alley, Old U.S. Custom House, Carpenter's Hall, Franklin Institute, Betsy Ross house, Christ Church and burial ground, Atwater Kent museum, Edgar Allan Poe house, The Gallery — plus well-known department stores, museums, theatres and many fine restaurants, all near the Hotel Benjamin Franklin.

"I'm looking forward to 'Welcoming' all of you there, WHERE IT ALL BEGAN!

"Sincerely, Jewell".

First Vice President Julie Berry has sent two items of information regarding Auxiliary members. On a sad note, Mabel (Mrs. Walter) Craft died on October 20 following complications ensuing from a fall. Mabel has been working with Julie toward organizing an Auxiliary chapter in the Columbus area. Our sincere sympathy to Walter and his family. On a happier note, Martha (Mrs. Ron) Winter of the Indianapolis Chapter, gave birth to their first son, Seth, the end of September. Congratulations!

Immediate Past President Helen Pearson has taken time out from her busy schedule to write us a note. "Now that the festivities of Christmas and the New Year are over, it is time to turn our attention to the next big event — the Philadelphia convention. If it is to top that of 1979 we will all have to work very hard, because last year's was super. A convention is not something staged by a few, but is a meeting where members convene. It is the members that make a convention successful! If we have any ideas for improving this annual affair, or if we have any criticism, let us write to President Jewell, and write in time so that she may utilize our suggestions and take warning from our criticisms.

"One of the biggest problems will be dealing with gas conservation. Here we need some ideas and tips. Perhaps some car pooling is possible. The only idea that pops into my crazy brain is a piggy bank. Drop in a slip each time that you conserve gas, showing the mileage conserved and the quantity. Rather than add up the amount in July, it might be wise to also put in the actual money saved. Then at convention time you can open the bank and laugh all the way to Philadelphia.

"Last week the county music teachers met in my home. For all to see, the fabulous quilt, originally designed by Margaret Frazer and lovingly donated to undeserving me, was displayed as a grand piano cover. At refreshment time the silver tray and decanter graced the table. Needless to say, both were conversation pieces. There is no other quilt in existence like this one, and no one had ever seen a decanter with an ice tube running down the center. Thank you, members, Margaret, and all who sewed patches.

"Paul Cheatham helped me carry these gifts to my room after the tea. He was always eager to help the Auxiliary. We shall miss him. Our hearts go out to Dessie. We wish we could help carry her burden. On the brighter side is the word that Virginia Seller has recovered from her hospitalization.

"A final word — suggestion to the talent committee — Get a better tuner!"

Auxiliary Parliamentarian and Historian Ginger Bryant writes of a recent trip to New Orleans with her husband, who was attending a National Home Study Council Seminar. She writes, "It was held at the Royal Sonesta on Bourbon Street, which made it very easy for me to get around the French Quarter. We happened to be there over Halloween. This is a mini-mardi gras. It's weird, wild and woolly. As for the costumes — you'd never believe me if I told you! Jim is a bird watcher and was particularly impressed with some of the species encountered on Bourbon Street that evening. Some of those observed were the 'short panted bun twitcher,' the 'bare breasted tassel twirler,' and the 'overstuffed leotard,' to name a few.

"We did get to hear lots of good Dixieland (of which we are both affectionados) and were able to renew an acquaintance with a great singer-pianist who performs somewhat in the style of Bobby

Short in the Esplanade Lounge of the Royal Orleans Hotel. Bob Discon of the New Orleans Chapter of the Guild was playing in one of the restaurants of our own hotel.

"We met with Jess Cunningham for lunch during our stay. He filled us in on details concerning the St. Petersburg convention. He also escorted us to Weirblein's Music Company where the 9'6", 93-key Bosendorfer concert grand was being displayed. A magnificent instrument, it now retails for $51,900. In case you're interested, they require only one-half down. We understand it is touring the country. Don't miss it when it comes to your area!

"I'm still making a plea for pictures and/or memorabilia from the Minneapolis convention. The historian book is sad and suffering. Please send any items to me at my home address — 1012 Dunbarton Circle, Sacramento, CA 95825. Things sent to Jim's office seem to get lost in the shuffle. Best regards, Ginger"

Thanks again to Ginger for that interesting article. We need more like it. Have a happy Valentine Day, and start making plans for Philadelphia!□

New Members/Reclassifications

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New York City Chapter

STRICK, KENNETH L.
Connecticut Chapter

WALKER, DONALD T.
South Bay Chapter

APPRENTICE

BRYANT, KEN L.
Toronto Chapter

GILLIES, BRUCE N.
Los Angeles Chapter

GORDON, RUSSELL H.
Washington, D.C. Chapter

ALLIED TRADESMAN

GROVE, DEANNA S.
Washington, D.C. Chapter

ASSOCIATE

CORSON, BRENT L.
Modesto Chapter

LEA, HENRY V. A.
Denver Chapter

OBITUARIES

EUGENE PRENDERGAST,
Lansing-Michigan Chapter

Coming Events

Notices of seminars will be accepted for insertion in THE JOURNAL no sooner than six months before an event. In addition to the listing below, your seminar may be publicized through one free display ad, two columns by two inches deep. It is the responsibility of the advertiser to submit copy for the ad to the Home Office. Material must be received six weeks prior to the publication date of THE JOURNAL.

Note: All seminar dates must be approved by the Conference Seminar Committee. Please submit the appropriate information on the Request for Seminar Approval Form.

April 10-12, 1980
PACFIIC NORTHWEST
CONFERENCE CONVENTION
Vancouver, British Columbia

Contact: Al Seitz
1517 Medfra
Anchorage, AK 99501

April 11-12, 1980
NEW ENGLAND SEMINAR
West Lebanon, New Hampshire

Contact: George Wheeler
11 Cherry Hill
Springfield, VT 05156

April 18-20, 1980
PENNSYLVANIA STATE
Altoona, Pennsylvania

Contact: Fred Fornwalt
1333 Logan Blvd.
Altoona, PA 16602

April 26, 1980
LOS ANGELES ANNUAL
TECHNICAL SEMINAR
Los Angeles, California

Contact: Daniel A. Evans
4100 Beck Avenue
Studio City, CA 91604

April 29, 1980
MID-SOUTH SEMINAR
Nashville, Tennessee

Contact: Ronald Croy
3214 Jonesboro Drive
Nashville, TN 37214

May 2-4, 1980
MICHIGAN STATE CONVENTION
Southfield, Michigan

Contact: Calvin Champine
2145 Dalesford
Troy, MI 48098

July 14-18, 1980
Piano Technicians Guild
23RD ANNUAL CONVENTION
& TECHNICAL INSTITUTE
Philadelphia, Pennsylvania

Classified Advertising

CLASSIFIED ADVERTISING RATES are 15 cents per word with a $3.00 minimum. Full payment should accompany insertion request. Closing date for ads is the first of the month prior to publication.

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

Send check or money order (U.S. funds), made payable to the Piano Technicians Guild, to Classified Ads, THE JOURNAL, 113 Dexter Avenue North, Seattle, WA 98109.

HELP WANTED

PIANO QUALITY & ENGINEERING MANAGER — Story & Clark, a leading manufacturer of quality pianos, has this excellent management opportunity. As Engineering Manager, you would be taking charge of our complete Engineering function, including Product Development, Processing, Industrial Engineering, and Quality Control. Applicants must be qualified through experience with a piano manufacturer. We are located in an attractive community in a prime West Michigan recreation area. The position offers an attractive salary and benefit program. Apply in confidence by sending resume with current salary to **Employee Relations Manager, Story & Clark Piano Co., 100 Fulton St., Grand Haven, MI 49417, or phone (616) 842-6000**

WANTED — Fulltime piano technician. Salary negotiable. **Contact: Dean Linsey Merril, Conservatory of Music, 4420 Warwick Blvd., Kansas City, MO 64111. Phone: (816) 363-4300**

FOR SALE

PIANOS FOR SALE — Always on hand, 150 to 300 uprights! Plain case, art case and players. Also 50 to 150 grands at all times, as is or rebuilt. Excellent brand names — no junk! All set up for inspection. Lowest possible prices. Call for quotes: **Owen Piano Wholesalers, 2152 West Washington Blvd., Los Angeles CA 90018. Telephone (213) 883-9643**

FOR SALE — Rare 6'6" 1867 Steinway square grand. Rebuilt. **Inquire: Worley, 341 So. Spring, Bellefonte, PA 16823**

FOR SALE — Mason-Hamlin 7' grand circa 1892. Screw-stringer type with refinished case, original insides. **Contact Jonathan Hancock, 364 W. 18th St., #1H, New York, NY 10011. (212) 243-6108**

FOR SALE — Reconditioned Steinway whippens. Felt bushings. $200. **John Fox, 3790 Priest Lake Drive, Nashville, TN 37217. (615) 361-8972**

FOR SALE — McMorrow Automatic Pitch Analyzer. Like new. $337.50. **Call James H. Rogers at (913) 727-1180.**

MISCELLANEOUS

PIANO TECHNICIAN APPRENTICE SEEKS job in STABLE piano shop or factory. Will relocate anywhere in the world. **Inquire: Worley, 341 So. Spring, Bellefonte, PA 16823**

KEY RECOVERING MACHINE—Build your own precision key recovering machine from stock machine parts. Demonstrated 1978 California convention and Pacific Northwest 1979. Send $10.00 p.p. for acccurate machine drawing instructions, photos, to: **Solenberger Piano Service, 1551 Lynn Court, Santa Rosa CA 95405**

TUNERDATA: (1) Mail reminders make money for you; (2) geographical files make money for you; (3) we'll do them both for you. Write **Ed Fesler, 11315 Rich Circle, Minneapolis MN 55437**

WANTED BY BEGINNING TUNER-TECHNICIAN, Piano Technicians Journals between 1965-77 inclusive. **Jim Heilman, Box 118, Cochin, Saskatchewan, Canada SOM OLO**

CASH PAID for used Steinway action parts; Chickering and Mason & Hamlin screw stringer parts. Send sample of discards for payment estimate to **Janson Piano Co., 299 Queen St. W. Room 200, Toronto, Ontario, Canada M5V 1Z9**

CORRESPONDENCE COURSE — Piano tuning-servicing. **Don Flippin, RTT Member PTG - 569 N. McLean, Memphis, TN 38112. (901) 327-3970**

WANT TO BUY

WANTED TO BUY — Mason & Hamlin Grand Piano. Want one that was a player. I have a player mechanism to install. Will pay handsome reward. **Brady, 4609 Crankbrook, Indianapolis IN 46250. (317) 259-4305, after 5 p.m. (317) 849-1469**

BE VISIBLE

DECLARE YOUR MEMBERSHIP WITH DECALS AND BUMPER STICKERS

Make sure that your membership in the Piano Technicians Guild has high visibility. Bumper stickers and decals are available from the home office to help you.

BUMPER STICKERS

Bright yellow, blue and white stickers for your automobiles help catch attention. Be sure every car in your family bears a sticker. **Only $1.50 each.**

DECALS

Logo stickers are available in many sizes for your windows, notebooks — anywhere you wish to draw attention to the Guild. All stickers have a peel-off backing.

Blue/Gold/White logo stickers:
8½" logo—$3 each or 2 for $5 or 6 for $10
3½" logo—$1.50 each or 2 for $2.50 or 6 for $5.50
1½" logo—10¢ each with a minimum order of 10

Black/Gold logo stickers:
1½" logo—10¢ each with a minimum order of 10

Piano Technicians Guild, Inc.

PLEASE SEND:	Quantity	Price	Total
		SUBTOTAL	

ADD SHIPPING AND HANDLING

If order totals:	Below $5.00	$5 to $9.99	$10 to $14.99	$15 to $24.99	$25 or More
Add:	$1.00	$1.50	$2.00	$2.50	None

Washington State residents only add 5.3% sales tax

Enclose check or money order for this amount **TOTAL U.S. FUNDS**

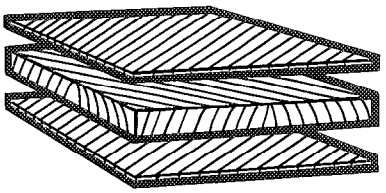
ORDERS UNDER $10 MUST BE PAID IN ADVANCE.

Name _____
Address _____
City/State or Province _____
Zip/Postal Code _____ Phone _____
Chapter _____ Nonmember _____

MAIL TO: PIANO TECHNICIANS GUILD
113 DEXTER AVENUE NORTH
SEATTLE, WASHINGTON 98109

PLEASE FEEL FREE TO PHOTOCOPY THIS ORDER FORM

Pencil point proves performance of new Wurlitzer Soundboard

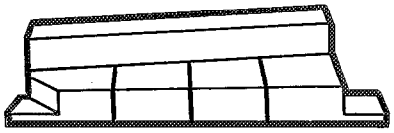


The grain of the wood in both top and bottom layers of the new soundboard runs parallel to the general direction of the treble bridge. The fine grain of the inside layer runs in the direction of the ribs.

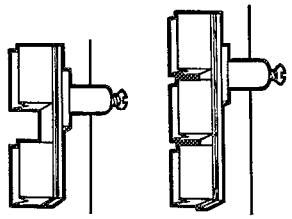
Picture below shows relationship of crowned rib to soundboard. Putting a crown into the underside of the ribs holds a crown in the soundboard. This soundboard is of uniform thickness throughout.

Wurlitzer's new all-spruce Duraphonic Multi-radial™ Soundboard transmits string vibrations more efficiently than any other.
To prove its responsiveness, touch the point of a sharp pencil to any area of the board and strike a note as you hold the pencil gently against the surface. Test it top, bottom, sides and center. You will feel vibrations that are both strong and evenly distributed.

Further enhancing tone production is a new Quadrasonic™ bass bridge built in four sections. Low notes do not oscillate the whole bridge, but transmit more directly into the soundboard.



Dynamic response of the new soundboard is so much greater, Wurlitzer has increased the damper size by 30% to control the greater tonal output.



That is because Wurlitzer now uses three separate layers of mountain-grown spruce in all of its finer pianos. These layers are placed at scientific angles so they transmit string vibrations (which travel mostly with the grain) to all corners of the board. The result is more volume, richer tone, and greater dynamic range. Crowning of the soundboard is achieved by crowning both ribs and soundboard liners. The soundboard itself is of equal thickness throughout and is therefore more capable of equal response in all areas.

Of still greater interest to technicians, this new soundboard is more stable, with a coefficient of expansion/contraction that is 80% lower than that of solid spruce. This means truer tuning and fewer problems caused by moisture or temperature variations.

If you would like assistance from Wurlitzer technical staff, call 800/435-2930 toll-free between 8:00 AM and 4:30 PM. For parts, call Code-A-Phone 800/435-6954. In Illinois call 815/756-2771.

WURLITZER®
The Music People
DeKalb, Illinois 60115

PIANO TECHNICIANS GUILD

FEBRUARY 1980 UPDATE

comments from the EXECUTIVE DIRECTOR

Your National Board of Directors met at the home office over the weekend of January 19th and 20th.

On Saturday, the board struggled with Guild problems for nine straight hours, and on Sunday, the 11 hours of meetings ran right through breakfast, lunch and dinner. The Seattle Chapter hosted a dinner Saturday evening, and it was a most pleasant exchange of friendship and camaraderie enjoyed by all.

Among the highlights of the board meeting were lively discussions on the certification examinations, budget proposal for 1981 and next year's convention policies and programs.

Included in the Update is a summary of the board actions to give the membership some idea of the duscussions and subjects which were covered. Bear in mind this is only a small portion of the meeting.

Don Morton, Chairman of the Certification Examination Committee, presented a proposal developed through the work of Dr. Al Sanderson and Jim Coleman and other members of his committee. A great deal of discussion ensued, with counter-proposals from the Cleveland Chapter and a personal dissertation from San Francisco Chapter member Mark Schecter. The whole thing will be placed in the hands of the council in July and it is hoped that shortly afterwards the program will be launched nationally.

(Executive Director's comments continued on the next page.)

YOUR BOARD in ACTION:

The Piano Technicians Guild Executive Board met in Seattle January 19th and 20th, and the following actions were taken:

GUILD MEMBERSHIP ROSTER: The roster will be in a new format this year, and will contain an alphabetical listing of all members, followed by a listing of regions by state and by chapter with names, addresses and telephone numbers. In addition, there will be a map showing an outline of the regional areas, plus all other traditional information as in the past.

> Special Note: Not all chapters have responded to our requests for telephone numbers. We must have this information by MARCH 1ST to be inincluded in the new roster.

NEW EXAMINATION & TESTING PROCEDURES: The Examination and Service Standards Committee submitted a full written report, and the board directed the committee to prepare the proposals for publication in The Journal and for presentation to council delegates.

SUSTAINING MEMBERSHIP APPLICATIONS: Ralph Kingsbury of the Wisconsin Chapter was approved for Guild Sustaining Membership. Arthur Tofte, Texoma Chapter, Arthur Gray, New York Chapter, and William Walker, San Diego Chapter, were all approved for Chapter Sustaining Membership.

NEW CHAPTER: The Little Egypt Chapter of New York was granted a temporary charter.

(Report on board actions continued on the last page.)

(Executive Director's comments continued.)

The 1981 budget proposal presented by Recording Secretary/Treasurer Charlie Huether and the Executive Director was submitted with some apprehension since budgeting in this day and age is like sitting in the middle of a 3-ring circus -- while watching one point of activity, there are numerous others all around you in a constant state of flux and frantic change. More guesswork goes into budget projections now than ever before and one can only hope that the economy settles down a bit before we arrive at that point in time next year. It was generally conceded that income must be increased in order to keep up with the wildly spiraling economy. It is felt by the board that this problem will be most familiar to the membership since you are no doubt experiencing the same vexing problems in your business enterprises.

The upcoming great convention in Philadelphia was discussed, and the registration fees adopted were based on the costs and programs to take place. The big social event of the convention will be a Block Party and Flea Circus. Games, booths, lots of eats, music by the Mummer Band, a Chapter Bazaar and entertainment will all add to the festivities. The big training thrust will once again be the Piano Technicians Institute, headed by Ernie Juhn. He is putting together a truly impressive list of classes and instructors. Because of the confusion surrounding reimbursement of instructors last year, a firm policy was adopted by the board to help offset some of the expenses and make the instructors's jobs easier. Walter Sierota is the local host chairman and is right on top of things at the scene.

Vice President Sid Stone was commissioned by President Bob Russell to report on the things a new regional vice president can expect to face in terms of his relationship with his family, chapter and members. I will share it with you since it has a definite ring of truth in it, albeit slightly exaggerated:

Upon accepting the responsibilities and duties of a regional vice president, you must take the following into consideration:

A. New relationship with your family:

Upon election, immediately call home and have your wife --

(1) Cancel all appointments for the next two months;
(2) Convert one bedroom, whether occupied or not, into a RVP Headquarters Office complete with desk, typewriter, copy machine, special phone and full supply of stamps and stationery;
(3) Put an ad in the newspaper for a fulltime secretary;
(4) Start the process of refinancing your home to the fullest amount so you will have not financial worries for at least a year;
(5) Put in storage your golf clubs, jogging clothes, sailboat and anything else that may be a hindrance to your carrying out the RVP duties;
(6) Inform your wife and children that during your term of office that they will have to get along without you for days upon end.

B. New relationship with your chapter: Now that you are an officer of the Guild, you have all the answers and are in a good position to run the chapter the way it should be run. So get yourself elected chapter president as soon as possible.

C. New relationship with members in your region: Be ready to answer any question about the Guild, having memorized the Guild bylaws and regulations in their entirety. When dealing with members in your region, you must be instructor, arbitrator, advisor, referee, pastor and den mother. To do this job adequately you must have:

(1) The eye of an eagle;
(2) The friendliness of a sparrow;
(3) The grace of a swan;
(4) The wisdom of an owl;
(5) The speed of a hawk;
(6) The night hours of a bat; then everyone will say, "That's some TURKEY we've got in there for regional vice president!"

DUES DUES DUES

Response to the annual dues mailing has been excellent. So good, in fact, that the accounting department reports foot-high stacks of mail each day for processing. Thank you for your patience. All payments will be recorded as fast as possible.

CHAPTER MAILING INFORMATION

The January mailing to chapter presidents contained:

1. Computer printout of members showing names and addresses to be entered in the roster. Any changes to the printout to be forwarded to the home office immediately by return mail.

   Special request for telephone numbers for the new roster.

   Changes/additions/deletions must be received by the home office no later than MARCH 1ST to be included in the new roster.

2. Chapter Achievement Committee mailing with cover letter and two copies of the contest form.

USE OF REGISTERED TECHNICIAN

Some members have questioned the use of REGISTERED TECHNICIAN in place of CRAFTSMAN on their billings. Council action last July changed the official language so that now all members who pass the highest Guild examination become REGISTERED TECHNICIANS.

The bylaws provide that Registered Technicians may use the titles:

Craftsman and/or Registered Craftsman
Registered Tuner-Technician (RT)
Registered Technician (RT or Reg. Tech.)

COPYRIGHTS

We have received requests from chapters and members to make copies of Guild films. Please not that all films and tapes have been copyrighted and may not be duplicated without Guild permission.

MEMBERSHIP SERVICES HANDBOOK

Many thanks for the response to the Membership Services Handbook. There have been some comments on the cover...here is one:

"The Membership Services Handbook is one of the best ideas I've seen in a long time. Congratulations! However, congratulations are not due to the person who chose the cover picture - a brass string spliced in the speaking length. For shame!"

When our former Managing Editor selected that picture for the cover, her reasoning was, "What better photo than a shot piano string to get the interest of a piano tuner-technician since that is one of the reasons he is needed. After all, this is a Guild service manual. It's all in the way you look at it. The manual isn't being distributed to the general public and if it was, they wouldn't know a broken string from a hole in a wall."

MEMBER CARDS

The old plastic membership cards are now outdated and no longer to be used by Guild members. The new ANNUAL membership cards are being printed for each member whose dues are fully paid for 1980. As the dues payments are received and processed by the accounting office, new annual membership cards will be mailed.

Due to the heavy flow of incoming dues mail there may be a small delay in distribution of the cards.

GUILD LIBRARY

There has been an unusually heavy demand for library items in the last few weeks, and we regret that it has not been possible to fill all of the requests for books, tapes, cassettes and films as fast as they come in.

We urge everyone to remember that others are waiting for the materials and would appreciate borrowed items to be returned as quickly as possible.

Please return films immediately after showing, and books and tapes with 30 days of receipt. Thank you for your cooperation.

(Board actions continued from front page.)

CHAPTER OFFICERS ELECTIONS: The board recommended that chapter officers elections be held in November or December in order to have the current officers entered in the annual roster listings, and to bring chapter elections into relationship with the Guild calendar year on dues and finances.

CHAPTER MANAGEMENT HANDBOOK: The home office will update this handbook.

SOUTHEAST REGION EXPANSION: The board approved for presentation to the council the expansion of the Southeast Regional boundary to include the Virgin Islands and Puerto Rico.

1980 PHILADELPHIA CONVENTION FLEA MARKET: A form will be included in the March Update so that chapters can indicate their plans to participate in the Flea Market and register their projects with a view to avoid duplication.

1981 INSTITUTE DIRECTOR: George Defebaugh was appointed Institute Director for the 1981 convention.

1981 POST-CONVENTION MEETING: The board approved a post-convention meeting to be held in Hawaii immediately following the 1981 convention in San Francisco. Full information on this post-convention package will be published as soon as it is available.

NEW MEMBERS LISTINGS: In future, the listing of new members in The Journal will be printed under the chapter's name.

PIANO PARTS & THEIR FUNCTIONS: The board is investigating placing publication of this book with a publishing company.

MEETING LEADERS GUIDES: A new guide is being prepared for each of the films in the Guild library. The guides will cover preplanning, presentation of the film, review, etc., and will give an outline of the contents of the film with notes of special interest.

CHAPTER NAME CHANGE: The board approved for presentation to the council the name change of the Greensboro-Charlotte Chapter to the Central North Carolina Chapter.

NEW WRITTEN EXAMINATION: The new written examination papers have been completed in accordance with council instructions in 1979. A full report will be presented at the council session before the new examination goes into effect.

BUDGET: The board approved the proposed budget for 1981.

DUES INCREASE: The Guild dues level was discussed at length in light of continued inflationary pressures and a dues increase will be recommended through the Bylaws Committee report to all chapter before the convention in Philadelphia.

CANADIAN REBATE: Canadian chapters are to report on their activities to promote the Guild in their area, in accordance with Guild bylaws requirements. The reports will be considered for publication in The Journal.

CANDIDATES FOR GUILD OFFICE: All nominees for election to Guild office will receive an outline of the duties and responsibilities of the office, together with a consent-to-serve form. The information will enable a member to more fully understand the obligations of the position before accepting the nomination.

CHAPTER PROGRAM AIDS: A new schedule of fees for Guild program aids was approved. Each film - $5. Each reel or cassette tape - $2 (with a maximum fee of $5 for more than two tapes in one mailing). Each library book - $2.

STEVE JELLEN MEMORIAL LIBRARY FUND: The board approved creation of the fund so that contributions could be made in memory of Guild members. The fund will be opened with a deposit in memory of deceased national officers. All contributions will be used to build a valuable library available to the membership, and all members are invited to contribute in memory of a friend or fellow member. Contributions will be permanently recorded in the Steve Jellen Memorial Library Fund, and the book will be on display during the annual conventions and published in the Update.