

Piano Technicians
Journal

October 1985





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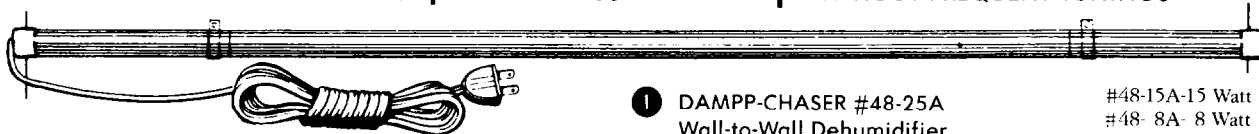


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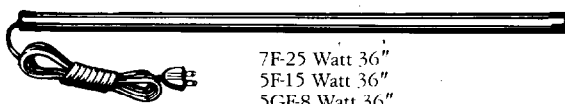
STABILIZES TUNINGS
TUNING WILL NOT HOLD
OR STAY ON PITCH
WITHOUT FREQUENT TUNINGS



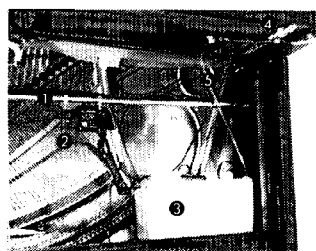
1 DAMPP-CHASER #48-25A Wall-to-Wall Dehumidifier

#48-15A-15 Watt
#48- 8A- 8 Watt

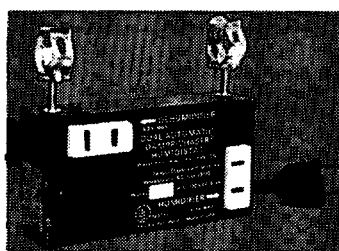
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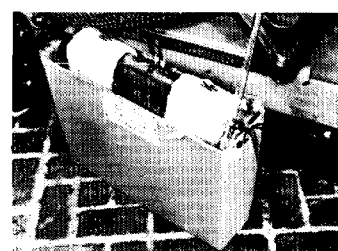
7F-25 Watt 36"
5F-15 Watt 36"
5GF-8 Watt 36"



2



DUAL-AUTOMATIC HUMIDISTAT #H-1
The Humidistat—is a dual-automatic control which cycles the humidifier and the dehumidifier on and off as needed to maintain ideal piano humidity conditions.

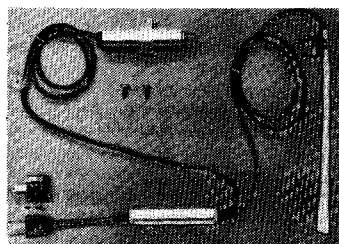


3

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The Humidifier—automatically adds humidity to the piano during dry spells especially during winter heating season. Self-contained reservoir.

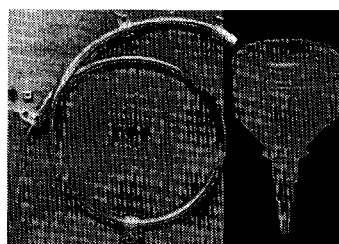


5-YEAR GUARANTEE



4

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ON THE COVER:

The other side of a Steinway grand soundboard. Detail taken from a model displayed by Steinway & Sons at the 28th Annual Convention & Institute in Kansas City.

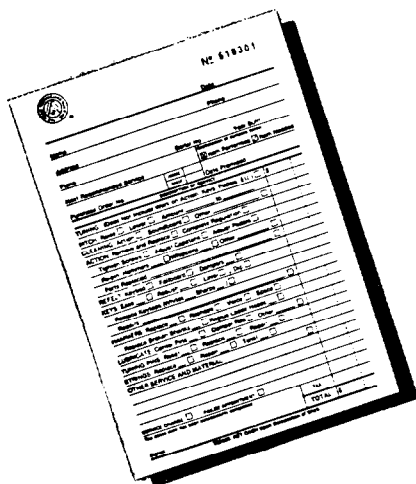
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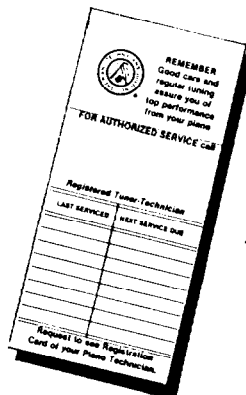


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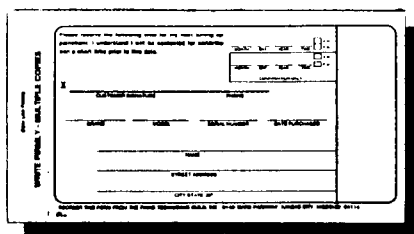
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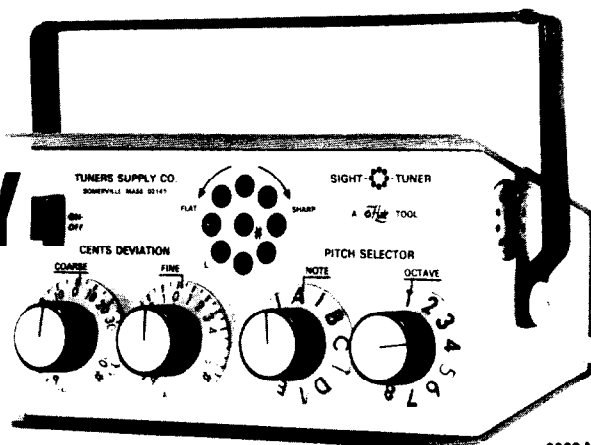
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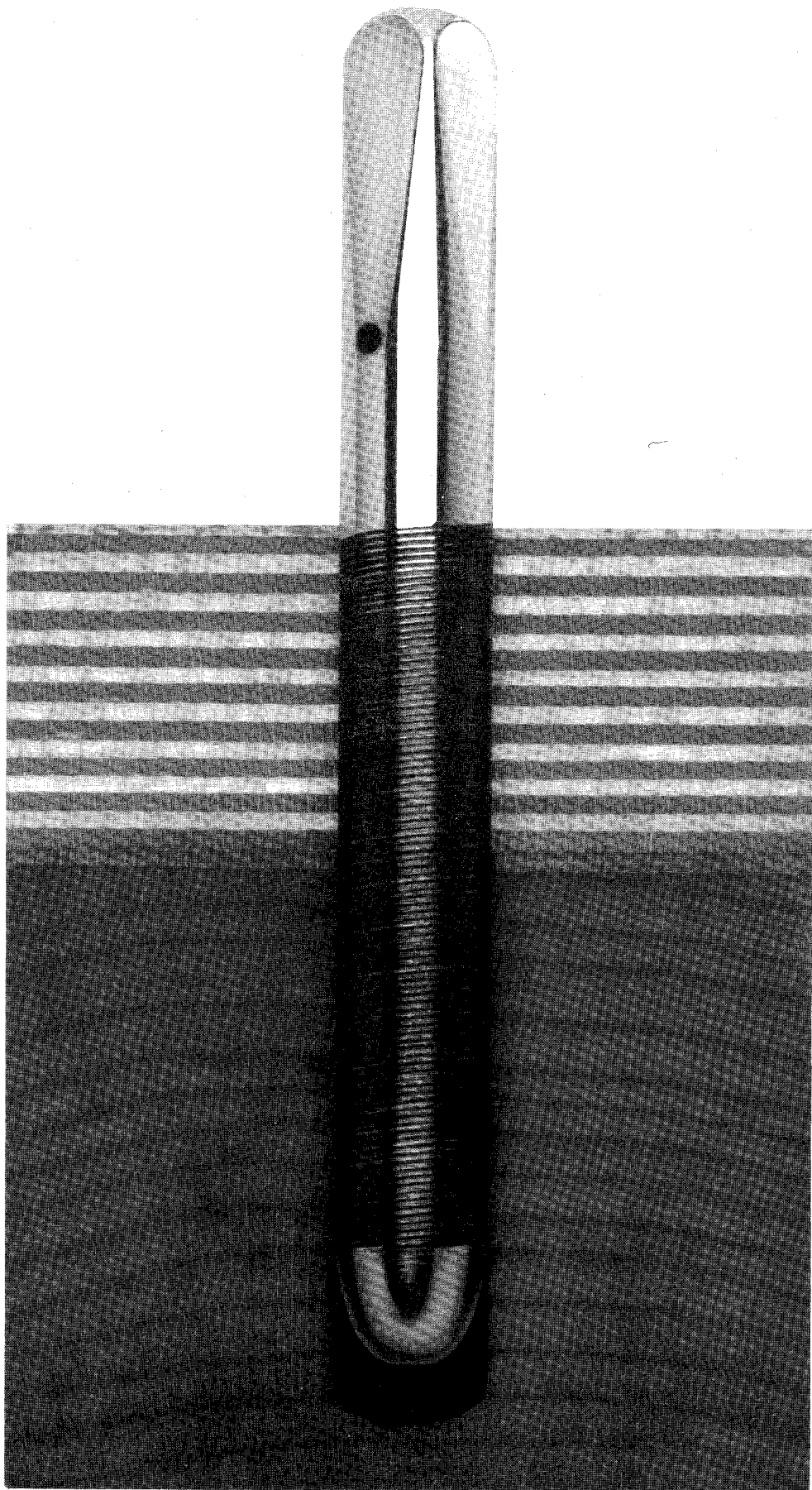
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Joe Vitti,
Tuner-Technician, New York

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Bob Erlandson,
Tuner-Technician, Omaha

"Multi-ply pinblocks are harder to shape, fussier to drill, and more work to string — and I put them in every piano I rebuild. Experience with the Baldwin block has convinced me it is the best. After all, the last sixty years of a piano's life are just as important as the first three."

Susan Graham,
Tuner-Technician, Oakland

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The President's Perspective



**Charles P. Huether
President**

Our New Tests

October is a landmark month for the Piano Technicians Guild. This marks the beginning of use of the recently completed and accepted Written and Technical Tests for membership. We will have in place, after the end of the month, completely new and standardized tests for every segment of our entrance qualifications.

The standardized Tuning Test in place for a number of years will be joined by the improved Written Tests and the Standardized Technical Tests.

These new tests, great improvements over those previously used, have been field-tested in many chapters this past year or more. They have been revised and refined as suggestions and criticism have come in. The developers of the tests have been unmercifully critical of their own work, reviewing and revising them over and over again as input and criticism have been received.

The results are documents we can be proud of and which will go far to help the image of our Guild. We owe a debt of gratitude to those who have worked so hard and so long in their development.

Marty Hess and Doug Wood must be recognized and thanked for their work on the written tests.

Otto Keyes and his assistants in the Chicago Chapter must be recognized and thanked for their work on the Chicago Technical test.

Norman Neblett and his assistants in the Los Angeles Chapter must be recognized and thanked for their work in the Los Angeles Technical Test.

Each Chapter should have copies of these tests with instructions as to how they should be handled. Previously used tests should be discarded. Only these tests can be used, together with the Standardized Tuning Test.

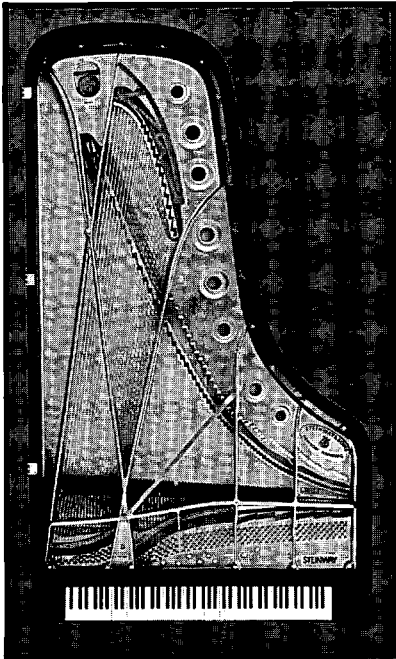
It is our hope that we will be ushering in a period of uniform entrance testing, a period when there will be few, if any, changes so that chapters and testing facilities will be able to work without having to change procedures or tests frequently.

This stability should facilitate the timely processing of new memberships, reduce the waiting time for processing, make entrance into the organization simpler from a bureaucratic point of view, and in general help us develop our membership strength and influence.

For the past 10 years, we have had tests in process of review, starting with the tuning test. The success of that tuning test, achieved after many years of work, set the standard for our efforts in revising the written tests and what we used to call the Bench Test.

The results we have achieved with all of these tests are worth of the time and effort expended by many people. We have a set of entrance tests which are fair, well developed, covering necessary essentials of our skills adequately, designed to be fairly administered in a uniform way. We should all be proud of what has been achieved.

The last link in the chain is the actual administration of the tests. The documents and instructions should be in the hands of every chapter by now. Make yourself familiar with them. Volunteer to help administer the tests. Take time to practice the administration techniques. Help to make or acquire whatever parts or mock-ups are necessary for the technical tests. In so doing, you will learn just how well constructed they are. You will learn how important teamwork and cooperation is to chapter welfare. You will be contributing to the continued growth of the Piano Technicians Guild.



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From The Executive Director



Barbara Parks
Executive Director

An Opportunity To Evaluate Our Progress

As this is written, we are hard at work on the 1985-86 directory. Directories can sometimes be odd publications. Rarely are they just a listing of members' names and addresses. Like ours, most directories include information about the organization they represent. Ours will include our bylaws as well as information about our history and our industry. It also will include information on some benefits of membership, things to help you get the most out of belonging to the Piano Technicians Guild.

Directories also are different things to different people. After the 1984 directory was published, some members told me that they hardly used their directories at all. Others use them to their fullest, dog-earing pages, writing notes in the margins and referring daily to the phone numbers of contacts all across the country.

Our goal is to make it a valuable resource book. Our membership listings alone are a veritable "Who's Who" of our profession and our industry. Being listed in it not only means that you are a leading member of your profession, it also means that you are part of a strong, vital and progressive organization.

* * *

When confronted by either curiosity or a lack of inspiration, writers often refer to back issues of their publication to see what might have changed in the intervening years. I turned back 25 years and found Edith Ann Davis, then associate editor of the *Journal*, involved in a similar project. She, likewise, quoted someone who was doing the same thing — Henry A. Eyles, a San Diego NAPT member who wrote in a 1925 issue of the *Tuner's Journal*:

"Think of what the tuner was 30 years ago (which now takes us back to the turn of the century)...The trade at large is beginning to look up to the

tuner's organization, pointing out that it is not like a union, but that the tuners are simply attending to business, solving their own problems, giving better service every day, and creating business not only for themselves, but for their close associates — the music dealers, as well."

Davis wrote, "Our young tuners of 1960 seem to realize this earlier in their business careers than did many of the older tuners. Recently this reviewer was surprised and delighted with the immediate grasp of the budgeting of time, transportation, number of pianos to be tuned per day, cost of materials and estimated income from his efforts, as summed up by a comparatively young tuner. His business acumen would result in profits not dreamed of by the old-timer. Time is a relentless element in his life, his income and final success, which the young tuner...quickly translates into profit or loss these days. Organization, chapter meetings, regional and national conventions all are powerful aids to our tuner's progress."

The forward-thinking young businessman of 1960, like his counterpart 30 years before, would find the 1980s a tough time in which to make a living. But one thing has not changed. The Guild, with its conventions, meetings and other methods of sharing information, still is a powerful aid.

* * *

In a way, a directory is a milestone. In producing it (or, for that matter, in receiving and using it), we have an opportunity to take stock of ourselves, to look back along the road we have traveled.

As we look at the names of those who built the Guild, and as we look at the tangible evidence of what it has become and how it serves its members, it's easy to see how far the Guild has come.

The International Scene

Fred Odenheimer
International
Relations Committee

Conventions And More

We are just about to board the train to continue our trip to Seattle after spending nine days in Waterton-Glazier International Peace Park. It was wonderful to be there, especially since the weather was gorgeous, the bear, elk, deer, and mountain goats obliged by being visible, the wildflowers were at their best and hiking was good.

Both the Guild and IAPBT conventions were certainly successful affairs. We had representation from a number of foreign countries and Institute Director Ernie Juhn was able to get a number of top-notch instructors from various parts of the world. This certainly helped the international character of the convention and technical institute. By now everybody should be home, with the exception of vacationers like us.

The IAPBT convention came off smoothly, thanks at least in part to the wonderful cooperation of the Home Office, Ginny Seevers, Barbara Parks and all the unnamed specialists and helpers and Larry Goldsmith of the Journal. No task was too small to be attended to immediately. It was a pleasure to be part of it.

New IAPBT officers were elected, with Charlie Huether,

president; Bo Jung Lee, Korea, vice president; and Kazujuki Ogio, Japan, remaining secretary. In addition, three board members were elected: "Tom" Liu, Taipei; Seiichi Utsunomiya, Japan; and Fred Odenheimer. New members approved were the Taipei Piano Technicians Association and single members Ralph Long, Matthias Stoeckle and Johannes Ruoss. There were some minor changes in the bylaws and the new logo was approved.

In order to receive your beautifully designed pin free of charge, you must be a member of "Friends of IAPBT." Membership is \$15 per year. Send your contribution to the Home Office, specifying "Friends of IAPBT." If you are a member already and you have not received a pin, then put in a request to the Home Office and they will send you one.

The next convention will be in Toronto, Canada, in 1987 following the next convention there.

Dan Evans is already hard at work putting together a Guild-sponsored trip to Europe this coming year. For information, please write to Dan Evans, 4100 Beck Ave., Studio City, CA 91604 (See page 10).

PINBLOCKS REPAIRED BY EPOXY

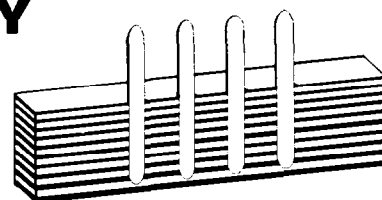
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Both are two part epoxy systems and cure at room temperature. When cured, they become extremely strong, hard, clear plastics. A pinblock hole filled with the epoxy and re-drilled now has the extra strength needed to prevent cracking as the pin is torqued.

Other potential applications include (but are not limited to) filling in cracks on soundboards, strengthening of deteriorating wood surrounding bridge

pins, bolting ribs back to the soundboard, and filling in bridge pin holes that need to be changed or repaired. Try these epoxies for yourself, and see how they enhance the restoration process.

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1986 Piano Technicians Guild European Tour

Dan Evans
International Relations
Committee

The International Relations Committee is excited to announce that a tour of Europe is scheduled for Spring 1986.

We will leave May 16 from New York and for the next several weeks visit some of the most beautiful and interesting parts of the old country, returning to New York on June 8. From northwest Germany we will cross into East Germany and Czechoslovakia, seeing life on the other side of the wall. Then we will experience the thrill of seeing some of the most beautiful mountains in Australia and Switzerland. There will be more thrills driving through the Black Forest, a train ride up the Jungfrau, and a day at a famous spa.

Along this fantastic route which the most privileged tourists enjoy, we will stop at places most meaningful to all piano technicians. Gracious hosts will show us how some of the finest pianos are made, how the highest-quality piano wire is drawn, hammers made, and the way actions are produced from chosen



Piano Technicians Guild China tour group and Chinese hosts at Pearl River Piano Factory, Canton, China, June 9, 1983.

trees. Would you like to see — and perhaps play — Cristofori's pianoforte made in 1726?

There will be many "piano business" stops, so this will be an official Guild tour. Under present IRS rules, technicians can deduct about 25 percent of the cost of the trip. Perhaps \$600 to \$700!

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bus and an outstanding knowledgeable guide throughout the entire time, first class accommodations and fine food.

Start saving and planning now for the trip of a lifetime. Just ask anyone who has been on one of our tours! A complete itinerary and application form will be in the *Update* section shortly.

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Jack Krefting
Technical Editor

Q: *I thought Tom Lowell's article on plate suspension systems and downbearing analysis was excellent, but I'm having trouble visualizing a few things. Can you help me?*

Could this system be used when the pinblock is attached to the frame as well as the plate of the piano? It would seem shimming or shaving would be necessary in the pinblock area to have a solid mounting. Is it enough just to screw the pinblock to the plate and eliminate screwing it to the rim shelf when it was done previously?

I don't see how leaving the one rear plate screw undrilled would allow enough support to set up the plate position using this new suspension.

How can you be sure the plate is sitting squarely when drawing the plate screws down? How tight would you draw them?

While reading downbearing, isn't it enough to see the difference in your dial indicator readings from the front segment to the rear segment to determine if you have

more front bearing than rear? Why are angle numbers important? And what kind of numbers are we looking for?

Kent Gallaway
Ripon, WI

A: This system certainly can be used when the pinblock is attached to the rim as well as the plate; in fact, the only maker using this system (Baldwin) uses heavy screws to attach the block to the rim. It is a good point to raise, though, because obviously the possibilities for error abound in even the best of quality control situations. The top of the inner rim is probably the best point of reference because it is cut all around with the same saw, and both the pinblock and the soundboard are designed to mount directly onto it.

But what if the plate happens to be a bit too thick or too thin, thus affecting the string height? Or, for that matter, what if the

pinblock itself is the wrong thickness, or the bridge the wrong height, or the crown unusual in some way? It may not have been apparent in Tom's article, but in many ways it is more important to hold the string height dimension at the strike point than to hold a particular draft angle for front bearing, which is not to diminish the importance of the latter but rather to place it in perspective. The tone is probably going to be affected more by over-centering hammers, for example, than by a slight downbearing variation. True, that condition can be accommodated by altering the hammer boring distance or the action height above the keyframe, but this can lead to other problems like woodiness of tone from too much molding above the shank, or capstans that are at the limits of their adjustment, letoff and drop screws at the end of their travel, and so on. When one dimension is changed, inevitably the consequences of that decision are more far-reaching than was first supposed.

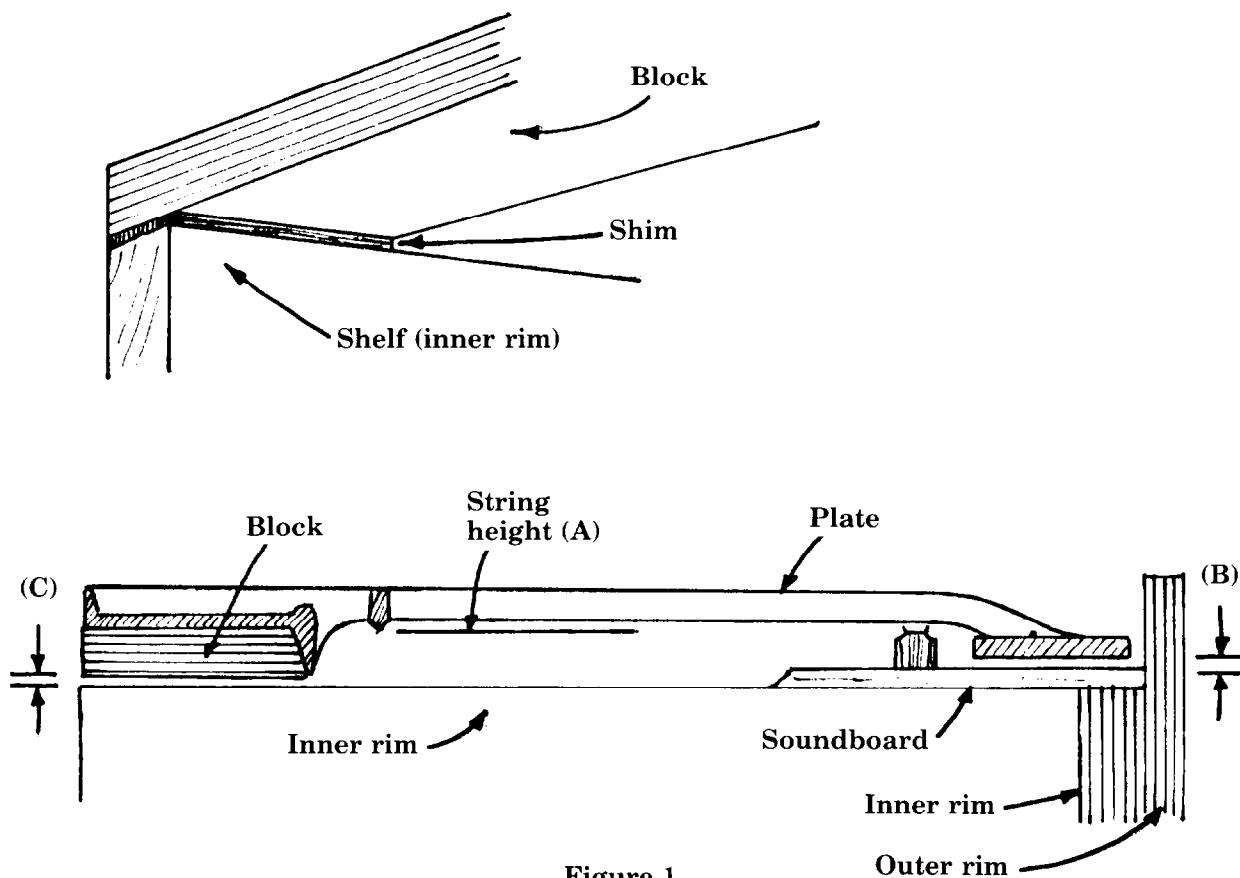


Figure 1

Figure 1 shows a cross-section of a plate, pinblock and rim assembly with three particular dimensions called out. The string height, usually measured from the keyed at the strike point, is an important dimension as discussed above, and is directly affected by plate height and bridge elevation. If the technician will be replacing the bridges, then the latter is no problem because it can be adjusted as required, regardless of the plate height; but if not, then the plate must be set for the designed draft angle. That angle, which is usually greatest in the high treble and reduces to virtually nothing in the low bass, is theoretically the same as the frontside downbearing angle, assuming that the top of the bridge is level and no roll is present. The difference in elevation between the forward termination and the bridge top would taper in a typical design from about 1/64 inch at note 1 to about 1/8 inch at note 88, depending of course on the effects of relative humidity on the crown and bridge height.

Now, assuming that the block is set onto the rim but not yet fastened down, the plate is put in position and attached to the block. Raising or lowering the tail of the plate not only affects dimension B, but also dimension C, as noted by Gallaway. At this point, if the string height is found to be improper, it will be necessary to adjust the height of the block by either cutting it down at the underside of each end, or building it up with shims. This cutting or shimming should obviously be done with consideration for whatever angle other than zero that may exist at C, otherwise an unnecessary stress will be placed on the block and plate when the block-to-rim screws are driven.

The second part of the question addresses the one undrilled hole at the tail. The reason this gives adequate support is that the front end of the plate is supported at both ends of the pinblock, so the single support at the tail gives a three-point suspension not unlike the three legs of a grand piano. The jacking screw holds the plate

in a particular elevation while the first perimeter bolt is installed, that's all. Once that first screw threads into the inner rim, the height of the tail is established and cannot be changed without removing that screw. If the concept of the jacking screw is confusing, readers will note that the tail could just as well be supported at the optimum height with a wedge, or a hoist, or by any other means.

Using this unique system, it is not necessary or even desirable to tighten the perimeter bolts with any real force, because that wouldn't change the height of the plate at all. Because the plate itself is threaded, one could theoretically substitute a long piece of threaded rod for the perimeter bolt as shown in Figure 2. This rod could be turned up or down any number of revolutions without the plate moving up or down, so long as the rod remains threaded into the plate and the inner rim. One could even back the screws out a turn or two without any ill effect at all, except of

course that this would allow the washers to rattle and buzz.

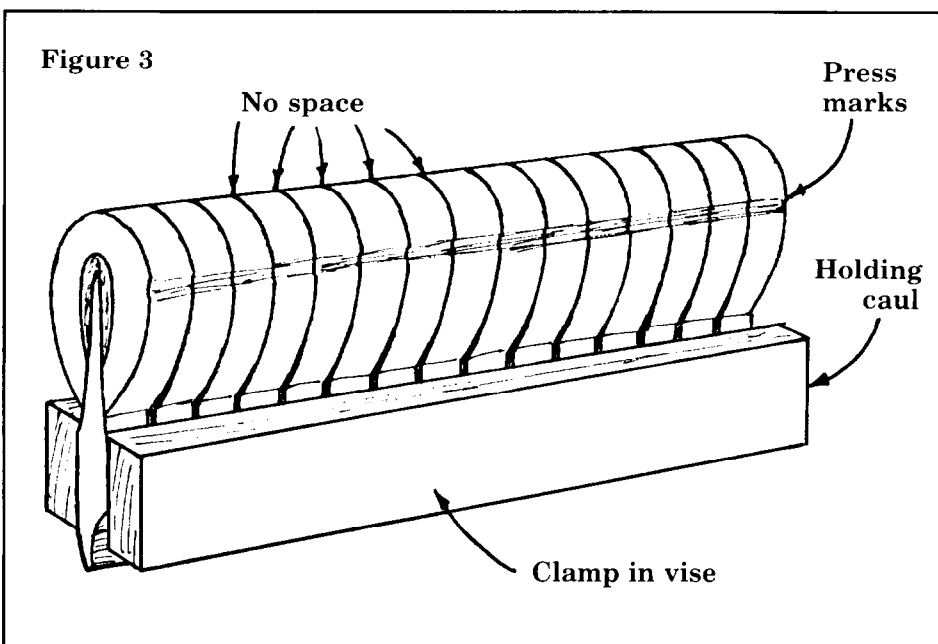
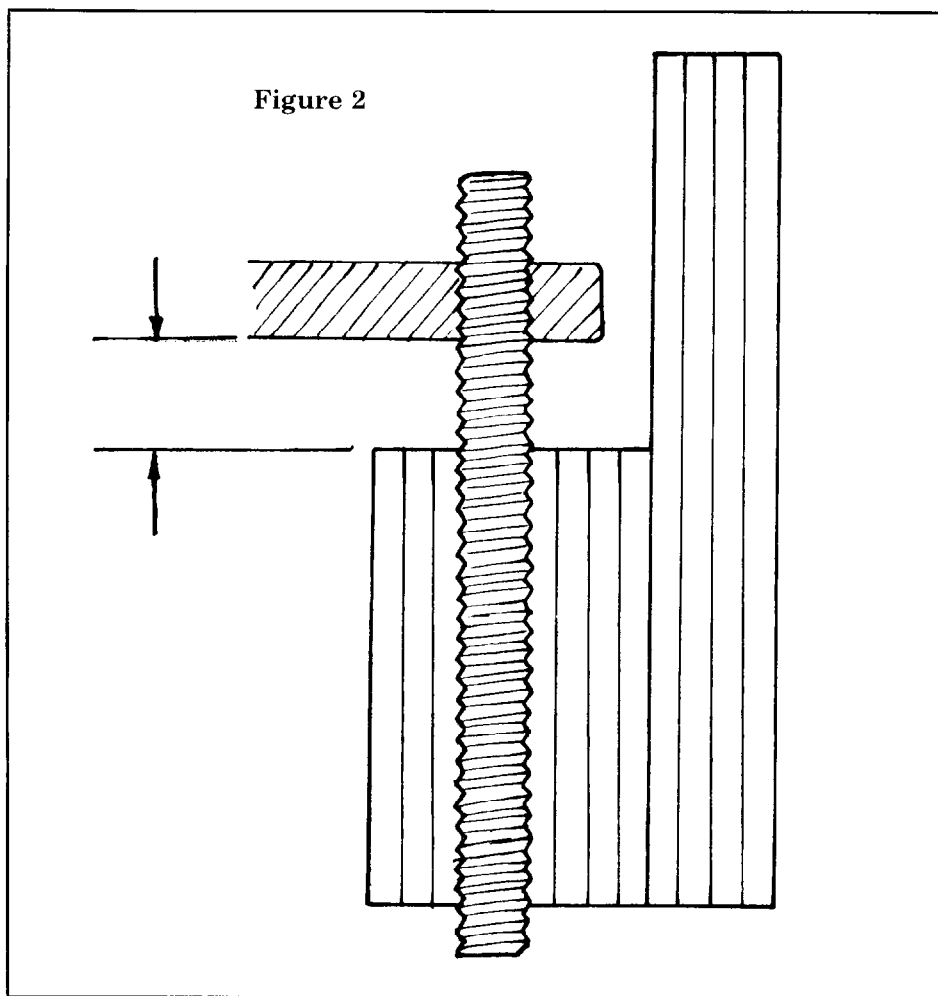
Finally, it is probably just as well not to place undue emphasis on specific angle numbers because the performance of the piano isn't apparently affected that specifically, which is a good thing because those numbers change continually with the weather and aren't consistent from note to note anyway, even at a given moisture content. Although I certainly agree with Lowell that downbearing analysis is important, and indeed I always check it carefully every few notes throughout the scale before tearing a piano down, I also think it is possible to get too concerned about small details, especially if the added trouble isn't justified by a superior job in some measurable way, or if that degree of accuracy cannot be maintained outside of a laboratory environment.

Having said that, we also want to emphasize the importance of research work such as is being done by Tom Lowell, who is now at work on a second article on the same topic. We hope to present it before the first of the year.

Pre-Filing Hammers

Last month, as an adjunct to a question that mainly addressed removing the cup-shape from new hammers, we made a couple of statements which may be misleading to some, and we therefore wish to add a few thoughts:

The technician who does a lot of hammer hanging and voicing — more than 10 sets in the preceding year, for example — will often have a pretty good idea of how much filing is going to be needed, especially if that technician consistently uses hammers made by the same supplier. If the hammers are ordered unbored, unshaped and untapered, it is easy to gang-file groups of hammers because they can be clamped together in a vise between two blocks just as they were before being cut apart. Simply line up the press marks, which are faint ridges or dimples on the shoulders where the side caul and main caul joined, and gang-file them. The trick, as always, is to take off even layers of felt all the way around the perimeter, and to remove about the same amount



from one group as from the previous one.

If the sides of the hammers have already been tapered, it is still possible to gang-file them, but it is a lot harder to line them up straight. In *Figure 3*, we see a group of tapered hammers between two

wooden blocks, carefully aligned so the tails are evenly spaced while the tops are touching. Needless to say, if they cannot be accurately aligned for whatever reason, do not attempt to file them in this fashion; that would be almost as bad as gang-filing a set of hammers after

they have been crookedly hung, and for the same reasons.

While it is certainly possible to gang-file with a paddle, taped sandpaper may be a better method, especially with a new set of hammers. That new set doesn't have grooves to remove, so it isn't necessary to remove nearly so much shoulder felt, and the flexible paper makes it easier to stay within the layers of felt, provided of course that hand pressure is placed against the back of the sandpaper when it is on the shoulders.

Lay the sandpaper face down on a workbench and apply tape to the back as shown in *Figure 4*. The purpose of the tape is to strengthen the paper so it won't tear, and any kind of tape will work in a pinch,

even cellophane tape or masking tape. The best choice in our opinion, considering cost, strength and flexibility, is the brown plastic package-sealing tape offered by 3M and other suppliers. The best paper for the purpose, again in our humble opinion, is open-coat garnet paper in the grit designations shown in the accompanying box.

It is our opinion that the paper should be pulled only one direction even in the coarser grades; this seems to require less felt removal to achieve a fine, dense perimeter layer on the striking surface. That, if true, translates into less work for the technician and more remaining hammerfelt for the customer, so everybody wins.

Finally, the statement "One can always needle some more if necessary, but bringing up a set that has been over-voiced presents a whole new set of problems and compromises" implies, on second reading, that needling a hammer *always* makes it quieter. Not true. Frequently a set of new hammers will sound loud enough on attack, but will die away quickly, and judicious low-shoulder needling will make the tone bloom, increasing the decay time and apparent volume.

It is embarrassing to reread one's own material and find so much to criticize about it, especially when it was written only a month before.

Reader Response

A radial drill press such as you describe in the May Technical Forum is available from U.S. General Tool Co., 100 Commercial St., Plainview, NY 11803 and is built by AMT. It is a light-duty machine and the 2 1/8-inch stroke would be just barely adequate for drilling pinblocks.

Gary Schlichting
Washburn, WI

The drill press pictured in past Journals is commonly called a radial arm drill press. I bought mine from AMT but I believe they supplied Sears as it looks identical to theirs. Some other makers: Rockwell Power Tool Division, 400 N. Lexington Ave., Pittsburgh, PA 15208; American Machine & Tool

Grit Purpose

60	Removal of excessive amounts of felt, as when reshaping an excessively worn set.
80	Moderate felt removal, as when doing the initial filing or pre-filing on a new set.
120	Follow-up filing after using the 60-grit paper on an old, badly worn set.
150	Follow-up filing after using the 80-grit on a new or slightly worn old set.
220	Final polishing, new or old hammers, paper pulled one direction only for fine, smooth surface.

Cover back with tape
then cut to size

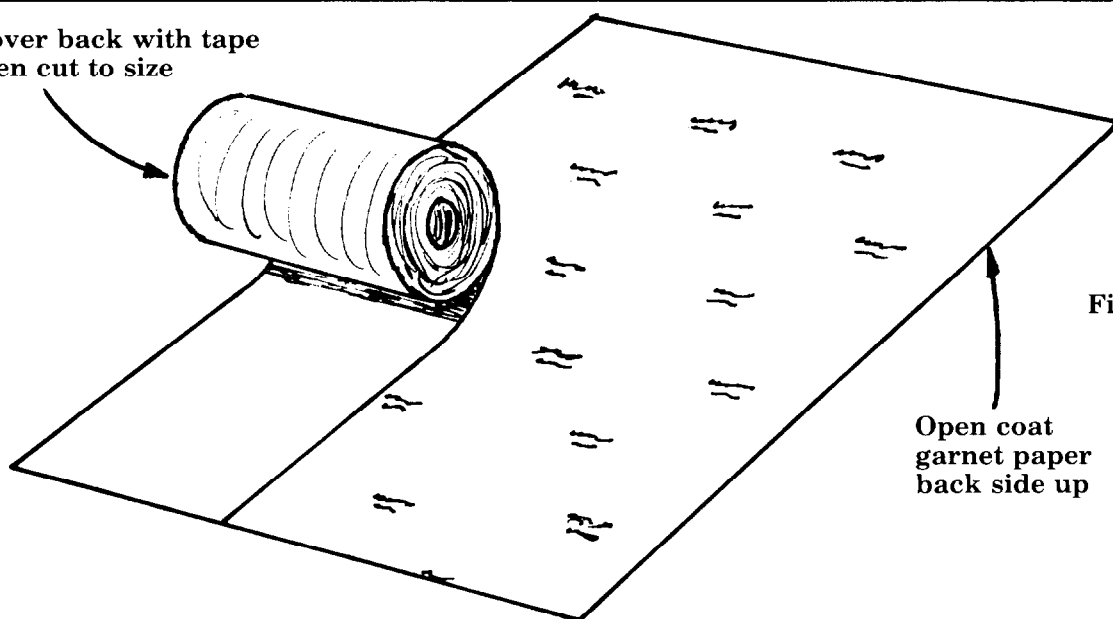


Figure 4

Open coat
garnet paper
back side up

Co., Fourth Ave. at Spring St., Royersford, PA 19468; and Sprunger Power Tools, PO Box 1621, Elkhart, IN 46515.

Kent Gallaway
Ripon, WI

(Note: we didn't say "radial arm" because that feature is not necessary for a pinblock-drilling apparatus. It just happens to be a feature of my unit, which was the one drawn. — J.K.)

On page 18 of the July 1985 Journal, a method is shown for regluing ribs to a vertical piano by inserting wedges blocked between the rib and a pipe clamp which is secured to one of the backposts. While this can be a useful method

in some instances, beware of popping the soundboard loose at its perimeter by applying too much pressure to a weak old glue joint! I've seen any number of old uprights with weak, thin tone in which the board was unglued three-quarters of the way around the edges, and in a piano with loose ribs, there's a good chance that the soundboard might pop loose, too, without support from the front, something usually possible only when the plate is out.

Arthur Reblitz

When we received that article from Jim Donelson, we assumed that it was understood that the board would be supported from the front side, which we're sure Jim

does. One common method is to use the plate itself to support the board by placing one or more wedges between board and plate. Our thanks to Art for pointing out the omission, however, and as always we think all of this month's contributors.

We are always looking for good material for publication and would especially like to have one or two more regular writers who could commit to a column each month. If you have ideas along these lines, or have any technical material at all to contribute, please send it to me at this address:

Jack Krefting
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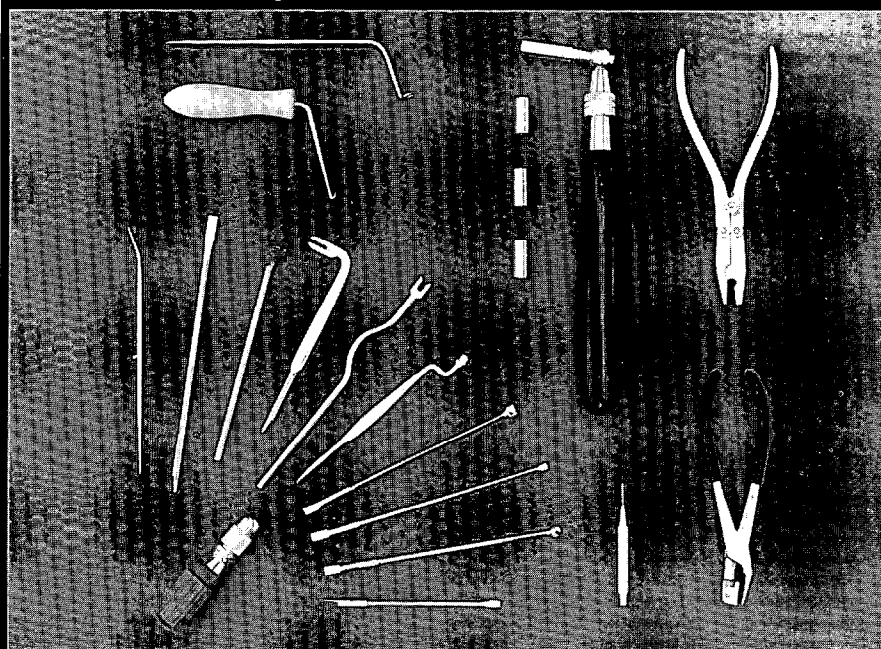
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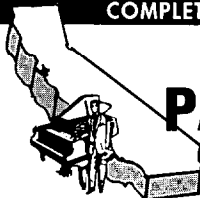


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ALL ABOUT ADHESIVES

Epoxies: Aunt Mathilda's Teacup And Wooden Boats

Del Fandrich, RTT
Sacramento Chapter

In my last article I wrote about some of the mechanical details and principles involved with the gluing process. This month I will examine an adhesive family that seems to defy many of those principles: epoxies.

Piano technicians seem to have two basic attitudes about epoxies. One is a nearly complete avoidance of epoxies for any purpose. The other, just as extreme, is a tendency to want to use epoxies for all types of piano repairs. As with most somewhat controversial subjects (or in this case, materials), reality lies somewhere between the two extremes.

Epoxies have many distinct advantages over conventional adhesives for some applications, but they also have disadvantages which make them undesirable for others. Let's take a look at the major advantages and disadvantages and see just where these products fit in our arsenal of adhesives.

Advantages

Epoxies differ from other adhesives in several important ways.

Adhesion. Unlike most other adhesives, epoxy can be, and is, formulated to bond to a very wide variety of materials. Curing is by

chemical reaction rather than by drying or evaporation of solvents. This means that epoxies can cure in the absence of air or oxygen. Some epoxies designed for wood boat repair are designed to bond and cure even when applied under water!

Cohesion. Epoxy resins form highly cohesive bonds. Remember

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...reality lies somewhere between the two extremes. Epoxies have many distinct advantages over conventional adhesives for some applications, but they also have disadvantages which make them undesirable for others.

//

that cohesion is the molecular attraction that holds the body of the adhesive together — in other words, the internal strength of an adhesive. In the case of epoxy, this internal strength is extremely high. This means that its gap-filling abilities are very good since the strength of the adhesive generally exceeds the strength of the adherends. This is especially true when the adherends are wood, although the materials failure rate is quite high even when used with adherends such as aluminum and other metals.

100 percent solids. One important specification of any adhesive is its "solids content." This is the percentage (by weight) of the non-volatile matter in an adhesive. Since epoxies have essentially no solvents (they are designed to cure by chemical reaction rather than loss of solvent) they have a high solids content. Most other woodworking adhesives, even formaldehyde-based products, lose water or some other solvent during their cure cycle. Epoxies do not — at least not enough to notice.

Low shrinkage. Since epoxies have no solvents to lose, they shrink very little as they cure — one or two percent is typical. When used to bond wood — especially soft

wood — it will sometimes look like the epoxy has shrunk, but this is generally the result of its penetrating into, or saturating, the wood surfaces. What shrinkage there is can be reduced even further by adding various inorganic fillers.

Low creep. Epoxies are thermosetting resins which, as a group, tend to maintain their shape under prolonged stress much better than do thermoplastics such as polyvinyl acetates or aliphatic resin adhesives; hence they are generally classified as having moderate to low creep. Even the flexible (the term is relative) epoxies have a limit to how much they will give under stress. Inorganic fillers can also be used to control or reduce what flexibility they do have.

Moisture/solvent resistance. Epoxies are resistant to water and almost all solvents. This quality has prompted a lot of research which has resulted in some pretty rapid advances in the use of epoxies as coatings as well as adhesives. In fact, they are not just water-resistant, but can be made vapor-resistant. It is the only clear coating available that I know of that can be used with, or on, wood which can completely seal the surface against vapor. This makes the wood impervious to changes in humidity — interesting thought, isn't it? (Lacquers and varnishes are good moisture sealers but do not block water vapor — they slow it down, but they don't block it. To test this, measure the dimensional changes of a finished piano soundboard as it is exposed to variations in humidity.)

Easily modified. Epoxy formulations can easily be modified by the manufacturers to suit many different applications. In addition, it is quite easy for the user (us) to modify the working characteristics of the basic product through the addition of various fillers. (In fact, some of the products which I'll be describing later — both epoxies and various fillers — are designed to be used and modified in this manner.)

Disadvantages

Unfortunately, epoxies are not perfect adhesives, either. Their major disadvantages are:

Toxicity. Most of the epoxies we work with can cause dermatitis. A

...it is quite easy for the user (us) to modify the working characteristics of the basic product through the addition of various fillers.

person's sensitivity to uncured resins can increase with repeated exposure. Once a person has developed sensitivity to the uncured resin, there is little that can be done to reduce it, so all steps possible should be taken to guard against the problem. The primary sources of the irritants, incidentally, are the hardeners. Once the hardeners are diluted in the resin the toxic risk is greatly reduced, although there will still be some danger.

Rubber gloves, of course, will provide excellent protection against the irritants in the epoxy; however, they can make delicate work nearly impossible. An easier, but still effective method of protecting your skin is to use a cream-type chemical barrier. SBS46 is one such product. It is applied just like any skin cream just prior to handling epoxies. When you are finished, you should thoroughly clean your hands to remove all traces of uncured resins. *Do not use solvents such as lacquer/epoxy thinners or acetone.* They will dilute the resins and carry them into the skin. An industrial hand soap such as SBS-30 is formulated specifically for removing these resins. Both of these products are available from local industrial suppliers or from several of the epoxy distributors listed at the end of this article. The fumes from epoxy resins are not supposed to be particularly harmful, but it's still a good idea to work in a well-ventilated area.

If you develop any type of skin rash, either while working with epoxies or immediately following exposure to them, you should see a

doctor as soon as possible. Many of the newer formulations are designed to reduce this problem to a minimum but none of the products that I am aware of have completely eliminated it yet.

Short shelf life. In general, epoxies have a relatively short shelf life; usually on the order of six to 12 months. The shelf life can be extended somewhat by storing it in a very cool area — not freezing, though. Conversely, storage in warm to hot areas will shorten its shelf life considerably. If you have any reason to question the freshness of any epoxy, test a sample before using it on anything critical. It may seem like throwing away money, but in the long run, the cost of repairing a weak bond is much greater than the cost of the product you're discarding.

Low (or short) pot life. Compared to other adhesives, most epoxies have a rather short pot life. (The pot life for most epoxies is printed on the package label.) There are some products, however, that are formulated specifically to extend the pot life — check the manufacturers' literature. Cooling the two components prior to mixing will extend the pot life somewhat, but will also make the mixture stiffer and harder to work with. Notice, too, that the open assembly time will generally be considerably longer than the pot life. Epoxies are thermosetting materials which generate heat during the curing process and the amount of heat generated is directly proportional to the mass of the material present. This internally generated heat acts to speed up the curing process quite a bit, which in turn generates more heat which...well, you get the idea. A large mass of epoxy in a "pot" will cure much more rapidly than will the much thinner layer of spread adhesive.

High cost. All epoxy products are expensive. In many cases, their high cost is offset by the jobs they do — some of which can be done by no other readily available materials. Used appropriately, the high cost of epoxy, while still significant, is more than offset by the time saved over alternate methods of doing the same job.

Aunt Mathilda's Teacup And Wooden Boats

There are probably more different types and formulations of epoxies available to us than any other type of adhesive. Stores of every type — hardware stores, “home improvement” stores, drug stores, grocery stores and whatever stores — seem to have at least two or three different types of epoxy available. For the most part, I do not recommend any of these products. For one thing, there is no indication of freshness. Well, actually, the fact that it's there is an indication of its age and that is part of the problem. Let me explain.

First, a chemical manufacturer somewhere brews up a nice batch of generic epoxy. Since the manufacturer really has no idea how the product will ultimately be used, what it will be used for, who will use it, or what the conditions will be like when it is used, the formulation has to have certain chemical safeguards built into it. Many compromises have to be built in so the product will work once it finally does reach the ultimate user.

And the path between the manufacturer and the user can be long, indeed. Once it is manufactured, it may go to a distributor who will package it and store it for awhile until it is ordered by a wholesaler. Then it will go into the shipping chain where it will be stored and/or shipped under something less than ideal conditions. (Have you ever spent a few weeks in an uninsulated warehouse in the summer? Or how about riding in the back of a closed and sealed semi-trailer or railroad car on its way across the Mohave Desert on a sunny summer afternoon. No, neither have I. But I'll bet it sure gets warm in both of those places. Now remember what I said about storing epoxy in cool areas?) Once it arrives at the wholesaler's warehouse, it will be stored again until it is ordered by a retailer.

Finally it is delivered to the retailer who will promptly put it in his storeroom until his shelf stock gets low. Finally it will get to the shelf — the back of the shelf; first in, first out, remember? — where it will remain until all the other packages in front of it are gone.

Ultimately, it is purchased by Uncle Charlie who takes it home

I'm told that some of the wooden mine sweepers built with epoxy in the 1940s are still afloat. Now I would think that that is pretty rough use — almost as rough as some pianos that I've seen recently.

and uses it to repair Aunt Mathilda's broken china teacup. Since it is now well over a year old and has spent a considerable amount of time stored at temperatures in excess of 110 to 120 degrees fahrenheit, and possibly some time at or near freezing as well, it fails the first time Aunt Mathilda picks up her cup and she spills hot tea all over the members of her bridge club. And what she has to say to Uncle Charlie I couldn't possibly repeat here...

When I learned about epoxy and began to use it many years ago, my experiences were much like Uncle Charlie's. I kept hearing about how great epoxy was, but I had a lot of “unexplained” failures no matter how carefully I tried to follow directions. I had almost reached the conclusion that epoxy was just one more of those over-hyped products whose only reason for being was to make its promoters wealthy at my expense. And then I got interested in *wooden boats*.

I soon discovered that many wooden boats are held together entirely by epoxy. No other adhesives or fasteners of any type were used. Eventually the thought crossed my mind that perhaps those boatbuilders knew something that I didn't know about epoxy. I began to study what they were doing and how they were doing it, and guess what? They did.

The first thing that I learned was to avoid purchasing any epoxy product from the traditional hardware/home store retailers. First of

all, formulating a general-purpose epoxy is a lot like trying to make a general purpose, one-size-fits-all shoe. One size and style of shoe just isn't going to fill everyone's needs. Secondly, as Uncle Charlie found out, we can only guess at what has happened to the product since it was manufactured and we can only guess at how old the product really is.

I now purchase most of the epoxy I use either directly from one of the distributors specializing in supplying epoxies to boatbuilders, or from a wooden boat builder, who orders it directly from the manufacturer in 55-gallon drums. He goes through one or more of these drums every month. I know that when I buy it from him the product is never more than a month or two old. Also, I know that the epoxy I am purchasing has been formulated specifically to bond wood: wood to wood, wood to metal, wood to whatever, but definitely wood!

It has now been some years since I have had a failure with an epoxy joint, and I don't expect to have any in the future, either. I'm told that some of the wooden mine sweepers built with epoxy in the 1940s are still afloat. Now I would think that that is pretty rough use — almost as rough as some pianos that I've seen recently.

The following is a description of some of the epoxy products that I am familiar with. I have tried to stick to products you can buy without too much trouble. They are all available by mail nationally, if not locally. They are all products that I either have used or still do use. There are other types and brands which may also be readily available that I cannot discuss simply because I have not used them. (Once again, your comments about either products or techniques would be greatly appreciated.)

Products Available

The epoxy products that I use most frequently are manufactured by *the Gougeon Brothers, Inc.*, 706 Martin Street, Bay City, MI 48706. Their products are sold under the trade name of “The WEST System” (WEST stands for Wood Epoxy Saturation Technique) and are available either directly from them or from one of their regional distributors. The WEST System is a group

of component parts which have been designed (or selected) to work together compatibly.

The Gougeon Brothers have an excellent manual "The WEST Manual" available for \$2. At least that's what it cost when I got mine. I highly recommend it. It is primarily written for boatbuilders but the principles are the same. They will also send you the names and addresses of their distributors upon request.

Here is a brief listing and discussion of the basic component parts of this system.

#105 Resin. This is the basic epoxy resin. It has been specifically formulated to have excellent penetrating and wetting characteristics. It was designed to work especially well with wood.

#205 Hardener — Fast. Using this hardener gives a pot life of 10 to 20 minutes and cures hard in approximately five hours at 70 degrees fahrenheit.

#206 Hardener — Slow. This hardener gives a pot life of 20 to 30 minutes and cures in approximately nine hours at 70 degrees. This is the hardener I generally use. I tend to need all the pot life I can get, although if the shop is on the cool side, #205 is a little more reactive and will get the cure cycle started a bit sooner.

These three products (one resin, two hardeners) make up the epoxy resin portion of the system. These products are supplied in appropriately sized containers (they use a five-to-one resin-to-hardener mix ratio) with special plastic pumps available (at extra cost, of course, but they are reusable and they do last awhile). One pump from each container gives the proper ratio for mixing.

Fillers

The mixed resin and hardener can be used just as it is mixed as an adhesive, or one of the following fillers can be added to alter the characteristics of the basic mixture to fit the particular needs of the application at hand:

Filler — Microfibers. Extremely fine cotton linen fibers. This is used to make the mixture non-thixotropic, i.e., non-sagging while curing. It also makes the cured mass harder and stronger while still allowing a slight amount of flexi-

bility. This is a good combination to use when a gap-filling adhesive is needed. The strength of the mixture when cured will easily exceed the strength of any of the woods that we use and with a little experimenting you should be able to approach the density of any wood you are working with if that seems important for your application. (Soft woods may require the addition of some #407 Microballons to decrease the density somewhat. Experiment first!)

#406 Filler — Colodial Silica. This is extremely fine powdered silica. It can be used to control the viscosity of the basic mixture. Adding colodial silica to the epoxy in small increments will change it from a honey-like liquid into a light- to-heavy paste, depending on how much you put in. The more silica that is added to the mixture, the harder the cured mass will be. High percentages of colodial silica will make the cured mass extremely hard and somewhat self-lubricating. Too much will make it very hard to work with, i.e.; it can become very difficult to sand or machine. It will also become quite brittle.

#407 Filler — Microballons. Tiny, hollow brown spheres of very low density. Used to make inexpensive filling and fairing putty, easy to sand shape. This can be used to reduce the density of the cured mass to approximate that of any wood you may be working with.

#409 Filler — Microspheres. Similar to #407. Less expensive, white in color, easier to sand, but more difficult to work with during mixing and spreading.

#601 Filler — Aluminum Powder. Gives great strength to cured mass as well as changing the color to a metallic aluminum shade. Using this filler will give you approximately the same results as you would get using the so-called "plastic aluminum" products — only you can control the product yourself. The cured mass can be shaped and worked much like real metal. I have used this mixture to repair broken damper tray brackets, sostenuto rod brackets, etc. It can also be used to fill voids (holes left in a plate during casting) in plates prior to finishing. Used properly, it can frequently save your day.

#603 Filler — Graphite Powder. This additive makes the cured mass very black, very hard, very strong and self-lubricating. The resulting mixture (the proportions vary according to your needs) can be used for a variety of bridge repairs. The black color is certainly appropriate and the cured mass has the strength and rigidity to sustain the steady loads imposed by the string tension. Again, experiment with different mixtures before attempting to use it for any critical repairs.

In addition to these fillers, other materials can be added as needed for specific applications. Wood flour (or sawdust) can be used to make a bulk filler. Dry powder pigments such as Behlen's Fresco Colors (available from Garrett Wade, 161 Avenue of the Americas, New York, NY 10013) can be added to color the mixture to match a particular wood surface. When adding color pigments you need to make sure that you add enough to make the mixture truly opaque or the cured mass will appear much different than you imagined. And, above all, if you decide to try something not recommended here, in the manufacturer's literature, or from some other reliable source, experiment first!

Sources Of Supply

In addition to the products made by The Gougeon Brothers, there are several other manufacturers and/or distributors whose products I have found quite useful. Most of these products have been designed or adapted for wood boat construction, but again, the principles and technology are similar. Some of the major companies I have dealt with, and the products I have used (in no particular order) are:

Chem-Tech, Inc. 4669 Lander Road, Chagrin Falls, Ohio 44022. Among the products offered are:

1. T-88 Structural Adhesive. A heavy bodied, 50-50 mix designed as an adhesive. Difficult to use with fillers. Moderately flexible. Very strong bond.
2. F-9 Surfacing Compound. A filled epoxy designed to be used as a surfacing or fairing putty. Dark mahogany color.

Uses

The variety of uses for which epoxy can be adapted is astonishing. In my shop I have used it:

- As a basic adhesive, either plain or sometimes with a filler to bond and fill voids which were impractical to treat in any other way.
- As a filler to build up areas of ornate carving which were damaged and would have been difficult to repair otherwise.
- When filled with aluminum powder, it has been used to repair broken action brackets, damper tray brackets, sostenuto brackets, etc.
- When filled with cotton fiber, microballons and some color pigments it has been used to repair cracks in soundboards.
- When filled with graphite, it has been used to repair cracked or damaged bridges. In fact, experimentally, it has been used to coat bridge caps. (This one is a bit tricky. If anyone is interested, let me know — it may be worth another article sometime.)

The list goes on and on. The above obviously represents only a few of the many ways in which epoxy can be used. I'm sure others have lists equally as long — and I'd like to hear about them.

I fully intend to add to my list as time goes by. The secret, if there is one, is to experiment, to try out new ideas, to search out new ways of dealing with old problems. Time spent in discovery is fun time as well as being rewarding.

Devcon Corporation. Danvers, MA 01923. Devcon makes and/or distributes a wide variety of epoxy-based products, many of which can be quite useful. Try to find an industrial supplier in your area who handles the line and get

copies of their product literature. Be sure that your supplier has fresh stock. This is one of the products that is sold at retail through many outlets — I have found some products that I'm sure were outdated.

Industrial Formulators of Canada, Ltd. 3824 William Street, Burnaby, B.C. V5C 3H9, Canada. This Canadian company makes several excellent epoxy products worth looking into. A letter to them will get you information about their products and a list of distributors.

1. G1 — Glue. Approved by the Canadian Government for use on aircraft. Bonds well to a variety of materials.

2. GL1 — Glue and Laminating Resin. Thinner consistency than G1. also longer pot life.

3. GLS1 — Glue, Laminating Resin or Sealer. Excellent penetrating properties. This materials will bond at 35 degrees fahrenheit, even under water!

4. GLS2 — Same as GLS1 except for the additions of chemicals to make it work better when used with oily woods such as teak or rosewood.

They have other products as well. Everything of theirs I have used has been of good quality and has performed exactly as described. Write.

System Three Resins, 5965 Fourth Avenue South, Seattle, WA 98108. This company makes a sys-

tem of products similar to the WEST System (although I doubt that they would like that comparison much). I have tried some of their products and found them to be quite good. I don't use them regularly since in my area it is easier to get WEST System products. They do have several fillers that the WEST System does not offer. (The fillers can be used interchangeably — one manufacturer's fillers can be used with another's resins, etc.)

The above list is not intended to be a complete list of all the epoxy suppliers in the country. Nor even the most common ones. Indeed, I've listed them because I think most piano technicians probably do not know of them. I would like to encourage anyone interested to investigate these and other materials and then share what you have learned.

That's about it for epoxies (and adhesives in general). I hope that this series of articles has been helpful to you. They certainly have not covered all of the subject, nor were they intended to. They were intended to provide an overview of the subject and, hopefully, stimulate your interest enough to prompt some investigation of your own.

More could be written about specific applications, and maybe I'll tackle that later. Again, if there are any comments or questions that you think I could be of help with, please feel free to contact me.

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S O U N D

BACKGROUND

Cristofori's Soundboard Design; Cristofori Becomes Curator Of Medici Instrument Collection

Jack Greenfield
Chicago Chapter

Approximately two-thirds of Maffei's article is concerned specifically with Cristofori's work on the piano. The remainder includes a discussion of Cristofori's ideas on soundboard design applicable to harpsichords as well as pianos, and a non-related topic, observations Maffei made on an unusual instrument — a harpsichord with five keyboards.

The "rose" referred to by Maffei was a traditional soundboard ornamentation. Some Italian builders cut a hole in the soundboard and inserted an ornamental open rosette made of parchment and veneer. Its effect on time is debatable. Other makers believed no opening was necessary and constructed instruments with the intact soundboard, sides and bottom forming a closed box. Cristofori believed that complete enclosure would give muffled sound but preferred to place apertures in the front of the instrument instead of the soundboard,

which would allow dust to settle inside the cavity below. The openings were placed in the belly rail,

//

...openings were placed in the belly rail, the frame member that supports the front edge of the soundboard. This is a unique feature of design that serves to identify instruments made by Cristofori or his associates.

//

the frame member that supports the front edge of the soundboard. This is a unique feature of design that serves to identify instruments made by Cristofori or his associates.

Cristofori comments on the general observation that new instruments do not sound their best until after the wood has had some aging. He then states that by using suitable wood salvaged from old chests or other articles, instruments can be made that will be sonorous right from the start.

Special Harpsichord Tuning

Maffei's discussion on the harpsichord with five keyboards includes comments on tuning practices of the time. He stated that the instrument was tuned with the fifths "perfect," probably meaning

"pure" or "just." In modern terminology, the term perfect indicates a fifth that is seven semitones wide and does not indicate whether or not it is tempered. The instrument was probably strung with 17 tones to the octave to permit tuning a 17-note series with five pairs of enharmonic sharps and flats. Tuning in pure fifths would give Pythagorean intonation, which was little-used then in performance but may have been used for theory as mentioned. The instrument also could be tuned in the more popular 1/4-comma meantone temperament.

Maffei commented on the difficulties encountered in instruments tuned with tempered intervals in unequal temperament but said nothing about use of equal temperament.

Prince Ferdinando's Death And The Medici Succession

By 1709, Prince Ferdinando's illness had progressed to such an advanced stage that he spent most of his time in bed semi-conscious. His condition continued to worsen until death finally came to him on Oct. 13, 1713.

Although their marriage had been unsatisfactory, his widow Princess Violante had become accustomed to life in Florence. She was well-liked by Cosimo and Gian Gastone. She therefore decided to stay rather than return to her family in Germany. She was given living quarters in the Pitti Palace and was also given the Medici country villa Lapeggi. Violante had not shared Ferdinando's interest in music but was a devoted patron of literature and she supported a program of literary activities at her villa.

Prince Ferdinando's death added urgency to Cosimo's necessity for resolving the question of succession. He even considered returning Florence to its citizens to be governed again as a republic. His first thoughts were for his family, however. He wanted the rule of Tuscany to pass down to the last surviving member. On Nov. 26, 1713, he proclaimed that if both he and Gian Gastone should predecease her, Anna Maria was to succeed to the rule of Tuscany. At this time, Anna Maria lived in Dussel-

New Invention Of A Harpsichord With The *Piano* And The *Forte*

By Scipione Maffei
(Continued from last month)

This ingenious man, being also excellent in the manufacture of ordinary harpsichords, deserves notice because he does not agree with the modern makers, who, for the most part, manufacture them not only without a *rose* in the center, but even without any other escape for the sound throughout the case. Not that he thinks it necessary to make the hole so large as the roses of the ancient manufacturers, nor does he think it desirable to make the opening in that part of the instrument, because it is exposed to dust; but he makes two small apertures in the front, so that when the instrument is closed, they are concealed and protected from it. He asserts that such apertures are necessary in some part of the instrument, because, when played on, the sounding-board [*sic*] ought to vibrate; and that it does so, is known by the trembling of anything you may place upon it when any one plays; but if there were no opening, the air, not having an escape, could not yield; but would remain fixed; and hence the sound would be somewhat obtuse and short, instead of resonant. When, however, a hole is made, you will soon see the sounding-board give more, and the string remain higher, and you will hear a stronger (fuller) tone; and by placing the finger close to the aforesaid opening, you may feel the vibration and the exit of the air. I may here remark that, profiting by the investigations of natural philosophy into the inclinations and effects of air and motion, a great amount of knowledge might be gained by closely observing the various and wonderful effects on air set in motion by musical instruments; by examining the form of its vibrations, and reflecting whence arises the perfection or imperfection of their sounds, and how to alter them; as, for instance, the variations of sound in instruments capable of expression, such as those played with a bow, which, if the position be slightly changed, becomes in one place sonorous, and in another obtuse; also the alteration and diversity of sound in different measurements, and especially in harpsichords, from the bottom of the case being thicker or thinner, and from many other considerations. It must not be forgotten that, the universal opinion being that new harpsichords are always imperfect, and that they acquire perfection only by age, this manufacturer pretends that he can make them in such a manner as to be immediately as sonorous as old instruments. He asserts that the want of vibration in new instruments arises principally from the elasticity of the wood, that for some time keeps the sides and the bridge uninfluenced by

dorf, the wife of Prince Johann Wilhelm of the Palatinate.

Meanwhile, the Austrian emperor was impatiently awaiting the end of the Medici so that he could annex Tuscany, basing his claim on its remote early status as part of the Holy Roman Empire. Charles IV had become emperor in 1711. His expectation of acquiring Tuscany soon received a setback by the unexpected emergence of another Medici heir, Elizabeth Farnese, who became engaged to King Philip V of Spain in 1714. She was a great-granddaughter of Margherita de Medici, sister of Grand Duke Ferdinand II and aunt of Cosimo III. Elizabeth Farnese was to be King Philip's second wife. His first, a member of a French noble family, had just died.

Cosimo was not pleased over this latest development. Fearing that either Spain or Austria might seize Tuscany to gain control ahead of the other, he had his ambassador get a promise of support from England for continued independence of the Grand Duchy.

Cristofori's Work Continues

Cristofori continued to serve the Medici family during the period of Prince Ferdinando's terminal illness and after his death. A bill dated 12 October 1711 in Russell's *The Harpsichord and Clavichord*, Appendix I, shows work done on a harpsichord belonging to Princess Eleonora, widow of Cosimo's brother, Francesco Maria. The instrument was restrung, requilled,

pressure, and that, until they press upon the frame, the sound remains imperfect; that if this elasticity be entirely taken from them before employing them in the manufacture, this defect will immediately be removed, as he finds by experience. The good quality of the wood will also contribute; wherefore Pesaro made use of old chests that he found in the granaries of Venice and Padua, which were for the most part of cypress wood from Candia and Cyprus.

It will not be here disagreeable to lovers of music to hear something of another rare harpsichord, which is in Florence, in the hands of Signor Casini, a most esteemed Maestro di Cappella. This has five key-boards — that is, five entire sets of keys, one above the other and which may be called a perfect instrument, the five fifths in every octave being tuned perfect (instead of only one, as then the custom), so that you may modulate and run through all the keys without any dissonance, and always finding the accompaniment perfect, as may be experienced by hearing the possessor play upon it, who displays it to perfection. Ordinary harpsichords, like all instruments with fingerboards, are very imperfect; because the tuning not being equal in all keys, there are many keys that have not a perfectly tuned fifth and we are obliged to employ the same key for a sharp and a flat; to avoid which defect, there are some old spinets, chiefly those of Undeo, with some of the black keys divided down the middle, the reason for which many professors do not understand; and it is truly because there being the fifth of a note difference between G sharp and A flat, there is a necessity for two strings.

However, owing to the before-named imperfection, a harpsichord or a theorbo lute cannot be tuned perfectly like a violin; although, when used in concert, the ear does not detect the imperfection; and hence it arises that there are no compositions in keys that require a great number of sharps or flats, that they are used sparingly, and, by some masters, only when an imperfect sound suits the expression of the words, or harshness is to be expressed by the voice. This imperfection in instruments that have fingerboards is also often perceptible, when the accompaniment is transposed; because, by changing into keys that have ill-tuned fifths, the imperfections of sound offend the ear. It will not so happen with the violin; because, not having a finger-board, the notes may be sounded in the right position, and the sound be perfect in any key. The above-named harpsichord, therefore, besides possessing the charm of perfect intonation, may be useful in many experiments on the theory of music; nor should it be supposed that its tuning is too difficult, for it is really more easy, in consequence of the fifths being tuned perfect; whilst, in the ordinary instruments, it is necessary to pay attention to the flattening of the fifths and the sharpening of the fourths and major thirds, as well as to other things.

Translated from Maffei's *Giorale de Litterati d'Italia*, Vol. V, 1711

the jacks lengthened, a new music desk made and the case was restored. The project required six days' work by Cristofori and an assistant.

In a document prepared after Prince Ferdinando's death, under the entry "*Lista del Serenissimo Gran Principe Ferdinando, anno 1713*," Cristofori is listed as "Strumentajo," or "instrument-maker." Cosimo III, probably the least musical of any of the Grand Dukes, did not like any music except religious music and none of the surviving members of his family are known to have had as deep an interest as his oldest son and his brother had shown.

Although the opera performances at the Villa Pratolino were terminated, fortunately the Medicis continued enough other activities

for Cosimo to retain Cristofori in his service. On Sept. 23, 1716, Cristofori was put in charge of the Medici musical instruments, many of which had belonged to Prince Ferdinando. Among the collection of approximately 150 shown in the inventory Cristofori prepared, 45 were keyboard instruments, including 20 harpsichords, 16 spinets, three clavichords and six organs and organ combinations. Seven of the instruments were built by Cristofori, including an upright harpsichord, an ebony harpsichord with ivory keys, a large spinet and four more harpsichords, each with one stop. Most of the remaining harpsichords and spinets were older Italian instruments. Although Maffei had seen four "piano e forte" instruments in 1709, none were listed in the 1716 inventory.



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Gerald F. Foye
San Diego Chapter

I know you've been wondering what to do with all that lead lying about the shop. All that lead tubing from the 3,000 player pianos you rebuilt. Or, those gold coins you purchased in Mexico at a super bargain and you wondered why the customs agent snickered instead of having you jailed. When you arrived home you discovered they had somehow mysteriously turned to lead!

Well, here's what you can do with your lead. As a warning, this is a lengthy project where the time is spent in preparation, while the actual job is relatively quick and easy. Therefore, a group project might be more rewarding. This is also one of those projects you do just to do it since you can purchase key leveling weights from your favorite piano supply house with a lot less mess and commotion.

However, should you decide the challenge is simply too great to pass up, then here we go. As with many other projects mentioned in previous articles,

there can be a lot of variation in materials, dimensions and procedures. I am simply offering the basic idea and you can pick it up from there.

First thing is a mold. Mine was from scrap material (I make a lot of that) as in the accompanying sketch. It is a wood base with wood strips to create form and size. Yes, wood! No it won't burn up.

Note the slits for the brass clips must be fairly snug so the lead won't flow through. Your form can be made to manufacture about 12 weights at a time or whatever number you desire.

The brass material for the hanging clips was purchased from the local model (hobby) shop. This particular stock is brass, about 1/32-inch thick by about 5/16-inch wide and in 36-inch lengths. Cut it to a suitable length, put a sharp bend in one end to serve as an anchor inside the cast weight. Leave the other end straight until after the weights are molded. When cool, which doesn't take long, the curve can be formed by shaping over a 3/8-inch dowel held in a vise for convenience.

The lead is melted in a plumber's crucible with a plumber's gas torch. You probably will have to borrow or rent or hope the latest addition to your chapter is a retired plumber. Pour the molten lead with a small ladle which generally comes with the crucible.

You are dealing with a molten substance that can cause serious burns so handle with care. Pour close to the mold to avoid splatter, and wear goggles and heavy gloves. Incidentally, the drier the mold, the better to avoid splatter and gas bubbles that come from moisture in the wood. This is about the same effect as dropping water in hot bacon grease.

Carrying 88 weights in your tool kit isn't very practical, so you might wish to make a carrying case like the one shown here. My case was made with 1/2-inch plywood (particle board should work well). Add a couple of snap-type latches and a sturdy carrying handle and your project is complete.

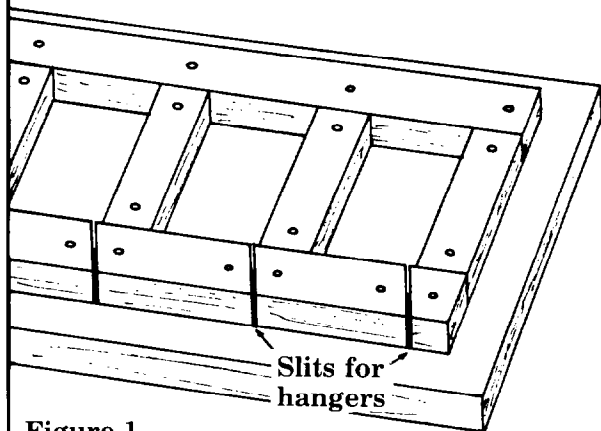


Figure 1

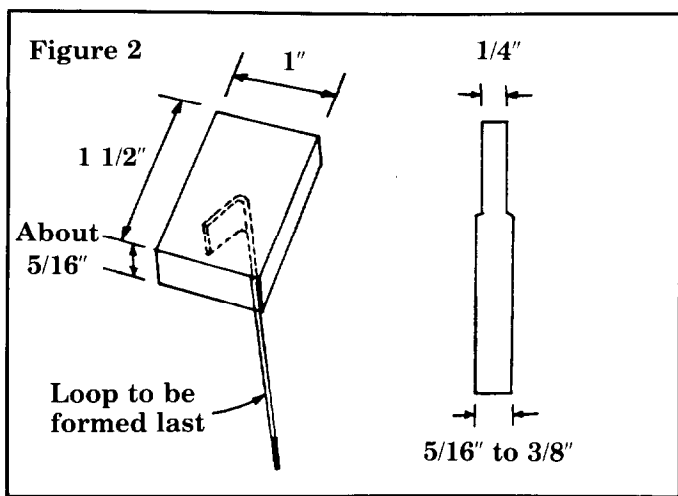
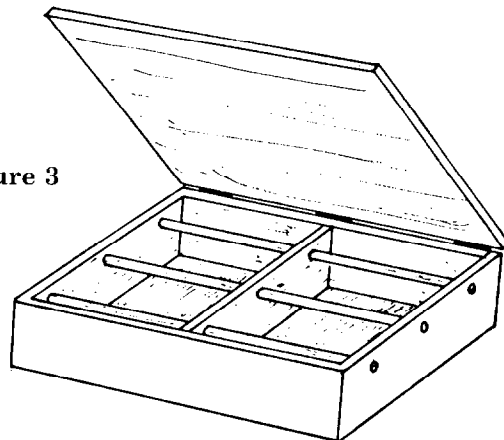


Figure 3



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Get The Organizational Spirit!

M.B. Hawkins
Vice President

Anyone not having attended an Annual Institute and Convention prior to Kansas City could possibly get the idea that by now the sizzle would have worn thin. I submit that in years past this may have been the case. For those members seasoned to Annual Institutes and Conventions, I'm sure you left Kansas City with a sizzle never experienced before. I sense that it is not wearing thin because it served as a new springboard for future activities; the kind of forward movement that earmarks the beginning of a new century. We of the Piano Technicians will begin ushering in this new century as early as 1990. The groundswell toward that year is beginning now.

While there are a few more months left in calendar year 1985, allow me to personally invite those people who have been wading in the surf of piano technology to take the plunge. You will be genuinely amazed by the difference in feeling from the inside as opposed to looking in. This year we had a very large number of non-member registrants present at our Annual Institute and I feel certain the membership process has begun for many of those folks already.

For those not present in Kansas City, now is as good a time as ever to look up a member or a chapter close to you for more information relative to becoming

associated. Should you not know a member or the location of the chapter that serves your locality, fill out the form below and mail it. Very soon you will receive full information about how you can become involved. The time is right and this is definitely the team you want to be on if you are going to be involved in piano technology. You will not find a broader depth of knowledge about this field of endeavor anywhere. To have a knowledge resource and friends that literally reach around the world...come on in and the organizational spirit will engulf you, too.

This next little piece is dedicated to all members who recently became part of the Boosters Club. As a result of your encouragement, many new names were added to our roster. You are to be congratulated for your efforts. "The Art of Friendship" is dedicated to you.

The Art of Friendship

Be a friend; then making friends takes care of itself.

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Corrections

In August's listing of reclassifications, the name of Kimberly Fippin, who became a registered technician, was misspelled.

In July's issue, William R. Douglass, Middleton, WI, was mistakenly listed as a member of the North Central Wisconsin Chapter. Douglas is a member of the Madison, WI, Chapter.

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Duncan, David R.	1	1	Radd, Dorothy J.	1	1
Ellis, Jim	5	1	Reed, G. Timothy	2	2
Enoch, Norman R.	1	1	Russell, Robert J.	6	6
Foli, Donn G.	1	1	Scott, H. Dennis	5	1
Goetsch, Lawrence T.	5	5	Shroyer, Alvin M.	5	1
Griffiths, Dan	1	1	Sierota, Walter	4	1
Grossman, Matthew R.	5	2	Smith, Sheldon D.	4	1
Guerra, Edward T.	5	1	Steege, David J.	1	1
Hanson, Frank C.	4	1	Swafford, Kent E.	4	1
Harmon, Clayton C.	1	1	Teel, Carl W.	2	2
Hartley, Sandra M.	4	1	Trautman, Marty	5	1
Hennessy, Frank P.	1	1	Trivelas, Chris A.	1	1
Hopland, Ray	4	1	Zeringue, Nolan P.	1	1
Hornbeck, Stephen E.	1	1			

The Auxiliary Exchange

From The President

Every auxiliary performs a unique purpose. This uniqueness always comes from the parent organization. Even though we are an autonomous group, our reason for being comes from the same roots as our parent organization, the Piano Technicians Guild. When a "dead" piano comes into the shop, we wonder how this thing which has been in a fire can possibly be brought back to life again! As we watch with great curiosity, an instrument emerges again which is as good as it was originally!

Many of our Auxiliary members take an active part in this restoration. I take off my hat to these people who work in this way for it is a very exact and careful art which brings the instrument back to life. Others in our group do the books, answer the telephone and generally do much to improve public relations for their spouse. All of us do some of this even if we have some other occupation of our own.

This uniqueness translates into a common background from which we build wonderful friendships with people whom we would never have met in any other way. Take the time to meet us! You will meet people with whom you have much in common.

Louise Strong

Welcome To New Members

One of the first things I did after arriving home from the convention was to compile the directory.

Many addresses are being changed, some by the postmaster because of increase of routes. Some box numbers are being added. Will you please check the directory when it arrives? If there has been any change in your address, please take a little time and mail a postcard to let us know. Thank you.

I'm delighted to welcome the following new members:

*Jane Baker (Dean)
M.A.L.
1507 Mesa
Odessa, TX 79761

Martha Cobble (Thomas)
Richmond, VA, Chapter
12101 Quito Road
Midlothian, VA 23113

Barbara Fandrich (Delwin)
M.A.L.
4030 Bridge Street
Fair Oaks, CA 95628

*Diana Sue Francis (Stephen)
Wichita, KS, Chapter
317 N. Walnut
Eureka, KS 67045

*Victoria Leffingwell (Brian)
M.A.L.
750 Quasar Drive
Fairbanks, AK 99701

*Mary Lou Norris (A.C.)
M.A.L.
St. Rt., Box 44
Merryville, LA 70653

Ruby Savereide (Robert)
M.A.L.
1903 W. 3rd St.
Cedar Falls, IA 50613

*Barbara Sloane (Kenneth)
Cleveland, OH Chapter
41 Morgan Street
Oberlin, OH 44074

* Identifies the ladies who signed up at the convention.

Barbara Fandrich was given a job at her first convention. She was the photographer on the tour. Take a look at the Historian Book next year in Las Vegas. Barbara may have caught you on camera.

We have membership pins for sale at \$2.50 while they last.

Kathryn Snyder
Treasurer — PTGA

People In The Lobby

You can see them in the lobby at

every convention. Some of them wear name tags, some don't. They wait around for husbands or wives to get out of class. They spend time at the swimming pool or browse the shops near the hotel. They use the time to catch up on reading, needlework or to get away from their own jobs and pressures.

Sometimes they meet each other. The conversations are tentative at first, but soon they discover many things they have in common. Often they will introduce each other to their spouses. Sometimes the couple will go to dinner together.

If they are lucky, by the end of the convention they will have learned more about what it means to their spouses to be piano technicians. Maybe they will have picked up tips for running more efficient businesses. Maybe they will have found new friends.

When I see spouses sitting in a lobby at a Piano Technicians Guild Convention, I hope all these things will happen, but I know that often it will take more than luck to make them happen. I remember that first convention when I spent much of my time in the lobby just waiting for things to happen. By my next convention, I had ventured forth enough to sign up for the Auxiliary activities. That made things happen much faster.

Now I go to conventions to see my friends and have my own fun with the Auxiliary while my husband is busy with his side of things. I still make time for myself, and once in awhile I meet him for lunch, but my security and enjoyment of the convention doesn't depend on his schedule. I'd like to think the people in the lobby at one convention are not the same ones who sat in the lobby the year before. Spending a year or two sitting in the lobby is *not* a prerequisite to becoming involved with the Auxiliary.

Julie Berry

Among the many joys of Christmas and the holiday season is spreading good cheer and sharing among family and friends. Unfortunately, many of the friends we have made through PTGA we rarely, if ever, see at this important time of the year. That doesn't have to be true next year because we are going to have *Christmas in July*

CHRISTMAS IN JULY



LAS VEGAS — 1986

during the Las Vegas International Convention July 21-25.

A beautifully decorated Christmas Tree will sparkle in the Hospitality Room throughout the week. There will be Christmas carols being played softly in the background. Beneath the tree and around the room will be hundreds of lovely gift items. Where will all of this splendor come from? From *you!* They will be your handmade ornaments — your hand-crafted gifts — your creations. We are stressing variety and will include everything from Aardvarks to Zulu dolls — bottles, candles, dolls, earmuffs, frogs, giraffes, holly, icicles, jack-in-the-boxes, knick-knacks, lamps, millinery, niceties, ornaments, puppets, quilted things, reindeer, Santa Clauses, totem poles, unicorns, varmits, wreaths, and xtra special things — your specialties!

Each and every item sent or brought to Las Vegas by you members will be for sale. You can have most of your Christmas shopping done by July! The proceeds will go into the PTGA Treasury to be earmarked for some worthy project to be determined by the PTGA Board and Council.

You will be getting more details in the months ahead, but it is not too early to get started on your contribution right now. While making things and decorating for this Christmas, make two — one for *Christmas in July!*

Current PTGA Chapter Presidents

Marion Bailey
Youngstown, OH Chapter
628 E. 4th St.
Salem, OH 44460

Crystal Bowman
South Central PA Chapter
210 Hamilton St.
Harrisburg, PA 1702

Esther Erickson
Minnesota/North Iowa Chapter
112 1st Ave. N.
Clear Lake, IA 50428

Patsy Escobar
Houston TX Chapter
2710 Durban
Houston, TX 77043

Shirley Felton
Philadelphia PA Chapter
586 Fairway Terrace
Philadelphia, PA 19128

Margaret Frazier
Dayton, OH Chapter
133 N. Dixie Dr.
Vandalia, OH 45377

Ingrid Gotrich
Cleveland OH Chapter
5219 Cheswick
Solon, OH 44139

Jennie Hart
Seattle WA Chapter
2992 S. W. Avalon Way
Seattle, WA 98126

Elizabeth N. Bates
Richmond VA Chapter
9501 Lester Lane
Richmond, VA 23229

Judy White (contact person)
Twin Cities MN Chapter
RRL, Box 134
Alma Center, WI 54611

Fern Morton
Los Angeles CA Chapter
19501 Mayall St.
Northridge, CA 91324

Kathryn Snyder
Reading/Lancaster PA Chapter
79 Furnace St.
Robeson, PA 19551

Suzie Sloffer
Indianapolis IN Chapter
3701 Stafford Drive
Bloomington, IN 47401

Grace Mehaffey
Pomona Valley CA Chapter
1031 Northwestern Dr.
Claremont, CA 91711

Helen Pearson
Daytona Beach FL Chapter
2366 S. Ridgewood Ave.
South Daytona, FL 32019

Planning Next Year's Convention

Regardless of the PTGA Program presented at the annual convention, there always seems to be a certain number of complaints. One year it may be, "There wasn't enough to keep us occupied. Another year, "We didn't have enough time to ourselves." There was too much "this" or not enough "that."

At the request of President Louise Strong, I will attend the planning meeting in Las Vegas in November. Your help is needed to determine just what kind of a program the majority want. Do you like educational programs? If so, what kind? Cooking? Dressmaking? Business practices? A mixture? Entertainment? If so, what kind? Please drop me a note or postcard right away telling me your preferences. I will need them by the first week of November, so do it right away.

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Louise (Mrs. Donald) Strong
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Rome, GA 30161

Ginger (Mrs. James) Bryant
Vice President
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Sacramento, CA 95825

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Recording Secretary
RR. Box 210A
Edinburg, PA 16116

Bert (Mrs. Walter) Sierota
Corresponding Secretary
5201 Whitaker Avenue
Philadelphia, PA 19124

Kathryn (Mrs. Willis) Snyder
Treasurer
79 Furnace St.
Robeson, PA 19551

Coming Events

Date	Event	Site	Contact
<i>Sept. 29- Oct. 1, 1985</i>	Florida State Convention	Plaza Motel 600 N. Atlantic Daytona Beach, FL 32018	Walter T. Pearson c/o Community Piano 1128 State Ave. Holly Hill, FL 32017 (904) 255-4804
<i>Oct. 4-6, 1985</i>	N.Y. State Conference Of Piano Technicians	Ithaca, NY	Ken Walkup 310 4th Street Ithaca, NY 14850 (607) 272-6547
<i>Oct. 11-13, 1985</i>	Ohio State Conference	Holiday Inn North Dayton, OH	Francis Hollingsworth 2271 E. Spring Valley Paintersville Rd. Xenia, OH 45385 (513) 372-1981
<i>Oct. 18-20, 1985</i>	Texas State Convention	Executive Inn 3232 Mockingbird Ln. Dallas, TX	Martin Wisenbaker 808 Cordell Houston, TX 77009
<i>Nov. 2, 1985</i>	Oregon Day	Valley River Inn Valley River Center Eugene, OR 97440	Donna Byrd 2293 Birch Lane Eugene, OR 97403 (503) 344-3840
<i>Nov. 15-17, 1985</i>	North Carolina State Convention	Raleigh Inn Raleigh, NC	Tom Karl 2251 Rumson Rd. Raleigh, NC 27610 (919) 828-3535
<i>Feb. 21-23 1986</i>	California State Conference	Town & Country Hotel San Diego, CA	Don Mannino 4243 Blackton Dr. La Mesa, CA 92041 (619) 461-7559
<i>Mar. 7-9 1986</i>	South Central Louisiana Seminar	Shreveport, LA	Owen C. Trimble 3117 Sandra Drive Shreveport, LA 71119 (318) 636-6882
<i>March 13-15, 1986</i>	Pacific Northwest Conference	Red Lion Inn Bellevue, WA	Steve Brady 22808 35th Ave. West Brier, WA 98036 (206) 543-0543 (206) 771-7781
★ <i>July 21-25 1986</i>	Piano Techicians Guild Annual Convention and Institute	Caesars Palace Las Vegas, NV	Home Office 9140 Ward Parkway Kansas City, MO 64114 (816)444-3500 ★



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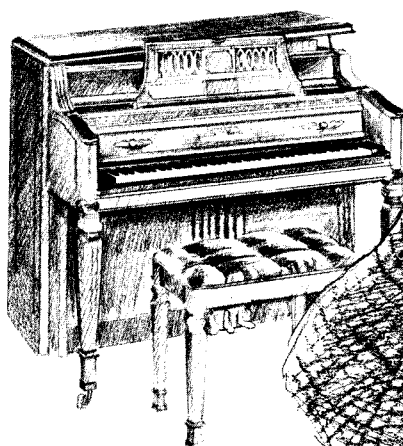
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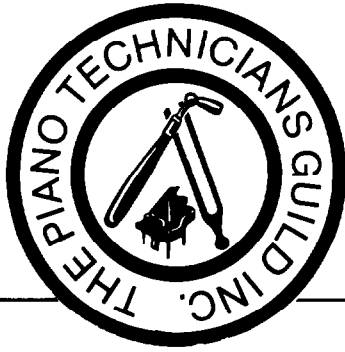


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Update

October 1985

In Respectful Memory...

Earl A. Gardner, 66, owner of Gardner's Piano Sales and Service in Prunedale, CA, died July 22 while vacationing in Massachusetts. He was a charter member of the Guild's newest chapter, Monterey Bay, and had formerly been a member of the Santa Clara Valley Chapter. Many members in both chapters

benefitted from his teaching and encouragement.

He was born in East Charleston, VT, and lived in the Monterey County area since 1961. He tuned pianos since he was 14, when he ordered a piano-tuning kit from a mail-order firm for \$1.50. He turned the hobby into a life-long avocation, tuning pianos on Navy ships while in the service during World War II and eventually establishing his own business.

His red Volkswagen station wagon with a large piano-shaped sign on top was a familiar sight on area roads.

He is survived by his wife, Dixie, one daughter, two sons,

four stepdaughters, four stepsons, six sisters, three brothers and 16 grandchildren.

P. Amburgh Campbell, 83, of Valparaiso, IN, died July 20 in a Valparaiso hospital.

He owned the former Campbell's House of Music, served as a piano technician at Valparaiso University and was a member of the Guild's Northwest Indiana Chapter and Moose Lodge 1357.

Born in Illinois, he married Mildred Wattles, who survives. Also surviving is a brother, Warren, of Arizona.

Memorial services were Tuesday, July 23.

New Officers

Augusta GA Chapter

President: Claude N. Sherrer
Vice President: Fred Powers III
Secretary: William C. Fletcher

Central Florida Chapter

President: David G. Taylor
Vice President: Arthur L. Flashman
Secretary-Treasurer: Allen K. Wright

Indianapolis IN Chapter

President: Phil Sloffer
Vice President: Brian Spears
Secretary: Ron Winter
Treasurer: Bill Reeder

Detroit-Windsor Chapter

President: Hugh Gullede
Vice President: Dan Harteau
Corresponding Secretary: Steve Hornbeck
Recording Secretary: Greg Boyd
Membership Chair: Gary Gugala

Correction

In a picture caption in September's Update, South Central RVP Nolan Zeringue was mistakenly identified as being from the Southeast Region.

Testing Update

Revised copies of two Guild written examinations, the Los Angeles Technical Exam and the Chicago Technical Exam have been mailed to all Guild Chapter Presidents.

The tests were approved by the 1985 Guild Council, which set a 90-day deadline for getting them into operation. These are the only written and technical tests that should be in use after Oct. 15, and chapters should discontinue using any earlier tests.

Applicants may take either of the written and technical examinations. If he or she fails one examination, an applicant may request an opportunity to take the other.

News And Notes

Dale Heikkinen, RTT Chapter Management and Achievement Committee

Standing rules, as opposed to the bylaws, govern the day-to-day operations of the chapter. They are more specific than bylaws and are designed to be amended more easily than bylaws to meet the changing needs of the chapter. Many of the standing rules govern practical matters such as the establishment of standing committees, the date for electing officers, determining the fiscal year, setting of dues and fees, and rules that govern membership.

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The Cost Of Advertising

**Willem Blees, RTT
C.W.R.V.P.**

A lot has been said about advertising. Most of you have heard the expression, "Advertising doesn't cost, it pays." The Guild is in the middle of a controversial debate over whether or not to allow non-Registered Technicians the right to advertise. From what I can gather, most of the RTTs want advertising to be restricted. What makes this so ironic is that most of you do not advertise. In my visits around the country, I have opened many phone books. Very seldom do I see the words, "Piano Technicians Guild."

This leaves me to think that most of the country doesn't even know that we exist. Yet we worry that someone other than a RTT tells his customers that there is a PTG. If we, as tuner-technicians, are concerned over who has the right to use the logo and the words, "Piano Technicians Guild," then I think it is imperative that we all start using it whenever and wherever we can.

Advertising doesn't cost. It does pay. For those of you who don't advertise, I assume you have all the business you can use. For those of you who advertise but do not indicate membership in the Guild, I must say that you are cheating yourselves. You are paying dues in an organization that allows you the exclusive right to a logo for which you have worked hard and passed rigid exams. The Guild puts on conventions and seminars and provides you with a technical journal. If you do not advertise this membership, your customers will never know that you are working hard to make sure their pianos are in top condition.

One reason you should advertise your membership in the Guild is new customers. A Yellow Page advertisement on TV several years ago said that one

in every three families move every year. One-third of your clients leave you, for no reason other than that they move away. But don't forget, the family that moves into that vacant house also could have a piano which needs to be serviced. When one of my customers moves out of town, they know they should look for another Guild member, because I tell them so. If you do not advertise membership in the Guild, they will pick the non-member listed right above you. If all of you would advertise, you would not only spread the word about the PTG, you would also help your fellow Guild members increase their business.

The few extra dollars it costs to add the words, "Member of the Piano Technicians Guild," to your Yellow Page advertisement will be paid for with two or three extra tunings per year. Only about 10 percent of my

new business comes from customers who indicated that they picked me because I am a member of the Guild. Few of those really understand what the Guild is, but they know enough to realize that a person who belongs to a Guild must somehow be better than a non-Guild member. This 10 percent, by the way, are the ones who ask. The referrals from those calls will probably add another 20 percent to my customer file. By now I am up to 30 percent of my customers.

Ask yourself these questions: "Can I afford to lose 30 percent of my customers?" and "Can my business stand to increase by 30 percent?"

Support the Guild. Let your membership be known. Let your customers know about the Piano Technicians Guild. You've earned it — wear it proudly!

Quotables

"It is ironic that at a time when the sale of new pianos is in a serious slump, that the piano and its keyboard have become widespread symbols of elegance in the advertising of other products. Pianos and keyboards are being used to sell clothing, linens, lingerie, stationery, restaurants, computer software, window blinds, stereos, cigarettes, et al. Now if someone could just figure out how to use pianos and keyboards to sell pianos.

— Taken from the Wichita Chapter's *The Voicing Tool*, edited by Kent Swafford.

"The U.S.A. Navy Choir has used a Japanese piano. This shocking discovery was made by Rep. John E. Grotberg, an Illinois Republican whose district includes DeKalb, home of the

Wurlitzer Company, which makes pianos, organs and jukeboxes.

"He obviously didn't like the name of that tune, since he has introduced legislation — approved by voice vote on the House floor — to change it.

"Mr. Grotberg's amendment to the military programs bill urges performing groups in the armed forces to 'use domestically manufactured entertainment support items' (musical instruments?) and sound and lighting equipment at patriotic events on government property whenever possible.

"This might be music to the ears of the folks back in DeKalb, but we detect the sour note of protectionism."

— Editorial in the *Hartford Courant* by way of the Connecticut Chapter's newsletter *The Keybed* and Ken Strick.

Between You And Me

M.B. Hawkins, RTT
Vice President

With the *positive charge* developed in Kansas City this year and the feeling of exhilaration so clearly visible on the faces of those in attendance, I find myself with a nagging frustration I want to share with you. While I was able to speak to and visit with a number of you present, the time was all too limited. In addition to this, there was an even greater number that I did not even say hello to and that is what frustrates me. Perhaps I'm expecting too much,

but I want all of you to know that my desire is to know each of you personally.

Now let's change to a different key — Please pay attention to what follows, because this group is really special.

I am speaking of the committee chairpersons and members who contributed so greatly to last year's successes. Please know the time and energy you gave to our organizational endeavors was graciously appreciated. This is the type of spirit that keeps us alive. Thank you so very, very much.

Pass It On!

When you were learning to be a piano technician, there was someone who helped you through the tough times. It may have been a teacher who taught you a better way of performing a difficult task. It may have been someone who showed you how to run your business. Or it may simply have been someone you admired, someone who became a model for you.

Remember those who contributed so much to your professional development and to the Piano Technicians Guild. Your tax deductible contribution to the Piano Technicians Foundation's Steve Jellen Fund for Research and Education means that their work will continue.

If you wish, your contribution may honor a specific individual, either living or dead. When you send in your contribution, remember to include the name of the person you wish to honor. Donations to the Foundation should be sent to:

Piano Technicians Guild
9140 Ward Parkway
Kansas City, MO 64114

Magic Kingdom Club Offers New Discount

Walt Disney's Magic Kingdom Club is now offering improved discounts at Walt Disney World Vacation Kingdom in Orlando, FL.

"Club members will receive a \$5 discount on Walt Disney World three-day and four-day world passports and \$2 off the one-day ticket," writes Bob Baldwin, the club's national director, adding that a family of four can save \$20 on the multi-day passports.

Multi-day passports include three days' admission and unlimited use of all adventures and attractions in both the Magic Kingdom and Epcot Center and use of the transportation system in the Walt Disney World Vacation Kingdom. The one-day ticket includes one day's admission and unlimited use of all adventures and attractions in either the Magic Kingdom or Epcot Center.

For more information or for your Magic Kingdom Club card, please contact the Home Office.

News And Notes...

The Chicago Chapter spent several months developing a list of proposed standing rules for their chapter and acted upon them at their April meeting. Their members then received a mailing of the new standing rules as adopted at their chapter business meeting, an updated membership list, and a membership process flow chart.

For the second straight year in a row, The Piano People, owned by Steve Schmidt and Jerry Eagles, have exhibited a rebuilt Steinway at the Music Teachers National Association. This year, the MTNA national convention was held in Detroit. They are the only rebuilders to attend so far and have "received

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News And Notes...

rave reviews," reports Lucinda Strehlow, chapter president for Central Illinois. The Piano People also exhibited at the Michigan State Regional Conference. It is hoped by this writer, that more rebuilders will exhibit their work at regional and national conferences.

"Cliff Geers used ESP in Sioux City" ran the headline in *The Action*, Nebraska Chapter Newsletter. Actually, ESP stands for "Evenness, speed, and power – the ultimate goals of a successful regulation," reports Jeff Stickney. Mr. Geers was invited for a day-long seminar at Western Iowa Tech last April. Not only did he cover regulating for the Nebraska Chapter, but included a segment on grand damper felt replacement and regulation. The entire session was videotaped as part of a series to be produced at Western Iowa Tech.

George Defebaugh, Los Angeles Chapter, was interviewed by radio station KMOX, St. Louis during the national convention in Kansas City. It was a 30-minute taped interview by Bill Reeker. The program was aired late in the evening in that area during a radio talk show. Stephen Brady, Seattle Chapter, has also been interviewed on a local radio talk show. There are many, many opportunities for promoting pianos and the piano trade through commercial radio and TV stations, not to mention the newspapers.

In January, two members of the Puget Sound Chapter spoke before the Music Teachers Association on piano care. And in February, Michael Reiter gave a presentation at the University of Pacific entitled "Pianos inside and out," an informative class on basic piano technology for musicians.

The August issue of *Gourmet Magazine* alone indirectly features the piano by two advertis-

ers, Taylor California Cellars new blush wine and Naturally Fresh Bleu Cheese Dressing by someone called Proud Products. The product (piano) can't be entirely going downhill when it has such good curves.

Chapter Programs Around North America

Toronto – "Adhesives in piano work," Cameron Miller, technical representative, LePages, Ltd.

Connecticut – "The art and mechanics of operating a retail piano store," Angelo Mastagni.

LI Cristofori Brotherhood – "Replacing bass strings; rescaling bass strings," Richard Dante.

Capitol Area, NY – "Harpsichord building," Walter & Bertha Burr.

Syracuse – "Refinishing techniques, work clothes and rubber gloves," Joseph Karwacki.

Reading-Lancaster – "Super fine tuning," Hank Meyerman.

Baltimore – "The Knight piano factory and construction methods," Phil Huth, dealer.

Roanoke – "Concert tunings, classical and rock," Harry Doss.

South Florida – "Homemade and modified tools," membership.

North Central Louisiana – "Key easing, level and depth," Ken Gentry.

Texoma – "Business aids," Dale Probst.

El Paso – "Baldwin twin plant; recollections of 15 years as an employee," Maria J. Corral.

Bluegrass – "Soundboard and bridges," Clair Davies.

Columbus – "Future of the piano business," Victor Wolfe.

Cleveland – "Customer relations," Kevin Leary.

Northern Michigan – "Knuckle replacement," membership.

Chicago – "Dampers," Otto Keyes.

Central Illinois – "Test reviews; tuning and written,"

John Baird and Bob Morris.

Minnesota-North Iowa – "Judgement calls with repair and regulation," roundtable discussion.

Twin Cities, MN – Tour of the Schubert Club Musical Instruments

Tri-Cities, Davenport – "Presentation on tax laws and book-keeping," David Ralston.

Hutchinson, KS – "Splicing piano strings," Olin Allen.

Nebraska – "Vertical regulation," Leroy Schultz.

Denver – "Veneer replacement and repair," Frank Bidingier.

Phoenix – "Temperaments," Jim Coleman.

Tucson – "Tuning Fender Rhodes," Bruce Fulton.

Orange County – "Making accurate estimates," Richard Davenport.

Santa Barbara – "Tuning tests," Ray Uhrig.

Santa Clara – "Mason & Hamlin screw stringer," Bob Burton. Slides, Bill Reid.

Redwood – "Agraffe replacement," Kermit Williams.

Seattle – "Solving capo-d'astro problems," Ed McMorrow.

Puget Sound – "Setting up your shop," Mike Reiter.

Central Washington – "Grand cleaning," Earl Franz.

Tape Format Changed

In an attempt to provide better service to its visually impaired members, the format of the Guild's monthly "Journal on Tape" program has been changed. Effective with the September issue, the tapes are being mastered on a variable-speed recorder obtained from the American Printing House for the Blind. Therefore, tapes played on a normal recorder may sound garbled. Those who have questions about the new format should contact the Home Office.