

smith & smith

TECH HELP ARCHIVE 2005

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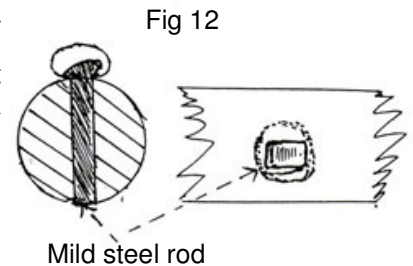
November 05 - **Why do we stock.....**

December 05 - **Why do we stock.....**

TECH HELP - Clock Mainsprings, Barrels and the Like Part 6

Occasionally the barrel arbor hook will break or wear down through spring breakage to where it will no longer function - a careful observation of a number of arbors will quickly show the various methods used to manufacture the hook and these will give you the idea on replacing them. Bearing in mind the finished hook must meet all the criteria previously described. If the hook is still in place but rounded off, the arbor can be filed away (see fig11) to effectively raise the profile of the hook. The arbor behind the hook must be filed to form a gradual slope to ensure the mainspring will properly locate and the front filed just enough to allow the end of the spring to nestle snugly (fig11). If the hook is missing altogether, the simplest method (see fig 12) is to drill a hole through the diameter of the arbor and friction fit a mild steel rod by either hammering or some other suitable means. The hole need not be too large but the rod must be a suitable friction fit size, not a bash it in at any cost size! Ordinary nails can be used for this purpose and the rounded head type are ideal as the head be easily filed to form the hook. Almost all American clocks use this method and many German makers also. It is quick and immensely strong.

Next Month - The arbor square and replacing the barrel hook

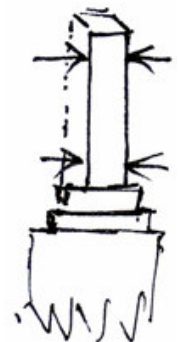


TECH HELP - Clock Mainsprings, Barrels and the Like Part 7

Many barrel arbors will suffer damage to the corners of the winding square because the key is either too large or simply worn out. It is always a good idea to supply a new key with each repair unless you can be sure the original key is in good condition. If any repair work has been done to any one of the squares on say, a Chime clock, you either supply two keys and advise the customer or you file, even machine each square to the same dimensions.

The most common problem is the corners of the square are rolled over and form a ridge along the edge. This can be removed by filing, taking great care not to touch the flat surfaces with the file. If the damage is only slight the arbor may not need any further treatment. If the damage is severe the square has to be reduced in size to bring it to a uniform dimension.

One way to do this is to clamp the square in a vice (making sure it is parallel with the jaws) with just 1mm standing above the jaws and commence filing with a safe edged file. The vice is used as a filing guide and makes the job much more accurate. Take a few cuts with pressure on the file only on the forward stroke. Remove the arbor and turn it to the next square and recommence filing. After all four have been filed, remove and measure across the flat surfaces (fig 13) both at the top and the bottom. If the measurements are OK restart your filing and measuring until all the damage is removed. If the measurements are all over the place your filing must compensate for this and the square brought back to truth. When the square is finished to your satisfaction it will have sharp corners. These must be removed and a fine file run down each one to form a small chamfer. Failure to do this can cause the arbor to bind in the key which determines a larger key needs to be used and we are back where we started. If after filing the square is too small and obviously cannot cope with the pressure of the mainspring a new arbor is required. Lastly, polish both ends of the arbor, it looks nice!



Next Month- Replacing the barrel hook

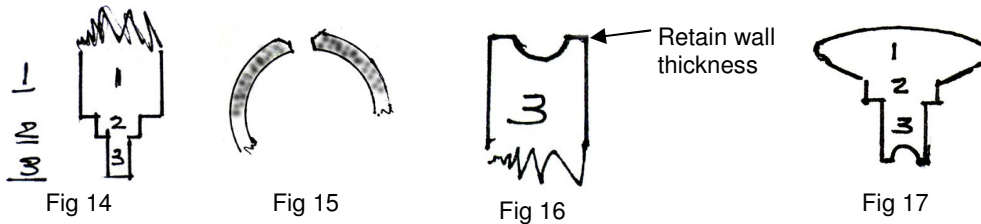
Fig13

TECH HELP - Clock Mainsprings, Barrels and the Like Part 8

The need to replace a barrel hook is very common and because it is a simple task, can be done quite quickly, but you do need a lathe. The hook must be replaced if it is missing altogether, if it is loose or if the barrel wall is cracked where the hook is fitted.

If the wall is cracked go to the opposite side and drill a pilot hole at the same height as the original, this is important. Next, turn a soft iron bar to match the original hook (large nails can be used for this) which means you will end up with three diameters, **Fig 14**, one for the head another for the spring to hook onto with the third being the rivet. If it is missing you can match it with one of the other barrels but if all else fails use your common sense. Open the pilot hole in the barrel to exactly fit the rivet section of the hook and chamfer the outside of the hole slightly **fig15**, this will allow the rivet to hold firmly. Place the rivet portion into the hole from the inside and cut off the excess leaving about half a millimeter protruding outside the barrel wall. Place the rivet back into the lathe and cut a recess into the end, a round engraving bur is good for this. It must not be too deep (about 1/2mm) or too large, it is important some wall thickness remain otherwise the riveting will be weak **fig16**. All forms of rivet must be relieved in this way as it is almost impossible to rivet a solid dowel into soft brass without damage. Chamfer the underside of the head and cut the completed rivet away from the stock, the finished rivet will look like this, **fig17**.

Place the rivet into the hole in the barrel and support the head of the hook using something solid, a large diameter steel bar held in a suitable vice will suffice. Using a light hammer gently peen the rivet flush with the barrel wall, if the job has been done properly no more work needs to be carried out.



TECH HELP - Clock Mainsprings, Barrels and the Like Part 9

When a new mainspring is needed it may be because the old one is broken or perhaps too weak, too strong, long or short, but how do you calculate the right size spring for the barrel?

Having details from the manufacturer or a mainspring catalogue can give you the necessary information. However, because this sort of information is not readily available use of our simple method of calculation will take out the guesswork and give you the correct size every time.

If you follow the formulae described below you will have no more problems

STEP 1: Measure the inside diameter of the barrel and divide by 2, multiply your answer by 3.142

STEP 2: Measure the diameter of the arbor where the spring fits around and divide by 2, multiply your answer by 3.142

STEP 3: Subtract answer 2 from answer 1 and divide by 2

STEP 4: Divide answer 3 by thickness of spring, this will give you the required length of spring

By using this method you can work out the length of a spring even if you need it to be weaker or stronger and if it is necessary to purchase one longer than needed for the job you can shorten it quickly and accurately. If all this is too much for you, log on to our website, select "mainsprings" and use our easy calculator.

Did you know.....This method is available on our website www.smithsmith.com.au in an A4 printable format, and you will also find a little program you can download which will do all the work for you! Just go to "Downloads" on the left hand side menu.....

TECH HELP - Tapered Pins Part 1

It goes without saying, when we hand a finished repair back to the customer we endeavour to make sure it looks good. You know what I mean, clean the case, make everything spick and span because we all know if the job looks good on the outside its much easier to convince the customer it is just as good on the inside. One thing even a novice will immediately spot is old, bent, scored and otherwise damaged tapered pins. Where these are visible, French clocks are good examples, it becomes hard to be convincing about the rest of the repair.

Knowing how to remove old pins and replace with new ones is important and although not difficult certain guidelines need to be followed.

I do not pretend the method I use is the best but if the outcomes using other tried and true procedure fall short perhaps some of the ways I approach the job can be adopted.

How to remove a tapered pin:

Each pin must be taken on its merits so the method used must be one which will not damage any part of the clock. Scratch marks on the plates indicate an unsympathetic repairer so don't make the same mistake. Pliers are the standard pin removing tool and are useful for clamping the pin, twisting it and even sometimes breaking it off.

The standard flat nosed plier is not the best plier to use because it cannot hold the pin securely by virtue of the V formed by the plier jaws, **Fig 1**. Often there is not enough pin protruding over the edge of the plate to allow the plier to take hold and this results in the plates being marked again. You will notice how closely the marks you made match the marks already on the plates. It is no longer a mystery how those marks got there. Another method is to use a specially ground and slotted plier (**Fig 2**) to push the pin out by allowing one jaw (the one with the slot) to be supported by the pillar whilst the other endeavours to push the pin out of its very snug hole. Now you know where those marks came from!

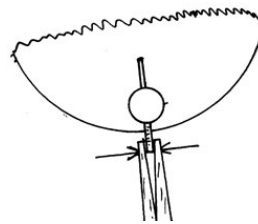


Fig 1

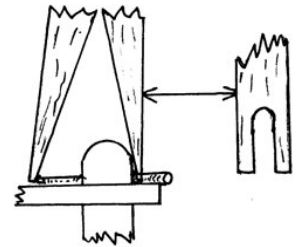


Fig 2

TECH HELP - Tapered Pins Part 2

If you are going to use pliers to remove a pin the best type to use are the type where the jaws open and close **Parallel**. **Fig 3** (If your tool kit does not include a pair make sure you make a wise investment and get them now. These are the most useful plier you will ever own).

Make sure the pin is straight along its entire length. A curved pin, particularly if it is scored, (having been re-used numerous times) is particularly reluctant to leave its home of many years. If the pin extends over the edge of the plate it is possible to clamp it in the jaws of the plier and simply pull. If the pin is very tight a slight twisting motion can be used to get it started but do not pursue this course too enthusiastically. It will almost certainly break off very close to the pillar making it impossible to grab hold of. So, what is my usual practice?

By its very nature a tapered pin will not touch the plate once it has been pushed through the pillar, **Fig 4**, this fact determines how easily a pin can be removed even though it has defied all other attempts. You need three things, A brass rod about 10mm diameter, a screwhead file and a solid block of something on which to rest the movement.



Fig 3

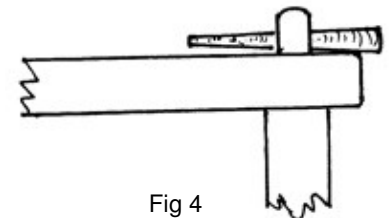


Fig 4

To be continued

TECH HELP — Tapered Pins Part 3

To remove a tapered pin without damaging the plate, support the movement on a solid surface and place your brass rod on the end of the pin. Being soft it will not cause any damage should it touch the plate. Support the rod and movement in one hand and tap the rod using a light hammer. One short sharp tap will usually remove the most stubborn pin, **Fig 5**. If the pin bends which it could do if too long, shorten it to make it more rigid and try again. Make sure the pin and the rod are vertical; this will make certain all energy is directed to the pin. Once all the pins have been taken out, repair the damage caused by previous repairers. Do this sympathetically, deep scratches cannot be completely removed and trying can result in more damage. It is rare for a pin to be so tight it cannot be removed but if this is the case the only alternative is to cut the pin close to the pillar. A slotting or screwhead file can be used for this purpose as it can be held close to the pillar thus keeping damage to a minimum. Removing the remainder from the pillar can be done by punching, drilling and the method you used last time. But remember, the pin was excessively tight. My suggestion is Rust remover, it may take some time but guaranteed to leave a clean hole.

Next month. **Fitting a new pin**

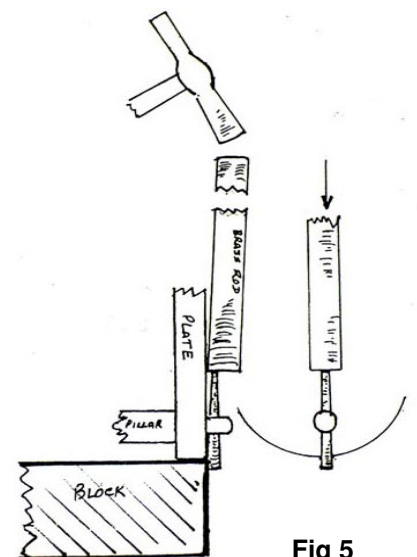


Fig 5

TECH HELP — Tapered Pins Part 4

Fitting a new tapered pin is as easy as placing it in the hole provided, push it in as far as you can and then cut it off with a pair of end cutters and then go to the next one. *If this is what you have been doing up until now!!!* I started out by saying the most obvious visual signal for potentially poor workmanship are tapered pins. Every pin must be of the same length and well fitted, so try this. Not every hole is the same size, each pin must be made to suit the selected pillar.

Choose a pin and push it home, Take your slotting saw and file half way through the pin, both front and back, **Fig 6**. Grip the pin in your pliers and a gentle side to side motion will cause it to break cleanly without bending the piece remaining in the pillar, **Fig 7**. Each pin can be cut the same length without difficulty. The finish is quite acceptable if the pin is not to be seen but in a situation where it will be visible remove the pin after filing the slots (make sure you grip the end), break off the ends, secure the usable section in a pin vice and dress each end in turn. Push the pin into the hole from which it was removed and I think you will agree you have a professional finish

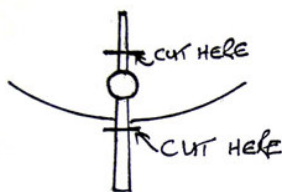


Fig 6

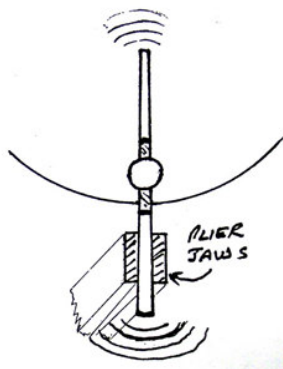


Fig 7

TECH HELP — Why do we stock.....

Why do we stock a Ratchet pin vyce?

This is a tool not seen prior to us introducing it to our stock. It has a number of features which make it extremely useful for the clockmaker. The first feature is by having a T bar it is more controllable. The T bar can be easily removed and the tool used as a let down key. It enables the user to let down a mainspring quickly and safely by allowing the tool to slip through the hand. It will fit over winding squares up to 5mm square. Because it ratchets either left or right it can be used as a winding key when repairing. It can also be locked in a central position if necessary. Reamers, both large and small can be held securely and with the T bar fitted no job is too difficult, even the largest holes can be reamed with ease whilst retaining full control. Why not add one of these great tools to your "must have" list right now.



TECH HELP — Why do we stock... Lapping Film?

Until recently the only emery paper available to the trade was the tried and true paper backed sheet that ranged in grit size 4 to 4/0 (4/0 being the finest, commonly known as Crocus or polishing paper). There is of course nothing wrong with these papers; jewellers and watchmakers have been using them for well over a hundred years. This being the case why do we need to introduce another product?

Lapping film is really better suited to the needs of the watchmaker. Firstly it is much thinner than paper and therefore more flexible. The backing is a clear film and very durable, if required it can, with the aid of a double-sided sticky film be stuck to any contour (or flat), which makes it wonderfully universal. Its most outstanding feature is the grit size, the sizes we carry range from 12 micron to 0.3 micron. Bearing in mind 5 micron is about 3000 grit size the value of grits ranging down to 0.3 is clearly obvious. Virtually any type of finish, right down to a high polish can be obtained quickly and easily making what could have been an ordinary job both professional and pleasing. Can be used on any metal and because the sheets are large it will last a long time. This product is used throughout the world in a wide range of industries, I am sorry we took so long to introduce it to you!

TL800 Series lapping film, available in the following sizes; 12, 9, 5, 3, 1 and 0.3 micron



TECH HELP — Why do we stock... Degussit stones

We first became interested in DEGUSSIT stones when it was pointed out how useful they were for certain jobs. At that time they were very expensive and this proved to be a bit of a stumbling block but thanks to large volume purchasing we have made the price so attractive they are now on our best seller list. This is as it should be because this is a stone with unique properties.

Known throughout industry as FRIALIT- DEGUSSIT it consists of a mixed crystal of exceptional hardness; the main element is aluminium oxide. The characteristic red colour of the stone is the result of an admixture of chromium oxide. This crystal is found in nature as ruby. This gives it extreme hardness which results in extreme wear resistance. So what do we use it for? Anything you once would have used your Arkansas stone for with none of the disadvantages such as softness which quickly destroys the profile. For pivot restoration it has no peer. Square corners, hard surface and extremely fine grit result in a brilliant finish. Because the stone will not wear out the surface always remains flat and the corners always remain square. This has never been achievable with any other stone. Its other uses are only limited by your imagination.

For example, it can be used instead of a file. Imagine, no more file marks and a mirror finish as well. Screwdriver and graver sharpening is easy (you need the bigger stones for this) and no metal too hard. We carry a range of sizes to cover most needs, you will never be sorry you made this purchase.

We stock the following popular sizes in **100mm** lengths;

Fine Grit: 4x4mm \$132.50, 6x3mm - \$95 6x6mm - \$130 8x6mm - \$97.50
Medium Grit: 8x6mm - \$95 (all prices + gst)



TECH HELP — Why do we stock... MAUN Parallel Pliers

Parallel closing pliers are the most versatile pliers to have in your tool kit. The special closing action allows any item to be held in the tightest grip or the gentlest. Firmly gripping any object without the tendency to slip gives this plier an advantage over a conventionally closing plier by gripping over the entire surface of the part being held. The jaws themselves also have these distinct features; several millimetres of smooth surface at the ends (fig1), well defined serrations down the rest of the jaw (fig2), and a v-groove on one jaw running down the entire length to hold round or odd shaped stock (fig3). Extra long material is simply fed through the plier to be held in the selected spot (fig4). As a bonus, because the jaws close parallel, they can be used as a bushing tool (fig5). Simply hold over the bush and squeeze the handles! The jaws will reach 40mm from the edge of the plate - just right for most clocks.



Treat yourself to a great Christmas present, TY601 only **\$59.50+gst**

