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BAND AND SCROOL SAWS.

A VERY useful tool in a pattern shop is a good band saw. The more it is used the better it is liked, and one is continually being surprised by its capabilities. It will do nearly everything that a circular saw can do, and a great many things that can't be done by a circular saw The band saw, if kept in good order will do nice work, but if the guides are allowed to get worn out of shape, leaving the edge of saw loose, the saw so badly set and filed that each and every tooth strikes it in a new place on the stuff being sawed, and then the hole through the table so large that you can stick your finger down through the table all around the saw, it won't be likely to do very nice work, and it wouldn't be safe to get very close to the line in sawing, because you never would be sure of where the saw was cutting on the bottom side of the stuff. With a saw that is set and filed accurately, you may safely cut right up to the line, when necessary, if it don't crowd the saw, but allow it time to cut free and clean.

In sawing short curves it is very easy to cramp the saw by feeding too fast, or in the wrong direction. It is hard to give any explicit directions in regard to feeding when sawing curves, but let the feeding be so done that all the power exerted will tend to force the saw against the collar or plate behind it. You should not twist the stuff so that the saw is pressed hard against the sides of the guide, as this causes great friction and consequently throws a great strain on the saw, also heating it. If you persist in doing this you will break a great many saws, besides wearing out the guides very fast. The rubber covering on the wheels will also come in for an excessive amount of wear.

When the saw needs setting or filing, before you take it off the wheels, brush the dirt and gum out of the teeth. A file card does this first rate; then joint the saw with an emery stone, taking care to hold the stone square across the saw. Take off the saw and if it needs setting, set it just as little as possible. Don't try to make a wide saw do the work for which you should use a narrow saw by setting it very wide, for it won't work nice, and it is hard on the wheel covering. In filing, it is customary to file all from one side and square across, although the saw would cut better if filed partly from each side.

After the saw is replaced on the wheels, and the guides adjusted to the saw, not the saw made to run in the guides, just as they are, because it runs so before filing, unless both the top and bottom guides are just right to fit and hold the saw. Make sure that they are just right. They should be exactly in line with the saw, and take in the whole width of saw except the teeth. Then adjust the upper wheel. This will usually, and I presume always, be provided with means for tilting it over toward the front or back as may be necessary so that the saw won't run off. It should run against the back of the guide very lightly when not doing any work. This saves the guides and also prevents any unnecessary heating of the saw.

Now joint off both sides of the saw in this way, use an emery stone having a flat surface, then holding the stone against the side of the saw touching the back edge, first keeping it in contact with the back edge, swing it around until it touches the sides of the teeth. This method will prevent any possibility of cutting off the front corners of teeth, and the the saw will cut to its full width.

The saw should run straight and true when in motion and not squirm around like a snake, as I have seen some do. You can perhaps imagine how close to the line it would be advisable to get with a saw that runs back and forth sidewise, three or four times in each revolution. Of course this sidewise motion should be controlled by the guides, but the same saw that has the most need of the controlling influence of the guides doesn't get it, because the guides are in no better shape than the saw itself.

A saw that has been broken and mended a number of times is very apt to run crooked, not only on account of the joints, but because the soft places which the brazing of the joints make, are very apt to get bent. When your saw gets broken and you wish to mend it, begin by filing down the ends you wish to join. Make the joint from one-half to one inch long, taking care to file the ends to a straight taper, so that the joint will fit closely together without springing and also to be of the same thickness as the rest of the saw. This is important, as you will find that if you have to spring the joint together when you braze it, you will spring the saw on each side of the joint. Then when you are ready to braze the joint, take care to clamp it down straight, and don't get more thickness of brass, silver or whatever solder you use than there will be of steel after the joint is finished. Put the saw on the machine, adjust the guides and try it. If the edge runs in a straight line, and the new joint passes the guide without being heard, you have done a good job, and you will be repaid for all your troubles by the quality of work turned off.

If I should try to tell all that might be done by a band saw I should wear out the patience of the reader, and perhaps not tell him anything new after all. The best job I ever heard of as being accomplished on a band saw was the sawing of gear teeth, right to the line, so that they only required sandpapering to complete them. I didn't see the gear teeth, but I always thought they must have been finished before the sandpaper touched them. Seriously, about the only thing in the line of sawing that can't be done on a band saw is making holes. This is where the band saw has to yield to the jig saw, its older relative. This machine (the jig saw) as in use in most shops, makes more noise than all the rest of the machinery together, and does comparatively little work. It is just the opposite with the band saw, which makes very little noise, but does a great deal of work.

There are, of course, some exceptions to the kind of jig saw noted, but even the best of them require constant care and a good deal of it. The saw wants filing very often, and why shouldn't it when you remember that about five inches in length of it does all the work, and consequently gets dull very quickly? Then the guides for the cross heads—perhaps there are two cross heads—must be kept snug, and the connecting rod or pitman mustn't be allowed to get loose, and there is usually trouble in keeping the machine oiled, as the sawdust, more or less of it (generally more), falls directly on the crosshead and pitman, and soon absorbs the oil from these parts and from the guides. But we must put up with all their faults, because we can't saw holes with a band saw, until some genius (?) makes a band saw with a joint in it.

One great difficulty in the way of a smooth running jig saw is a little too much speed; they run too fast. If the pitman and crosshead are very heavy, and are not well balanced, you can easily see what a little too much speed will do. Then there are jig saws that are not provided with any appliance to ease the shock of reversing the motion at the end of stroke. The spring commonly used at the top to strain the saw helps the reversing at the lower end of the stroke, but hinders it at the upper end. Another point where the jig saw has the advantage of band saw is in the size of work which may be done. On the band saw the size is limited to the diameter of the wheels which carry the saw, but with the jig saw the only limit to size of stuff sawed is the size of room where the saw is located.

A good jig saw should have its crosshead and pitman as light as is consistent with the necessary strength, and well balanced, with good tension for saw at the top end. This is a sure method of holding the saw, and one that can be operated quickly. The pitman must not be too short; neither should it be too long, as this will add unnecessary weight to the reciprocating parts. Not less than three, or more than five times the length of stroke will put the length within reasonable limits. The tension spring helps the reversing at lower end of stroke. Then if the blower for removing the sawdust could be located at the top end of stroke; but the difficulty in the way of this is the pipe necessary to convey the compressed air from the blower to the upper surface of work. Still an air cushion might be utilized to keep the sawdust off the crossheads and guides, and it would certainly make the saw run steadier. Then, to bring out the good points, and make them show to the best advantage, the saw should stand on a good foundation.

It is not a good plan to use much oil on the saw, or the saw guides, because the sawdust sticks to it, and the oil gets on your work, and it makes things dirty and disagreeable. This applies equally as well to the band saw. It is much better to keep the saw in such good order that it will need no oiling at these.

I recollect reading in the *American Machinist* about the influence poor tools, dirty machines, and the poor work resulting therefrom, had upon the character of the workman. Where these things are chronic, the men's work will soon become like the shop, poor and dirty in looks, and whoever saw a dirty machine do a good job?

Take, for example, a band saw that hasn't had the oil and dirt wiped off in six months, and this too, where it has been the rule to oil the saw and saw guide as often as any one thought necessary. The oil will collect all the sawdust that will stick to it: the saw itself I should expect to find in keeping with the machine, every tooth set to a different width, and filed to a length of its own. This saw won't do good work, and the man who has the care of it won't be apt to lose much sleep on this account.—*F. W. Barrows in American Machinist.*

A new lumber tariff has been published by the C. P. R. which fixes rates from Shuswap and all shipping points east of Shuswap to all points from Banff to Emerson. On the longer distances the rates in comparison with those in force are slightly lower, but on shorter hauls rates are doubled. The new tariff is regarded with great displeasure by dealers in Calgary and by mill men in the naighborhood of Donald as calculated to destroy their trade. Calgary and Banff are deprived of all advantages from their proximity to timber, and will have to pay as much for lumber brought 150 miles as they would have to pay if it was 600 miles distant.