THE GRAIN OF LUMBER IN PATTERNS

By J. L. Gard.

One thing that few pattern-makers seem to understand about lumber, and one of much importance, is how the grain of the wood can be placed to make the patterns most serviceable. When quarter-sawed lumber is spoken of, it is generally supposed to apply to oak, or other hard woods, and is understood as meaning a method only of showing the markings on the face of the board.

But there are quarter-sawed boards in pine more than any other kind of lumber. A quarter-sawed board is one that is cut from the log radially, as in Fig. 1. To cut all boards quarter-sawed would waste too much of the log, which is the reason that only a few boards from each log are sawed radially.

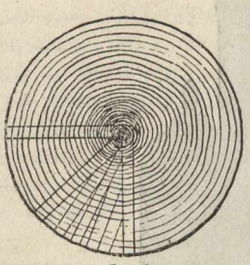

Fig. 1

Fig. 2

A quarter-sawed board will stay practically straight during many changes of temperature or humidity. So if you have a thin pattern to make that has no ribs to hold it straight, select, if possible, a quarter-sawed piece, which can be easily done by looking at the grain on the end. You may waste a little stock to get such a piece, but just consider the convenience of having the pattern stay the way it was made. I remember an instance of making new patterns to replace some that were badly warped. Cleats were ordered put on the new patterns to be afterwards stopped off. I sent the patterns to the foundry without cleats, with word that when they became crooked to send them back and I would put the cleats on. But I never saw them again.

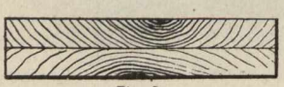

Fig. 3

Fig. 4

Fig. 5

Fig. 6

A board like Fig. 2 will not stay straight long. This reminds me of the boy who tried to plane such a piece straight; the more he planed the worse it got, until it began to look as if there would be no board left. The boss told him he didn't plane fast enough to keep ahead of the warping.

When gluing two thicknesses together, it is better to place them so that the grain will lie as in Fig. 3, because the warp of one piece will counteract that of the other, and the joint will not open as readily on the edges as if placed like Fig. 4 or 5.

If you glue one piece across another you will get the effect of Fig. 6, unless the glue lets go or one piece splits in shrinking. The pull on board A in shrinking is often powerful enough to bend board B in its length. Cross grain is only effective with absolutely dry material of four or more

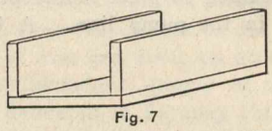

Fig. 7

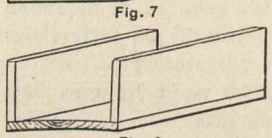

Fig. 8

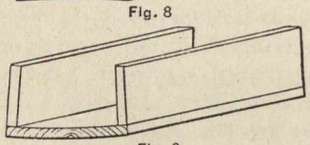

Fig. 9

thicknesses. A pattern like Fig. 7 is more serviceable made with length of the bottom piece running from one rib to the other, as the bottom will stay straight and the side will always draw. If made like Figs. 8 and 9 you get the effect shown which will distort the ribs so that the pattern will not draw.

When the grain of the wood can be put in to run in the same direction as the line of draft, a slight warping will not affect the drawing of the pattern. This cannot always be done, because patterns so made would be weak in vital parts. Distribution of the grain of wood in patterns is as much a study as the distribution of metal, both equally affecting the utility of their respective constructions.—"American Machinist."

VARNISH FOR PATTERNS.

Patternmakers have great difficulty in getting a pattern varnish which has little affinity for the sand, can be smoothed finely, and will resist moisture. The following is a recipe used in the pattern shops of several of the largest engineering works in Europe and America:—

Vermillion. (Fifteen cents per pound.)
Best orange shellac.
Pure alcohol.

Mix the varnish and vermillion together to the consistency of paint, thin down with alcohol to work free; when perfectly dry rub down with very thin sand-paper before sending to foundry.

PATTERNMAKERS' GLUE.

1 pound glue,
1 pint to 1 quart water, as glue requires,
¼ pint wood alcohol,
¼ pound dry white lead, well pulverized,
½ ounce precipitated chalk.

Preparation of above:—Place glue in water until same is dissolved, add alcohol, heat 2 or 3 minutes, then add chalk + lead (mixed together), stir well, and use hot.