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METHOD OF CONVERTING PLAIN GRAINED BOARDS INTO QUARTERED GRAINED BOARDS.

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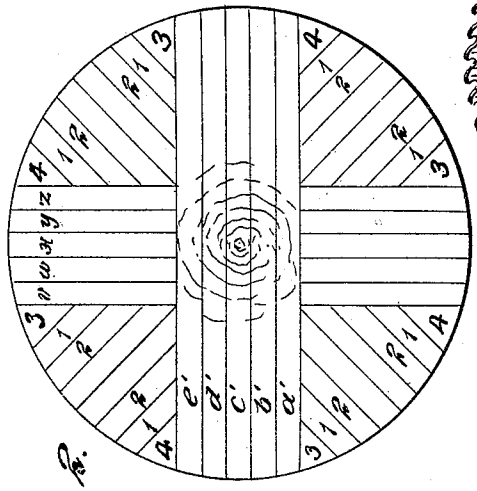

Fig. 2.

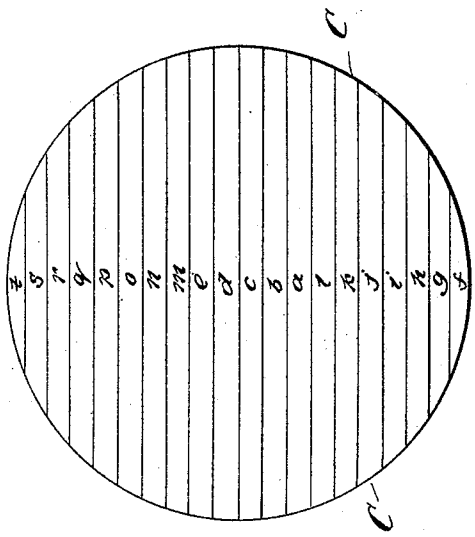

Fig. 1.

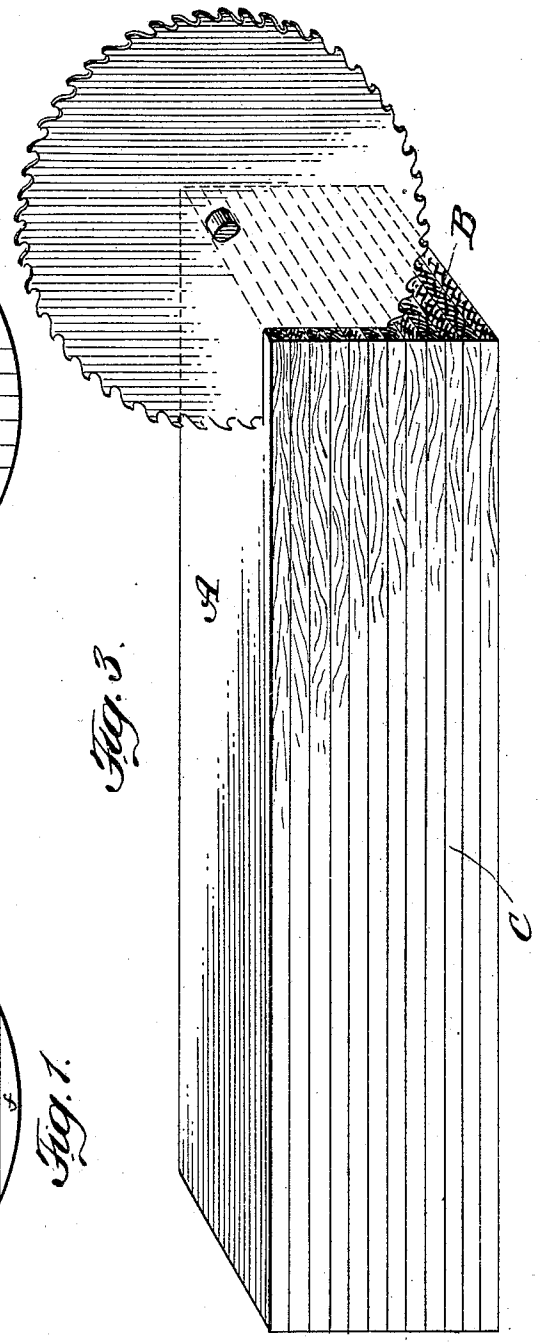

Fig. 3.

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METHOD OF CONVERTING PLAIN-GRAINED BOARDS INTO QUARTERED-GRAINED BOARDS.

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To all whom it may concern:

Be it known that I, HERMAN KERTSCHER, a citizen of the United States, residing at the city of New York, borough of Manhattan, in the county and State of New York, have invented a certain new and useful Improved Method for Converting Plain or Straight Grained Boards or other Pieces into Quartered-Grained Boards, &c., of which the following is a full, clear, and exact specification.

My invention relates to an improved method for converting plain or straight grained boards or other pieces into quartered grained boards, strips, veneers or other pieces.

As is well known, if a log of given diameter is sawed in the easiest possible fashion to get the greatest number of boards or other pieces of a given thickness therefrom, the majority of such boards will consist in what is known as plain and only a few as quartered grained pieces.

In Figures 1 and 2, I have illustrated diagrammatically by sectional views of a log, approximately the methods in which logs are cut to secure plain and quartered grained pieces respectively. Fig. 3 is a perspective view illustrating my preferred method of putting the plain grained boards together and sawing the same to produce quartered grained boards, strips, veneer and the like.

Obviously, in sawing as illustrated in Fig. 2 to secure quartered grained material, there will be considerably more waste of lumber than in sawing it to get plain grained material, as illustrated in Fig. 1, and second, the log will have to be turned to secure quartered material, while in sawing for plain material, it is merely a steadily reciprocating process.

As is well known, quartered material is much more valuable than plain material. Furthermore, it should be borne in mind that to secure a board, strip, veneer or piece of wood of any character, to have any utility, the sawing must be done lengthwise of the log or with the grain of the tree. For example, it would be of no value for any useful purpose to cut a round piece off the end of a log, because such pieces would have no tensile strength. Plain grained wood is much cheaper than quartered grained.

As will be seen from a consideration of Fig. 1 compared with Fig. 2, assuming the log to be of such a size that twenty boards can be secured by cutting according to the method illustrated in Fig. 1, approximately one quarter of these boards or about the five center boards *a*, *b*, *c*, *d*, *e*, will be the same as about five of the boards illustrated in Fig. 2, namely, boards *a'*, *b'*, *c'*, *d'* and *e'*, and will therefore be quartered material.

When logs are sawed in the manner illustrated in Fig. 1, it is customary to sort the boards and other pieces of quartered material, such as *a*, *b*, *c*, *d* and *e*, into one pile, and the plain boards into another.

By the use of my invention, I can take the plain boards, such as the fifteen boards marked respectively, *f*, *g*, *h*, *i*, *j*, *k*, *l*, *m*, *n*, *o*, *p*, *q*, *r*, *s*, and *t* in Fig. 1 and convert them into boards, strips, veneers or other pieces of practically any size, all of quartered material and at a cost considerably less than would be the cost of normally quartered material of the same dimensions.

It will be noted that in sawing a log to produce quartered grain, the saw, in all instances, travels along or substantially along a radius or diameter of the cross-section of the log. The ideal quartered grain is secured by the saw running directly along a radius. On each side of the radius or diameter, for a certain distance, amounting approximately to a quarter of the entire diameter of the log, less perfect specimens of quartered grain lumber may be secured.

In sawing as illustrated in Fig. 2, it is obvious that the saw will have to be driven entirely through the log to cut off the boards *a'*, *b'*, *c'*, *d'* and *e'*, and then the remaining pieces of the log sawed up as indicated, or else that the log will have to be continuously turned. By the latter, I mean it will be necessary to saw the boards *a'*, *b'*, etc., up to the heart of the log and then turn the same to saw at cross angles to the original cuts. This entails considerable labor and adds very materially to the cost as compared with cutting as illustrated in Fig. 1. Furthermore the short diagonal pieces, such as 1, 2, 3, 4, and in some instances the next few shortest pieces will be of very little, if any, value. As a result a certain amount of the log is always wasted in sawing as illustrated in Fig.

2 which results indirectly in a still further increased cost of the material saved and used.

It is not my purpose to use any quartered boards. On the contrary, the plainer the grain, the better. In other words, I can use with the greatest advantage, the cheapest plain grained material.

By comparing Fig. 2 with Fig. 1, it will readily be seen that the longitudinal edges of each of the best quartered boards 1, 2, 3, 4, Fig. 2, made on the (as shown) vertical cut are the same wood and grain as the plane surfaces of the plainest grained boards when cut (as shown) horizontally as in Fig. 1. If you kept on cutting vertically in Fig. 2 the longitudinal edges would gradually get closer and closer to the grain of the surfaces of the quartered portions *a*, *b*, *c*, *d*, *e*, in Fig. 1. Conversely the longitudinal edges of the only good quartered boards of Fig. 1 (such as *a*, *b*, *c*, *d*, *e*,) would be of wood of the plainest grain and farthest removed from a quartered board. As shown in Fig. 2, it is necessary in cutting for quartered grained material to saw in such a way as expressly to avoid any such grain.

Comparing Fig. 1 with Fig. 2 the longitudinal edges of the boards cut close to the circumference of the log will be of the same grain as the plane surfaces of boards cut from the center of the log, provided the cutting were done at right angles, or, as shown, vertically. Of course Figs. 1 and 2 are merely diagrammatic illustrations. Roughly speaking, however, the longitudinal edges of three-fourths of the boards, sawed as indicated in Fig. 1, will be quartered grain. The best grain will be from the outside boards, such as those designated *f*, *g*, and *s*, *t*, in Fig. 1, and will include the same grains as the plane surfaces of the boards *v*, *w*, *x*, *y*, *z*, of Fig. 2. The quality of grain will then gradually depreciate as the boards get closer to the center, until finally the longitudinal edges will become plain and the plane surfaces quartered. Broadly speaking, the longitudinal edge of a board having a quartered plane surface will always be plain grained, and vice versa.

I propose to take the plain boards, secure them together in any suitable way and in any suitable numbers, and then to saw longitudinally and parallel to the original edges through the structure to get new boards, strips, etc., having their plane surfaces comprised of what were formerly the longitudinal edges of the old boards. A glance at the structure illustrated in Fig. 3 will show what I mean. A consideration of this same Fig. 3 will further explain what I have already described.

A designates what I have called the plane surface of one of the original boards, B, the ends of the original boards, and C, the longitudinal edges thereof.

In other words, the ends B are what we see in looking at Fig. 1. The plane surface A is the surface which would be formed as the boards were cut by the passage of the saw through the log in Fig. 1. The edges C correspond to the outer edges of the boards sawed as shown in Fig. 1, starting from the circumference and extending toward the center, so long as the boards continue plain grained on their plane surfaces as opposed to quartered grained. Evidently, if the quartered grained boards obtained by sawing, as illustrated in Fig. 1, were included in the structure illustrated in Fig. 3, their edges would become plain grained, and thus spoil the quartered grained effect desired for the surface C of Fig. 3.

I will now describe in more detail how I carry out my proposition to take the plain boards and convert them into new boards, strips, etc., having their plane surfaces quartered grained. I take a number, determined at will, of plain grained boards or other pieces and arrange them back to back, insert intermediate their surfaces a glue or other suitable retaining substance, put them in a press or under other suitable high pressure and leave them there until they are dry, thus producing, in substance, an integral structure (Fig. 3), which is then sawed transversely through the surfaces of the original boards and substantially parallel to the original edges thereof, or in the direction indicated by the line A—B in Fig. 3. The resulting board, strip, or veneer (depending upon the thickness and dimension), will comprise a series of quartered grain strips forming a substantially integral structure and adapted to be used for any suitable purpose. It will be noticed that we have here a structure formed by cutting with the grain as opposed to across the grain, as in the case of sawing off the end of a log.

This invention may be used for turning out boards of any thickness, thin veneers, so-called panel work, rafters, etc. Furthermore, columns, cylindrical or substantially cylindrical in shape, may be formed of this material, which will give the effect of quartered oak.

I have found by experiment that for stanchions, ornamental beams, ornamental wainscoting, ornamental lining and partition work generally and all purposes where no very great pressure is exerted, this material, taken by itself, will fill all requirements, and produce a very beautiful result. Of course, in veneer work, where the material is used in a very thin form, it must be supported by a suitable backing. In other words, each strip, taken by itself, has the full tensile strength of the natural wood.

The only danger of breaking lies in sufficient pressure being exerted to force the strips apart. If the strips are properly secured together by a suitable glue and after sufficient pressure, pieces so formed will be equally as strong as integral pieces of the same thickness.

What I claim is:—

1. The process of converting plain-grained material into quartered-grained, which comprises first, securing together a number of plain grained pieces, and second, sawing the same transversely to the surface thereof to produce quartered-grained pieces.

2. The process of converting plain-grained material into quartered-grained, which consists, first, of inserting a retaining substance intermediate the plane surfaces of a plurality of plain-grained pieces, second, submitting the same to pressure, and third, sawing the same transversely to the surface thereof to produce quartered-grained pieces.

3. The process of converting plain-grained material into quartered-grained, which consists, first, of inserting a retaining substance intermediate the plane surfaces of a plurality of plain-grained pieces, second, submitting the same to pressure, third, drying the same while under pressure, and, fourth, sawing the same transversely to the surface thereof to produce quartered-grained pieces.

In witness whereof, I have signed my name to the foregoing specification in the presence of two subscribing witnesses.

HERMAN KERTSCHER.

Witnesses:

Jos. F. O'Brien,

Rose V. Finn.