(No Model.)

E. J. STORY.

METHOD OF TREATING LUMBER.

No. 276,499. Patented Apr. 24, 1883.

Fig. 1.

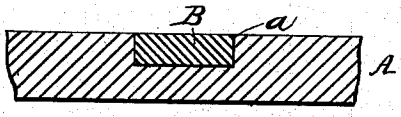

Fig. 2.

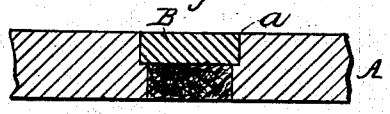

Fig. 3

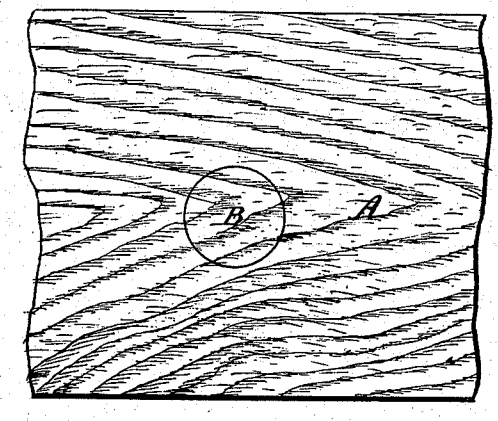

Fig. 4.

Fig. 5.

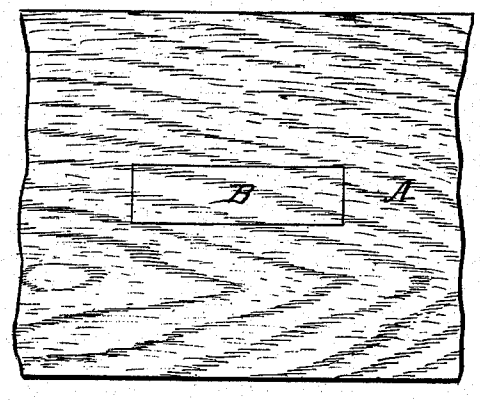

Fig. 6.

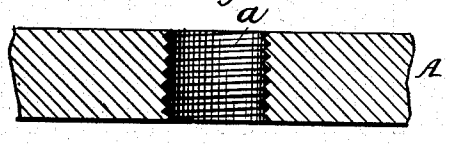

Fig. 7.

Witnesses:
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Atty.

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UNITED STATES PATENT OFFICE.

EPHRAIM J. STORY, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR OF ONE-HALF TO GEORGE A. GUSTIN, OF SAME PLACE.

METHOD OF TREATING LUMBER.

SPECIFICATION forming part of Letters Patent No. 276,499, dated April 24, 1883.

Application filed November 29, 1882. (No model.)

To all whom it may concern:

Be it known that I, EPHRAIM J. STORY, of Washington city, in the District of Columbia, have invented certain new and useful Improvements in Methods of Treating Lumber; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention relates to a method or process of improving the quality and adding to the value of knotty or unsound lumber by machinery and on a commercial scale, thereby fitting such lumber for useful application in the arts, and effecting great saving of valuable material which is ordinarily wasted. It is well known that about lumber-yards, saw-mills, &c., much really valuable lumber is rejected as useless, or is classed as low-grade stock and sold at very low prices, simply by reason of its containing a few unsound spots, such as split or checked knots, or knot-holes, or small decayed portions. Now, I have found that such lumber may, with advantage, be treated on a systematic plan on a commercial scale by machinery, and its quality thus improved and its grade raised to first-class stock, and this at comparatively small expense, where proper machinery is provided and used for treating large quantities of the inferior lumber. It is a well-known fact that the value thereof is impaired by knots, for the reason that they disfigure it by preventing the production of a smooth surface, and, besides, are liable to become loose and drop from their seats, and also to exude a resin which discolors and mars the paint which is generally applied to finished work.

The object of my invention is to remedy the defects above enumerated.

In carrying my invention into effect I remove the knots and other defective portions, together with a rim of the surrounding sound wood, by a revolving cutting-tool, a cutting-die, or other suitable tool operated by machinery. The defective or objectionable portion is cut to a sufficient depth, and a cavity produced of a proper contour to admit of the insertion and retention of a piece of clear wood. It is preferred to cut a cavity or opening in the piece of timber to be improved with a geometrical or other regular contour, in order that a filling-piece of corresponding shape may be readily prepared and snugly fitted therein.

In one of the methods of carrying out my invention the knot or unsound portion of the lumber is removed by a revolving cutting-tool, forming a circular cavity or hole, in which is formed a screw-thread for receiving a screw-threaded filling-piece. The cavity or hole should be slightly expanded by force before insertion of the filling-plug. The filling-piece is screw-threaded on its periphery, and is of proper size to fit tightly in its place. As hereinafter more fully described, the filling-piece is coated before insertion with a moist adhesive substance, which will cause the filling-piece and the wood in which the cavity is formed to swell and form a tight joint after the filling-pieces have been properly inserted. In case the filling-piece is round and screw-threaded, it is, after being moistened, screwed into its place and its surface dressed down. My invention, however, is not confined to a screw-threaded hole and filling-piece. Other forms are hereinafter described. The filling-piece is so cut that its grain shall coincide with or extend in the same direction as the grain of the timber into which it is to be fitted, in order that the lumber shall present as uniform appearance as possible after the treatment. The filling-piece should be dry, and may be cut with a die or punch of a shape corresponding to that of the cavity in the lumber, and in the process of production is slightly compressed, so that after insertion in its cavity it may be caused to swell by moisture and fit tightly in its place, and thus make perfect union with the lumber. Cavities of suitable shapes having been made in the lumber for the removal of knots, decayed portions, &c., and filling-pieces of corresponding shape and slightly compressed having been formed, the cavities are coated with glue or other suitable adhesive substance, and the filling-pieces are then driven or forced home, and, if necessary, are dressed down to the surface of the lumber. The moisture of the glue or other adhesive substance will then cause the filling-piece to

swell to its original size, and thus seat itself firmly in place, making perfect union with the lumber.

The tool, if a revolving cutter, may be applied with its end vertical to the lumber, or horizontally—that is, with its periphery to the lumber—for cutting the cavities, and they should be of different sizes and shapes, according to the shape of the knot or decayed portion to be removed. For ordinary building-lumber my preference is for a vertical cutter making a circular cavity. For hard wood I prefer a horizontal cutter making a cavity down into the wood like the segment of a circle, though of rectangular shape at the surface of the wood.

The accompanying drawings illustrate the method of applying my invention for improving the quality and appearance of lumber.

Figures 1 and 2 represent a cross-section of a board showing the cavity made by a vertical cutter with the piece inserted completely filling the cavity. Fig. 3 is a top or plan view of the same. Fig. 4 represents a section of board, showing the cavity cut by a horizontal cutter, with its filling-piece inserted; and Fig. 5 is a top or plan view of the same. Fig. 6 shows a sectional view of a piece of lumber having a round opening through it which is screw-threaded, and Fig. 7 shows the screw-threaded filling-piece to be inserted in the opening.

A is the board or other piece of lumber to be improved. It is shown with the cavity *a* of different shapes, made by different cutting-tools.

B is the filling-piece, inserted and driven home into its cavity.

Having described my invention, what I claim, and wish to secure by Letters Patent, is—

The improved method of converting and improving lumber hereinbefore described, consisting essentially in, first, introducing imperfect lumber to a machine; second, bringing the knots or other imperfect parts opposite the cutters of the machine; third, removing by machine-cutters the imperfect parts; and, fourth, inserting clear stuff to the cavities made by the removal of refuse parts, all substantially as set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

EPHRAIM J. STORY.

Witnesses:
O. E. DUFFY,
GEO. A. GUSTIN.