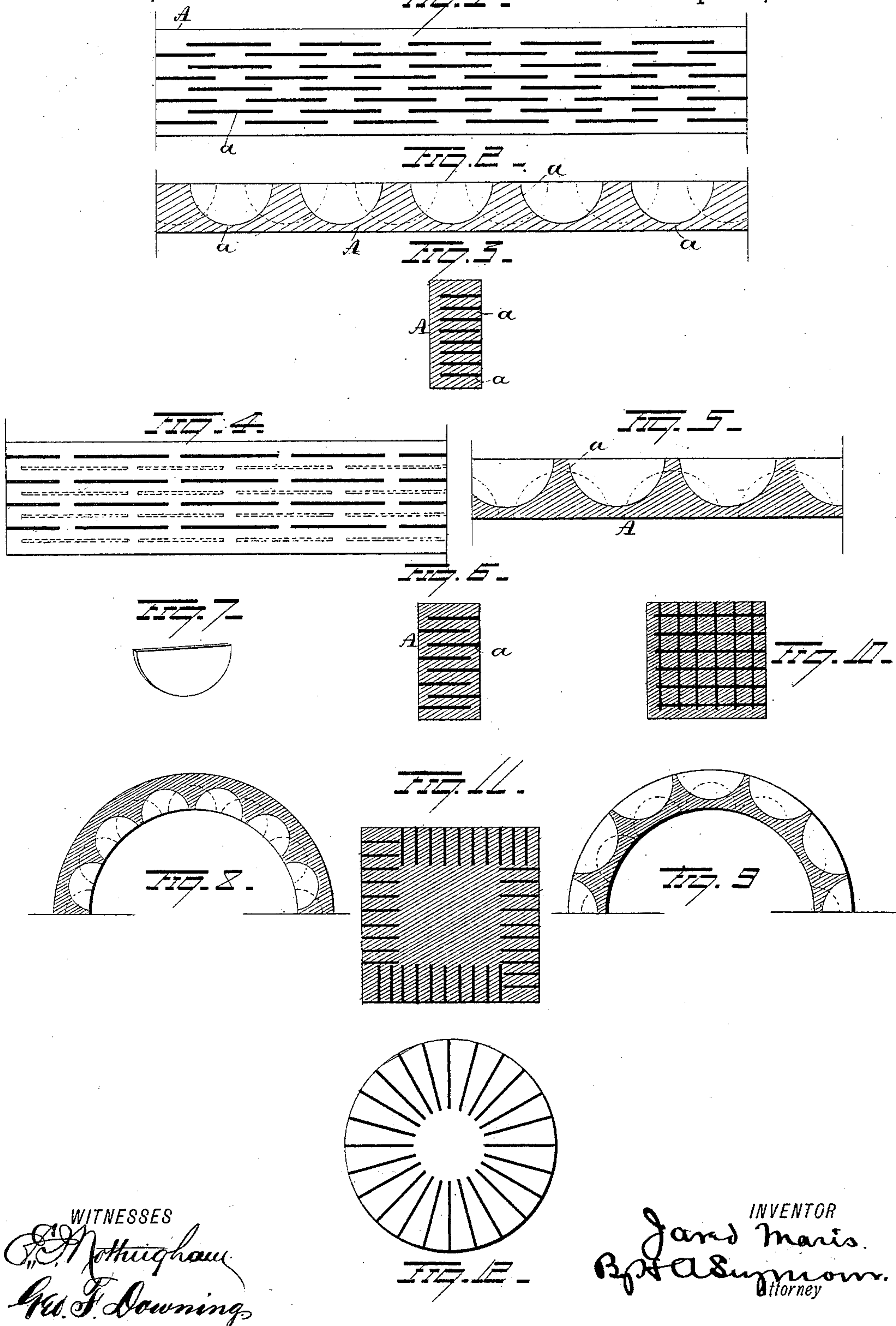


(No Model.)

J. MARIS.  
COMPOUND LUMBER.

No. 339,199.

Patented Apr. 6, 1886.





# UNITED STATES PATENT OFFICE.

JARED MARIS, OF PHILADELPHIA, PENNSYLVANIA.

## COMPOUND LUMBER.

SPECIFICATION forming part of Letters Patent No. 339,199, dated April 6, 1886.

Application filed May 15, 1885. Serial No. 165,623. (No model.)

*To all whom it may concern:*

Be it known that I, JARED MARIS, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain  
5 new and useful Improvements in Methods of Manufacturing Compound Lumber from which Articles or Structures are Formed; and I do hereby declare the following to be a full, clear, and exact description of the invention,  
10 such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improved method of manufacturing compound lumber from which articles or structures are formed, the  
15 object being to strengthen or stiffen or lighten such articles or structures and regulate the expansion thereof; and it consists, first, in removing portions of the wood from the piece from which the structure or article is to be  
20 formed and introducing into the recesses or cut-away portions separate and independent strips or pieces of wood or material of such form and character as will serve to strengthen or stiffen or lighten the completed article or  
25 structure or to regulate the expansion thereof; second, in removing portions of the wood from the piece from which the structure or article is to be formed and introducing into the recesses or cut-away portions separate and independent  
30 strips of wood or material in such manner that they will break joints one with another; third, in removing portions of the wood from the piece from which the article or structure is to be formed and introducing into the recesses or cut-away portions very thin  
35 strips of wood or material, in such a manner that they will break joints one with another and allow of the employment of a great number of re-enforcing or supplemental strips in a comparatively small space; fourth, in removing  
40 portions of the wood from one side or face of a piece from which the article or structure is to be formed and introducing into such recesses or cut-away portions separate and independent strips of wood or material, so as to  
45 extend only partly through the main piece; fifth, in bending a piece of wood into any desired form, and then cutting or forming recesses therein and introducing into said recesses separate and independent strips of wood  
50 or material, for strengthening or lightening or regulating the expansion of the completed

structure or article; sixth, in certain other features of invention in the method of forming structures or articles from wood, as will be  
55 hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan-view of a straight piece of wood having strips of wood inserted therein in accordance with my invention. Fig. 2 is a longitudinal section, and Fig. 3 is a transverse section, of the same. Figs. 4, 5, and 6 are similar  
60 views of a straight piece of wood having strips of wood inserted therein from its opposite sides. Fig. 7 is a detached view of one of the strips for insertion into the piece. Fig. 8 represents a bent strip of wood having pieces inserted therein from one side. Fig. 9 is a similar view showing the pieces inserted from  
65 opposite sides. Fig. 10 is a cross-section of a piece of wood having strips inserted from its sides so as to intersect one another. Fig. 11 is a cross-section of a square piece of wood having strips of wood inserted in its  
70 sides, and Fig. 12 is a cross-section of a round piece of wood with strips of wood inserted in its periphery.

In Figs. 1, 2, and 3, A represents a piece of wood having elongated slots *a* formed therein  
80 by means of a circular saw or by other means. These slots are preferably made very narrow and extend only partly through the piece, so that the side opposite the saw kerfs or slots remains undisturbed and uncut. The slots are  
85 also preferably formed so as to break joints in the manner shown. Within each slot is inserted a thin strip of wood made in the form illustrated in Fig. 7, the curved edge of the strip being cut so as to conform in shape to the  
90 bottom of the saw-kerf and fit snugly therein. To retain the strips against displacement, they are secured within the slots by means of glue or other cement. By making the saw-kerfs  
95 very narrow and inserting correspondingly thin strips therein and arranging the latter so as to break joints, as described, I am enabled to materially strengthen the piece and increase its elasticity without adding to its size or weight. Instead of forming the saw-kerfs in one side only of the piece, they may be formed in opposite sides thereof, as shown in Figs. 4, 5, and 6, and in some kinds of work this plan may be the preferred one.



In Fig. 8 I have represented a piece of wood which is bent into any desired form, after which recesses or slots are formed therein and the strips of wood inserted within the recesses.

5 In Fig. 9 the piece is bent and the strips inserted into the opposite sides of the piece—that is to say, into the concave and the convex surfaces of the strip.

10 Fig. 10 represents another method of carrying my invention into effect, and consists in inserting the wooden strips into a piece of wood, so that the strips inserted in one side will intersect the strips inserted in the other side of the strip.

15 In Figs. 11 and 12 are represented pieces of wood having the thin wooden strips inserted in slots extending around the entire circumference of the piece, such method being resorted to in articles of sufficient size to admit  
20 of the insertion of the strips on all sides or within the entire periphery of the piece of wood of which it is to be formed.

Many important advantages are derived from my improved method of manufacturing  
25 articles or structures from wood, and of the number the following are enumerated: In such articles or structures as require to be compact in form and size and of maximum strength the insertion of thin strips within correspond-  
30 ingly narrow slots in the piece of wood, so that the strips shall overlap and break joints, enables me to greatly enhance the strength of the piece, as it allows of the employment of any suitable kind of wood, and to re-enforce  
35 and strengthen it by the thin strips, which are arranged so as to conform as nearly as possible to the arrangement of the natural fiber of the wood, and as the re-enforcing or supplemental strips may consist of very hard, tough,  
40 and elastic wood, they serve to add very materially to the strength of the piece so re-enforced. Again, the elasticity of a piece of wood may be greatly increased by resorting  
45 to my improved process, as a piece of wood having a limited amount of elasticity, when re-enforced by thin strips of tough and elastic wood inserted therein in the manner described, is rendered exceedingly resilient and strong,  
50 and thereby adapted to many uses for which it could not be used in its natural state. Again, by inserting the thin strips of wood within the narrow slots in such a manner that the grain of the strips will intersect or be arranged across the grain of the piece, the lat-  
55 ter will be stiffened and prevented from cracking or splitting; also, the expansion and contraction of a piece of wood may be increased or decreased or equalized by the employment of the re-enforcing or supplemental strips.

60 It is well known that wood expands in a direction transverse to the length of its fiber and not in a line therewith. Hence by inserting the thin strips of wood so that the grain of the strips shall be arranged at right angles to the  
65 grain of the piece the tendency of the piece to expand or contract will be in a great measure counteracted by the tendency of the fiber

of the strips to expand in an opposite direction. By a proper location and arrangement of the thin strips the expansion of the piece of wood  
70 may be regulated and controlled as desired.

In many instances a cheap grade of wood may be utilized by properly re-enforcing its strength or stiffness or elasticity by the em-  
75 ployment of the supplemental strips, as described, and also a structure of minimum weight may be secured by this process, as it allows of the use of the lightest species of wood, which may be properly strengthened and stiff-  
80 ened throughout its length, or at any point where it may be subjected to heavy strain or weight.

In the manufacture of articles from bent wood the process described is of value and importance, for the following reasons among  
85 others that might be cited:

It is well known that the tensile strength of wood exceeds its collapsing or crushing strength. Thus, for example, when a piece of  
90 wood is bent, the fibers on the inside of the curve will fold onto themselves, while the fibers on the outside of the curve will retain their normal position, or nearly so. Now, when a piece of wood thus bent into curved  
95 form is allowed to absorb moisture from any source, the lateral expansion of the folded fibers will tend to lengthen the inner face of the curve, and hence to straighten it. This change of curve is a serious objection in all  
100 cases where symmetry or joints are affected thereby. By inserting the thin strips of wood into the narrow saw-kerfs on the inside of the curve, the grain of the strips being arranged  
105 in line with the grain of the curved piece, the tensile strength of the strips is utilized in counteracting the tendency of the crowded fibers on the inside of the curve to expand, and thereby retains the piece in its curved form.

As my improved process is applicable to a  
110 great variety of special purposes, I do not restrict myself to any particular purpose for which it may be used.

Having fully described my invention, what I claim as new, and desire to secure by Letters  
115 Patent, is—

1. A strip or piece of wood having a series of short narrow strips or pieces, substantially as described, secured within short narrow  
120 slots formed with the strip or piece, substantially as and for the purpose set forth.

2. The method of manufacturing compound lumber, consisting, essentially, in forming a series of narrow slots in one or more faces of  
125 a piece of wood and securing within said slots thin strips or pieces of wood, the said thin strips being arranged to break joints with one another.

3. The method of manufacturing articles or structures of bent wood, consisting in first  
130 bending the wood into the desired form, and then forming narrow slots therein and inserting within the slots thin strips of wood, substantially as set forth.



4. A piece of wood provided with narrow slots arranged to break joints one with another, and thin strips of wood secured within said slots so as to break joints, substantially  
5 as set forth.

5. A piece of wood provided with narrow slots extending partly through the piece, and narrow strips of material secured within said slots so as to break joints, substantially as set  
10 forth.

6. A piece of wood having narrow semicircular grooves therein and thin strips of wood semicircular in shape inserted in said grooves.

In testimony whereof I have signed this specification in the presence of two subscrib- 15  
ing witnesses.

JARED MARIS.

Witnesses:

GEO. L. MARIS,  
ARTHUR M. WARE.