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J. H. WEISS.

PROCESS OF PRODUCING IMITATION CARVINGS IN WOOD.

(Application filed Nov. 2, 1897. Renewed Feb. 6, 1899.)

(No Model.)

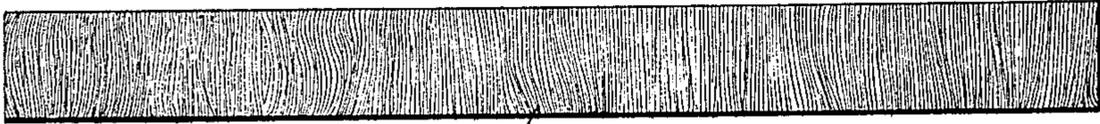


FIG. 1



FIG. 2

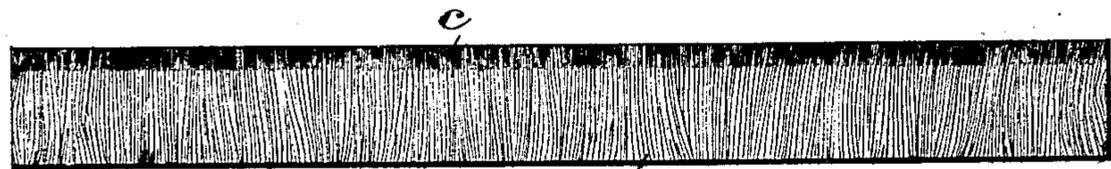


FIG. 3



FIG. 4

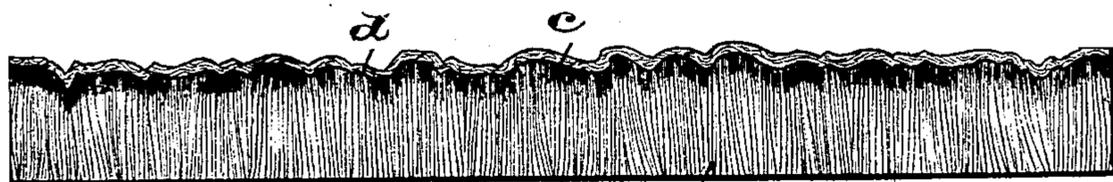


FIG. 5

WITNESSES:

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# UNITED STATES PATENT OFFICE.

JULIUS H. WEISS, OF PARIS, FRANCE, ASSIGNOR, BY MESNE ASSIGNMENTS,  
TO THE WILLNER WOOD COMPANY, OF NEW JERSEY.

## PROCESS OF PRODUCING IMITATION CARVINGS IN WOOD.

SPECIFICATION forming part of Letters Patent No. 632,433, dated September 5, 1899.

Application filed November 2, 1897. Renewed February 6, 1899. Serial No. 704,737. (No specimens.)

*To all whom it may concern:*

Be it known that I, JULIUS H. WEISS, a subject of the Emperor of Germany, and a resident of No. 20 Rue Taitbout, Paris, France, have invented a certain new and useful Improvement in Processes of Producing Imitation Carvings in Wood, of which the following is a full, clear, and exact description, such as 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 letters of reference thereon, which form a part of this specification.

My invention has for its object to provide a novel process of producing imitation carvings in solid or veneered blocks of wood—such as are used in wainscoting, cabinet-making, and other like uses wherein a decorative effect is desired—by subjecting the surface of the wood to the action of a mixture of a chemical or chemicals of a mineral species with a mineral of a micaceous or other like nature held in suspension in such solution, so as to render that portion of the wood either at or near the surface resistible or tenacious to pressure and practically forming at the exposed surface a condition of excessive hardness, and then subjecting it to the action of a die or dies bearing a design, under proper pressure, whereby an ornamentation of the surface of the wood is produced in perfect imitation of hand-carving.

A further object of the invention is to provide a novel process for producing imitation carvings in wood by subjecting the surface of the wood to the action of a mixture of the nature above set forth and in addition thereto exposing the surface of the wood to the action of an organic substance to render that portion of the wood at and near the surface both resistible or tenacious to pressure and non-hygroscopic and subjecting it to the action of a die or dies bearing a design under pressure, whereby the ornamentation of the surface of the wood is produced in perfect imitation of hand-carving.

Finally, another object of the invention is to produce a block, slab, or piece of wood which has been treated in the above manner to produce a new article of manufacture.

The invention therefore consists in a block,

slab, or piece of wood of the nature herein set forth; and, furthermore, the invention consists in a novel process, the main features of which reside in that the wood to be ornamented is rendered capable of withstanding the pressure to which it is subjected in raising an ornamentation thereon—that is, the wood having been treated at or near its surface in the manner stated practically forms, with the material employed, a surface of a tenacious nature in which the fiber of the wood is embedded and forms an integral part therewith, and it will not become torn or distorted when subjected to the pressure under the die or dies.

The invention consists, furthermore, in rendering the surface of the wood, in addition to this resistible feature of the surface to pressure, waterproof to render the wood incapable of warping when in the form of relatively thick sheets or slabs.

The invention also consists in a process of producing imitation carvings in wood, in veneering the wood, and after treating the wood as above stated subjecting the combined material to the action of a die or dies.

In the accompanying sheet of drawings I have illustrated the different steps of my novel process, as well as the completed article of manufacture.

In said drawings, Figure 1 is a sectional view of a block or slab of wood in its normal condition. Fig. 2 is a similar view of the block or slab, illustrating the surface of the wood after it has been subjected to the herein-described treatment to render it tenacious or resistible to pressure; and Fig. 3 is a similar view of the wood after the solution has been allowed to dry in the surface of the wood. Fig. 4 is a sectional view of the block or slab of wood after it has been subjected to the action of a die or dies, and Fig. 5 is a similar view of a block or slab of wood provided with a veneer and treated as above.

The method of producing imitation carvings in wood by my novel process is as follows: I take a block, slab, or piece of any suitable wood, as *a* in Fig. 1 of the drawings, the thickness of which is only that required for producing a decorated article after it has been subjected to pressure. This block is

preferably exposed to dry heat, such as hot air or dry steam, at a temperature of about 20° Réaumur for a length of time varying between, say, one and several days, according to the greater or less degree of dampness or moisture of the wood. Such drying operation may be performed either on the mass of raw wood before it is cut up or upon each individual piece or slab cut from said mass. When dry, the wood is placed in a mixture the ingredients of which are of a mineral or inorganic species, and then boiled therein for rendering the surface of the wood hard or tenacious and capable of resisting pressure without danger of tearing or distorting the fiber of the wood at the surface when subjected to pressure from a die or dies. This mixture contains bichromate of potash in water and fine particles of mica in suspension therein in the proper proportions, which will readily penetrate the pores at the surface of the wood and practically form a surface *b* of a tenacious nature, as indicated in Fig. 2. After the block or slab of wood has undergone this treatment for half an hour or longer, depending on the kind of wood, the wood is dried by means of hot air, dry steam, or in any other suitable manner, causing by evaporation a crystallization of the bichromate of potash with the fine particles of mica interspersed and resulting in a crystallized-like surface *c*, as indicated in Fig. 3, with the fibers of the wood thoroughly embedded therein and the whole forming one integral mass at the exposed surface of the block or slab of a condition of excessive hardness, which can be readily and directly impressed with any desired design. The piece or block of wood so treated and prepared is now directly subjected to the action of a die or dies, (one of which has engraved into it the design which it is desired to impart in relief to one of the faces of the piece of wood,) the direct pressure being applied parallel to or along the grain of the wood or across the grain, as may be desired. This finished product is clearly illustrated in Fig. 4 of the drawings. If desired, the surface of the wood can be rendered non-hygroscopic by the addition of a substance of an organic species, as gelatin, which prevents any action of dampness and moisture of air upon the wood and positively prevents the warping of the wood and especially compressed wood. The above-mentioned substances may be employed with advantage in the following proportion—viz., bichromate of potash, twenty parts, by weight; mica, twenty-five parts, by weight, and water, fifty-five parts, by weight. These proportions are not, however, absolute. They may be varied within reasonable limits according to the kind of wood used and the different impressions desired. When it is intended to render the surface of the wood waterproof, I add, usually, ten parts of gelatin, by weight, varying the parts of the bichromate of potash and the water accordingly. The block or

slab of wood when being removed from the press is then ready for use as it is for wainscoting, cabinet-making, and decorating purposes generally, or it can be varnished, shellacked or japanned in any suitable manner to suit taste or special purposes. To attain a higher decorative effect of the finished piece of wood, I may apply to its embossed surface, either by a brush or by steeping, a solution of celluloid or equivalent substance of any desired color, allowing the same to dry thereon.

In the art of embossing wood by means of dies it has before my invention been proposed to waterproof the piece or slab of wood before embossing the same. To this end various substances have been proposed—such as glue, resins, or melted paraffin—and these water-repellents have been applied hot as well as cold. I have, however, found it to be impossible to obtain good results with any of these substances for the reason that they are used in attenuated or thin solutions. Otherwise the wood could not become saturated therewith. But when used in attenuated solutions the wood is insufficiently protected against the action of moisture. Furthermore, without the use of a mixture of a mineral or inorganic species, as hereinabove set forth, which, when the wood is dried a second time, a proper pressure-resisting surface will not be produced, and hence the fibers become torn and distorted and an unfinished and rough ornamentation in the surface of the wood will be the result. A mixture of this nature is therefore essential. I have found that the mixtures mentioned in the foregoing specification have the property of readily penetrating into the pores or the cells of the wood, whereby the fibers of the wood form a tenacious substance which can and does withstand the action of the embossing die or dies with the best results. I am therefore fully aware that waterproofing the surface of the wood and then subjecting it to the action of embossing-dies is not new *per se*, and this I do not claim broadly; but I do claim that it is new to treat the surface of the wood before embossing to the action of a mixture of a mineral or inorganic species to render the surface of the wood tenacious or resistible to pressure. I further claim that it is new to treat the surface of a piece of wood to a mixture of the nature just specified with the addition thereto of an organic substance, such as gelatin, to render the surface of the wood both resistible to pressure and non-hygroscopic.

Although in the foregoing specification I have stated that the design may be pressed direct into the surface of the prepared piece of wood itself, it will be evident that the piece of wood, either before or after the hereinabove-described treatment, may be provided with a wood or other suitable veneering, as *d*, (see Fig. 5,) which, with the main body or block of wood, is subjected at the same

time to the action of the die or dies, whereby both the treated surface *b* of the block *a* as well as the veneer *d* are suitably and properly embossed, as will be clearly evident from an inspection of said Fig. 5.

Having thus described my invention, what I claim is—

1. As a new article of manufacture, a block, slab, or piece of wood, impregnated at or near its surface with a mineral substance, the whole forming a block or slab or piece having a crystallized-like surface of a tenacious nature and excessive hardness at the exposed surface, and an ornamentation in said surface in imitation of wood-carving, formed in said impregnated surface by the subsequent action of a die or dies, substantially as and for the purposes set forth.

2. A process of producing imitation carvings in wood, consisting in taking a piece or slab of wood, in subjecting its surface to the action of a mixture of a mineral species having in suspension in said mixture a mineral of a micaceous or similar nature, to render a portion of the wood at and near its surface tenacious and resistible to pressure, and then subjecting the said treated surface to the action of a die, substantially as and for the purposes set forth.

3. A process for producing imitation carvings in wood, consisting in taking a piece or slab of wood, in drying it, in subjecting its surface to the action of a mixture of a mineral species, having in suspension in said mixture a mineral of a micaceous or similar nature, to render a portion of the wood at or near its surface tenacious and resistible to pressure, then drying it again, and subjecting the said treated surface to the action of a die, substantially as and for the purposes set forth.

4. A process for producing imitation carvings in wood, consisting in taking a piece or slab of wood, in subjecting its surface to the action of a mixture of a mineral species, having in suspension in said mixture, a mineral of a micaceous or similar nature, and a substance of an organic species having waterproofing properties, to render a portion of the wood at or near its surface tenacious and resistible to pressure and also non-hygroscopic, and then subjecting the said treated surface to the action of a die, substantially as and for the purposes set forth.

5. A process for producing imitation carvings in wood, consisting in taking a piece or slab of wood, in drying it, in subjecting its surface to the action of a mixture of a mineral species, having in suspension in said mixture, a mineral of a micaceous or similar nature and a substance of an organic species, having waterproofing properties, to render a portion of the wood at and near its surface tenacious and resistible to pressure and also non-hygroscopic, then drying it again, and then subjecting the said surface to the action of a die, substantially as and for the purposes set forth.

6. In a process of preparing wood for ornamentation by means of dies, expelling the moisture from a piece or slab of such by heat, boiling such piece or slab in an aqueous mixture of bichromate of potash and mica about in the proportions set forth, drying such piece or slab and subjecting the surface to be ornamented to the action of steam, and immediately thereafter to the action of dies, substantially as and for the purposes set forth.

7. In a process of preparing wood for ornamentation by means of dies, expelling the moisture from a piece or slab of such by heat, boiling such piece or slab in an aqueous mixture of bichromate of potash and mica about in the proportions set forth, drying such piece or slab, subjecting the surface to be ornamented to the action of steam and immediately thereafter to the action of dies, substantially as and for the purposes set forth.

8. In a process of preparing wood for ornamentation by means of dies, expelling the moisture from a piece or slab of such by heat, boiling such piece or slab in an aqueous mixture of bichromate of potash and mica about in the proportions set forth, drying such piece or slab, subjecting the surface to be ornamented to the action of steam and immediately thereafter to the action of dies, and then impregnating or coating the ornamented surface with a solution of celluloid, substantially as and for the purposes set forth.

In testimony that I claim the invention set forth above I have hereunto set my hand this 21st day of October, 1897.

JULIUS H. WEISS.

Witnesses:

EDWARD P. MACLEAN,  
J. S. ABERCROMBIE.