No. 646,547. Patented Apr. 3, 1900.

C. SEARS.

PROCESS OF PREPARING WOOD MATRICES.

(Application filed Feb. 11, 1898.)

(No Model.)

Fig. 1.

Fig. 2.

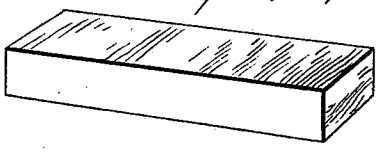


Fig. 3.

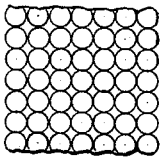


Fig. 4.

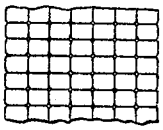
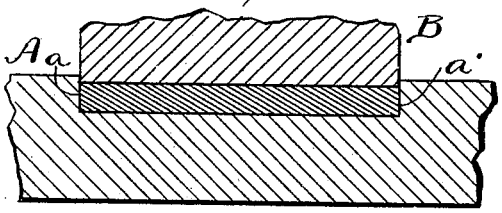


Fig. 5.



Witnesses:
E. B. Gilchrist
Philip E. Knowlton

Inventor:
Charles Sears.
By his attorneys,
Thurston & Bates

UNITED STATES PATENT OFFICE.

CHARLES SEARS, OF CLEVELAND, OHIO.

PROCESS OF PREPARING WOOD MATRICES.

SPECIFICATION forming part of Letters Patent No. 646,547, dated April 3, 1900.

Application filed February 11, 1898. Serial No. 669,981. (No specimens.)

To all whom it may concern:

Be it known that I, CHARLES SEARS, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Processes of Preparing Wood Matrices, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

In my prior patent, No. 446,930, of February 24, 1891, I have described a "stereotyped mold," so called, which is formed by impressing the letters or characters into the end fibers of a wood matrix-block. When a matrix-block of which the wood in its natural condition is used for making a mold to be used in casting type-bars, the printing-surface of these bars will not invariably be smooth, and therefore the bars cannot be used for book-work and other fine printing.

The object of my present invention is to provide a wood matrix-block into the end fibers of which impressions may be made, whereby the bottoms of said impressions will be extremely smooth and dense, so that a type cast from a completed matrix will have a smooth printing-surface.

The invention consists of a wood matrix-block whose cross-sectional area is less than it is in its original condition by reason of the fact that the fibers thereof have been forced into closer and more intimate contact with each other. The invention also consists in the process of treating the natural wood to produce the described matrix-block.

In the drawings, Figure 1 is a perspective view of a matrix-block constructed according to my invention. Fig. 2 is a perspective view of the block in its natural condition and before it has been treated in the manner to be presently described to form the block shown in Fig. 1. Fig. 3 is an illustrative view of an end section of the wood block in its natural condition. Fig. 4 is a similar view of the block after it has been treated by my process, and Fig. 5 is a sectional view of a device adapted to apply lateral pressure to the natural-wood block for the purpose of reducing its cross-sectional area.

In the natural wood the fibers lie substantially parallel to each other and at some distance apart, there being interstices between them. It is possible by pressure applied in a direction transverse to the fibers to force them into more intimate contact with each other and to compress and alter the shape of the fibers themselves, thereby reducing the cross-sectional area of the block. This is what I do to a piece of natural wood in preparing the matrix-block constituting this invention. In order, however, that the fibers shall maintain the shape and position relative to each other due to the application of this lateral pressure, I first immerse the wood in a weak solution of glue, allowing the same to soak into the wood. The glue-soaked wood is then placed between two pressure-plates—as, for example, the plates A and B in Fig. 5.

The elongation of the block in a direction transverse to the direction of the fibers may be and preferably should be prevented, and this result I produce by means of the two vertical shoulders a and a' on the plate A, which lie close to the ends of the block. When the block has been placed between these shoulders and upon the plate A, a strong pressure is applied to the block through the plate B. This pressure must be sufficient to squeeze out nearly all of the liquid glue, and must reduce the thickness of the block by forcing the fibers thereof out of their natural form and position and into more intimate contact with each other. When the pressure is taken off of a block which has been thus treated, there will be comparatively little expansion of the wood toward its original size, this being due largely to the presence of the glue in the wood. The glue also serves another purpose—namely, it practically fills the pores of the wood.

A block which has been treated in the manner described may be used to receive letter impressions in its end—that is, lengthwise of the fibers. The depressions will be clean and distinct, and the bottoms thereof will be so smooth that type cast in the depressions will have absolutely-smooth printing-faces, and will therefore be capable of use in the finest kind of printing.

It will be understood that the means for compressing the wood which is shown in the drawings hereinbefore referred to is not a material part of the invention. This invention is entirely independent of any particu-

lar means for effecting the compression of the wood.

Having described my invention, I claim—

1. The herein-described process of preparing a wood matrix-block for character-impressions, which consists in subjecting the block to pressure in one direction transverse to the direction of the fibers and preventing the spreading of said wood in the other direction transverse to the fibers thereof, whereby said fibers will be forced into more intimate relation with each other and the block itself reduced in cross-sectional area, substantially as specified.

2. The herein-described process of preparing a wood matrix-block for character-impressions, which consists in increasing the density of said wood by first causing said wood to absorb an adhesive liquid, and second, by reducing the cross-sectional area of the wood by pressure applied transverse to the fibers, substantially as specified.

3. The herein-described process of preparing a wood matrix-block for character-impressions, which consists in increasing the density of the block, by first causing the wood to absorb an adhesive liquid; and then reducing the cross-sectional area of the wood by pressing it laterally in one direction and preventing the lateral spreading thereof in the other direction, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES SEARS.

Witnesses:
THOS. C. BRINKLEY,
PHILIP E. KNOWLTON.