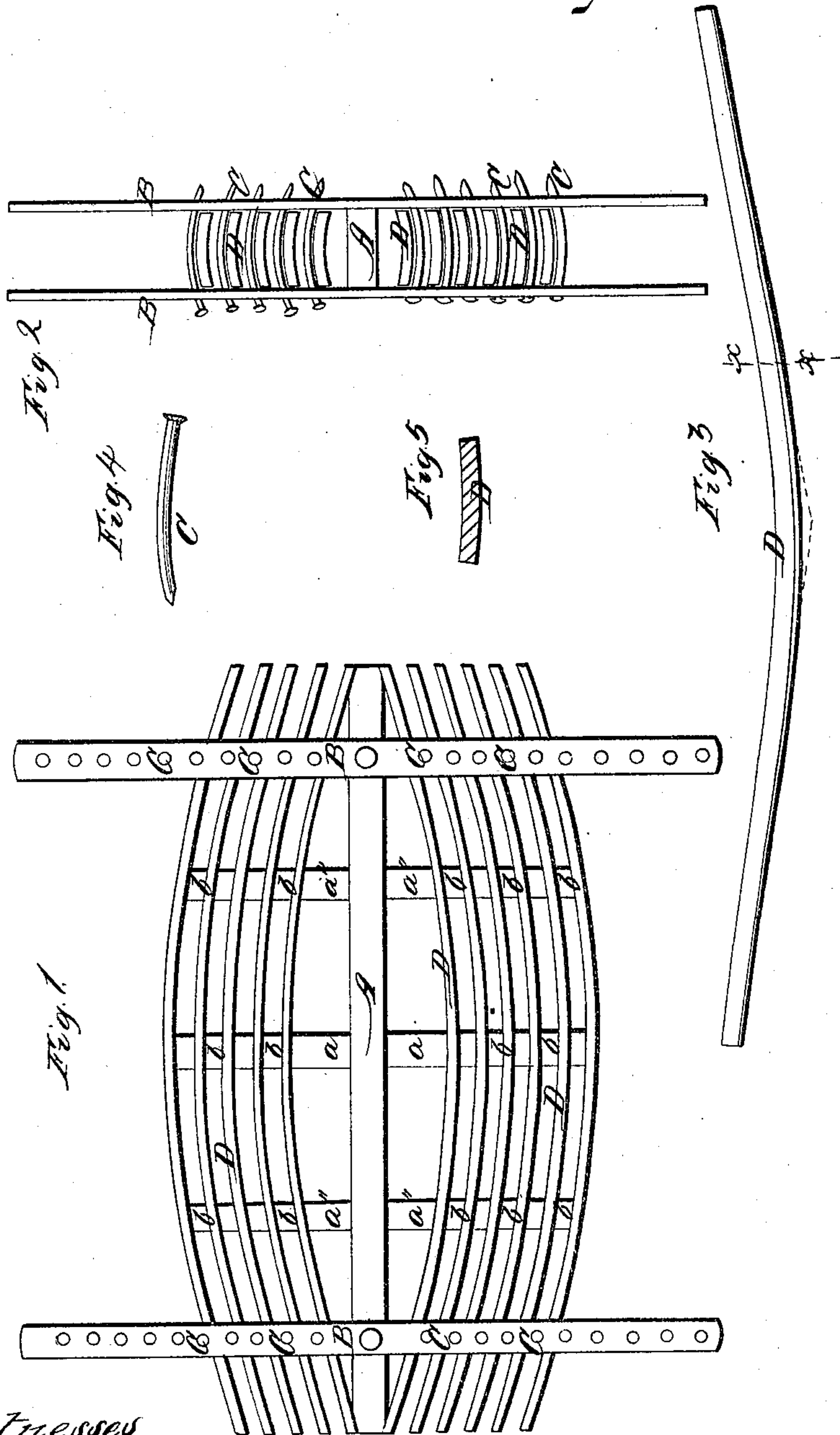


C. B. Hutchinson,
Bending Wood,
No 53,983, Patented Apr. 17, 1866.



Witnesses
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CHARLES B. HUTCHINSON, OF AUBURN, NEW YORK.

IMPROVEMENT IN MACHINES FOR BENDING STAVES.

Specification forming part of Letters Patent No. 53,983, dated April 17, 1866.

To all whom it may concern:

Be it known that I, CHARLES B. HUTCHINSON, of Auburn, in the county of Cayuga and State of New York, have invented a new and Improved Process for Preparing Staves for Casks, Barrels, &c.; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side view of a clamp used in carrying out my invention; Fig. 2, an end view of the same; Fig. 3, an edge view of a stave prepared according to my invention; Fig. 4, a detached view of a pin pertaining to the same; and Fig. 5, a transverse section of Fig. 3, taken in line *x x*.

Similar letters of reference indicate corresponding parts.

This invention relates to a new and improved process for giving the proper bilge or bulge to staves for casks, barrels, &c., whereby timber or stock which could not hitherto be advantageously used for staves—such, for instance, as that which is cross-grained, knotty, brashy, &c.—may be bent in proper form and prepared for use in a short time directly from green timber.

The invention consists in giving the staves, after they are properly dressed or given the necessary curved form in their transverse section, and softened or rendered pliable by steaming, soaking in water, or other means, a proper bilge or bulge form by placing them in a clamp or former, and while clamped or held in the shape or form designed for them thoroughly drying them in a kiln or drying-chamber, or otherwise, after which they will retain the form or shape given them by the clamp or former.

Inferior timber, such as is brashy, knotty, cross-grained, &c., has not hitherto been used for staves on account of not being capable of being bent without breaking; and as superior timber for staves is now getting very scarce and high, my invention will prove to be very valuable, as there is a large supply of inferior timber which, by its adoption, may be worked up into staves.

The clamp or former which I propose to use, although others may be employed, consists of

a bed or tie, A, of wood or metal, and having two bars, B B, secured to it near each end, and one at each side. (See Figs. 1 and 2.)

The bars B, at each end of the bed or tie, are parallel with each other and at right angles with the bed or tie, and they have pins C fitted in them at equal distances apart. These pins are removable, and they are curved longitudinally, corresponding to the transverse curvature of the staves D to be operated upon, and to each side of the bed or tie A there are attached transversely cleats *a a' a''*, the central ones, *a*, being the deepest and the others, *a' a''*, being of equal depth and placed at equal distances from *a*. (See Fig. 1.)

The staves D are dressed or curved transversely by any suitable machine, (see Figs. 2 and 5,) said curvature corresponding transversely with the curvature of the cask or barrel to be made with the staves. The staves, after being thus dressed, are rendered soft or pliable by steaming, soaking, or other means, the amount of such softening depending on the gravity of the wood, and the first two are placed against the cleats *a a' a''* and their ends pressed toward the ends of the bed or tie A and secured by pins C. The outer edges of the cleats *a a' a''* are curved longitudinally, corresponding to the transverse curvature of the staves. Other staves are clamped in a similar manner, curved keys or pieces *b* being interposed between them, and their ends secured by pins C in the bars B B.

By this means the proper bilge or bulge is given the staves, (see Figs. 1 and 3,) and the staves will be firmly held in this bent form, the clamp or former being made of any desired length to hold a greater or less number of staves, as desired; and more or less bilge or bulge may be given the staves by varying the depth of the cleats *a a' a''*, especially the central cleat, *a*, Fig. 3, which is the important one—in fact may be used alone or without *a' a''*, as the latter are not indispensably necessary. The cleats *a a' a''*, if all be used, give the form to the first two staves, and all the others will be bent to correspond to them, as will readily be seen by referring to Fig. 1.

After the staves are thus bent so as to have the proper bilge or form, and while being held or retained in said form by the clamp or former, the latter is placed in a kiln or drying-chamber, or any other process of drying, and all

moisture thoroughly evaporated from the staves, the latter being "kiln-dried," as it is commonly termed. Any suitable number of filled clamps or formers may be placed in the kiln or drying-chamber, and the staves, when thus dried, are detached from the clamps or formers, and will retain their shape or bilge form, and in which shape the staves may be jointed, chamfered, and crozed in a much more perfect manner than usual, and at a time when the staves are or may be perfectly dry and free from sap or moisture; whereas if said jointing were done previously to bending the staves or giving them their proper bilge or bulge form, and the latter in a dry state, the staves would—a large proportion of them—break in bending or giving them the bilge form.

By this process staves may be manufactured directly from green wood and of inferior timber, and rendered fit for use in a short time, the steaming or soaking and kiln-drying depriving the wood of all sap or natural fluids.

Inferior timber, when thus prepared, answers a good purpose. The only reason why it has not hitherto been used is owing to the difficulty of bending it so as to give the staves the proper bilge or bulge and render them capable of retaining the proper bilge or bulge form.

I do not claim, broadly, the steaming or soaking of timber for the purpose of rendering it soft or pliable; nor do I claim, broadly, the kiln-drying of timber; but

I do claim as new and desire to secure by Letters Patent—

A clamp or former adapted to impart the desired bilge or bulge form to staves for casks or barrels when in a soft and pliable state and retain them in such form while drying, substantially as and for the purpose herein described.

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Witnesses:

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