S. R. BAILEY.

WOOD-BENDING MACHINERY.

No. 170,981. Patented Dec. 14, 1875.

Fig. 1.

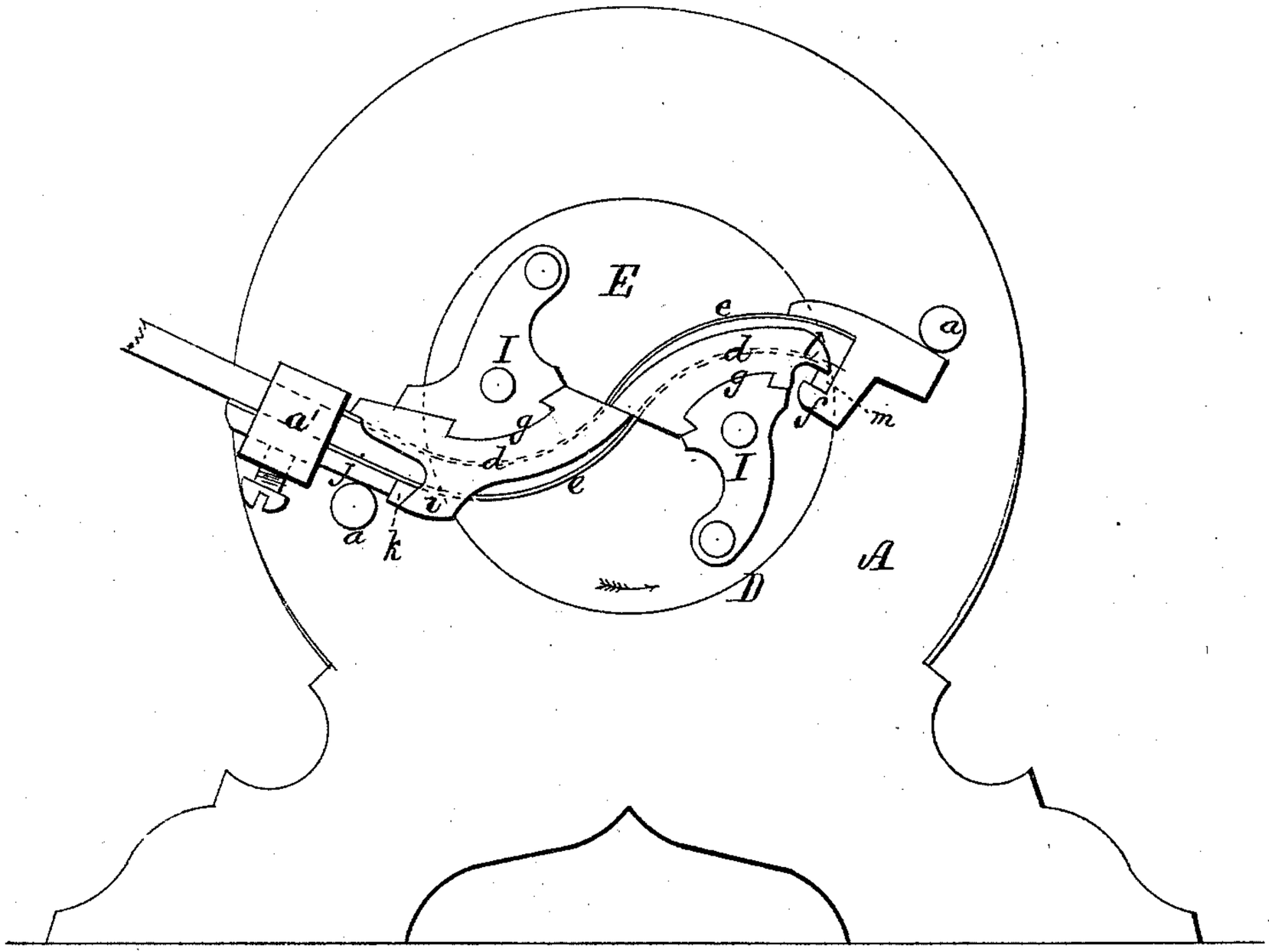


Fig. 2.

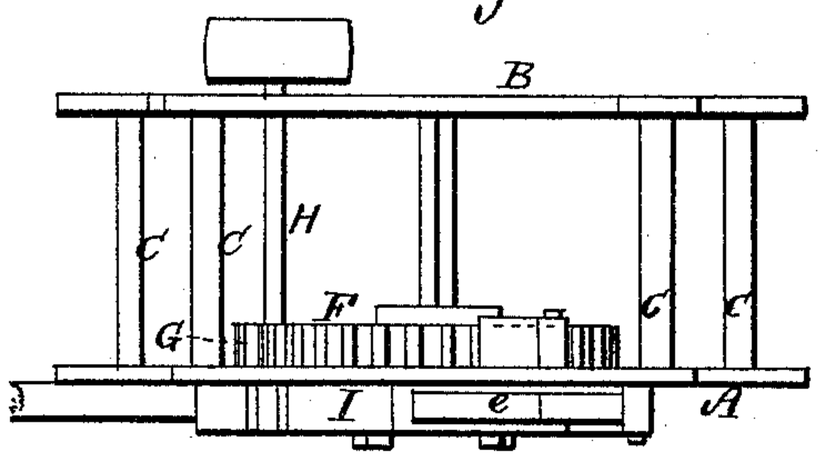
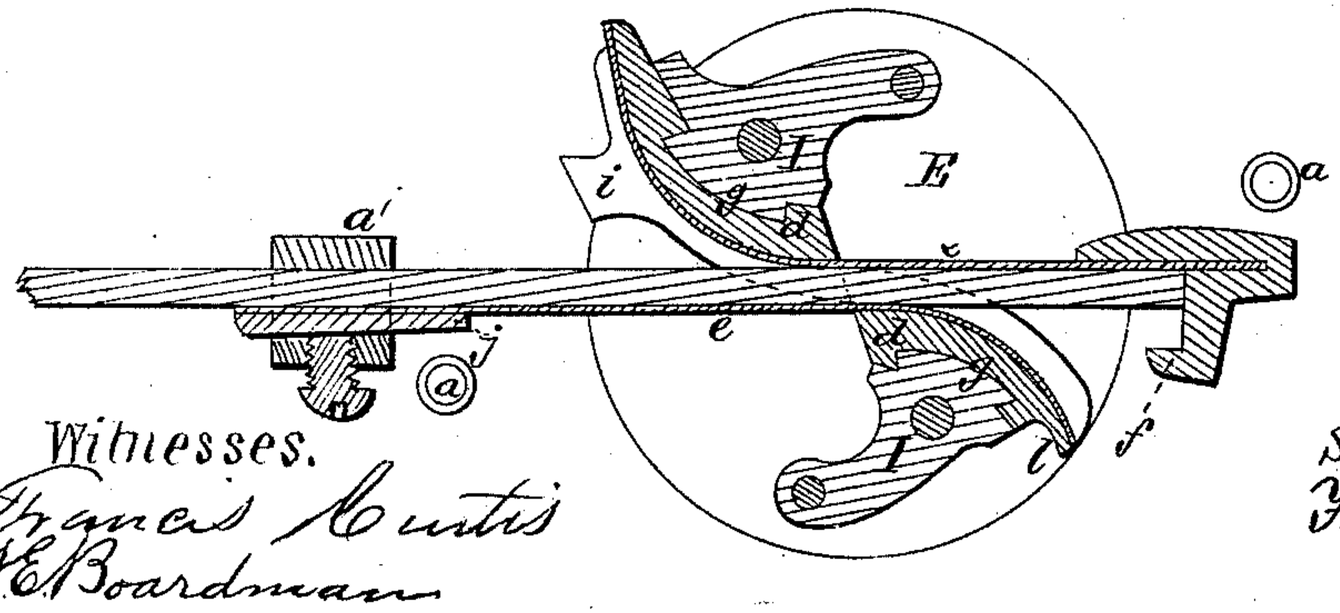


Fig. 3.



Witnesses.
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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN WOOD-BENDING MACHINERY.

Specification forming part of Letters Patent No. **170,981**, dated December 14, 1875; application filed August 24, 1875.

To all whom it may concern:

Be it known that I, SAMUEL R. BAILEY, of Boston, Suffolk county, Massachusetts, have invented certain Improvements in Wood-Bending Machinery, of which the following is a specification:

My present improvements relate to means for bending wood, whereby I am enabled, in an expeditious and ready manner, to obtain a reverse or double bend without injury to the wood.

The drawings accompanying this specification represent, in Figure 1, a front elevation, and in Fig. 2 a plan, of a machine embodying my improvements. Fig. 3 is a section of the shaping-forms and confining-straps prior to bending the wood.

In these drawings the frame of the machine is shown as composed of two upright standards or housings, A B, united by proper horizontal braces C. The front standard A is pierced with a central orifice, D, in which is disposed a circular disk, E, this disk being revolved by means of a spur-gear, F, affixed to its rear side, which gear engages and is driven by a pinion, G, which, in turn, is mounted upon a horizontal shaft, H, revolving in bearings formed in the standards A B, the outer end of this shaft being provided with a driving-pulley. To the front face of the standard A, and upon opposite sides of the semi-rotary disk or carriage E, I affix two posts or stops, *a a*, while to the adjacent face of the carriage E I affix, in an adjustable manner, two abutments, I I, whose inner faces are, preferably, segments of a circle, and so disposed, with respect to each other, as to constitute in common a reverse or ogee curve, a sufficient space existing between them to admit of the introduction of the strip of wood to be bent, as well as the metallic clasps which inclose and protect the latter. The stops *a* being stationary, and the abutments I revolving or moving in the arc of a circle, by and with the carriage E, it follows that a strip of wood introduced between the abutments, and with its ends resting against the stops, will, necessarily, be bent into a reverse or ogee curve, which is the form into which shafts, poles, and other articles are frequently bent.

In the operation of bending strips of wood heretofore, a metallic plate or strap has been applied to each side of the strip, and confined at its ends thereto. When an attempt has been made to produce a double or reverse curve, one end of each strap necessarily becomes doubled or crippled, unless its extremity is released, in which latter event its pressure or hold upon the wood is lost, and the latter is fractured or split. In fact, very much difficulty has been experienced in bending wood to such a shape, and it may be said that prior to my present improvements it has not been done, practically, at one operation with strips of any size.

In order to bend a strip of wood to an ogee or irregular form, and, at the same time, protect the entire sides of the strip by a metallic strap, which shall remain uniformly smooth and effective during the entire operation, I make use of two sets of "bending-formers," which meet at the center of movement of the two abutments, and abut against each other, end to end, and are confined one to each abutment by suitable means, so that any slip is rendered impossible. The formers are shown in the drawings as composed each of a metallic block, *d*, whose inner face is convex, and of such a curvature as the bend is to assume, a ledge being created upon the edge of the block to prevent lateral misplacement of the wood in the operation of bending. Each block *d* is provided with an elastic strap, *e*, of suitable metal, such strap constituting a continuation of the curved bending-face of the block, and one of said straps terminating in a hook, *f*, for purposes hereafter stated.

In proceeding to bend a strip of wood, it is first steamed to the requisite degree, and then inclosed between the two clasps, as shown in Fig. 3 of the drawings, in which case the outer end of such strip will be seen abutting against the base of the hook *f*, and the inner ends of the blocks *d* abutting against each other, the outer end of the strap, which is next the body of the strip of wood, being confined to the latter by a clamp, *a'*. The clasps, with the wood inclosed between them, are now applied to the machine by being placed between the abutments, to which they are con-

fined, one to each, by a dovetailed joint, *g*. The carriage E is now revolved in the direction of its arrow until the hooked block *f* brings up against one stop, *a*, and the strap of the opposite clasp abuts against the opposite stop, and the rotation of the carriage is continued until the strip of wood and the elastic straps have been bent together about the curved edges of the blocks *d*. As these blocks, with the wood adhering to them, are to be removed from the machine, and remain with the wood confined between them until the latter is set, it remains to provide a means of confining the clasps in such a position. To accomplish this I form upon one block, *d*, two ears, *i i*, and I affix to the adjacent elastic strap a stop, *j*, and insert between the two a key, *k*, while upon the outer extremity of the opposite block *d* I form a furcated nose, *l*, between which and the hook *f* I drive forcibly a key or wedge, *m*. The carriage E is now to be rotated in a reverse direction, and returned to its original position, and the two clasps, with the wood adhering, are to be removed and placed in a suitable locality until the wood is set or dry.

It will be apparent that each clasp or strap is free to follow the movements of the carriage E without being crippled or relaxing its pressure upon the wood, and, consequently, the latter, being inclosed powerfully upon both sides, is bent into an irregular form without strain or injury, the fibers being held and not allowed to separate or slip to any injurious extent.

I claim—

1. In machinery for bending wood into double or reverse curves, or other irregular shapes, the two moving or rotary shaping-blocks or formers, arranged as herein described, so that their shaping-surfaces shall form a continuation one of the other, in combination with flexible straps, one for each former, between which the wood to be bent is confined, substantially as and for the purposes set forth.

2. The combination, as herein described, of the following elements, namely: two moving or rotary curved shaping-blocks, abutting end to end, and arranged so that their shaping-surfaces shall form a continuation one of the other; flexible binding-straps, one for each former, and clamping devices, which confine the straps and the inclosed wood about the formers when the wood is bent, said combination being for operation as set forth.

3. In combination with the abutments I, the forming-blocks attached thereto by a dovetailed connection, substantially as and for the purposes set forth.

4. In combination with the former *d*, provided with the furcated nose *l*, the hook *f* and key *m*, whereby the outer end of the wood and the flexible strap are confined to said former.

5. The combination of the forming or shaping blocks *d*, carried by the carriage E, with the abutments I and stops *a*, substantially as and for purposes stated.

SAMUEL R. BAILEY.

Witnesses:

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