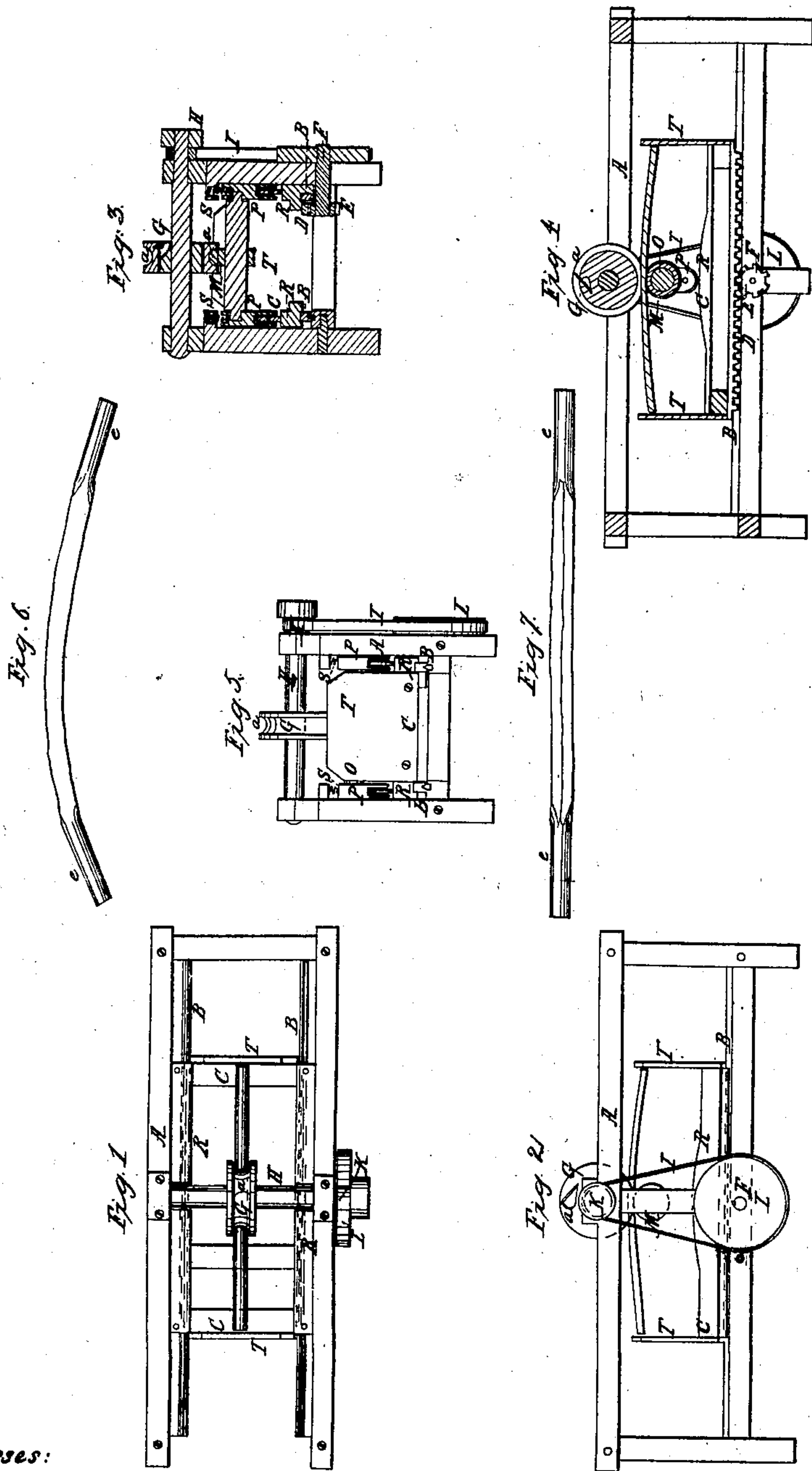


*H. S. Denison,
Bending Wood.*

N^o 40,249.

Patented Oct. 13, 1863.



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UNITED STATES PATENT OFFICE.

HIRAM S. DENISON, OF COLERAINE, MASSACHUSETTS.

IMPROVEMENT IN SHAPING WOOD FOR OX-BOWS.

Specification forming part of Letters Patent No. 40,249, dated October 13, 1863.

To all whom it may concern:

Be it known that I, HIRAM S. DENISON, of Coleraine, in the county of Franklin and State of Massachusetts, have invented an Improved Machine for Shaping Wood Used in Manufacturing Ox-Bows; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, of which—

Figure 1 exhibits a top view of said machine; Fig. 2, a side elevation of it; Fig. 3, a central, vertical, and transverse section of it; Fig. 4, a central, vertical, and longitudinal section of it; Fig. 5, an end view of it.

In the drawings, A denotes the frame of the machine, the same being provided with two parallel and horizontal rails, B B, which serve for supporting and guiding a carriage, C, arranged on them, as seen in Figs. 2, 3, and 4. This carriage has a toothed rack, D, fixed to it, and made to engage with a gear or pinion, E, that is carried by a horizontal shaft, F, which, when the machine is in operation, should be put in revolution in such manner as to produce a rectilinear movement of the carriage on its ways with the velocity that may be desirable to enable the stick or bow blank to be properly reduced by the cutter-cylinder. This cutter-cylinder (marked G) is fixed on a rotary or driving shaft, H, which is arranged with reference to the carriage, or above the same, as shown in the drawings. An endless band, I, working around a pulley, K, (on the said shaft,) and another pulley, L, situated on the pinion gear shaft, serves to put the latter shaft in revolution. The rotary cutter-cylinder is grooved on its periphery and on each of its cutters, as shown at *a*, and it has arranged directly underneath it a bearing-roller, M, which is fixed upon a horizontal shaft, O, whose journals are supported in boxes or slides P P, that play vertically and rest, respectively, on curved pattern-rails R R, affixed to the upper surface of the carriage hereinbefore described. Springs S S serve to press the journal-slides firmly in contact with said pattern-rails. To the rear end, or to each end of the carriage C, a wide plate or standard, T, is affixed, and made to project above said carriage, as well as somewhat above the lower part of the cutter-cylinder, as shown in the drawings.

In operating with this machine, the piece of

wood to be reduced is placed on the carriage and directly between the standards T T thereof, and so that it may extend between the cutter-cylinder and the roller beneath the same and rest on the periphery of the said roller, and have its rear end held up by and in contact with the front face of the rear plate or standard, T.

In Figs. 6 and 7 I have represented the general form and appearance of ox-bow blanks before being submitted to the action or operation of the said machine, and I would remark that they are generally rived or split from pieces of hickory, and so as to have a sectoral form in cross-section, the bark being preserved on the arc of the sector. After a stick of wood has been thus split lengthwise into blanks, each of said blanks, by means of a proper or suitable tool or machine, is reduced a short distance from each of its ends to a cylindrical form, as shown at *e e* in each of the last two figures, such portions of the blank being those usually inserted in the ox-yoke.

The purpose of my machine is to reduce to the proper form, or approximately so, the remainder or middle portion of the blank, leaving the bark, or a considerable portion thereof, on the same, as it is only those bows which exhibit the bark that bring the highest price in the market, such as have no bark on them being considered inferior articles. These blanks, after being split, are seldom straight, they being crooked more or less in various directions. My machine is calculated for reducing them and rounding their middle parts while they are crooked as well as when they are straight.

While the machine is in operation on a stick or blank the latter is grasped at its rear end by an attendant, who, while the stick is advancing under the cutter-cylinder and resting on the roller underneath the same, moves said stick laterally or up and down or changes the position of its rear end against the face of the rear standard, T, as occasion may require, in order to enable the cutters to cut square to the stick, or reduce it at right angles to its axial line, and thereby maintain on the curved lower edge of the stick as much of the bark as possible. Were the stick held firmly at its two ends by means of center-pins, it could not be rounded or cut to any advantage.

I am aware that it is not new to affix a piece

of wood in a carriage or frame and regulate the movement of such carriage or frame toward a cutter-wheel by means of a pattern or guides, and so as to cause such piece of wood to be cut or reduced in conformity to the pattern, such being accomplished in machines or lathes for turning oars, lasts, and gunstocks, or for shaping various irregular forms. Therefore, I do not claim this principle.

In my machine the piece of wood to be reduced is not fastened in a carriage or to center points carried by the same, but it simply rests on a roller or its equivalent and between two upright plates or standards, or against one of the same, by which it is moved along on the roller when the carriage from which said plate or plates extend is in rectilinear movement; and, besides this, the roller in the meantime is moved vertically toward and away from the cutter-cylinder, so as to make the ox-bow taper from each end toward its middle, and at the same time be made round laterally on its upper surface, and the bark be kept on its lower edge or surface. The rear standard, T, not only performs the function of moving the stick for-

ward, but, by its being a plate or presenting broad, flat surface on its front, it allows said stick to be moved laterally, as may be necessary to properly accommodate it to the cutter-cylinder, however crooked the stick may be. After the stick has been reduced, the crooks are removed by well known means.

What, therefore, I claim as my invention is—

The roller or its equivalent and the broad plate standard or standards, as combined with or used in connection with the patterns, carriage, and the cutter-wheel, and constructed and made to operate therewith, substantially as described, in order that a crooked piece of wood or ox-bow blank may have imparted to it while being reduced the forward and lateral movements necessary to its proper reduction, as hereinbefore specified.

In testimony whereof I have hereunto set my signature.

HIRAM S. DENISON.

Witnesses:

R. H. EDDY,

F. P. HALE, Jr.