J. B. DOUGHERTY & J. NAYLOR, Jr.

Machine for Dressing and Compressing Hoops.

No. 211,716. Patented Jan. 28, 1879.

Fig.1.

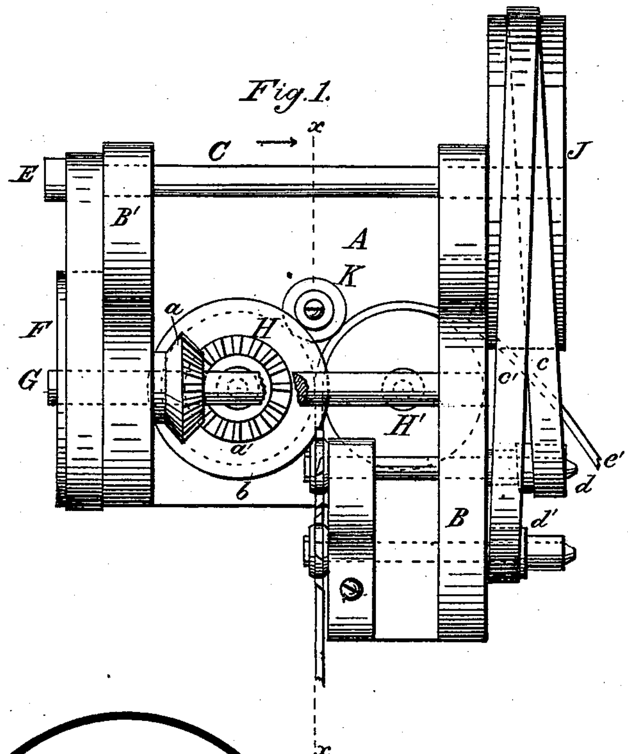
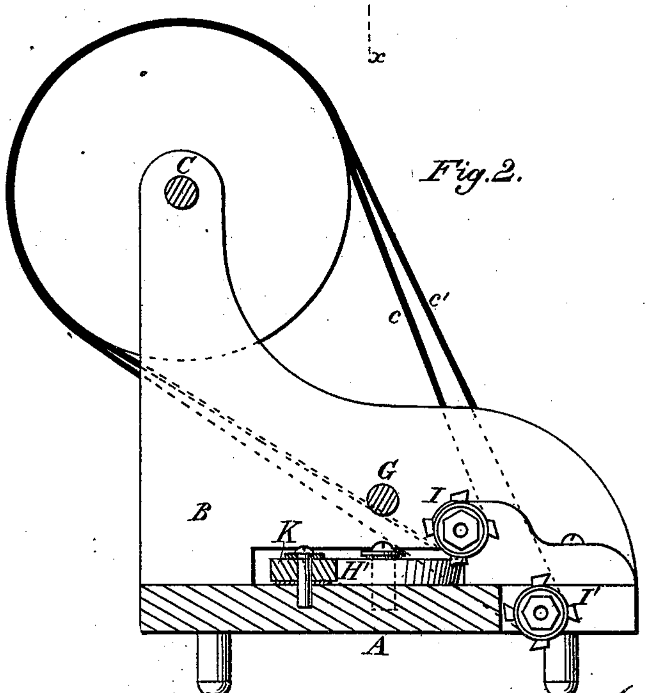


Fig.2.



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UNITED STATES PATENT OFFICE.

JOHN B. DOUGHERTY AND JAMES NAYLOR, JR., OF ROCHESTER, NEW YORK; SAID NAYLOR ASSIGNOR TO SAID DOUGHERTY.

IMPROVEMENT IN MACHINES FOR DRESSING AND COMPRESSING HOOPS.

Specification forming part of Letters Patent No. **211,716**, dated January 28, 1879; application filed September 11, 1878.

To all whom it may concern:

Be it known that we, JOHN B. DOUGHERTY and JAMES NAYLOR, Jr., of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Machines for Dressing, Compressing, and Finishing Hoops; and we do hereby declare that the following is a full, clear, and exact description of the invention, which 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 marked thereon, which form a part of this specification.

The object of this invention is to produce a machine capable of putting a smoothly-finished surface upon wooden hoops, compressing and compacting its fibers as well as crimping or coiling, if desired, ready for use at a single operation; and the invention consists in the construction and arrangement of a pair of suitably-shaped compressing-rollers in connection with the instrumentalities needed for chamfering and crimping or coiling, as will be hereinafter fully described, and specifically pointed out in the claims.

Figure 1 of the drawings is a plan, and Fig. 2 is a vertical longitudinal section on the line *x x* of Fig. 1.

Heretofore it has been the practice of manufacturers, when it was desired to make wooden hoops with a smooth and finished outer surface, to pass the same after having been cut or sawed from the log through a planing-machine, which imparted the necessary finish. This process always caused the waste of more or less material, it being cut into shavings during the operation. The surface was also left porous and open, as the action of the rotating cutters upon the wood tended rather to open instead of closing the pores, thus rendering it liable to imbibe moisture, causing frequent swelling and shrinking of the hoop, which soon lost its strength under these repeated changes.

By this invention the smooth surface is produced by compression, which causes the elevated portions to be pressed down to an even surface with those which are more depressed, while the fiber of the whole hoop is compacted and solidified to such a degree as to close the pores of the wood and prevent the ready absorption of water or other fluid, while all, or nearly all, the material of the hoop as cut from the log is retained without waste and in its full strength.

In order to accomplish these results in a cheap and expeditious manner, the machine, which will now be described, has been constructed, and in which—

The letter A of the drawings designates the bed, B and B′ representing two upright side pieces rising from and properly secured to the bed. Connecting these side pieces near their top is the driving-shaft C, revolving in suitable bearings and rotated by power derived from a steam-engine or other suitable motor. Upon one end of this shaft is secured a pulley, E, a belt from which communicates motion to the pulley F upon the shaft G. This shaft crosses the machine a short distance above the bed A, and revolves in bearings in the side pieces, B B′.

Secured upon the shaft G, and rotating with it, is the bevel-gear *a*, which engages with a similar gear, *a′*, attached to the grooved pressure-roll H. The periphery of this roll is provided with flanges *b b*, forming a groove between them, conforming in cross-section to that of the outer surface of the finished hoop.

This roll H acts in conjunction with the roll H′, the periphery of which is of such thickness as to fill the space between the flanges *b* of the roll H without creating friction by impinging against them, the axis of the roll H′ being adjusted in such a position as will cause the distance between its periphery and that of the roll H to exactly equal the thickness of the finished hoop.

It will be evident that the groove in the periphery of the roll H may be of any desired form to suit the contour of the finished hoop, and the flanges *b* may be placed at a greater or less distance from each other to suit the width of the hoop operated upon.

When it is desired to give the hoop an oval or other rounded outer surface, it may improve its finished appearance to remove the outer corners before passing it between the compressing-rolls. This may be readily accomplished by means of the rotary cutters I and I′, which are placed in advance of the com-

pressing-rolls and driven by the belts *c c'*, acting upon the pulleys *d d'* from the pulley J upon the shaft C. These cutters simply remove the corners, which, by the elasticity of the wood, would be likely to spring out and show after the hoop was compressed; or, if desired, one of them may be made to remove a portion of the inside of the hoop to increase its flare.

A crimping-roll, K, may be placed in the rear of the compressing-rolls to give the hoop a bend or set into the circular form it is to have when applied to use.

If desired, a coiling apparatus may also be attached to form the hoops into suitable coils for shipment as they come from the machine.

It will be apparent that the details of construction in this machine may be greatly varied to suit the work required of it, the essential features being the two compressing-rolls acting in concert, so as to compress and solidify the wood forming the hoop, which may be of any of the many varieties in use for different purposes, such as the manufacture of barrels, kegs, cheese-boxes, buckets, or any of the numerous articles of coopers' ware in common use.

Having thus described our invention, we claim as new, and desire to secure by Letters Patent of the United States, the following:

1. In a machine for compressing and compacting the fibers of wooden hoops and giving form to their exterior surface, the compressing and forming rolls H and H', arranged so as to bear upon the material passing between them with a constant unyielding pressure, in combination with a crimping-roller, substantially as and for the purpose specified.

2. The compressing-rolls, operated as described, in combination with the rotary cutters for removing the corners from the hoop, as and for the purpose set forth.

3. In a hoop-finishing machine, the combination of the compressing-rolls, the rotary corner-cutters, and the crimping-roll, all arranged and operated substantially as shown and described.

In testimony that we claim the foregoing as our own we hereunto affix our signatures in presence of two witnesses.

JOHN B. DOUGHERTY.
JAMES NAYLOR, JR.

Witnesses:
WM. D. GALLAGHER,
FRANK J. ELLIS.