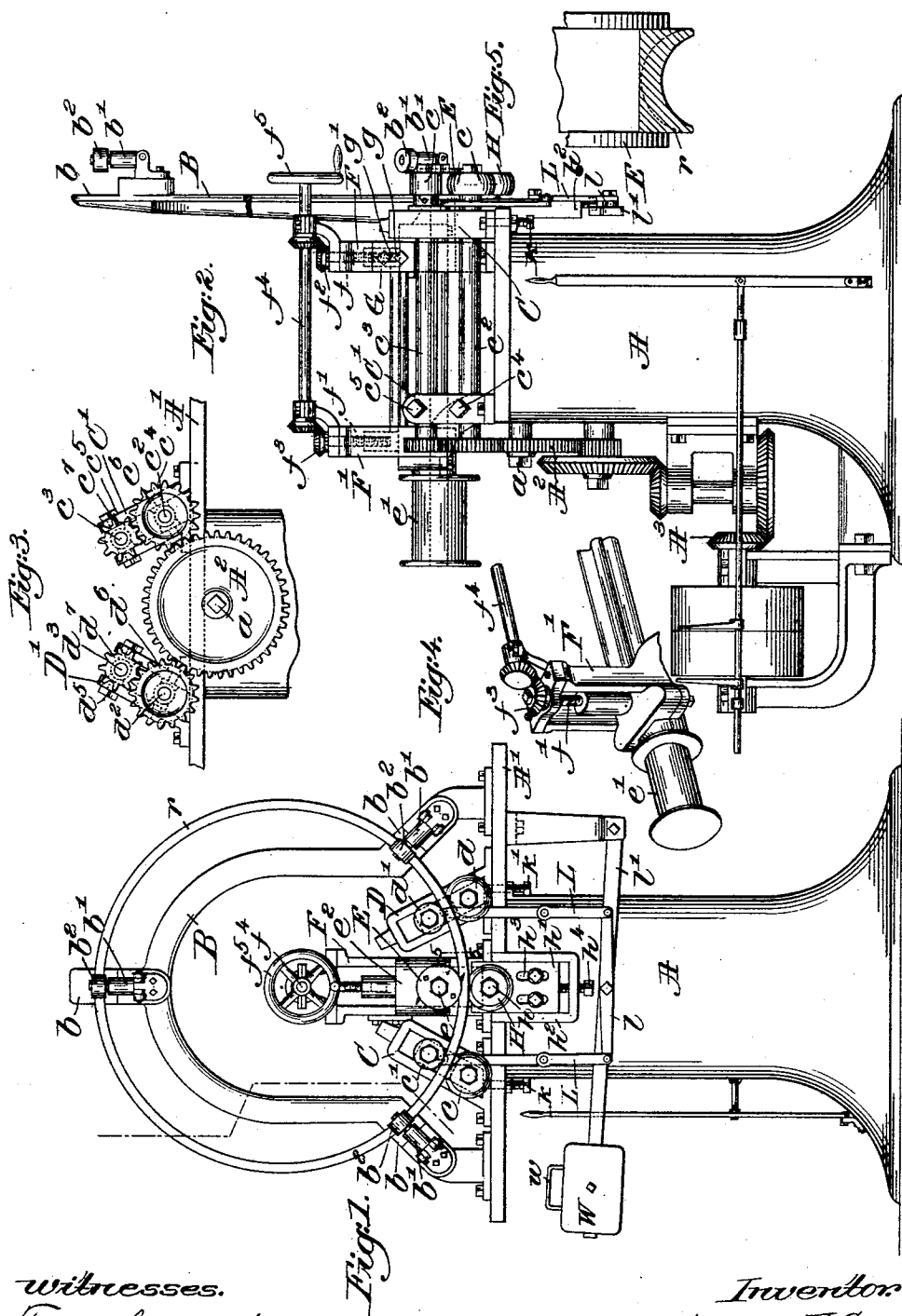


(No Model.)

C. H. COWDREY.  
MACHINE FOR SHAPING WOODEN RIMS.

No. 586,380.

Patented July 13, 1897.



witnesses.  
Friedrich S. Grunhof.  
Thomas J. Spummond.

Inventor.  
Charles H. Cowdrey.  
by Crosby Gregory, attys.

# UNITED STATES PATENT OFFICE.

CHARLES H. COWDREY, OF FITCHBURG, MASSACHUSETTS.

## MACHINE FOR SHAPING WOODEN RIMS.

SPECIFICATION forming part of Letters Patent No. 586,380, dated July 13, 1897.

Application filed November 22, 1895. Serial No. 569,767. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES H. COWDREY, of Fitchburg, county of Worcester, State of Massachusetts, have invented an Improvement in Machines for Shaping Wooden Rims, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 This invention has for its object the production of a machine for turning or shaping wooden wheel-rims, hoops, &c., upon their inner circumference, whereby the turning or shaping is accomplished without distorting or bending the rim or other article from its true circular form.

15 In accordance therewith my invention consists in an apparatus for turning the inner circumference of wheel-rims, &c., having a series of supports to sustain the rim at three points on its periphery, combined with a cutter to act upon the inner circumference of the rim and means to feed the rim to the cutter, substantially as will be described.

25 Other features of my invention will be hereinafter described, and particularly pointed out in the claims.

30 Figure 1 represents in front elevation a machine embodying my invention. Fig. 2 is a side elevation thereof, the rim being omitted. Fig. 3 is a fragmentary view, in rear elevation, of the feeding-gear. Fig. 4 is a detail perspective of the cutter-shaft and its adjustable bearings, and Fig. 5 is a vertical section on line 5 5 of Fig. 1.

35 In the present embodiment of my invention the working parts of the machine are supported on the post or column A and table A', secured transversely to the top of the post.

40 Adjacent the front edge of table A' is the vertical guide-frame B, in the present instance arched in form and bolted at either end to the table. This guide-frame is provided at three points with guide-plates b, having their guiding-surfaces in the same preferably vertical plane, and having arranged to swing parallel therewith the guide-arms b', hinged at one end and provided at their other end with friction-rolls b<sup>2</sup>, adapted to bear on the wheel-rim r and hold the same in gentle contact against the adjacent guide-plates. These guide-arms are preferably held in loose

contact with the wheel-rim or hoop by means of spring-hinges, although they may be in the form of plates arranged to overlap the wheel-rim and adjusted to the guide-frame B by any suitable means at their free end, as by a thumb-screw or spring.

A yoke C is supported at the front edge of the table, preferably inclined radially to the wheel-rim to be supported, and is provided with parallel ways or guides, within which the feed-rolls c c' are fixed on the forward ends of the shafts c<sup>2</sup> c<sup>3</sup>, which are mounted at their opposite ends in journals adjustable on the pivots c<sup>4</sup> c<sup>5</sup> in the bracket C'. Correspondingly arranged in a yoke D, similar to the yoke C and also mounted at the front edge of the table A' at the opposite side thereof, are the guide-rolls d d', longitudinally adjustable in the yoke D. These guide-rolls are fixed on shafts d<sup>2</sup> d<sup>3</sup>, mounted in the bracket D' on the pivots d<sup>4</sup> d<sup>5</sup> in a manner similar to the feed-rolls.

At the back side of the post A, I provide a driving-gear A<sup>2</sup>, suitably mounted on a stub-axle a, by means of which motion is communicated to the feed-rolls through intermeshing gears c<sup>6</sup> c<sup>7</sup>, suitably fixed, respectively, on the shafts c<sup>2</sup> c<sup>3</sup>. I also prefer to give positive movement to the guide-rolls d d', and for this purpose have provided gears d<sup>6</sup> d<sup>7</sup>, fixed on the shafts d<sup>2</sup> d<sup>3</sup>. (See Fig. 3.) The drive gear-wheel A<sup>2</sup> receives its power from the shaft A<sup>3</sup>, suitably provided with a fast and loose pulley and connected by intermediate power-gearing.

Between the feed-rolls and the guide-rolls I have arranged the cutter E, fixed on shaft e, provided at its rear end with a belt-pulley e'. Shaft e is mounted in journal-bearings e<sup>2</sup>, preferably arranged to slide in vertical ways at either end, provided in the supporting-standards F and F', simultaneous movement therefor being communicated by the bolts f f', screw-threaded, respectively, into the upper ends of said bearings and provided with suitable bevel-gears f<sup>2</sup> f<sup>3</sup>, driven by shaft f<sup>4</sup> and hand-wheel f<sup>5</sup>.

Conveniently located on one of the standards, preferably the forward one F, is a stop G, adjustably held thereto by means of clamping-bolts g and the slot g'. This stop projects in the path of a moving part, as the bearing

$e^2$  of the cutter mechanism, and may be set accurately for the special rims to be formed. Having thus adjusted the stop, the machine may be entrusted to comparatively unskilled hands with no possibility of the cutter being run too deeply into the rim. Below the cutter-head E, I have provided a presser H, in the present instance shown as a roll. This presser-roll is free to rotate on a stud  $h$ , projecting from the front of a plate  $h'$ , arranged to slide in a bracket  $h^2$ , secured to the table  $A'$ , said plate being held in place by bolts passed through slots  $h^3$  therein and into the bracket, and adjusting-screw  $h^4$  providing means for raising and lowering the plate and presser-roll H, according to the thickness of the rim and of its diameter.

By means of the mechanism thus far described it is evident that the rim may be adjusted for travel under the cutter according to its curvature without any tendency thereof to be sprung or distorted simply by adjusting the presser-roll H up or down, the guide-roll  $d$  and feed-roll  $c$  remaining in their fixed position. In order, however, to give a greater range of service than the adjustment of the presser-roll will allow, I have provided adjusting-screws  $k$   $k'$  for raising or lowering the lower feed-roll and guide-roll in their carrying-hooks.

The upper feed-roll  $c'$  and guide-roll  $d'$  are moved to and from the inclosed wheel-rim or hoop by means of links L, which are connected, respectively, to either end of the equalizing-bar  $l$ , centrally pivoted to the operating-lever  $l'$ . In order to secure proper gripping-contact between the feed-rolls and the guide-rolls, I have provided at the free end of lever  $l'$  a tension-weight W, provided with a handle  $w$ .

The construction just described is of particular advantage in this class of work, for the reason that it is necessary to accommodate the feed-rolls and guide-rolls to any unevenness that may occur or that the pattern may require in the wheel-rim, and also to accommodate the upper feed-roll and guide-roll to the difference in thickness produced in the wheel-rim by reason of the portion thereof that is cut away by the intervening cutter.

The arrangement of parts in the preferred form of construction which I have above described causes an even distribution of pressure, and yet allows independent yielding of the upper feed-roll and guide-roll.

It is evident that motion could be communicated to the cutter by means of the same gearing that is used to operate the feed-rolls, but I have shown an independent belt-pulley therefor in order to accommodate the mechanism to the vertical movement of the cutter-shaft.

In the operation of the above-described machine the operator turns the hand-wheel  $f^5$  to clear the cutter E from the rim  $r$ . He then lifts the weight W, throws back the guides  $b$ , and removes the rim; or the rim may be

simply pulled away from the guides and they will swing back on their hinges without separate manipulation. If, however, it is desired to shape a smaller rim, the bolt  $h^4$  is turned down to drop the presser H until the smaller rim is touched at three points by the feed-rolls  $c$ , presser H, and guide-roll  $d$ . The rim being in place, the weight is lowered, which firmly clamps the rim proper in adjustment. The cutter-head is then lowered as desired by properly turning the hand-wheel  $f^5$ . If it is found that the rolls do not hold the rim as desired, it may be adjusted by raising or lowering the screws  $k$   $k'$ . If the rim is of larger diameter, the presser-roll will be raised slightly, a very slight adjustment being sufficient for quite wide differences of diameter.

By the construction herein described the inner circumference of wooden wheel-rims, hoops, &c., may be quickly and accurately turned and shaped, the true circular form of the exterior being retained without any possibility of springing or pressing out of shape.

The three points of support for the rim cooperate with the truly circular exterior thereof, and thereby move the same in a circle having as its center the center of the exterior of the rim.

My invention is not restricted to the precise construction and arrangement of parts as herein described, as the same may be altered or modified without departing from the spirit and scope of my invention.

I claim—

1. In an apparatus for turning the inner circumference of wheel-rims, &c., a vertical U-shaped guide-frame provided with three or more guide-plates extending radially therefrom at points substantially equidistant about a circle and having their outer supporting-surfaces lying in the same vertical plane to support an endless wheel-rim, a guide-arm for each plate and pivotally hinged thereto to receive the wheel-rim between said arm and plate and retain the same in proper position, and a horizontal cutter and cutter-shaft extending through, or between the arms of, said U-shaped frame, substantially as described.

2. In an apparatus for turning the inner circumference of wheel-rims, &c., a vertical guide-frame provided with three or more guide-plates extending radially therefrom at points substantially equidistant, and having their outer supporting-surfaces lying in the same vertical plane, and a spring-actuated guide-arm for each plate and pivotally hinged thereto to receive the wheel-rim between said arm and plate and retain the same in proper position, and a horizontal cutter and cutter-shaft, substantially as described.

3. In an apparatus for turning the inner circumference of wheel-rims, &c., a vertical U-shaped guide-frame provided with three or more guide-plates extending therefrom having their outer supporting-surfaces lying in the same vertical plane, a guide-arm for each plate to receive the wheel-rim between said

arm and plate and retain the same in proper position, vertical standards for the cutter-shaft, centrally disposed between the arms of said U-shaped frame, and yokes for the wheel-rim supporting and feeding devices, said yokes being inclined radially to the wheel-rim to be supported and arranged within said frame, one on either side of said standards, substantially as described.

10 4. In an apparatus for turning the inner circumference of wheel-rims, &c., adjustable supports to sustain the periphery of the rim at two points, means to adjust said supports to accommodate rims of different diameters,

15 and clamping devices to bear on the inner side of the rim opposite said supports, and movable to and from the same, combined with a tension-lever having an adjustable weight

at one end and pivoted at its other end to a fixed support, said weight being provided with a handle for readily lifting the same and said clamping devices, an equalizing-bar intermediately connected to said lever and links joining said equalizing-bar at either end thereof to said clamping devices respectively, whereby either or both of said clamping devices may yield and the tension thereof remain constantly uniform, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES H. COWDREY.

Witnesses:

CHAS. S. HAYDEN,  
WALTER G. COREY.