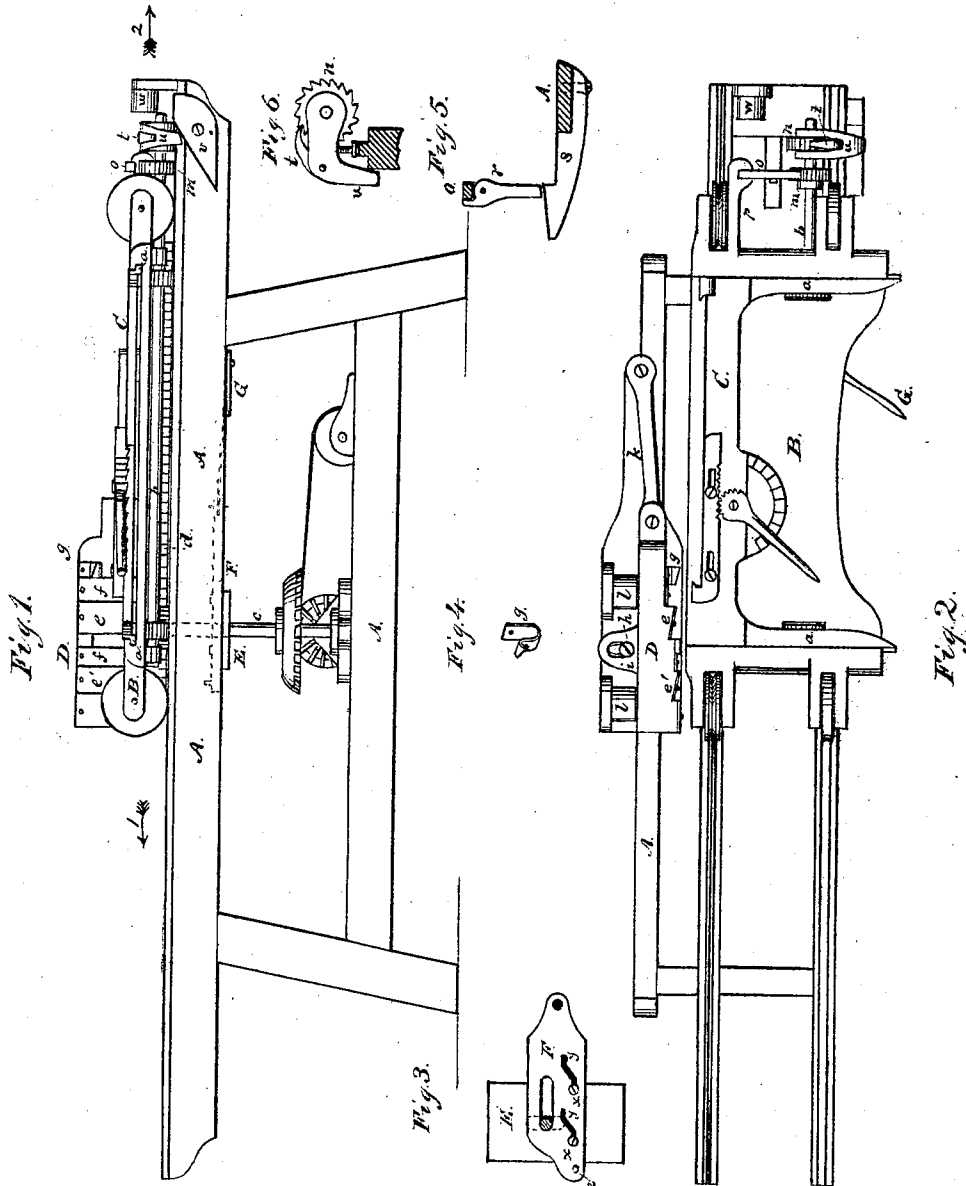


P. WELCH.
Hoop-Cutting Machines.

No. 141,246.

Patented July 29, 1873.



Witnesses.
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UNITED STATES PATENT OFFICE.

PETER WELCH, OF ST. LOUIS, MISSOURI, ASSIGNOR, BY MESNE ASSIGNMENTS, TO DAVID T. WELCH, OF SAME PLACE.

IMPROVEMENT IN HOOP-CUTTING MACHINES.

Specification forming part of Letters Patent No. **141,246**, dated July 29, 1873; application filed March 7, 1873.

To all whom it may concern:

Be it known that I, PETER WELCH, of the city and county of St. Louis, in the State of Missouri, have invented an Improvement in Hoop-Cutting Machines; and I do hereby declare the following to be a full and correct description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a machine embodying my improvements. Fig. 2 is a top or plan view of the same. Fig. 3 is a top view of the slotted plates. Fig. 4 is a perspective view of one of the knives for rounding off the hoop corners, and Fig. 5 is a side view of the finger and incline for operating one of the pawls.

This invention relates to improvements in machines for cutting complete finished hoops in one operation; and said improvements consist, first, of a cutter-stock having knives arranged thereon at any desired angle for cutting at one operation any number of hoops, having one edge thicker than the other, which thick edge is rounded off by secondary knives on the stock, and said stock is further arranged to adjust itself to any inequalities in the timber being cut; secondly, the improvements consist of ratchets and pawls of peculiar construction for operating the timber-feeding carriage; and, finally, they consist of slotted plates arranged to throw the carriage-operating mechanism in and out of gear with the toothed rack on the under side of said carriage, for the purpose of allowing the carriage to be moved forward, and so that it can be drawn backward.

In the drawing, letter A marks a frame of suitable construction, upon which is secured a track having one flat and one inverted V-shaped rail. Upon this track the carriage B is moved, said carriage having wheels to correspond with the rails. C is the timber-feeding carriage secured in grooves in the carriage B, provided with adjustable dogs, and having toothed racks on the under side of its arms *a*, with which pinions on a shaft, *b*, mesh, to move said carriage back and forth. The carriage B is moved forward on the rails or way by means of a pinion on the end of a vertical shaft, *c*, mesh-

ing with a toothed rack, *d*, on the under side of the carriage, the shaft *c* being operated by beveled gearing and suitable belt-and-pulley connections, as shown in Fig. 1, and it is drawn back by a cord and weight. D is the cutter-stock, made hollow, and having angular or inclined recesses formed on its top and bottom edges to receive cutting-knives *e e'*. These recesses are not of equal depth on both edges—that is, the upper recess for knife *e* is smaller or of less depth than its lower recess; hence, the knife is at one angle in both its vertical and horizontal planes, and will cut from the timber a strip having one edge thicker than the other, the outline of a cross-section of which would somewhat resemble a right-angled triangle. Throat-pieces *f f* are arranged in front and underneath the knives, and serve to prevent checking and fracturing of the hoop, and as they are set in their flat recesses in the stock at about the same angle in the vertical plane as are the knives, they prevent the hoop from springing away from the knife, and hence a cleanly-cut perfect hoop is always produced. By means of cutters *g* on the stock having peculiarly-curved cutting-edges, the thick corner of the hoop is rounded off so as to render it more symmetrical without affecting its strength. The knives *e* and *e'* are inclined vertically in opposite directions, and consequently the thick edge of one of the hoops will be at the top of the block, and of the other at the bottom; hence, to round off these thick edges one of the cutters *g* is placed at the top of the stock and one at the bottom. Their position is just in front of the knives, so that they trim off a part of the hoop before it is cut. The cutter-stock shown in the drawing and just described will cut two hoops at the same time; but it is obvious that three or more knives may be used, if desired. The stock D is held in place on its bed by a set-screw, *h*, passing through a slot in a flat projection, *i*, on the stock, and by a rod, *k*, jointed to it and the frame. Rubber or other yielding bumpers *l l* are placed back of the stock on its bed to prevent undue pressure on it, and they, in connection with

the slotted projection and set-screw and the jointed rod, allow the stock to be adjusted so as to compensate for any inequalities in the wood. The shaft *b* has fitted on one end, to work in opposite directions, two ratchet-wheels, *m n*. A pawl, *o*, secured in a projection, *p*, on the carriage *B*, engages with ratchet *m* to prevent the shaft from turning; and this pawl is operated—that is, freed from the ratchet—by means of a finger, *r*, pivoted to and depending from it, (see Fig. 5,) which, when the carriage is drawn back, comes in contact with an inclined projection, *s*, extending from the frame, whereby the finger is raised, and, of course, the pawl likewise. This pawl and ratchet prevent the shaft from slipping or turning in the wrong direction, and the means for operating the shaft consist of the ratchet *n* and its pawl *t*. This pawl is hinged in a feed-arm, *u*, swinging on the shaft *b*, and embracing the ratchet *n*, and said arm is adjusted so as to keep the pawl firmly in place by means of a set-screw underneath it, which rests on the flat rail. *v* is an incline on the frame, against which the end of arm *u* strikes in the backward movement of the carriage, and thereby causes the pawl to turn ratchet *n* the distance of one tooth, by which the feed-carriage is advanced toward the cutter-stock, the pawl *o* and ratchet *m* holding it there. *w* is an elastic bumper on the end of the frame, against which the projection *p* abuts in the backward movement of the carriage, thereby preventing jarring and injury to the machine. The shaft *c* is set at its lower end in a socket, and its upper end passes through a slot in a cross-piece, *E*, underneath the carriage-way. A plate, *F*, is placed over this cross-piece, and has a slot in it made at right angles to that in cross-piece *E*, through which, also, the shaft *c* passes. The plate *F* is secured to cross-piece *E* by set-screws *x x*, which pass through zigzag slots *y y* in the said plate, (see Fig. 3,) and by means of a rod (see dotted lines, Fig. 1) connecting said plate with a hand-lever, *G*; or, by the con-

tact of a pin, *z*, on the plate with the carriage, the plate is moved forward and backward and right and left, and thus throws the pinion on shaft *c* in and out of gear with the toothed rack *d*. The pinion is thrown in gear with this rack when the carriage is to be moved forward or in the direction of arrow 1, and when the carriage has run the desired distance—sufficient to cut off the hoops—the plate is drawn in the opposite direction, so as to throw the pinion out of gear, when the carriage will be drawn backward or in the direction indicated by arrows 2, and as the arm *u* strikes incline *v*, and the finger *r* is raised by contact with incline *s*, the shaft *b* will so turn as to advance the timber-carriage toward the cutter-stock sufficiently far to present enough timber from which to cut two more hoops.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with a cutter-stock having knives set thereon at angles, as described, and also throat-pieces, cutters *g* for rounding off the corners of the hoops, substantially as specified.

2. In combination with a cutter-stock, the jointed rod *k*, bumpers *l l*, projection *i*, and set-screw *h*, to allow said stock to adjust itself to inequalities in the timber being cut, substantially as described.

3. The combination of the ratchet *m*, its pawl *o*, finger *r*, and incline *s* with the ratchet *n*, pawl *t*, feed-arm *u*, and incline *v*, for the purpose of operating the timber-feeding carriage, substantially as described.

4. The slotted plates *E* and *F*, substantially as described, in combination with the shaft *c*, for the purpose specified.

The above specification of my said invention signed and witnessed at St. Louis this 17th day of January, A. D. 1873.

Witnesses:

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