

Ralph H. Boynton and Horace S. Boynton.
 108439 *Spoke Cutting Machine.*

Fig. 1.

PATENTED OCT 18 1870

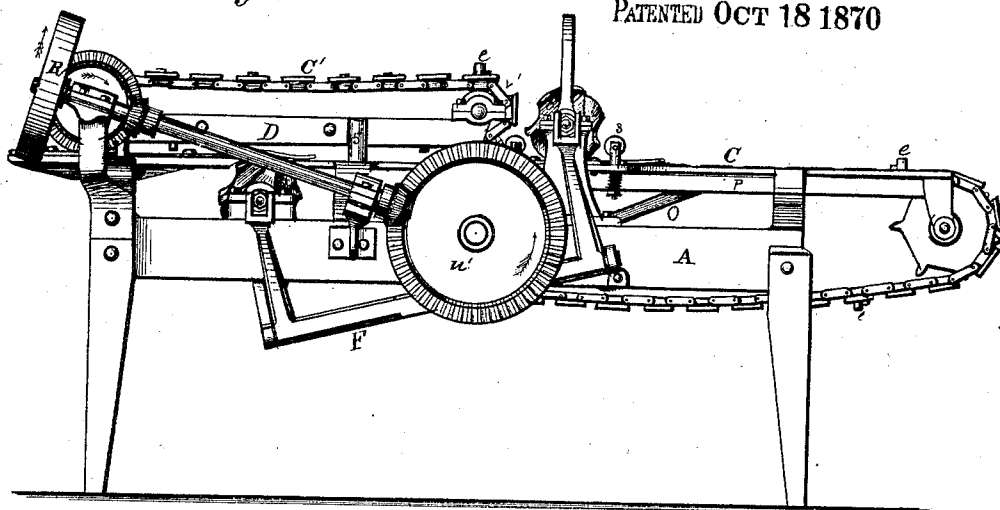


Fig. 2.

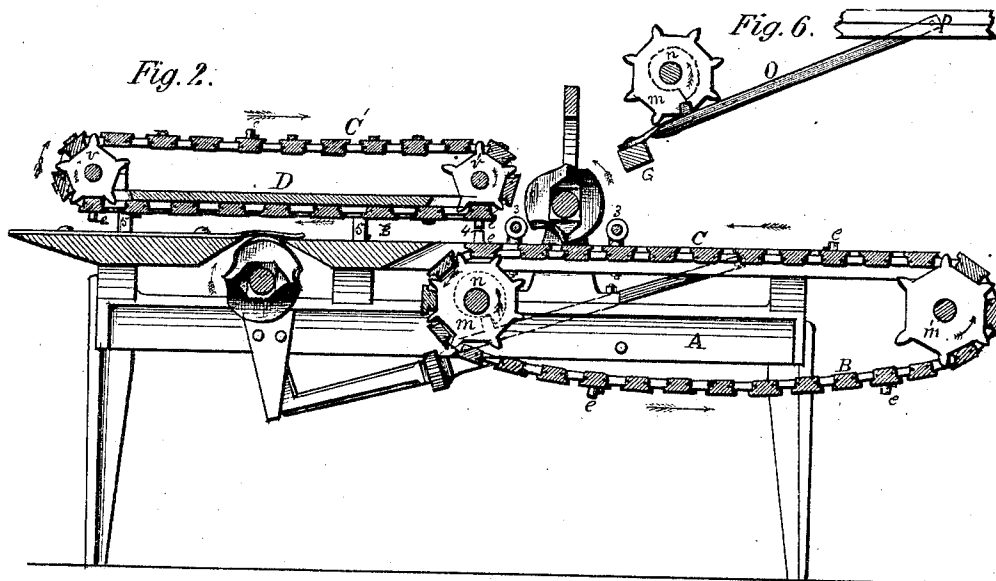


Fig. 6.

Witnesses:
Fred. Astor.
M. D. Darrow.

Inventors:
Ralph H. Boynton
Horace S. Boynton
By R. H. Boynton
his Attorney

United States Patent Office.

RALPH H. BOYNTON AND HORACE S. BOYNTON, OF OSHKOSH, WISCONSIN.

Letters Patent No. 108,439, dated October 18, 1870.

IMPROVEMENT IN MACHINES FOR DRESSING SPOKES.

The Schedule referred to in these Letters Patent and making part of the same.

We, RALPH H. BOYNTON and HORACE S. BOYNTON, of the city of Oshkosh, Winnebago county, Wisconsin, have invented a new Spoke Dressing Machine, of which the following is a specification:

Description of Plates.

Figure 1, plate 1, represents a side elevation.

Figure 2, plate 1, represents a vertical and longitudinal section through the center of the machine.

Figure 3, plate 2, is a top view of the machine with the upper frame and upper set of cutter heads removed.

Figure 4, plate 2, is an end view of that portion of the machine to the right of dotted lines *x x*, as viewed from the left hand of the plate.

Figure 5, plate 2, is a view of a section of the cutter-head shaft with one half of it removed.

Figure 6, plate 1, is a detached view of cam *n* and lever *o*, in position, with the heads closed.

This invention relates to improved machinery for the manufacture of spokes for wagons, carriages, and other vehicles for land carriage, and consists in the use of two sets of rotating cutter heads and two endless chains for feed purposes, together with suitable mechanism for producing a reciprocating movement of the cutter-heads, the several parts being so arranged and combined relative to each other that each set of cutters will be dressing the opposite or reverse sides of different spokes at the same time.

General Description.

In the drawing—

A represents a frame, upon which are arranged the cutter-head shafts K K, the endless chains C and C', the rocker-shafts F F, and the machinery for giving motion to the same.

Frame A is constructed with a center-piece lengthwise through the frame, a portion of which is formed in a suitable manner for supporting and guiding the endless chain feed-bed C', and the remainder of it has a smooth horizontal surface, forming a bed upon which the spoke is carried along past the lower cutter-heads by the joint action of the two endless chains.

The endless chain feed-bed C' is constructed by connecting together short sections with smooth surfaces, in a manner that will make a flexible endless chain suitable for feeding spoke blanks to revolving cutter-heads.

Upon this chain are bolts or set-screws, *e*, corresponding in number with the spokes that can be placed upon it at each revolution of the same. These bolts are placed at equal distances from each other, and are used as stops against which the small end of the spoke blank is placed while being dressed.

This chain is made to move along the guides and around the chain-pulleys by means of the gearing seen in fig. 1, plate 1.

The upper frame D is of sufficient weight to hold the spoke firmly on the bed B while being carried forward over the cutters *i i*, and is kept from a side or endwise motion by stands 5 5. Frame D is adjustable in height so as to adapt it to spokes differing in thickness.

The shaft upon which is chain-pulley *v*, and the shaft upon which is bevel-wheel *u*, are connected by shaft E, which has a universal joint at each end of it, allowing chain C' to move freely while at different heights from the bed B.

The upper chain C' is constructed like chain C, with the addition of raised pieces across a portion of the sections, which pieces are shaped to fit onto the dressed side of the spoke. The one that rests upon the butt of the spoke is straight, and the others are curved to fit the spoke at the point where they respectively rest upon it.

The chain is made to move in guides on the under side of frame D and around chain-pulleys *v v'*, by means of gearing, as shown in fig. 3, plate 2.

The gearing is so arranged that each chain moves with the same speed, and the chains are so adjusted that the bolts *e* meet upon a vertical line, as seen at 4 in fig. 2, plate 1.

The cutter-heads *i i i i* are fitted in a manner so that they slide freely upon their arbors, and each head is connected to an inside rod, H, as seen in fig. 5, plate 2.

These heads are provided with cutters of suitable shape to produce, in conjunction with cam *n*, the varied forms of the spoke.

The distance between the two sets of cutter-heads is the same as the distance between two of the bolts *e* on the chains; hence it will be seen that the lower set of cutters will commence dressing the under side of the first spoke at the same time that the upper set commence dressing the upper side of the second spoke.

The rocker shafts F F are constructed with uprights at each end that connect at their upper ends with the cutter-heads by rods H, as seen in fig. 5, plate 2.

Each rocker-shaft has an arm projecting from the center of it, at right angles with the uprights, which meet midway in the machine, as seen in fig. 4, plate 2. These arms are constructed with teeth upon their inner ends, which mesh into each other, so that power applied to one will give motion to each of them.

The lever O, seen in fig. 6, plate 1, is hinged to the frame at P.

The free end of this lever is connected with one of the arms G, in a manner to allow a free vertical movement of the lever and arms.

Cam *n* and lever O, as represented by dotted lines in fig. 2, plate 1, show their relative position when the cutters are in position to commence the dressing of a spoke.

Fig. 6, plate 1, shows the relative position of the cam and lever when the cutters have completed a spoke.

At each revolution of shaft L, the cam depresses the free end of lever O, and, through the medium of the rocker-shafts F F and its connections, it causes the cutter-heads upon each shaft to move simultaneously toward each other in the line of their shafts.

The reverse movement of the heads is produced by a spring, T, connecting the arms with the top or center-piece of frame A.

At each revolution of shaft L, a section of cam C, as divided by the bolts e, is moved past the cutter-heads.

It will be seen that the reciprocating movement of the cutter-heads produced by the alternate action of the cam and spring, and the movement of a section of the chains past the cutter-heads, corresponds in point of time.

The cutter-heads *iii* and feed-pulley R receive motion by belts from a counter shaft placed upon the floor at the left of the machine, as it is represented in the drawing.

Upon the same shaft with pulley R, are bevel pinions *t t'*, meshing into bevel-wheels *u* and *u'*.

These wheels, upon their respective shafts, impart motion to the chains O and O', in the direction indicated by the arrows.

Operation.

The machine being in motion, and the chains being so adjusted that the bolts e on the chains will meet on a vertical line, as seen at 4 in fig. 2, plate 1, and the cam so adjusted that the cutter-heads will open as soon as bolts e have passed the cutter-heads, a spoke blank will be placed upon chain O with the small end against bolt e, when the chain is in the position seen in fig. 1, plate 1, and the edge of the butt of the spoke against guide 2, seen in fig. 3, plate 2. As the chain moves along it carries the spoke under pressure rollers 3 3, and onto bed B until one of the bolts e on the upper chain comes down behind the spoke.

At this point both chains have a hold upon the spoke and are forcing it along, but the lower chain C soon loses its hold upon the spoke, which is forced

along over the lower set of cutter-heads and out of the machine in a finished state by the action of the upper chain alone.

When the first spoke has moved far enough to allow of it, another spoke blank will be placed upon the chain in the same manner as the first blank, and as they move along each one reaches their respective cutters at the same time, and each set of cutters finish dressing the reverse or opposite sides of different spokes at the same time. By using two endless feed-chains, and two sets of rotating cutter-heads, arranged and combined substantially as described, a spoke can be dressed as often as a section of the chains passes a given point on the machine or past a set of cutters, the operation requiring no other manual labor than the act of placing a blank upon each returning section of the lower chain, which blanks are then carried past the cutters and out of the machine in a finished state, twice as rapidly as when dressed upon a feed-bed requiring the spoke to be turned and its position on the bed to be changed in order to finish dressing it.

Having described our invention and the method of operating the same,

What we claim as new, and wish to secure by Letters Patent, is—

1. The adjustable endless chain O' and shaft E, when arranged to operate substantially as shown and described.

2. The two endless feed-chains O and O', in combination with two sets of rotating cutter-heads, *iii*, when arranged to operate together substantially as shown and described.

3. The arrangement of cam n, lever O, spring T, rocker-shafts F F, and cutter-heads *iii*, substantially as shown and described, and for the purposes set forth.

RALPH H. BOYNTON.
HORACE S. BOYNTON.

Witnesses for R. H. BOYNTON:

J. E. BEARDSLEY,
M. D. DARTOW.

Witnesses for H. S. BOYNTON:

CHARLES W. BREWER,
E. A. CHURCH.