(No Model.) 2 Sheets—Sheet 1.

# F. L. WILSON.

## BARREL HOOP CUTTING MACHINE.

No. 264,392. Patented Sept. 12, 1882.

Fig. 1

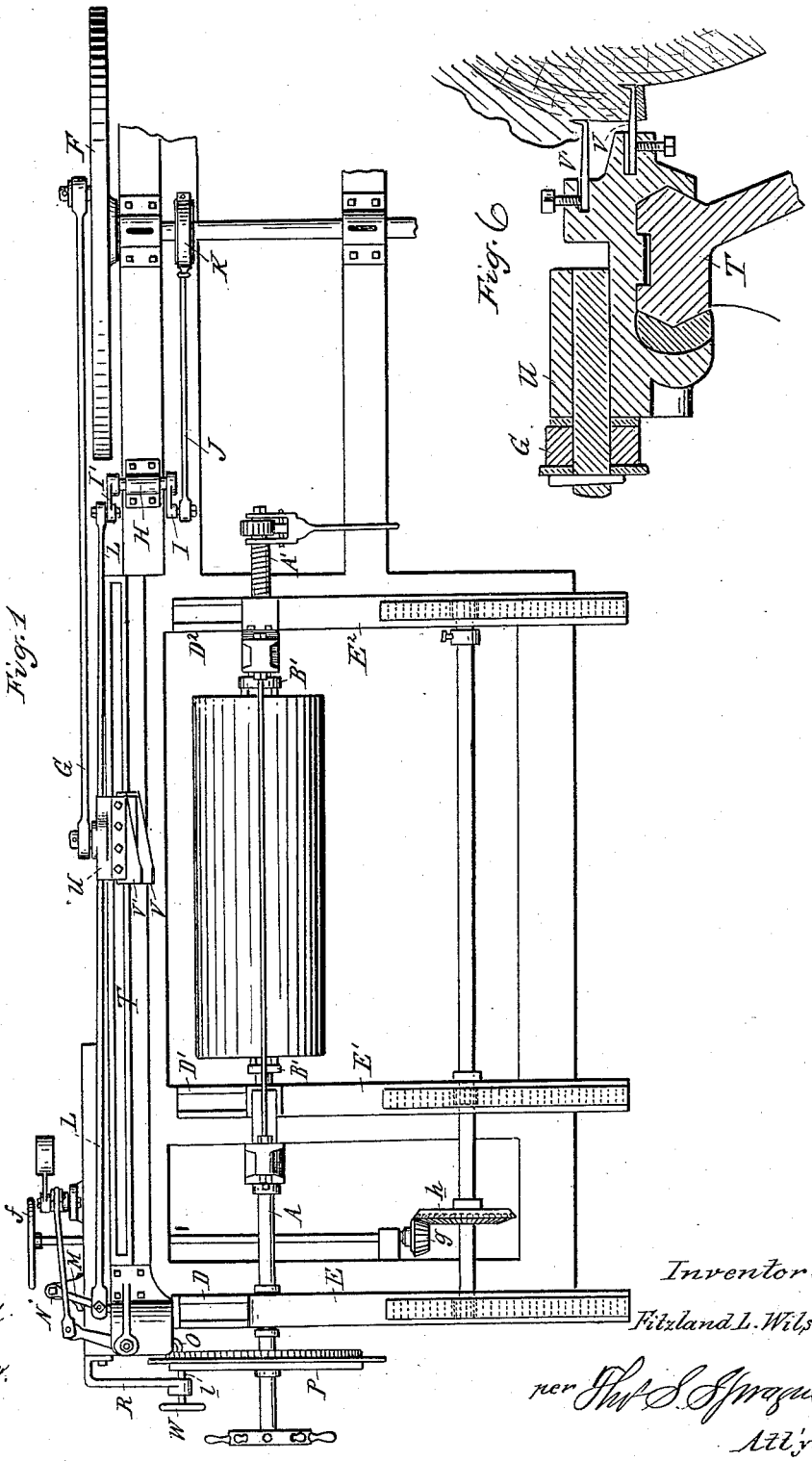

Fig. 6



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(No Model.) 2 Sheets—Sheet 2.

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## BARREL HOOP CUTTING MACHINE.

No. 264,392. Patented Sept. 12, 1882.

Fig. 2

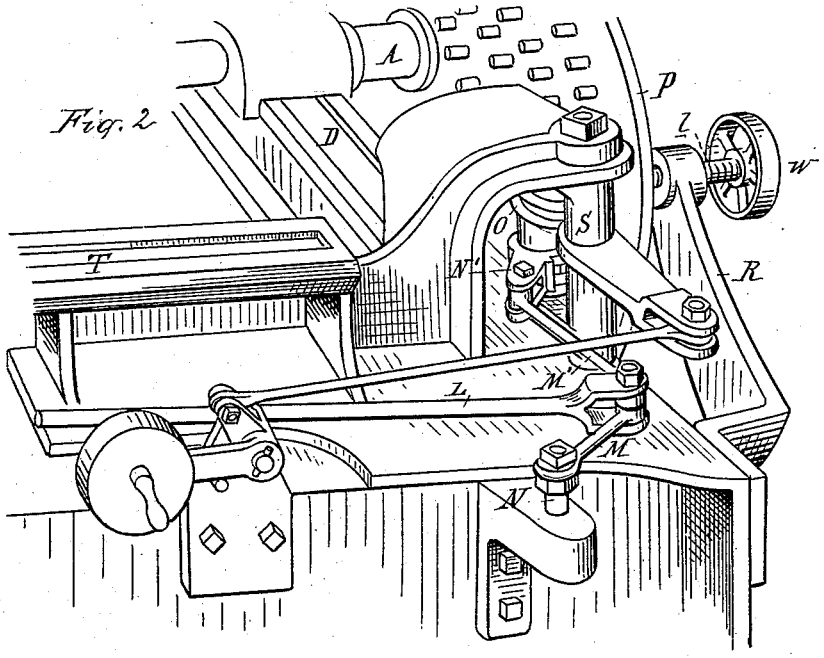



Fig. 3

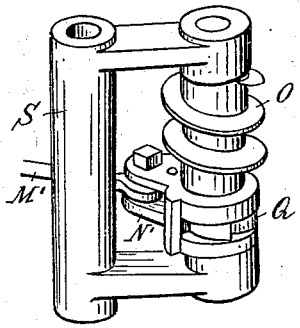



Fig. 4

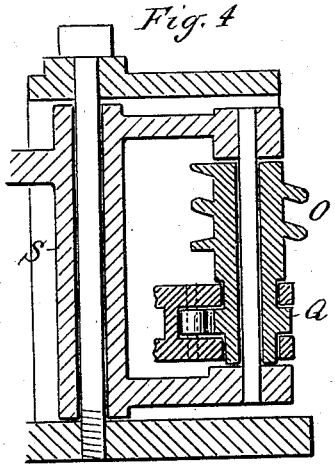
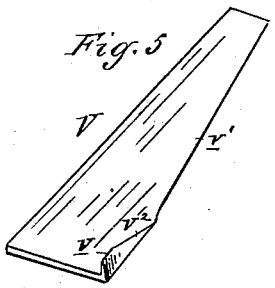



Fig. 5

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# UNITED STATES PATENT OFFICE.

FITZLAND L. WILSON, OF SAGINAW, MICHIGAN.

## BARREL-HOOP-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 264,392, dated September 12, 1882.

Application filed February 11, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, FITZLAND L. WILSON, of Saginaw, in the county of Saginaw and State of Michigan, have invented new and useful Improvements in Barrel-Hoop-Cutting Machines; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to that class of hoop-cutting machines wherein the log is fed to a reciprocating cutting-knife; and while my invention is mainly designed to form an improvement upon the hoop-cutting machine patented to me July 12, 1881, No. 244,155, it still embodies some important new features in contradistinction to the above-named patent, viz:

First. The hoop is cut only on the back-stroke of the reciprocating knife, which also it cuts in two planes, as in the former machine. The two planes do not cut simultaneously upon the same hoop.

Second. A supplementary knife is attached to the knife-head, destined to trim off the irregularities of the log during the first stages of the cutting, in advance of the regular hoop-cutting knife.

Besides these more important points I have also added an improved feeding device, and changed the arrangement and combination of other parts, all substantially as hereinafter described, and pointed out in the claims.

In the drawings, which form a part of this specification, Figure 1 is a plan view of my machine. Fig. 2 is a perspective view of the feeding mechanism. Fig. 3 is a detached perspective view of the feed-screw. Fig. 4 is a vertical central section thereof. Fig. 5 is a perspective view of the cutting-knife detached. Fig. 6 is an end view of the knife-head, showing also the knife-guide and log in cross-section.

In the drawings, A and A′ are two spindles, carrying the chucks B B′, between which the log is held.

D D′ $D^2$ are ways upon which the sliding plates E E′ E″ are adapted to advance or retract simultaneously.

P is a wheel having spiral grooves (not shown in the drawings) on one side and spiral gearing (shown in Fig. 2) on the opposite side.

R is a rigid arm provided with a pin, *l*, to engage with the spiral grooves of the wheel P, all these parts being constructed and combined the same as shown in my above-mentioned patent.

T is a guide upon which the knife-head U has its reciprocating motion imparted to it by the crank-wheel F by means of the connecting-rod G. The knife-head U carries the two knives V V′. The knife V does the cutting of the hoops during the back-stroke by a drawing cut produced by the inclined cutting-edge *v′*. *v* is an upturned lip, also provided with an inclined cutting-edge, $v^2$, all as shown in Fig. 5. The knife V′ may be an exact counterpart of the knife V. The log is fed to the cutting-knife with an intermittent revolving and horizontal motion just before the knife begins to cut, and the parts constituting the feed mechanism are the following:

H is a rock-shaft properly journaled upon the bed of the machine.

I and I′ are two cranks attached to the ends of the rock-shaft. The crank I is connected by the rod J to the eccentric K, and the crank I′ is connected by the rod L to the toggle-levers M and M′. The lever M has a stationary pivot at N, and the lever M′ is pivotally connected with the lever N′, which latter is fulcrumed upon the lower end of the feed-screw O, Figs. 3 and 4, and, being provided with a proper pawl engaging with the ratchet Q, is adapted to turn, when oscillated, the feed-screw O, which in turn, by its engagement with the spiral gear upon the wheel P, will rotate the same, and thereby feed the log to the knife in the same manner as described in my former patent. The oscillation of the lever N′ is, as will be seen, brought about by the action of the toggle-levers M and M′, which are actuated by the eccentric K through the medium of the rock-shaft H and connecting-rods J and L. By examining Fig. 2, where the position of the toggle-levers is shown at the commencement of the feeding action, it will be seen that the angle of the two levers M and M′ is an obtuse one, while at the end of the feeding action the two levers M and M′ will be nearly in a straight line with each other, corresponding therewith. The movement of the feed-screw will at first be rapid and gradually grow slower, thus giving the log proper time

to expend its acquired momentum before being checked. As above mentioned, the cutting of the hoop is only performed at the backstroke of the knife. This necessitates a new feed only before the beginning of each backstroke, which in each case gives the advantage of doing the work of the machine only with the pull of the connecting-rods, which, in heavy work, are always liable to spring when doing also work with the push.

The feed-screw O, as shown in Figs. 2, 3, and 4, is carried in a swinging frame, S, whereby the same can be easily brought out of engagement with the wheel P by the connections shown in Fig. 2. To facilitate the operation of retracting the parts in a proper position for chucking a new log, I provide the pin *l* with a hand-wheel, W, and screw-thread it through the arm R, making it thus easy to withdraw it from its engagement with the spiral grooves of the wheel P, and after this is done the proper turning of the hand-wheel *f* will, by actuating the bevel-gears *g* and *h*, withdraw or advance the log-carriage to any desired point.

The action of the knife V′ will be easily understood by examining Fig. 6, where this knife is shown in its proper relative position to the knife V. It trims the log and removes inequalities in advance of the latter, thereby getting the knife V much sooner to do proper work, thus saving much valuable time.

The practical operation of the hoop-machine herein described is so similar to the one patented to me, as above mentioned, that I refrain from a more minute description thereof, calling attention only to the different mode of separating the hoops from the log, which in this machine is not done by the simultaneous action of the two cutting-edges of the knife V upon the same hoop, but by their consecutive action, as shown in Fig. 6. In this latter mode of cutting the knife V produces a cleaner cut, as the action of one cutting-edge is less liable to influence the action of the other.

What I claim as my invention is—

1. In a hoop-cutting machine, the combination, with the chucks and arbors for carrying the log, and the wheel P and screw O for turning said log, of the toggle-levers M M′ and ratchet-connections between the levers and the screw, and connections, substantially as described, between the center of the toggles and the driving-shaft, as set forth.

2. In a hoop-cutting machine, the combination, with the chucks and arbors for holding the log, and wheels P and screw O for turning said log, of the lever and pawl N′, toggle-arms M M′, connected one to the lever N′ and one to a fixed point, the rod L, and suitable devices for reciprocating said rod, substantially as described.

3. In a machine for cutting hoops, the combination, with grooved and geared wheel P and the screw thereof for feeding the log, of the swinging frame S, carrying said screw, suitable devices for operating said frame, and the retractible pin *l*, whereby the feeding mechanism can be thrown entirely out of gear, substantially as described.

4. In a hoop-cutting machine, the cross-head U, carrying the two knives V V′, having upturned angular cutting-edges at different distances from the cross-head and one above the other, in combination with suitable devices for giving said cross-head a reciprocating movement along a log, and mechanism for giving the log an intermittent rotary movement, substantially as described, and for the purpose specified.

5. In a hoop-cutting machine, the combination, with the chucks and arbors for carrying the log, and the wheel P and screw O for turning said log, of the cross-head U, carrying a knife or knives having upturned edge or edges, means for reciprocating said cross-head, the toggle-levers M M′, and ratchet-connections between the levers and the screw O, and connections, substantially as described, between the center of the toggles and the driving-shaft, as set forth.

FITZLAND L. WILSON.

Witnesses:
M. P. HUGHES,
ALEXANDER BUSH.