

(No Model.)

J. ANTHON.
OSCILLATORY CHAIN SAW MORTISER.

No. 547,572.

Patented Oct. 8, 1895.

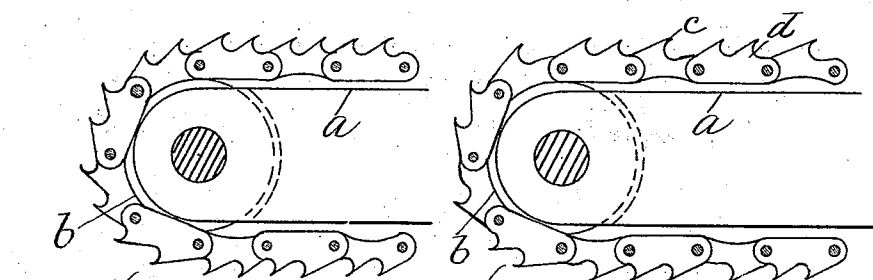
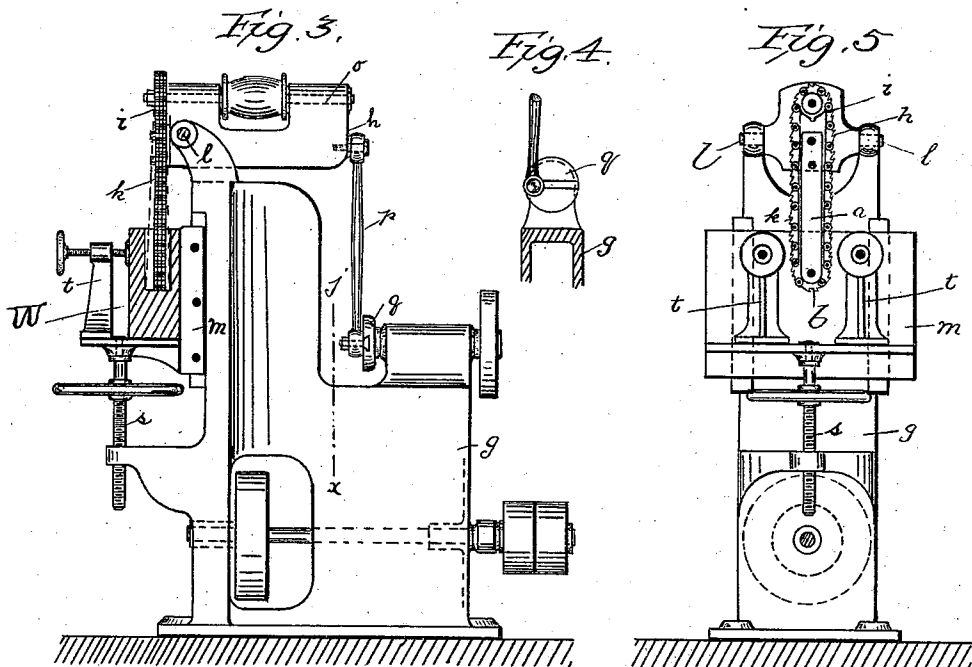
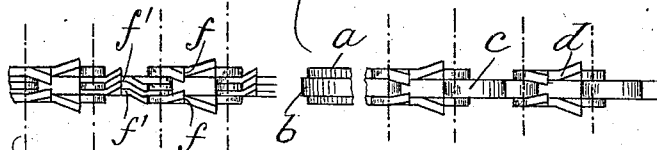


Fig. 2.

Fig. 1.

Witnesses:

Wm. H. Hoffmann
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UNITED STATES PATENT OFFICE.

JOHANN ANTHON, OF FLENSBURG, GERMANY.

OSCILLATORY CHAIN-SAW MORTISER.

SPECIFICATION forming part of Letters Patent No. 547,572, dated October 8, 1895.

Application filed January 18, 1895. Serial No. 535,409. (No model.)

To all whom it may concern:

Be it known that I, JOHANN ANTHON, a subject of the Emperor of Germany, residing at Flensburg, Germany, have invented a certain new Oscillatory Chain-Saw Mortiser for Making Quadrangular Holes in Wood, of which the following is a specification.

In essentials the invention consists of a chain-like combined tool whose links have saw-teeth. This endless saw, being stretched over two rolls and put in rapid motion, intrenches itself into a piece of wood held close to it and by this cuts a quadrangular hole.

Figures 1 and 2 show the various constructions of the working chain in plan and side view each. Fig. 3, 4, and 5 represent the machine with the mounted working chain.

I have found two combinations of the working chain most suitable for this purpose. As per Fig. 1, the chain consists of a number of thin plates *d*, provided with saw-teeth, which plates are bolted together hingelike, two by two, with a thicker link *c*, provided with a large sharp edge. The teeth of the plates *d* being alternately cross-cut—i. e., one tooth is bent a little outward, the other inward, as this is the case with each ordinary saw—have to make two saw-cuts into the wooden piece, the wood remaining between the two cuts being taken away by the links *c*, provided with a sharp edge. Fig. 2 shows the other construction. This chain consists of single thin plates *f* and *f'*, provided with saw-teeth, which are bolted in such way that two exterior links *f* follow two interior links *f'*. The teeth of all plates are cross-cut alternately inward and outward, so that each tooth takes away one part of the wood, and by degrees all the teeth by working together make a hole in the whole width of the chain. The endless chain runs over two rolls *b* and *i*, Fig. 3, of which the one is constructed as a chain-wheel with teeth which engage into the intervals formed by the link-plates *d* or *f*. The other under roll *b* serves only as a support or guide for the chain and does not prevent the latter from penetrating the wood. A plate *a*, split at one end for holding the roll *b*, serves to stretch the chain sufficiently. As soon as the upper wheel *i* has been put into a rapid rotation the chain-links obtain a continuous mo-

tion corresponding with the speed of rotation of the wheel. The hole made by the saw-teeth has the section of the chain system—viz., a length equal to the diameter of the under wheel plus the space occupied by both the chain-bands and a width equal to the thickness of the chain. Therefore with one chain only one hole of a certain length and width could be made; but to be able to cut with one and the same chain holes of various widths it has been arranged to give to the chain during its working an oscillatory motion to both sides across the direction of the cut, so that the under part of the chain entering the wood makes the greatest lateral deviation, as shown by the dotted line in Fig. 3. This oscillatory motion of the working chain forms the second part of my invention.

As the oscillatory motions are executed in a very rapid succession while the chain-saw penetrates into the wood, the chain-saw cuts out a hole whose size depends on the deviation, as shown in the wood piece marked W. By giving to the chain a more or less strong deviation it makes wider or narrower holes. By this arrangement many chains of different sizes are rendered unnecessary and all sizes of holes can be made with one and the same chain.

Figs. 3, 4, and 5 show the construction of the machine. The chain K is carried by the plate *a*, in turn held by the carriage *h*. This carriage also carries the bearings of an axis O, upon which the upper chain-wheel *i* is fixed. The carriage *h* is pivotally supported in the frame *g*, thus swinging at the center *l* and by this occasioning the oscillatory motion through the medium of a connecting-rod *p* from a crank-axle or from an eccentric *g*, Fig. 4. The crank-axle or the eccentric is so constructed that the stroke or the eccentricity may be altered in an easy manner, perhaps as per a scale, by which the stroke or the eccentricity can be exactly fixed for the desired width of the hole. In the drawings the pivot of the crank can be moved within a dovetail groove formed in the crank-disk *g*, and by this more or less eccentricity can be obtained.

The other parts of the machine are supposed to be known and found in other mortising-machines. The wooden piece is fixed

by the chucks *t* upon a slide *m*, which is lifted
by the screw *s*, by a lever, or by a rack, thus
bringing the wood piece to the working chain.
If long sash-holes are wanted, either several
5 holes are mortised, one beside the other, by
pushing the wooden piece horizontally, or
while the tool penetrates by degrees into the
wood the latter can be allowed to make a hori-
zontal movement, as this is the case with the
10 long-hole mortising-machines. The driving-
pulley is carried on the shaft *o*.

I claim—

1. In combination in a mortising machine,
a pivoted support, means for rocking said
15 support on its pivot and an endless chain cut-
ter supported by and depending from the
pivotal support and means for operating the
chain, the pivotal movement of the support

acting to vibrate the chain laterally of the
mortise, substantially as described. 20

2. In combination in a mortising machine,
the cutter consisting of the chain, the upper
and lower rollers therefor, the pivoted sup-
port carrying the same, the bar *a* extending
from the upper to the lower roller and means 25
for oscillating the pivoted support, the piv-
otal movement of the support acting to vi-
brate the chain laterally of the mortise, sub-
stantially as described.

In witness whereof I have hereunto set my 30
hand in presence of two witnesses.

JOHANN ANTHON.

Witnesses:

THOMAS MATTHIESEN,
WILHELM BRANDES.