

Figure 4 is a vertical transverse section, showing those parts of the machine which are at the right hand of the line $x x$ drawn across figures 1 and 2.

The first part of my invention relates to the combination of rotary cutters and feeding-rollers, in such a manner that the said feeding-rollers shall be capable of feeding the lumber to the cutters, and also of effectually resisting the tendency of the cutters to draw the lumber upwards towards them ; the object of this part of my invention being to reduce the lumber operated upon to a uniformity of thickness, and give it a planed and even surface upon one side thereof.

The second part of my invention relates to the combination, with feeding-rollers and rotary cutters, for planing one of the principal surfaces of the lumber, of rotary machine cutters so as to form a tongue or grove, or both, upon the edge or edges of the lumber, at the same time that one of its principal surfaces is planed.

In the drawing, A is the frame of the machine, which frame should be substantially constructed to resist the vibrations of the operating parts. B is the driving pulley, which is hung on the main shaft C of the machine, from which latter, motion is communicated to the operating parts. D is the shaft of the rotary cutters by which the lumber is planed. This shaft is made flat upon two of its sides, between its bearings, for the reception of the cutters E, E, which are firmly secured to it by bolts $a a$, the holes through these cutters for the reception of these bolts elongated in the direction of the width of the cutters to allow the necessary adjustment of the cutters. The shaft D is hung in adjustable bearings, by which it may be elevated and depressed to regulate the thickness of the planed lumber, F is a pulley on the shaft D, which receives motion from belt G, from the band-wheel H, on the driving shaft. I, I, J, J, are the feeding rollers, each pair of which is connected by finger pinions b, b , and the upper roller of each pair is hung in spring bearings, which allow it to yield slightly upward to the pressure, to adapt it to any differences or inequalities in the thickness of the lumber. The lower roller of each pair is provided with a worm wheel c , which meshes into a worm or endless screw d on the shaft k , which is propelled by a bevel wheel l on the main shaft, working into the bevel wheel f on the shaft k .

L, M, are cutters hung upon vertical shafts N, O, one set of these cutters being adapted to form a groove, and the other to form a tongue upon the