

(No Model.)

2 Sheets—Sheet 1.

K. NELSON.
ROTARY CUTTER HEAD.

No. 501,956.

Patented July 25, 1893.

FIG. 1.

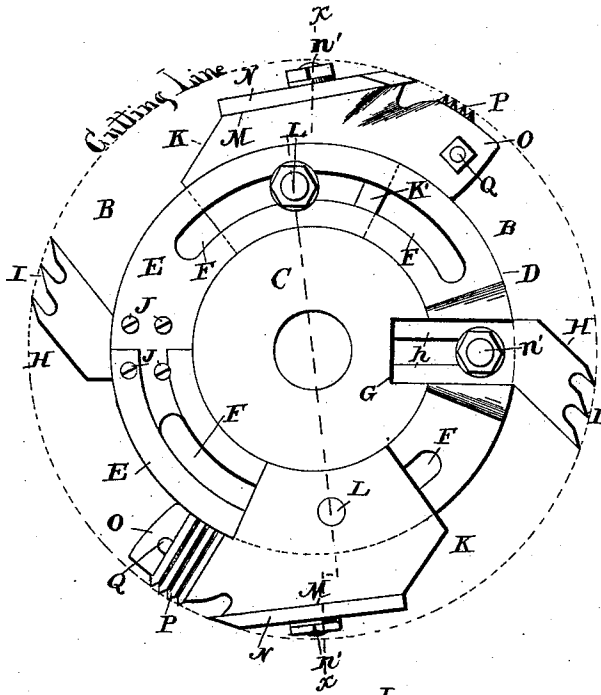


FIG. 2.

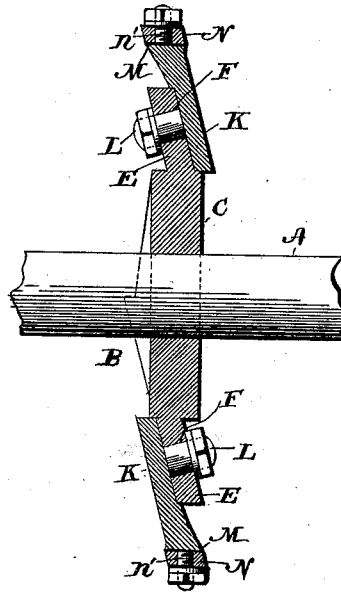


FIG. 3.

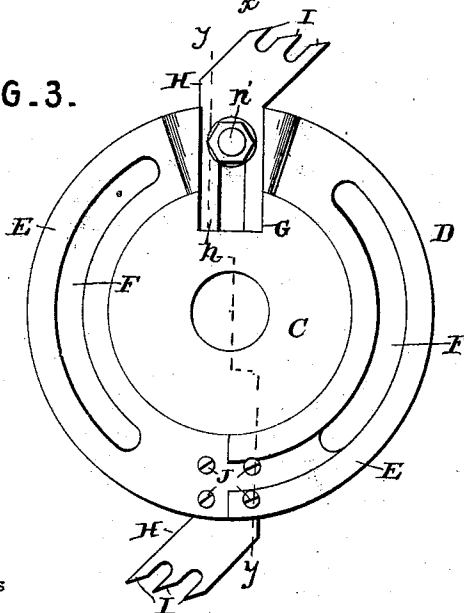
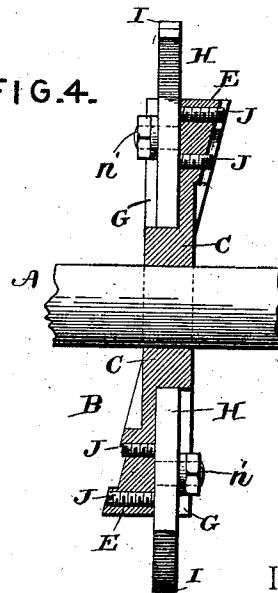


FIG. 4.



Witnesses

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(No Model.)

2 Sheets—Sheet 2.

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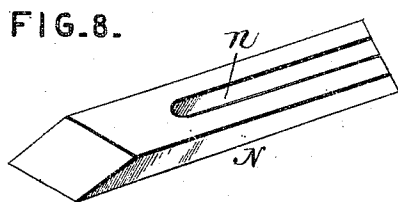
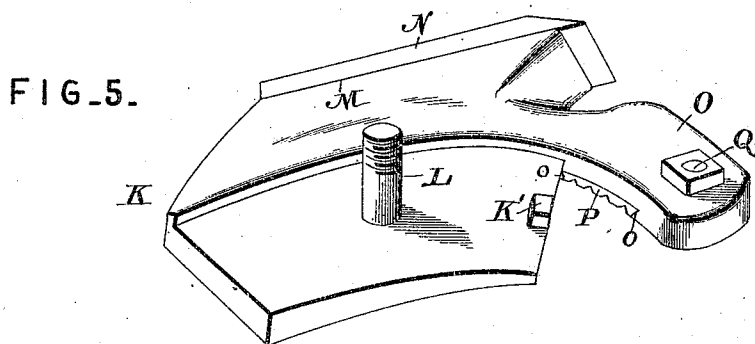


FIG. 6.

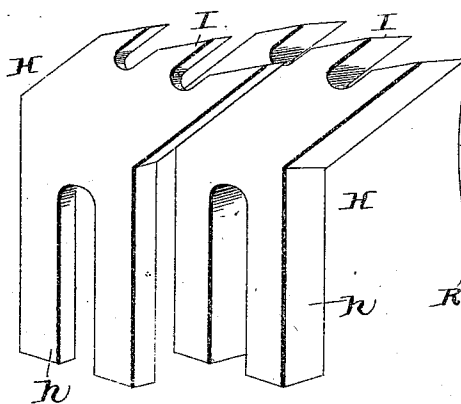


FIG. 7.

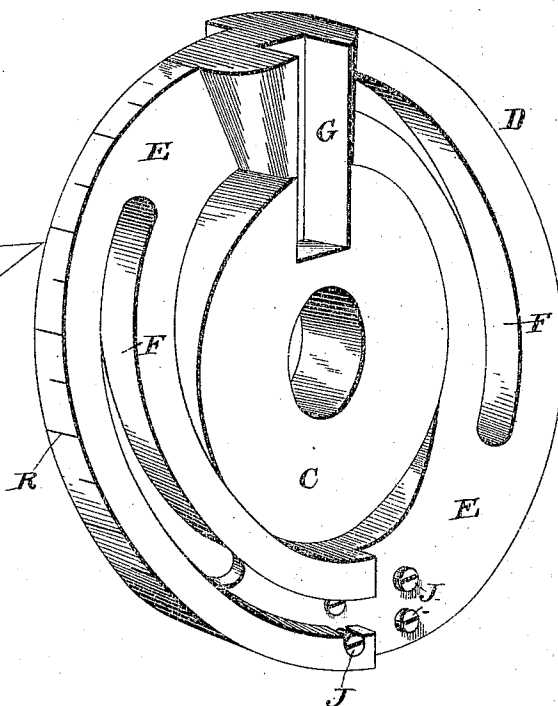
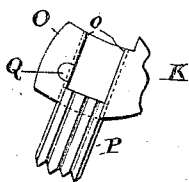


FIG. 9.



Witnesses

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UNITED STATES PATENT OFFICE.

KILBURG NELSON, OF WEST DULUTH, MINNESOTA.

ROTARY CUTTER-HEAD.

SPECIFICATION forming part of Letters Patent No. 501,956, dated July 25, 1893.

Application filed November 19, 1892. Serial No. 452,580. (No model.)

To all whom it may concern:

Be it known that I, KILBURG NELSON, a citizen of the United States, residing at West Duluth, in the county of St. Louis and State of Minnesota, have invented a new and useful Rotary Cutter-Head, of which the following is a specification.

This invention relates to cutter heads for wood working machines, and it has for its object to provide an improved cutter head of the rotary type, that can be readily adapted for use on the shaft of any saw table or other similar wood working machine, and is of such construction as to take up but a small amount of space thereon.

To this end the invention primarily contemplates an improved cutter head provided with special attachments and adjustments whereby the wheel or head is adapted for cutting or boring grooves, in any kind or grain of wood, ranging from three-sixteenths of an inch to two and one-fourth inches, and in this use being both effective and rapid.

With these and other objects in view which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

In the accompanying drawings:—Figure 1 is a plan view of a rotary cutter or grooving wheel constructed in accordance with this invention, showing all the cutters in position adapting the wheel for cutting grooves from three-fourths of an inch to two and one-fourth inches. Fig. 2 is a vertical transverse sectional view of the same mounted on the shaft taken on the line $x-x$ of Fig. 1. Fig. 3 is a view similar to Fig. 1 showing the sliding cutter heads removed, and the wheel adapted for grooving from three-sixteenths to three-eighths of an inch. Fig. 4 is a vertical sectional view of the construction disclosed in Fig. 3, and the wheel on a shaft and taken on the line $y-y$ of such figure. Fig. 5 is a detail in perspective of one of the sliding cutter heads. Fig. 6 is a similar view of a pair of the toothed cutters. Fig. 7 is a detail in perspective of the wheel stock with the several cutters removed. Fig. 8 is a detail in perspective of a plain cutter. Fig. 9 is a detail

view of the connection for one of the serrated cutters.

Referring to the accompanying drawings:—A represents a saw table shaft, or any suitable revolving shaft on which is mounted the cutter wheel B. The cutter wheel B, is provided with the central disk C, which is secured directly on the shaft and which is surrounded by the rim D, which comprises the two oppositely slanting or inclined sections E, each of which is provided with a curved slot F. At the meeting points of the two oppositely slanting or inclined sections E, which are at an angle to the vertical plane of the disk C, are formed the opposite notched seats G, which are arranged at opposite edges and on opposite sides of the wheel, and are designed to accommodate the radially adjustable toothed cutters H.

The toothed cutters H, are provided with the slotted shanks h , and a series of saw cutting teeth I, which are designed to travel into the wood and serve in the capacity of saws and cutters to cut and groove the piece of work.

As illustrated in the drawings, the cutters H, come in two sizes, the smaller of which are used independently of any other cutting devices on the wheel, as illustrated in Figs. 3 and 4 of the drawings, and are designed to cut from three-sixths of an inch, their width, to three-eighths of an inch, the width of the other size of cutters H. As illustrated in Fig. 4 of the drawings, by loosening the bolts h' , engaging the slotted shanks of said cutters, the said cutters can be adjusted laterally from the rim of the wheel by means of the adjusting screws J, passing through said rim and engaging the inner faces of the cutters, the said cutters being adjusted in opposite directions to each other to cut from three-sixteenths of an inch to three-eighths of an inch. By removing the three-sixteenths inch cutters and placing the three-eighths inch cutters in position, by the same adjustment, the groove can be cut from three-eighths of an inch to three-fourths of an inch.

The cutters H, have been described as being used independently, when cutting small grooves, but in cutting grooves from three-fourths of an inch to two and one-fourth

inches the said toothed cutters, cut in the center of the work being grooved, and when thus employed are used in connection with the cutting devices of the circumferentially and laterally adjustable sliding heads K. The sliding heads K, are mounted to slide on the oppositely slanting or inclined sections E, of the rim and on opposite sides thereof, so as to adjust all the cutters on the same cutting line, shown in dotted lines in the drawings. The heads K, are provided with the squared lugs K' moving in the curved slots F, of the sections E, so as to strengthen the connection of the heads to the rim of the wheel, on the bolts L. The sliding heads K, are provided with the flat slightly inclined edges M, upon which are mounted the adjustable plain cutters N, which are provided with slots n, engaged by the clamping bolts n', which provide means for the tangential adjustment of the plain cutters. Directly in advance of the flat edge M, the heads K, are further provided with the short arms O, in which on one face are formed dove-tailed grooves o. The dove-tailed grooves o, accommodate the radially adjustable serrated saw cutters P, which are adjustably held in position in said dove-tailed grooves by means of the headed bolts Q, passing through said short arms and engaging one edge of said serrated cutters.

Now with the general construction of the rotary cutter in mind, it will be readily seen that in cutting grooves varying from three-fourths of an inch to two and one-fourth inches, the serrated saw cutters P, travel in advance of the plain and toothed cutters so as to break the surface and edge of the groove and thereby prevent the cutters, following, from splitting or tearing, while the plain slightly inclined cutters directly after the serrated cutters, chisel out the width of the groove while the toothed cutters following pass through the center of the groove and line up the bottom edge of the same. Now it will be clear that by circumferentially adjusting the sliding heads K, on the oppositely slanting or inclined sections, equal distances, the same will be laterally adjusted away from the center of the disk E, and thereby provide means for widening the groove to be cut, while by leaving the toothed cutters stationary the same always remain in the center of the cutting line of the wheel, that is at a central point between the farthest opposite edges of the cutters of the opposite heads. It will also be obvious that any depth of work ranging from one-sixteenth to one and one-fourth inches can be secured by the radial adjustment of the toothed and serrated cutters, and the tangential adjustment of the plain cutters. From the foregoing it is thought that the several adjustments and adaptations of the cutters will now be apparent.

As illustrated in the drawings, it will be seen, that the edges of the rim sections over which the cutter heads slide may be provided

with a graduated scale R, by means of which the adjustment of the heads can be accurately regulated so that the width of groove between three-fourths of an inch and two and one-fourth inches can be accurately determined.

It is to be understood that changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

1. In a rotary cutter of the class described, the cutter wheel, having oppositely slanting or inclined rim sections, cutter heads circumferentially adjustable on said sections,—and intermediate cutters adjustably secured to said wheel between said cutter heads, substantially as set forth.

2. In a rotary cutter, the cutter wheel having opposite seats arranged on opposite sides of the same, single saw toothed cutters mounted in said seats, and means for radially and laterally adjusting each cutter substantially as set forth.

3. In a device of the class described, the cutter wheel having opposite notched seats arranged at opposite edges and at opposite sides of the same, interchangeable saw toothed cutters mounted for longitudinal adjustment in said seats, and a series of adjusting screws arranged to engage the inner sides of said cutters to adjust the same laterally in opposite directions away from the wheel, substantially as set forth.

4. In a rotary cutter of the class described, the cutter wheel having opposite rim sections set at opposite inclinations to the vertical plane of the hub of the wheel and on both sides thereof, cutter heads circumferentially adjustable on each of said inclined sections at both sides of the wheel to secure a consequent simultaneous lateral adjustment, and cutters adjustably mounted on said heads, substantially as set forth.

5. In a rotary cutter of the class described, the wheel having oppositely slanting or inclined rim sections in which are formed curved slots, sliding cutter heads moving against opposite faces of the opposite rim sections and having lugs projecting into said slots, bolts passing through said cutter heads and said slots, cutters adjustably mounted on said heads, and intermediate cutters arranged between said cutter heads, substantially as set forth.

6. In a rotary cutter of the class described, the cutter wheel having opposite rim sections arranged at an angle to each other, opposite cutter heads circumferentially adjustable on said rim sections to secure a consequent lateral adjustment and provided with flattened edges and grooves in advance of said edges, plain cutters adjustably mounted on said

flattened edges, and saw cutters adjustably mounted in said grooves, substantially as set forth.

7. In a rotary cutter of the class described,
5 the cutter wheel having opposite rim sections,
opposite sliding cutter heads circumferentially and laterally adjustable on said rim sections and provided with slightly inclined
10 flattened edges and arms having dove-tailed
grooves in advance of said flattened edges,
plain cutters adjustably mounted on said flat-

tened edges, saw cutters radially adjustable in said grooves, and toothed cutters adjustably mounted on the wheel between the cutter heads, substantially as set forth.

In testimony that I claim the foregoing as
my own I have hereto affixed my signature in
the presence of two witnesses.

KILBURG NELSON.

Witnesses:

CHAS. F. HOPKINS,
JUDSON D. HOLMES.