

(No Model.)

P. PRYIBIL & E. D. MACKINTOSH.

CUTTER HEAD.

No. 301,272.

Patented July 1, 1884.

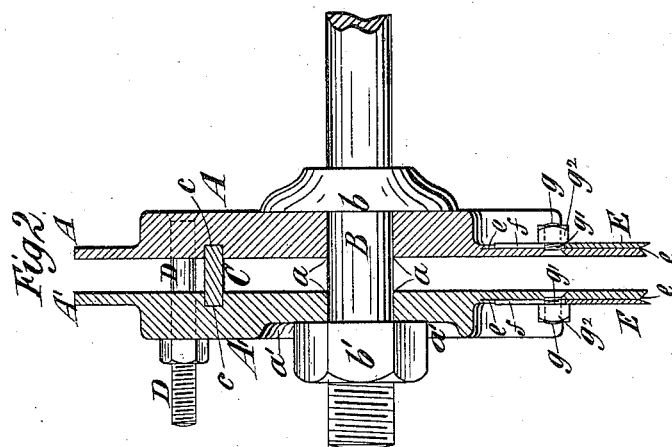


Fig. 1.

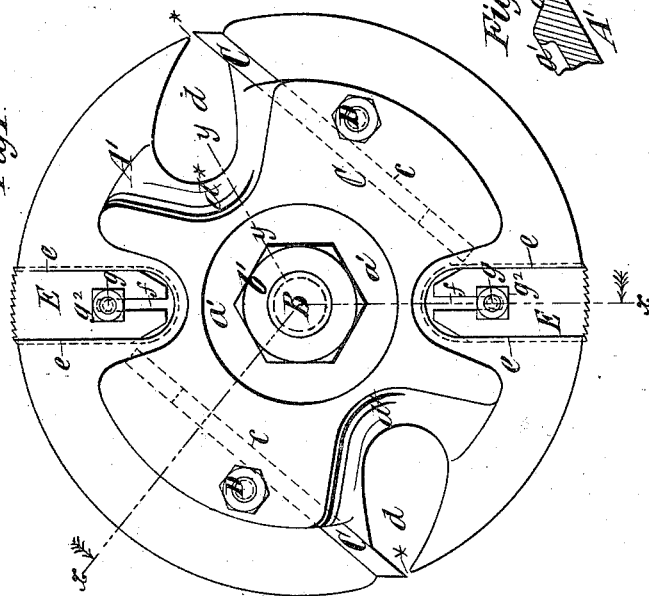


Fig. 4.

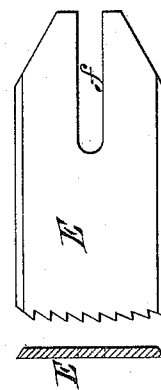
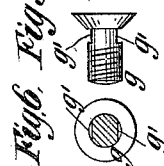


Fig. 5.



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# UNITED STATES PATENT OFFICE.

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## CUTTER-HEAD.

SPECIFICATION forming part of Letters Patent No. 301,272, dated July 1, 1884.

Application filed April 23, 1884. (No model.)

*To all whom it may concern:*

Be it known that we, PAUL PRYIBIL, of the city and county of New York, in the State of New York, and EDWARD D. MACKINTOSH, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Dado or Grooving-Heads for Grooving Lumber, of which the following is a specification.

Our invention relates to a head which consists of two plates or flanges, which are to be secured upon a saw-mandrel or other arbor, and which carry scoring-knives for cutting down to form the sides of a groove. The two plates or flanges of the head have tangential grooves in their inner faces, and in these grooves are secured knives for cutting away the lumber as it is scored by the scoring-knives. The bottoms of the grooves in each plate or flange are in the same plane as the cutting-edges of the scoring knife or knives of that plate or flange, and hence when knives of any desired width are placed in the grooves of the plates or flanges and the latter are drawn together tightly to hold said knives the scoring-knives will be in the proper positions to score the desired width. The scoring-knives are usually fitted in dovetailed radial channels or recesses in the outer faces of the plates or flanges, and are therein secured by screws inserted through the plates or flanges from the inner sides or faces thereof, and having nuts applied to them outside the scoring-knives. Heads of this kind are sometimes required to cut a groove as narrow as one-fourth or three-eighths of an inch, in which case the knives of that width are inserted in the tangential grooves of the plates or flanges, and the latter are brought almost together. It will therefore be seen that in heads of this class, which are designed for cutting narrow as well as wide grooves, the metal of each plate or flange at the bottom of the dovetailed channels for the scoring-knives must be of little thickness, and so thin, in fact, that the screws for holding the scoring-knives could not be well secured against turning. This difficulty has been recognized in making these heads, and the screws have generally been formed with nicks in their heads for the reception of a screw-driver; but in this construction it has

been necessary to separate the plates or flanges and remove them from their arbor whenever it was desired to take out or put in the scoring-knives, or to set them in or out in their dovetailed grooves.

One object of our invention is to avoid this necessity of separating the plates or flanges whenever the scoring-knives are to be set, and to hold the screws against turning by other means, so that their nuts may always be tightened or loosened by applying a wrench to them.

To this end our invention consists in the combination, with the plates or flanges of the head, provided with dovetailed grooves or channels, of scoring-knives slotted from their back ends forward, and screws having a greater diameter than the width of the slots in said knives, and having flattened portions which fit said slots and prevent the screws from turning when tightening or loosening the nuts applied to said screws on the outer sides of the said knives, as more fully hereinafter described.

As heretofore made prior to our invention, the two plates or flanges of the head have been secured together only by the arbor or mandrel on which they are supported, and the nut applied thereto, and when the said nut was loosened the two plates or flanges were no longer tightly clamped together.

Another feature of our invention consists in the combination, with the two plates or flanges provided with scoring-knives, and the knives which are fitted between them in tangential grooves, of bolts inserted through the plates or flanges adjacent to said grooves, and serving to clamp the plates together.

Our invention also consists in the combination of the two plates or flanges and their knives, the plates being provided with coincident eyes to fit upon a mandrel or arbor, and one of the plates or flanges having in its outer face a recess or countersink around its eye to receive the nut of the mandrel or arbor. This construction enables the head to be widened to a greater extent than it otherwise could be in connection with an arbor having but a short length of bearing for the reception of the head.

In the accompanying drawings, Figure 1 is

a side view of a head embodying our invention. Fig. 2 is a sectional view thereof on the dotted lines *x x*, Fig. 1. Fig. 3 is a face view of one of the scoring-knives. Fig. 4 is a transverse section of such knife. Fig. 5 is a side view, and Fig 6 a transverse section, of one of the screws for securing the scoring-knife; and Fig. 7 is a view of one of the plates or flanges on the dotted line *y y*, Fig. 1.

10 Similar letters of reference designate corresponding parts in all the figures.

A A' designate the two plates or flanges of the head. They are provided at the center with coincident eyes *a*, which are adapted to receive an arbor or mandrel, B, and on this 15 the head may be secured by a collar or shoulder, *b*, and a nut, *b'*. The plate or flange A' is countersunk or recessed at *h'* around its eye to receive the nut *b'*, and by this means the 20 head may be expanded to a greater width on an arbor or mandrel having but a short bearing for it. In the inner faces of the plates or flanges A A' are tangential grooves *c c*, wherein are fitted knives C, the cutting-edges 25 of which are presented at the peripheries of the plates or flanges in such position as to form a throat for the passage of chips under the knife and into the cavities *d* in the plates or flanges. The backs of these cavities 30 are beveled outward, as shown at *d\**, Fig. 7, to throw off chips. Two knives, C, are here shown, and adjacent to the grooves *c*, in which they fit, are bolts D, here shown as screwed fast into one plate, and having nuts whereby 35 the two plates or flanges may be drawn together and securely clamped on the knives C. These bolts, being independent of the arbor B, prevent the plates from falling apart when off 40 the arbor, and enable the tool and its knives to be adjusted when in a horizontal position instead of a vertical position. The bolts D are also advantageous because they are adjacent to the knives and hold them more firmly than would the nut *b'*.

45 E designates the scoring-knives, two of which are shown in each plate or flange. They have opposite edges beveled, as shown in Figs. 3 and 4, and they are fitted in dovetailed recesses or channels *e*, as shown in Figs. 50 1 and 2. Each knife E is slotted at *f* from its rear end inward, and is secured in its channel or recess by a screw, *g*, having a conical head which is countersunk into the inner face of the plate or flange. The body of the screw 55 *g* is of greater diameter than the width of the slot *f* in the knife; but inside the head it is flattened or cut away on opposite sides at *g'*, as shown in Figs. 5 and 6, so as to make its thickness sufficiently less than the width of 60 the slot *f* to enable it to be received thereinto. The slot will then receive the flattened or contracted part of the screw, and will hold it against turning when its nut *g<sup>2</sup>* is tightened or loosened to adjust or remove the scoring-knife 65 E. In putting in the scoring-knives E, the screw *g* is inserted through the plate or flange

A or A'. The knife is then slid into its channel or recess *e*, and the screw being properly turned to present its flattened sides *g'* to the slot *f*, the knife can be pushed in as far as desired. The screw *g* being thus held against 70 turning by the engagement of the slot *f* with the flattened part of its screw, the nut *g<sup>2</sup>* can be tightened or loosened with ease.

We are aware of United States Letters Patent to J. L. Taylor, No. 33,501, dated October 15, 1861, and do not claim as of our invention anything therein shown and described. In said patent the screws which secure the scoring-knives have no flattened portions beneath 80 their heads, and the slots in the said scoring-knives are large enough to receive through them the round bodies of the screws and do not extend from the rear ends of the knives. In said patent the heads of the screws are nicked, 85 and when the tool is set for wide grooves, with the flanges or plates at a distance apart, a screw-driver or tool may be introduced between them for holding the head of the screw. When, however, the plates or flanges are set very near together or almost back to back, for cutting narrow grooves, as they are most often, no tool can be introduced between the plates or flanges 90 for holding the screw-heads, and hence no provision is then afforded for holding the screws until the plates or flanges are separated, which destroys the set or gage of the tool. According to our invention we hold the screw equally well and automatically, whether the plates or flanges are close together or not, and it is never 100 necessary to destroy the set of the tool by separating the plates or flanges when the scoring-knives have to be removed and replaced; hence by our invention we remove what has always been the greatest difficulty with the otherwise 105 useful tool shown in Taylor's aforesaid patent.

We are also aware that cutter-heads have been made with grooves for receiving knives which are pressed over and clamped against one side or wall of the groove, each by means 110 of a bolt having a long and taper or wedge-shaped head which bears against one side of the knife; and we are also aware that the side of the taper bolt-head impinging on the knife has been flattened to prevent the turning of 115 the bolt. Such knives are not slotted at all, and the flattened portions of the screws are not beneath the heads, as is necessary in our case, but are on the heads themselves.

What we claim as our invention, and desire 120 to secure by Letters Patent, is—

1. The combination, with the plates or flanges A A', provided in their outer faces with the channels or recesses *e*, of the screws *g*, inserted from the inner side of said plates or flanges, 125 and having flattened portions *g'* under their heads, and nuts *g<sup>2</sup>*, and the scoring-knives E, fitting the channels or recesses *e*, and furnished with slots *f*, extending from their rear ends, the said slots fitting the flattened portions of 130 the screws, and serving to prevent the turning of said screws when their nuts are turned

to clamp the scoring-knives against radial movement, substantially as herein described.

2. The combination, with the two plates or flanges provided with tangential grooves *c c* 5 in their inner faces and with channels or recesses *e* in their outer faces, of the knives C, fitting said grooves *c c*, bolts D, inserted through said plates or flanges adjacent to said grooves, and serving to clamp the plates or flanges together and upon said knives C, the screws *g*, 10 having flattened portions *g'* under their heads, and nuts *g''*, and the scoring-knives E, fitting the channels or recesses *e*, and furnished with slots *f*, extending from their rear ends, the 15 said slots fitting the flattened portions of the screws, and serving to prevent the screws from turning when their nuts are turned to clamp

the knives E against radial movement, substantially as herein described.

3. The combination of the two plates or 20 flanges A A', provided with scoring-knives, and knives C, clamped between said plates or flanges, the plates or flanges having coincident eyes *a*, and the plate or flange A' having a countersink or recess, *a'*, surrounding its eye, 25 and capable of receiving the nut, whereby the cutter-head may be secured upon a mandrel or spindle, substantially as and for the purpose herein described.

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