No. 816,953. PATENTED APR. 3, 1906.

C. BACKMAN.

CUTTER HEAD FOR SHAPERS.

APPLICATION FILED NOV. 23, 1905.

Fig. 1.

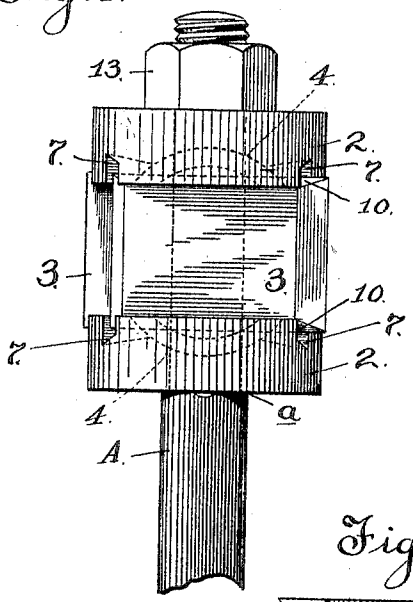


Fig. 2.

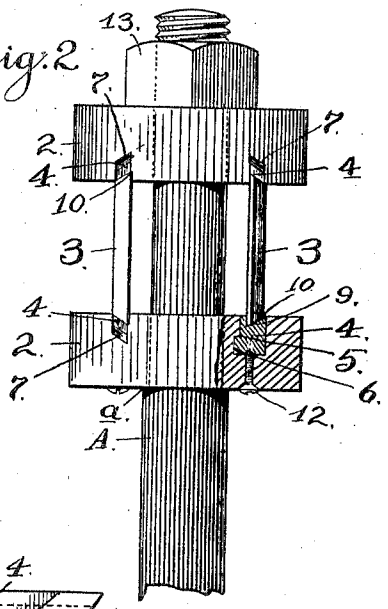


Fig. 6.

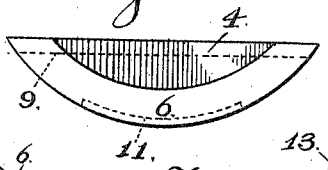


Fig. 3.

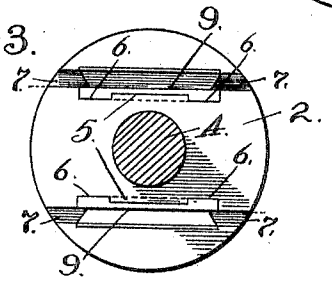


Fig. 4.

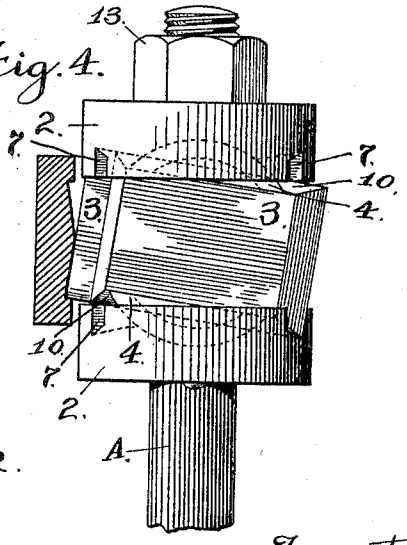
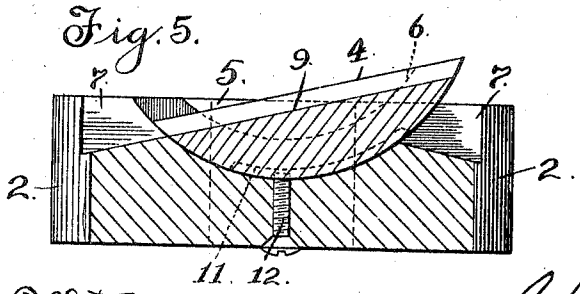


Fig. 5.



Witnesses:

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By Geo. H. Strong. Atty

UNITED STATES PATENT OFFICE.

CHARLES BACKMAN, OF ALAMEDA, CALIFORNIA.

CUTTER-HEAD FOR SHAPERS.

No. 816,953. Specification of Letters Patent. Patented April 3, 1906.

Application filed November 23, 1905. Serial No. 288,698.

To all whom it may concern:

Be it known that I, CHARLES BACKMAN, a citizen of the United States, residing at Alameda, in the county of Alameda and State of California, have invented new and useful Improvements in Cutter-Heads for Shapers, of which the following is a specification.

My invention relates to woodworking machinery, and especially to means for adjustably holding cutters in position in shaping-machines.

My object is to provide a simple practical cutter-head whereby the same knives may be employed for cutting different kinds of molding and for doing different kinds of work. In machines ordinarily in use it is generally necessary, as far as I know, to use a different knife for each different kind or size of molding. It requires careful and tedious grinding of the knives to get the right bevel and results in loss of time in having to change the knives or regrind them for each different piece of work.

The invention consists of the parts and the construction and the combination of parts, as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a side view of my cutter-head. Fig. 2 is a front view of same, partly broken away to show bearing-block. Fig. 3 is a plan of bottom collar with knives removed. Fig. 4 is a side view showing tilted position of knives in operative position to a piece of work which is shown in section. Fig. 5 is a section through the collar on enlarged scale. Fig. 6 is a detail of the bearing-block.

A represents a spindle of an ordinary shaper, and 2 represents two collars or clamp members loosely fitting over the upper threaded end of the spindle. It is understood that the spindle is suitably supported and that it may be driven from any suitable source of power and that there may be any desired number of spindles, and the lower collar may be supported on the spindle in any appropriate fashion. I have shown the spindle as having an enlarged shoulder portion *a*, forming an abutment or stop to the longitudinal movement of the lower collar on the spindle. Tiltably supported and clamped between the collars are one or more knives or cutters 3. The main feature of my invention resides in the means for tiltably supporting and clamping these knives. As shown, the adjacent faces of the collars 2 carry rockable knife-bearings 4. These bearings 4 are generally arranged in complementary pairs on opposite sides of the spindle with each collar supporting two bearings. Each bearing comprises a segmental plate or block fitting a corresponding groove in the collar, and each block is held in place by suitable means, as the lateral segmental flange 5, operating behind a corresponding shoulder 6 on the collar. Each bearing-block is so set into its collar and so held in position that the outer edge of the block may be turned to lie flush with the inner surface of the collar. The grooves in which the blocks or bearings seat lie in the planes of chords of the collars, and ordinarily when a block stands with its outer edges flush or parallel with the inner face of its collar the ends of the block will lie entirely inside of the periphery of the collar. Each collar, however, is cut away at each end of each block and in the plane of the slot in which the block rocks, as at 7, to accommodate the knives to the various inclinations which the knives are designed to assume.

Each block is shown as having a longitudinal groove 9 to receive the corresponding bevel edge 10 of a knife 3. The bottom of the end slots 7 in the collars may be correspondingly grooved or beveled, so as to be in continuation of grooves 9 when the blocks are rocked to tilt a knife. The solid portion of a collar lying beyond and in continuation with the depressed end of a block when the knife is tilted operates to afford additional support to that edge of the knife.

In order to prevent the blocks from falling out of their guides formed by the flanges 5 and shoulders 6, I have shown the curved rear side of each block as having a longitudinal groove 11, with a screw 12, carried by each collar, fitting the groove 11. The screws and the end walls of the groove 11 coöperate to limit the rocking movement of the several blocks and enable the collars to be held in any position without any danger of a block dropping out accidentally.

By taking out a knife and removing a screw any one of the blocks can be quickly removed from its seat in the collar. The knives are capable of not only a tilting movement on their rockable bearings, but they are freely slidable in said bearings, so that the cutting edge of a knife may be made to project more or less beyond the periphery of the collars, according as it is desired to cut a shallow or deep groove.

The lower collar may be supported by any

suitable means on the spindle, while any appropriate means may be employed to clamp the upper collar down upon the knives and in opposition to the lower collar. A simple and convenient clamping means is afforded by the nut 13, fitting the screw-threaded end of the spindle. The removal of the nut allows both collars and knives to be quickly taken off. The knives may be of any desired description and have any desired form of cutting edges—curved, straight, or beveled.

The same knives may be used for a variety of different styles of work by simply loosing up the nut and tilting the knives in their bearings so that their cutting edges will operate in the desired manner. A great variety of designs and sizes of molding may be cut with the same knives, and the same knives that are used for making moldings may be employed for fluting as well as for forming nosings.

It is possible that various modifications in my invention may be made without departing from the principle thereof, and I do not wish to be understood as limiting myself to my specific construction beyond what is required by a reasonable interpretation of my claims.

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

1. The combination of a rotatable spindle, clamp members thereon, an intermediate substantially tangentially disposed cutter, and means carried by the members permitting the cutting angle of the cutter to be changed.

2. The combination of rotatably-supported clamp members, a tangentially-arranged cutter, and rockable bearings carried by said members and supporting said cutter.

3. The combination of rotatably-supported clamp members, a knife intermediate of said clamp members, and substantially tangentially disposed rockable seats carried by the clamp members and supporting the knife, and said knife having a lengthwise adjustment in said seats.

4. The combination of a spindle, collars thereon, rockable knife-seats carried by the collars, a knife supported by said seats, and arranged tangential to the spindle, and means for clamping the collars and knife.

5. The combination of a rotatable spindle, collars thereon, segmental seats carried by said collars and turnable in planes at right angles to the adjacent faces of the collars, knives supported by said seats, said knives arranged substantially tangential to the spindle and means for clamping the collars and knife together.

6. The combination of a rotatable spindle, collars having transversely-extending grooves on their opposed faces, segmental knife-seats fitting the said grooves, means for holding the seats in position in the grooves, tangentially-arranged knives between opposed seats, and means for locking the collars and knives in operative position.

7. The combination of a rotatable spindle, collars thereon, opposed rockable knife-seats on the adjacent faces of the collars, a tangentially-arranged knife supported by said seats and having a lengthwise adjustment in the seats to project more or less beyond the collars, and means for locking the knife and collars in operative position.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CHARLES BACKMAN.

Witnesses:

FRANZ O. JOHANSAN,

S. H. NOURSE.