

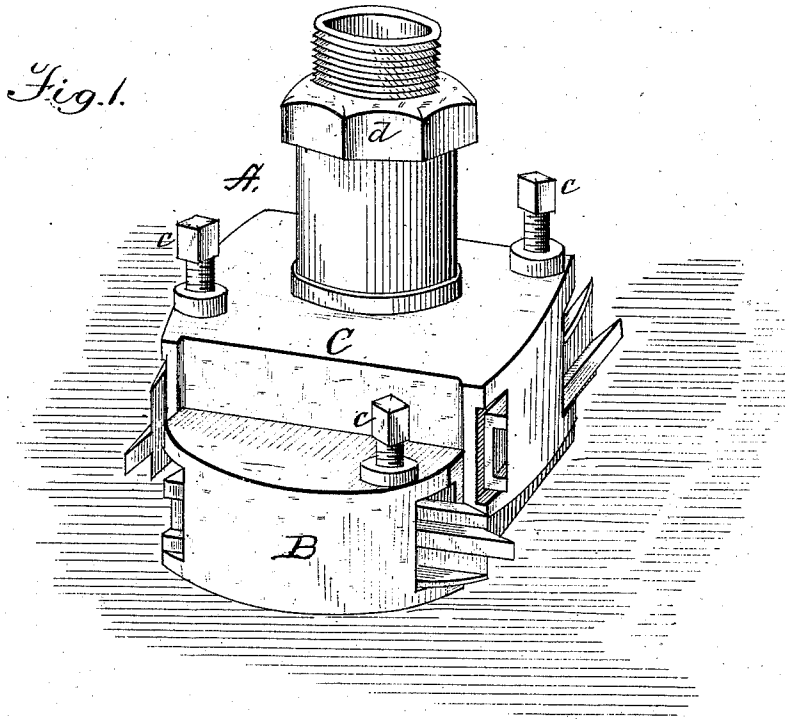
(Model.)

3 Sheets—Sheet 1.

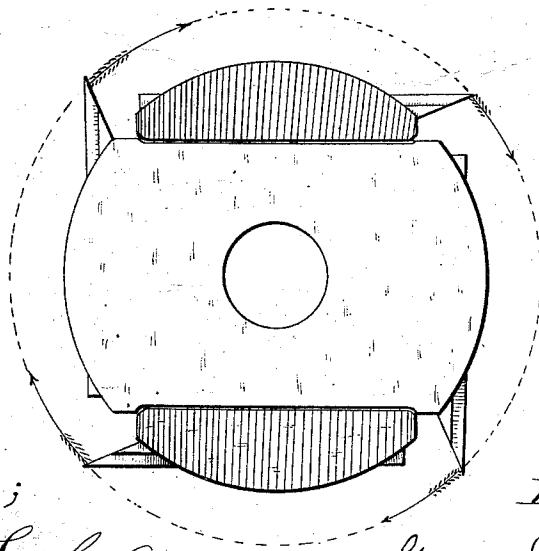
G. J. & S. J. SHIMER.  
Cutter Head.

No. 241,432.

Patented May 10, 1881.



*Fig. 2.*



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Fig. 3.

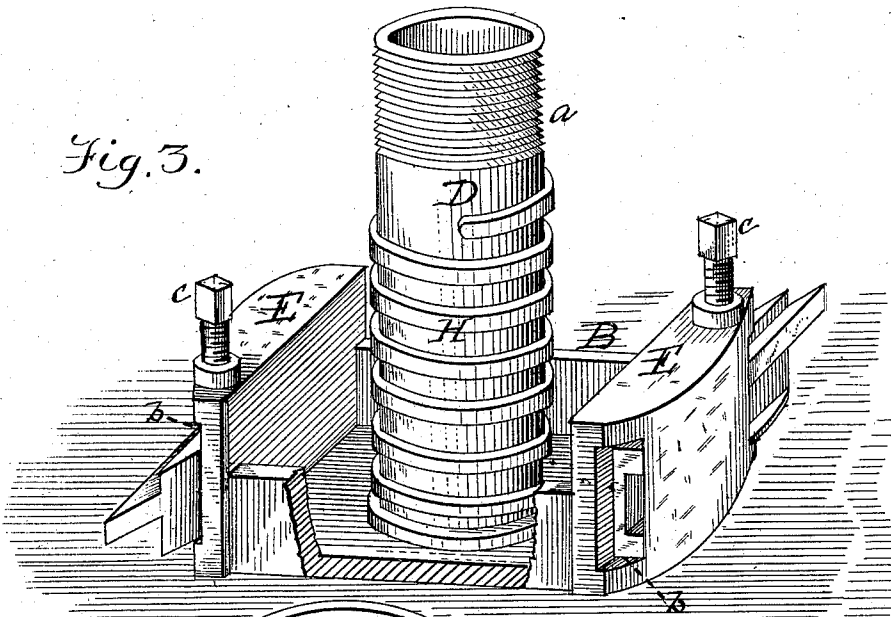
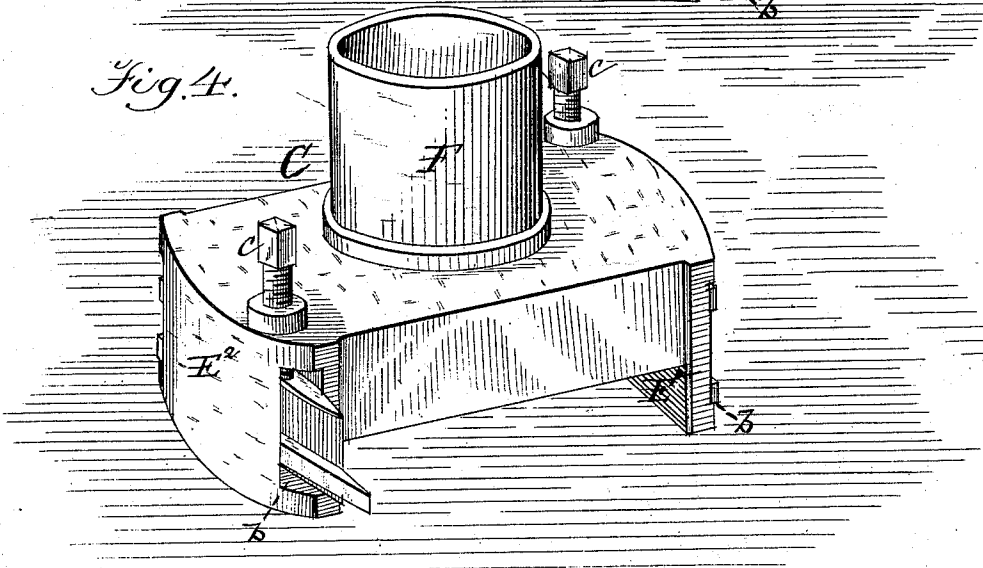


Fig. 4.



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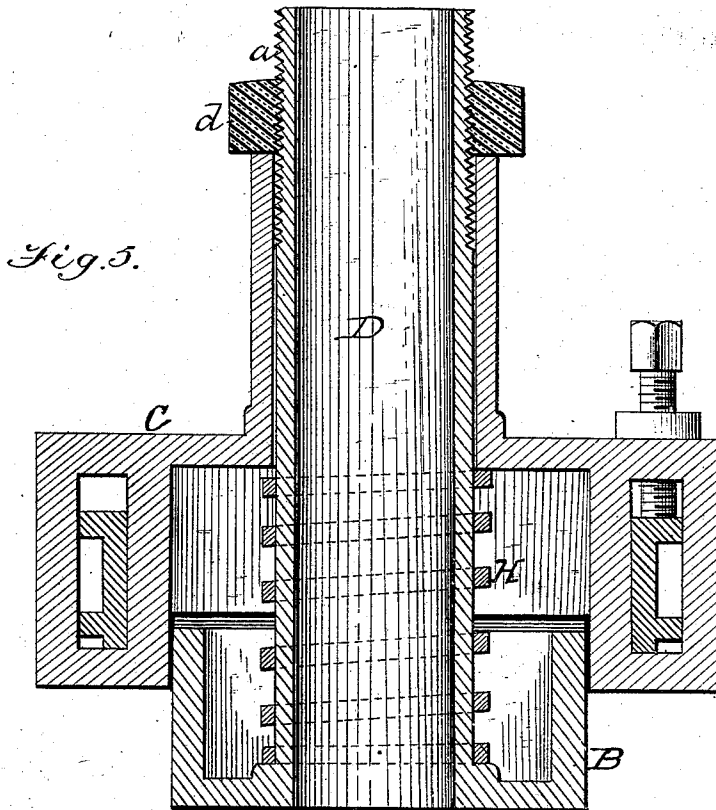


Fig. 5.

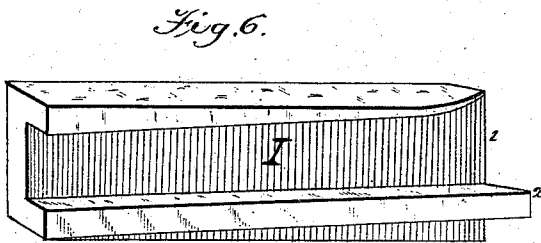


Fig. 6.

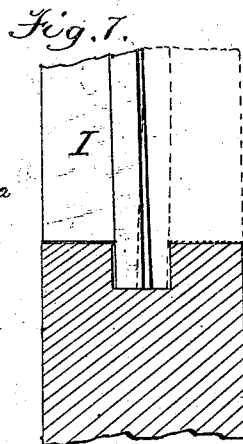


Fig. 7.

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# UNITED STATES PATENT OFFICE.

GEORGE J. SHIMER AND SAMUEL J. SHIMER, OF MILTON, PENNSYLVANIA.

## CUTTER-HEAD.

SPECIFICATION forming part of Letters Patent No. 241,482, dated May 10, 1881.

Application filed March 10, 1881. (Model.)

To all whom it may concern:

Be it known that we, GEORGE J. SHIMER and SAMUEL J. SHIMER, citizens of the United States, residing at Milton, in the county of Northumberland and State of Pennsylvania, have invented certain new and useful Improvements in Cutter-Heads; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Our invention relates to cutter-heads that are used on matching and molding machines for matching, grooving, and finishing the edges of lumber, and particularly to that class wherein bits or cutters are employed to produce a divided cut and to operate with clearance at the side of each cutting-edge.

Our invention also relates to the peculiar construction of the bits or cutters, operating in pairs, so as to overlap each other on the inner line of cut, and capable of lateral adjustment for matching and molding lumber.

Our invention consists in a cutter-head composed of two sections or parts, operating conjointly and capable of lateral adjustment, in combination with bits or cutters having the outline of a certain mold formed on their outer surfaces at an angle with the edges upon which they are secured to their respective sections.

Our invention further consists, in combination with the cutter-head composed of two sections or parts, of an elastic cushion operating against the movable section.

Our invention further consists, in combination with the cutter-head composed of two sections or parts, of an elastic cushion or coiled spring and an adjusting means, whereby the overlapping edges of the cutters of the sections can be increased or decreased.

Our invention further consists in the peculiar construction of the bit or cutter, as will be hereinafter described and claimed.

Our invention further consists in the novel construction and combination of parts, as will be hereinafter described and specifically claimed.

Figure 1 of the drawings is a perspective

view of our improved tool. Fig. 2 is a bottom view of the same. Fig. 3 is a perspective view of the stationary section of the cutter-head with its bits or cutters, and showing fully a coiled spring surrounding the hub. Fig. 4 is a perspective view of the adjustable section of the cutter-head with its bits or cutters. Fig. 5 is a vertical sectional view, showing the relative position of all the parts. Fig. 6 is a perspective view of the bit or cutter. Fig. 7 is an edge view of one of the bits, showing the mode of operation upon a piece of lumber.

In the annexed drawings, forming a part of this specification, the letter A represents the cutter-head, composed of two sections or parts, B and C. The section B (see Fig. 3) is constructed with a central hub, D, having at its upper end an exterior screw-threaded portion, *a*, and at its base with re-enforced side flanges or segments, E E, directly opposite each other, and arranged in planes at right angles to the axis of rotation. The section C (see Fig. 4) is constructed with a central sleeve, F, the interior diameter of which is a little greater than the exterior diameter of the hub D of section B, so as to pass over the same easily, and to permit of vertical adjustment, and is also constructed with the re-enforced side flanges or segments, E<sup>2</sup> E<sup>2</sup>, which are arranged directly opposite each other, as seen in the drawings. The side flanges of the respective sections are formed with mortises *b*, to receive the bits or cutters, and provided with set-screws C at or near one end, on the upper surface, to secure the bits or cutters to their seats. The mortises in the respective sections are parallel to each other, in order that the cutters arranged therein shall move in the same plane. These sections are made of cast metal with the openings and passages cored, and should be of sufficient strength to resist the torsional strain upon the bits when the tool is in operation.

Arranged around the hub D of the section B (see Figs. 3 and 5) is a coiled spring, H, or its equivalent, having a tension of sufficient strength to act as a nut-lock. This coiled spring rests upon the floor of the lower section, and the upper end bears upon the upper section when adjusted in position, as seen in Fig. 5 of the drawings. The office of this spring coiled around the hub is to automati-

5 cally adjust the upper section upwardly or outwardly and retain the same in the adjusted position. The downward adjustment of the upper section is accomplished by the adjusting-nut *d* engaging with the screw-threads on the upper end of the hub.

10 The letter I (see Fig. 6) represents a bit or cutter with two cutting-edges, 1 and 2, in transverse section, having the shape or outline to cut a certain mold which is formed on the outer surface by planing or milling. In this example of a bit for forming a groove the projecting cutting-edge 2 is arranged at an angle to the base of the bit, or when it is secured to the head. These cutters are introduced into the mortises and properly adjusted in pairs or series, so as to partially overlap each other on the inner line of the cut.

20 It will be understood that as the cutters wear away they will make the groove narrower and tongue wider; but to maintain the uniformity of the groove and tongue the upper section, with its cutters, is adjusted so that they will overlap each other on the inner line of cut.

25 The *modus operandi* of these overlapping bits, for alternating the cut and dividing the chip upon the inner line of cut, is fully explained in the reissued patent of G. J. Shimer, dated February 12, 1880, and in our patent dated January 11, 1881.

30 The parts constituting the tool are put together in the following manner: On the hub of the lower section is arranged the coiled spring, after which the movable upper section is passed over the hub of the lower section, at right angles thereto, until it rests upon the upper end of the coiled spring, when the nut is applied and adjusted to form or constitute the interlocking of the sections, as seen in Fig. 40 1 of the drawings. The bits are properly adjusted in pairs in the mortises, and secured in their seats by means of the set-screws, and the desired overlap adjustment of the bits or cutters is accomplished by screwing the nut by means of a suitable wrench down upon the upper section, which will give the nice desired adjustment. The bits are sharpened and the cutting-edges adjusted to a common circle in the well-known manner.

50 It is obvious that as these bits or cutters are worn off by use and repeated sharpening, their

lateral adjustment must equal the inclination given for clearance to their leading points, and that, owing to the construction seen in Fig. 6, the bits operate with side clearance to their leading points when they are adjusted to the work in the ordinary manner.

In lieu of the coiled spring a rubber buffer or cushion may surround the hub, or a number of spiral or flat springs incased between the sections.

We do not wish to confine ourselves to the precise construction herein described and shown, as slight changes may be made without departing from the spirit of the invention.

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

1. A cutter-head composed of two parts operating conjointly and capable of lateral adjustment, the solid bits or cutters of which have the outline of a given shape formed on their outer surfaces at an angle with the edges upon which they are secured to their respective sections, substantially as described, and for the purpose set forth.

2. In a cutter-head, the combination, with the two sections composing the head, of an elastic cushion operating upon the movable or adjustable section, substantially as and for the purpose set forth.

3. In a cutter-head, the combination, with the two sections composing the head, of an interposed elastic cushion and an adjusting means, substantially as and for the purpose set forth.

4. A bit or cutter for a cutter-head having two cutting-edges in transverse section, the cutting-edge that shapes or forms the mold being formed on a projection on the face of the bit or cutter, at an angle to the base thereof, substantially as described.

5. The improved cutter-head hereinbefore described, consisting of the section B, movable section C, with their bits, the coiled spring H, and adjusting-nut, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

GEO. J. SHIMER.  
SAMUEL J. SHIMER.

Witnesses:

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M. F. NORAEONK.