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

No. 211,480. Patented Jan. 21, 1879.

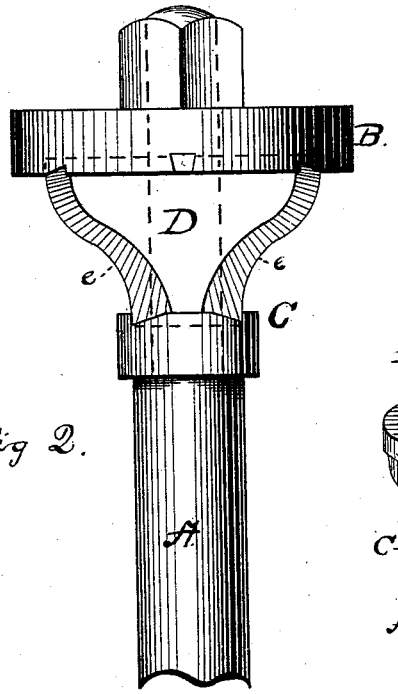


Fig 2.

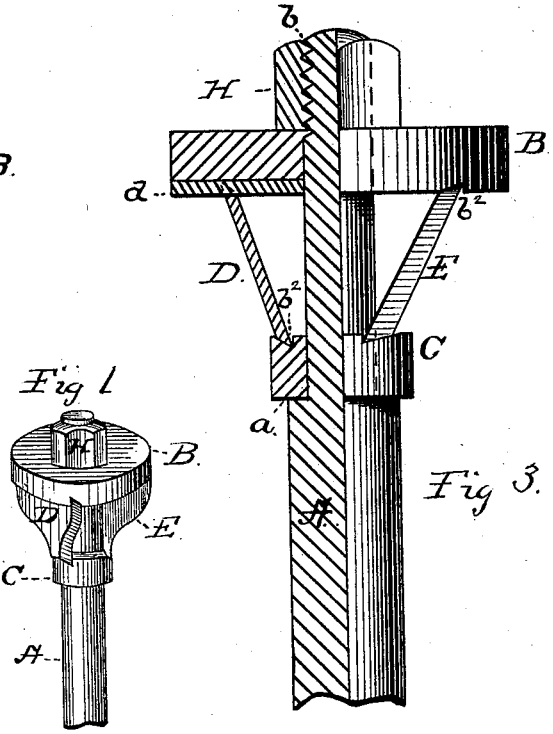


Fig 3.

Fig 1

Fig 4.

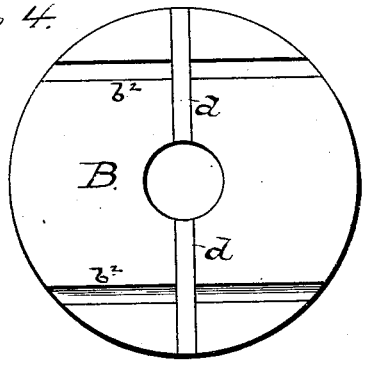


Fig 5.

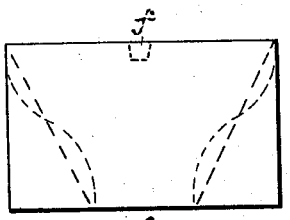
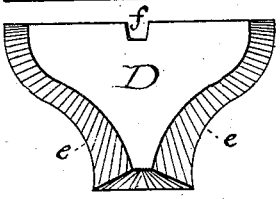


Fig 6



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UNITED STATES PATENT OFFICE.

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

IMPROVEMENT IN REVERSIBLE CUTTER-HEADS.

Specification forming part of Letters Patent No. **211,480**, dated January 21, 1879; application filed November 22, 1878.

To all whom it may concern:

Be it known that we, SAMUEL J. SHIMER and GEORGE J. SHIMER, both of Milton, in the county of Northumberland and State of Pennsylvania, have invented a new and valuable Improvement in Rotary Cutter-Heads; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a perspective view of our improved cutter-head. Fig. 2 is a side view of the same. Fig. 3 is a side view, partly sectional. Fig. 4 is a plan view of the upper collar, showing the grooves and keys. Fig. 5 shows the method of laying off a cutter on a blank. Fig. 6 shows the finished cutter.

This invention relates to that class of cutter-heads that are used on reversible shaping-machines, the cutters of which must have two cutting-edges.

It has been suggested heretofore to secure the cutters or knives in the head by means of grooves in the spindle, and in a lower grooved collar sliding on said spindle, the collar secured in position by a nut on the spindle; but no provision was made for the adjustment of cutters, whereby the cut could be increased or decreased.

Our improvement consists, principally, in two grooved collars of unequal size suited to reversible shaping-machines for holding the cutters, so that the distance between their cutting-edges may be increased or decreased by changing the collars, and the depth they cut being determined by the angle of adjustment relatively to the spindle; also, in the construction of the cutters, whereby they can be easily adjusted to the collars; also, in the novel construction and arrangement of the parts, as will be hereinafter more fully set forth.

To enable others to make and use our invention, we will proceed to describe it as follows:

In the annexed drawings, forming a part of this specification, the letter A represents a spindle of a reversible shaping-machine having a shoulder, *a*, and screw-threads *b* at its upper end. B and C indicate the holding collars or flanges, the smaller one resting upon the shoulder *a* of the spindle. Each of these collars is provided with two V-shaped parallel grooves, b^2, on or about the lines of an inscribed square within the circumferential line of the collars, and the upper or larger collar is provided at right angles with the grooves with keys *d*, or their equivalents, extending from the circumference to the center, substantially as shown in Fig. 4 of the drawings, for centering the cutters.

The letters D and E represent the cutters, having two cutting-edges, *e*, of the same shape and size, made from plates or slips of steel, with the upper and lower ends tapered so as to fit into the V-shaped grooves of the collars. These cutters are also provided at their upper ends with a square notch, *f*, substantially as shown in Fig. 6, to fit over or straddle the key *d* in the upper collar. The lateral edges of the cutters are equal in length to the sides of the inscribed squares of the collars with which they work.

Our method of laying off and making the cutters consists in using collars that are of different sizes, the upper collar being equal to the diameter of the lower collar plus twice the depth the cutters cut into the lumber. For example, when we wish to make a cut or mold one-half inch deep, the upper collar must be one inch larger than the lower collar. The size of the lower or guide collar is a matter of choice with the workman. To make the cutters work with collars thus differing in size, we select blank steel plates (see Fig. 5) of a width suited to the thickness of the lumber to be molded, and file or stamp a notch, *f*, in the center of the upper end in each plate to nicely fit a key or feather, *d*, in the upper holding-collar.

We now mark the edges of the steel plates on the circumferential lines of the collars and join these marks by lines drawn diagonally across the steel plates. Upon these lines lay off the ogee or any other desired mold, to be formed substantially as shown in Fig. 5 of the drawings, and cut out the same by any suitable means, and file up the same as in preparing any straight cutter, and the result will be a cutter like that shown in Fig. 6 of the drawings. The cutters made according to this rule,

in combination with holding-collars of unequal size, as above set forth, are reversible, the collars being exchangeable for others of smaller diameter as the cutters wear down.

It will be observed that by means of key *d* the cutters are brought into position for work without any further adjustment, the holding-key adding greatly to the the safety of the head, as the cutters are not liable to fly out.

The cutters have two cutting-edges, and are set at an angle, substantially as shown, and operate upon the lumber with a draw-cut, the one edge of each cutter being operative when the spindle runs one way, the other edge when the spindle is reversed, the distance between their cutting-edges being increased or decreased by changing the collars, and the depth they cut being determined by the angle of anjustment relatively to the spindle.

Ordinarily the common nut on the spindle will be found sufficient to securely hold the collars and cutters in place. If, however, extra heavy work is to be done, or extra security required, then a groove or keyway should be cut in the spindle and a corresponding key fitted to each collar, or two nuts, H, (only one shown,) passed over the upper end of the spindle—the upper one screwed down to hold the bottom one from loosening. Either or both of the above-described devices may be employed.

By this construction and arrangement of the unequal-sized collars we get for the cutting-edges of the cutters the greatest possible distance apart, and consequently the best possible clearance for the cutting-edge that is running rearward.

What we claim as our invention is—

1. In a rotary cutter-head, two clamping-collars of unequal size provided with grooves which are parallel to each other, in combination with a pair of cutters, substantially as and for the purpose set forth.

2. A reversible rotary cutter-head consisting, essentially, of two collars of unequal size provided with grooves and keys, and the cutters mounted on a spindle, substantially as set forth.

3. In a rotary cutter, the collar B, provided with grooves b^2 and key *d*, or its equivalent, adapted for use substantially as described.

4. A reversible rotary cutter-head consisting of a spindle, A, with shoulder *a* and screw-threads *b*, the grooved collars B C, the collar B being also provided with a centering-key, *d*, the cutters D E, and a fastening device, substantially as described.

5. The cutter D, having double cutting-edges *e e* and key-notch *f*, as an improved article of manufacture.

In testimony whereof we have hereunto subscribed our names.

SAMUEL J. SHIMER.
GEO. J. SHIMER.

Witnesses:
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