(Model.) 3 Sheets—Sheet 1.

S. J. & G. J. SHIMER.

CUTTER HEAD.

No. 261,266. Patented July 18, 1882.

Fig. 1.

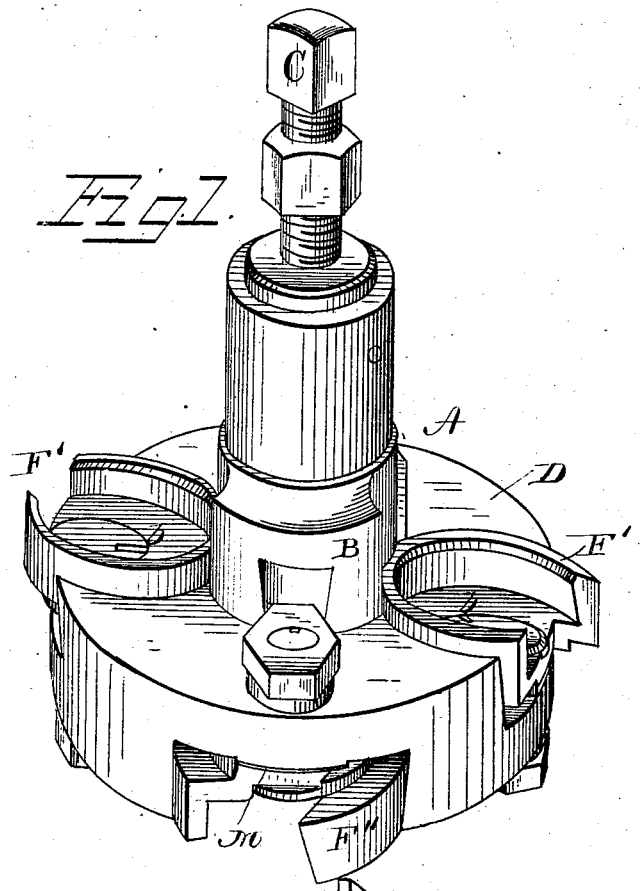

Fig. 2.

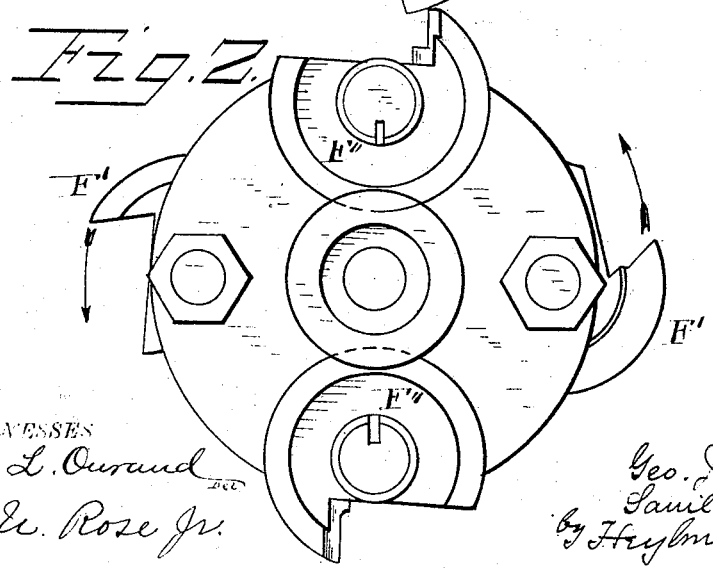

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Fig. 3.

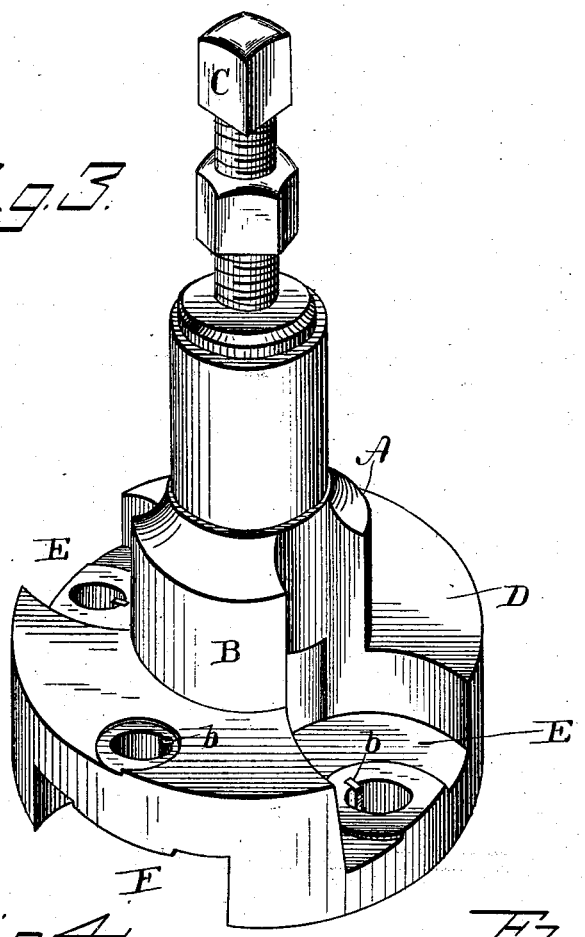

Fig. 4.

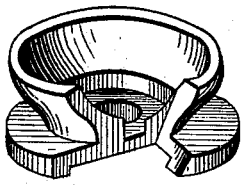

Fig. 5.

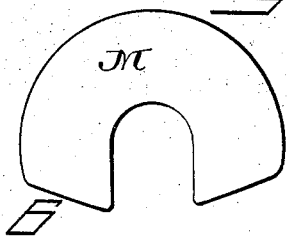

Fig. 6.

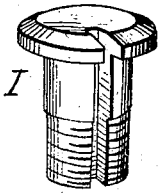

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Fig 7

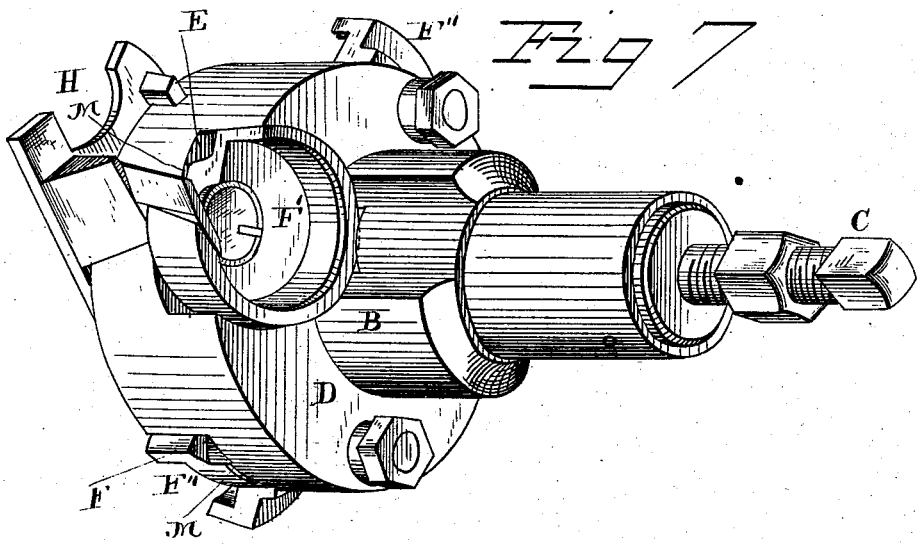
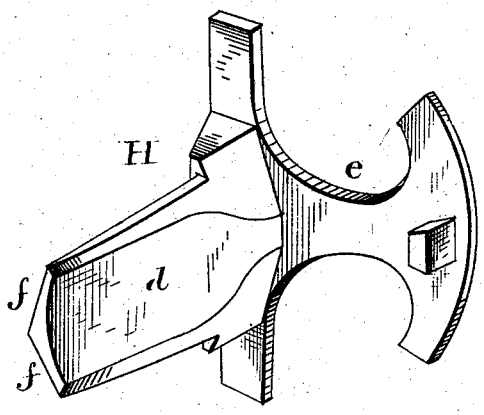


Fig. 8.



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UNITED STATES PATENT OFFICE.

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

CUTTER-HEAD.

SPECIFICATION forming part of Letters Patent No. 261,266, dated July 18, 1882.

Application filed May 1, 1882. (Model.)

To all whom it may concern:

Be it known that we, SAMUEL J. SHIMER, residing at Milton, Northumberland county, Pennsylvania, and GEORGE J. SHIMER, residing at Freemansburg, in the county of Northampton and State of Pennsylvania, citizens of the United States of America, 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.

The invention relates to improvements on that class of cutter-heads shown and described in Letters Patent dated January 26, 1875, and reissued October 12, 1880, No. 9,403.

Our invention consists in the combination of a cutter-head having the bit-seats alternately arranged on opposite sides of the flange of the head, circular cutters or bits, and fastening-bolts with keyways.

Our invention further consists in the novel construction and combination of parts, as will be hereinafter more fully set forth.

In the annexed drawings, forming a part of this specification, Figure 1 represents a perspective view of our improved cutter-head with cutters or bits for tongueing lumber. Fig. 2 is a bottom view of the same. Fig. 3 is a perspective view of the head without the cutters. Fig. 4 is a perspective view of a door-bit. Fig. 5 is a plan view of the open or slotted washer. Fig. 6 is a perspective view of the clamping-bolt, showing the keyway. Fig. 7 is a perspective view of the cutter-head and gage, showing the mode of adjusting and setting a bit; and Fig. 8 is a perspective view of the setting-gage.

The letter A represents the head, consisting of the central hub, B, the flange D, and set-bolt C, with jam-nut. The flange D in this example is divided into four sections for forming the bit-seats, two of which are on the upper surface, arranged directly opposite, and the other two on the other side, arranged at right angles to the upper bit-seats. These bit-seats (see Fig. 3) are made by forming two recesses or chambers, E, in the upper surface of the flange, of a semicircular shape, and on the under side of the flange with two similar-shaped recesses or chambers, F. These recesses or chambers are alternately arranged—one on the upper side and the next on the under side—so as to receive the circular matching bits or cutters to form the divided cut. These bit-seats, which are eccentric to the head and exterior to the axis of rotation, have their faces oblique to the plane of revolution, the two upper seats being inclined forward and slightly outward, and the two lower inclined forward, in the same direction of rotation, and slightly inward. The object of forming these seats as described is to secure an inclined surface upon the head, in order that the cutters secured thereto may occupy the proper position with relation to each other on the same head and work with proper clearance.

The head with the hub and formed bit-seat chambers in the flange are all connected by casting, and the head is of sufficient strength to resist the strain upon the cutters when the tool is in operation.

The bit-seats are formed with slight elevations for fitting and adjusting of the cutters to their seats. The bolt-holes of the bit-seats are formed or provided with keys or feathers *b*, as seen in Fig. 3, for the purpose hereinafter stated.

The letters F′ and F″ represent in this example four cutters or bits of the circular class, adapted to fit into the formed chambers of the head. Each cutter or bit is secured or clamped to the face of its seat by means of a headed bolt, I, formed with a keyway passing through the axial hole of the bit and fitting the key or spline or their equivalent, *b*, of the bolt-hole to prevent the turning the bolt.

Before the circular cutter is clamped tight to its position on the seat the setting-gage H is adjusted to the tool in the manner as indicated in Fig. 7 of the drawings. In this position the lower slanting face comes in contact with the cutting edge or portion of the cutter, and when the perfect registration or adjustment is had the nut is screwed home tight upon the bolt, thus firmly securing the cutter upon its formed inclined seat in position between two fixed surfaces. This cutting-gage (see Fig. 8) consists of two arms, *d* and *e*, arranged

nearly at right angles. The arm *d* is formed with two inclined or slanting faces, *f*, while the arm *e* is made H-shaped.

The gage formed and constructed as shown and described will reverse, and is applicable to accurately adjust both the upper and lower cutters. When applied it rests upon the outer circle of the head, with one arm engaging the round part of the nut, and the cutter-bit is brought in position to register with face of the gage, when it is adjusted and then fastened. It will be observed that the adjustment is effected from a point in common with and central to the cutter, and always occupies the same position relatively, and because of this fact, that the pivotal point to gage from is central to the bit, we are able to duplicate gages.

The letter M represents an open or slotted washer for insertion between the bit-seat and bit. Its insertion is accomplished by loosening the nut sufficiently to admit of slipping the washer under the bit, when the open side is turned outward and the nut again secured. The object of interposing the washer under the bit is to adjust the bit or cutter to suit thicker lumber. By the employment of these washers—one or more to each bit—lumber of different thickness may be worked.

By this construction and organization of a cutter-head we are able to produce a strong and substantial tool having the properties of a sectional expansible cutter-head, and having the cutters arranged in series, so as to partially overlap each other on the inner line of the cut.

We reserve the right to vary the construction and arrangement of parts without departing from the spirit of our invention; also, we reserve the right to make a separate application for the gage-tool shown in Figs. 7 and 8 of the annexed drawings.

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

1. A head of a cutter-head tool, formed with bit-seat chambers alternately arranged on opposite sides of the single flange, and the bolt-hole structures formed or provided with keys or splines, substantially as described.

2. The combination, substantially as described, of the head formed with inclined bit-seats alternately arranged on opposite sides of the flange, circular bits, and fastening-bolts with keyways or their equivalents, substantially as described.

3. The organized cutter-head composed of the solid head with the formed bit-chambers with the double inclined surfaces and alternately arranged, the circular bits arranged in series, which partially overlap each other on the inner line of the cut, and the fastening bolts and nuts with locking means for preventing the turning of the bolts, substantially as described.

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

SAMUEL J. SHIMER.
GEO. J. SHIMER.

Witnesses:
ELMER S. SHIMER,
W. H. BECK.