

E. S. SHIMER.
CUTTER HEAD.
APPLICATION FILED JAN. 25, 1911.

1,025,839.

Patented May 7, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

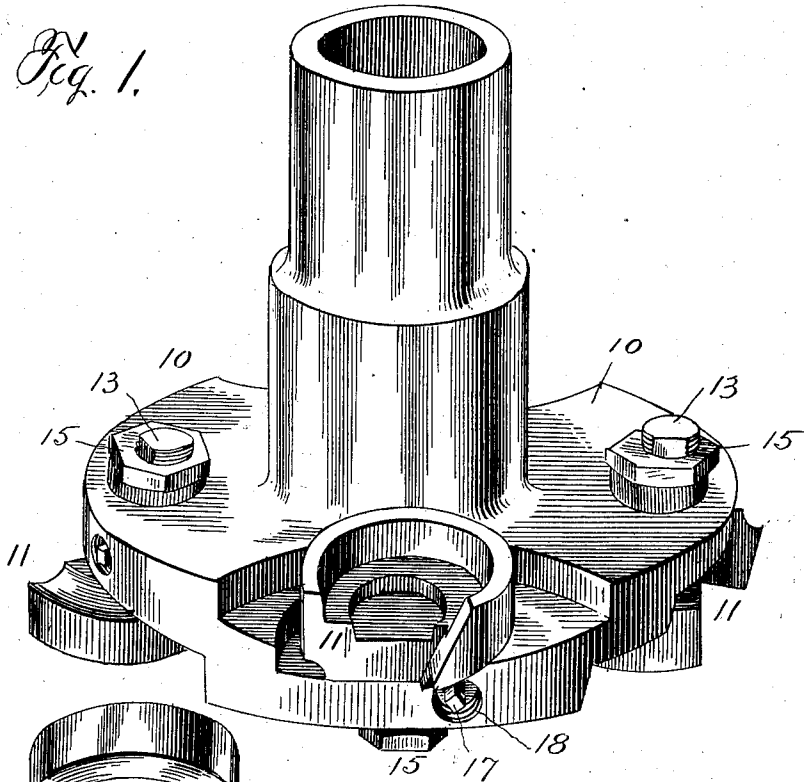
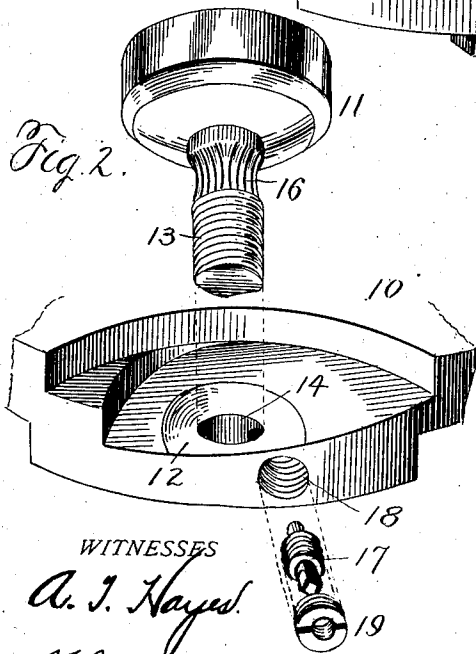


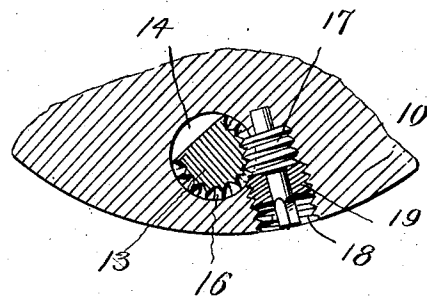
Fig. 2.



WITNESSES

A. J. Hayes.
F. W. Ernst.

Fig. 3.



INVENTOR

Elmer S. Shimer,
by Chas. F. Williamson
Attorney

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2 SHEETS—SHEET 2.

Fig. 4.

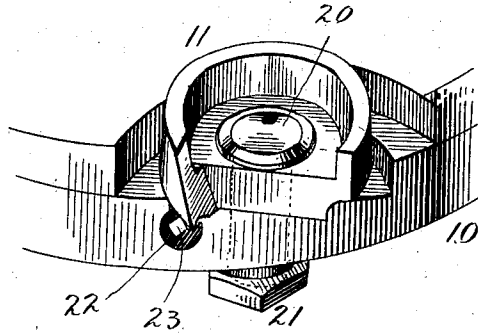
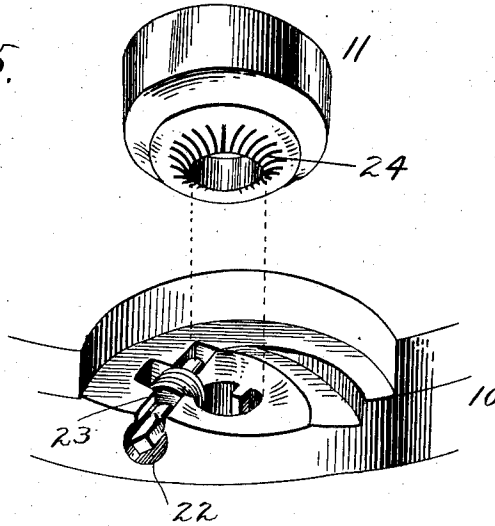


Fig. 5.



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A. J. Hayes.

F. W. Ernst

INVENTOR

Elmer S. Shimer,
by Chas. J. Williamson,
Attorney

UNITED STATES PATENT OFFICE.

ELMER S. SHIMER, OF MILTON, PENNSYLVANIA, ASSIGNOR TO SAMUEL J. SHIMER AND SONS, OF MILTON, PENNSYLVANIA.

CUTTER-HEAD.

1,025,839.

Specification of Letters Patent.

Patented May 7, 1912.

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To all whom it may concern:

Be it known that I, ELMER S. SHIMER, of Milton, in the county of Northumberland and in the State of Pennsylvania, have invented a certain new and useful Improvement in Cutter-Heads, and do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to cutter heads for wood working machines, and more particularly to the type of head known in the trade as the Shimer cutter head, which have a group or series of successively acting circular bits. Each bit is capable of rotation, so that as it is worn by use and repeated sharpening it may be adjusted to proper cutting position. The trouble that has been encountered with cutter heads of this class, is the possibility of one of the bits, by reason of some unusual strain or pressure upon it, as for example, by the bit striking a knot in a board under rapid and forced feed, turning back or driving back, as it is called, upon its seat so that its cutting edge is displaced from cutting position, and as such bit, therefore, fails to do its work, with the result that a less number of bits than is designed for doing the work is in operation, the result being that the quality of the work done by the cutter head is considerably impaired. Of course, more than one bit of a group or series may be thus accidentally driven back or displaced from proper cutting position, and thus increase the defective character of the work done by the cutter head.

The object of my invention, principally is to overcome this difficulty by rigidly locking the bits so that they cannot be rotated on their seats accidentally, or under such conditions as those I have just described, and incidentally to provide means for the convenient rotation of the bit when desired for proper adjustment of its cutting edge to cutting position, and, to achieve this object by a simple device and one that is capable of easy operation.

My invention, therefore, consists in the cutter head having the construction substantially as hereinafter specified and claimed.

In the accompanying drawings—Figure 1 is a perspective view of a Shimer cutter head embodying my invention; Fig. 2 a detail view in perspective of one of the bits, a

portion of its seat and the locking device parts being shown separated; Fig. 3 is a horizontal section through the parts when assembled, but a portion of the cutter head being shown; Fig. 4 is a detail view in perspective of a different embodiment of my invention, but a portion of the cutter head being shown; and Fig. 5 is a detail view of such different embodiment, the view being similar to Fig. 2.

The cutter head 10 illustrated in the drawings in its general construction, is one of the well known Shimer cutter heads having disposed upon opposite sides a series of circular bits 11, consisting of a base portion and a flange cut away on the side to provide the cutting edge. The inner side of the base, or the side next to the cutter head 10, may be flat or convex to conform to a corresponding seat on the cutter head. As shown in the drawings, the seat 12 is concave and, therefore, the side of the base that engages the seat is convex. In the form of my invention illustrated in Figs. 1 to 3, the bit has an integral stud or shank 13 which extends centrally from the inner side of the bit base and which passes through a hole or opening 14 in the cutter head and projects beyond the opposite side of the cutter head where it is threaded to receive a clamping nut 15, by which the bit is clamped to its seat on the cutter head. In or upon the periphery of the portion of the bolt stud or shank that is within the opening in the cutter head are formed longitudinally extending thread form grooves or notches 16 that in effect constitute a worm wheel formation on said shank or stud which are adapted to be engaged by the thread of a screw or worm 17 swiveled in a radially extending chamber 18 in the cutter head 10, which tangentially intersects the hole 14 in the cutter head for the reception of the bolt stud or shank 13. It will be seen that by reason of the engagement of the thread of the screw with the periphery of the shank or bolt, the circular bit is rigidly held from turning around its own axis. For the convenient turning of the screw, its outer end is squared and is accessible for the application of a turning key or wrench through the outer end of the cutter head opening 14. By revolving the screw it will be evident that the circular bit may be revolved for the purpose of adjusting its cutting edge

to its proper cutting position. To facilitate the insertion and removal of the bit shank or bolt without obstruction from the screw, the shank or bolt is slabbed off on one side toward its outer end so that when the slabbed side is toward the screw, the bolt may readily pass into and out of the cutter head hole. A convenient mode of mounting the screw both for assembling and removing it when desired, is to close the outer end of the cutter head hole 14 by means of a threaded tubular plug 19 through which the reduced squared end of the screw projects so that it may readily be engaged by its turning key or wrench. Said threaded plug 19 forms the bearing to prevent endwise movement of the screw at one end and the inner end or wall of the cutter head hole 14, forms the bearing to prevent endwise movement of the screw in the opposite direction.

In the form of my invention illustrated in Figs. 4 and 5, the circular bit clamping device consists of a headed bolt 20 which passes through a central hole in the circular bit that alines with the hole in the cutter head, and on the side of the cutter head opposite the bit there is a nut 21, the bolt being held from rotation by a spline or key, so that such rotation of the circular bit as is required is about the bolt. In this case the locking grooves or notches to hold the circular bit from turning accidentally are formed in the underside of the bit head, and the hole 22 which contains the locking screw 23 cuts through into the bit seat so that the screw can engage said grooves or notches 24 in the adjacent surfaces of the bit. In this case, as well as in the other embodiment of my invention which I illustrate and describe, the screw may be used

for the purpose of turning the bit for adjustment.

It will be understood, of course, that it is necessary to release or relax the bit clamp preliminary to turning the bit by means of the screw or otherwise, and that after the bit has been placed in the desired cutting position is again clamped therein.

Of course I do not limit myself to any particular number of circular bits.

Having thus described my invention what I claim is—

1. The combination of a cutter head, a rotatable bit, a screw mounted on the head eccentric to the axis of rotation of the bit, and notches on a part rigidly connected with the bit engaged by the thread of the screw and the screw engaged part being cut away at a point to permit the separation of the same and the screw by movement in the direction of the axis of revolution of said part.

2. The combination of a cutter head, a circular bit having a clamping bolt passing through a hole in the cutter head, said bolt having peripheral notches, and a screw mounted on the head having its thread engaging said notches, said bolt having a slabbed surface extending from said notches outward, said surfaces being adapted to be placed adjacent to the screw and thereby disengagement of the screw and bolt caused to permit the endwise movement of the bolt.

In testimony that I claim the foregoing I have hereunto set my hand.

ELMER S. SHIMER.

Witnesses:

JOHN A. McFARLAND,
W. H. BECK.