(No Model.) 3 Sheets—Sheet 1.

S. J. SHIMER.

CUTTER HEAD.

No. 527,080. Patented Oct. 9, 1894.

Fig. 1

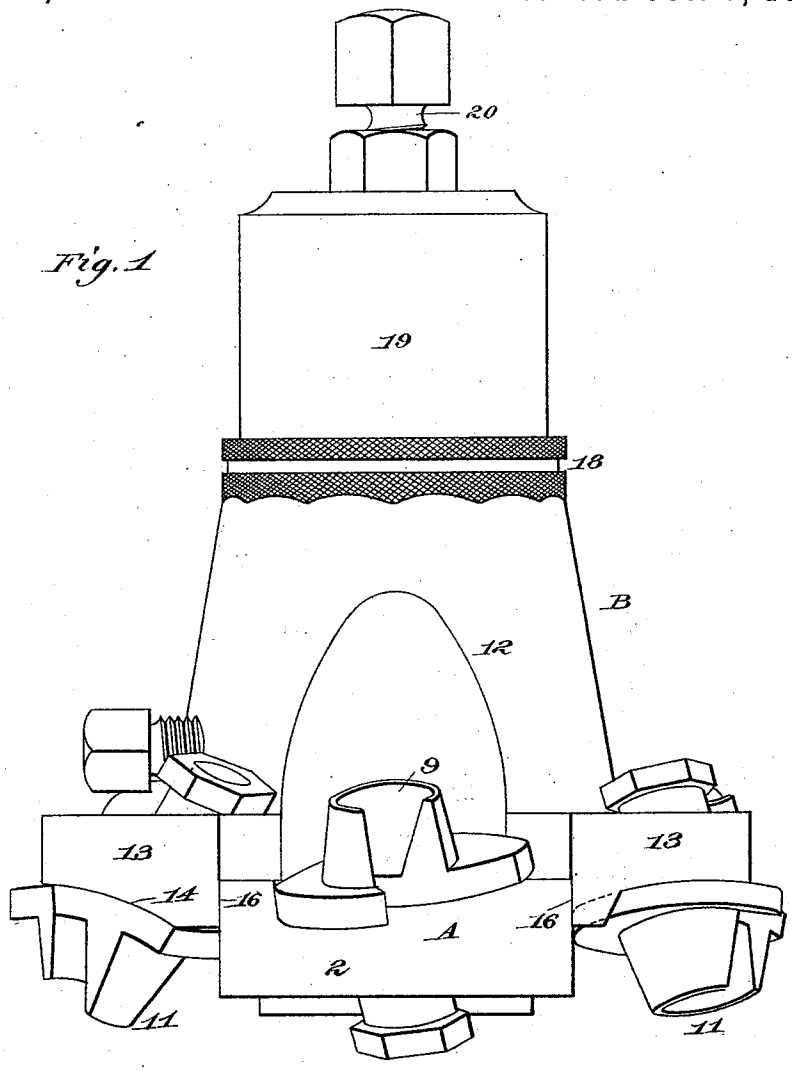
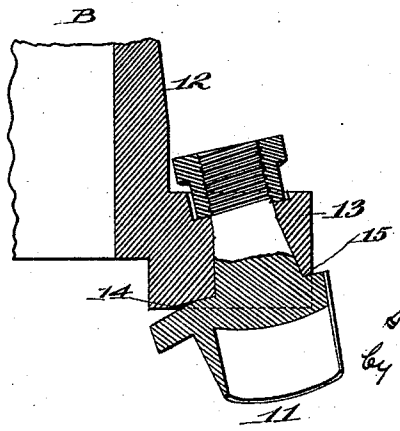


Fig. 3



Witnesses:
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Atty.

(No Model.) 3 Sheets—Sheet 2.

S. J. SHIMER.

CUTTER HEAD.

No. 527,080. Patented Oct. 9, 1894.

Fig. 2

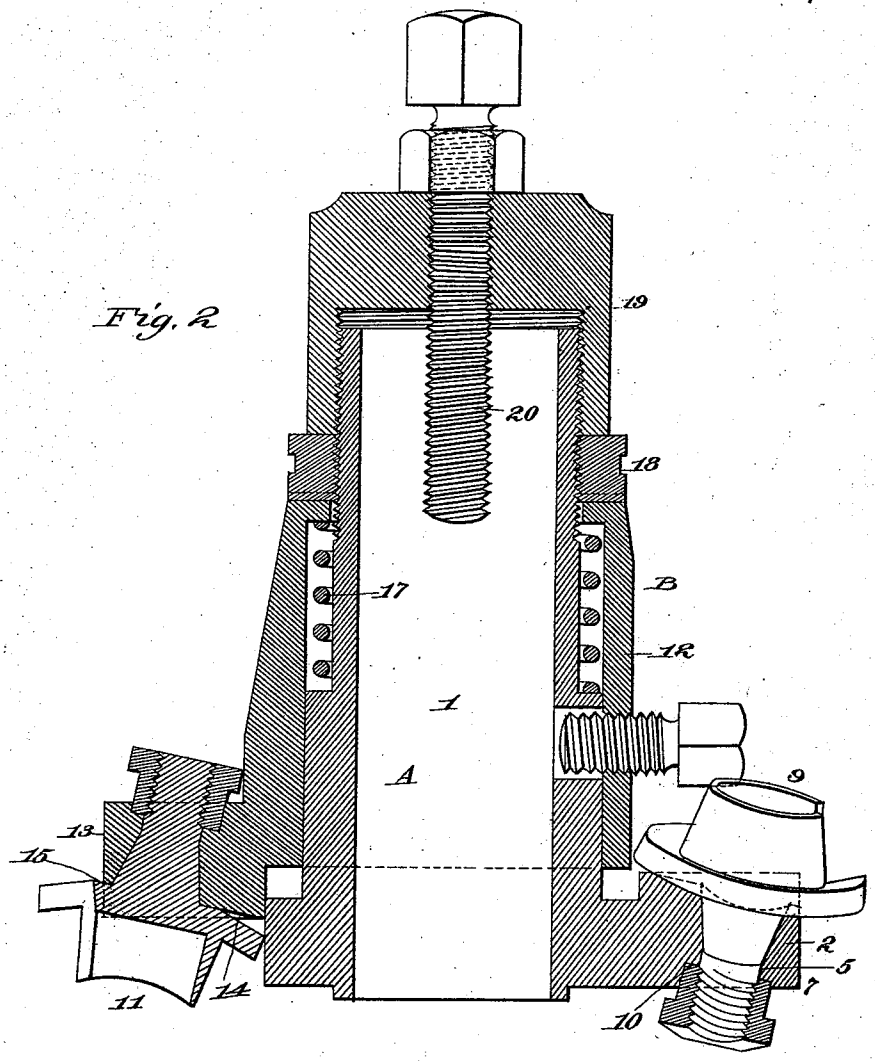
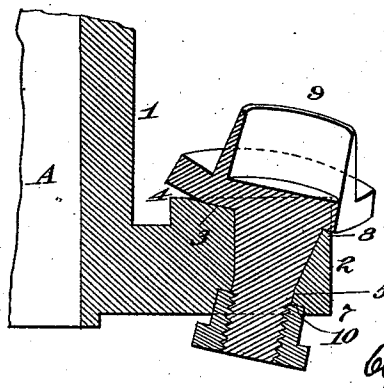


Fig. 4



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(No Model.) 3 Sheets—Sheet 3.

S. J. SHIMER.

CUTTER HEAD.

No. 527,080. Patented Oct. 9, 1894.

Fig. 5

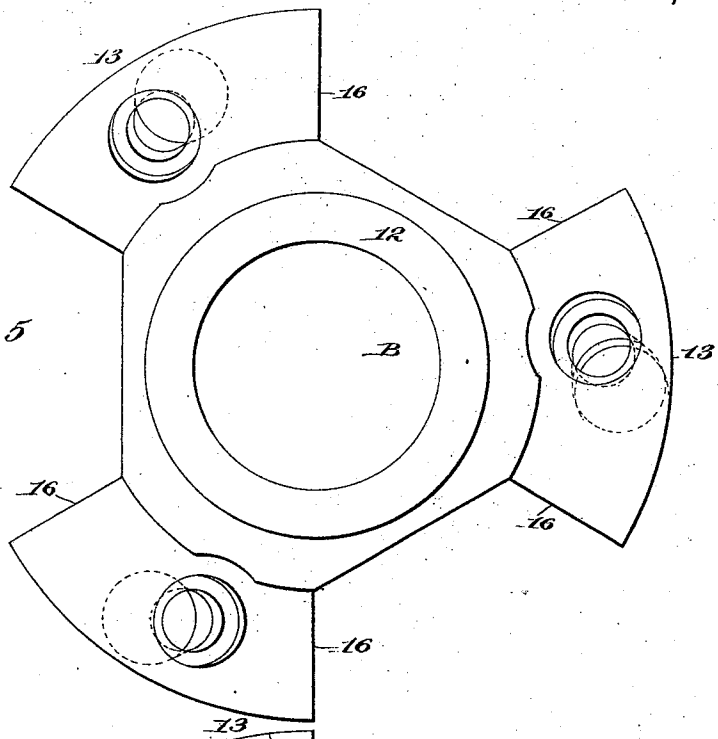
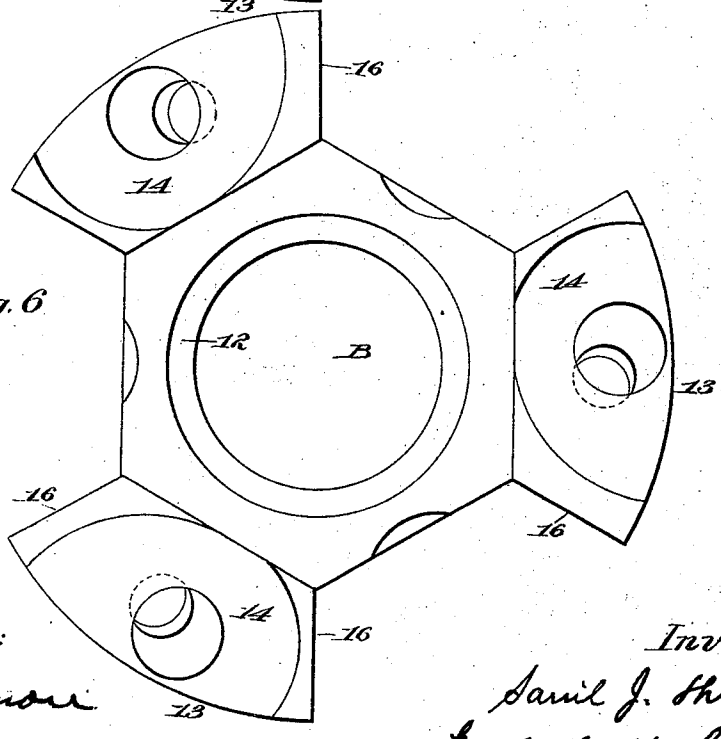


Fig. 6



Witnesses:

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UNITED STATES PATENT OFFICE.

SAMUEL J. SHIMER, OF MILTON, PENNSYLVANIA.

CUTTER-HEAD.

SPECIFICATION forming part of Letters Patent No. 527,080, dated October 9, 1894.

Application filed February 24, 1894. Serial No. 501,420. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL J. SHIMER, a citizen of the United States of America, residing in Milton, in the county of Northumberland, in the State of Pennsylvania, have invented new and useful Improvements in Cutter-Heads, of which the following is a specification.

My invention has relation to improvements in cutter-heads of that class or construction designated as "rotary stock," wherein the head is supported on a vertically arranged spindle and composed of upper and lower flanged sections carrying circular cutters, and adjustable vertically to regulate the clearance between the upper and lower set of cutters, as may be seen in my former Letters Patent No. 476,563, dated June 7, 1892.

It is the object of my present invention to improve the means for holding the circular bits to their seats on the head and disposing relatively the position of the bits on the flanges, by making the direction of the bolts holding the bits so that there will be additional metal given to the outer portion of the flange adjacent to the bolt-holes, and also additional strength at the base of the flange. Heretofore the bolts by which the bits or cutters were held in the seats on the head, were so arranged that the bolt-hole was vertical and equi-distant from and parallel with the edge of the flange, above and below, and parallel with the center of the head, so that when small circular bits had to be used the bolt-holes were very near the outer edges of the flanges and the bit in heavy work liable to tear or break out the metal at the outer part of the hole. To remedy and overcome this liability of the bit to break out of the head, I direct the bolt-hole inward from the bit-seat toward the center of the head, in order to thicken the flange toward the spindle and have more metal left outside the bolt and thus get a stronger grip upon the seat or head. This construction and arrangement of the flange and bolt throws the nut end of the bolt farther back from the edge of the flange and make it less liable to become loosened. The bit also takes a position from which it is not liable to move or become loose from the effects of the work during matching because the stroke of the cut is not so directly on the line of rotation. I accomplish these essentials tending to perfection, by the constructions illustrated in the accompanying drawings, wherein—

Figure 1 is a side view showing the cutter-head equipped with circular bits for cutting the tongues on boards. Fig. 2 is a central vertical section of a cutter-head showing the bits arranged on the sections or parts and the incline of the bolts and bit-seats. Fig. 3 is a detail sectional view of one of the flanges of the upper section of the head broken off showing the inwardly inclined bolt-hole. Fig. 4 is a similar detail of one of the lower section flanges. Fig. 5 is a top plan view of the flanges showing the location of the bolt-hole, and Fig. 6 is a bottom view showing the location of the bolt-hole from that side.

A designates the section or part of the head which carries the bits or cutters for cutting the upper carve of the tongue. This section is of the improved construction shown and described in my said recited Letters Patent, except in the essentials hereinafter specified. It consists generally of a vertical hub, 1, adapted to fit on the vertical rotary shaft or spindle and has three radial flanges 2, to which the bits are secured. As hereinbefore stated, the bolt-holes in the bit-seats have heretofore been vertically parallel with the axis of the stock or head, but inclined forward or backward to suit the clearance of the bits on the respective sections of the head. In the present instance this forward or backward clearence incline is preserved as shown in the drawings, and the bit seat also inclined from the base of the flange outward, either downward or upward, according to whether the bit-seat is on the upper or lower section of the head, or upper or lower face of the flange; the seats 3 of the section A being inclined downward from the base 4, to the edges of the flange, as shown, and the bolt-holes 5, entering the flange from the under face farther toward the axis of the head and inclined outward to the top or bit-seat. This arrangement increases the body of the metal at 7, and does not diminish it at 8, whereby the bolt is given a strong hold and the flange made thicker and stronger at the base without sacrificing the metal at the outer part of the flange. The circular bits 9, as disposed

on these seats rest inclined backward and downward and thus given a strain tangential to the horizontal plane of the rotation and prevented from becoming loose, while the metal is increased in the parts where the strain comes. The nut-seat 10, is formed on planes at right angles to the stem of the bolt to give the nut a firm, square, seat in tightening up.

B designates the head-section carrying the lower set of cutters 11. This head section consists of a strong hub 12, having a bore fitting over the hub of the other section and formed with radial bit-flanges 13, oppositely identical with the other section, and on which the lower set of bit seats are provided to which the bits are secured, the clearance incline 14 being oppositely arranged to that of the other bits, and also inclined from the base upward as shown in the drawings at 15. The radial flanges of this section set in the spaces between the flanges of the other section with the aligned side faces 16, of the respective flanges resting against each other, so that when the head is assembled the flanges support each other in the direction of rotation. About the hub of the section A is an expansion spring 17, having its seat on a shoulder on the hub of section A and bearing at the upper portion against a collar in the hub of section B. The adjusting-ring 18, clamping-cap 19, bolt 20, are identical with the like parts shown and described in my former Letters Patent. In fact, the whole head, excepting my present improvements in the formation of the bit-seats and the bolt-holes, is substantially identical with the head shown and described in my Patent No. 476,563, before named.

It is apparent at once that my present invention is equally applicable to a cutter-head having an integral single circular flange with bit-seats on the upper and lower faces of the flanges for cutting the groove in boards.

What I claim is—

1. A circular-bit cutter-head formed with a base-flange having bit-seats on the opposite upper and lower faces thereof, said bit-seats being oppositely inclined in the direction of rotation and oppositely inclined from the base of the flange outward and having bolt-holes oppositely inclined from the bit-seats inward, bits on the bit-seats, and clamping-bolts in the bolt-holes, substantially as and for the purpose specified.

2. In a circular-bit cutter-head the combination of the section A having radial flanges formed with bit-seats upwardly inclined in the direction of rotation and downwardly and outwardly inclined, and bolt-holes in said seats at right angles to the upwardly inclined seat and inclined outward from the under face of the bit-flange, and the section B having radial flanges to set between the flanges of the other section and formed with bit-seats on the under face of the radial flanges inclined downward in the direction of rotation and upward and outward and bolt-holes in said seats at right angles to the downwardly inclined seat and inclined inward from the seat to the other face of the flange, circular-bits on the respective seats of the sections and clamping bolts in the bolt-holes thereof, substantially as and for the purpose specified.

3. The combination of the sections A and B formed with intersecting radial flanges at their bases having upper and lower bit-seats on the alternating flanges, said bit-seats being oppositely inclined in the direction of rotation and oppositely inclined from the base of the flanges outward and having bolt-holes oppositely inclined from the axis of the head and at right angles to the plane of the bit-seats, circular bits having integral clamping bolts, and clamping-nuts on the bolts, as specified.

In witness whereof I have hereto set my hand in the presence of two attesting witnesses.

SAMUEL J. SHIMER.

Attest:
E. P. HILL,
C. A. ROAT.