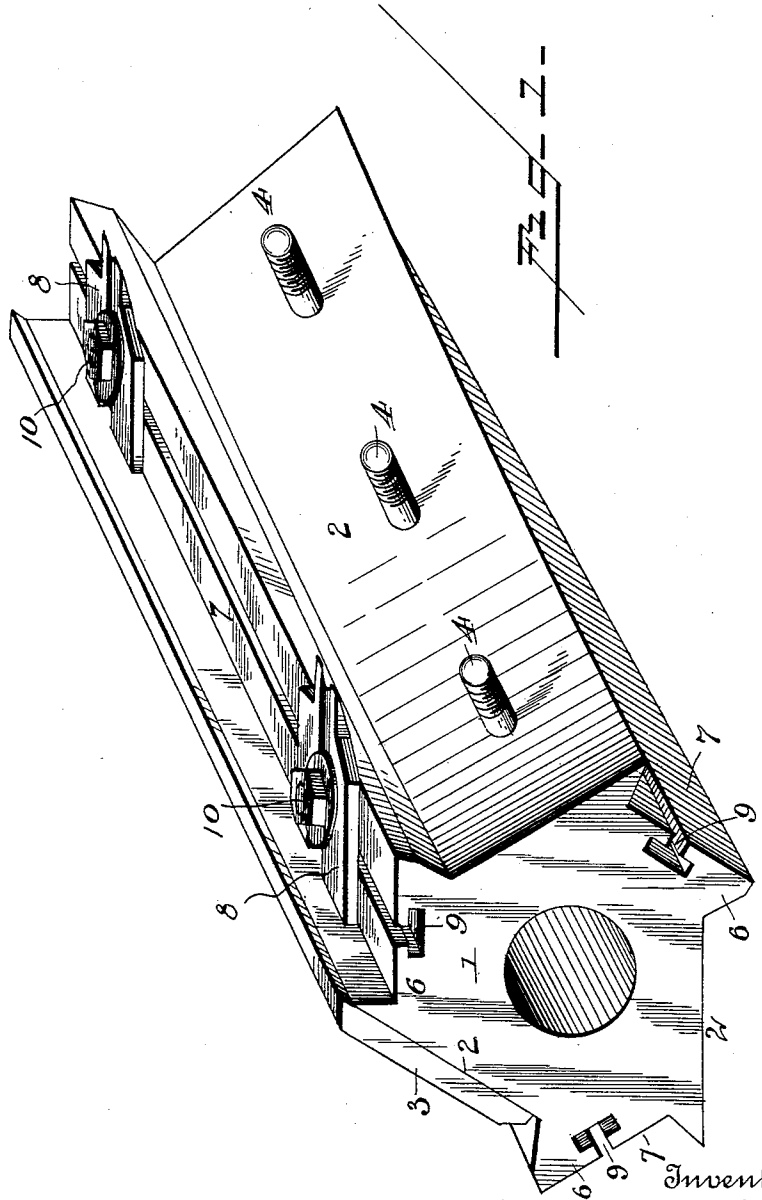
(No Model.) 2 Sheets—Sheet 1.

S. J. SHIMER.

CUTTER HEAD.

No. 593,439. Patented Nov. 9, 1897.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

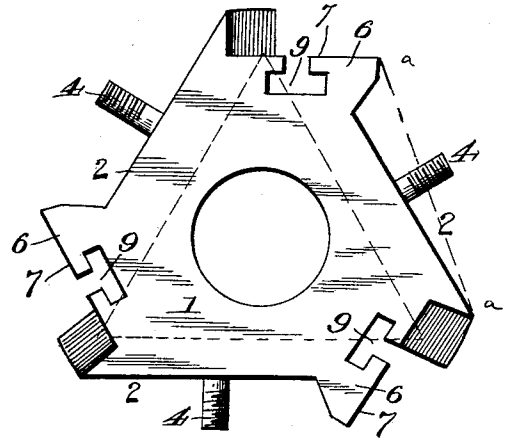


Fig. 3.

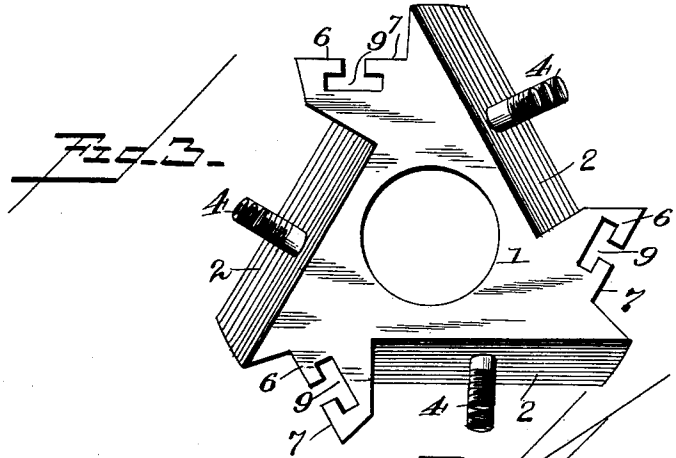
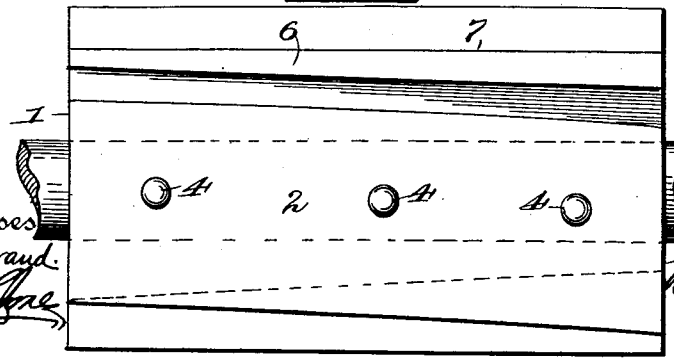


Fig. 4.



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UNITED STATES PATENT OFFICE.

SAMUEL J. SHIMER, OF MILTON, PENNSYLVANIA.

CUTTER-HEAD.

SPECIFICATION forming part of Letters Patent No. 593,439, dated November 9, 1897.

Application filed December 18, 1896. Serial No. 616,173. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL J. SHIMER, a citizen of the United States, and a resident of Milton, in the county of Northumberland and State of Pennsylvania, have invented certain new and useful Improvements in Cutter-Heads; and I do hereby declare that the following is full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to improvements in rotary cutter-heads for wood-planing machines of that class or description which are formed with a plurality of faces inclined transversely and longitudinally to the axial line thereof, to which are secured planing-knives so arranged as to give a shearing cut to the surface of a board or other object acted upon.

The object of the invention is to provide a cutter-head of the above character formed with a series of faces alternately arranged with respect to the inclined faces and parallel to the axial line of the head to receive beading-cutters, which cut a groove or bead in the board and which travel in advance of the planing or surfacing cutters, so that any splintered or rough edges formed by the leading knives or cutters will be smoothed by the planing knives or cutters.

The invention consists in a cutter-head having a plurality of faces to receive planing or surfacing knives, which faces are inclined transversely and longitudinally with respect to the axial line of the head and the inclinations of all of said faces running in the same direction, and said head formed with a series of alternately-arranged faces parallel to the axial line of the head.

It also consists in cutter-heads having a plurality of faces inclined transversely and longitudinally in the same direction and convexed longitudinally, the convexity being such that the cutting edges of the knives secured thereto will lie in the surface of the cylinder of rotation, and said head also formed with a series of alternately-arranged faces parallel to the axial line of the head to receive beading-cutters.

It also consists in the novel construction and combination of parts hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 represents a perspective view of a cutter-head constructed in accordance with my invention, showing a planing-knife and two beading-knives secured thereto. Figs. 2 and 3 are end elevations looking from opposite ends, respectively, of the cutter-head. Fig. 4 is a plan view of the cutter-head, the knives being removed.

In the said drawings the reference-numeral 1 designates the cutter-head, formed with a central bore for the passage of a mandrel, by which it is rotated. The head in the present instance is provided with three faces 2, to which the knives 3 are secured by screws 4, as shown, or by bolts, if desired, the heads of which are held in place in longitudinal T-grooves, and nuts screwed on the ends of these bolts serving to clamp the knives in place. The said faces are inclined both transversely and longitudinally with respect to the axial line of the head, and the inclinations of all of said faces running in the same direction. For the purpose of illustration the imaginary dotted lines *a a*, Fig. 2, are drawn, showing the normal outline of an equilateral triangle, the space between said lines and the full lines opposite representing the pitch given by the transverse inclination, whereby a knife bolted to the face can engage the work at a great angle. The longitudinal inclination is for the purpose of giving a diagonal or draw cut. The said head is also formed with a series of alternately-arranged faces 7 to receive beading-knives 8. These faces 7 are parallel to the axial line of the head and are formed with longitudinal T-grooves 9, with which engage headed bolts 10, provided with nuts 12, by which the knives 8 are held in place.

To cut a perfectly plane surface on a board, it is essential that the cutting edges of the knives should assume a convex shape. The preferred way of giving this convexity to the said edges is to convex the faces 2 of the head transversely or from end to end and springing down and bolting the knives thereupon, the convexity of said faces being so proportioned with respect to the radius of the cylinder of rotation that when the knives are so sprung down their cutting edges will lie in

the cylinder of rotation. Another way by which the same result may be produced is by forming said faces flat or plane surfaced and making the cutting edges of the knives convex in outline.

It will be seen that the faces 7, which receive the beading-knives, are depressed such a distance below the edges of the adjacent planing-knives that there will be no possible interference between the heads of the bolts and the cutting edges of the beading-knives, or, in other words, if a circle be struck from the center of the head the heads of the bolts holding the beader-knives in place will lie beneath the arc of the circle described from the edge of a knife of a face to which said beading-knives are secured. As before described, the faces which receive the beading-knives are parallel to the axial line of the head, and consequently the knives will be at right angles to said axial line, so that in action these beading-knives will strike directly into the lumber and thereby make a positive cut in contradistinction to the shearing cut made by the planing or surfacing knives. Should any splintery or rough edge or raised surface be caused by the beading-knives, such obstruction will be removed by the planing-knives, which follow the action of the beading-knives, so that when dressed a piece of lumber will present a smooth and finished appearance.

From the above it will be seen that I provide a triangular-shaped head, the faces which receive the planer-knives being convexed longitudinally in the arc of an ellipse, the transverse lines being straight and parallel with the axial line of the head, and said faces converging toward a common center, while the faces to receive the beading-cutters are straight or at equal distances at all points from the center of the head.

Having thus described my invention, what I claim is—

1. As an improved article, a triangular cutter-head having a number of faces inclined transversely to enable a knife bolted thereto to engage with the work at a great angle and inclined longitudinally and convexed longitudinally on the arc of a symmetrically-disposed ellipse to enable the knife to make a draw cut, and a number of alternate flat faces to receive beading-knives equidistant at all points from the center of the head, substantially as described.

2. The combination with a triangular cutter-head having a number of faces inclined transversely to enable a knife bolted thereto, to engage with the work at a great angle, and inclined longitudinally and convexed longitudinally on the arc of a symmetrically-disposed ellipse, to enable the knife to make a draw cut, and a number of flat faces equidistant at all points from the center of the head, to receive beading-knives, of the flat knives sprung down and bolted to said convex faces and the adjustable beading-knives secured to said flat faces, substantially as described.

3. As an improved article, a triangular cutter-head having a number of faces inclined transversely to enable a knife bolted thereto to engage with the work at a great angle and inclined longitudinally and convexed longitudinally on the arc of a symmetrically-disposed ellipse, to enable the knife to make a draw cut, and a number of alternate flat faces depressed below the front edges of said inclined and convexed faces, to receive beading-knives, substantially as described.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

SAMUEL J. SHIMER.

Witnesses:
AUGUST PETERSON,
E. P. BURKET.