(No Model.)

F. S. MADISON.

MATCHER HEAD.

No. 439,079. Patented Oct. 21, 1890.

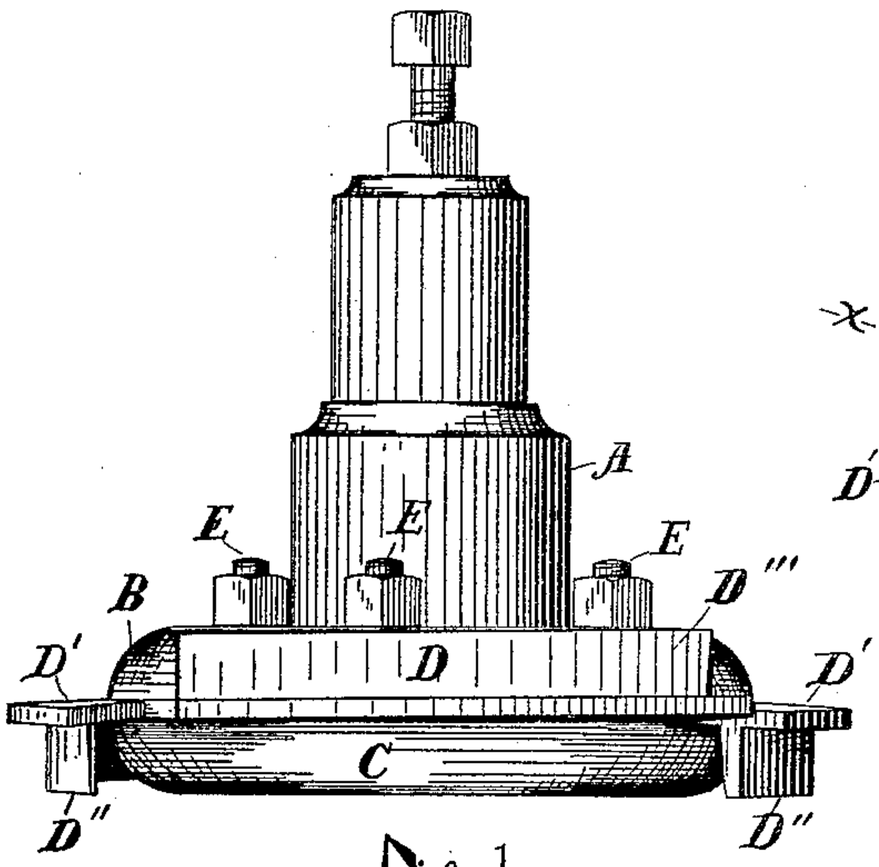

FIG. 1.

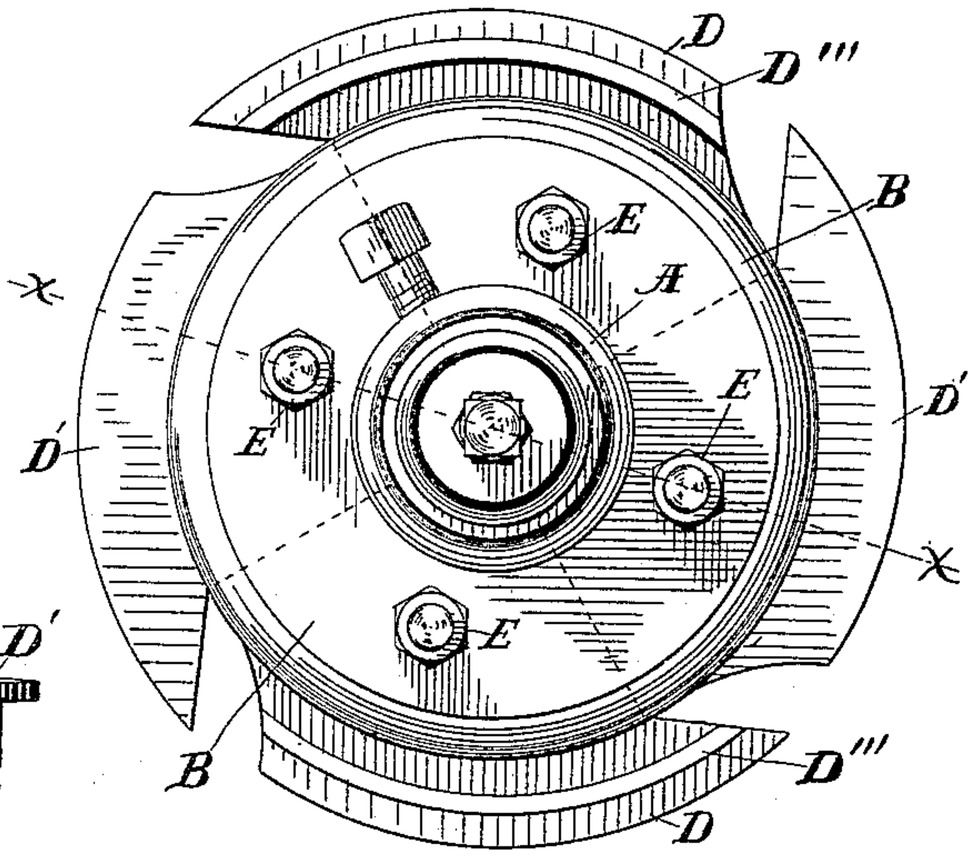

FIG. 2.

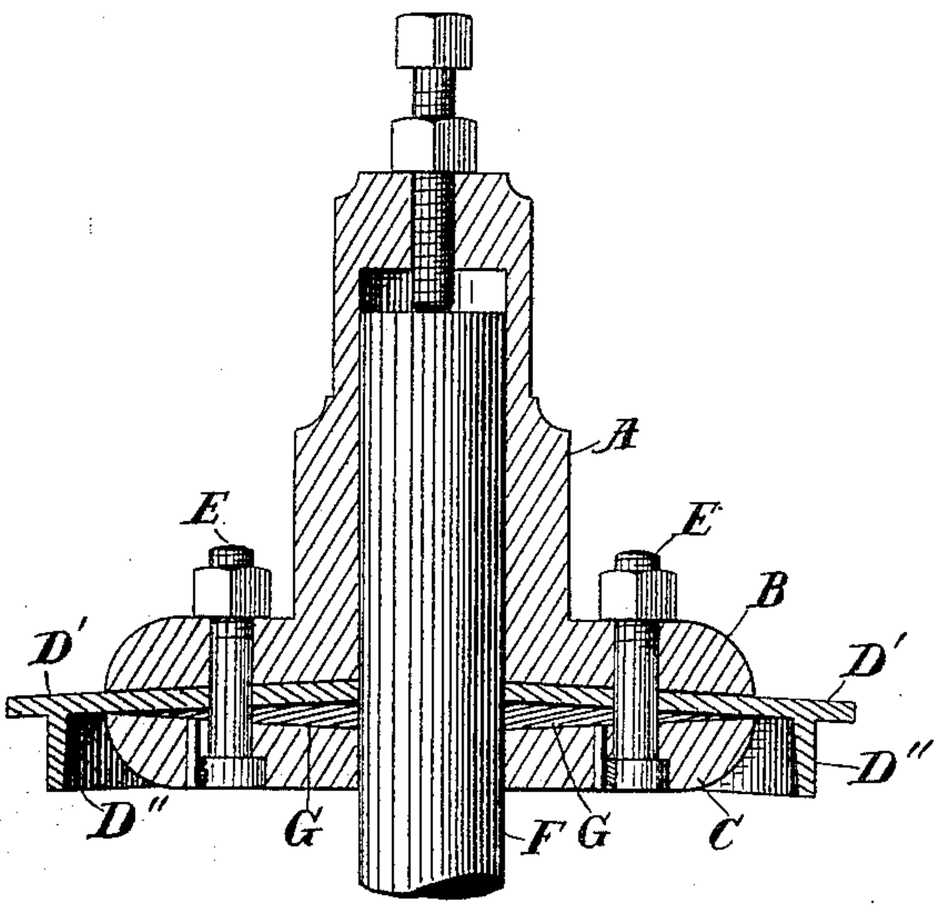

FIG. 3.

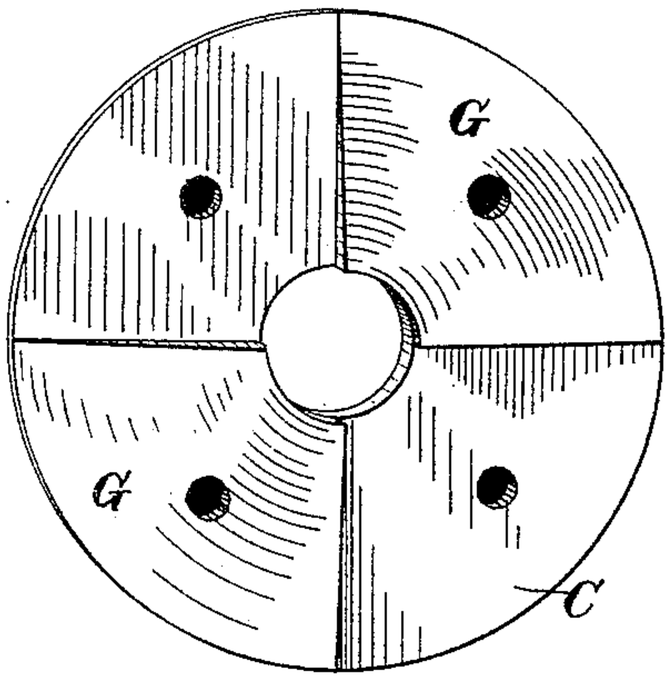

FIG. 4.

WITNESSES:

Claude R. Buchanan

Lulu E. Pierce.

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BY

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ATTORNEYS

UNITED STATES PATENT OFFICE.

FRANK S. MADISON, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR OF ONE-HALF TO JOSEPH B. WARE AND FRED. H. OLIN, BOTH OF SAME PLACE.

MATCHER-HEAD.

SPECIFICATION forming part of Letters Patent No. 439,079, dated October 21, 1890.

Application filed June 10, 1890. Serial No. 354,948. (No model.)

To all whom it may concern:

Be it known that I, FRANK S. MADISON, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Matcher-Heads; and I 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.

My invention relates to a matching-head for wood-working machinery. My object is to simplify the construction and produce a useful article; and the invention consists in the construction, combination, and arrangement of the parts hereinafter described, and pointed out in the claims, reference being had to the accompanying drawings, wherein—

Figure 1 is a side elevation of my device; Fig. 3, a vertical section on the line *x x* of Fig. 2; Fig. 2, a plan, and Fig. 4 a detail, of the collar C, showing the upper face with one of the wedges in place.

Like letters of reference indicate like parts throughout the drawings.

A represents a head, which is attached to the spindle F in any suitable manner and has a horizontally-projecting flange B integral, the under surface of which is conically concaved or dished, and is provided with vertical apertures for the bolts E.

C is a disk-collar having a flat under surface provided with countersinks for the bolt-heads and apertures for the bolts opposite to the apertures in B. The upper surface of C is also concaved or dished oppositely to the dishing of B, whereby when these two faces are opposite to each other forming a circular chamber deepest at the center, where the spindle F passes through, and within this chamber are arranged the shanks of the knives and the wedges hereinafter described, as shown in Fig. 3.

D D D′ D′ are the cutting-knives, having their rims eccentric to the axis of rotation for clearance and provided with integral segmental flanges D″ D″ D‴ D‴, having cutting-edges vertical near the edge of said rims at a distance from such rim edge equal to the depth of the groove to be cut and conforming in arrangement to the eccentric outline of said rim. The cutting-edge of the flange and of the rim being flush, forms the cutting-edge of the knife, and each knife is adapted to cut a little more than one-half of a groove in the edge of a board, the edge of the rim cutting the groove and the edge of the flange facing off the edge of the board, and by changing the form of the cutting-edge a tongue instead of a groove may be formed in the edge of a board. These knives are arranged and operate in pairs. D D constitute one pair, track each other, and are arranged upon opposite sides of the head. D′ D′ constitute the opposite pair, and are oppositely arranged and track each other, each pair overlapping each other upon the inner line of the cut for smoothness. The shanks of the knives being that portion inclosed between the collar C and flange B are quadrantal, as shown in Fig. 2 by dotted line, and are upwardly and downwardly inclined, respectively, having surfaces conforming to the pitch and curve, respectively, of the surfaces of B and C, to which they are adjacent. D′ D′ have their upper surfaces in contact with the under surface of B, and D D have their under surfaces in contact with the upper surface of C. For holding these shanks firmly and securely in their respective and relative positions, as described, I provide a series of four quadrantal wedges G, two of which are shown in position in Fig. 4, having their surfaces flared from the center toward the edges to conform to the top and bottom of the chamber between C and B, as described. One pair of these wedges is inserted between the shanks of the knives D′ and the collar C, the shank of the knife conforming to the surface of and resting upon the top of the wedge, which rests upon the collar C, as shown in Fig. 3, and one pair is inserted between the shanks of the knives D and the flange B, as will be readily understood.

All of the parts described are firmly and securely held together by bolts E passing vertically through the same and provided with suitable binding-nuts.

The edges of the shanks of the respective knives engage with the edges of the respective wedges, whereby the seats of the knives D D are in the collar C and the seats of the

knives D′ D′ are in the flange B. It will now be seen that the seats for the shanks of each pair of knives are conical and in the same plane of rotation; that they are radial and slightly inclined to the axis of said spindle and parallel to the plane of rotation of the head; that by the eccentricity of said rims and the inclination of said seats a proper clearance for the cutting-edges of the knives is obtained; also, that the wedges G may be integral with B and C; but I prefer to construct them separate, so that by substituting different thicknesses of wedges wider or narrower grooves may be cut with the same set of knives.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. The combination, with the spindle, of the head A, having the flange B, having its under surface conically concaved, as described, the collar C, having its upper surface concaved, substantially as set forth, knives arranged in pairs D D D′ D′, having their shanks between the surfaces of flange B and collar C, wedges G, between said shanks and surfaces, and bolts E, arranged as described, and for the purposes herein set forth.

2. The combination, with the spindle, of the head A, having a flange B, provided with a series of conical quadrantal seats arranged in radial oppositely-inclined pairs, and a series of knives having quadrantal shanks fitted and secured to said seats, each knife having a cutting-face adapted to cut a portion of the groove and face off a portion of the edge of a board, arranged substantially at right angles to said shank and eccentric to the rim of said flange, substantially as set forth.

3. The combination, with the spindle, of the head A, having a flange B, provided upon its under surface with a series of conical quadrantal radial seats arranged in oppositely-inclined pairs parallel to the plane of rotation, and a series of knives having quadrantal shanks having curves corresponding to said seats fitted to and firmly secured therein to said flange, each knife having a rim secured to and substantially at right angles to the side thereof, having a cutting-edge parallel to but at a distance from the edge of the knife equal to the depth of cut, whereby each knife has a cutting-edge adapted to cut a little more than one-half the form to be produced and the revolution whereof is eccentric to the axes of the spindle for affording clearance of the knife, substantially as set forth.

4. In a matching-head, the combination, with the spindle F, of the head A, having the horizontally-projecting flange B, having its under surface conically concaved, as set forth, a collar C, having its upper surface conically concaved, as described, a pair of knives D D, having flanges D‴, and a pair of knives D′ D′, having flanges D″, arranged as set forth, said knives having quadrantal shanks curved to correspond to the curves in flange and collar, as set forth, and wedges G, arranged between said shanks and collar and flange, substantially as and for the purpose set forth.

In testimony whereof I have affixed my signature in presence of two witnesses.

FRANK S. MADISON.

Witnesses:

LUTHER V. MOULTON,

FRED. H. OLIN.