

(No Model.)

J. C. HUMPHREYS.

CUTTER HEAD.

No. 370,542.

Patented Sept. 27, 1887.

Fig. 1

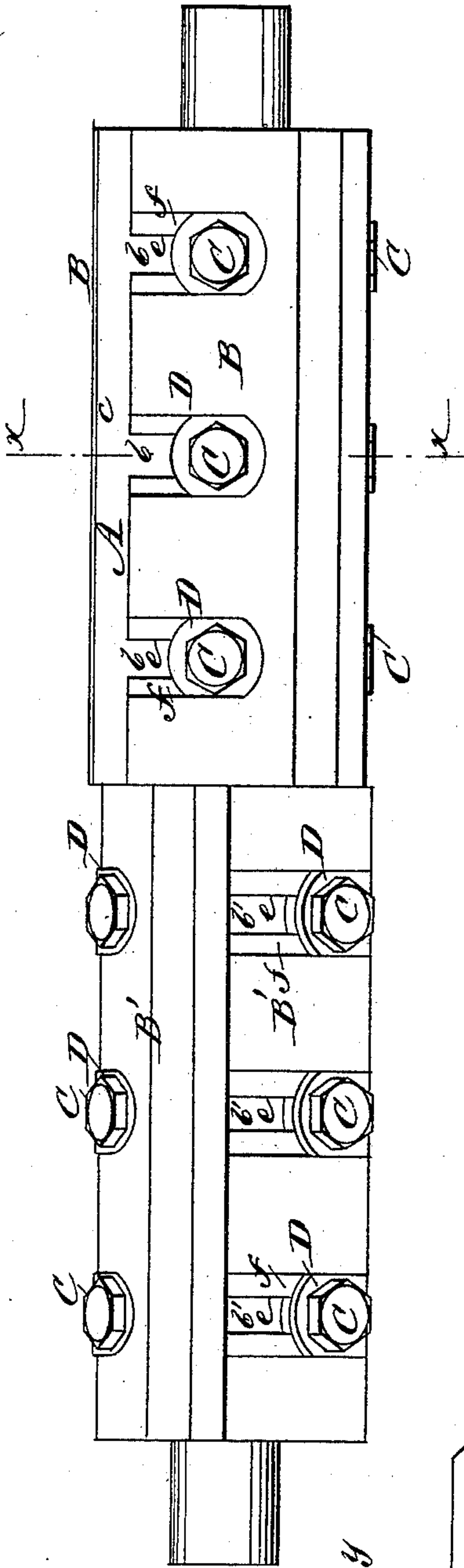


Fig. 4

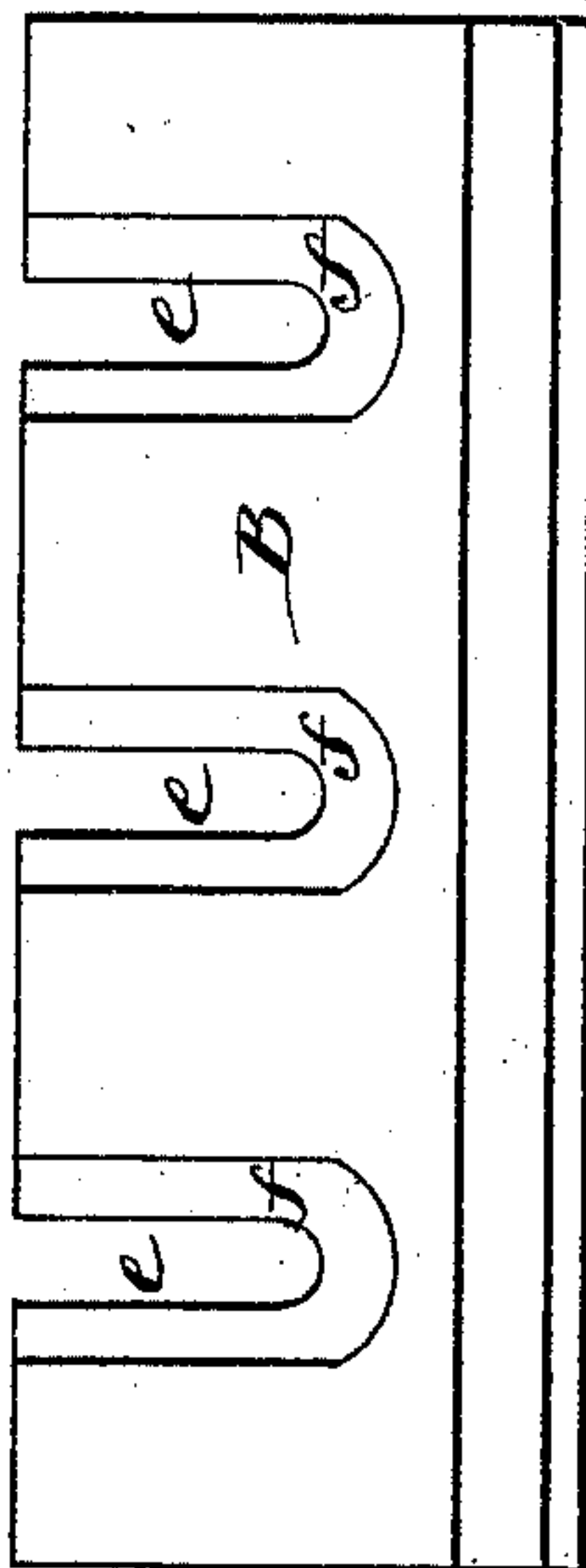


Fig. 2

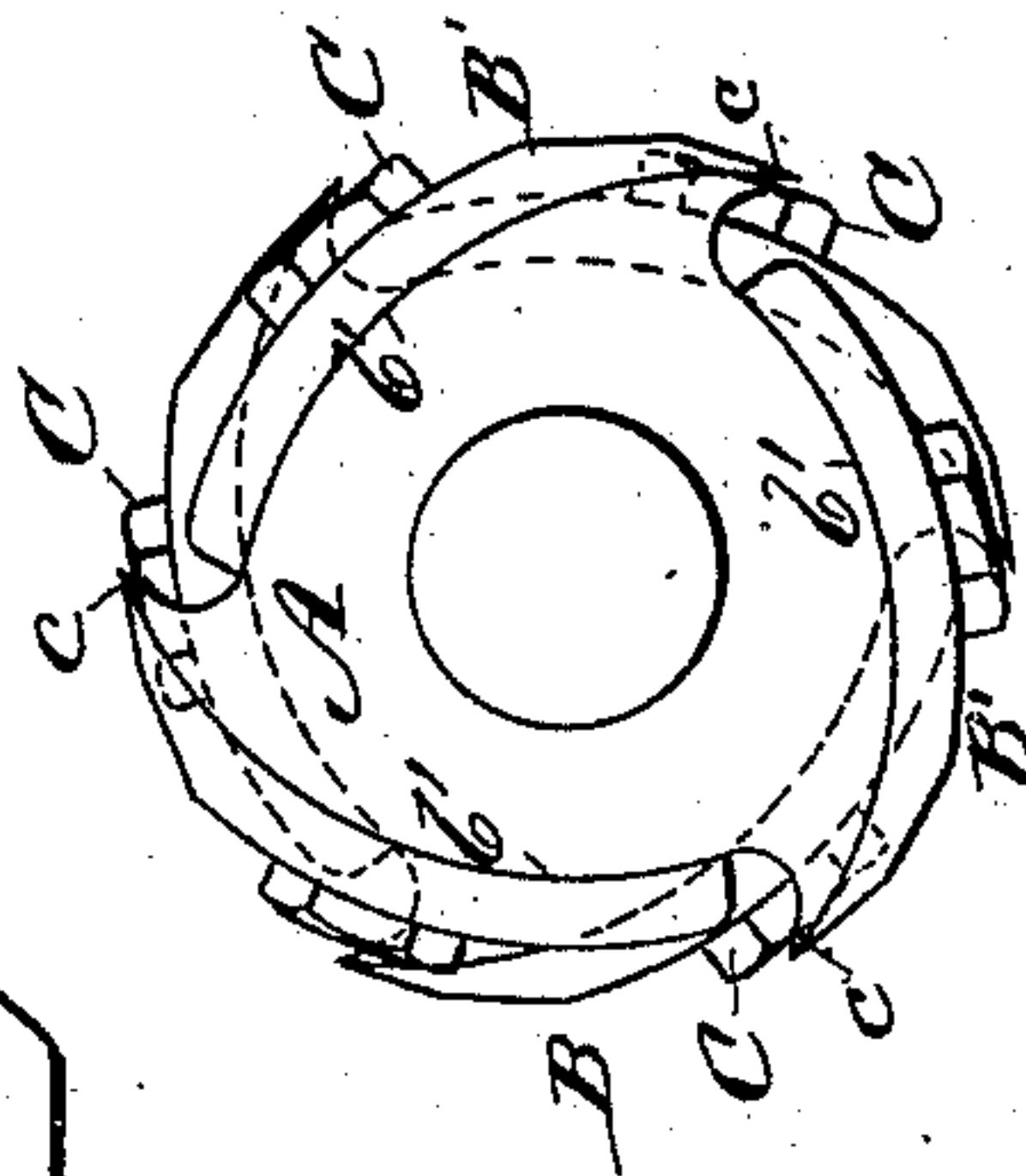


Fig. 3

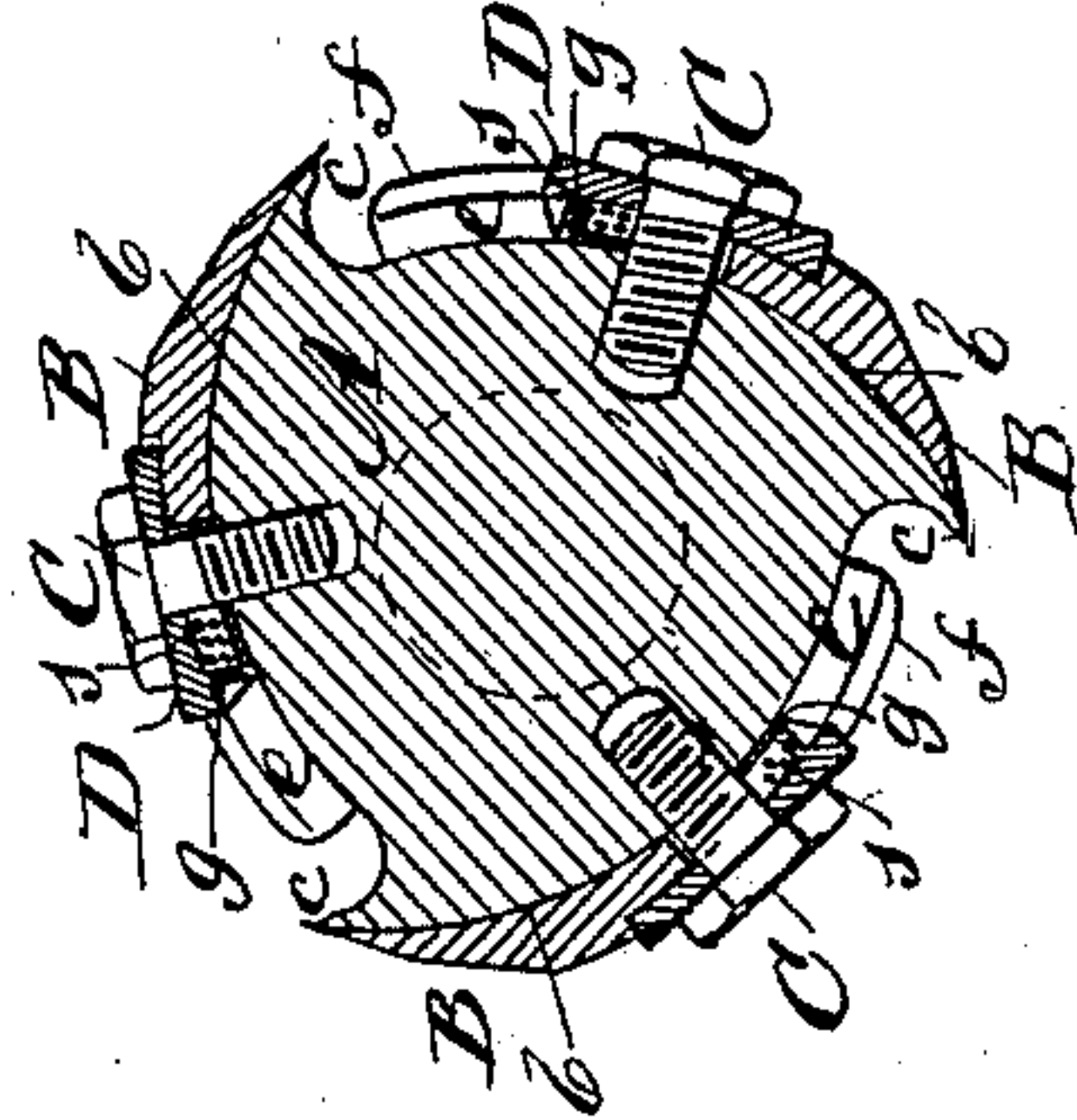
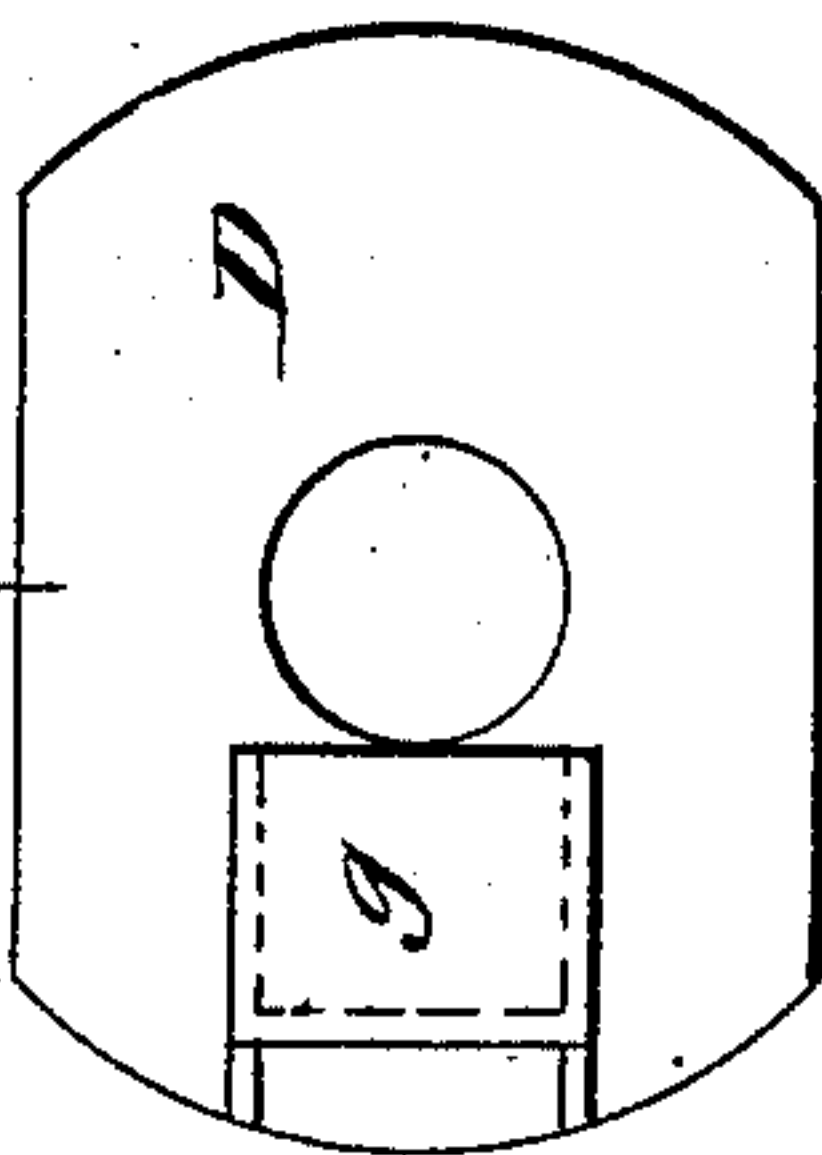


Fig. 6



Fig. 5



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN C. HUMPHREYS, OF BRAXTON COURT-HOUSE, WEST VIRGINIA.

CUTTER-HEAD.

SPECIFICATION forming part of Letters Patent No. 370,542, dated September 27, 1887.

Application filed March 17, 1887. Serial No. 231,275. (No model.)

To all whom it may concern:

Be it known that I, JOHN CALDWELL HUMPHREYS, of Braxton Court-House, in the county of Braxton and State of West Virginia, have
5 invented a new and useful Improvement in Cutter-Heads, of which the following is a full, clear, and exact description.

This invention relates to rotary cutter-heads for planing lumber or other material; and it
10 consists in certain novel constructions and combinations of parts, as hereinafter described, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification,
15 in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 represents a longitudinal view of a rotary cutter-head embodying my invention. Fig. 2 is an end view of the same as seen from
20 the left-hand side of Fig. 1, and Fig. 3 a transverse section thereof upon the line *x x* in Fig. 1. Fig. 4 is an outer face or back view of one of the cutting-bits detached; Fig. 5, an inner face view, upon a larger scale, of a washer provided with a pocket used in securing and bal-
25 ancing the bits; and Fig. 6, a transverse section thereof upon the line *y y* in Fig. 5.

A is the cutter-bar, stock, or bit-holder of the rotary cutter-head, having a series of exterior convex surfaces, *b* and *b'*, eccentric to
30 the axis of the cutter-bar, and shaped so that the cutter-bar or bit-holder, as viewed from its opposite ends, presents two three-leaved cams, each of which extends half the length of the
35 cutter-bar, and so that the advance edges *c*, which are the edges farthest removed from the axis of the cutter-bar of the cam-like surfaces or portions *b*, are centrally intermediate of the corresponding edges *c* of the cam-like surfaces
40 or portions *b'*, whereby the several edges *c c* divide a circle which would circumscribe them into six equal parts. These convex surfaces *b b'* form the eccentric bearings, as in other
45 cutter-heads differently constructed, for the cutting-bits B B', each of which is one-half the length of the cutter-bar, thus making the bits of one series intermediate of those of the other. The advance or cutting edges of said
50 bits of course slightly overlap the edges *c c* of the portions *b b'*, and, taking the two series of bits B B', divide the circle circumscribed by them into six equal parts.

With the several bits arranged as described only one bit will cut at a time, thus requiring
only about one-half the power to drive the
55 cutter-head as if two bits were cutting simultaneously, and the bits project at such tangents and are so shaped on their backs that their outer surfaces back of the cutting-edges lie in-
60 side of the circle described by the cutting-edges, whereby the bits in cutting the wood work at an angle of from fifteen to twenty
degrees, or thereabout, to it, instead of at an angle of forty-five degrees, as is generally the
65 case, and do not drag or leave creases or ridges in the surface of the wood being dressed, but cut in contradistinction to scraping it, and not
only economize driving-power but wear and tear of the belts and machinery used to operate
70 the cutter-head.

The bits B B' are secured to their places on
the cutter bar or stock by screws C, arranged
to enter said bar or stock and to pass through
open-ended slots *e* and washers D in the bits,
said washers being of irregular shape to pre-
75 vent them from turning, and fitting within countersunk marginal portions *f* outside of the slots. Every facility is accordingly af-
forded for attaching and removing the bits as
80 required and to hold them securely in place.

The several bits B B' are similar in construc-
tion or shape and size, so that they are inter-
changeable. This is important, as I have found
from experience that the bits in rotary plan-
ing cutter-heads generally wear more in the
85 middle of their lengths than at their ends, which heretofore it has been usual to remedy by grinding. By using the two series of bits, however, and making the bits of the one se-
ries interchangeable with those in the other
90 series—that is, the bits B interchangeable with the bits B'—I largely avoid this, as in inter-
changing or transposing said bits their outer ends become their inner ends on the cutter-bar. Furthermore, it is important, as is well known,
95 in rotary cutter-heads running at a high rate of speed, that the several bits should be of the same weight one with another. This, too, has
usually been done by grinding the bits. To obviate this I construct each washer D with a
100 pocket, *g*, on its inner side, in which may be placed shot or other weights *s*, and thus virtually provide for making the several bits of the same weight, or, in reality, the portions

of the cutter-head occupied by the several bits of like weight, thereby doing away with any irregularity in the motion or action of the cutter-head by an unequal distribution of its weight. By removing or adding weights *s* this adjustment can be very accurately effected without having resort to grinding the bits. This arrangement of pockets in the washers *D*, adapted to carry adjustable weights, is virtually the same as similarly and adjustably loading the bits themselves, and in some cases I make the bits also with pockets, in which to place shot or weights.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A stock or bit-holder having two series of convex surfaces, *b b'*, eccentric to the axis of the stock, each series extending half the length of the said stock, with the advance edges *c* of one series of convex surfaces centrally intermediate the advance edges *c* of the other series of convex surfaces, substantially as herein shown and described.

2. The combination of the cutter bar or stock *A*, having a double series of eccentrically-curved equidistant bit-bearing surfaces, *b b'*, each series extending half the length of the cutter bar or stock, with the advance edges *c* of one series centrally intermediate the advance edges of the other series, the detachable and interchangeable bits *B B'*, of equal length throughout, constructed to fit the said bearing-surfaces and adapted to cut at an acute angle, and means for detachably securing the bits to the cutter bar or stock, substantially as herein shown and described.

3. The washers *D*, provided with pockets *g*, adapted to carry removable weights, in combination with the cutter-bar and a series of bits arranged around said bar, and the screws *C*, substantially as and for the purpose herein specified.

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Witnesses:

E. A. BERRY,
J. T. FRAME.