(No Model.)

A. C. HEATH & F. H. WHITE.

ROTARY CUTTER HEAD.

No. 421,276. Patented Feb. 11, 1890.

FIG. 1.

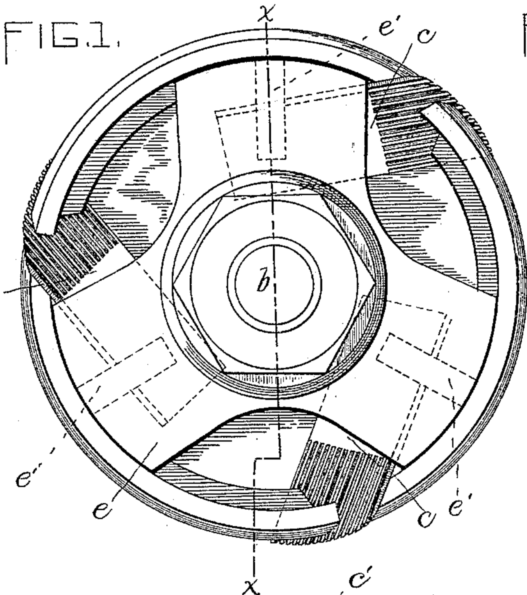


FIG. 2.

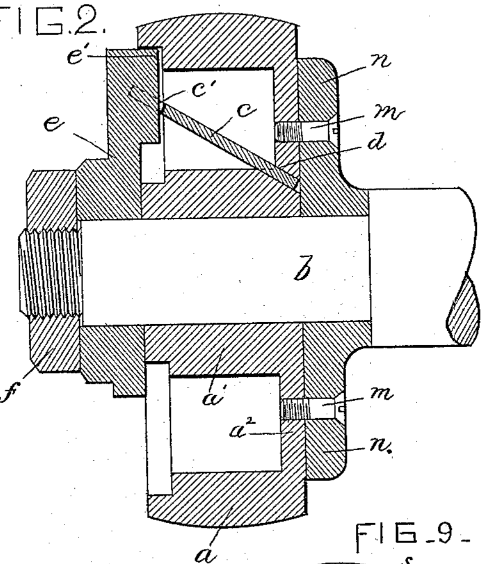


FIG. 9.

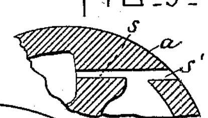


FIG. 3.

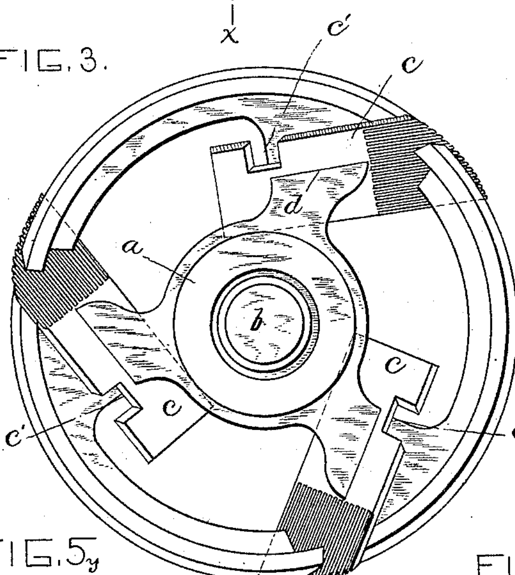


FIG. 4.

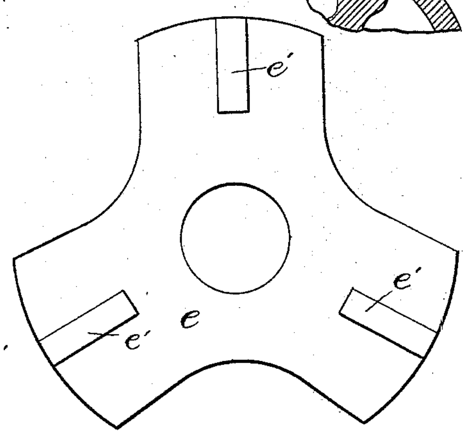
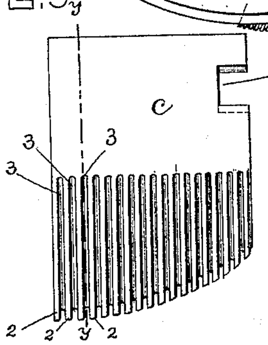


FIG. 5.



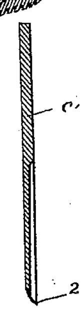


FIG. 6.

FIG. 8.

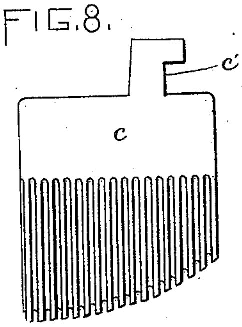
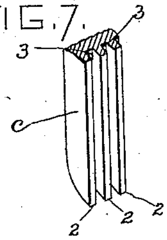


FIG. 7.



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UNITED STATES PATENT OFFICE.

AMASA C. HEATH AND FRED H. WHITE, OF SOUTH EASTON, MASSACHUSETTS.

ROTARY CUTTER-HEAD.

SPECIFICATION forming part of Letters Patent No. 421,276, dated February 11, 1890.

Application filed May 8, 1889. Serial No. 310,047. (No model.)

To all whom it may concern:

Be it known that we, AMASA C. HEATH and FRED H. WHITE, of South Easton, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Rotary Cutter-Heads, of which the following is a specification.

This invention relates to cutter-heads in which a series of blades are applied to a rotary head, the blades being detachably secured to the head within the periphery of the same, and having their cutting-edges projecting outside of said periphery.

The invention has for its object to provide improved means for securing the blades to the cutter-head and simultaneously adjusting the same.

The invention also has for its object to provide an improved blade having its cutting end divided into a series of small pointed teeth, and of such construction that the operation of grinding said cutting end will not remove the teeth.

To these ends our invention consists in the improvements which we will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a side elevation of a cutter-head embodying our invention. Fig. 2 represents a section on line *x x*, Fig. 1. Fig. 3 represents a side elevation, with the blade holding and adjusting plate removed. Fig. 4 represents a view of the inner side of said plate. Fig. 5 represents a view of the front side of our improvd blade. Fig. 6 represents a section on line *y y*, Fig. 5. Fig. 7 represents a perspective view of a portion of said blade. Fig. 8 represents a modification of the blade. Fig. 9 represents a sectional view on a reduced scale of a part of the cutter-head, showing one of the blade-guiding slots, the blade being removed therefrom.

The same letters and figures of reference indicate the same parts in all the figures.

In the drawings, *a* represents the cutter-head, having a circular periphery, which is suitably molded or shaped to conform to the curvature of the heel to be trimmed. Said head has a hub *a'*, which receives the shaft *b*, whereby the head is rotated. The periphery of the head is connected with the hub by a web a^2, which constitutes one side of the head.

c c c represent the blades, of which three are shown in this case, although the number may obviously be more or less than three. Said blades are inserted in oblique slots *s*, Fig. 9, which are formed in the cutter-head and extend from points at or near the hub tangentially or obliquely in and through the periphery of the head. The blades *c* are adapted to slide in said slots, and are of such thickness as to fit somewhat closely in the same, excepting the outer ends of said slots, which are widened, as shown at *s*, Fig. 9, so that only the backs of the blades bear on the slots at the periphery of the head, openings through the periphery of the head at the front sides of the blades being thus provided for the escape of the particles removed from the heel during the trimming operation. The ends of the blades are curved to conform to the transverse curvature of the periphery of the cutter-head.

e represents a plate which is mounted on the shaft, and is held by a nut *f* against the cutter-head, said nut being screwed upon the threaded outer end of the shaft *b*, and when turned home acting to hold the plate *e* rigidly. The plate *e* is provided with a series of lugs *e'*, projecting inwardly from its inner side. Said lugs enter slots or recesses *c'*, formed in the blades *c*, so that when the plate *e* is loosened by unscrewing the nut *f* the blades may be moved simultaneously in or out by partially rotating the plate *e* on the shaft *b;* but when the plate is held by said nut it prevents any independent movement of the blades. The plate *e* and clamping-nut *f*, therefore, constitute the means whereby the blades are detachably secured to the head, while the plate when released from the hold of the nut becomes an adjuster, whereby the blades may be simultaneously moved endwise to give their cutting ends any desired projection from the periphery of the head *a* and compensate for wear of said cutting ends.

The slots *c'* are shown in Figs. 2, 3, and 5 as formed in the outer edges of the blades, while in Fig. 8 the back of the blade is provided with an offset-lug which contains the slot *c'*.

The slots *d*, which receive the blades, are

most conveniently formed by sawing into the head *a* from the periphery inwardly, the slot extending entirely across the head, or from one side to the other.

To provide a bearing or support for the blades at the inner side of the head, or the side opposite the plate *e*, we attach to said inner side, by screws *m* or otherwise, a plate *n*, which covers the ends of the slots *d* at that side of the head, as shown in Fig. 2. Said plate also strengthens the head, which would otherwise be left in a weakened condition by the slots *d*.

We prefer to make the blade-receiving slots *d* diagonal to the axis of the cutter-head in the cross-section thereof, so that the cutting ends of said blades are arranged diagonally or obliquely at the periphery of the head and have a draw cut.

The cutting ends of the blades are divided into small teeth 2, as shown in our pending application, No. 298,182, filed January 31, 1889, to enable the blades to trim heels made of wood pulp, it being a fact that a continuous knife-edge cannot be kept sufficiently long in operative condition when acting on wood pulp to make practicable the operation of trimming heels of said material by the use of knife-edged blades. In our former application we show the said teeth 2 formed by cutting slots or grooves in the beveled end of the blade, or that end which by its intersection with one side of the blade makes the cutting-edge. We find, however, that the reduction of said end by grinding and by the wear to which it is subjected reduces the teeth and requires occasional re-forming or deepening of said grooves or slots, thus involving more labor than the ordinary grinding operation. To obviate this labor we form longitudinal parallel grooves 3 3 in the front side of each blade, thus dividing said side into ribs, the outer ends of which constitute the teeth 2. It will be seen, therefore, that the depth or projection of the teeth is not lessened by grinding, and that the grinding operation is as easily performed as it is when the cutting-edge is continuous.

We claim—

1. The combination of the cutter-head having a series of oblique slots extending inwardly from its periphery, said slots being widened at the periphery of the head, a series of blades movable in said slots and guided thereby, a rotatable plate having a series of projections *e'* engaged with slots or recesses in said blades, substantially as described, and adapted to move the same simultaneously in the slots, and means for securing said plate and through the latter the blades at any position to which said plate and blades may be adjusted, as set forth.

2. The combination of the cutter-head having a series of oblique slots extending inwardly from its periphery, a series of blades movable in said slots and guided thereby, a rotatable plate having a series of projections *e'* engaged with slots or recesses in said blades, substantially as described, and adapted to move the same simultaneously in the slots, and a nut which is screwed upon the shaft of the cutter-head, whereby the plate and blades may be secured to the cutter-head, as set forth.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, this 16th day of April, A. D. 1889.

AMASA C. HEATH.
FRED H. WHITE.

Witnesses:
C. F. BROWN,
A. D. HARRISON.