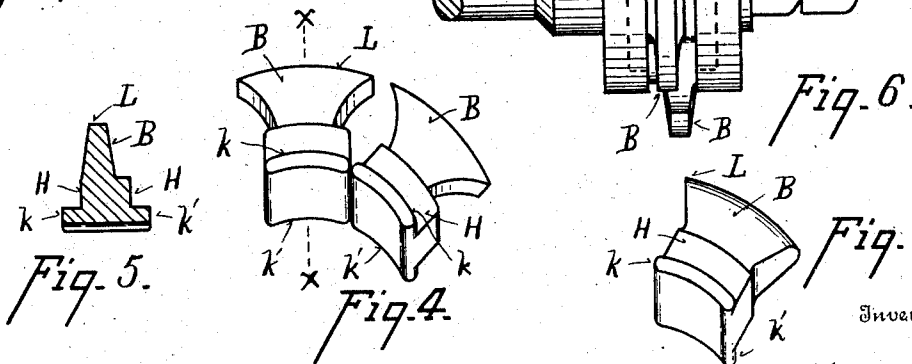
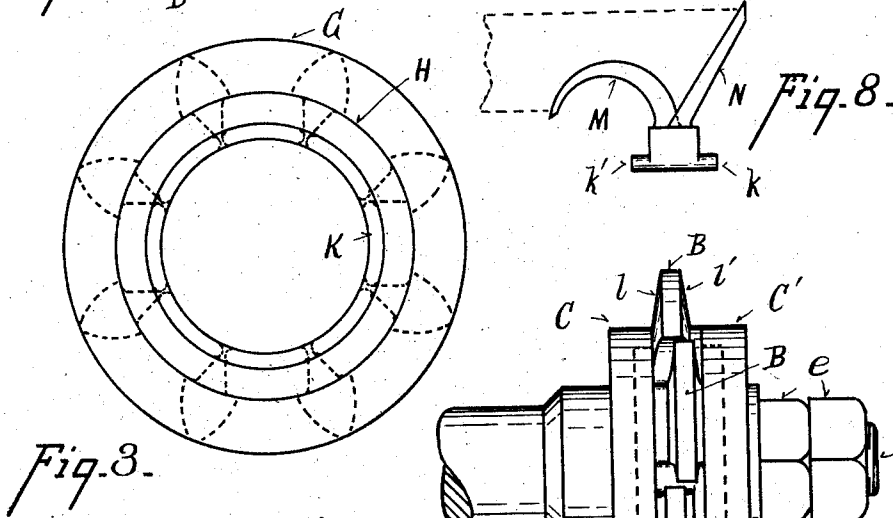
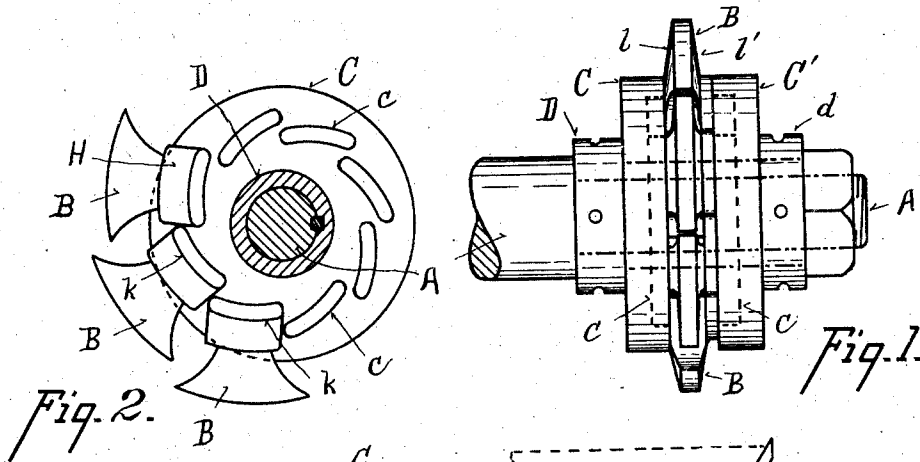


No. 866,372.

PATENTED SEPT. 17, 1907.

G. B. MALTBY.
 ROTARY CUTTER.
 APPLICATION FILED OCT. 15, 1906.



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GEORGE B. MALTBY, OF AURORA, INDIANA.

ROTARY CUTTER.

No. 866,372.

Specification of Letters Patent.

Patented Sept. 17, 1907.

Application filed October 15, 1906. Serial No. 338,982.

To all whom it may concern:

Be it known that I, GEORGE B. MALTBY, a citizen of the United States, residing at Aurora, in the county of Dearborn and State of Indiana, have invented certain new and useful Improvements in Rotary Cutters, of which the following is a specification.

My invention relates to improvements in rotary cutting tools for use in cutting wood, metal, or other similar substances.

One of its objects is to provide a rotary cutter, the knives or cutting parts of which can be formed in a single piece or simultaneously by turning them to the desired shape on a lathe, and which can be subsequently severed into segments or separated and reassembled into a cutter, the separate sections or knives being so arranged as to attain the necessary clearance, so that the cutting edges only of the knives will engage the work.

Another object is to provide reliable and accurate means for reassembling and clamping the knives.

Another object is to provide means whereby the knives may be reversed so as to use either edge for cutting purposes.

Another object is to provide means whereby the knives may be staggered if desired.

It further consists in certain details of form, combination and arrangement, all of which will be more fully set forth in the description of the accompanying drawings, in which;

Figure 1 is a side elevation of my improved rotary cutter. Fig. 2 is a plan view of one of the clamping disks with part of the cutters or knives assembled thereon. Fig. 3 is a plan view of a turned blank from which the cutters or knives are to be formed. Fig. 4 is a perspective view of two cutters or knives. Fig. 5 is a section through one of the knives on line $x x$ of Fig. 4. Fig. 6 is a view similar to Fig. 1 showing the knives set staggered. Fig. 7 is a perspective view of a cutter adapted for cutting metal. Fig. 8 is a diagram illustrating another style of cutter.

In the accompanying drawings A represents the shaft or mandrel on which the cutter is mounted, and by means of which it is rotated.

B represents the knives or teeth of the cutter, and C C' represent clamping plates or disks between which the knives are clamped to retain them in their adjusted position.

D represents a sleeve on which the clamping plates and cutters are clamped by means of a nut d engaging the threaded end of the sleeve. Sleeve D is preferably keyed to the mandrel and locked in place by nut E engaging the threaded shank of the mandrel.

In the preferred form of construction the knives are formed by severing into sections a ring or disk of metal

G, which has been first turned to the desired cross sectional outline. The knives herein shown, with the exception of Fig. 7, are of a form adapted for cutting wood and similar substances. The blank G is formed with faces H, preferably parallel to each other, and after the knives are formed are adapted to engage and be clamped by the inner faces of disks C C'. Annular ribs K are formed on opposite sides of the blank, which after the knives are formed serve as projections $k k'$ to enter counterpart recesses c in the disks C C' so that the knives are firmly held to the desired angle and position relative to said disks C C'. The recesses c are uniformly or symmetrically cut tangential to the path of travel so that the projections $k k'$, which are arcs or segments of a circle may register therewith and the cutters be both interchangeable and also reversible to permit the use of either edge of the cutter for cutting purposes. By forming the cutting portion L of the cutters at one side of the center of the cutter bases, the cutters may be staggered, that is alternate or different cutter portions L caused to travel in different planes, by reversing the position of part of the cutters as indicated in Fig. 6. I preferably slightly taper the faces $l l'$ of the cutters, which provides clearance at the sides as well as the periphery of the cutters, due to the angular or tangential position which they occupy relative to the path of travel.

By turning up the cutters in a single blank and subsequently severing the same to form the teeth or cutters, I am enabled to quickly and accurately form the cutters and their faces and projections to interengage with the clamping plates, so that all the cutters may be interchangeable and reversible, and when they are severed, it is only necessary to round the ends of the projections $k k'$ to cause them to accurately fit the recesses of the clamping plates. The recesses of the clamping plates may also be uniformly and accurately machined therein, and the angular or tangential lead of the recesses may be varied as desired in different clamping plates to attain the desired clearance in the cutters.

By employing clamping plates having their recesses c concentric with the path of travel, the cutters may be mounted in the same relation which they occupied in the original blank, and can thus be accurately ground to shape after being tempered, and also cutters which have become worn or damaged may be ground to the form desired for smaller sized cutters.

In Fig. 7 is shown a form of cutter adapted for cutting gears or similar work in metal. In Fig. 8 are shown two knives of a style of cutter adapted to dress the chimes of barrels. In this character of cutters, a series of teeth or knives M are turned up in one blank to the outline indicated, and another blank is turned up to the required outline for the knives N. The two blanks are then sev-

ered into sections and part of the knives from each blank assembled in the manner indicated in Figs. 1 and 2 into a cutter for the purpose desired.

The cutters and clamping plates are preferably secured upon a sleeve as indicated in Fig. 1, so that the cutter as a whole can be attached to or detached from the mandrel. As shown in Fig. 6 however the clamping plates and cutters may be clamped directly upon the mandrel by means of nuts *e*. Where the cutters are to be used upon a milling machine, the cutters and clamping plates are assembled directly on the milling machine spindle by means of the nuts usually provided therewith.

The cutters herein shown are particularly adapted for a class of work in which the cutters require a considerable amount of clearance, and where the rear end of the cutters would otherwise be liable to touch the work and limit the depth of cut and efficiency of the cutters, such for instance as cutting the chimes of barrels, or other work upon the interior of a circular piece of work. My improved cutters are also adapted to be employed as a substitute for the ordinary solid milling cutters, and wood working cutters heretofore extensively in use.

The mechanism herein illustrated and described is capable of considerable modification without departing from the principle of my invention.

Having described my invention, what I claim is;

1. In an article of the character indicated, a series of cutters having a segmental cylindrical outline, each cutter having a concentric curved projection and faces against which the clamping plates engage, and clamping plates engaging opposite sides of said cutters, one of said plates having recesses to receive said projections, and which serve to lock the cutters to the desired angular adjustment, and also to lock the cutters circumferentially and equidistant apart.

2. In an article of the character indicated, in combination with clamping plates having eccentrically arranged recesses, a series of cutters comprising segments of a symmetrically formed circular blank, said cutters having concentric curved projections to enter the recesses in said clamping plates to lock the cutters to the desired angular adjustment.

3. In an article of the character indicated, a series of cutters, each having a segmental cylindrical outline, concentric segmental cylindrical projections at the side of said cutters; clamping plates adapted to engage opposite sides

of said cutters, one of said clamping plates being provided with eccentrically arranged recesses the counterpart of and adapted to register with said projections.

4. In an article of the character indicated, a series of cutters each having a segmental cylindrical outline, concentric cylindrical projections at opposite sides of said cutters; clamping plates adapted to engage opposite sides of said cutters, each of said clamping plates being provided with independent recesses to receive said projections, and which serve to lock the cutters circumferentially and equidistant apart.

5. In an article of the character indicated, in combination with clamping plates adapted to engage opposite sides of the cutters, a series of reversible cutters of segmental cylindrical outline having parallel clamping faces at the sides and a cutting portion formed at one side of the center of the clamping portion so that when part of the cutters are reversed the cutting portion of different cutters will travel in different planes, and inter-engaging members on the cutters and clamping plates to lock the cutters to the desired angular adjustment.

6. In an article of the character indicated, in combination with clamping plates adapted to engage opposite sides of the cutters, a series of reversible cutters of segmental cylindrical outline, the cutting portions of said cutters being formed at one side of the center of the body portions thereof, so that when part of the cutters are reversed, the cutting portion of different cutters will travel in different planes, and inter-engaging members on the cutters and clamping plates to lock the cutters to the desired angular adjustment.

7. In an article of the character indicated, a series of interchangeable cutters each having a segmental cylindrical outline and provided with concentrically formed segmental cylindrical projections, and clamping plates adapted to engage opposite sides of said cutters, said plates being provided with eccentrically arranged recesses the counterpart of said projections, with which said projections interchangeably engage.

8. In an article of the character indicated, a series of symmetrical cutters, each of segmental cylindrical outline and having oppositely arranged cutting edges, and provided with concentric segmental cylindrical projections, and clamping plates adapted to engage opposite sides of said cutters, said plates being provided with eccentrically arranged recesses the counterpart of said projections, with which said projections interchangeably engage.

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

GEORGE B. MALTBY.

Witnesses:

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IDA S. MALTBY.