

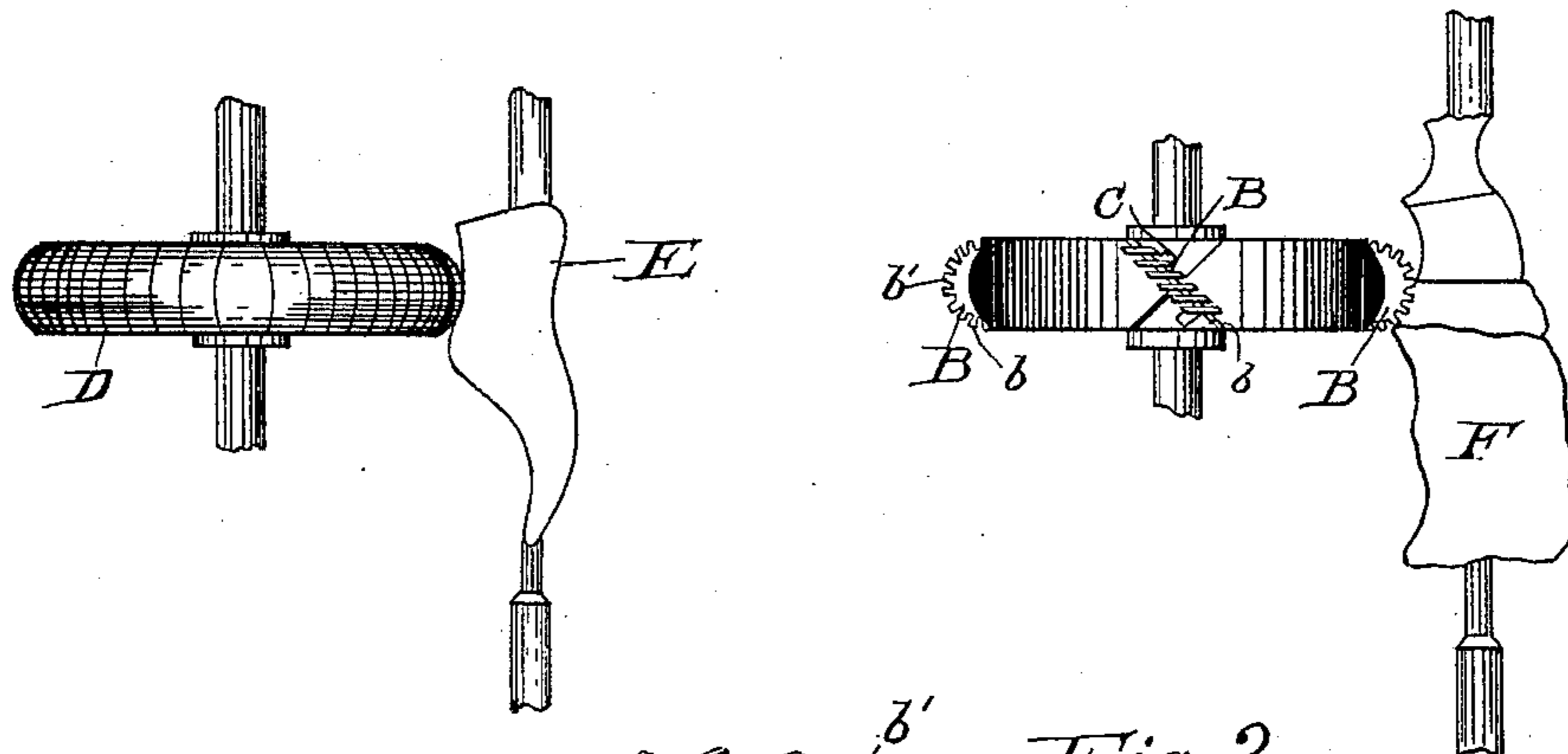
(No Model.)

A. M. MOORE.  
CUTTER HEAD.

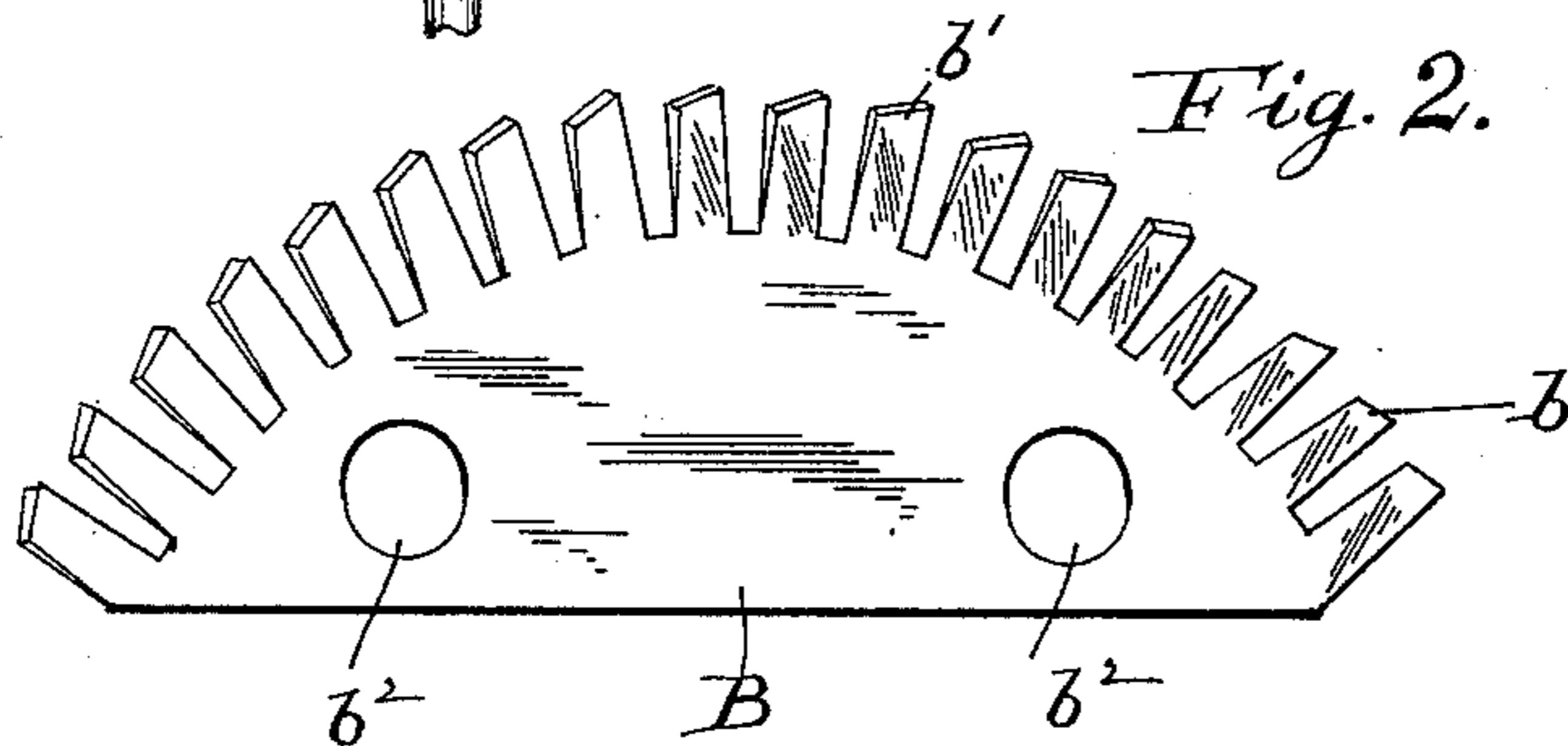
No. 432,321.

Patented July 15, 1890.

*Fig. 1.*



*Fig. 2.*



Witnesses:

*W. F. Lunt,*  
*R. A. Davis*

Inventor  
*Alfred M. Moore*  
by *S. M. Bates*  
his atty.

# UNITED STATES PATENT OFFICE.

ALFRED M. MOORE, OF LOCKPORT, NEW YORK.

## CUTTER-HEAD.

SPECIFICATION forming part of Letters Patent No. 432,321, dated July 15, 1890.

Application filed November 13, 1889. Serial No. 330,243. (No model.)

*To all whom it may concern:*

Be it known that I, ALFRED M. MOORE, a citizen of the United States, residing at Lockport, in the county of Niagara and State of New York, have invented certain new and useful Improvements in Cutter-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 cutter-heads for use in lathes for turning irregular forms, and in other machines where a rotating cutter-head is used; and it is particularly designed for reducing wood-pulp articles, although it may be used for wood and other materials.

In making many articles of wood pulp the pulp is compressed or otherwise formed into approximately the size and shape desired, and after being thoroughly dried the outside of the article is turned or formed to its exact shape.

Great difficulty has been experienced in getting a reducing-tool which would work wood pulp rapidly, resist the grit contained in the pulp without continual sharpening, and which would retain its shape so that it could be worked with good results on irregular lathes, &c., where guides are used and where nice work is required.

To remedy these difficulties is the object of my invention, which consists of a cutter-head having knives or cutters secured thereto, said knives having teeth the points of which are in the line of a diagonal section taken through the rounded working-periphery of said cutter-head, or of a wheel of equal size with said cutter-head, said teeth being preferably bent or twisted to come substantially into the line of rotation.

It further consists of the above-described cutter-head having the roughing or reducing teeth in the plane of said section and the finishing-teeth bent or twisted, as described.

It further consists of the various features set out in the claims.

In the accompanying drawings I illustrate a cutter-head embodying my invention, in which—

Figure 1 is a plan view showing the relative positions of the cutter-head and the guide

in a last-turning machine. Fig. 2 is an elevation of the cutter.

In the case here illustrated I make use of the ordinary cutter-head A, having, as here shown, four diagonal recesses in its periphery for the knives or cutters. Each of the four cutters B, I form, preferably, from a piece of saw-plate steel, and I secure it in the diagonal recess in the cutter-head A by bolts C, passing through apertures  $b^2$ , which are elongated to allow of adjustment. In the edge of the cutter B are cutting-teeth  $b b'$ , the points of which are in the line of an elliptical curve, which is a diagonal section through the rounded working-periphery of said cutter-head, or of a wheel of equal size with the cutter-head, as the guide-wheel D. By the use of the term "rounded periphery" I do not wish to limit myself to a periphery with a curved cross-section; but I wish to cover any case where the periphery has a central portion of greater diameter than the side or sides. By the "working-periphery" of the cutter-head is understood the path formed by the rotation of the working or cutting teeth. This is obviously the effective periphery of the cutter-head.

E represents the last-form in position in the lathe, and F is the rough block of pulp or other material. The roughing or reducing teeth  $b$ , which move ahead to cut away the bulk of the material, are in this case left straight or in the plane of the section or cutter, while those teeth  $b'$  which follow and finish are bent or twisted into substantially the line of rotation.

The teeth in this cutter are so numerous that the operation is substantially that of sawing, so that the cutting-edges do not require to be as sharp as in ordinary cutters, and they will go a comparatively long time without becoming dull. In sharpening them it is only necessary to file the front face of the tooth. As the teeth wear they do not materially change their form, so that it is always easy to keep the points in the necessary line to do the finest work.

It will be seen that this cutter is adapted to work around any angles or corners which may occur in this class of work as well as any cutters made for this purpose. The straight

teeth, which cut away the bulk of the material, work in a diagonal direction, cutting with their corners, so that they tear away and reduce the material very rapidly. The finishing-teeth, which follow, act nearly at right angles and follow each other rapidly, so that they produce a comparatively smooth surface.

I have here illustrated my cutter-head as being used on irregular work; but it is equally well adapted for straight work—such as turning down the surfaces of pails, tubs, and other cylindrical or tapering articles. The surface left by this cutter is comparatively smooth and requires no more finishing than is required when other cutters are used.

I have here shown a cutter-head with four cutters or rows of teeth; but in practice I prefer to use about eight cutters as producing a smoother surface.

It is evident that the invention as broadly claimed is not limited to the particular manner here shown for securing the teeth to the cutter-head proper.

I claim—

1. A cutter-head having a substantially rounded working-periphery and knives or cutters secured to said cutter-head, said knives or cutters having teeth the points of which are in the line of a diagonal section taken through the rounded periphery of a wheel of equal size with said cutter-head, said teeth

being bent or twisted to come substantially into the line of rotation, substantially as described.

2. A cutter-head having knives or cutters secured thereto, said knives or cutters having teeth the points of which are in a line which is a diagonal section through the working-periphery of said cutter-head, the reducing or roughening teeth being straight or in the plane of said section, and the finishing-teeth being bent or twisted into the line of rotation, substantially as described.

3. A cutter-head having a substantially rounded working-periphery, knives or cutters secured to said cutter-head, said knives or cutters having teeth the points of which are in a line which is a diagonal section through said working-periphery of said cutter-head, substantially as shown.

4. The herein-described cutter-head having tooth-plates secured diagonally in the outer edge thereof, the said tooth-plates having a rounded outer or working edge and having in said working edge a plurality of cutting-teeth, substantially as shown.

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

ALFRED M. MOORE. [L. S.]

Witnesses:

CHAS. E. FOLGER,  
T. M. MCGRATH.