(No Model.)

# C. GROTZ.

## CUTTER HEAD AND KNIFE.

No. 481,861. Patented Aug. 30, 1892.

Fig. 2.

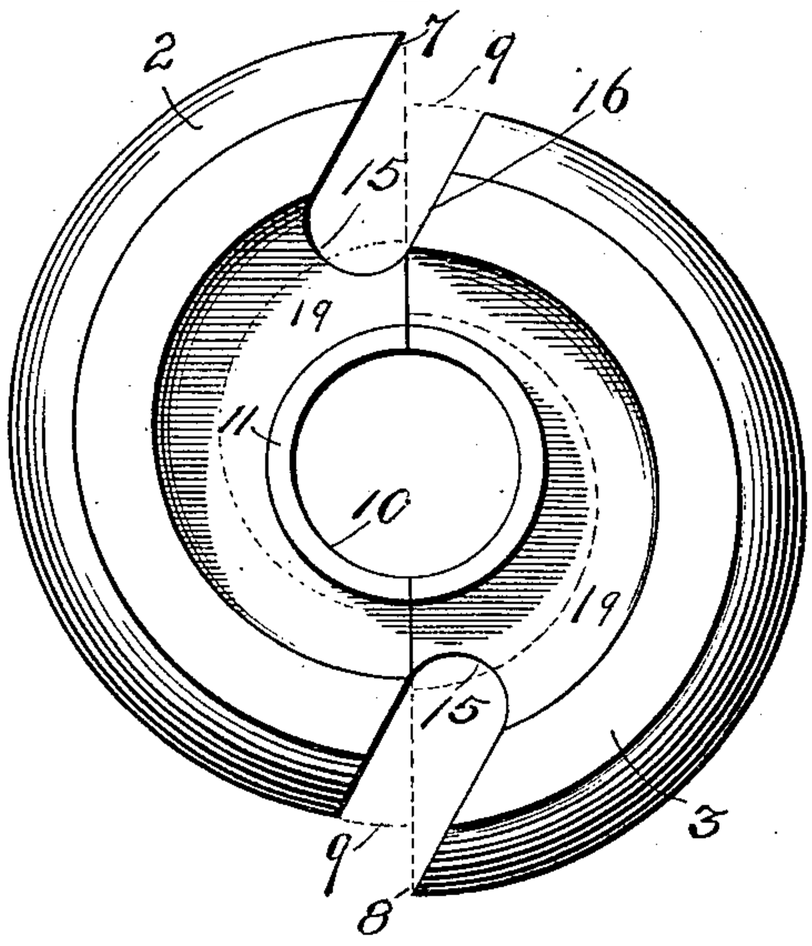



Fig. 1.

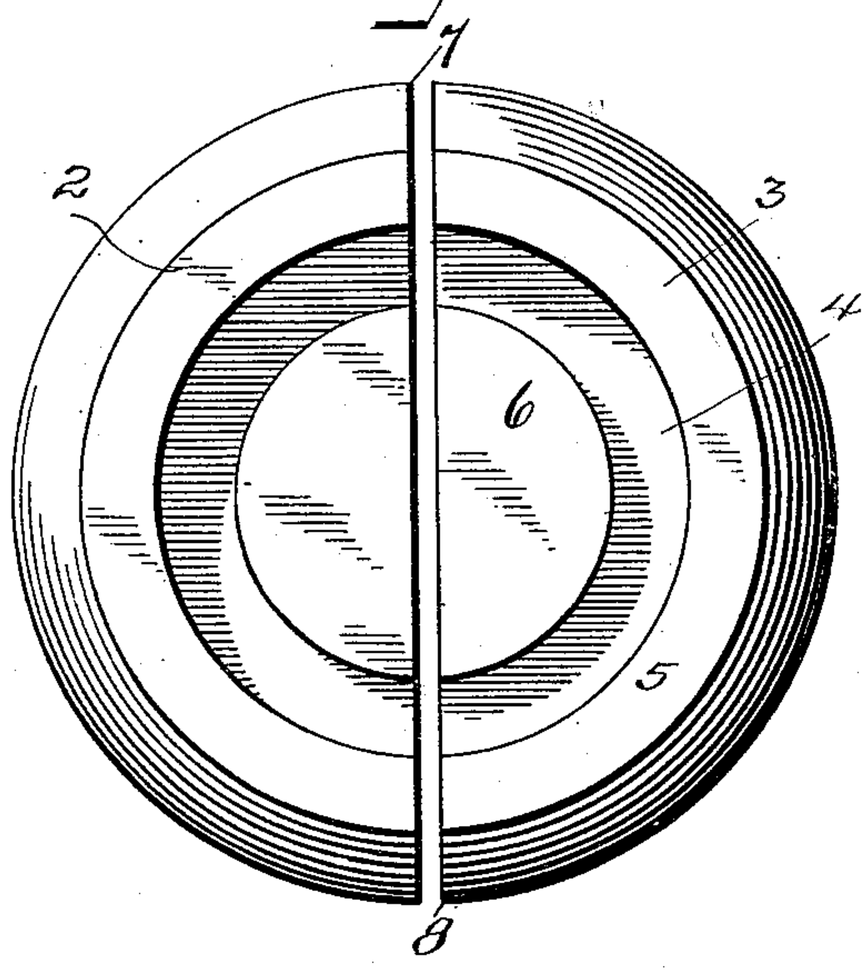



Fig. 3.

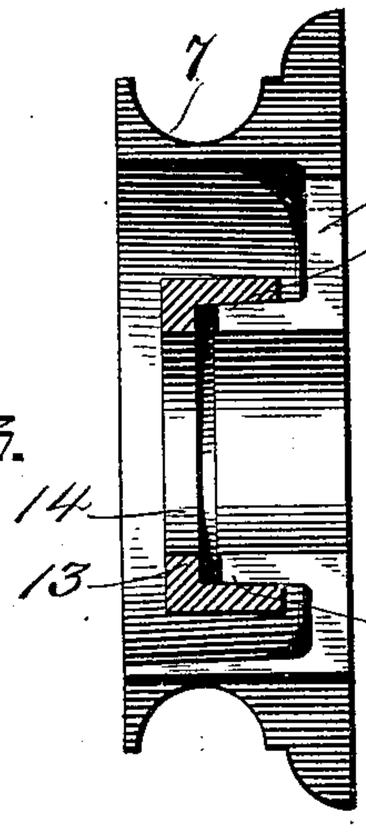
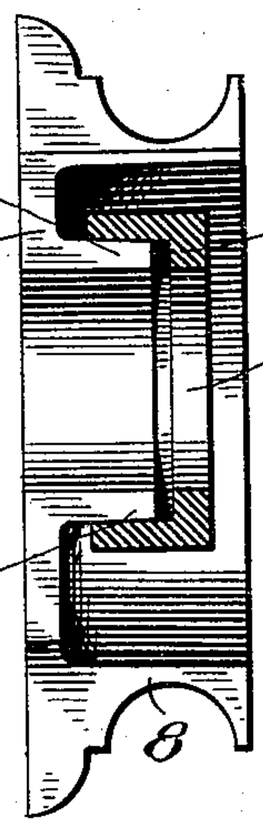



Fig. 4.




Witnesses.
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A. G. Hawley.

Inventor.
Charles Grotz
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his Attys

# UNITED STATES PATENT OFFICE.

CHARLES GROTZ, OF OTTUMWA, IOWA, ASSIGNOR TO COOPER & HAMPTON.

## CUTTER-HEAD AND KNIFE.

SPECIFICATION forming part of Letters Patent No. 481,861, dated August 30, 1892.

Application filed June 23, 1891. Serial No. 397,191. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES GROTZ, of Ottumwa, in the county of Wapello and State of Iowa, have invented certain Improvements in Cutter-Heads and Knives, of which the following is a specification.

My invention relates to cutter-heads for use in making grooves, dados, moldings, &c.; and the object of the same is to provide a cheap, strong, durable, and efficient cutter-head and integral knives therefor, and, further, to arrange said knives or cutting-edges so that they may be ground and finely and evenly sharpened with the least labor and in the shortest possible space of time.

My invention consists in a cutter-head and knives composed of a turned disk having a face or periphery corresponding to the form to be given the material operated upon, said disk being cut upon one of its diameters and the two parts thus formed being secured in offset positions with respect to one another, whereby two cutting edges or angles are provided on and in the head itself.

The invention consists, further, in convenient means for disposing of the shavings and in the formation and arrangement of the cutting-edges, whereby they are adapted for fine work and rendered easy to sharpen.

The invention consists, further, in means for securing said parts of the disk firmly together, and my invention will be more readily understood by reference to the accompanying drawings, in which—

Figure 1 illustrates a turned disk after being cut upon one of its diameters to separate the disk into two equal parts. Fig. 2 shows a side view of a complete cutter-head, the clamping-ring adapted to fasten the two parts together being removed. Figs. 3 and 4 are views of the two parts from each side of the line of separation between the two, the clamping-ring being therein shown in section.

The device, with the exception of the clamping-ring, is constructed of the turned disk having a circular form and of the proper width or thickness. The concave grooves, beads, and shoulders forming the negative of the molding to be cut are arranged upon the edge or periphery of the disk while in the lathe. After the disk has been turned up and the periphery properly faced and smoothed the disk is taken out of the lathe and cut into two equal halves 2 and 3. In turning the disk the wide groove 4 is cut in one side thereof, the rim 5 and the boss 6 being thus formed. The inner faces or straight sides 17 and 18 of the two parts 2 and 3 are now trued and faced and the parts then firmly clamped together in the offset positions indicated by the dotted lines 9 of Fig. 2. The offset on each side of the head forms a cutting-edge 7 or 8, and when these edges are beveled sharp knives are formed. The hole 10 is now drilled through the two parts of the boss 6, the center of the same being at a point equidistant from the cutting-edges 7 and 8. It will be seen that the parts of the boss will also be offset, and these are therefore now cut down to form the small rim or wall 11, of a uniform thickness, about the central opening 10. The outer wall 12 of this rim is beveled or coned slightly, as indicated in Figs. 3 and 4. For clamping the two parts together I provide the ring 13, having the opening 14, preferably of the same diameter as that numbered 10. The inside of the ring is coned to correspond with the walls 12. Hence when the ring is driven firmly upon the same the two parts of the head are securely fastened together. After the ring 14 is placed in position the head may be placed upon any suitable revolving mandrel or arbor. I bevel and sharpen the cutting-edges, as shown in Fig. 2, and cut away the material to form the deep notches 15, adapted to allow the grindstone to enter far enough to properly sharpen the innermost parts of the cutting-edges. With a view to forming a wide mouth in front of each cutting-edge, through which the shavings are hurled into the grooves or recesses 19 of the head, I chamfer the non-cutting end of each half of the head, making the end 16 parallel with the cutting-edge 7 or 8, respectively. The shavings, it will be seen, pass into what may be termed the "hollow interior" of the head and are thrown out through the open side thereof. It is obvious that opposite parts of the head will revolve in exactly coincident planes. This is assured by placing the two parts upon or against a plane surface when driving the clamping-ring into place. It is further obvious that the surface or periphery of the head may be grooved in any pattern

desired. The head thus formed is secured upon the arbor in the usual manner, one side of the head being pressed against a collar or shoulder on the arbor and the other side secured by the nut or burr, screwed tightly against the clamping-ring. The tightening of this nut and the fastening of the clamping-ring, it will be seen, makes it impossible for any part of the head to fly off of the arbor, as is frequently the case with cutter-heads formed of a number of separable parts.

The advantages of my device lie in the fact that the knives cannot become detached or lost from the head, that the same occupy positions where they may be readily sharpened by applying them to the grindstone, that the form of the cutting-edges is never changed, that the head is perfectly balanced, and that, being formed on the lathe, the parts may be turned out with great exactness and a number of heads of exactly the pattern and dimensions required produced.

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

1. The combination, in a cutter-head, of the two equal parts having their semicircular peripheries grooved or patterned, with semicircular walls projecting from the side of the cutter-head and eccentric with the peripheries thereof, said walls having their outer surfaces tapered or coned, an annular ring having its internal surface coned to fit said walls, and thereby secure said parts in offset positions with respect to one another, and an opening concentric with said walls and ring to admit the arbor, and the projecting edges of said two parts being sharpened and parallel with the axis of the wheel, substantially as described.

2. The combination, in a cutter-head, of the two parts 2 and 3, each of a semicircular form, having the patterned peripheries, and each provided with a tapering channel 19 and semicircular walls 11, said walls being tapered and eccentric with the peripheries of the two parts, with the webs between the said walls and the outer portion of the cutter-head, the annular clamping-ring to engage said tapering wall, and the sharpened edges 7 and 8, said parts being provided with slots 15 and the chamfered ends 16, all substantially as described.

In testimony whereof I have hereunto set my hand this 18th day of June, 1891.

CHAS. GROTZ.

In presence of—
FRANK M. HARMAN,
EDWARD H. STORY.