

C. E. ZIMMERMANN.

ROTARY CUTTER HEAD FOR WOODWORK.

No. 539,326.

Patented May 14, 1895.

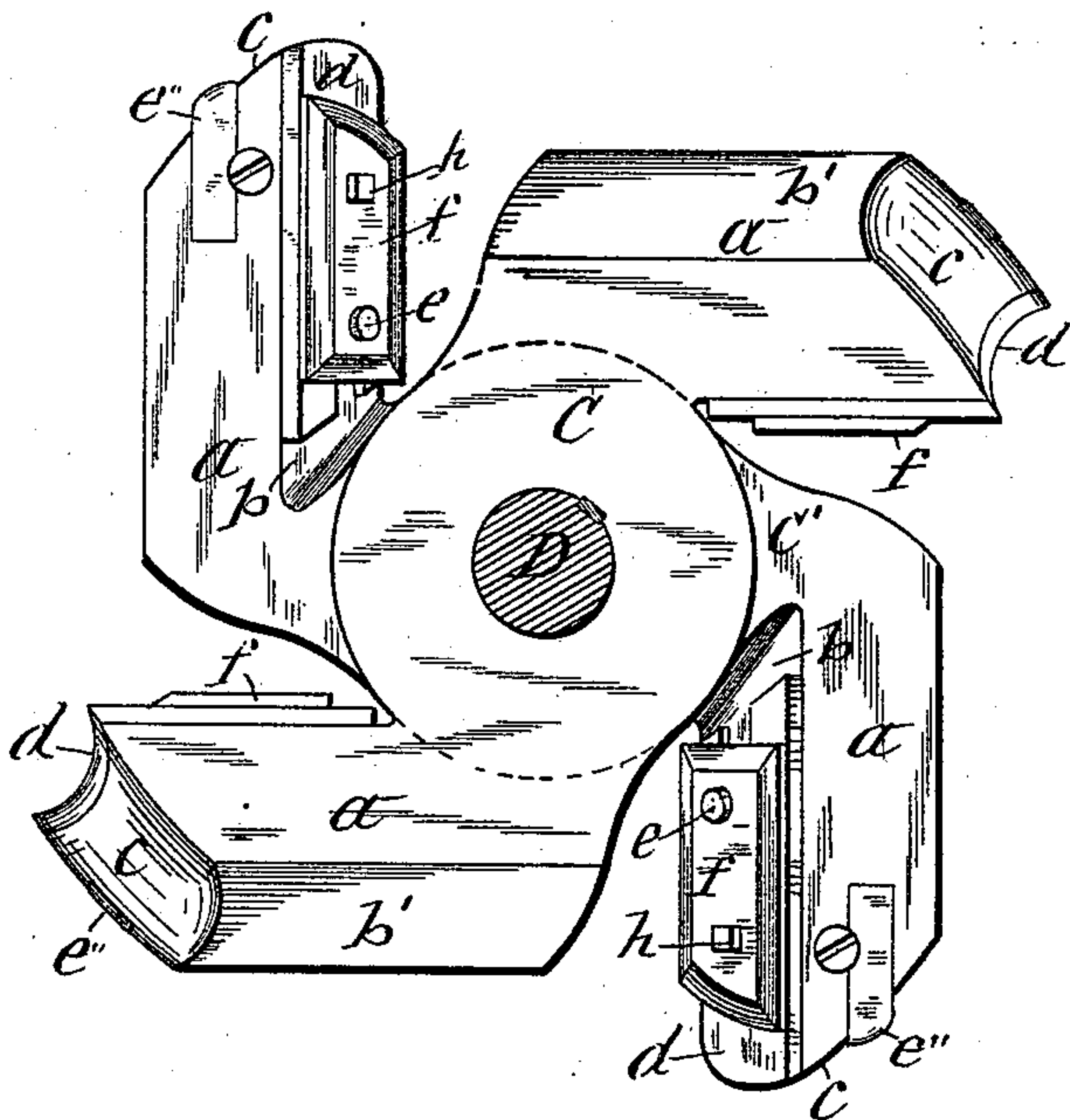


Fig. 1

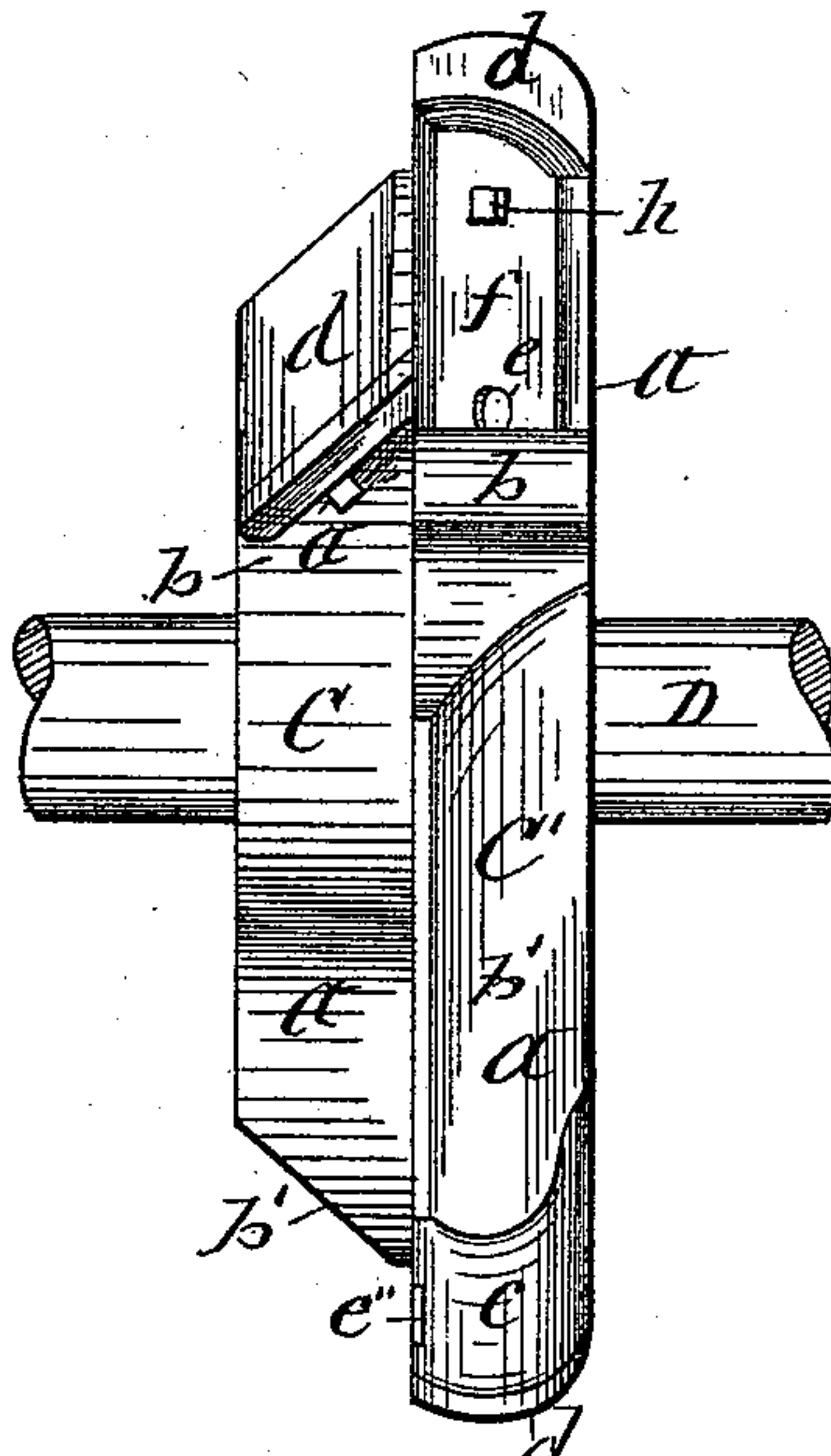


Fig. 2

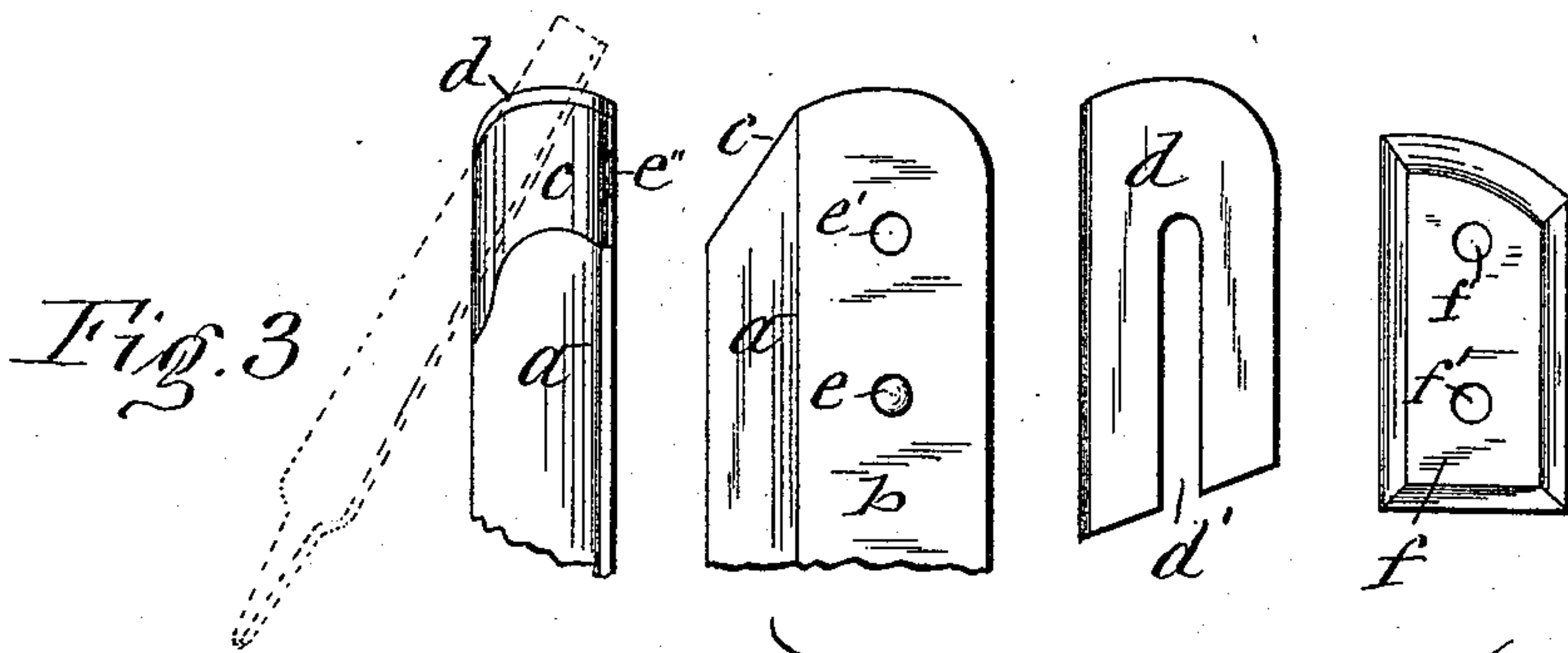


Fig. 3

Fig. 4

WITNESSES:

J. J. Laass  
C. L. Bendixen

INVENTOR:

Charles E. Zimmermann  
By C. Laass  
his ATTORNEY

(No Model.)

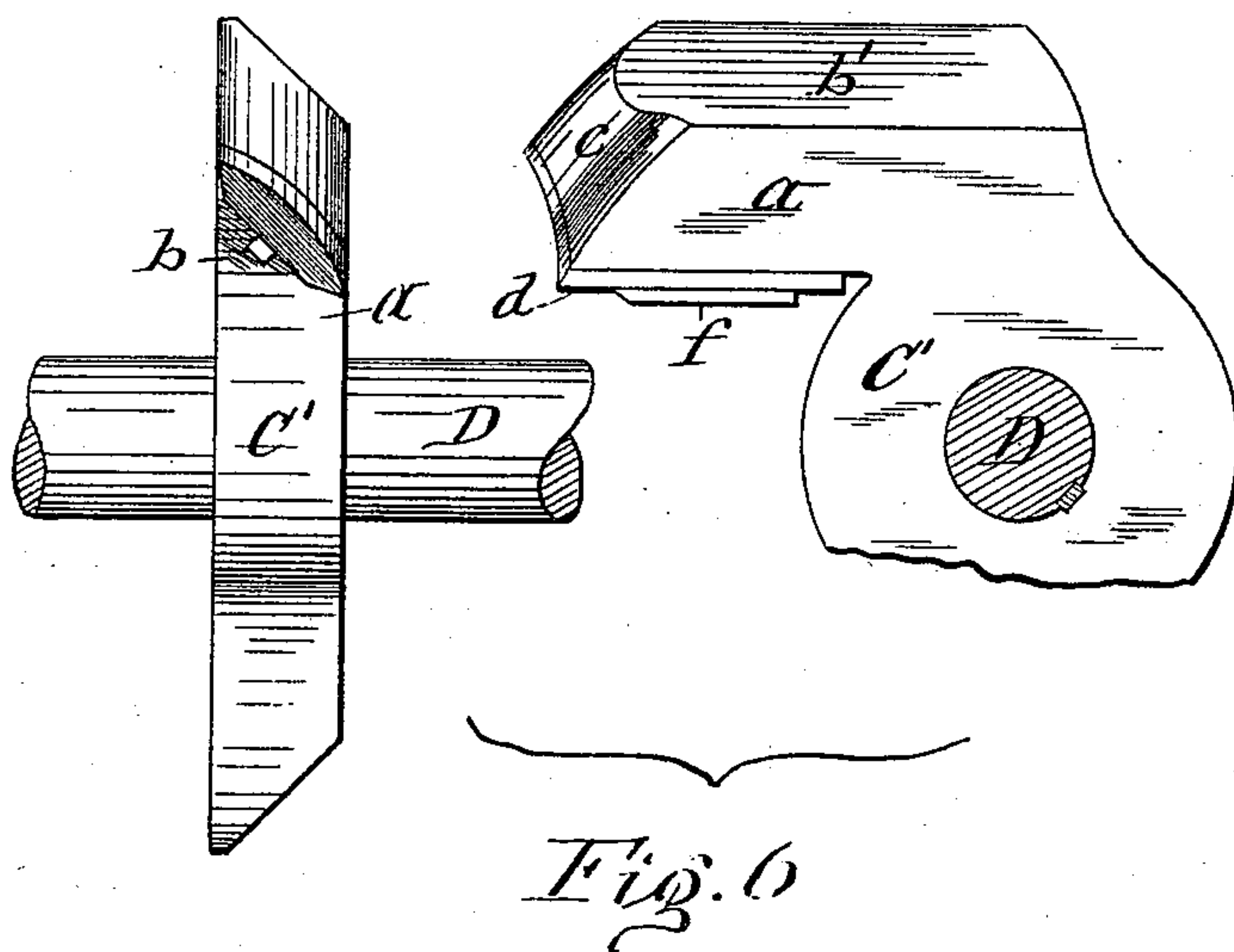
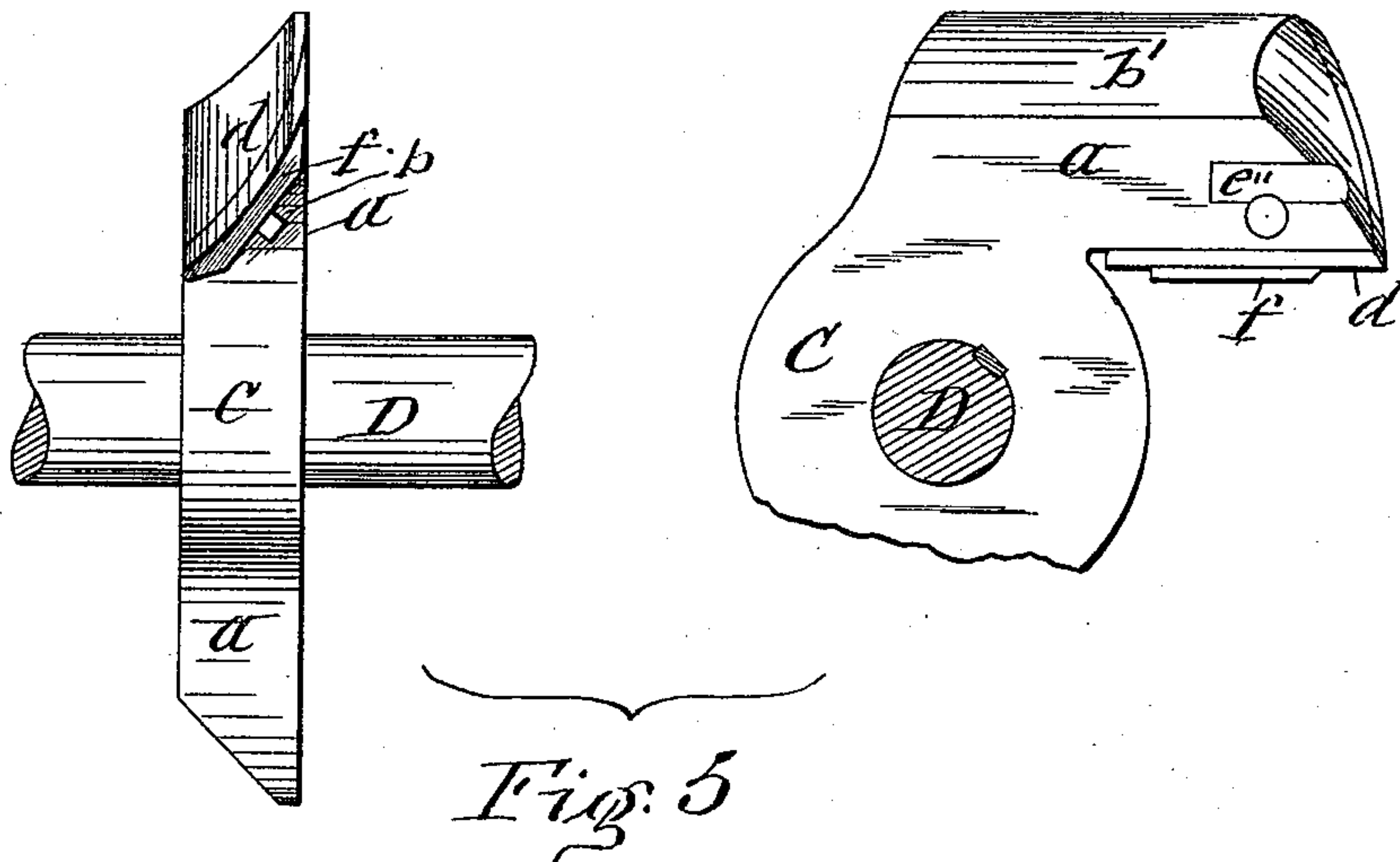
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# UNITED STATES PATENT OFFICE.

CHARLES E. ZIMMERMANN, OF SYRACUSE, NEW YORK.

## ROTARY CUTTER-HEAD FOR WOODWORK.

SPECIFICATION forming part of Letters Patent No. 539,326, dated May 14, 1895.

Application filed April 26, 1893. Serial No. 471,866. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES E. ZIMMERMANN, of Syracuse, in the county of Onondaga, in the State of New York, have invented  
5 new and useful Improvements in Rotary Cutter-Heads for Woodwork, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

10 This invention relates to the class of rotary cutter-heads which are specially designed for operating on wood crosswise the grain thereof; and the invention consists in a novel shape of the cutter-head having cutter sup-  
15 porting arms slanted to one side so as to afford ample clearings for the chips or shavings, and carrying the cutters in a slanting and more effective position, the end-faces of the afore-  
20 said arms slanting to one side and shaped to correspond to the shape of the cutting edges of the cutters secured to the front faces of the arms, said end faces being case-hardened and serving as guides for the sharpening tool in the operation of sharpening the cutters  
25 and thus maintaining the same in their required shape; and the invention also consists in certain novel features of the details of the cutter-head with the cutters attached thereto, all as hereinafter more fully described  
30 and specifically set forth in the claims.

In the annexed drawings, Figure 1 is a side view of two cutter-heads mounted side by side upon the arbor and embodying my improvements. Fig. 2 is a front view of the same.  
35 Fig. 3 is a detail view illustrating the utility of the case-hardened end face of the cutter-carrying arm in guiding or gaging the sharpening-tool in the operation of sharpening the cutter. Fig. 4 is a detail view of the cutter  
40 and its attaching devices, and Figs. 5 and 6 show sectional views of modifications of my invention.

Similar letters of reference indicate corresponding parts.

45 C— and —C'— represent the cutter-heads which are rigidly mounted side by side on a rotary arbor—D. Each of these cutter-heads is formed with arms —a—a— which are extended tangentially from the hub of the cutter-head. The arms of each head are formed  
50 with parallel front and rear faces —b—b'— which are slanting to one side of the arms,

and the end faces —c—c— of said arms are also slanting to the same side and shaped transversely corresponding to the shape of  
55 the cutting edges of the cutters —d—d— which are secured to the front faces of the arms.

In casting the cutter-head I chill or case-harden the end-faces —c—c— so as to resist  
60 abrasion from a file or other sharpening tool that may be brought in contact with said faces in the operation of sharpening the cutters sustained on the cutter-head. These end-faces therefore serve as gages or guides for  
65 the sharpening tool in the operation of sharpening the cutters, and thus the cutting edges are maintained in their requisite contour.

The cutting edges of the cutters being slanted to correspond to the slant of the end  
70 face —c— renders the cutter more effective in its operation.

In assembling the parts the cutters are placed so that their cutting edges are remote from the faces of the arms to which they are  
75 attached and not adjacent thereto. Hence, no injury can result to said cutting edges by case hardening the ends of the arms. In this class of machines the cutters are sharpened by filing and generally without detaching  
80 them from the cutter head. Hence, if the ends of the arms *a a* were soft the inadvertent touching of the file thereon when sharpening the cutters would soon wear the ends of the arms and destroy their shape. The case hardening  
85 of the ends *c c* avoids this objectionable feature. The slanting faces and ends of the arms enable the file to be readily operated from the side without interference.

Inasmuch as the cutters need not be de-  
90 tached from the cutter-head for the purpose of sharpening the cutters I render the attachment of the cutters adjustable to allow them to be set out sufficiently for the sharpening tool to operate on them. This I accomplish by  
95 securing to the front face —b— of the arm —a— a stud-pin —e— and providing the arm with a screw-threaded socket —e'— between said stud-pin and free end of the arm. The cutter —d—I provide with a longitudinal slot  
100 —d'— and upon the cutter I place the cap —f— which is provided with eyes —f'—f'. The stud-pin —e— projects into the slot of the cutter and into the inner eye —f'— of the



cap and thus sustains the inner ends of the cutter and cap laterally. A tap-bolt —*h*— passes through the other eye —*f'*— and through the slot of the cutter and is screwed  
 5 into the socket —*e'*— so as to clamp the cap onto the cutter and the latter onto the arm —*a*.

By loosening the bolt —*h*— the cutter can be slipped longitudinally to project the de-  
 10 sired degree from the end of the arm for sharpening the cutter, and in said movement of the cutter it is guided rectilinearly by the stud-pin and tap-bolt. For forming large ogee moldings I employ two cutter-heads  
 15 —*C—C'*— side by side and form the end faces of one concave transversely, and the other convex transversely as shown; and in order to obviate slivering the wood in the operation of said cutter-heads I attach to the sides  
 20 thereof the quirks —*e''—e''*—.

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

1. A rotary cutter having tangential arms  
 25 whose front and rear faces are parallel and slant laterally in the same direction, the ends of the arms being shaped to form a pattern for the sharpening tool and case hardened to prevent accidental abrasion by the same, and

conformed to the contour of the cutting edges 30 of the cutters, and cutters secured to the front faces of the said arms, substantially as described.

2. The herein shown and described rotary cutter head for woodwork composed of a hub 35 having tangential arms whose front and rear faces lie in parallel planes and slant in the same direction to the sides of the arms, and whose ends conform to the shape of the cutting edges of the cutters and are shaped to form a pat- 40 tern for the sharpening tool, and are case hardened to prevent accidental abrasion by the same, the forward faces of the said arms having a threaded opening and a pin, cutters having longitudinal slots, cap plates fitted 45 over the cutters and having openings to register with the said threaded openings and pins of the cutter supporting arms, tap bolts to adjustably secure the cutters between their  
 50 respective arms and cap plates, and quirks adjustably secured to the sides of the arms, substantially as specified.

In testimony whereof I have hereunto signed my name this 22d day of April, 1893.

CHARLES E. ZIMMERMANN. [L. S.]

Witnesses:

J. J. LAASS,

MARK W. DEWEY.