

(Model.)

W. MUNCH.  
CUTTER HEAD.

No. 567,545.

Patented Sept. 8, 1896.

Fig. 1

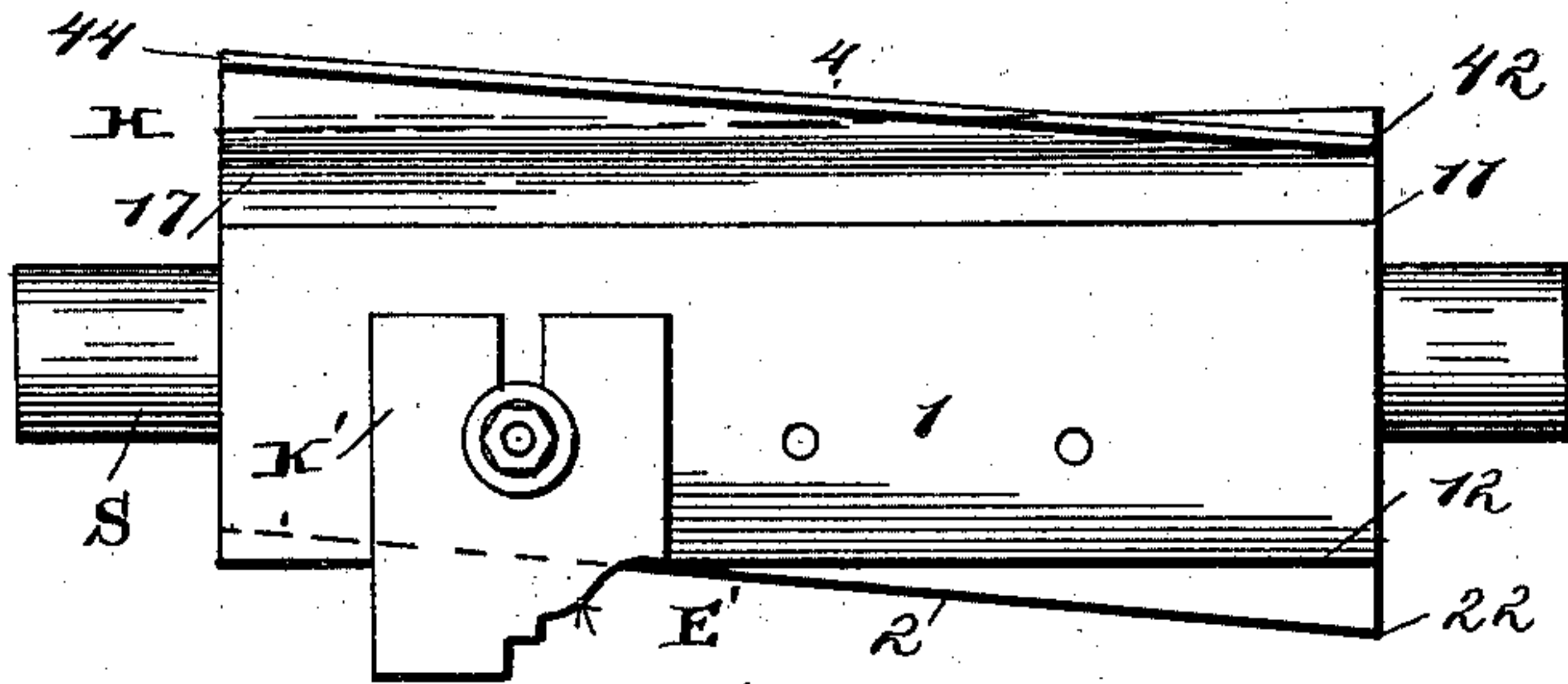


Fig. 2.

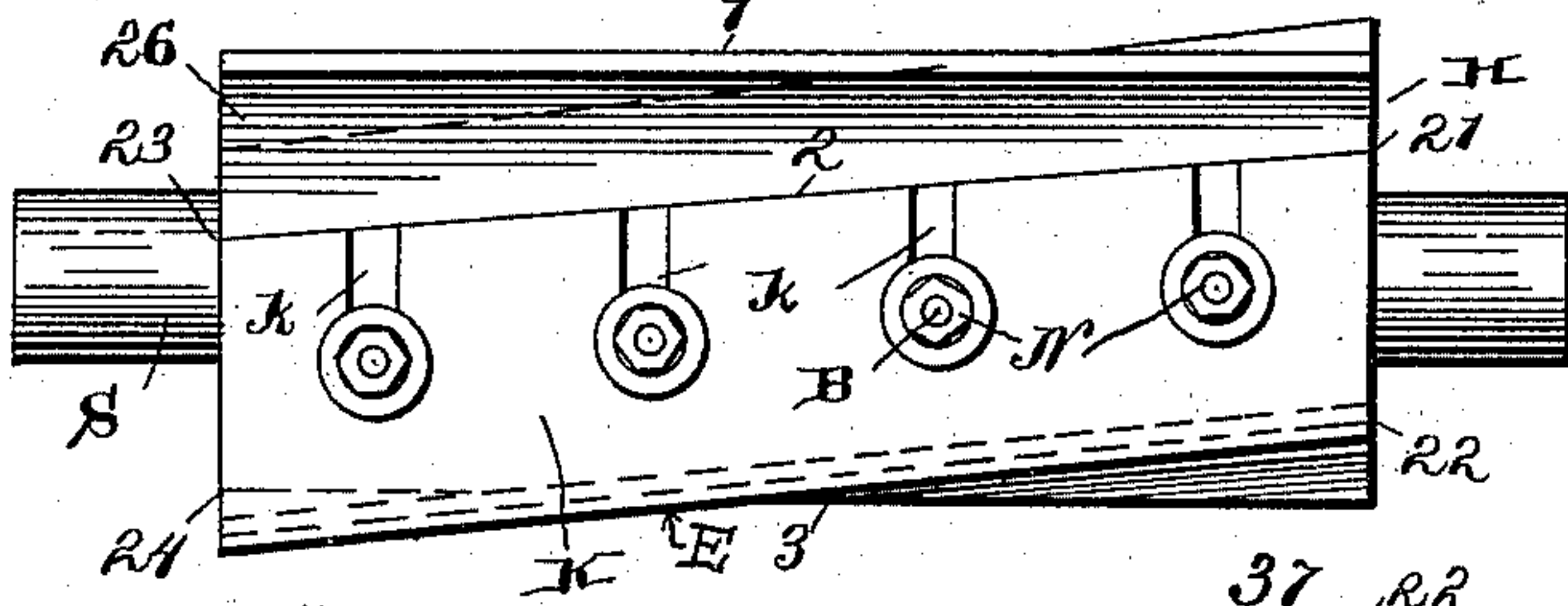


Fig. 3

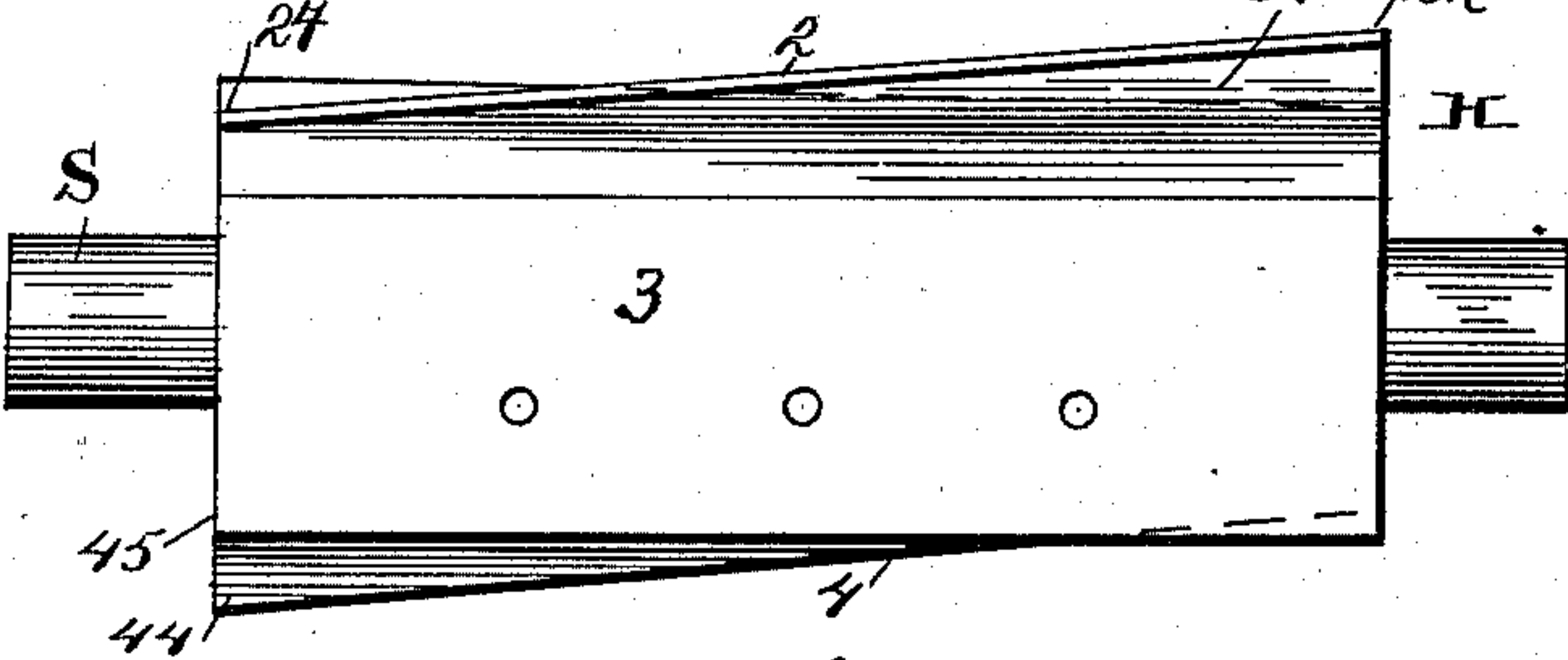


Fig. 4.

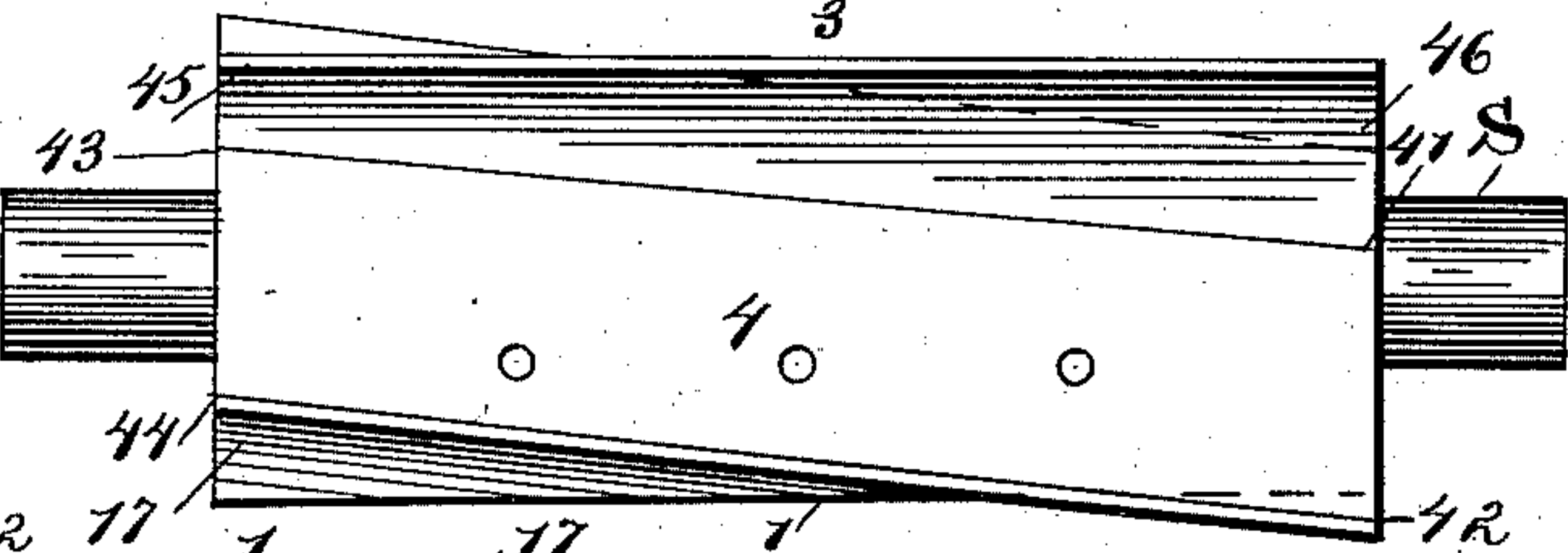


Fig. 5.

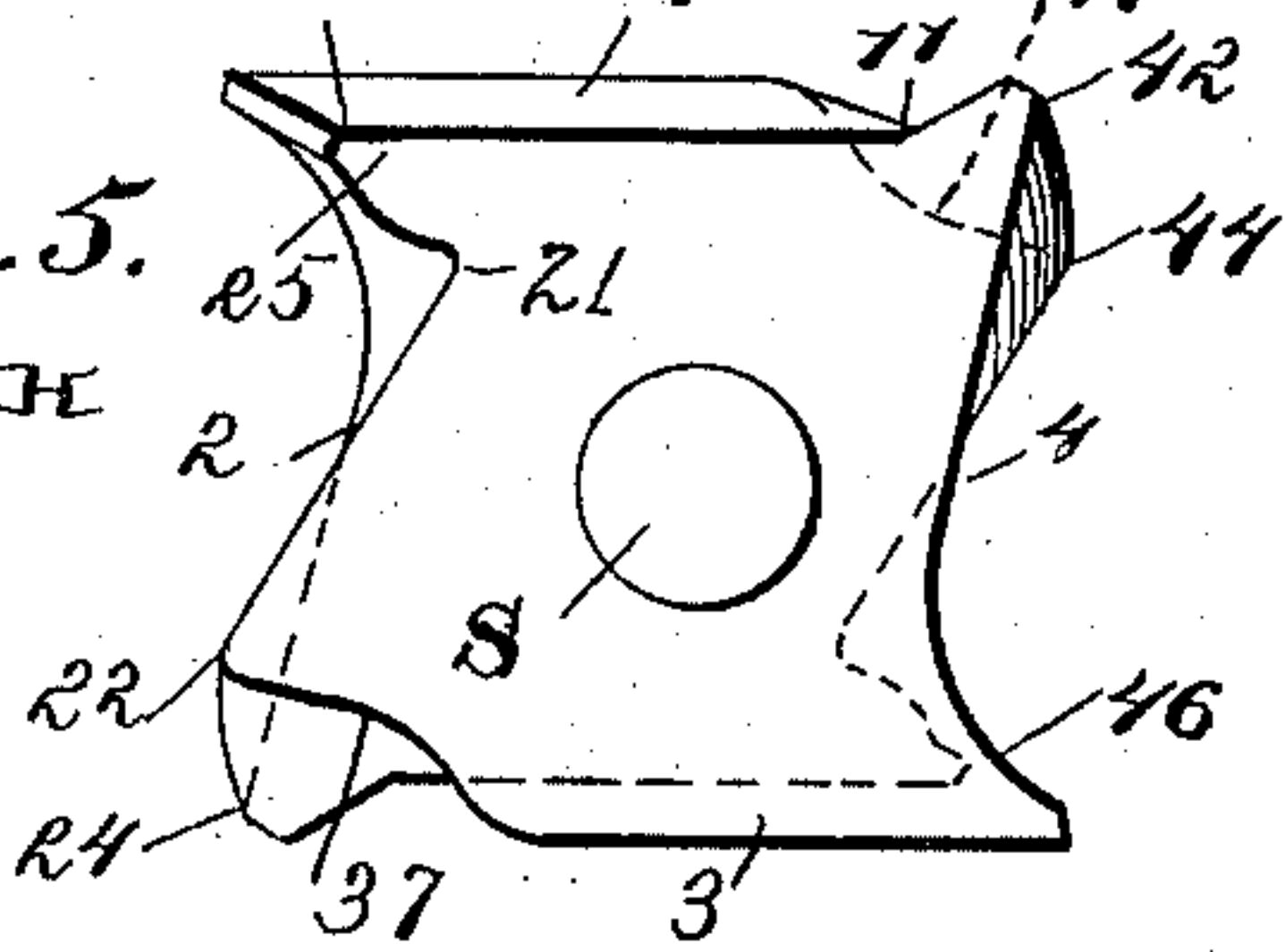
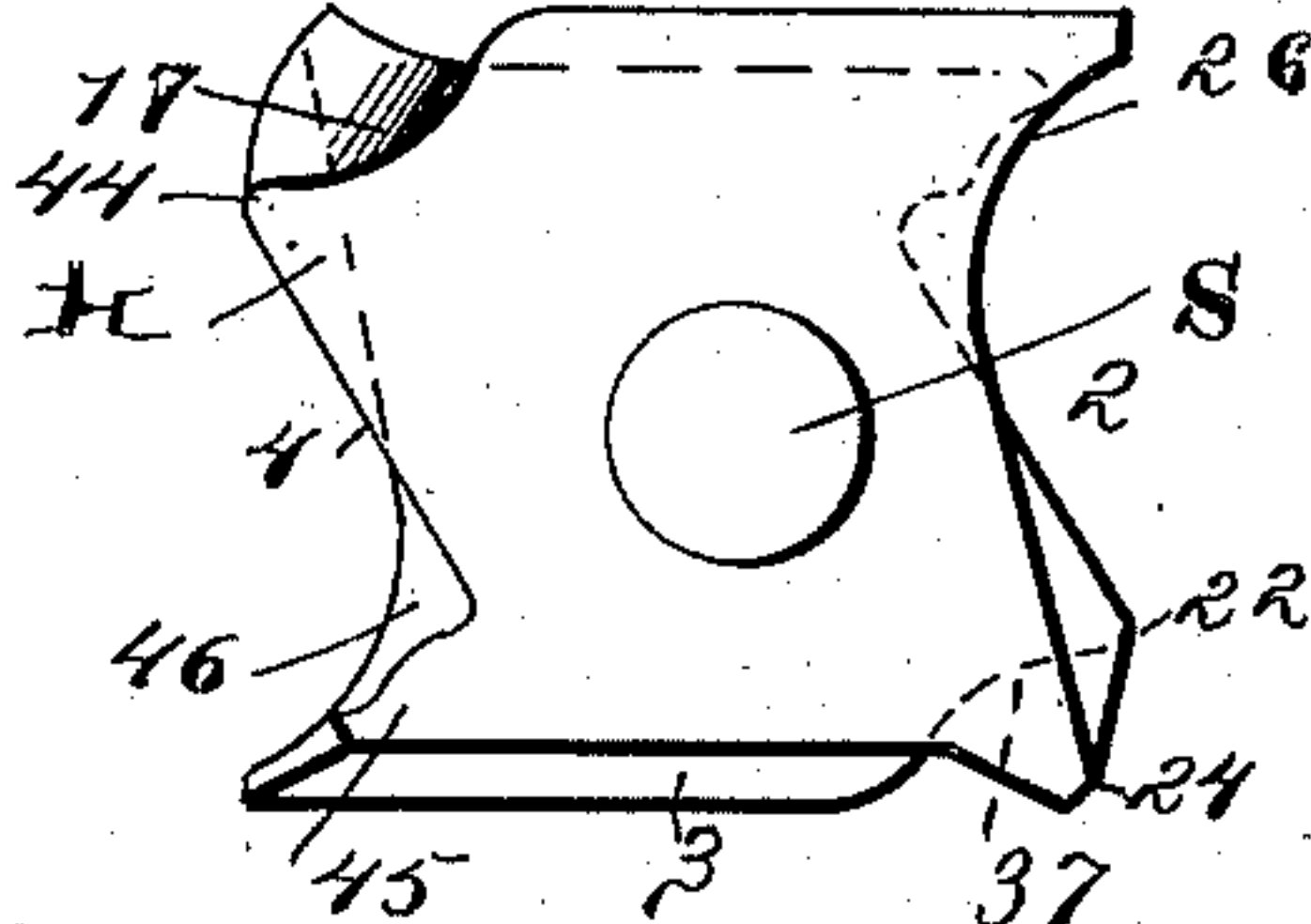


Fig. 7.



Witnesses:

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*Walter Munch,*

*by Louis Treiser,*  
Attorney.



# UNITED STATES PATENT OFFICE.

WALTER MUNCH, OF ST. PAUL, MINNESOTA.

## CUTTER-HEAD.

SPECIFICATION forming part of Letters Patent No. 567,545, dated September 8, 1896.

Application filed September 3, 1895. Serial No. 561,195. (Model.)

*To all whom it may concern:*

Be it known that I, WALTER MUNCH, of the city of St. Paul, county of Ramsey, and State of Minnesota, have invented certain new and useful Improvements in Cutter-Heads for Wood-Planing Machines, of which the following is a specification.

This invention relates to woodworking, and more especially to that class of machines which plane the surface of a piece of wood so as to make it either flat or figured in section; and the object of the same is to produce an improvement in the cutter-heads used on such machines. Heretofore many cutter-heads had their knives disposed directly across the grain of the board, and others had them so located spirally around the head as to cut with a shearing action from one edge of the board to the other, so as to cut the fibers of the wood without tearing or splintering them, thus effecting quite a saving of material.

The present invention consists in forming a single head adapted to receive and carry straight or spiral knives, or both, (two or more of each,) the spiral knives being disposed with their inclinations or direction of twist opposed to each other, so that one knife will cut from one edge toward the second and the other knife will cut from the second edge back toward the first.

The invention further consists in certain details of construction for carrying out this idea, all as described below and illustrated in the drawings, wherein—

Figure 1 is a plan view of one face of a four-sided cutter-head, showing a small beading-knife adjustably held thereon. Fig. 2 is a plan view of the face next forward of that shown in Fig. 1, with a spiral knife clamped thereon. Fig. 3 is a plan view of the face next forward, and Fig. 4 is a plan view of the last face of the four. Figs. 5 and 6 are end elevations, respectively, of the right and left ends of the head. Fig. 7 is a detail of the spiral knife.

Referring to the said drawings, the letter S designates the shaft centrally secured to or formed integral with the head H, which latter is preferably forged wholly from a single block of material, such as cast-steel. The shaft projects from its opposite ends and is

journalled in suitable bearings, as will be understood, and rotary motion is imparted thereto by suitable belting. (Not shown.) The head H is made with a plurality of faces, (preferably multiples of four, or at least of two,) and in the present instance is shown as having four such faces.

The first and third faces 1 and 3, respectively, illustrated in Figs. 1 and 3, are substantially rectangular in plan view and stand in parallel planes at opposite sides of the shaft S, equidistant therefrom, as seen in Fig. 5. The rear edge of the face 1 extends to a point 11 about above the rear side of the shaft S, while its front edge extends somewhat forward of the front of the shaft, as seen at 12, and the corresponding edges of the face 3 reach to points diametrically opposite, whereby the two faces 1 and 3 shall be substantial duplicates of each other. These faces are used when it is desired to employ knives extending at right angles to the line of cut, as will be clear.

The second face 2 here shown is in contour a simple parallelogram, as seen in Fig. 2, twisted into a spiral plane approaching the axis at the left end, as will be clear from Fig. 3, and bounded by the four sides or edges between the corners numbered, respectively, 21, 22, 23, and 24. The end 21 22 at the right of the head is more remote from the shaft S than the opposite end 23 24 and stands at an obtuse angle to the face 1, while the left end 23 24, from the twist of the face 2, is caused to stand almost or quite at right angles with the face 1, as seen in Fig. 6. The rear edge 23 21 of this face 2 extends obliquely across the head when viewed in plan, as in Fig. 2, the front edge of the face 1 extending over and beyond such rear edge at the right end of the head, as seen at 25, and at the left end curving down to the face 2, as seen at 26, while the front edge 24 22 is parallel with the rear edge.

The fourth and remaining face of the head (here shown at 4 in Fig. 4) also comprises a figure shaped like a parallelogram, whose corners are indicated by the numerals 41, 42, 43, and 44; but this face stands at an angle to the shaft just the opposite from face 2, and its spiral twist is such that its right end is nearer the shaft than its left. Its rear edge



43 41 inclines forwardly toward the right of the head, the front edge of the face 3 just in rear projecting over such rear edge at the left end of the head, as at 45, and curving  
 5 down to such face 4 at the right end, as at 46, similar to the rear edge of the face 2, but just the reverse, end for end. The front edge 44 42 of this face is parallel with its rear edge, which necessitates a groove 17 in  
 10 rear of the rear edge of the face 1, also similar to the face 2, which requires a groove 37 at the rear of the face 3.

The letter K designates the knife shown in Fig. 7 as spiral, so as to fit one of the  
 15 spiral faces, although it will be plain if applied to the remaining faces, and this knife has notches *k* cut through its body from its rear edge toward its front to receive bolts B, which project from the corresponding face,  
 20 nuts N on the bolts firmly clamping the knife in position with its cutting edge E forward. K' is a short knife illustrated as applied to the face 1 of Fig. 1 by the same fastening means, but having a cutting edge D' shaped  
 25 to produce beading or fancy grooving in the board being planed, as, for instance, in producing matched boards. The use of these or other knives on the flat faces is well understood in the art, also their use on spiral  
 30 faces; but the advantage of the cutter-head herein described consists in arranging such spiral faces so that their twists shall stand opposite to each other, whereby the front corner of one spiral knife shall be at the  
 35 left of the head and at the left edge of the board, and that of the following spiral knife

at the corresponding right edge of the board. Thus the spiral knives shear in their action on the lumber, but the successive knives shear first from one edge and then from the  
 40 opposite edge. If the straight-edged knives are used simultaneously, their cut occurs between those of the spiral knives and, of course, without any shearing action whatever; but either the spiral or the straight knives may  
 45 be removed at will to permit the use of the others. The use of the knives for beading purposes is also well known and needs no further description here.

What is claimed as new is— 50

1. A cutter-head having knife-faces certain of which are flat while the intermediate faces are spiral with the directions of their twists alternating with each other, and the forward end of each spiral face being nearer  
 55 the axis than the opposite end, combined with knives on the faces.

2. In a cutter-head, the combination with the head having a plurality of faces alternately flat and spiral, the rear edge of the  
 60 flat faces having a spiral groove just forward of the front edge of the spiral face next in rear; of flat and spiral knives detachably secured to the respective faces.

In testimony whereof I have hereunto set  
 65 my hand in presence of two subscribing witnesses.

WALTER MUNCH.

Witnesses:

LOUIS FEESER, Jr.,  
 JOHN F. BRUGGEMANN.