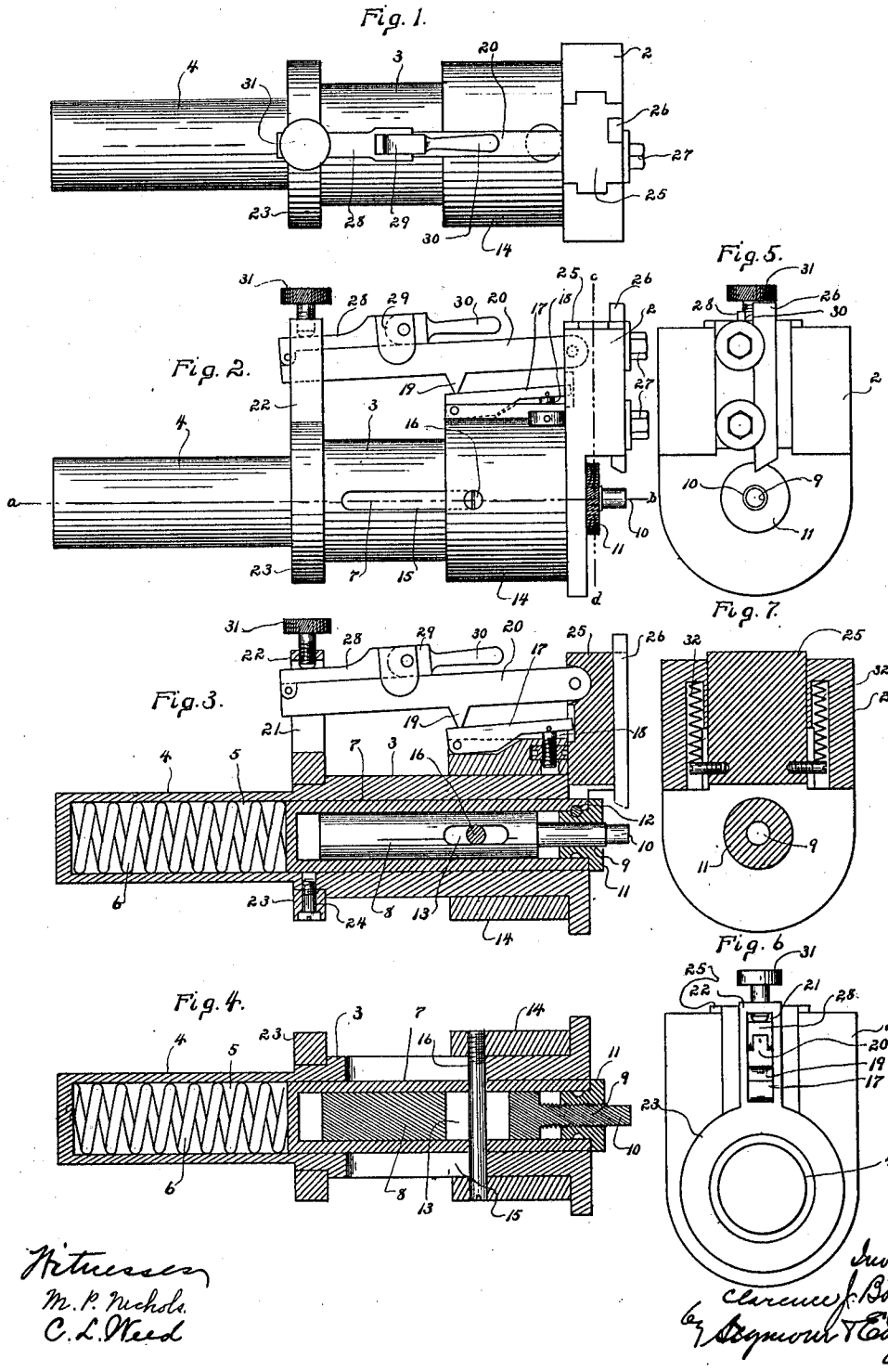


C. J. BOYCE.
CUTTER FOR FORMING IRREGULAR SURFACES.
APPLICATION FILED MAR. 29, 1912.

1,031,318.

Patented July 2, 1912.



UNITED STATES PATENT OFFICE.

CLARENCE J. BOYCE, OF NEW HAVEN, CONNECTICUT.

CUTTER FOR FORMING IRREGULAR SURFACES.

1,031,318.

Specification of Letters Patent.

Patented July 2, 1912.

Application filed March 29, 1912. Serial No. 687,166.

To all whom it may concern:

Be it known that I, CLARENCE J. BOYCE, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Cutters for Forming Irregular Surfaces; and I do hereby declare the following, when taken in connection with the accompanying drawings and the characters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this application, and represent, in—

Figure 1 a top or plan view of a cutter for forming irregular surfaces constructed in accordance with my invention. Fig. 2 a side view of the same. Fig. 3 a transverse sectional view of the same. Fig. 4 a transverse sectional view on the line *a—b* of Fig. 2. Fig. 5 a front view. Fig. 6 a rear view. Fig. 7 a sectional view on the line *c—d* of Fig. 2.

This invention relates to an improvement in cutters for forming irregular surfaces, such, for instance, as tapered surfaces, the object of the invention being a simple arrangement of parts whereby the cutter is moved to give the desired conformation to the article being turned; and the invention consists in the construction hereinafter described and particularly recited in the claims.

In carrying out my invention, I employ a head 2 formed with a cylindrical body 3 and a cylindrical tail 4 which tail is adapted to be gripped in an ordinary lathe. Extending through the body and tail is a longitudinal chamber 5. Within the chamber and bearing against the end of the tail which is closed, is a spring 6 the forward end of which bears against the rear end of a slide 7 which is free to move longitudinally in the chamber 5. Within the slide is a plug 8 formed at its outer end with a screw-threaded stem 9 and an unthreaded end 10. This screw passes through a nut 11 which is located in the outer end of the slide 7 by a pin 12 so that the nut may be rotated without moving longitudinally with relation to the slide, and by turning the nut the screw 9 will be moved back and forth. In the plug is a slot 13 for the purpose as will hereinafter appear. Around the body 3 is a sleeve

14 and extending through the sleeve and 55 through a clearance slot 15 in the body, is a transverse pin 16 which passes through the slot 13 in the plug and by which the plug is held against turning. Mounted in the top of the sleeve is a cam 17, this cam being 60 pivoted at its rear end and supported at its forward end by a capstan screw 18. Resting on the upper edge of the cam 17 is a lug 19 depending from an operating arm 20 the rear end of which extends through a slot 65 21 formed in the upward extension 22 of a ring 23 which is attached to the rear end of the body by a screw 24. The forward end of the operating arm is pivotally connected with a vertically movable cutter holder 25 70 which slides in the head 2 and which carries a cutter 26 which may be clamped in position by screws 27. Resting on the upper edge of the operating arm 20 and pivoted to the rear end thereof is a cam-holder 28 in 75 which a cam 29 is pivoted, this cam having a handle 30 by which it may be turned. The inner end of the cam-holder bears against an adjusting screw 31, and in the head and acting on opposite sides of the cutter-holder 80 25 are springs 32 the tendency of which are to drop the cutter. Work to be cut or turned is held by a chuck in the usual manner and advance toward the cutter and against the end 10 of the plug 8. If this plug be retired 85 to a point slightly in rear of the cutter the cutter will make a straight cut. As the work advances, however, the slide 7 is forced inward, and as it moves inward it carries with it the sleeve 14, and hence the cam 90 surface 17, and as this cam surface is moved rearward it lifts the operating arm 20 through the lug 19, and as the arm 20 is fulcrumed at its rear end the forward end of the operating arm will raise the cutter, 95 and consequently the article being cut will be tapered.

It is apparent, without illustration, that the upper edge of the cam 17 will have a contour corresponding to the contour to be 100 turned on the article being cut. In removing the work, it is desirable to slightly lift the cutter away from the surface, and for this purpose the cam 29 is operated by the handle 30 to raise the cam-holder 28, and 105 this tends to depress the inner end of the operating arm 20 and hence raise the cutter holder and cutter carried thereby. When

the chuck is retired with the work the spring 6 acts to force the slide outward ready for the next piece to be cut.

I claim:—

- 5 1. A cutter for forming irregular surfaces comprising a body and head, a slide within the body, a sleeve surrounding the body, a cam surface carried by said sleeve, a vertically movable cutter slide mounted 10 in said head, a cutter carried by the slide, an operating arm bearing on the cam surface carried by the sleeve, the forward end of the arm connected with the cutter slide whereby the cutter is raised or lowered according to the surface of the cam on the 15 said sleeve.
2. A cutter for forming irregular surfaces comprising a head, body and tail, a chamber extending through the body and 20 into the tail, a spring-actuated slide in the body, a plug in said slide and adjustable longitudinally therein, a vertically adjustable cutter mounted in said head, a sleeve surrounding said body, a cam carried by 25 said sleeve, an operating arm bearing on said cam and connected with said cutter whereby as the sleeve is moved rearward the cutter will be raised or lowered.
3. A cutter for forming irregular sur- 30 faces comprising a head, body and tail, a chamber extending through the body and into the tail, a spring-actuated slide in the body, a plug in said slide and adjustable longitudinally therein, a vertically adjust-

able cutter mounted in said head, a sleeve 35 surrounding said body and coupled with said slide, a cam pivotally connected at its rear end with said sleeve, means for adjusting the forward end of said cam, an oper- 40 ating arm pivotally connected at its forward end with said cutter slide, and a ring secured to the rear end of the body and formed with an upwardly projecting slotted arm in which the rear end of the operating 45 arm has a bearing.

4. In a cutter for forming irregular surfaces, the combination with the head and body, of a spring-actuated slide in said body, a vertically adjustable cutter mount- 50 ed in said head, a sleeve surrounding the body and connected with said slide, an adjustable cam mounted in the upper side of said sleeve, an operating arm connected with the cutter and bearing on said cam, a cam-holder pivoted to the rear end of said 55 operating arm, and a cam pivotally mounted with the cam holder and adapted to depress the rear end of said operating arm whereby the forward end will be raised and 60 the cutter lifted.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

CLARENCE J. BOYCE.

Witnesses:

WILLIAM W. WOOSTER,
L. H. MERWIN, Jr.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."