E. C. STILES

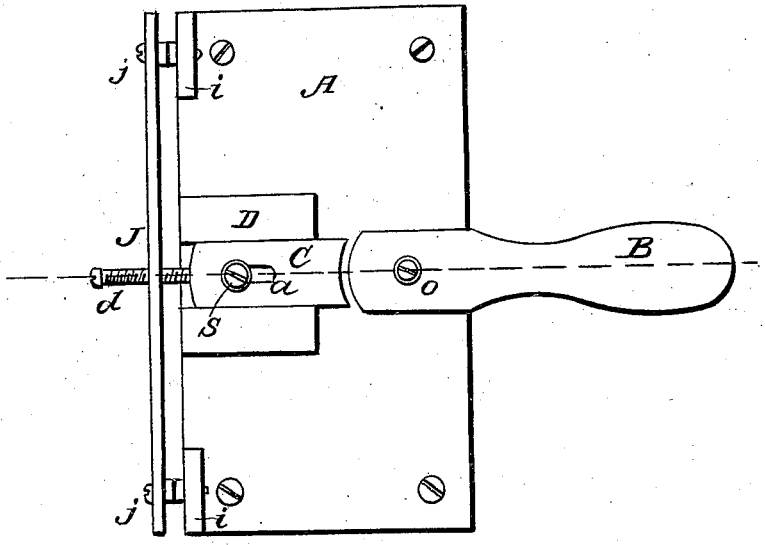
Milling Machine.

No. 46,401. Patented Feb. 14, 1865.

Fig. 2.

Fig. 3.

Fig. 1.



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UNITED STATES PATENT OFFICE.

EDWIN C. STILES, OF PORTLAND, MAINE.

IMPROVED MILLING-MACHINE.

Specification forming part of Letters Patent No. **46,401**, dated February 14, 1865.

To all whom it may concern:

Be it known that I, EDWIN C. STILES, of Portland, in the county of Cumberland and State of Maine, have invented a new and useful Improvement in Machines for Milling the Heads of Screws and other Articles; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan of a milling machine or tool which illustrates one mode of carrying out my invention. Fig. 2 is an elevation of a vertical section taken in the red line in Fig. 1, and Fig. 3 is an end view of the milling-lever B.

Similar letters of reference indicate like parts.

By my invention the article to be milled is received and operated upon by the tool without the application of power to the article, thereby doing better work and in a more simple mode and at less cost.

The devices herein described develop the principle of my invention and show one mode carrying it out into practice.

A is a bed, which carries the milling-tool or machine. It is to be properly secured to a frame or bench. It carries vertical ears *i* upon its upper face at its left-hand corners, which receive screw-bolts *j*, which sustain a steel spring-bar, J, in a plane at right angles with the plane of the bed and so as to be out of contact with it. Midway between the ears *i*, and on the same side of the bed, is secured or cast an elevation, D, which is grooved or planed out at its center throughout its whole length to receive a sliding milling stock or die, C. The elevation D may be cast of the shape here shown, or in two parts, and finished up and secured to the bed instead of being grooved or planed out from the solid metal. The die C fits within the groove of the elevation D, so as to move freely but truly within it, and is held down by a set-screw, S, which is secured to the bed A, and which passes through a longitudinal slot, *a*, cut in the stock. The set-screw S has a collar or washer under its head resting on the face of the stock. An adjusting-screw, *d*, which passes through a threaded hole in the center of the spring-bar J, sets against the outer end of the die C and determines its position in its groove. The inner end of the die C is curved, as shown in Fig. 1, so as to be concentric with the curved face of the milling-tool B, and a groove is cut on its periphery. The bottom of the groove is corrugated or milled in the way shown in Fig. 3, which is a representation of the grooved and milled face of the movable stock B. The movable or rotating stock B in this example of my invention consists of arm extending beyond the bed A, so as to be easily seized by the workman, and it is secured to the bed by a fulcrum-pin, O, about which it rotates over the plane of the bed A. Its inner edge or face is a section of a circle drawn from the center of the fulcrum O, and the curved face of the die C is drawn from the same center, so that all points of the face of the movable stock B will be at equal distances from the face of the die C at every period of its rotation.

It is evident that the milling-tool B may be made a complete circle in shape, so as to operate continuously in its rotation in one direction, instead of being a sector and vibrating back and forth, as in this example of my invention.

Instead of making the milling-surfaces circular, they may be rectilinear, and one of them be made to reciprocate upon its bed, or both the milling-tools B and C may be movable in lines either concentric or parallel with each other. The same mechanical effect will be accomplished in either of these methods—that is, the work or article to be milled will be held between the movable and stationary tool, and will be rotated by frictional contact between them.

Instead of depending upon the spring J for the required elasticity of the bearing of the die C, the set-screws *j* can be lengthened and stiff spiral springs slipped on them between their heads and the outside of the bar J. Moreover, the die C may be made entirely fixed or stationary and the necessary adjustments and elasticity be given to the bearings of the movable tool B.

The article to be milled is presented between the opposing faces of the movable and stationary tools, when, motion being given to one of them, the work or article is caused to

rotate in their grooves, and thereby present its entire periphery to their corrugations or milled faces, being then delivered properly milled at the opposite side of the tool.

The adjustment of the die C by means of the spring J and its set-screw *d* adapt the machine to different sizes of work.

I claim as new and desire to secure by Letters Patent—

1. Producing an elastic bearing for the counter-die C, or its equivalent, by means of the spring J and its set-screw *d*, substantially as described.

2. In machines for milling screw-heads and other articles, causing the curved face of the vibrating die B to operate in connection with the concave face of the adjustable counter-die C, substantially as described.

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Witnesses:
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