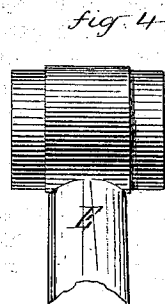
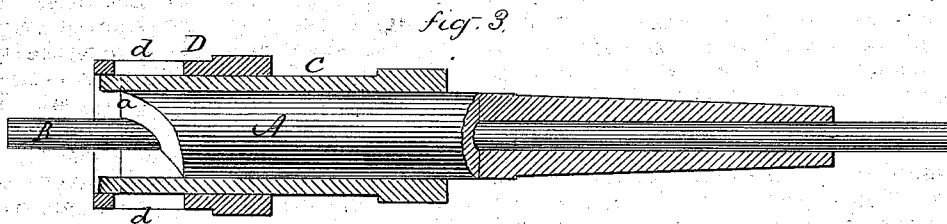
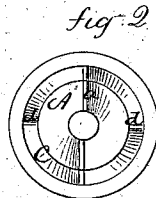
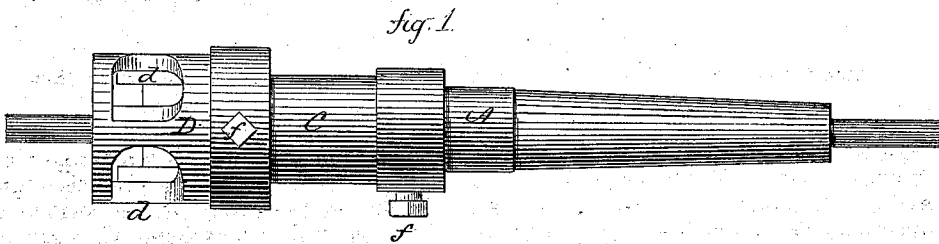


W. S. WARD.

Tools for Milling Carriage Shaft Eyes.

No. 136,112.

Patented Feb. 18, 1873.



Witnesses.

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UNITED STATES PATENT OFFICE.

WILLIAM S. WARD, OF PLANTSVILLE, CONNECTICUT, ASSIGNOR TO H. D. SMITH & CO., OF SAME PLACE.

IMPROVEMENT IN TOOLS FOR MILLING CARRIAGE-SHAFT EYES.

Specification forming part of Letters Patent No. 136,112, dated February 18, 1873.

To all whom it may concern:

Be it known that I, WILLIAM S. WARD, of Plantsville, in the county of Hartford and State of Connecticut, have invented a new Improvement in Tool for Milling Carriage-Shaft Eyes; and I do hereby declare the following, when taken in connection with the accompanying drawing and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawing constitutes part of this specification, and represents, in—

Figure 1, a side view; Fig. 2, an end view; Fig. 3, a longitudinal central section; and in Fig. 4, a shaft-eye which the instrument is designed to dress.

This invention relates to a tool for dressing the two ends of the article known to the trade as shaft-eyes—that is to say, the part of a carriage shackle or coupling which is attached to the shaft or pole. These, as represented in Fig. 4, are longer than the width of the shank, and of cylindrical form, and are required to be dressed to give the requisite diameter and length. The object of this invention is the construction of an instrument for dressing the ends of the eye to a certain defined point—that is, so that the two ends of the eye will be equidistant from the shank; and it consists in a mill for dressing the end of the eye combined with a cylindrical mill for dressing the outer surface of the eye, and a guide which will arrest the tool at the previously-determined distance from the shank.

A is the principal mill, the end of which is formed into one or more cutters, *a*, as seen in Figs. 2 and 3, the diameter of this mill corresponding to the diameter of the shaft-eye. A

central pin or spindle, B, is arranged in the said mill, which enters the opening through the eye to support the eye in proper relative position. Over the mill A a cylinder, C, is arranged, adjustable on the surface of the mill A longitudinally, and its end constructed with one or more cutters, *d*, as denoted in Fig. 2, and is set to project beyond the mill A a certain distance to dress the required amount of surface of the eye. Over this cylinder C a cylindrical guide, D, is arranged, adjustable thereon longitudinally, and set relatively to the mills so that when the two mills have done the required amount of work this guide will strike the shank E of the eye, and arrest further cutting. One end having been dressed, the eye is reversed, and the opposite end dressed in like manner, bringing the eye to the required length, and with the shank centrally between the two ends, this last result being difficult to attain by the common milling or turning process. The mill C and guide D are fixed in position by set-screws *f* or otherwise; but when set in their proper relative positions all revolve together as a single instrument. The cylindrical guide D is constructed with openings *d* through its side, so that the chips cut by the mills will pass freely out and clear the cutters.

I claim as my invention—

The herein-described milling-tool, consisting of the principal mill A, guide D, and the cylindrical mill C, combined and made adjustable relatively to each other in the manner described.

WILLIAM S. WARD.

Witnesses:

SIMEON H. NORTON,
GEORGE H. LANE.