(No Model.)

W. CROWE.

STEP FOR VERTICAL SHAFTS.

No. 261,139 Patented July 18, 1882.

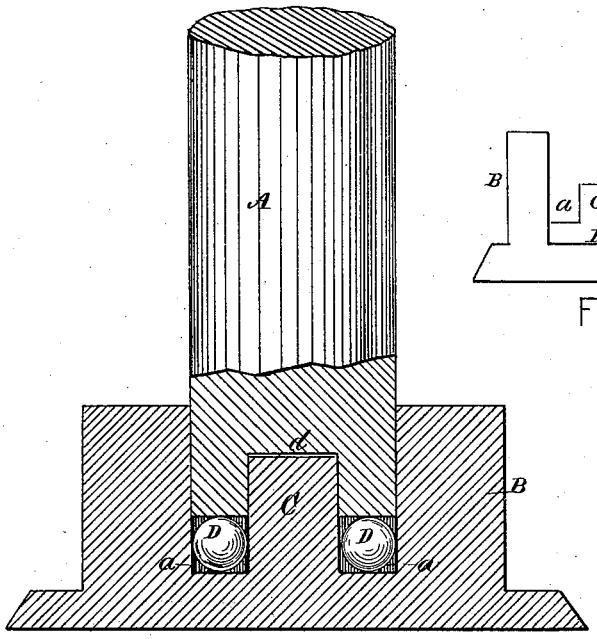

Fig. 1.

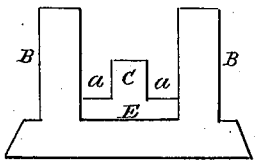

Fig. 3

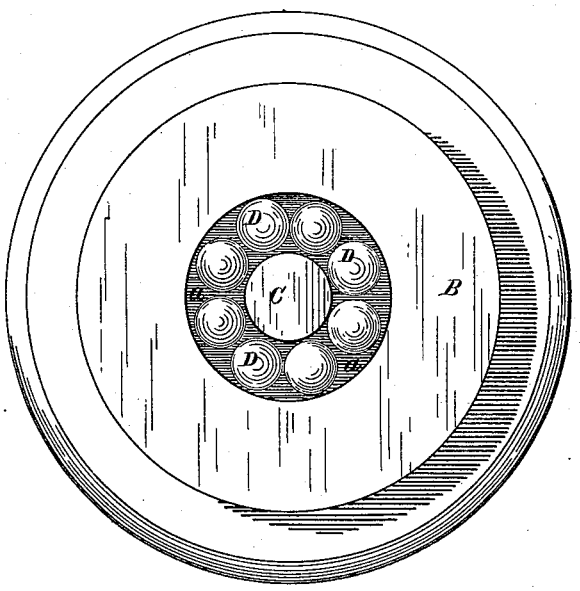

Fig. 2.

Witnesses.
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UNITED STATES PATENT OFFICE.

WILLIAM CROWE, OF BOSTON, MASSACHUSETTS.

STEP FOR VERTICAL SHAFTS.

SPECIFICATION forming part of Letters Patent No. 261,139, dated July 18, 1882.

Application filed June 5, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM CROWE, of Boston, in the county of Suffolk, State of Massachusetts, have invented a certain new and useful Improvement in Steps for Vertical Shafting, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a vertical longitudinal section; Fig. 2, a top or plan view with the shaft removed, and Fig. 3 a view of the plate.

Like letters of reference indicate corresponding parts in the different figures of the drawings.

The nature of my invention will be readily understood by all conversant with such matters from the following explanation, its extreme simplicity rendering an elaborate description unnecessary.

In the drawings, A represents the shaft, and B the step. The step is provided with an annular chamber, *a*, and central stud or projection, C, and disposed in the chamber are a series of smooth balls, D, preferably composed of steel, on which the lower end of the shaft A rests when in use. One row of the balls is represented in the drawings; but two or more rows may be used, if desired. The shaft is chambered or counterbored at *d* to receive the stud C, the depth of the chamber or bore being such that when the shaft is in position on the balls D it will not rest or bear on the top of the stud, the object of the stud being to keep the balls separated or away from the center of the shaft.

Great difficulty has heretofore been experienced in providing suitable steps for pintles and vertical shafting, especially in grinding-mills and where the shafts are loaded with heavy gearing or pulleys, on account of the friction between the parts and the difficulty of keeping them properly lubricated. My invention obviates this objection, requiring less lubricating than ordinary steps and greatly reducing the friction between the step and shaft.

In Fig. 1 the stud C is represented as integral with the body of the step; but I sometimes make use of the removable steel plate E, as seen in Fig. 3, the stud being attached to the plate instead of directly to the step. This plate can be easily and cheaply replaced when worn, enables the step to be constructed more advantageously, and preserves the bed or bottom of the chamber *a* from the action of the balls.

Having thus explained my improvement, what I claim is—

The step B, balls D, and plate E, provided with the stud C, in combination with the shaft A, provided with the chamber *d*, when constructed and arranged to operate substantially as set forth.

WILLIAM CROWE.

Witnesses:
C. A. SHAW,
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