D. HARRINGTON.

Step for Mill-Spindles.

No. 208,733. Patented Oct. 8, 1878.

*Fig. 1.*

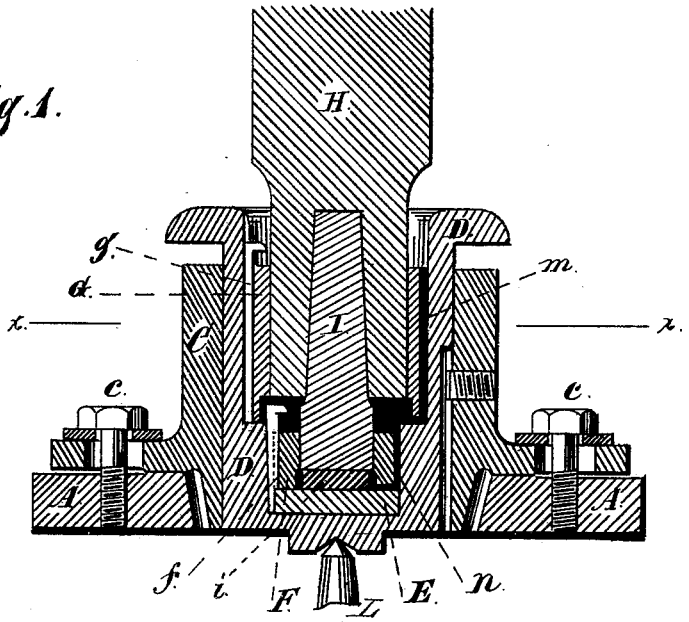
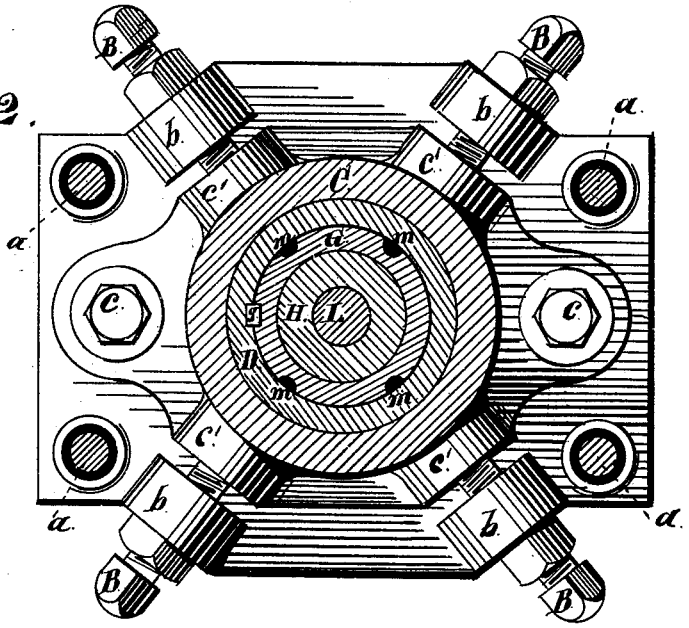



*Fig. 2.*




*Witnesses:*

L. W. Seely.

R. F. Dyer.

*Inventor:*

Daniel Harrington

by Geo. W. Dyer & Co

attys.

# UNITED STATES PATENT OFFICE.

DANIEL HARRINGTON, OF CHICAGO, ILLINOIS.

## IMPROVEMENT IN STEPS FOR MILL-SPINDLES.

Specification forming part of Letters Patent No. **208,733**, dated October 8, 1878; application filed April 12, 1878.

*To all whom it may concern:*

Be it known that I, DANIEL HARRINGTON, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Tram-Pots or Step-Bearings for Mill-Spindles or Upright Shafts, of which the following is a true and accurate description.

The nature of my invention relates to the construction and arrangement of tram-pots or step-bearings for the foot ends of mill-spindles or upright shafts; and it consists in a certain combination of a ring-bearing and a loose steel button, for guiding and carrying the spindle or upright-shaft point, with an anti-friction lining, for guiding the turned and polished mill spindle or shaft end, for the purpose of increasing the lateral and vertical bearing-surface, so as to reduce the wear and tear and to prevent the parts from becoming heated by friction.

It also consists in a series of lubricating-channels arranged within the tram-pot, which will facilitate the communication of the oil with all of the bearing-surfaces, and through them the free circulation of the same.

In the drawing, Figure 1 represents a vertical longitudinal section through the tram-pot and spindle-point, and Fig. 2 represents a sectional plan of the same on line *x x*.

A is the bed-plate, which is to be secured upon the spindle-beam by four bolts, *a a a a*. It has a round opening in its middle, and is provided on its corners with four lugs, *b*, having screw-tapped holes, for holding the set-screws B. C is the oil-pot guide, consisting of a ring or sleeve, which projects into the central opening of bed-plate A, and which is internally bored out cylindrically, and has flanges resting upon the bed-plate A, to be adjustably secured upon it by two bolts, *c*. It also has bosses *c'*, to meet the points of the set-screws B, by which said guide is laterally adjusted. D is the oil-pot, which is a cylindrical box, with a solid bottom and right-angularly expanded flanges on its upper end. This is turned exteriorly cylindrical to make a close fit with the bore of guide C, so as to slide up and down therein, and is held from rotating by a vertical groove cut in its face and by a screw-point tapped through the shell of the guide. It is supported by a pointed pin, L, arranged for a vertical adjustment in the usual manner. The interior of this oil-pot D is bored out concentric with its exterior surface, to hold in its bottom the steel tram-plate E, and upon this a steel ring, F, both held from turning by a key, *f;* and into the upper portion of said oil-cup is secured a ring-lining, G, of anti-friction metal, also held from turning by a key, *g*. H is part of the mill-spindle, the lower end of which is turned truly cylindrical, and of a size to make a close fit with the interior surface of the lining, and is highly polished; and I is the spindle-point, made of tempered steel, which is inserted into a conical socket in the mill-spindle end, and the lower end of which fits snugly into ring F.

One or more steel buttons, *i*, is interposed between the tram-plate and spindle-point, which is of such diameter that it will pass inside of ring F, being laterally held in position therein, but is allowed to turn upon the tram-plate.

Lubricating-channels *m* and *n* are cut into the exterior faces of the lining G and ring F, so that the oil can freely circulate to and communicate with the several bearing-surfaces.

Heretofore tram-pots have been constructed either with a lateral bearing only for the spindle-point in a ring, F, or with a ring-lining, G, only for the lower part of the spindle, and without button *i*. In either case the tram-plate and spindle-point were apt to heat to a melting condition, and would require therefore constant attention, while their wear and tear were very great.

With my above-described arrangement of lining G, as a lateral bearing for the mill-spindle, in combination with ring F, as a similar bearing for the spindle-point, I enlarge the lateral bearing-surface considerably and hold the foot end of the spindle very steady, while the steel button *i*, held in place by ring F, but allowed to rotate therein, will carry the weight of the spindle and running stone, and will multiply the pivoting-surfaces, thereby reducing the friction and the danger of heating.

What I claim as my invention is—

1. In combination with the mill-spindle H, having point I, a tram-pot having oil-pot D, with tram-plate E, ring F, lining G, and steel button *i*, all constructed and arranged substantially in the manner and for the purpose set forth.

2. A step-bearing for mill-spindles, consisting of the tram-pot C, having oil-pot D, tram-plate E, ring F, lining G, steel button *i*, and lubricating-channels *m n*, all constructed and arranged substantially as described and shown.

DANIEL HARRINGTON.

Witnesses:

WM. H. LOTZ,

EMIL H. FROMMANN.