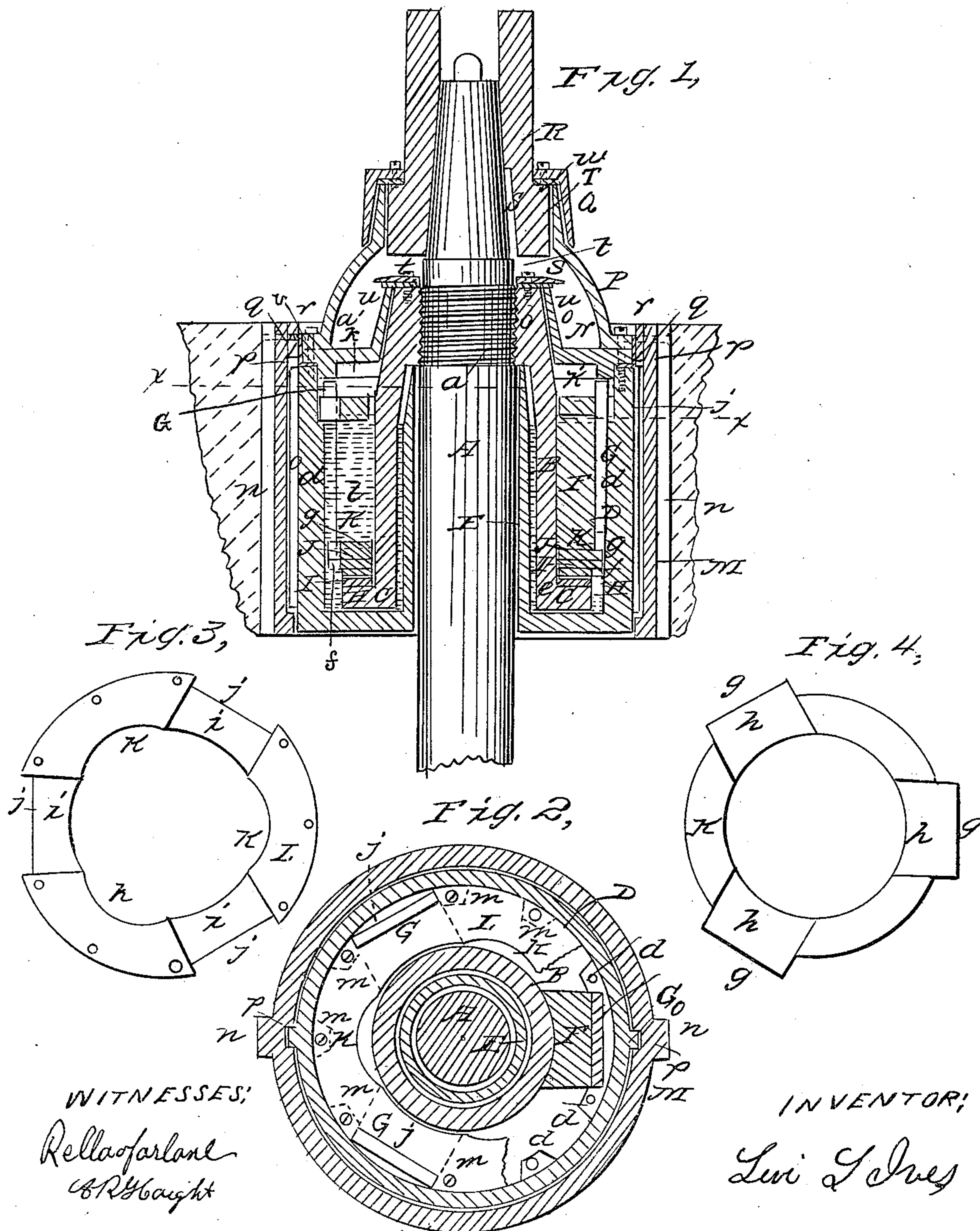


L. S. IVES.
Mill Stone Bush.

No. 25,120.

Patented Aug. 16, 1859.



WITNESSES:
Rellaofarlone
C.R. & Co.

INVENTOR:
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UNITED STATES PATENT OFFICE.

LEVI S. IVES, OF BROOKLYN, NEW YORK.

MILLSTONE-BUSH.

Specification of Letters Patent No. 25,120, dated August 16, 1859.

To all whom it may concern:

Be it known that I, LEVI S. IVES, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Millstone-Bush; and I do hereby declare that the following is a full, clear, and exact description of the same reference being had to the annexed drawings, making part of this specification, in which—

Figure 1, is a vertical central section of my invention. Fig. 2, is a horizontal section of the same, taken in the line *x, x*, Fig. 1. Fig. 3, is a detached inverted plan of the upper retaining ring or plate. Fig. 4 is a detached plan of the lower retaining ring or plate.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to obtain a mill-stone bush that will admit of the spindle being readily adjusted and retained in a vertical position and also permitting of a vertical play of the spindle, and at the same time admit of the proper lubrication of the spindle, retaining the oil around it, and excluding all dust therefrom.

The invention consists in the employment or use of a flanged collar attached to the spindle, fitted within an oil-chamber, and arranged with blocks, wedges, rings, plates, and other parts hereinafter described, whereby in connection with the spindle-adjusting mechanism, air and dust chambers are formed and the desired end is fully attained.

To enable others skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A, is a millstone spindle on which a flanged collar B, is firmly secured by a screw *a*, cut on the spindle and fitting in a female thread *b*, cut in the apex of the collar; see Fig. 1. The lower end of this collar has a flanch C, attached to it, said flanch projecting from it at right angles. The internal diameter of the collar is such as to allow a space *c*, of requisite width between it and the spindle.

D, is a hollow cylinder, provided with a vertical central tube E, through which the spindle passes; the collar B fitting within the cylinder D, and the tube E fitting within the space *c*; the flanch C, of the collar being near the bottom of the cylinder D. On the inner surface of the cylinder D, there are vertical projections *d*, which extend from the bottom to within a short distance of the

top of the cylinder; and within the cylinder D, blocks F are placed, three being shown at equal distances apart in the drawing, Fig. 2. The blocks F have concave surfaces corresponding inversely with the outer surface of the collar B, against which they bear, and are kept in contact by wedges G, which as well as the back parts of the blocks F, are fitted between the proper projections *d*, which serve as guides, see Fig. 2.

On the flanch C, of the collar B, a steel or other metal ring H is placed, and secured thereto by pins *e*.

I, is a steel or other metal washer precisely similar to the ring H, and placed loosely upon it.

J, is an annular plate of metal, provided with projections *f*, that fit between the same projections *d*, as the wedges G. A similar plate K, also provided with projections *g*, which fit between the projections *d*, is placed on J. The plate K, has its upper surface recessed in line with its projections *g*, as shown in Fig. 4, at *h*, so as to receive the lower ends of the blocks F.

L, is a plate which encompasses the upper part of the collar B, within the cylinder D. This plate L is recessed at its under side in line with the recesses as shown at *i*, in Fig. 3, to receive the upper ends of the blocks F, and the back edge of the plate L, is notched, as shown at *j*, to allow the wedges G, to pass through. The inner edges of the plate L, is notched or has recesses *k*, made in it to form a communication in the cylinder D, between the two spaces or compartments *k'*, *l*, above and below the plate. The plate L, is secured by screws *m*, to the upper ends of the projections *d*.

M, is a hollow cylinder, provided with feathers *n*, *n*, at its outer surface. This cylinder is firmly secured by cement in the center of the bedstone, the feathers *n*, preventing it casually turning. The cylinder D, is fitted within the cylinder M, and is also provided with feathers *o*, *o*, which are fitted within grooves *p*, *p*, in the inner side of the cylinder M; the feathers *o*, *o*, prevent the cylinder D from turning within M, but a certain degree of vertical play is allowed to the cylinder D; the length of said play may be determined by stops *q*, or these may be removed to allow any degree of play; the stops *q*, are secured in the upper part of the grooves *p*, *p*, in the cylinder M.

N is an annular plate which is firmly se-

cured by screws *r*, to the upper end of the cylinder D. This plate is provided with a flanch O, which encompasses the upper part of the collar B. P, is a dome-shaped cap, which is secured by the same screws to the plate N, and cylinder D. The cap P covers the plate N, and flanch O, and its upper end has a flanch Q upon it, which encompasses the lower part of a driver R, secured to the upper end of the spindle A, by a key *s*.

The upper end of the collar B, has a plate S, attached to it by screws *t*, a leather packing *u*, being interposed between the plate and the upper end of flanch O, which is covered by said plate. The plate S, prevents the entrance into the space or chamber *k'*, in the cylinder D, the same being an air-chamber; for a like reason, a leather or other suitable packing *v*, is interposed between the plate N, cap P, and cylinder D. The driver R, is formed with a shoulder *w*, on it, and to this shoulder a cap T is attached by screws. The cap T encompasses the flanch Q, and prevents the admission of dust into the chamber *a'*, formed by the cap P.

The cylinders D, M, may be of cast metal, and the spindle A, and driver R, of wrought metal. The blocks F may be of wood or soft metal.

The operation is as follows:—As the spindle A, rotates, the collar B, and the ring H, and washer I, rotate with it; the cylinders D, M, together with the blocks F, plates J, K, L, N, and cap P, remaining stationary. The projections *f*, *g*, which fit between the projections *d*, on the plates J, K, prevent the latter from rotating with the spindle through friction, and the plates K, L, prevent the casual turning of the blocks F, from the same cause, on account of the ends of the latter fitting in the recesses *h*, *i*, which are made respectively in the plates K, L. The spindle is adjusted in a vertical line and retained in such position by the blocks F, which bear against the collar B, the blocks being actuated by driving down the wedges G. The chamber *l*, is the oil-chamber; the oil (shown in red) passing up the inner side of the collar B, and tube *c*. The cylinder D, with all the parts within, and those attached to it, will, in consequence of the flanch C, on the collar B, rise and fall with the spindle, in order that the runner which the spindle drives or rotates may be adjusted higher or lower according to the degree of fineness the article which passes between the stones is to be ground. It is on this account that the vertical play of the cylinder D, in the cylinder M, heretofore alluded to, is allowed; and

by this arrangement the spindle is permitted to rise and fall with but little friction. The oil is prevented from escaping from the chamber *l*, in consequence of the air-chamber *k'*, which permits the oil to ascend or rise within it, and which compresses the air under the centrifugal force generated by the rotation of the runner, and thereby prevents the oil from escaping over the top of the tube E. The oil in *l*, having a tendency to rise rather than that in *c*, on account of the former being on the outer side of the collar B, farther from the center of motion, in greater quantity and is consequently acted upon to a greater extent by centrifugal force. The dust-chamber *a'*, receives and retains all dust that may find its way into it. The amount of dust, however, must in all cases be small as the cap T, and packing *w*, serve to prevent its entrance.

I am aware that collars B have been previously applied to millstone spindles, and that blocks F, and wedges G, have been employed to adjust the spindle in a vertical line; and also that a central tube E, has been employed over which the collar B fits within an oil chamber; I therefore do not claim such parts; but I do claim as new and desire to secure by Letters Patent,—

1. The placing, substantially as set forth, of a cylinder D, which contains the spindle collar B, blocks F, and the adjusting wedges G, within a cylinder M, secured within the center of the bedstone; the cylinder D being allowed a vertical movement or play within the cylinder M, to permit of the vertical adjustment of the spindle, and consequently the runner or upper millstone, with but little friction, and keeping all the parts in position so as to prevent their derangement.

2. The arrangement of the plates J, K, L, with the washer I, and ring H, or their equivalent, in connection with the projections *d*, on the inner side of the cylinder D, substantially as described, to prevent the casual turning of the blocks with the spindle.

3. The plate N, provided with the flanch O, and the dome-shaped cap P, provided with the flanch Q, in connection with the cap T, and plate *g*; the above parts being attached respectively to the cylinder D, spindle collar B, and driver R, to form an air and a dust chamber, substantially as and for the purposes set forth.

Twenty-third July, A. D. 1859.

LEVI S. IVES.

Witnesses:

R. MACFARLANE,
A. R. HAIGHT.