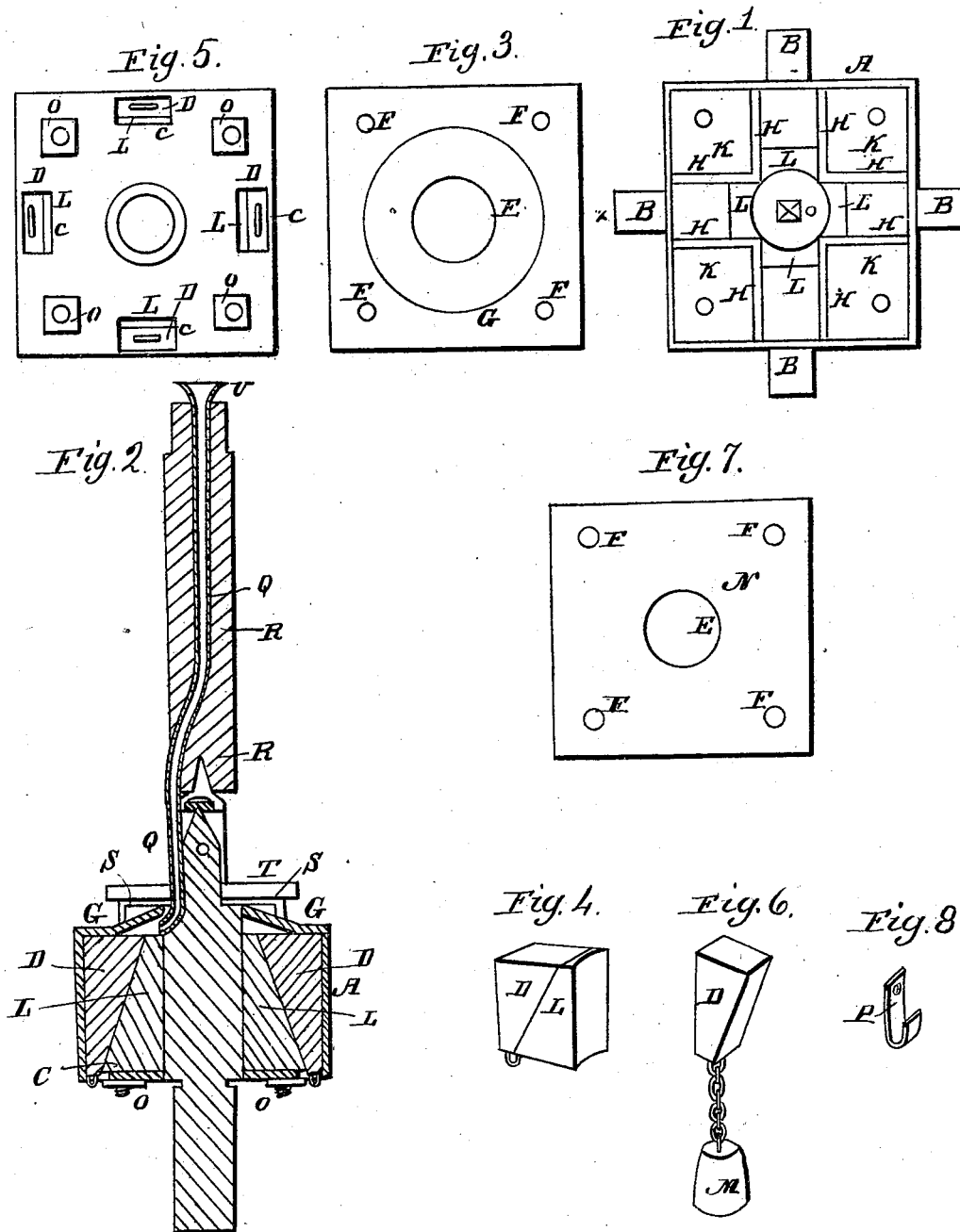


E. W. WELCH.  
Mill Spindle.

No. 1,481.

Patented Jan'y 28, 1840.



# UNITED STATES PATENT OFFICE.

ELIJAH W. WELSH, OF NEAR PARIS, VIRGINIA.

## MODE OF BUSHING MILLS AND KEEPING THE SAME CLOSE TO THE SPINDLE.

Specification of Letters Patent No. 1,481, dated January 28, 1840.

*To all whom it may concern:*

Be it known that I, ELIJAH W. WELSH, of near Paris, in the county of Fauquier and State of Virginia, have invented a new and  
5 useful Improvement in Mills for Grinding, being a mode of keeping the bushes constantly against the spindle as they wear and always lubricated, which is described as follows, reference being had to the annexed  
10 drawings of the same, making part of this specification.

The nature of this invention consists in constructing and arranging in the upper side of the bed stone a metallic square box,  
15 having eight parallel partitions, or divisions, extending from the four sides of said box toward the spindle, forming four passages, in which are placed four segment bushes, one in each passage, concave on the  
20 sides toward the spindle and inclined planes on the opposite sides, behind and against which, in the passages, are placed metallic wedge shaped blocks, whose sides coming in contact with the inclined sides of the seg-  
25 ment bushes are also inclined, the sides toward the sides of the box being vertical, so that as the concave sides of the segment bushes, in contact with the spindle, wear, the bushes are forced toward and against  
30 the spindle by the descent of the inclined or wedge shaped blocks, which, of course will descend by their gravity as said bushes move horizontally toward the spindle, oblong openings being left in the bottom of  
35 the box for the small ends of the metallic blocks or wedges to pass through, and in lubricating the surfaces of the spindle and bushes together by means of a bent tube passing through the damsel, whose upper  
40 end, which is above the hopper bearer, is made of a funnel shape to receive the oil. The other parts about the mill stones are made similar, or nearly so, to those in use, such as the balance rim, the driver, the  
45 damsel, the flying collar, &c.

To enable millwrights or persons skilled in the art of which this is a branch to construct and use my improvements, I shall proceed to give a more particular description  
50 of the same.

Figure 1 in the annexed drawings is a top view, the upper plate being removed. Fig. 2 is a vertical section of Fig. 1 at the line *x x*; Fig. 3, the upper plate; Fig. 4,  
55 perspective view of one of the bushes and wedge-blocks or followers; Fig. 5, bottom

of the box; Fig. 6, one of the wedge-blocks or followers with an additional weight appended thereto; Fig. 7, piece of leather put over the flannel for holding the oil over  
60 which the upper plate is placed; Fig. 8, curved guard for protecting the bent tube.

Similar letters refer to similar parts in the figures.

The square metallic box A, Figs. 1, 2 and  
65 5, when applied to a bed stone of 5 feet diameter should be made about 10 inches square by 5 inches deep, with flanges B on the outside to secure it to the bed stone and  
70 apertures C, Figs. 2, 5, in the bottom for the small ends of the wedge blocks D to pass through as they descend by their gravity, and an aperture E in the center for the spindle, and four other apertures F for the  
75 screw bolts which secure the top of the box b, Fig. 3, which is made movable in order to have access to the several parts in the box A and to hold them in their proper places. The eight parallel partitions or divisions H,  
80 Fig. 1, extend from the sides of the box until they nearly touch the periphery of the spindle I, being placed at a distance apart of about one fifth the length of the side of the box, two on each side, so as to form passages as  
85 wide as the wedge blocks and bushes placed in them. The ends of two partitions, or divisions, opposite each corner of the box come together and are united near the periphery of the spindle and form a square  
90 space opposite the corner of the box, which is filled with a block K, Fig. 1, of wood or lead or substance that will hold nails. A similar block is placed opposite each corner of the box, inside.

There are four bushes L, one for each pas-  
95 sage, concave on the side toward the spindle, as at l, Fig. 4, which is a perspective view of one of them, and an inclined plane on the opposite side, or that which is toward the wedge block D, the small end being up-  
100 ward, and vertical planes on the sides next the partitions. There are four wedge blocks or followers also placed in the passages, each of which being made in the shape of a wedge, the inclined side being toward and  
105 against the inclined side of the bush, designed to push or force the bush against the spindle and to keep it in that position as it wears by means of the gravity of said wedge block, which may be increased in weight by  
110 suspending an additional weight M, Fig. 6, to its smaller end, which is in a reverse po-

sition to the smaller end of the segment bush. When these bushes and wedge blocks are placed in their proper positions in the passages of the metallic box A a piece of flannel to hold oil is laid over them around the spindle and then a piece of leather N, Fig. 7, is placed over them and nailed down to the blocks of lead or wood K. Then the metallic plate b, Fig. 3, is put in its proper position over the same and properly secured to the box A by screws and nuts O. This plate is made concave on the under side to admit the leather and flannel and convex on the upper side to pitch the grain off and between the stones. In grinding plaster the oil-tube might be in danger of injury from the stones and may therefore be protected by a curved or twisted metallic wing or guard such as that represented at P, Fig. 8, secured to the cock head of the spindle. The tube Q, Fig. 2, for conveying the oil for lubricating the concave surfaces of the bushes and the convex surface of the spindle in contact therewith is made of metal, or any suitable material, and bent so as to conform to the aperture extending through the damsel R, driver T and flying circular collar S, its lower or smaller end being directly over the joint between the bushes and

spindle, at which place the oil is to enter as it drops from the end of said tube, and its upper or larger end, which receives the oil and which is made funnel shaped, as at U, being above the hopper holder. The tube of course turns with the runner in this case.

I do not claim as my invention the principle of adjusting the bush and spindle by means of a divided adjustable bush, nor of keeping the bush tight against the spindle by weights; nor do I claim the principle of lubricating the spindle and bush by supplying the oil through a tube, as these have already been known; but

What I do claim as my invention and desire to secure by Letters Patent is—

The peculiar manner in which I have combined and applied these principles—that is to say, I claim the self adjusting mode of keeping the divided bush tight against the spindle by means of the wedges D D acting against the wedge shaped sections of the bush IIII either by their own weight, or the addition of the weights as herein described.

ELIJAH W. WELSH.

Witnesses:

WM. P. ELLIOT,  
EDWD. MAHER.