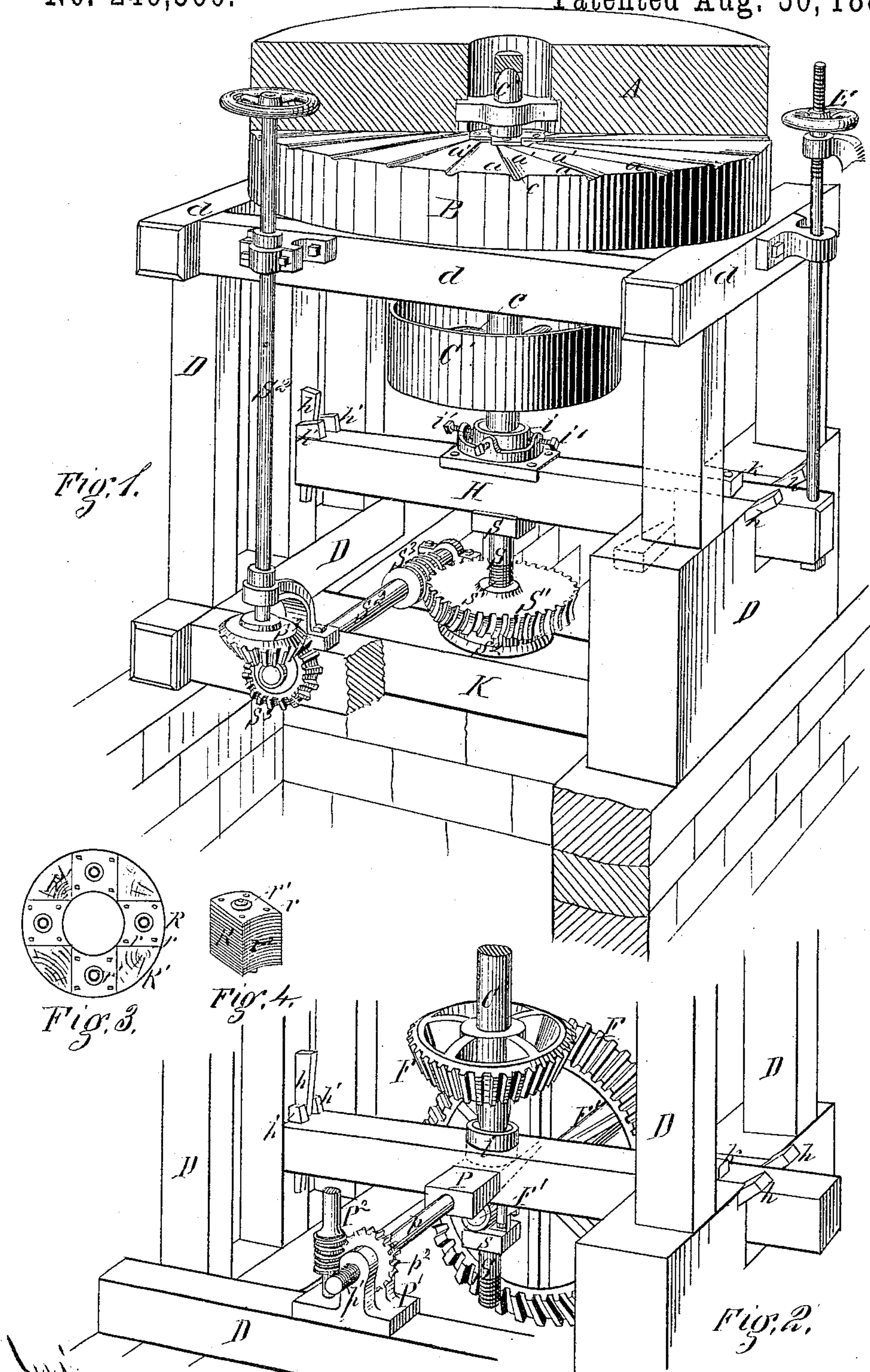


(No Model.)

B. D. SANDERS.
MILLSTONE MOUNTING.

No. 246,560.

Patented Aug. 30, 1881.



Witnesses
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UNITED STATES PATENT OFFICE.

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MILLSTONE-MOUNTING.

SPECIFICATION forming part of Letters Patent No. 246,560, dated August 30, 1881.

Application filed May 11, 1881. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN D. SANDERS, of Cross Creek District, Wellsburg P. O., county of Brooke, State of West Virginia, have invented or discovered a new and useful Improvement in Millstone-Mountings; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification—in which, like letters indicating like parts—

Figure 1 is a perspective view of such parts of a run of burr-millstones and devices for operating the same as serve to illustrate my invention. Fig. 2 is a similar view of a detached portion of the operating mechanism, illustrating modifications in the application of my invention, as hereinafter described. Fig. 3 is a plan view, to a larger scale, of the bushing or upper spindle-bearing. Fig. 4 is a perspective view of the follower employed in such bushing.

In grinding flour from wheat the aim of the miller is to produce a comparatively large proportion of middlings of uniform grade with as little cutting or abrasion of bran as possible. An essential condition to the securing of these results is a steady and true running of the stones, without which no degree of mechanical skill can secure a uniform product or the best grinding.

Several disturbing influences are always more or less present in grinding with ordinary millstones, such as unequal feed, imperfections in driving or running mechanism, and imperfect dress of the stones, which latter causes the meal to heap up and wedge between the grinding-faces of the stones, and this heaping up tends to give the runner a wobbling or unsteady motion, which, in turn, imparts to the spindle a vertical vibration. As the bridge-tree on which the upper stone is carried has heretofore been made and supported it not only permitted such vertical vibration to take place, but, on account of its lever action in adjusting the stones, it has operated somewhat as a spring-bar, inviting and intensifying such vibrating rather than preventing it.

I will now describe the improvements by which I prevent this irregularity in the running stone.

In the drawings, A and B represent an upper and lower millstone having their faces

formed in accordance with an invention which I have described in a separate application for a patent.

D is the husk or frame supporting the bed-stone; C, the spindle; C', a driving-pulley; H, the bridge-tree; *i*, the step and grease-pot; *v*, set-screws for adjusting the spindle, or wedges *h* around the bridge-tree may be employed for this purpose. These parts, with lighter screw E, for adjusting the stones, are substantially such as are and have been long in use, except that I support the bed-stone B on its four sides upon the cross and side timbers, *d*, of the husk, in order to secure the firmest possible support, and thereby prevent yielding of the bed-stone from changes of feed or other disturbing causes.

The present feature of my invention consists, in part, in adding an adjustable support, S, on the under side of the bridge-tree, directly under the spindle C. This support has a broad bearing, *s*, resting against the bridge-tree, and its foot has a screw-thread, *s'*, cut on it, and a nut, S', works thereon, which is arranged to bear against and turn upon a bed-plate, *s*², firmly set in the wall of masonry K. Then by turning the nut S' the support S may be raised and lowered or extended and shortened. Shafts and gearing S² S³ may be employed for conveniently turning nut S'. In this way the support S can be easily adjusted for changes resulting from varying temperatures, changes in position of the bridge-tree, and the like, so as at all times to give a firm bearing to the spindle, and through it to the stone above. The advantages derived from such an adjustable solid support for preventing tremors and vibrations cannot be overestimated, and when arranged as I have shown it may be used to advantage to adjust the stones for different grades of grinding. In such cases I fasten the ends of the bridge-tree H, as by wedges *h'* and bolts *k*, firmly as against upward movement, by preference at or a little below the position for producing the finest grinding, and then jack or screw up the support S until the center of the bridge-tree, or that point of it carrying the spindle C, is raised or sprung up sufficiently to raise the runner the desired distance. The tension thus imposed upon the bridge-tree has a useful effect in preventing tremor and shaking, and the range of adjust-

ment for ordinary grinding being very small, abundance of motion can be obtained in this way. In case it is desired to raise the upper stone beyond the ordinary range, the wedges h' and bolt k may be loosened, as required.

In Fig. 2 I have shown the spindle C driven by bevel-gearing F from a shaft, F'. S represents my adjustable support placed under the bridge-tree and shaft-bearing to impart or secure the requisite stability to the stone; and in order to adjust the stone up and down without disturbing the shaft-bearing, I set the step and pot i in a box or hole in the upper side of the bridge-tree, and rest them on the upper flat face of a wedge, P, which works in or passes through a mortise cut sidewise through the bridge-tree. The under side of the wedge is beveled or inclined, so that by pushing it in or out the step will be raised or lowered, as desired, while a solid bearing is had for the stone directly under the spindle. The wedge may be operated by a stem, p , threaded, as at p' , and carrying a correspondingly-threaded wheel p^2 , which is held in position between two plumber blocks or posts, P'. Turning wheel p^2 by worm-shaft P² or otherwise will give motion to the wedge, as desired.

I do not limit this part of my invention to any particular form of bridge-tree or spindle-support, as by obvious modifications it can be adapted to any of the different forms of such devices in use.

So far as I am aware, my invention is the first to afford or secure support directly under the spindle solid but adjustable and independent of the supporting frame-work of the stones.

Another fruitful source of disturbance in running the stone is the wearing away and consequent loosening of the bushing or upper spindle-bearing in the eye of the bed-stone.

I have found that a follower made of plates of leather bound tightly face upon face and shaped on their edges to the form of the spindle, when arranged in the bushing as in Fig. 3, not only affords the requisite firmness, tightness, and freedom from friction, but also, in point of durability, it is far superior to the bushing in common use. I have shown such a follower at R, Fig. 4. It is made by piling several plates or layers of sole-leather or other heavy leather face to face and fastening them temporarily, if desired, by pegs r . When the

desired thickness is secured the whole may be bound firmly by a bolt, r' . One edge, r^2 , of this pile is shaped to fit one-quarter of the circumference of the spindle, and the other three edges are given the usual form adapted to bear against the usual keys or wedges, R', so that four of these followers may be arranged around the spindle and keyed in place by such keys or wedges.

It is to be understood that other appliances, such as are in ordinary use in the operation of millstones, are to be added, especially for balancing and driving the upper stone.

I have found by actual test in my own mill that with the improvements herein described applied to millstones they are practically free from the vertical vibrations or irregularities of motion hereinbefore described.

I make no claim herein to the features of construction in the leather follower described, as the same, in so far as they contain patentable invention, will form the subject-matter of a separate application.

I claim herein as my invention—

1. In combination with the bridge-tree and spindle of a run of millstones, an adjustable or extensible support having a bearing against the bridge-tree directly under the spindle, and a foundation-bearing independent of the husk-frame, substantially as set forth.

2. As a means of adjusting an upper millstone, and in combination therewith and with the spindle, a bridge-tree, H, rigidly secured at its ends as against upward pressure, and an extensible or adjustable support, S, arranged to bear against the under side of the bridge-tree, and by bending or springing the bridge-tree upward hold it under tension and raise the stone, substantially as set forth.

3. The combination of runner A, spindle C, and step i , bridge-tree H or equivalent spindle-support, a solid support, S, under the bridge-tree and independent of the husk-frame, and an adjustable bearing, P, under the step, substantially as set forth.

In testimony whereof I have hereunto set my hand.

BENJAMIN D. SANDERS.

Witnesses:

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