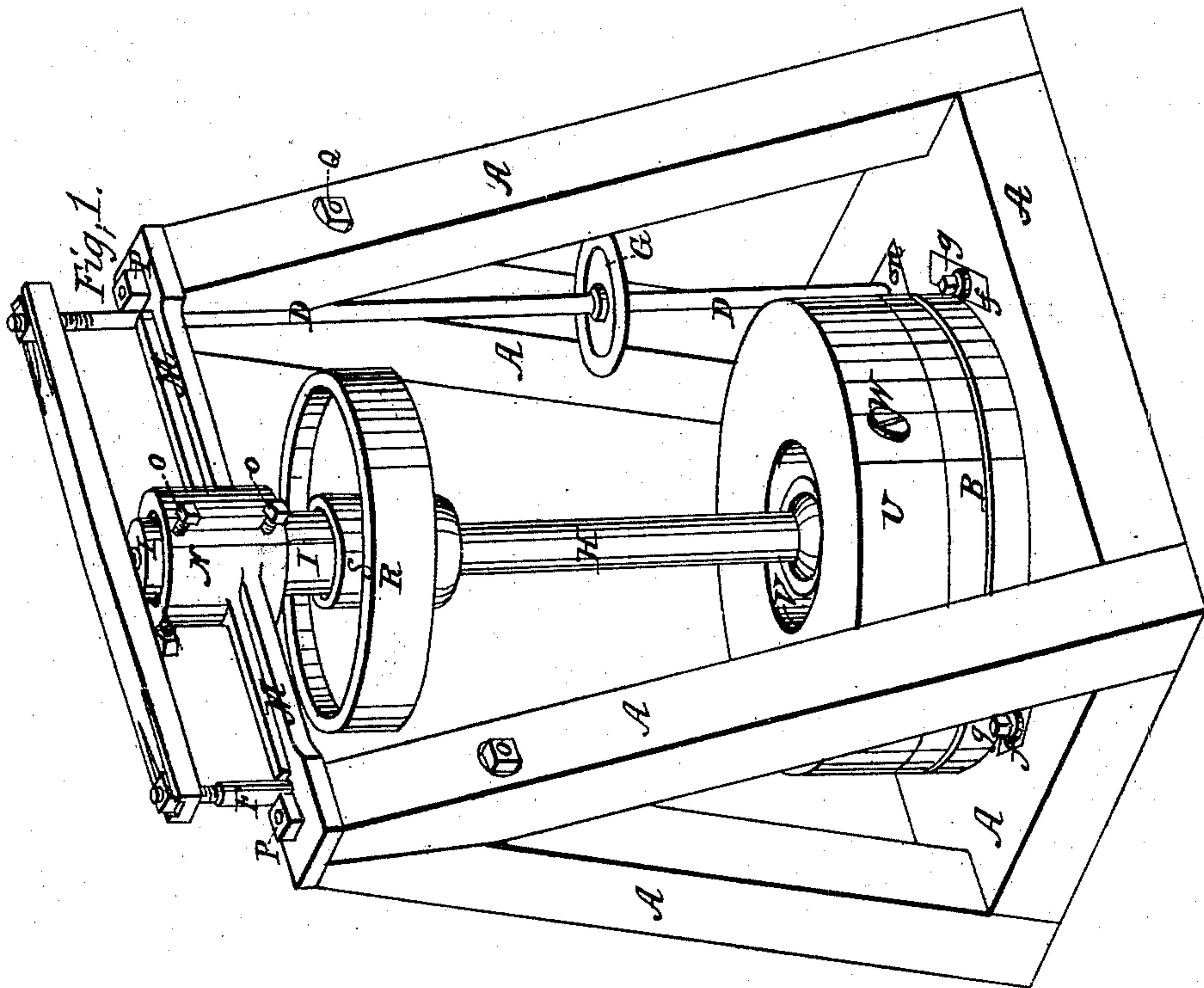
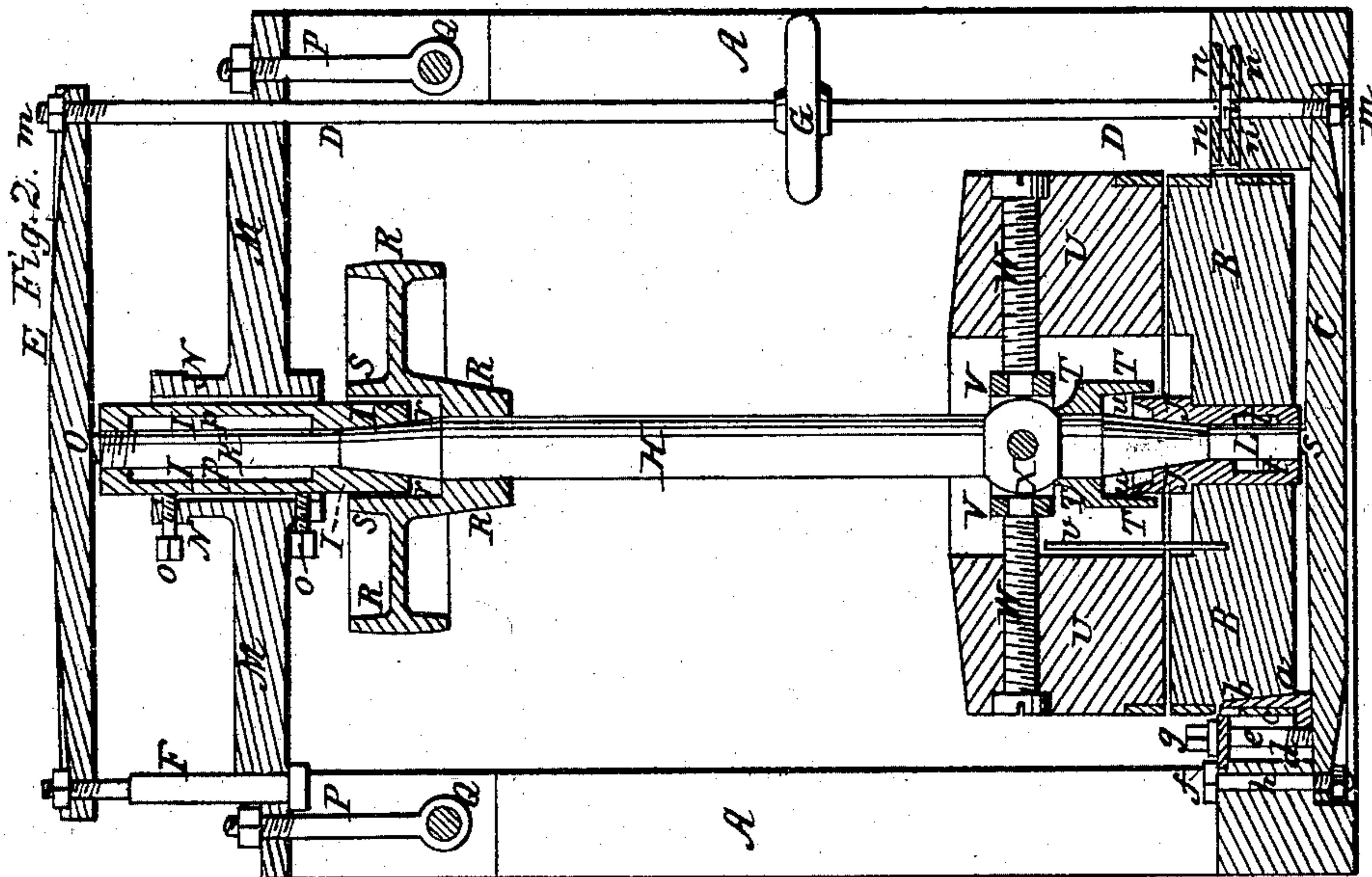


J. A. FORSMAN.

Grinding Mill.

No. 21,330.

Patented Aug. 31, 1858.





# UNITED STATES PATENT OFFICE.

JOSEPH A. FORSMAN, OF CINCINNATI, OHIO.

## HANGING MILLSTONES.

Specification of Letters Patent No. 21,330, dated August 31, 1858.

*To all whom it may concern:*

Be it known that I, JOSEPH A. FORSMAN, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Grinding-Mills, the same consisting in the manner of hanging and adjusting the stones; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a perspective view of the mill and frame in which it is placed, and Fig. 2 represents a vertical section through the same, taken centrally.

Similar letters of reference where they occur in the separate figures, denote like parts in both of the drawings.

My invention relates to the manner of hanging and adjusting the bed stone and runner to the frame and to each other, as will be hereafter more particularly set forth.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

A, represents the frame, the base of which is made to receive the bed stone B. This bed stone is held and made adjustable as follows: Three or more hooks or ears *a* are attached to the bed stone, by means of tapered shanks *b*, which pass underneath the iron band *c*, that is around the lower edge of said bed stone—the horizontal portions *d*, of said hook or ear having a female screw cut in it, which receives a screw bolt *e*, the head of which rests upon a plate or washer *f*, that is placed on the base or sill of the frame. The screw-bolts *e*, may have square heads *g*, upon them so as to be turned by a wrench or key, and by these screw-bolts the bed stone is leveled or trammed. Underneath the frame there is a bridge tree C, which is suspended to the frame at one of its ends by a screw-bolt *h*, and through its other end passes a long screw rod D, that extends up and through the upper bridge tree E, which also has one of its ends controlled by a screw bolt F, attached to it and to the main frame, and on this long screw rod D, there is a hand wheel G, by which it may be turned, so as to draw the bridge trees together or separate them, as occasion may require, and in order to make both bridge trees travel by the turning of said

rod a fast collar *i*, on the rod is placed between the two washers *n*, *n*, which are let into the frame, and thus the turning of the rod D, works both bridge trees. But either bridge tree may be independently adjusted by the nuts *m* on their ends, and thus the surfaces of the stones may have contact without friction to any injurious degree.

H, is the mill spindle, to which the runner is attached by a gimbal joint or connection, as will be presently explained. The ends of the spindle H, run in an upper and lower journal bearing I, and J, and followers K, L, which work through these journal boxes or bearings, respectively, rest against the upper and lower end of said spindle to hold it and the runner upon it at its exact position and to adjust it to that position. The follower K, has a depression in its upper end, into which a projection *o*, on the underside of the bridge tree E, passes, and which prevents the follower from turning, and it is suspended in the journal bearing I, by being screwed into its top, as shown in Fig. 2. The upper part of the bearing I, may have an oil chamber *p*, in it, from which the oil may pass down to the journal bearing proper, which bearing may be lined with Babbitt metal. It will be noticed that the ends of the spindle H, are conical and as the journal bearings become worn they can be brought toward the spindle and again tighten them, both ends of the spindle being hung in a very similar manner.

A cross-head M, of iron, which also serves as a tie to the frame, extends across from one side of the frame to the other, which has in its center portion an open hub N, in which the journal bearing I, is suspended by set screws O, O, by which it can be adjusted vertically or laterally, as may be required, and one or more of said set screws O, may pass into a feather cut in the journal bearing I, to prevent said bearing from turning. The cross head M, is held to the frame by screw bolts P, through the eyes of which cross bolts Q, pass, and thus tie the whole firmly together.

R, is the driving pulley, attached to the spindle H. The hub S, of this pulley at its upper portion is hollow, so that the lower end of the journal bearing I, may not only extend into it, but so as also to form an oil receptacle *r*, that will catch and retain all the oil that passes the journals of the spindle, and thus said spindle may wade



in oil all the time. The ends of the followers K, L, should be hardened so as to resist the wear of the spindle.

The lower journal bearing J J, may set  
5 in a bush of the ordinary kind, that is permanently attached to the bed stone B, said bearing being prevented from turning in the bush by a feather and slot or otherwise. Through the bottom of this bearing I, is  
10 secured the follower L, which supports the bottom of the spindle H, and the follower and bearing are raised up to the spindle by the lower bridge tree c, which has a projection s, which takes into a recess in the  
15 lower end of said follower L, as in the case of the upper follower and bridge tree. An oil receptacle t, is also made in the lower bearing J, for saving the oil that runs past the journal of the spindle.

20 T, is a cap fastened to the spindle H, and made to cover the oil chamber u, in the top of the bearing J—oil being supplied to this oil chamber, as well as the one p above, by suitable openings, which are afterward  
25 closed.

The runner U, is hung as follows: V is a ring which is centrally hung in the eye of the runner by the drivers W, which drivers  
30 have a screw thread cut on them that works in either a nut or bush in the eye of the stone, so that said drivers may be screwed out when it becomes necessary to dress the runner or bed stone. At right angles to the

drivers, which hold the ring V, and by which too the ring can be adjusted at pleasure, a  
35 bolt or pivot X, passes through the ring V, and the spindle H, (which is swelled out at that point,) said bolt fitting loosely in the ring, but tight in the spindle, so as to allow the runner to find its level and be balanced  
40 properly.

v is a stirrer fast on the bed stone, and extending up into the eye of the runner to prevent the grain from lodging in said eye.

The curb, hopper, meal spout, &c., which  
45 are the common accompaniments of all mills are not shown and they may be attached in any of the usual well known ways.

The object in bringing the bearing I, down into the hub of the driving pulley is to prevent as much as possible the strain of the  
50 belt from springing the spindle.

Having thus fully described the nature and object of my invention what I claim therein as new and desire to secure by Letters Patent, is—  
55

The combination and arrangement of devices for hanging and adjusting the bed stone and runner to the frame and to each other, substantially as represented, and for  
60 the purposes set forth.

JOSEPH A. FORSMAN.

Witnesses:

JOHN D. JOHNSON,  
MATTHEW J. SUTTON.