(No Model.) 2 Sheets—Sheet 1.

G. SUMMERTON.

MECHANISM FOR BALANCING AND SUPPORTING MILLSTONES.

No. 303,761. Patented Aug. 19, 1884.

Fig. 1.

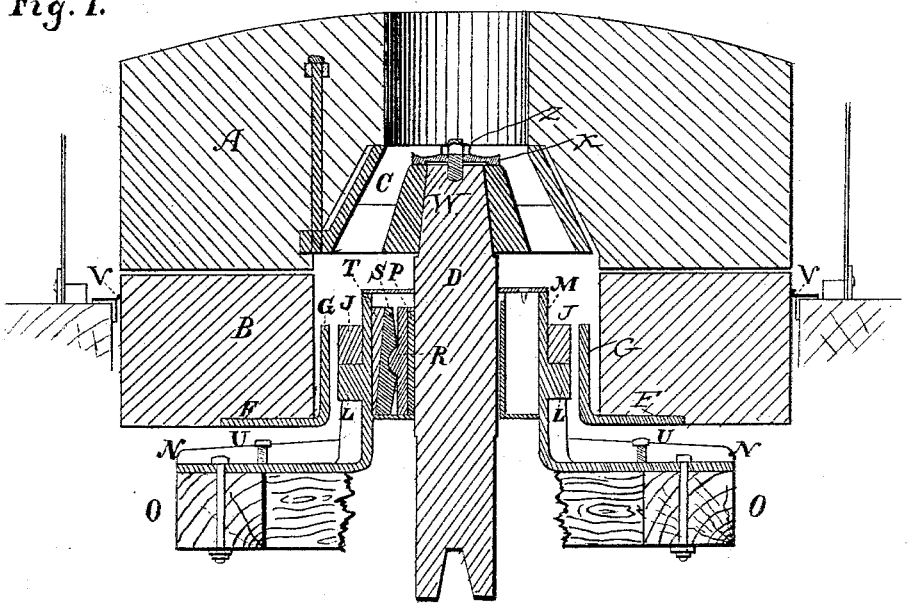
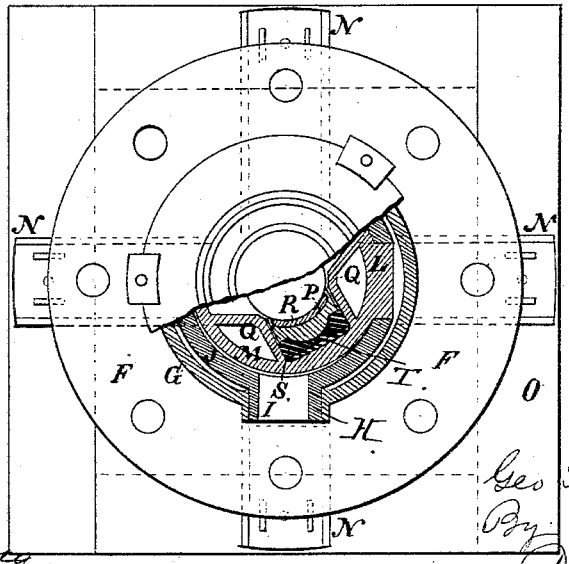


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

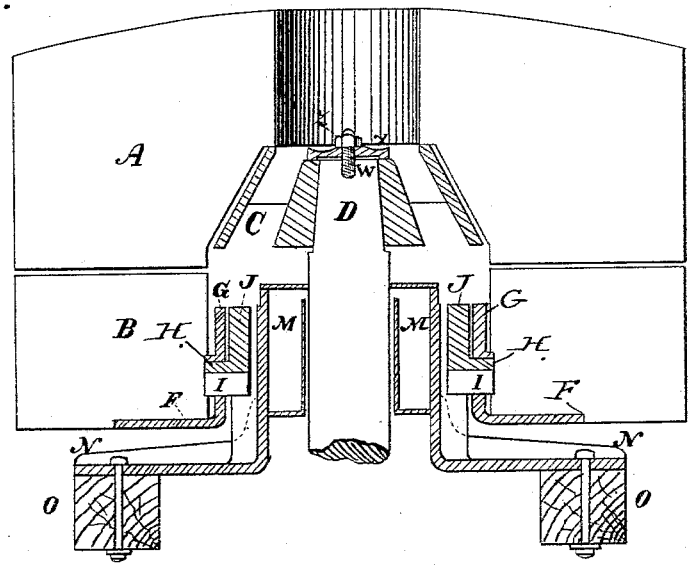


Fig. 4.

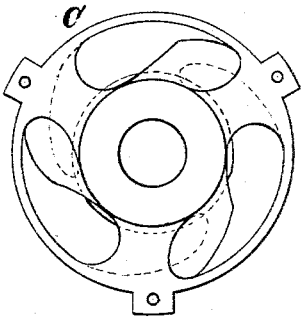


Fig. 5.

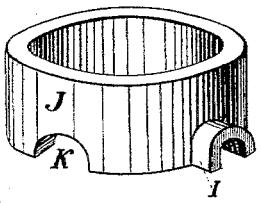


Fig. 7.

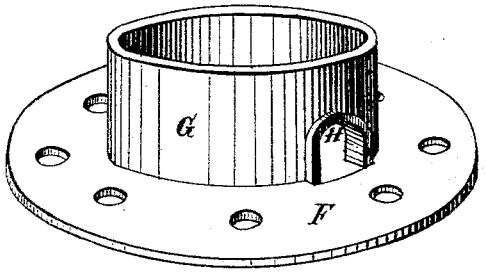
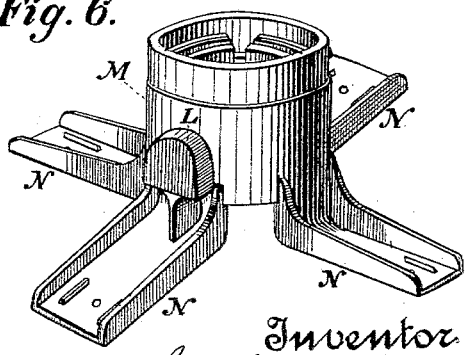


Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE SUMMERTON, OF SAN FRANCISCO, CALIFORNIA.

MECHANISM FOR BALANCING AND SUPPORTING MILLSTONES.

SPECIFICATION forming part of Letters Patent No. 303,761, dated August 19, 1884.

Application filed April 19, 1884. (No model.)

To all whom it may concern:

Be it known that I, GEORGE SUMMERTON, of the city and county of San Francisco, and State of California, have invented an Improvement in Mechanisms for Balancing and Supporting Millstones; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to certain improvements in millstone-irons; and it consists in the novel arrangement and combination of devices to be hereinafter more fully set forth and claimed.

Referring to the accompanying drawings, Figure 1 is a vertical section taken through the stones and spindle. Fig. 2 is a top view of the bottom irons, with a portion broken away. Fig. 3 is a vertical section taken at right angles to Fig. 1. Fig. 4 is a bottom view of the runner-iron or inque. Figs. 5, 6, and 7 are detail views of parts of the irons.

I have shown my invention applied to an upper runner and a lower non-revolving stone.

A is the upper and B the lower millstone.

In carrying this invention into effect I take a socketed center casting or forging of iron or steel, C, such as is commonly known as a "stiff inque," having preferably three radial arms, and of such material, shape, and size as is suitable for the runner, into which said stiff inque is permanently secured by means of bolts and cement. The upper end of the spindle D is fitted and locked to the said socketed center casting by means of a stud, W, and nut Z, so that the runner will rotate with the spindle. The upper side of the washer X, beneath the nut, may be shaped as a saucer and serve as a feeder. The lower stone, B, is cemented and fixed to a circular plate, F, which fits into its lower surface, as shown, and has an upwardly-extending hollow cylindrical extension, G, which projects upward into the hollow central portion of the stone. Upon opposite sides of the extension G are openings H, the upper sides of which form semicircular caps, which fit upon similarly-shaped trunnions, I, upon the hollow cylinder J. This cylinder has semicircular openings K in its lower edges, in radial lines at right angles with the trunnions I, forming caps to rest upon trunnions L, which project from the sides of the inner cylinder, M. This cylinder M has four arms, N, projecting radially from its lower edge, and these are bolted to the hurst-timbers O, to support the whole weight of the stone B. There is a space between the inner cylinder, M, and the cylinder J, and also between J and the outer cylinder, G, so that the stone, which is supported by means of the two sets of trunnions at right angles to each other, may have a motion about them to raise or lower its edges or skirt at any point, and thus adjust itself to the irregularities of motion of the upper stone. The spindle D turns in a step at the lower end, and is supported where it passes through the lower stone and the inner cylinder, M, by babbitted boxes or followers P. Three or more of these segmental boxes P are fitted into vertical channels formed by projections Q within the cylinder M, and upon the back, in the center of each, is a spherical projection, R. Behind each of these pieces P is a plate, S, having a depression corresponding with the projection R, and into which the latter fits, so that the interior segments may have a rocking adjustment about the spherical projections R, to allow them to fit the spindle D perfectly, if it should run out of line by reason of the strain from the power used in driving, or from other cause. Wedges T are driven in behind the plates S, and by these the segments P are kept to a bearing upon the spindle D. Adjustable screws or stops U project upward from the arms N or the bed-timbers, to limit the movements of the lower stone upon its trunnions. A flexible apron, flange, or gasket, V, is fixed around the lower stone, and presses against its periphery, to prevent dust from falling down at that point.

W is a screw passing through a disk or washer, X, into the top of the spindle D, and having a nut, Z, screwed down upon the top. The flanged edge of the disk rests upon the top of the inque C in the upper stone, and tends to prevent the stone from rising when a large amount of feed is passing beneath it.

Millstones are in some instances replaced by metal disks or artificial stones.

It will be manifest that my invention will apply not only to "millstones," properly so called, but to any apparatus operating similar-

ly, or designed to supply their place, although, for the sake of brevity, I have only mentioned millstones.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The runner rigidly secured to a driving-spindle, in combination with a non-revolving stone provided with a fixed circular plate, F, having an internal extension, G, and bearings H, an interior cylinder, M, provided with arms N and trunnions L, and an intermediate cylinder, J, having trunnions I and openings K, substantially as herein described.

2. In a grinding-mill, a non-revolving disk, a fixed circular plate provided with an interior extension having bearings, an intermediate cylinder having trunnions and openings, and an interior cylinder having trunnions and radially-extending arms, in combination with the segmental boxes P, having projections R, plates S, and adjusting-wedges T, substantially as herein described.

3. In a grinding-mill, the non-revolving disk, the fixed circular plate F, having the internal extension, G, and the bearing H at opposite sides, in combination with the interior cylinder, M, having trunnions L, and the intermediate cylinder, J, having trunnions I and bearings K, corresponding with those of the outer and inner cylinders, substantially as described.

In witness whereof I have hereunto set my hand.

GEORGE SUMMERTON.

Witnesses:
S. H. NOURSE,
C. D. COLE.