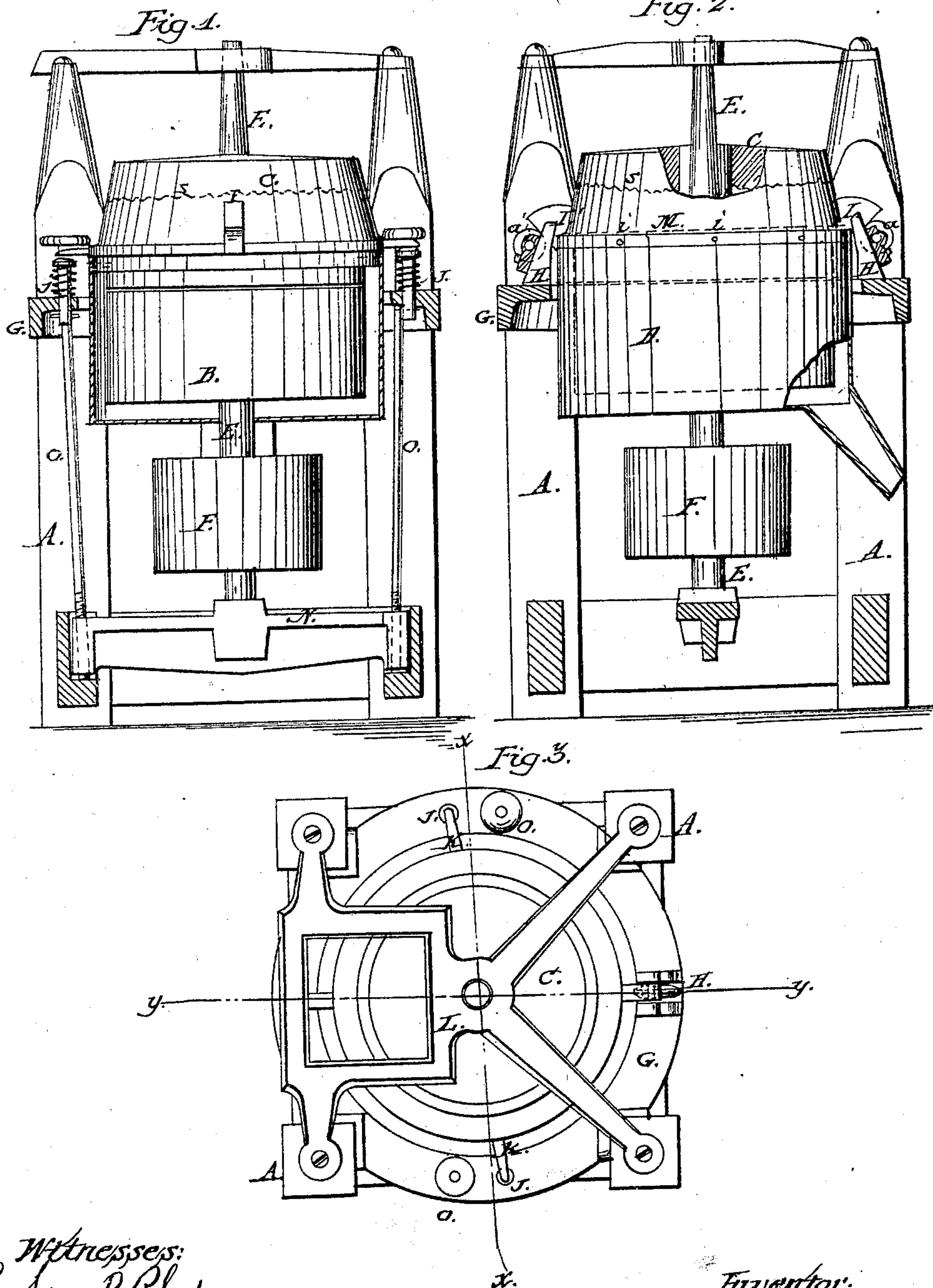


J. NORMAN.

Flour Mill.

No. 94,635.

Patented Sept. 7, 1869.



Witnesses:  
 Rufus R. Rhodes  
 James R. H. Hinton

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 James Norman



# United States Patent Office.

JAMES NORMAN, OF NEW ORLEANS, LOUISIANA.

Letters Patent No. 94,635, dated September 7, 1869.

## IMPROVEMENT IN GRAIN-MILLS.

The Schedule referred to in these Letters Patent and making part of the same.

### *To all whom it may concern:*

Be it known that I, JAMES NORMAN, of the city of New Orleans, parish of Orleans, and State of Louisiana, have invented a certain new, useful, and improved Device for Producing Uniform Grinding in Grain-Mills; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawing, making a part of this specification, in which—

Figure 1 represents a vertical section of a mill, in which my improvement appears, through line *x x*, the bisection, however, not extending to the upper or lower stones, or to the driving-drum;

Figure 2 is a similar partial section on the line *y y*; and

Figure 3, a plan or top view of such a mill.

My invention has for its object, so to mount the upper or non-revolving stones of grain-grinding mills, that they shall possess a considerable degree of undulating motion, and hence always maintain upon their grinding-faces a uniform parallel relation to the under or revolving stones, except when that relation is momentarily disturbed by the accidental intrusion of some hard foreign substance between the stones, and then, in that case, to be easily capable of rising up at the point where this substance is, and thus prevent the same from injuring the dress of the stones, or by its obstructive effect, the gearing, or some other part of the mill.

So mounting the non-revolving or stationary upper stones, it follows, as a necessary condition to the efficient operation of the mill, that the pendent casing which envelops the lower or revolving stone should also have a corresponding undulation or motion, and consequently it becomes another object of my invention, so to adjust this casing as to give it that motion. But my invention will be better understood by referring to the drawing, on which the same letters denote the same parts at all the figures.

On the drawing—

A represents the frame of the mill, which may be as shown, or of any other suitable form or construction.

B is the lower or revolving stone;

C, the upper or non-revolving stone;

E, the spindle;

F, a driving-pulley; and

G, an annular iron support for the mechanical appliances, which I have devised to support the non-revolving or upper stone at two points on its circumference, and through the agency of which it becomes self-adjusting, as well as exceedingly sensitive to every impression communicated by any foreign substance that may get between it and the lower stone, in the

operation of the mill. The ring G being strongly bolted thereto, is also a means of holding the frame A securely together.

On the upper side or top of this metallic ring G, metal standards H are elevated and securely fastened at two points exactly opposite each other, as shown. These standards have a central opening for about two-thirds their length from their tops, sufficiently wide to allow the friction-rollers *a a'* to enter therein, as shown by dotted lines at fig. 2, and they are so formed that their exterior surfaces have an angle of about seventy degrees, with respect to the vertical axis of the mill.

The rollers *a a'* are supported by detachable and adjustable journal boxes *b b'*, that are screwed on to the exterior faces of the standards H, as is clearly shown on the drawing.

From the perimeter of the upper stone C, or of the casing of the same, to which they are securely and permanently fastened, project the supporting-arms I I', that are so formed as to present an inclination on their lower or outside edges, reversely to the inclination of the outside faces of the standards H, which inclination is at about fifty degrees, with respect to the axis of the mill. The arms I I' entering into the central openings in the standards H, and resting on the rollers *a a'*, constitute the sole support of the upper stone, and by the counteracting effect of the reverse upward inclinations, which they present on opposite sides of said stone, always hold the same parallel to the upper surface of the lower stone, unless some hard substance get between the two, when they cause it to resume that position the moment such substance passes out of the mill.

J J' represent two vertical spring studs, that are also fixed on the ring G, on which lugs K, that project out from the circumference of the upper stone or its casing, midway between the supporting-arms I I', rest, as shown at fig. 1. The studs J J' are not really necessary to preserve the equilibrium of the upper stone, the arms I I' being alone sufficient to effect that object, and hence I may not always deem it expedient to use them.

The upper stone resting on the friction-rollers *a a'*, through the medium of the angle arms I I', must obviously adjust itself to the face of the lower stone, under all normal conditions of the mill, in its operation, while, at the same time, it is free to tilt in any direction, whenever anything which might do damage finds its way into the space between it and such face, such as a piece of iron, or a stone, or the like.

So, also, should an undue accumulation of grain take place at any one point between the grinding-surfaces, the upper stone will accommodate itself instantly to such a condition of things, and disperse the grain



in a proper manner for the efficient grinding of the same, the result being uniform grinding under all circumstances.

The enveloping casing D of the lower stone is attached to the upper stone or its casing, by pins or screws, as shown at *i*, and being so, must necessarily conform to every motion of the upper stone.

This arrangement avoids the necessity of interposing an elastic or bellows connection between the upper stone and said casing, which is always expensive, and liable to get out of order. Of course it must be understood there must be space within the frame, to give sufficient room to allow of this arrangement.

The friction-rollers taper from their centres to their peripheries, to a very narrow width, in order to reduce the friction between them and the supporting-arms I I', and also to quicken the undulation of the upper stone, whether the same is moving to establish or re-establish its parallel relations to the under stone, or is to be tilted, in order to prevent damage from the intrusive presence of a foreign substance between them.

L is what is technically called a "spider," that is secured at the top of the frame A, to support a hopper and a journal to receive the upper end of the spindle E, and N is the bridge-tree, on which is secured a socket, for the lower end of said spindle.

The rods O, on which the bridge-tree is suspended, constitute the means I employ for adjusting the spindle E and the upper stone.

When, by long use, the stones are so worn away as to require the upper stone to be lowered to bring them together again, this object is effected by simply lowering the friction-rollers *a a'*, by a lower adjustment of the journal-boxes *b b'*, the equilibrium or balance of the upper

stone and, of course, its power of self-adjustment being still preserved, because by the depression of the rollers, the points at which the stone rests thereon are carried up by reason of the angles on the under edges of the arms being in reverse direction to the angles of the standards H, on the sides to which the rollers are secured, the dropping of the stone one inch, raising the rollers on the arms I I' half an inch, in consequence of the difference of inclination between the standards H and said lower edges of the supporting-arms I I'.

Having thus described my invention,

What I claim, and desire to secure by Letters Patent, is—

1. Attaching inclined planes, or supporting-arms with inclined bearing-faces, to the upper or non-revolving stone of grain-grinding mills, or to the casing thereof, substantially as herein described, for the purpose set forth.

2. Mounting the upper stones of grain-grinding mills on friction-rollers *a a'*, that are sustained in adjustable journal-boxes *b b'*, which are secured to inclined standards H, when the same is done by means of supporting-arms I I', that have reversed inclinations to the inclinations of said standards, substantially as herein described, for the purpose set forth.

3. Attaching the enveloping casing of the lower or revolving stone to the upper stone or its casing, so as to give the same an undulatory motion, substantially as herein described, for the purpose set forth.

JAMES NORMAN.

Witnesses:

RUFUS R. RHODES,

JAMES R. MCCLINTOCK.