

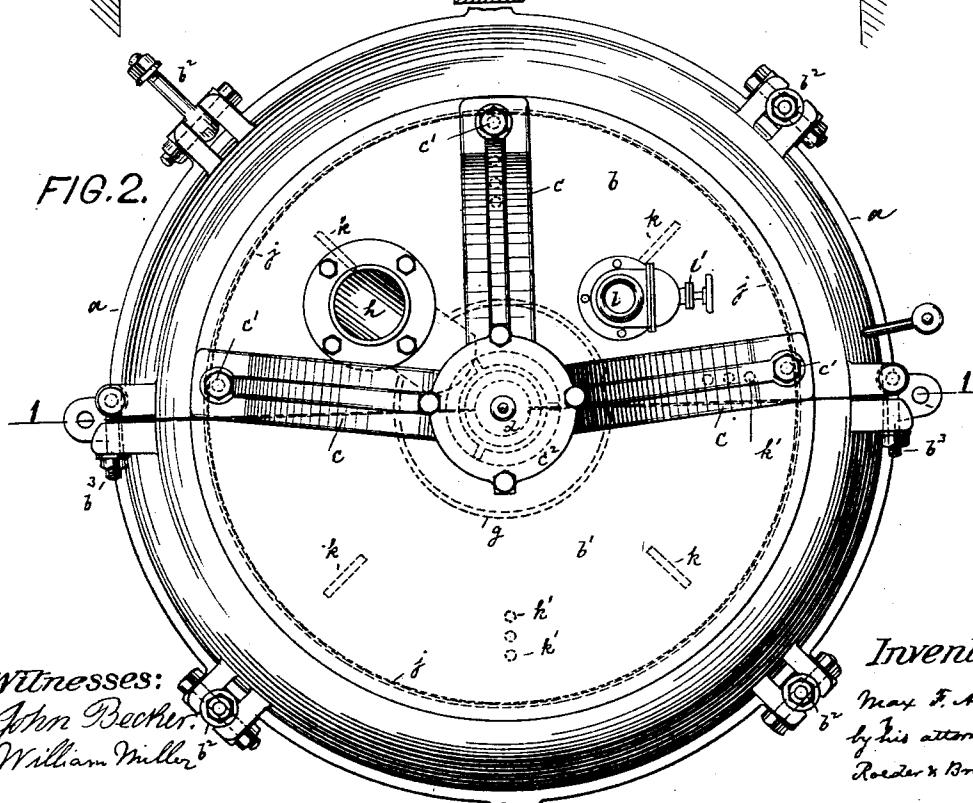
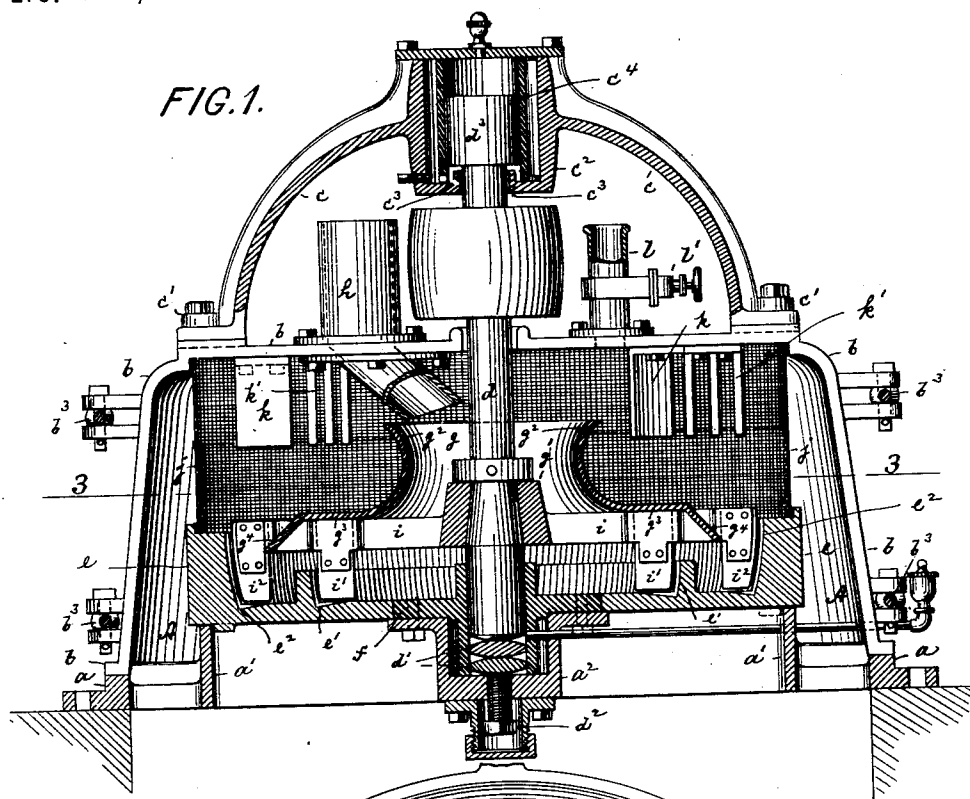
(No Model.)

2 Sheets—Sheet 1.

M. F. ABBÉ.
GRINDING MILL.

No. 587,688.

Patented Aug. 10, 1897.



Witnesses:
John Becker.
William Miller.

Inventor:
Max F. Abbé
by his attorney
Rooder & Brieaux

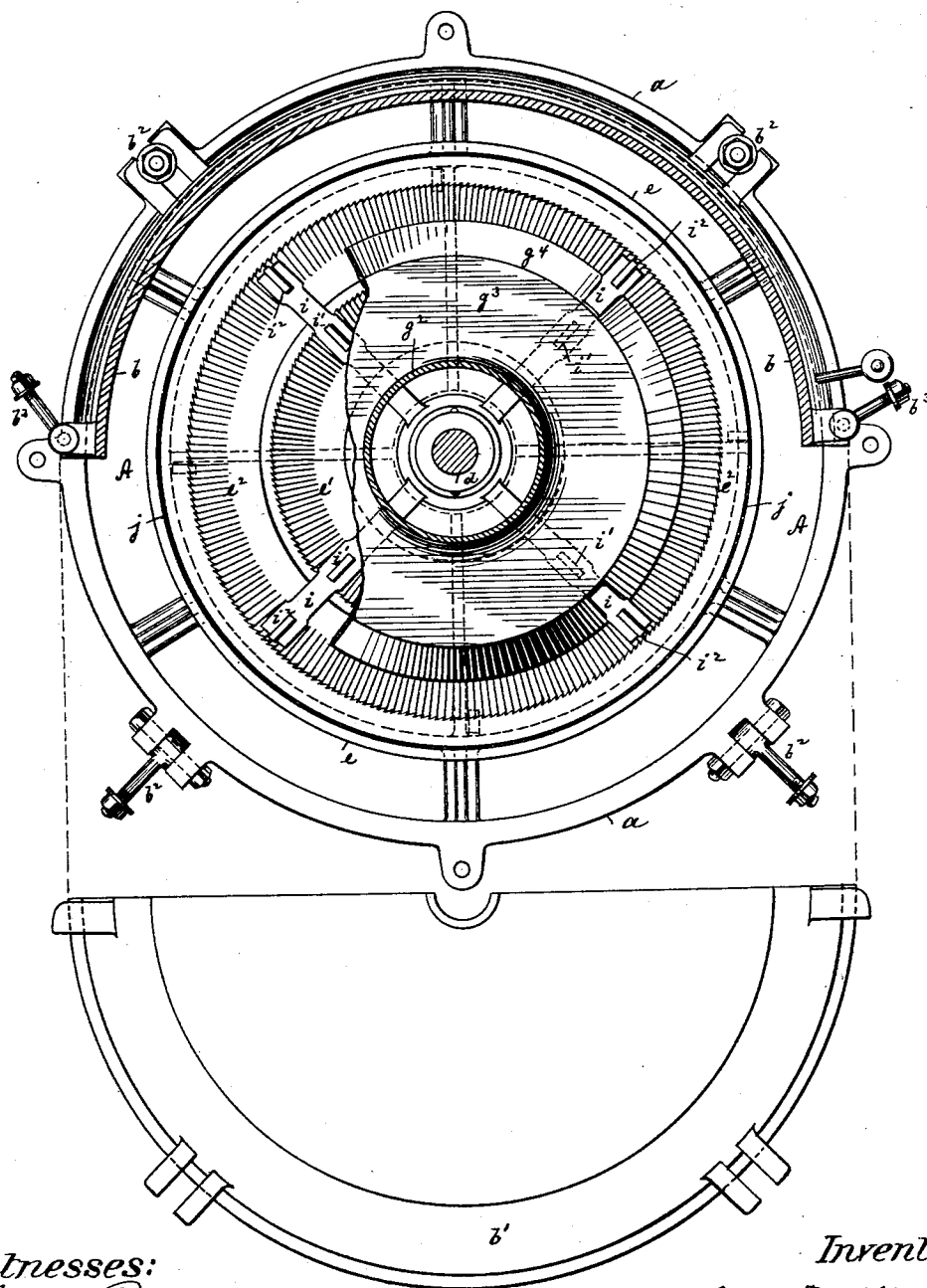
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FIG.3.



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Roeder & Bresson

UNITED STATES PATENT OFFICE.

MAX F. ABBÉ, OF BROOKLYN, NEW YORK.

GRINDING-MILL.

SPECIFICATION forming part of Letters Patent No. 587,688, dated August 10, 1897.

Application filed April 17, 1897. Serial No. 632,631. (No model.)

To all whom it may concern:

Be it known that I, MAX F. ABBÉ, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Grinding-Mills, of which the following is a specification.

This invention relates to a grinding-mill of improved construction and designed for reducing spices, sugar, fertilizers, and other substances.

The mill is of the class described in Patent No. 496,677, granted to R. W. F. Abbé May 2, 1893, and is constructed with a view of effecting a ready inspection and adjustment of the parts, insuring a thorough reduction of the substances to be ground and providing various improvements in the details of construction, all as hereinafter more fully pointed out.

In the accompanying drawings, Figure 1 is a vertical central section of my improved grinding-mill on line 1 1, Fig. 2. Fig. 2 is a plan; Fig. 3, a horizontal section on line 3 3, Fig. 1, with the shell-section b' removed.

The letter a represents the annular base-plate of the mill provided with an inner concentric flange a' and a central step-bearing a^2 . Upon the ring a there is supported the divided shell of the mill, which is made in two sections $b b'$, each of semicircular form. The sections $b b'$ are attached to the ring a by the vertically-swinging bolts b^2 , while the sections $b b'$ are attached to one another by the horizontally-swinging bolts b^3 . To the upper flange of the section b , which I term the "fixed" section, there are secured by bolts c' the outer ends of three (more or less) radial arms c , which at their center form the bearing c^2 of the upright work-shaft d , that projects with its lower end into the step a^2 .

The two outer arms c form an obtuse angle at the bearing and thence extend to the ends of the fixed section b , while the inner arm c bisects or subdivides the angle formed by the outer arms, Fig. 2. Within the step a^2 the shaft d is supported by two (more or less) bearings d' , which are vertically adjustable by set-screw d^2 , by means of which the shaft may be vertically raised to regulate the fineness of the powder. The upper end of the shaft d is provided within the bearing c^2 with

a collar or enlargement d^3 , turning in a sleeve c^4 , while the base-plate of the bearing c^2 is flanged, as at c^3 , beneath such collar. In this way the bearing constitutes in effect an oil-cup, which will prevent the lubricant from running down the shafting and mixing with the substances to be ground. It will be seen that the shaft d is supported at its upper end solely by the fixed section b of the shell, while the section b' , which I term the "movable" section, does not take any part in supporting the shaft-bearing. In this way the section b may be at any time readily unbolted and removed to open and inspect the mill without disturbing any of the bearings or driving parts of the machine.

Upon the inner flange a' of the base-ring a there is supported a fixed annular grinding-plate e , made with two (more or less) concentric corrugated grinding rings or concaves e' e^2 , while at its center it surrounds a tubular bearing f , that receives shaft d and projects into the step a^2 .

Above the plate e there is secured to shaft d the hub g' of a revoluble receiver g , into which the material to be ground is fed from the hopper or inlet-pipe h , secured to fixed section b . The receiver g is composed of an upright flange g^2 , placed concentric to shaft d , a horizontal body g^3 , and a downwardly-inclined flange g^4 , which terminates at a point between the inner and outer concaves $e' e^2$ of the base-plate e . The receiver g is formed with four (more or less) radial arms i , made integral therewith and projecting from hub g' to a point beyond the flange g^4 . The arms i thus serve to secure the receiver g to the shaft d , and they likewise serve for the attachment of the grinders or beaters $i' i^2$, which are bolted within slots of the arms. The beaters $i' i^2$ are placed within and beyond the flange g^4 , respectively, and will coact with the concaves $e' e^2$. The substance to be ground is by the flange g^2 of the receiver conducted to the base-plate e without being scattered by the air-current. It will then by the centrifugal action be forced outward to be acted upon, first, by the grinding parts $e' i'$ and then by the grinders $e^2 i^2$. On the passage of the material from the first to the second set of grinders the flange g^4 , which is arranged directly back of beaters i^2 , will con-

duct the powder to the outer grinders and prevent the same from scattering. Upon the edge of the plate *e* there is secured the circular screen *j*, through which the powder falls into an annular chamber or hopper *A* between the parts *e b b'*, to be thence conveyed to a suitable storage receptacle or bin. A number of stops *k k'*, made in the form of plates or fingers, depend from the roof of shells *b b'* within the screen *j*. These stops prevent the air-current from deflecting the powder from its radial direction, and thus insure its forcible ejection through the screen.

The air drawn into the machine is admitted through an air-inlet pipe *l*, secured to fixed section *b* and controlled by a valve *l'*.

It will be seen that in my improved grinding-mill a full inspection of the machine may be readily effected without disturbing any of the operating parts thereof. The mill feeds, grinds, and screens the substances quickly, thoroughly, and uniformly, so that a very satisfactory and even result is obtained. The usual or average speed of operation is about two thousand revolutions per minute.

What I claim is—

1. In a grinding-mill the combination of a grinding-plate having concentric annular concaves with a central shaft, a receiver secured thereto and having a set of radial arms and beaters secured to said arms, the receiver being provided with an inclined flange *g'*, within the outermost set of beaters, substantially as specified.

2. In a grinding-mill the combination of a grinding-plate having concentric annular concaves, with a shaft, a receiver having upright flange *g''*, and inclined flange *g'*, a set of radial arms *z*, projecting beyond the flange *g'*, and two sets of beaters secured to the radial arms within and beyond the flange *g'*, respectively, substantially as specified.

Signed at New York, in the county of New York and State of New York, this 13th day of April, A. D. 1897.

MAX F. ABBÉ.

Witnesses:

F. V. BRIESEN,
WILLIAM SCHULZ.