R. A. REYNOLDS.

GRINDING MILL.

APPLICATION FILED JUNE 19, 1911.

1,015,586. Patented Jan. 23, 1912.

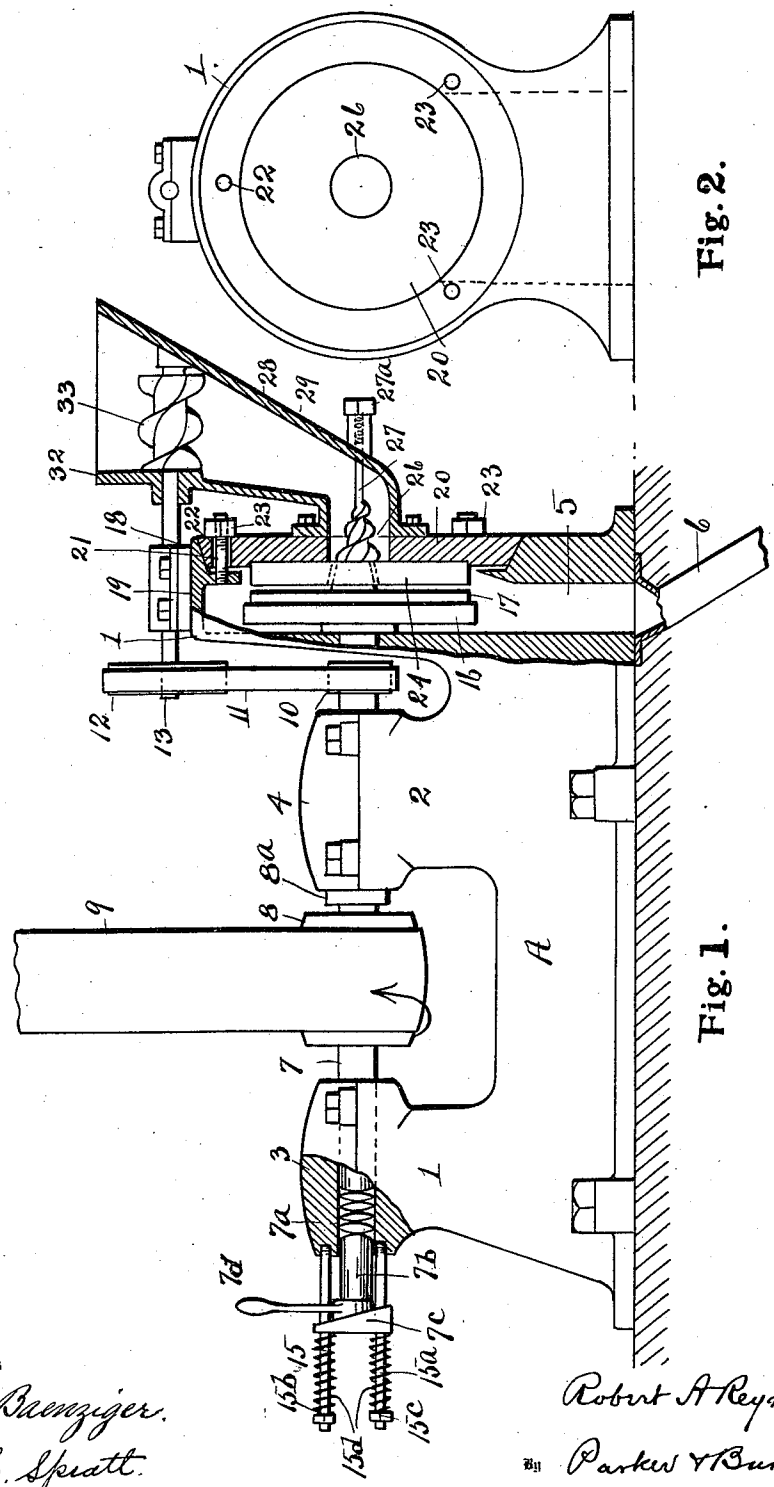

Fig. 2.

Fig. 1.

Witnesses

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ROBERT A. REYNOLDS, OF DETROIT, MICHIGAN.

GRINDING-MILL.

1,015,586. Specification of Letters Patent. Patented Jan. 23, 1912.

Application filed June 19, 1911. Serial No. 634,110.

To all whom it may concern:

Be it known that I, ROBERT A. REYNOLDS, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Grinding-Mills, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to grinding mills, and has for its object an improved mounting for a stationary mill stone, by means of which its relation of parallelism to the revolving stone may be adjusted readily, quickly and with certainty.

Another object of the invention is found in the provision for quickly changing the opening between the two stones and for holding the revolving stone yieldingly in proper relation to the fixed stone.

In the drawings:—Figure 1, is a side elevation partly in section. Fig. 2, is an end elevation of the mill with the hopper removed.

A heavy base A provided with pillow blocks 1 and 2 forms a bearing for the shaft 7 mounted on the blocks and held in position by the journal covers 3 and 4. At one end of the base is a housing, preferably made for the most part integral with the base, provided however, with an opening somewhat larger than the mill head of the shaft, in which opening is fitted a closure that is adjustable in its seat. Within the housing is a chamber 5 into which the end of the shaft 7 projects, and on this end of the shaft 7 which projects into the chamber 5 is keyed or otherwise secured a head 16 upon which is secured the grinding disk 17, the two together comprising the rotatable "mill stone". The shaft 7 is adapted to yield along its longitudinal axis, but is held in its proper position with the head 16 in proper relation to the fixed mill stone by an adjustable holding device that is attached to the base A and bears against the end of the shaft 7 forming a yielding end thrust bearing for the shaft. This attachment comprises a slidable thrust block 7^c held slidingly on bars 15 and 15^a that project from the base A. Between the block 7^c and the ends of the rods 15 and 15^a are interposed springs 15^d, whose tension may be adjusted by means of nuts 15^b and 15^c that run on the threaded ends of the rods 15 and 15^a. The sliding block 7^c is provided with a wedge face that engages against the wedge-faced end of the plug 7^b, which plug 7^b engages in the bearing formed by the pillow block 1 and the cap 3. Interposed between the end of the plug 7^b and the end of the shaft 7 are antifriction disks or washers 7^a. The plug 7^b is provided with a lever arm 7^d by means of which it may be turned quickly on its own axis, thereby actuating the shaft 7 or relieving the tension of the springs 15^d and allowing the shaft to yield. A collar 8^a on the shaft 7 prevents too close an approximation of the head 16 to the fixed mill stone 24. On the shaft 7 is a driving pulley 8 by means of which the shaft is driven by a belt 9 from any suitable or convenient source of power.

Within the housing and in the chamber 5 is located a fixed mill stone 24, which is secured to a removable closure member 20 having a considerable thickness of body, and having those edges which engage the seat in the walls of the housing fashioned to a zone of a spherical surface to engage with the concave spherical zone 18 fashioned in the thick walls of the housing. The plate is held to its place after adjustment has been made by screw bolts 22. These bolts engage loosely through holes in the closure member 20, and are themselves arranged in fixed relation to the walls of the housing. They are threaded and nuts run on the outer end of them bearing against the closure member, holding the closure member in any adjusted position. The adjusting screws are three in number arranged equally distant from the center of the closure member, three bolts being sufficient to produce any adjustment for parallelism between the faces of the fixed stone and the rotating stone. The fixed stone and the closure member are provided with an eye 26 through which the grain to be treated is fed into the space between the stones, and the hopper or spout 28 directs the grain into the eye of the fixed stone. A screw feed 27 projects from the rotating shaft and has a bearing 27^a on the hopper wall; this screw forces the grain into and through the eye and an agitator member 33 on shaft 32 stirs the grain in its course through the hopper. The

agitator is actuated by a belt 11 that connects pulley wheel 10 on the shaft 7 with pulley wheel 12 on the shaft 32.

The center of the sphere of which the zone 18 forms a part and the center of the sphere of which the zone 19 forms a part coincide, and this common center is in the axis of the shaft 7, the distance of the center of the spheres along the shaft from the mill stones is not important, but it is important that the spherical zones engage closely together and that one may be shifted slightly with respect to the other, thereby shifting the planes which bound the zone of the closure, and thus adjusting the fixed wheel for parallelism to the rotating wheel. The adjustment never is great, but it should be accurate.

What I claim is:—

1. In a grinding mill, in combination with a housing, provided with a seat shaped as the zone of the surface of a sphere, a grinding disk held in axially fixed relation thereto, a movable grinding disk, a support for said movable grinding disk provided with a surface shaped as the zone of a surface of a sphere concentric to said first-mentioned sphere and arranged to engage a zonular seat on said housing; bolts engaging said disk support for adjustably securing the same to its seat, substantially as described.

2. In a grinding mill, the combination of a housing, a rotatable disk-carrying head in said housing, a non-rotatable disk, a support therefor, a seat shaped as the zone of a surface of a sphere in said housing for said support, a complementary surface on said support the shape of a zone of a spherical surface in concentric relation with said seat and adapted to engage therewith, and a plurality of adjusting bolts arranged to hold the said support in its seat, substantially as described.

3. A grinding mill having in combination a housing, a rotatable disk support, a shaft for said disk support, movable longitudinally, a thrust block in axial alinement with said shaft provided with a wedge terminal, a wedge shaped abutment block, parallel rods arranged to hold said abutment block, springs interposed between the abutment block and the ends of the parallel rods, means for turning the thrust block and anti-friction members interposed between the shaft and the thrust block, substantially as described.

In testimony whereof, I sign this specification in the presence of two witnesses.

ROBERT A. REYNOLDS.

Witnesses:
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