

Sept. 6, 1932.

W. H. LETZ

1,875,743

GRINDING MILL

Filed Feb. 3, 1930

Fig. 1.

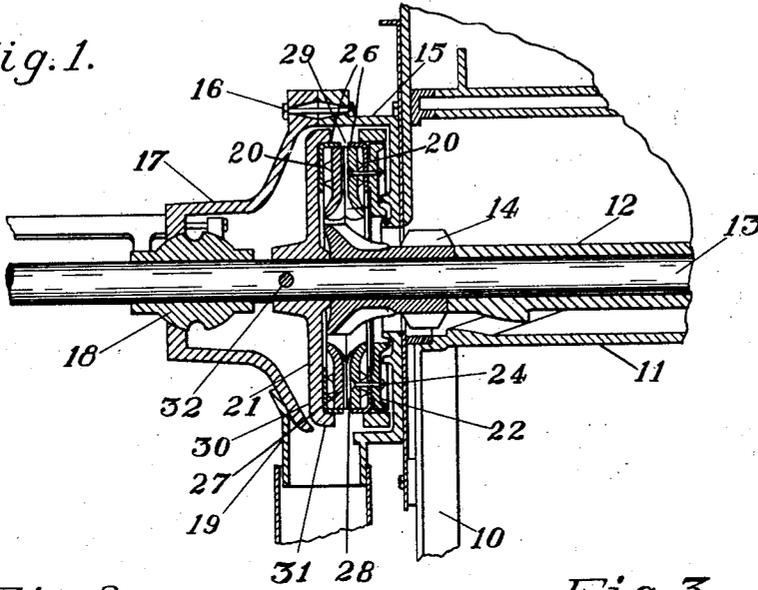


Fig. 2.

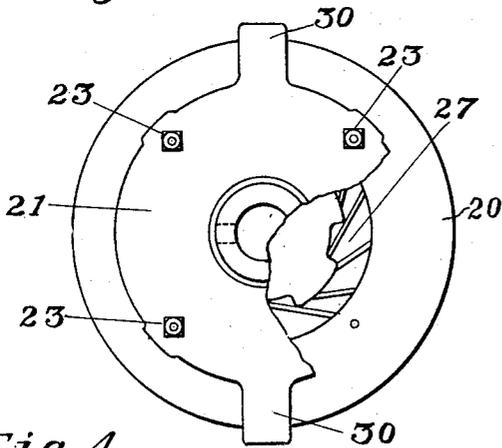


Fig. 3.

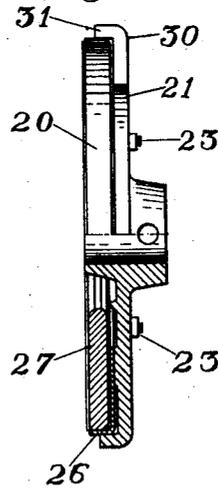
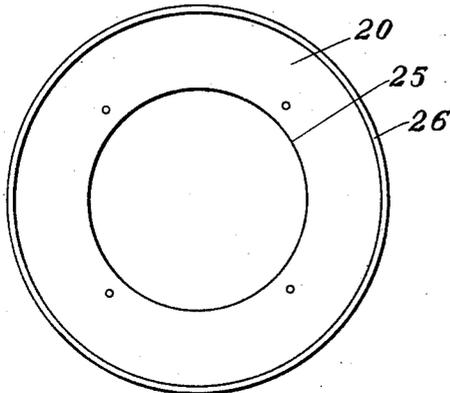


Fig. 4.



INVENTOR.
William H. Letz
BY John P. Smith
ATTORNEYS.

UNITED STATES PATENT OFFICE

WILLIAM H. LETZ, OF CROWN POINT, INDIANA, ASSIGNOR TO THE LETZ MANUFACTURING COMPANY, A CORPORATION OF INDIANA

GRINDING MILL

Application filed February 3, 1930. Serial No. 425,383.

The present invention is directed generally to improvements in grinding mill construction, but more particularly to a novel and improved construction which encases the grinding plates or burrs so that in the event of the accidental breaking of the grinding plates the broken parts thereof are retained within the casing so as to prevent breakage of other parts of the grinding mill.

One of the objects of the present invention is to provide a novel and improved form of grinding plate or burr protector which substantially encases both the revolving grinding plate and stationary grinding plate, so that in the event a stray bolt or nut, or any other foreign obstacle is accidentally thrown between the grinding members, and results in the breaking of the grinding plates into one or more pieces, the casing thus provided prevents the pieces of broken grinding plate from leaving their position, obviously preventing the flying pieces of the grinding plate to cause damage to the other parts of the mill.

A still further object of the invention is to provide a novel and improved construction of mill, so that in the event of the accidental breaking of the grinding plates of a mill by reason of foreign substances getting between the grinding plates, the damage caused thereby is reduced to the mere replacement of the plates without damage to other parts.

These and other objects are accomplished by providing a construction and arrangement of the various parts in the manner hereinafter described, and particularly pointed out in the appended claims.

Referring to the drawing,

Fig. 1 is a longitudinal cross sectional view of a fragmentary portion of a conventional form of grinding mill showing my improvement embodied therein.

Fig. 2 is an end elevational view showing a portion of the rotary plate holder broken

away, and also showing my improved grinding plate protector mounted between the plate holder on the grinding plate.

Fig. 3 is a side elevational view partly in cross section showing the parts disclosed in Fig. 2.

Fig. 4 is a front elevational view of one of the steel disks which encases the plate or burr.

Heretofore, whenever a bolt, a large wooden screw, or any other hard obstruction accidentally found its way between the grinding plates or burrs of a grinding mill, the results were that one or both of the grinding plates broke and the flying pieces of the grinding plate caused the breakage of other parts of the grinding mill, such as the grinding plate covers or the casting which surrounds the grinding plates, thereby entailing considerable delay and expense to the operator of the machine.

It is, therefore, the primary object of the present invention to alleviate this difficulty and reduce the damage caused by the breaking of the grinding plates or burrs to a minimum.

In the drawing I have shown the present construction comprising a relatively thin steel disk occupying but a little space between the plate holder and grinding plate, thereby providing a very strong and practically indestructible shield or casing for retaining the grinding plates therebetween, so that in the event of the accidental breaking of the grinding plates the flying pieces of the same will be prevented from causing further damage. It will of course be understood that the grinding plate holder may be constructed with a recess therein so as to form in effect a casing surrounding each grinding plate.

In illustrating one embodiment of my invention, I have shown the same in connection with a conventional form of grinding mill, which comprises the usual supporting frame

structure 10, which in turn is provided with the usual concave 11, and the crushing and conveying screw 12 mounted on the usual shaft 13. Mounted forwardly of the conveying screw 12 and secured to the shaft 13 in the usual manner is an auger 14. Secured to the frame structure 10 in a manner well understood in the art is a grinding frame casing or cover 15 which has secured thereto by means of bolts 16 a complementary member or cover 17. One end of the cover is provided with a suitable bearing member 18 in which the shaft 13 is journaled therein. Connected to the lower side of the cover members 15 and 17 is a discharge spout 19 through which the ground grain is discharged into suitable receptacles in a manner well understood in the art.

The construction thus far described is the conventional form of grinding mill, and a more detailed description of the same is unnecessary.

The invention in the present instance is directed to a novel and improved construction in which the stationary and rotary grinding plates and burrs are substantially encased between two steel disks so that in the event of the breakage of either one of the grinding plates or burrs, the broken parts thereof will be prevented from becoming dislodged from their position, and thereby prevent the breakage of other parts of the mill. These steel disk protectors generally indicated by the reference character 20 are preferably made of relatively thin sheet steel, and are secured to the rotary and stationary burr holders 21 and 22 respectively by means of the usual bolts 23 and 24 which secure the grinding plates or burrs to the plate holders. These steel disks are provided with relatively large central bores 25, and have their peripheries as shown at 26 bent at substantially right angles with respect to the plane of the disk portions thereof, so as to form in effect a recess for the reception of the rotary and stationary grinding plates 27 and 28 respectively. The adjacent edges of each of the steel disks 20 as shown at 29 approach in close proximity to the contacting or grinding surfaces of each of the grinding plates or burrs 27 and 28, so as to confine or substantially encase the major portion of the two grinding plates, so that in the event of the breakage of either of these plates by some hard foreign substance, the pieces of the burrs resulting from such a breakage cannot be dislodged from their position so as to cause further breakage of the other parts of the mill. The rotary plate holder 21 is provided with oppositely disposed lugs 30 which in turn have their outer ends bent forwardly and at right angles to the main portion as shown at 31, so as to engage the outer flange of the disk 20. It is of course understood that the plate holder 21 is secured to the shaft 13 by the usual pin 32.

From the above description it will readily be seen that in the event of a hard foreign substance being accidentally received between the grinding plates which results in the breakage of the plates, that the broken pieces resulting from said breakage will not be permitted to be discharged from within the casing formed by the two steel disks, and thereby prevent further breakage of the other parts.

While in the above specification I have described one embodiment which my invention may assume in practice, it will of course be understood that the same is capable of modification, and that modification can be made without departing from the spirit and scope of the invention as pointed out in the following claims:

What I claim as my invention, and desire to secure by Letters Patent is:

1. The combination with a grinding mill, of a frame therefor, a rotary shaft mounted on said frame, a plate holder secured to said shaft, a grinding plate secured to said plate holder, a relatively stationary grinding plate secured to said frame and cooperating with said first-mentioned plate, and disks secured adjacent said plates having a peripheral flange formed thereon forming a recess for the reception of each of said grinding plates for substantially encasing both of said plates whereby the broken parts of said grinding plates resulting from the accidental breaking of said plates are prevented from being discharged from between said disks.

2. The combination with a grinding mill having a frame, of a rotary shaft mounted on said frame, a plate holder secured to said shaft, a grinding plate secured to said plate holder, a disk secured between said plate holder and said grinding plate, and a peripheral flange formed on said disks for retaining therein the broken parts of said plate resulting from the accidental breaking of said grinding plate.

3. The combination with a grinding mill having a frame, of a rotary shaft mounted on said frame, a plate holder secured to said shaft, a grinding plate secured to said plate holder, a second plate holder secured to said frame, a second grinding plate secured to said second plate holder and cooperating with said first named grinding plate, and steel disks mounted between each of said plate holders and said grinding plates for substantially encasing both of said plates whereby the broken parts of said grinding plates resulting from the accidental breaking thereof are prevented from being discharged from between said disks.

4. The combination with a grinding mill of a frame therefor, a rotary shaft mounted on said frame, a plate holder secured to said shaft, a disk having a peripheral flange secured to said plate holder for encasing a grinding plate attached thereto, a relatively

stationary plate holder secured to said frame,
and a disk having a peripheral flange secured
to said stationary plate holder for encasing
a relatively stationary grinding plate secured
5 thereto whereby the grinding plates are sub-
stantially encased so that the broken parts
thereof resulting from the accidental break-
ing of said plates are prevented from being
displaced from said casing.

10 In testimony whereof I have signed my
name to this specification, on this 16th day
of January A. D. 1930.

WILLIAM H. LETZ.

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