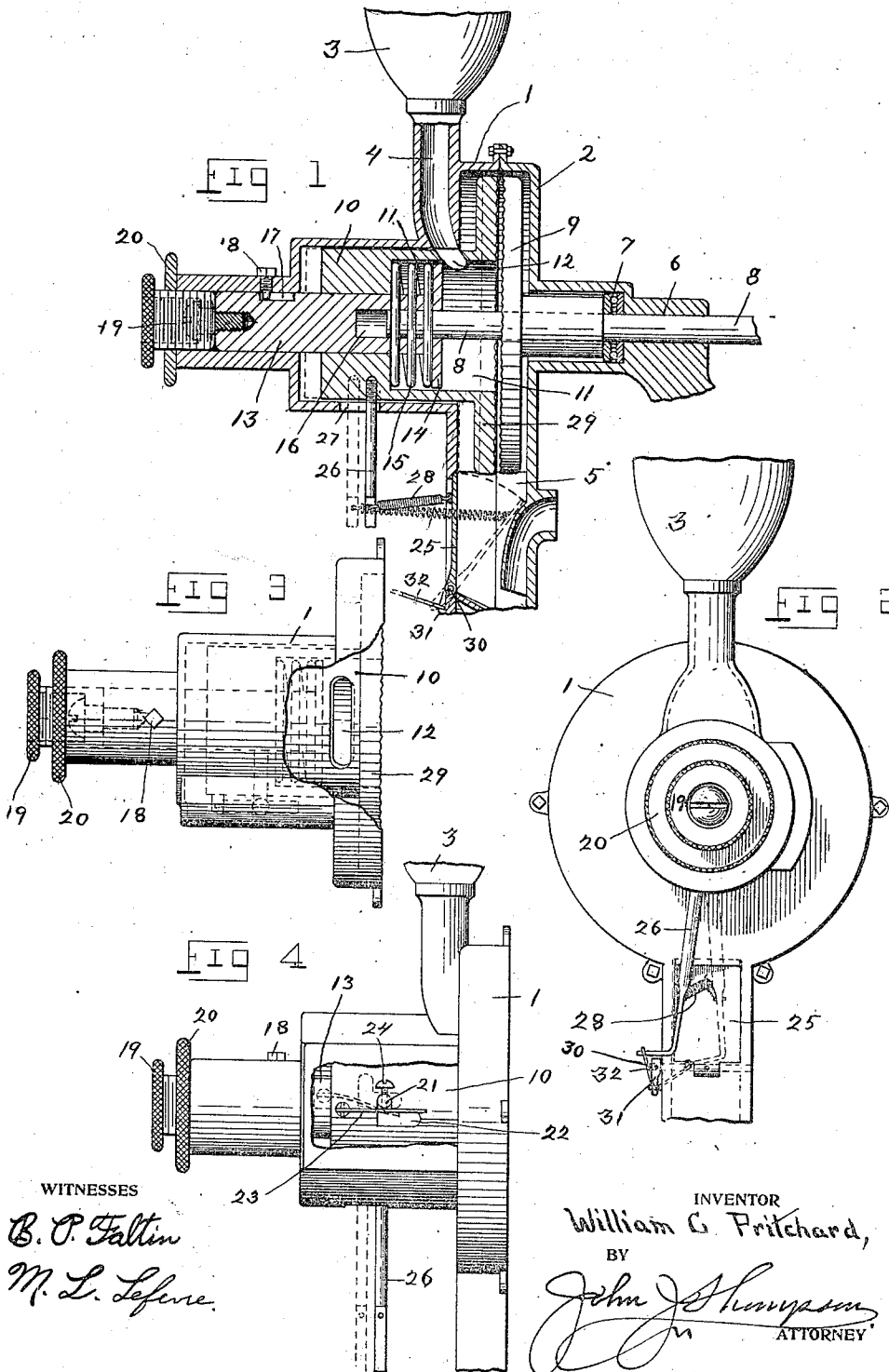


W. C. PRITCHARD.
 AUTOMATIC RELEASE FOR GRINDING BURS.
 APPLICATION FILED JUNE 17, 1911.

1,011,243.

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UNITED STATES PATENT OFFICE.

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AUTOMATIC RELEASE FOR GRINDING-BURS.

1,011,243.

Specification of Letters Patent.

Patented Dec. 12, 1911.

Application filed June 17, 1911. Serial No. 633,689.

To all whom it may concern:

Be it known that I, WILLIAM C. PRITCHARD, a citizen of the United States, residing at Lancaster, in the county of Lancaster and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Releases for Grinding-Burs, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to an automatic releasing mechanism for grinding burs, such as are employed in coffee and feed mills; and the device relates more particularly to means whereby the stationary grinding surface or bur of the mill may be disengaged from its coöperation with the movable bur of the mill, in case of the entrance into the mill of any foreign substance which will endanger the grinding burs.

The object of the invention is to provide a simple, cheap and durable device of this class that shall be automatic in its releasing action when any foreign substance enters the burs.

Another object of the invention is to construct and provide means whereby during the period in which the burs are held out of grinding relation with each other, the material which is unground and partly ground, and in which the foreign substance is contained, will be prevented from descending upon and mixing with the ground substance which has already passed through the burs, and also to prevent any unground substance from the hopper from entering the burs during the period of inaction.

A further object of the invention is to provide means whereby after the foreign substance has been removed, the grinding parts may be quickly brought again into action, and the flow of material through the mill returned to its normal state. Still another object of the invention being to provide means for adjusting the grinding quality or fineness of the mill within certain fixed limits.

With these and other objects in view, my invention consists in certain construction and combination of parts as will hereinafter be described and claimed in the annexed specification, and illustrated in the accompanying drawings which form a part of this application, and in which like figures of reference refer to corresponding parts in all the views; but it is fully understood that

while I have here described my invention as shown, that I do not confine myself to the exact design, as slight changes may be made in the construction and arrangement of the several parts without departing from the spirit of the invention.

In the drawings:—Figure 1, is a vertical sectional view of a fragmentary portion of a grinding mill embodying my invention. Fig. 2, is an end elevation of the same. Fig. 3, is a top plan view with a portion of the casing removed therefrom to show the inlet passage. Fig. 4, is a side elevation with a portion of the casing broken away to expose the catch mechanism.

Referring to the drawings; the outer casing is formed of the two parts 1, and 2, which also form a part of the mill frame and which are joined together in the usual way, and which are also provided with the usual feed hopper 3, inlet pipe 4, and outlet pipe 5. Mounted in a suitable plain bearing 6, and a thrust bearing 7, in the frame, and within the casing 2, is a driving shaft 8, upon which is secured the rotating or movable bur 9. The non-revolving and adjustable bur 29, is slidably mounted in the casing 1, and is formed with a hub 10, having a recessed portion 11, communicating with the face of the bur and provided with an opening 12, in the side wall thereof, which, when the bur is in a grinding position, registers with the inlet pipe 4, admitting the material to be ground from the hopper 3, to the center of the hub, thence between the grinding or crushing surfaces to the outlet pipe 5. Within said recess 11, is slidably mounted a plunger 13, which extends through the hub 10, and has a bearing in the casing 1. Said plunger 13, is formed with a head 14 which retains a coil spring 15, between said head 14, and the bottom of the recess 11; while said head 14, and plunger 13, are provided with a bearing 16, for the end of the shaft 8, to rotate within.

For limiting the extreme movement in either direction of the plunger 13, and also preventing the plunger 13 from revolving with the hub 10, the same is provided with a blind key-way 17, which is engaged by a set screw 18, threaded in the casing 1 or other suitable means and which also prevents the burs 9, and 29, from being brought into too close grinding or crushing relation with each other. For further adjusting the relation of the burs 9, and 29, the outer end

of the casing 1, is internally threaded and provided with a hollow adjusting plug 19, abutting against the end of the plunger 13 and secured thereto in a swiveling manner 5 by a screw 33, extending through the end of the plug 19, and threaded into the end of the plunger 13, and retained in position by a lock-nut 20.

For retaining the adjustable bur 29, in 10 grinding or crushing position as shown in Figs. 1, and 4, the plunger 13, is provided with a stud arm 21, which extends through an L-shaped or other suitable slot 22, formed in the side of the hub 10, said arm 21, being 15 normally retained in the short or transverse arm of the slot 22, by a tension spring 23, mounted on said hub 10; the tension of which is controlled by an adjusting screw 24, in said arm 21 the grinding pressure 20 being against said spring 23. In this manner it will be seen that when any foreign substance enters between the burs 9, and 29, the adjustable bur 29, will be carried slightly forward or in the direction of the rotation 25 of the rotating bur against the pressure of the tension spring 23, and the instant that the stud arm 21, enters the longitudinal or long portion of the slot 22, the hub 10, will be forced back by the spring 15, and 30 the bur 29, carried back out of grinding or crushing relation with the rotating bur 9. As the bur 29, is retracted, the opening 12, is brought out of register with the inlet pipe 4, thus closing said pipe 4, and preventing 35 any material from entering the burs 9, and 29.

For preventing the material containing the foreign matter which is between the burs 9, and 29, from descending through the passage 5, into the already ground material, 40 a portion of the wall or side of said passage 5, is cut away and provided with a hinged door 25, which may be opened inwardly as shown by the dotted lines in Fig. 1, to close the passage 5, and direct the contents of the 45 burs 9, and 29, outward into a suitable receptacle (not shown). For automatically operating this door 25, there is provided an arm 26, having one of its ends secured to the hub 10, and extending through an opening 27, in the casing 1, and having secured 50 thereto one end of a spring 28; the other end of said spring 28, being attached to said door 25, for the purpose of normally retaining the same in a position to close the side of the passage 5; while for reversing 55 the position of said door 25, when the burs 9, and 29, are thrown out, an arm 31, is secured to the hinge pin 30, of said door 25, which is joined to the arm 26 by a link 32; and in this manner whenever the bur 29, is 60 thrown out of grinding engagement, the passage 4, from the hopper is closed, the passage 5, to the ground material closed, and the material and foreign substance between 65 the bur removed, when the bur 29, may be

brought into grinding position by pushing forward on the arm 26, and slightly turning the hub 10, to engage the stud 21, in the short arm of the slot 22.

Having thus described my invention what 70 I claim as new and desire to secure by Letters Patent is:—

1. In an automatic bur releasing mechanism for grinding mills, the combination with a supporting frame and bur casing, 75 provided with feeding and discharging passages, of a driving shaft rotatably mounted in said frame, a revolving bur secured upon said shaft, an adjustable bur mounted within said casing, means for automatically re- 80 ceeding said adjustable bur from grinding engagement with the revolving bur, when a foreign substance enters said burs from the feeding passage, means for closing said feed- 85 ing passage when said burs are out of grinding position, means for closing said discharge passage when said burs are out of grinding position, means for discharging the contents of said burs other than the dis- 90 charge passage.

2. In an automatic bur releasing mechanism for grinding mills, the combination with a supporting frame provided with a bur case having an inlet and an outlet open- 95 ing, a rotating grinding bur mounted within said case, an adjustable grinding bur mounted within said case, said adjustable bur formed with a hub, said hub formed with a recess, a flanged plunger slidably mounted in said hub and recess, and extending be- 100 yond said hub into said case, a compression spring contained within said recess under the flange of said plunger, means for limiting the sliding movement of said plunger within said case, and means for adjusting 105 and changing the limits of said sliding movement.

3. In a grinding bur releasing mechanism of the class described, the combination with a rotating bur and an adjustable bur, of a 110 hub formed on the rear of said adjustable bur, said hub formed with an axial hole communicating with an orifice in the body thereof, a plunger slidably mounted in said orifice and hole, a head formed on said 115 plunger and contained within said orifice, a compression spring mounted on said plunger between the flanged head and the bottom of said orifice, a casing inclosing said burs and said plunger, means for limiting the sliding 120 movement of said plunger within said casing, means for normally retaining said adjustable bur in grinding position comprising a stud secured to said plunger and extend- 125 ing through a slot of angular form having a long arm and a short arm in the hub of said bur, a tension spring secured to said hub and bearing against said stud for the purpose of retaining said stud in the short 130 arm of said slot for the purpose set forth.

4. In a releasing mechanism for grinding
burs of the class described, the combination
with a suitable casing having an adjustable
bur and a revolving bur mounted therein,
5 said adjustable bur formed with a central
feeding orifice having an opening in the side
wall thereof communicating with the hopper
passage when the burs are in a grinding po-
sition, means controlled by the receding
10 movement of said adjustable bur for clos-
ing the feeding and discharging passages
from said burs.

5. In an automatic bur releasing device
of the class described, the combination with

a frame and casing having a revolving bur 15
and an adjustable bur mounted therein, said
casing provided with a bur feeding passage
and a discharge passage, of means for auto-
matically receding the adjustable burs when
a foreign substance enters through the feed- 20
ing passage, means for closing both of said
passages when said adjustable bur is receded.

In testimony whereof I affix my signa-
ture in presence of two witnesses.

WILLIAM C. PRITCHARD.

Witnesses:

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