

L. DELLERT.  
 AUTOMATIC STOP FOR GRINDING MILLS.  
 APPLICATION FILED APR. 24, 1917.

1,241,935.

Patented Oct. 2, 1917.

3 SHEETS—SHEET 1.

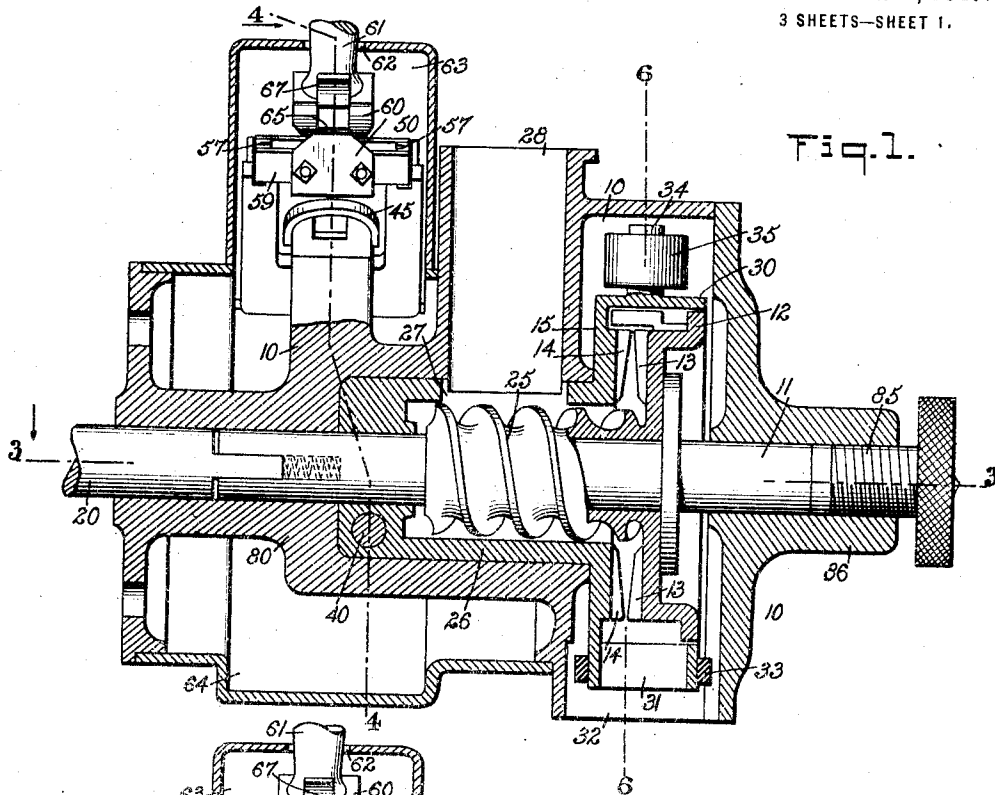


Fig. 1.

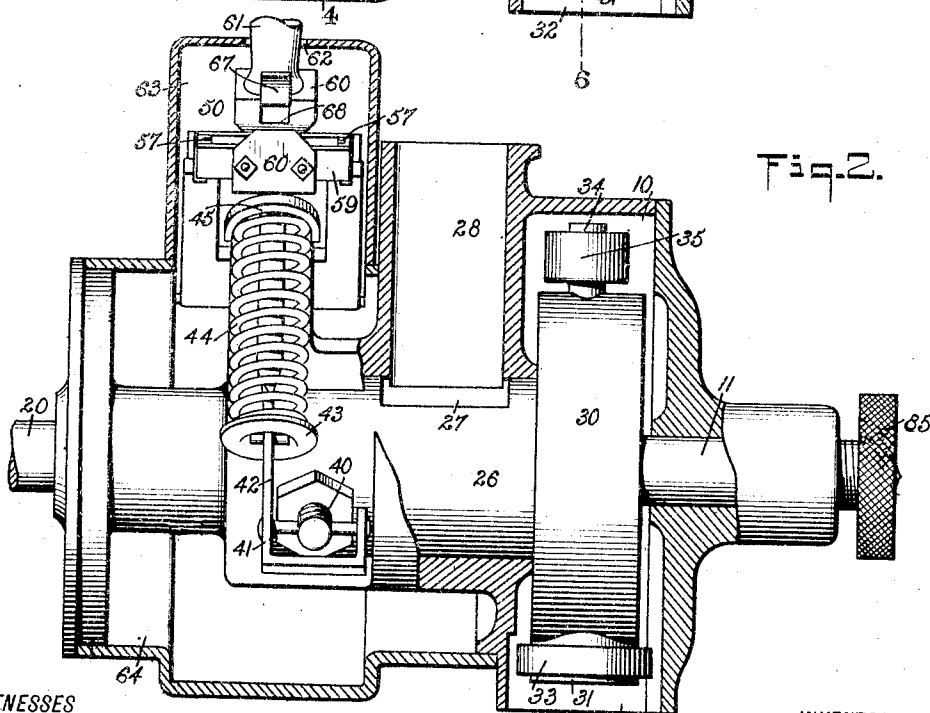


Fig. 2.

WITNESSES

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Fig. 3.

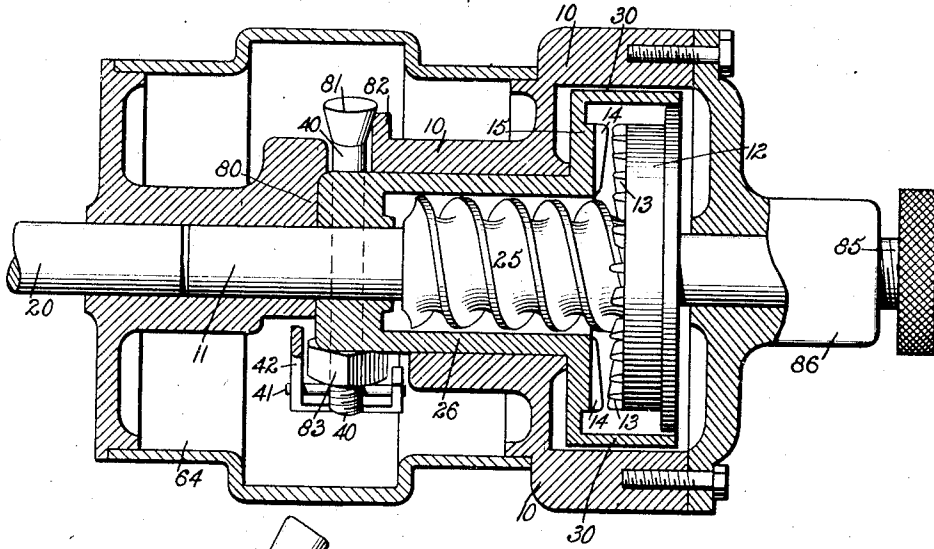


Fig. 4.

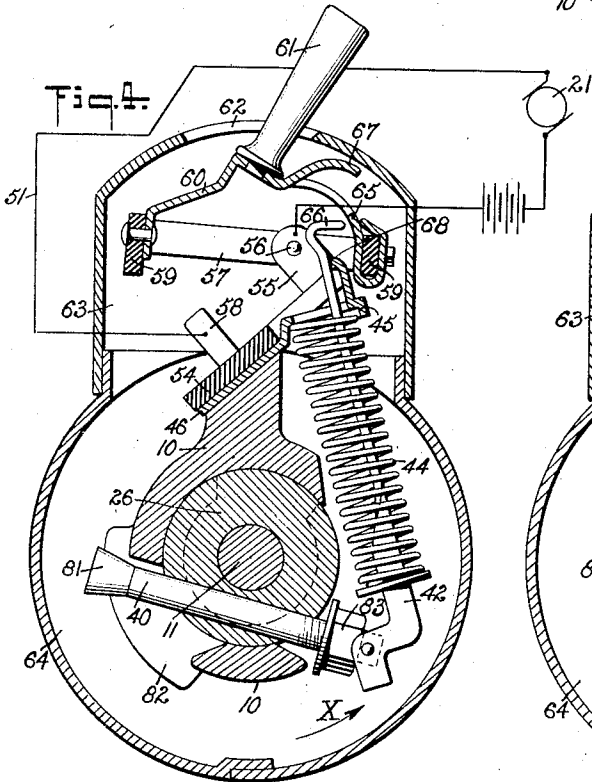
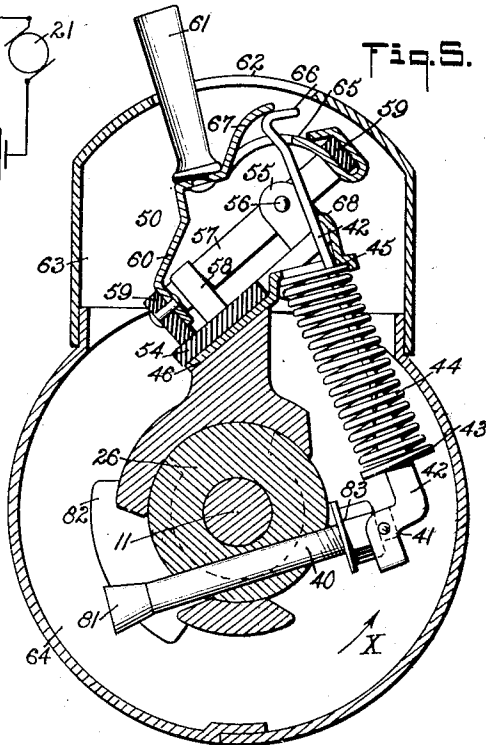


Fig. 5.



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Fig. 6.

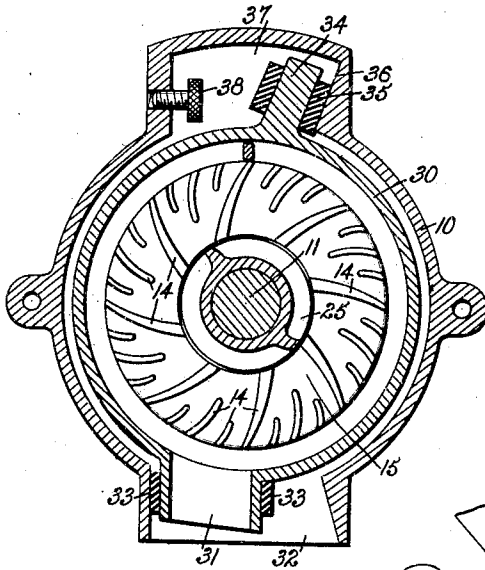


Fig. 7.

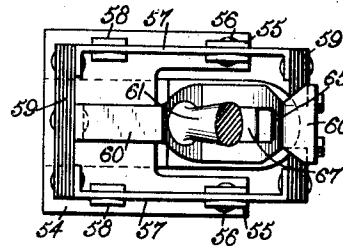
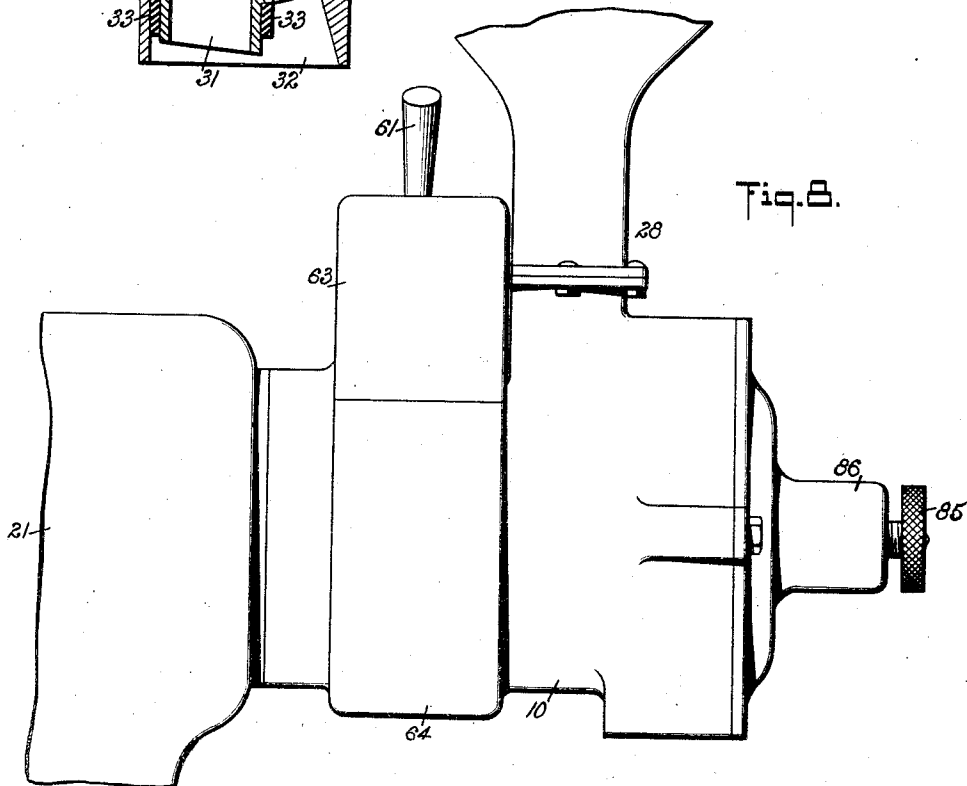


Fig. 8.



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# UNITED STATES PATENT OFFICE.

LOUIS DELLERT, OF BROOKLYN, NEW YORK.

## AUTOMATIC STOP FOR GRINDING-MILLS.

1,241,935.

Specification of Letters Patent.

Patented Oct. 2, 1917.

Application filed April 24, 1917. Serial No. 164,114.

*To all whom it may concern:*

Be it known that I, LOUIS DELLERT, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Automatic Stop for Grinding-Mills, of which the following is a full, clear, and exact description.

The invention relates to mills for grinding coffee, dried cereals and other materials, and its object is to provide a new and improved automatic stop controlled by the material to be ground between two grinding members to stop the driving means for the mill immediately after the last portion of the material is passing out between the grinding members.

In order to produce the desired result, use is made of a pair of coating grinding members adapted to grind the material between them, one of the grinding members being driven to rotate in one direction and the other grinding member being mounted to oscillate, a spring device connected with the said oscillating grinding member in the direction in which the other grinding member is rotating, and stopping means for the mill controlled by the said spring device.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a sectional side elevation of a grinding mill provided with the automatic stop;

Fig. 2 is a side elevation of the same with parts in section;

Fig. 3 is a sectional plan view of the same on the line 3—3 of Fig. 1;

Fig. 4 is a cross section of the same on the line 4—4 of Fig. 1 and showing diagrammatically the electric motor and the stopping mechanism for the same;

Fig. 5 is a similar view of the same with the parts in a different position;

Fig. 6 is a cross section of the mill on the line 6—6 of Fig. 1;

Fig. 7 is a plan view of the electric switch with the switch handle shown in section; and

Fig. 8 is a side elevation of the grinding mill and a portion of the electric motor for driving the same.

In the casing 10 of the grinding mill is

mounted to turn a shaft 11 on which is secured a grinding member 12, preferably in the form of a disk, having grinding teeth 13 on one face. The grinding teeth 13 coact with similar grinding teeth 14 arranged on an oscillating grinding member 15 to grind the material between the members 12 and 15, as hereinafter more fully explained. The grinding member 12 is continually driven in one direction, and for this purpose the shaft 11 is coupled with the shaft 20 of a motor 21, preferably of the electrical type and of any approved construction.

The hub of the rotary grinding member 12 is in the form of a feed screw 25 and extends within the hub 26 of the oscillating grinding member 15 and this hub 26 is provided with an inlet opening 27, preferably located on the top and in register with a hopper 28 for feeding the material to the feed screw 25 which delivers the material between the grinding faces of the grinding members 12 and 15. The oscillating grinding member 15 is provided with an annular flange 30 extending across the peripheral face of the rotary grinding member 12, and in the lower portion of this flange 30 is formed an outlet 31 for discharging the ground material through an opening 32 formed in the bottom of the casing 10. The outlet 31 is surrounded by a ring 33, preferably made of rubber, and adapted to abut against the walls of the outlet opening 32, as will be readily understood by reference to Fig. 6. The top of the flange 30 is provided with a pin 34 surrounded by a ring 35 of rubber or similar material, and this ring is adapted to abut against one side 36 of an extension 37 of the casing 10, and is also adapted to abut against a screw 38 screwing in the side wall of the extension 37 directly opposite the wall 36. By the arrangement described, the oscillating movement of the grinding member 15 is limited and the outlet 31 is always in register with the correspondingly enlarged outlet opening 32 of the casing.

In the end of the hub 26 of the oscillating grinding member 15 is arranged a transversely extending bolt 40, on one end of which is pivoted an angular offset of a hook 42 provided on its shank with a collar 43 on which is seated the lower end of a spring 44 resting with its upper end in a cup 45 attached or formed on a plate 46 secured to

the housing 10. Normally the spring 44 is in the extended position shown in Fig. 4, but when the mill is running and the material to be ground passes between the grinding 5 faces of the grinding members 12 and 15 then the grinding member 15 is caused to rotate in the direction in which the grinding member 12 is rotating by the action of the material on the teeth 14 of the grinding 10 member 15. The oscillating movement given to the grinding member 15 in the direction of the arrow *a* causes a compression of the spring 44 (see Fig. 5), and when the last portion of the material is ground and 15 passes out from between the grinding faces of the grinding members 12 and 15 then the spring 44 returns the grinding member 15 to its normal position. Thus the oscillating movement of the grinding member 15 in one 20 direction is controlled by the material passing between the grinding faces of the grinding members 12 and 15 to be ground, and the return movement of the oscillating member 15 is accomplished by the spring 44.

25 The hook 42 controls a switch 50 arranged in a circuit 51 of the motor 21, and this switch 50 is preferably of the knife type and is arranged as follows, special reference being had to Figs. 1, 2, 4, 5 and 7. On 30 the plate 46 is secured a block 54, of rubber or other insulating material, and on this block are arranged brackets 55 engaged by the pivots 56 of the side arms of a switch lever 57 adapted to engage contact members 35 58 held on the block 54. The side arms of the switch lever 57 are connected with each other by crossbars 59 of rubber or other suitable insulating material, and on the said crossbars 59 is secured a bail 60 carrying a 40 handle 61 extending through a slot 62 formed in a switch casing 63 attached to the casing 10, the said casing having a bearing portion 64 inclosing the spring 44 and the bolt 40. The bail 60 is provided with a 45 shoulder 65 adapted to be engaged by the head 66 of the hook 42 to swing the switch lever 57 from closed into open position, as hereinafter more fully explained. The bail 60 is provided above the shoulder 65 with a 50 stop arm 67 adapted to be engaged by the head 66 of the hook 42 to limit the upward movement thereof. Owing to the offset 41 on the spring-pressed hook 42 the latter tends to swing to the right against a shoulder 68 formed on the plate 46 to properly 55 engage the head 66 of the hook 42 with the shoulder 65 at the time the switch is closed (see Fig. 5) to subsequently swing the switch into open position. The shoulder 68 60 swings the hook 42 to the left with a view to disengage the head 66 from the shoulder 65 at the time the oscillating grinding member 15 nears the end of its return movement (see Fig. 4). The bail 60 is provided with a 65 rubber bumper 59 adapted to engage the

block 54 to limit the swinging movement of the switch lever 57.

When the switch is in the open position shown in Fig. 4 and it is desired to start the mill, then it is only necessary for the operator to take hold of the handle 61 and swing 70 the same over to the left to engage the switch lever 57 with the contact 58 to close the circuit 51 for the motor 21 so that the latter is started and the rotary grinding 75 member 12 is rotated. The material to be ground and fed through the hopper 28 passes into the hub 26 and is fed by the feed screw 25 between the grinding faces of the grinding members 12 and 15, and this ma- 80 terial acts on the grinding member 15 to oscillate the latter against the tension of the spring 44. During this oscillating movement of the grinding member 15 in the direction in which the other grinding member 85 is running, the hook 42 assumes the position shown in Fig. 5. When the material has been ground and the last portion thereof is passing out from between the grinding faces then the spring 44 turns the grinding wheel 90 15 in the reverse direction of the arrow *a* and at the same time the hook 42 engages with its head 66 the shoulder 65 thus imparting a swinging motion to the switch lever 57 to disconnect the latter from the 95 contact 58. The motor circuit is now broken and the motor comes to a stop.

The end of the hub 26 abuts against an abutment 80 forming a bearing for the adjacent ends of the shafts 11 and 20, and in 100 order to take up wear the head 81 of the bolt 40 previously mentioned is made conical and abuts at one side against a shoulder 82 forming part of the casing 10. It will be noticed that on screwing up the nut 83 105 of the bolt 40, the head 81 thereof by bearing against the shoulder 82 forces the hub 26 and consequently the grinding wheel 15 to the left and against the abutment 84. The shaft 11 and its grinding wheel 12 can 110 be adjusted relative to the oscillating grinding wheel 15 by the use of a screw 85 screwing in the outer end of the bearing 86 in which the right-hand end of the shaft 11 is journaled. Thus by the arrangement de- 115 scribed the wear of the grinding member 15 in its bearing can be taken up and the other grinding member 12 can be adjusted to keep the grinding faces of the said grinding wheels 12 and 15 at all times in 120 the proper relation to each other to grind the material to the desired fineness.

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

1. In a grinding mill, a pair of coacting grinding members adapted to grind the material between them, one of the grinding members being driven to rotate in one direction and the other grinding member be- 130

ing mounted to oscillate, a spring device connected with the said oscillating grinding member and placed under tension on oscillating the said oscillating grinding member in the direction in which the other grinding member is rotating, and stopping means for the mill controlled by the said spring device.

2. In a grinding mill, a pair of coacting grinding members adapted to grind the material between them, one of the grinding members being mounted to turn continuously in one direction and the other grinding member being mounted to oscillate, a resistance connected with the said oscillating grinding member and opposing the oscillating of the oscillating member in the direction in which the other grinding member is rotating, and means carried by the oscillating member for limiting oscillation thereof.

3. In a grinding mill, a pair of coacting grinding members adapted to grind the material between them, one of the grinding members being mounted to turn continuously in one direction and the other grinding member being mounted to oscillate, driving means for the said rotary grinding member, a spring connected with the said oscillating grinding member to oppose the latter's oscillation in the direction in which the other grinding member is rotating, and means connected with the said oscillating grinding member and the said driving means to stop the latter on the return movement of the oscillating grinding member.

4. In a grinding mill, a pair of coacting grinding members adapted to grind the material between them, one of the grinding members being mounted to turn continuously in one direction and the other grinding member being mounted to oscillate, an electric motor driving the said rotary grinding member, a spring opposing the said grinding member on the latter turning in the direction in which the other grinding member is rotating, and a shut-off switch for the said electric motor and connected with the said oscillating grinding member to stop the motor on the return of the said oscillating member caused by the said spring.

5. In a grinding mill, a pair of coacting grinding members adapted to grind the material between them, one of the grinding members being mounted to turn continuously in one direction and the other grinding member being mounted to oscillate, an arm on the said oscillating grinding member, a hook pivoted on the said arm, a spring pressing the said hook, and a motor controlling means adapted to be engaged by the said hook to stop the motor on the return movement of the oscillating grinding member by the action of the said spring.

6. In a grinding mill, a pair of coacting grinding members adapted to grind the material between them, one of the grinding members being mounted to turn continuously in one direction and the other grinding member being mounted to oscillate, driving means for the said rotary grinding member, an arm on the said oscillating grinding member, a hook pivotally connected with the said arm, a spring pressing the said hook, and a switch controlling the said driving means and adapted to be engaged by the said hook to open the switch and stop the said motor on the return movement of the said oscillating grinding member caused by the said spring.

7. In a grinding mill, a pair of coacting grinding members adapted to grind the material between them, one of the grinding members being mounted to turn continuously in one direction and the other grinding member being mounted to oscillate, driving means for the said rotary grinding member, an arm on the said oscillating grinding member, a hook pivotally connected with the said arm, a spring pressing the said hook, a switch controlling the said driving means and adapted to be engaged by the said hook to open the switch and stop the said motor on the return movement of the said oscillating grinding member caused by the said spring, and means to disengage the said hook from the said switch after the hook has opened the switch.

8. In a grinding mill, a pair of coacting grinding members adapted to grind the material between them, one of the said grinding members being mounted to rotate and the other being mounted to oscillate, means for continuously rotating the said rotary grinding member, a feed screw on the said rotary member to feed the material between the said grinding members, the said oscillating grinding member having a hub inclosing the said feed screw, the hub having an inlet opening, the said oscillating grinding member having an annular flange extending across the peripheral face of the said rotary grinding member, the flange having an outlet opening, and a hopper connected with the said inlet opening.

9. In a grinding mill, a pair of coacting grinding members, of which one is driven and provided with a feed screw to feed the material between the grinding members, the other grinding member having a hub inclosing the said feed screw, a bearing for the said hub, an abutment for the said hub, and a bolt extending transversely through the said hub and having a conical head engaging the said bearing to take up wear between the hub and the abutment.

10. In a grinding mill, a casing having an inlet hopper and an outlet, a pair of coacting grinding members adapted to grind the

material between them, one of said grinding members mounted to rotate continuously and the other grinding member mounted to oscillate, means for feeding the material from the inlet and between the said grinding members, said oscillating grinding member having an annular flange extending across the peripheral face of said rotary grinding member, the flange having an outlet opening, and means carried by the oscillating grinding member maintaining the outlet in said flange in registry with the aforesaid outlet of the casing. 10

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