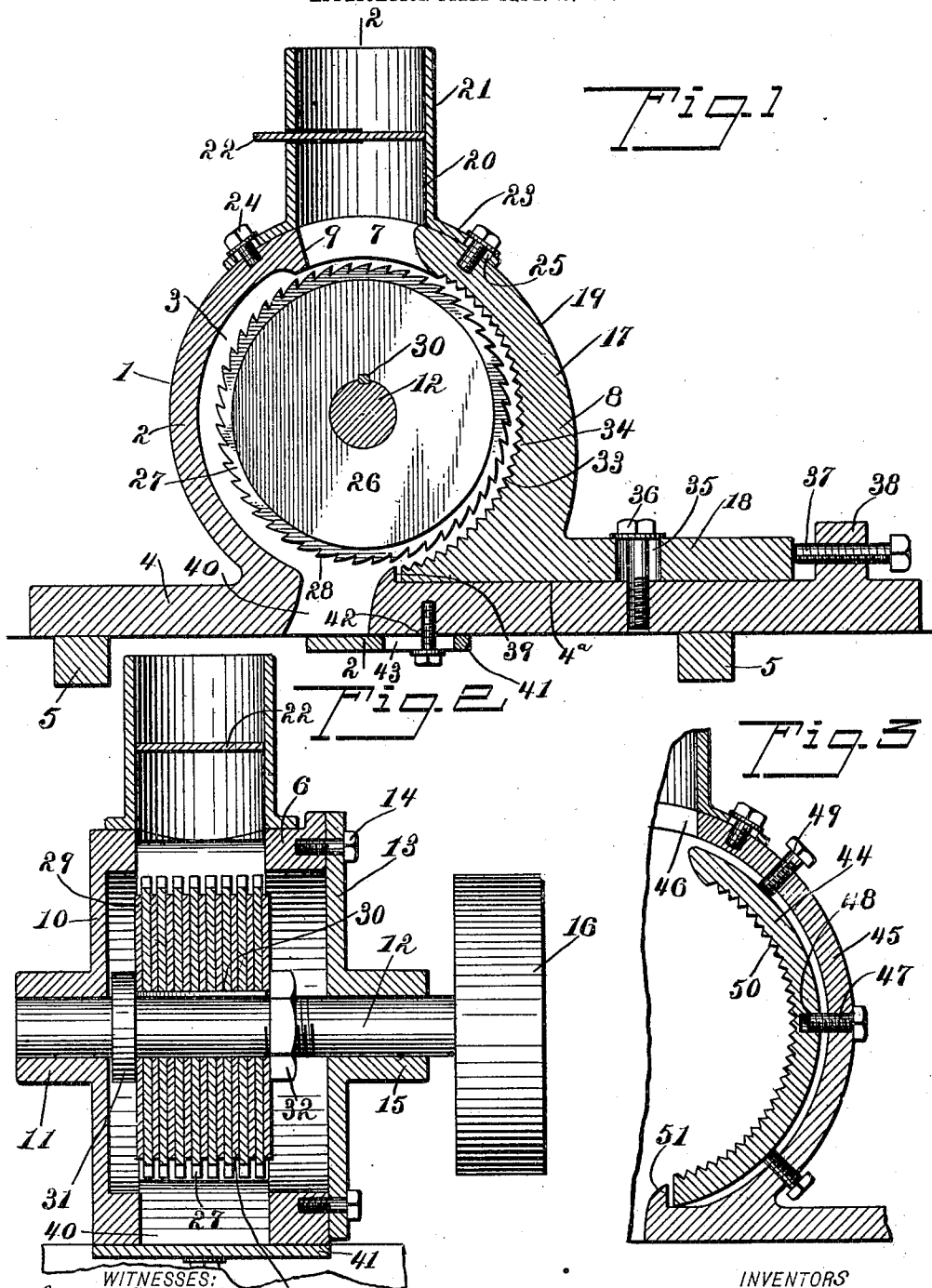


No. 838,370.

PATENTED DEC. 11, 1906.

P. P. BELT & E. UTZ.
GRINDING MILL.

APPLICATION FILED SEPT. 15, 1905.



WITNESSES:
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UNITED STATES PATENT OFFICE.

PERLEY POOR BELT, OF FREDONIA, AND EMIL UTZ, OF NEWTON, KANSAS.

GRINDING-MILL.

No. 838,370.

Specification of Letters Patent.

Patented Dec. 11, 1906.

Application filed September 15, 1905. Serial No. 278,575.

To all whom it may concern:

Be it known that we, PERLEY POOR BELT, a resident of Fredonia, in the county of Wilson, and EMIL UTZ, of Newton, in the county of Harvey, State of Kansas, citizens of the United States, have invented a new and Improved Grinding-Mill, of which the following is a full, clear, and exact description.

This invention relates to grinding-mills, such as used for grinding corn, coffee, spices, wheat, meat, &c.

The object of the invention is to produce a mill of this class which is simple in construction, which can be adjusted so as to grind readily to different degrees of fineness, and which may be readily repaired if the grinding-teeth become broken.

The invention consists in the construction and combination of parts to be more fully described hereinafter, and definitely set forth in the claim.

Reference is to be had to 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 vertical central section through the mill and taken in a plane at right angles to the axis of the grinding-wheel or bur. Fig. 2 is a vertical central section taken longitudinally of the axis of the grinding-wheel on the line 2 2 of Fig. 1, and Fig. 3 is a section taken in the same plane as Fig. 1 and showing a slight modification in the construction.

Referring more particularly to the parts, 1 represents the casing of the mill, the body 2 of which is of cylindrical form, so as to present a grinding-chamber 3 therewithin. The body 2 is preferably made integral with a base or base-plate 4, which is adapted to be supported in a horizontal position upon a table or upon timbers 5, as indicated in Fig. 1. In the cylindrical wall 6 of the casing and at its upper side a feed-opening 7 is formed, the same being located between a movable breast 8 and the upper edge 9 of the cylindrical wall 6. The body 2 comprises a side wall 10 of substantially circular form, which is integral with the aforesaid base 4 and which is formed centrally with a hub 11, to facilitate the mounting of a shaft 12. The opposite extremity of this shaft is rotatably mounted in a side plate 13, which is attached to the body 2 by means of suitable bolts 14, as shown. The side plate 13 is preferably provided with a hub 15, which is similar to the hub 11, which is disposed opposite. Upon the shaft

12 a belt-pulley 16 is rigidly attached, which enables the shaft to be driven, when desired, by means of a suitable belt.

Between the side plates 10 and 13 the aforesaid breast 8 is movably mounted. It comprises a body 17, having an arcuate form and provided with an extension or foot 18, which rests upon the upper side of the base 4, as shown. The outer face 19 of this breast is curved, as shown, so as to correspond substantially to the circular form of the body 2. The breast 8 may be considered a part of the case.

Above the aforesaid opening 7 a receiver or chute 20 is attached, the same having a cylindrical body 21, which may be opened or closed by means of a slide or shutter 22. The lower extremity of this receiver is expanded, so as to form a hood 23, which is attached rigidly to the body 2 and to the breast 8 by means of suitable bolts 24. For the purpose of enabling certain adjustments to be made, which will be described hereinafter, the hood 23 is provided with slots or openings 25, through which the said bolts pass, the longitudinal axes of the said slots being disposed in a plane at right angles to the shaft 12.

Within the grinding-chamber 3, upon the shaft 12, there is rigidly secured a bur or grinding-wheel 26. This wheel is composed of a plurality of disks 27, having saw-teeth 28 formed in the edges thereof. Between these saws or disks distance-pieces or washers 29 are provided. These washers are simply blank disks, which are of less diameter than the toothed disks 28. In this way the bur is composed of a plurality of toothed disks, with washers disposed therebetween. All of these disks are rigidly held upon the shaft 12 by means of a key 30, mounted in a suitable seat in the shaft, as indicated. At one side the bur 26 comes against a collar 31, preferably formed integral with the shaft, as shown. At the other side of the bur a nut 32 is mounted on the shaft, which is screwed up against the bur, so as to maintain the same against the collar, as shown.

The inner concave face 33 of the breast 8 is curved so as to conform substantially to the curvature of the bur, as shown in Fig. 1, and this face is covered with a plurality of teeth or ribs 34, which are disposed parallel with the axis of the shaft 12, as will be readily understood. This concave face 33 is normally held quite close to the face of the bur, so that as the bur rotates a grinding action

will take place upon the substance disposed between the bur and the breast.

In order to enable the breast to be adjusted to or from the bur, the foot 18 thereof is provided with a longitudinal slot 35. Through this slot passes a clamping-bolt 36, which is secured in the base 4, as indicated. By means of this bolt the breast may be securely attached in any adjusted position desired. To facilitate the adjustment of the breast as suggested, we provide an adjusting-screw 37, which is mounted in a lug 38, which projects up from the upper side of the base, as shown. The extremity of this adjusting-screw abuts against the extremity of the foot 18. Evidently by rotating the screw or bolt 37 the breast may be adjusted inwardly. In this connection it should be understood that the breast slides upon the upper face 4^a of the base 4. At a suitable point the base is provided with a nib or shoulder 39, which projects upwardly, so as to lie in the path of the inner extremity of the breast, and this shoulder operates as a stop which limits the inward movement of the breast, as will be readily understood. When the position of the breast is changed, as indicated, evidently one or both of the bolts 24, which attach the chute 20 to the body of the mill, will have to be loosened, so as to enable the bonnet 23 to adapt itself to the new position of the parts. In this connection it should be understood that the amount of adjustment of the breast is relatively small, and it is not necessary that the bonnet 23 should fit the case accurately with the breast in a new or adjusted position. When tightened, these bolts rigidly secure the upper part of the breast and the chute. Through the base 4 the casing 1 is formed with a discharge-outlet 40. The degree of opening at this point is adapted to be controlled by means of a sliding plate or shutter 41, attached to the bottom of the base 4 by means of a bolt 42, passing through a longitudinal slot 43. This bolt 42 affords means for clamping the shutter in any desired position. By this arrangement the progress of the ground material from the mill may be restricted as desired for the purpose of grinding the substance to a finer state. The coarsest grinding will of course occur when the opening 40 is unrestricted, as indicated in Fig. 2, wherein the plate is represented as removed.

Instead of making the breast 8 with a foot resting upon the base 4, as shown in Fig. 1, I may give it the form shown in Fig. 3. In this figure the breast 44 is of arcuate form simply and is adapted to be inserted within the body 45 of the casing. With this arrangement the cylindrical wall of the casing

is carried continuously from one side of the base to the other and the inlet-opening 46 made through this wall, as shown. The breast 44 is supported upon an adjusting screw or bolt 47, which projects through the wall of the body, as shown, the extremity thereof being received in the threaded opening 48. By rotating this adjusting-bolt 47 evidently the breast may be made to approach or recede from the bur. In order to maintain the breast in position and to hold the extremities thereof rigidly, we provide auxiliary adjusting-bolts or set-screws 49, which pass through the wall of the body 45, as indicated, so that their extremities abut against the outer face of the breast, as will be readily understood. Like the breast 8 the inner face of the breast 44 is provided with teeth 50, which lie adjacent to the face of the bur, as described in connection with the preferred form. With this form of the device we provide a shoulder 51, which is similar to the shoulder 39, described above, and which lies adjacent to the lower extremity of the breast 44 for the purpose of limiting the inward movement of the breast, as will be readily understood.

With a grinding-mill having a bur constructed as described, evidently if any of the teeth should become broken the bur may be repaired simply by removing the disk which has been injured and substituting a sound disk therefor.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

In a grinding-mill, in combination, a casing presenting a grinding-chamber therein, a shaft passing through said casing, a plurality of disks having teeth rigidly mounted on said shaft, a plurality of distance-pieces disposed between said disks, said casing comprising a base projecting therefrom, a breast slidably mounted on said base and presenting a curved inner face lying adjacent to said disks, means for clamping said breast to said base, and a feed-chute attached to said casing, said chute having slots, and bolts passing through said slots attaching said chute to said casing.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

PERLEY POOR BELT.

EMIL UTZ.

Witnesses to the signature of Perley P. Belt:

JOSEPH D. TIMMONS,

WILL W. BARRETT.

Witnesses to the signature of Emil Utz:

R. W. McGRATH,

ERNEST OTTO.