

C. A. MARKLE & G. B. McCLELLAN.
GRINDING MILL.

APPLICATION FILED OCT. 27, 1911.

Patented Feb. 25, 1913.

2 SHEETS—SHEET 1.

1,054,011.

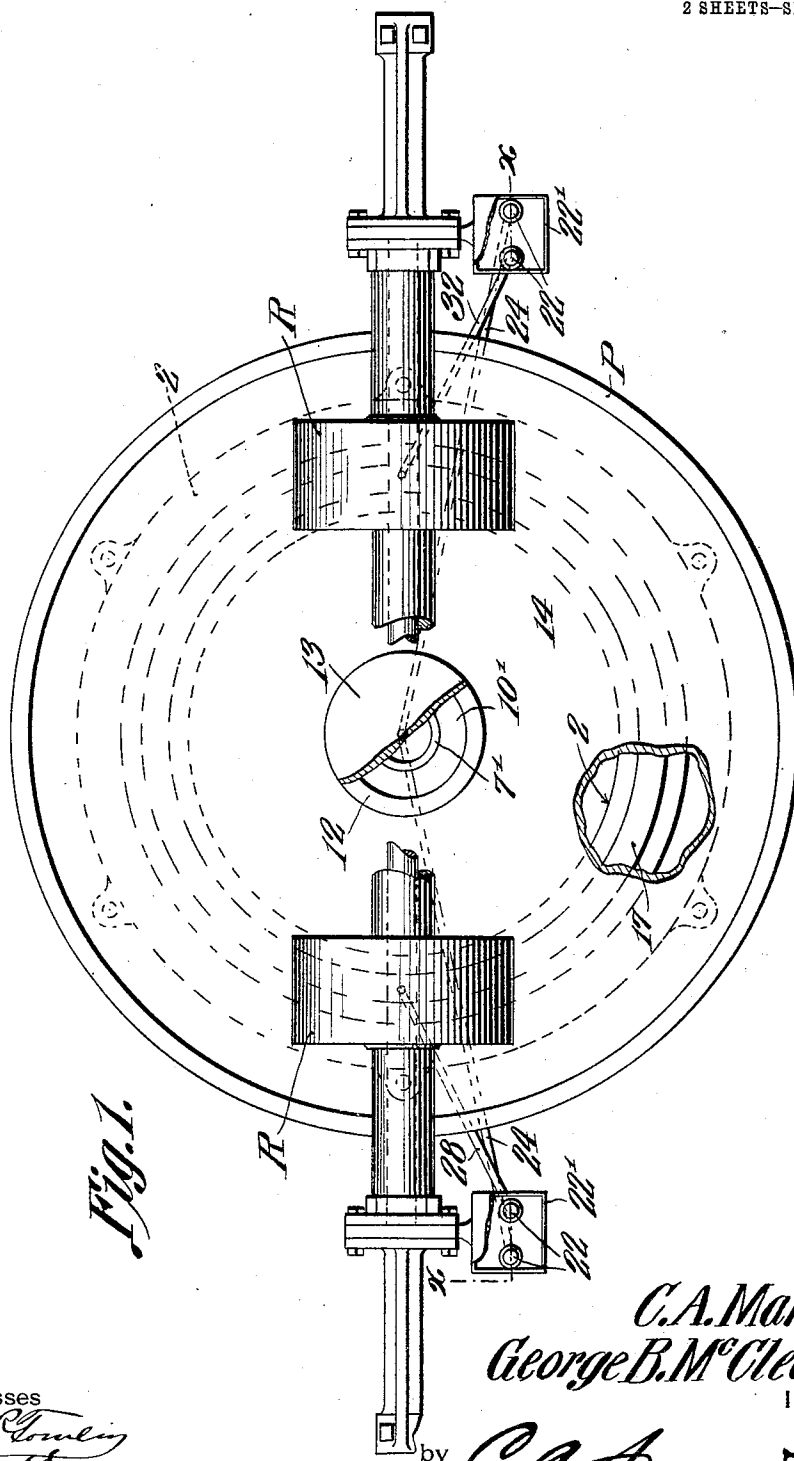


Fig. 1.

Witnesses

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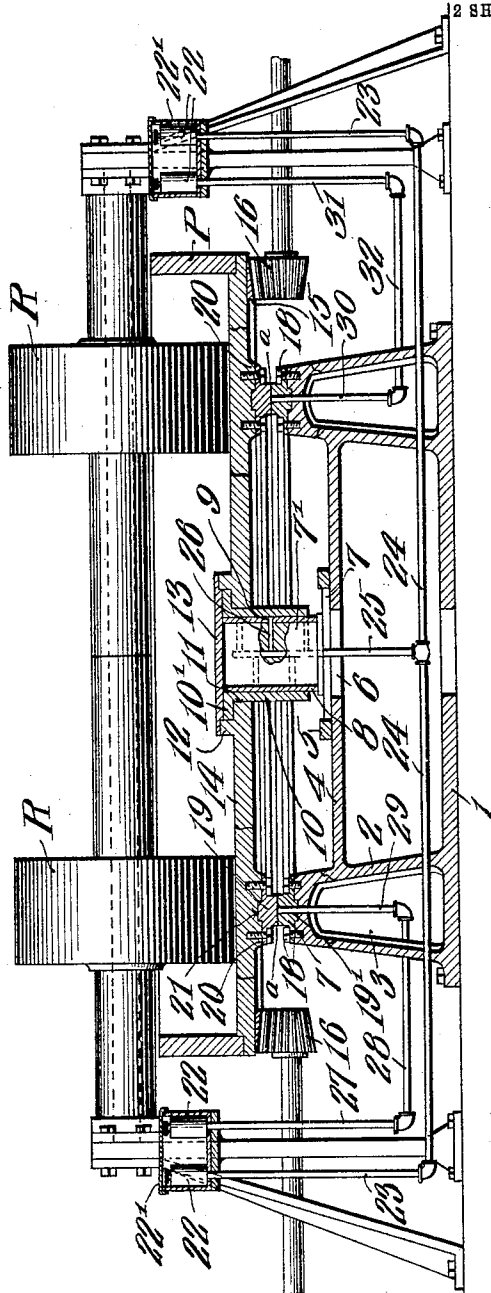
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2 SHEETS—SHEET 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

CLARENCE A. MARKLE AND GEORGE B. McCLELLAN, OF PUNXSUTAWNEY,
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GRINDING-MILL.

1,054,011.

Specification of Letters Patent.

Patented Feb. 25, 1913.

Application filed October 27, 1911. Serial No. 657,112.

To all whom it may concern:

Be it known that we, CLARENCE A. MARKLE and GEORGE B. McCLELLAN, citizens of the United States, residing at Punxsutawney, in the county of Jefferson, State of Pennsylvania, have invented a new and useful Grinding-Mill, of which the following is a specification.

The present invention relates to improvements in grinding mills, and the primary object of the present invention is the provision of a novel form of support for the bottom of the pan usually employed in connection with grinding mills adapted for grinding clay, the said pan bottom being supported concentrically, a track being carried by a casting upon a base and a co-acting track being carried by the under side of the pan, whereby the weight of the grinding rollers is centered above said tracks and the strain is relieved from the center of the pan bottom.

A further object of the present invention is the provision of a lubricating system disposed for lubricating the central axis of the pan bottom and for lubricating the coacting surfaces of the concentric tracks, that is, the movable track of the pan and the stationary track for supporting the pan directly below the grinding rollers.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawings: Figure 1 is a top plan view of the bottom of a grinding pan constructed in accordance with the present invention, a portion of the same being cut away to show in elevation a portion of the supporting base and the concentric tracks. Fig. 2 is a section taken on line $x-x$ of Fig. 1, the section through the pan at the point of contact with the right hand grinding mill being on a diametrical line.

Referring to the drawings, the numeral 1 designates a circular disk, platform or base, which has upstanding therefrom a circular pedestal 2, having the cored or open portion 3, a platform 4 being formed integral

with the inner portion of said pedestal within the same and parallel to the base 1. This platform 4 has formed integral therewith upon the upper face thereof and concentric with the opening 6, an annular rib or ridge 5 which provides a receptacle for the circular base 7 of the vertical column 7', whose bearing surface 8 is in the form of a sleeve provided with a series of radial openings 9, the purpose of which will presently appear, the bushing 10 anti-frictionally surrounding said sleeve 8 and having its annular flange 10' disposed upon the upper surface around the opening 11 and between the annular shoulder or rib 12 of the circular or disk pan bottom 14, a cover 13 concealing the upper ends of the column 7' anti-frictional bushing or sleeve 8 and the main bushing 10, the same covering the annular rib or ridge 12 and preventing particles of clay and other granular material from entering and destroying the bearing surfaces. Upon the under surface of the pan near the periphery thereof is the crown gear 15, which is in mesh at diametrically opposite points with the main pinions 16, by means of which the said pan bottom is rotated.

Mounted upon the upper surface of the pedestal 2 is the stationary track 17, the bolts 18 locking the same in immovable position with regard to the said pedestal and providing a track concentric to the bushing 10 of the pan 14 and directly below and in alinement with the track 19. By means of the rib 20 and the groove 21 of the pan 14, it is detachably secured in place and in frictional contact with the track 17 carried by the pedestal 2.

The track 17 is provided with a bore 19' centrally of and at diametrically opposite points in the pedestal 2 whereby the surfaces in contact are properly lubricated, as will presently appear. The two tracks 17 and 19 are disposed in such a position that the weight of the grinding rollers R is disposed equally upon opposite sides of the central line of the respective tracks whereby the weight of said grinding rollers is suspended or carried directly above the pedestal 2, thus relieving the weight on the center bearings of the pan and increasing the life of the wearing parts.

In order to properly lubricate all parts of the pan and the bearings thereof, the oppositely disposed lubricating or grease

cups 22, mounted in dust tight cabinets or cases 22', are employed and leading therefrom downwardly are the vertical pipes 23 whose inwardly projecting branches 24 are connected to an upstanding pipe 25 which projects concentrically through the aperture 6 of the platform 4 terminating within the column 7' where its branch pipes 26 aline with the lubricating apertures 9 of the bearing sleeve 8 and thereby supply lubricant between said bearing sleeve and the inner surface of the main bushing 10, thus keeping the surfaces properly lubricated during the rotation of the pan 14. Other conduits such as 27 and 31 lead from the lubrication cups 22 and through their respective horizontal pipes 28 and 32 supply the vertical pipes 29 and 30, respectively, the upper ends of said pipes, as clearly shown in section in Fig. 2 fitting the bore 19' of the stationary track 17 and permits the seeping or feeding of the lubricant to the contacting surfaces between the stationary track 17 and the pan carrying track 19. By this means all of the wearing surfaces are properly lubricated during the rotary action of the pan 14, thus reducing friction to a minimum and at the same time increasing the life of the wearing parts of the pan.

By reason of the fact that the bearing surfaces are made removable, the tracks 17 and 19 when the portions *a* thereof have been worn to too great an extent, may be removed and replaced by new ones, while when the bearing sleeve 8 of the center bearing has been worn the same may be removed, thus providing movable bearing portions for the pan, whereby said bearing surfaces may be made of a different material and if necessary, tempered differently from the main portion of the pan, and may be removed and renewed without impairing the life of the pan, as is the case where these parts are formed integral with the pan. If so desired, the crown wheel 15 may be made detachable, whereby, should the teeth thereof be worn to too great an extent, the same may be removed and replaced by a new one, thus adding still greater life to the pan 14.

The base 1 and pedestal 2 with the platform or spider 4 are cast in one piece, thus making a very rigid super-structure for supporting the pan and the rollers thereupon.

The lubricating devices 22 may be provided with any form of lubricating feeding means either a force device or gravity, and the casing 22' fitting thereover prevents the dust from affecting the lubricant so that when delivered to the frictional parts of the pan, there will be no grit with the lubricant. The structure for supporting the lubricating devices 22 may be of any form.

From the foregoing description taken in connection with the drawings, it is evident that a base provided with an annular pedestal, as set forth in this case, provides a support for a bearing surface to carry the weight of the grinding rollers and the pan at a concentric point between the periphery and the center of the pan, thus relieving the vertical bearing and taking the thrust thereaway from, increasing the life and wear at this point, and at the same time relieving the crown gear and pinions such as 16 from any undue strain occasioned by the weight of the grinding rollers. Further, by providing the platform 4 with a concentric bearing sleeve and making the main bushing 10 shorter than said sleeve, the pan is permitted a vertical movement due to the wearing of the portions *a* of the tracks 17 and 19 before the lower end of the bushing 10 can possibly abut the upper portion of the base 7 of the column 7'.

By providing flat rails, it is unnecessary to form the rails one to be attached to the pan and the other to the pedestal. Instead, one form of rail can be provided for both the pan and the pedestal. Where flat rails are employed, however, it is necessary to provide some means for holding the pan against horizontal displacement. For this purpose, the column 7' has been employed, the base of the column being fitted in the receptacle defined by the rib 5. Obviously, as long as the column is seated at its lower end within this receptacle and is in engagement with the central portion of the pan, the pan will be prevented from sliding horizontally and, therefore, flat duplicate rails can be employed.

What is claimed is:—

In a grinding mill, a table, a circular rail detachably secured thereupon and having a plain upper face, a column extending upwardly from the table, a pan having a central opening into which the column projects to hold the pan against horizontal displacement, a circular rail detachably secured to the bottom of the pan and having a plain lower face bearing upon the plain face of the other rail, the two rails being concentric with the column, and rolls bearing downwardly on the pan directly above the rails at diametrically opposed points.

In testimony that we claim the foregoing as our own, we have hereto affixed our signatures in the presence of two witnesses.

CLARENCE A. MARKLE.
GEO. B. McCLELLAN.

Witnesses:

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