A. ROOT.

GRINDING MACHINE.

APPLICATION FILED AUG. 7, 1908.

1,007,391.

Patented Oct. 31, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

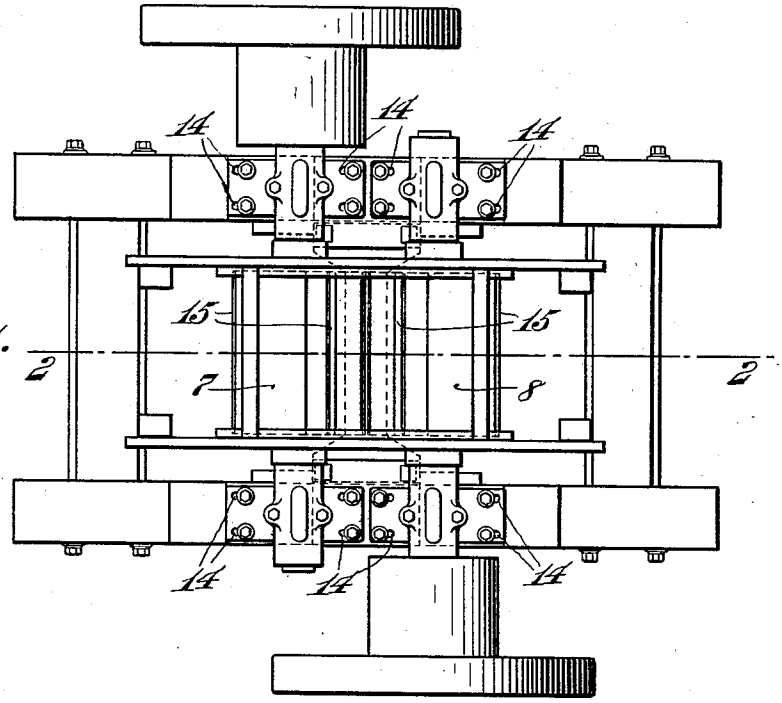
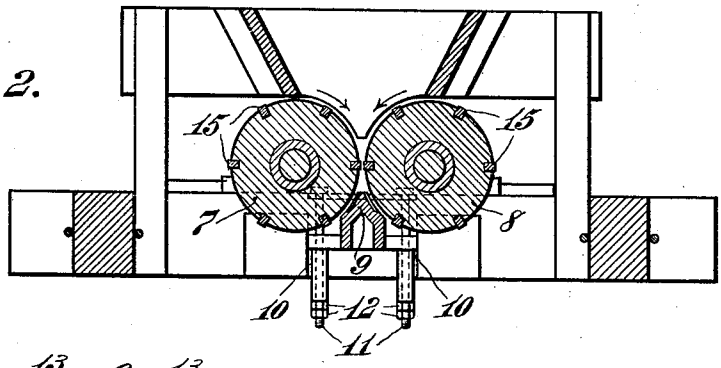


Fig. 2.



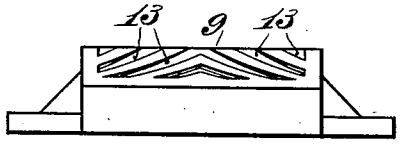


Fig. 3.

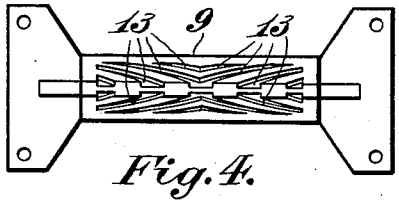


Fig. 4.

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2 SHEETS—SHEET 2.

Fig. 5.

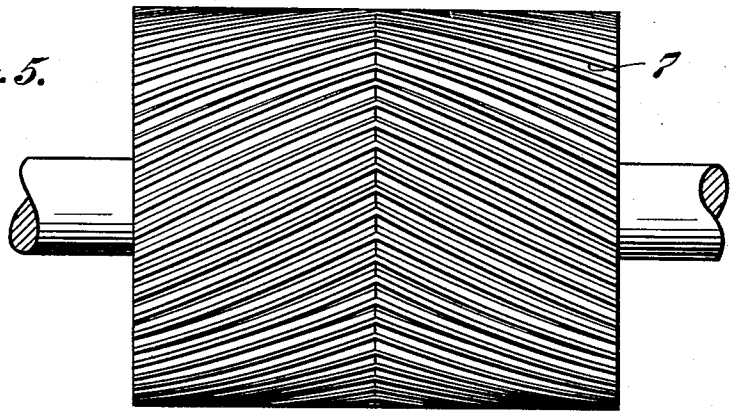
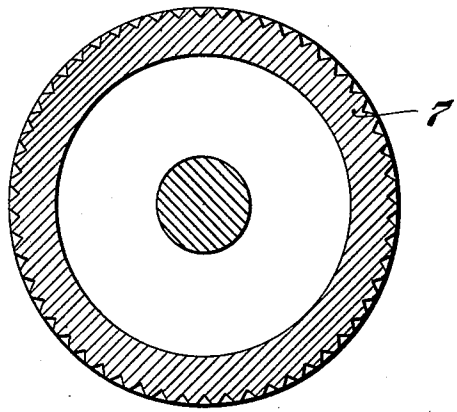


Fig. 6.



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UNITED STATES PATENT OFFICE.

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GRINDING-MACHINE.

1,007,391. Specification of Letters Patent. Patented Oct. 31, 1911.

Application filed August 7, 1908. Serial No. 447,386.

To all whom it may concern:

Be it known that I, ARTHUR ROOT, a citizen of the United States, residing at Lewisburg, in the county of Union, State of Pennsylvania, have invented a new and useful Grinding-Machine, of which the following is a specification.

My invention relates to improvements in grinding machines.

The object is to provide improved means for grinding clays, shales, or other materials, either dry or wet, and either with or without stones embedded therein.

My invention comprises improvements in connection with a grinding cylinder suitably channeled or ribbed, and a coöperating breast having a concave formation corresponding to a portion of the cylinder's periphery.

The particular improvements comprise the method of disposing the channels in the grinding breast and the closing of the lower extensions of same.

Referring to the drawings:—Figure 1 is a plan view of my device. Fig. 2 is a longitudinal vertical section on line 2—2 of Fig. 1. Fig. 3 is a side elevation of the breast. Fig. 4 is a plan view of same. Fig. 5 is a plan of one of the rollers. Fig. 6 is a vertical section on line 6—6 of Fig. 5.

Similar numerals refer to similar parts throughout the several views.

As shown in the drawings the rollers or cylinders 7 and 8 are of the same diameter and are designed to run at about the same number of revolutions per minute. Their faces are provided with bars or ribs 15 parallel to the axes of said rollers as shown in Figs. 1 and 2, or ribbed in herring bone style as clearly shown in Fig. 5. These ribs may be formed by inserting into the surface of the roller a series of steel bars at any desired distance apart, as shown in Figs. 1 and 2, or by making grooves 16 in the peripheral surface of the roller as shown in Fig. 5.

The concave grinding breast 9 is formed with concave surfaces in arcs of circles corresponding to the peripheries of the rollers, and is located between the same, below the axes thereof. This breast is provided with grooves 13 extending obliquely from the middle portion thereof as shown in Figs. 3 and 4. This grinding breast is adjustable to and from the rollers. It is held in position against lateral movement between the walls 10. It is vertically movable and supported on the bolts 11 and secured thereon in proper position by the lock nuts 12. The grooves or channels 13 on breast 9, it will be noted, are closed at the bottom so that any material not previously ground will finally work to the end of the groove and there be ground between rollers and the breast beyond the ends of the grooves.

One or both of the rollers may be moved slightly toward or away from the other by shifting the journal boxes carrying the same; such shifting being permitted by the enlarged or elongated openings 14 through which the retaining bolts project.

It will be seen that the two rollers rotating in the direction of the arrows, shown in Fig. 2, will first crush the lumps of the material and then feed the material down against the concave breast 9 where final and fine grinding is effected.

The advantage of directing the channels 13 of the concave breast outwardly or divergent from the middle portion thereof, as shown in Figs. 3 and 4, is to secure a more even distribution of the material over the breast and prevent a congestion at the middle part thereof, as is the case where the channels converge toward said middle part. The advantage of closing the channels 13 at their lower extension, as shown in Figs. 3 and 4, leaving the breast solid, is that this construction prevents the material running out of the channels at their lower ends before the same has become sufficiently ground, and holds the material in said channels and feeds it gradually over the solid lower portion of the breast, thereby insuring a complete and perfect grinding of the entire charge.

By moving the nuts 12 in either one or the other direction on the bolts 11 the breast 9 is raised or lowered to secure a finer or coarser grinding as may be desired.

What I claim is:—

1. The combination of a grinding roller having ribs on its face and a coöperating concave breast having its entire face provided with channels crossing the middle portion of the breast and diverging downwardly from said middle portion.

2. The combination of a grinding roller having ribs on its face and a coöperating concave breast having its entire face provided with channels crossing the middle

portion of the breast and diverging downwardly from said middle portion and closed at their lower ends.

3. In a grinding machine, the combination of a pair of grinding rollers provided with ribs on their periphery and a coöperating grinding breast projecting upwardly between the rollers having concave faces, said concave faces having their entire surfaces provided with channels inclined downwardly from the midle portion thereof.

4. In a grinding machine, the combination of a pair of grinding rollers provided with ribs on their peripheries and a coöperating grinding breast projecting upwardly between the rollers having concave faces, said concave faces having their entire surfaces provided with substantial channels inclined downwardly from the middle portion thereof and closed at their lower ends.

5. In a grinding machine, the combination of a pair of rollers provided with ribs or bars upon their grinding faces, a grinding breast projecting upwardly between the rollers provided with downwardly inclined concave faces corresponding to the curvature of the rollers, said faces having their entire surfaces provided with channels diverging from the middle portion thereof downwardly and closed at their lower ends, as and for the purpose specified.

ARTHUR ROOT.

Witnesses:
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