April 5, 1932. R. E. RITCHIE 1,852,435

GRINDING MULLER ROLLER

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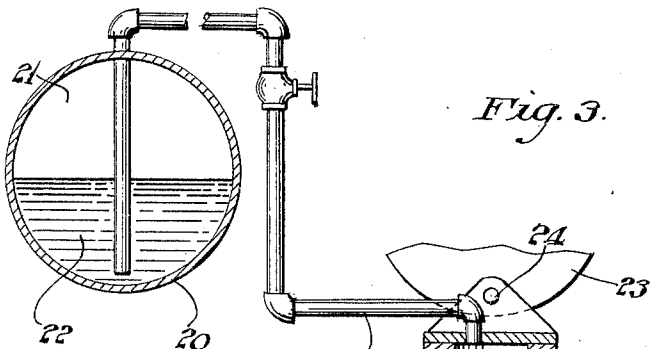
Fig. 3.



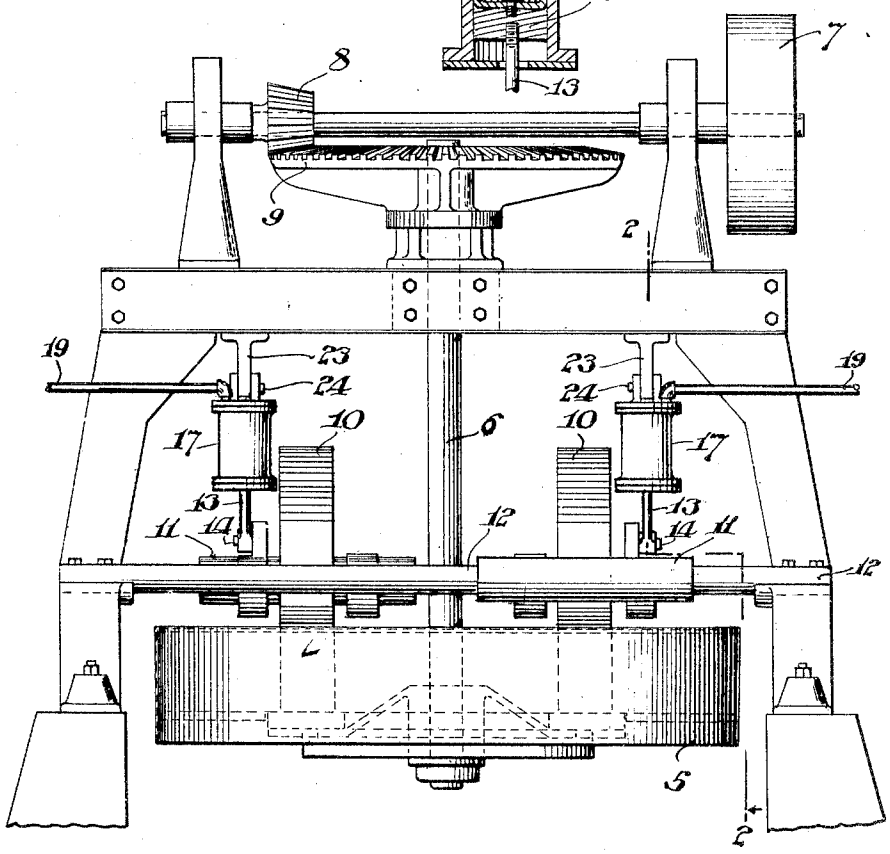


Fig. 1.

INVENTOR:
Ralph E. Ritchie
BY
Thos. Macdonald
Hi ATTORNEY.

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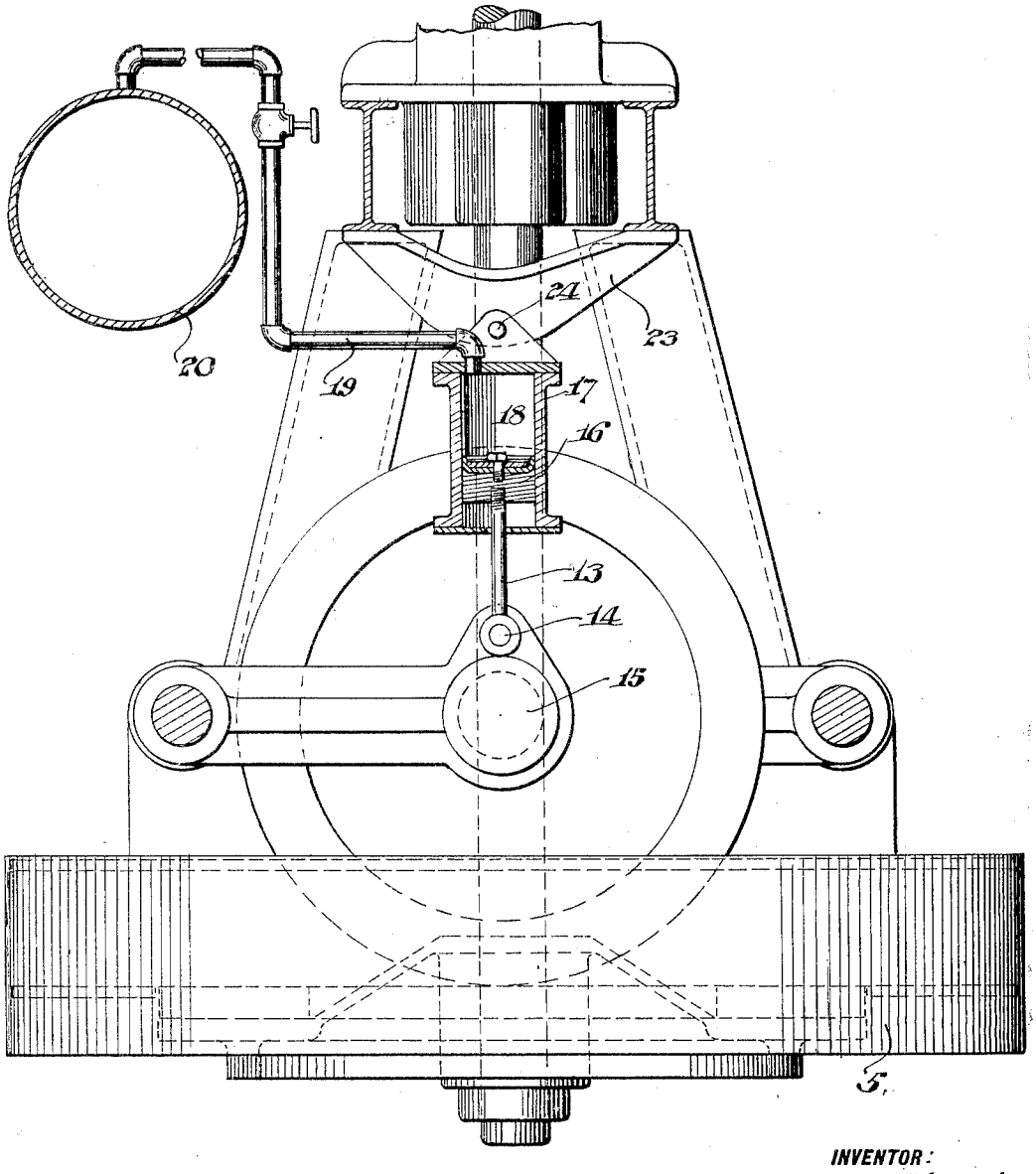

Fig. 2

INVENTOR:
Ralph E. Ritchie,
BY
Robertson & Lee
ATTORNEY.

Patented Apr. 5, 1932

1,852,435

UNITED STATES PATENT OFFICE

RALPH E. RITCHIE, OF BIRMINGHAM, ALABAMA, ASSIGNOR TO CHAMBERS BROTHERS COMPANY, A CORPORATION OF PENNSYLVANIA

GRINDING MULLER ROLLER

Application filed July 26, 1929. Serial No. 381,105.

The invention relates to grinding muller rollers for dry pans, used for grinding or pulverizing clay or other materials.

The object of the present invention is to provide improved method and means for augmenting the pressure exerted by the muller rolls.

In devices of this class now in common use, the muller rolls are adapted to rest by gravity upon the clay or other material contained in the revolving pan. In accordance with the present practice, usually the weight of the rolls is relied upon to secure the crushing or grinding effect.

In accordance with the present invention the pressure of the muller rolls is augmented by a fluid medium under pressure, such for example as compressed air or steam, exerted through a piston operating in a cylinder supplied with said medium.

Referring to the drawings which illustrate merely by way of example suitable means for effecting the invention:—

Fig. 1 is an elevation.

Fig. 2 is a part elevation part section on line 2, 2 of Fig. 1, on an enlarged scale.

Fig. 3 is a fragmentary sectional view showing a modification.

Similar numerals refer to similar parts throughout the several views.

The dry pan 5 is mounted upon the rotating shaft 6, operated by the pulley 7 through the gears 8 and 9, in accordance with the present practice. The muller rolls 10 are mounted in the yokes 11, each yoke being connected to a rock shaft 12 so as to permit the rolls to rise and fall as they travel over the material in the rotating pan 5. This is also in accordance with the present practice.

In accordance with the present invention, a piston rod 13 is pivotally secured, as at 14, to one arm of each yoke 11, forming a bearing for the roll, at a point vertically above the axis of shaft 15 of the muller roll 10. The piston rod 13 is connected to a piston 16 operating in a cylinder 17. The cylinder 17 is supported on the stationary bracket 23 by pivotal connection, as at 24. The cylinder space beneath the piston is open to atmosphere. The space 18 in the cylinder 17, above the piston 16, is connected, as by pipe 19, with a source of air supply under pressure, such for example as contained in the tank 20.

It will be understood that pressure may be communicated to the cylinder and piston through the medium of a liquid, as shown in Fig. 3, in which case the liquid is put under the pressure of a compressed elastic medium contained in the space 21 above the liquid 22.

In operation, it will be seen that the pressure of the roll due to gravity will be augmented by the pressure of the compressed air or other elastic fluid medium, exerted in the cylinder 17, communicated through the piston 16 and piston rod 13 to the bearing carrying the roll. This augmented pressure will depend upon the pressure at which the elastic fluid medium is maintained, for example in the tank 20. This pressure can of course be varied at will, and the source of pressure, or the pressure tank, may be positioned at any convenient point irrespective of the position of the grinding mullers. In accordance with the present practice dry pans are usually provided with two muller rolls, and the yokes mounted on the rock shafts usually provide a bearing on each side of each muller roll. I do not however desire to limit the invention to any specific structure beyond that defined in the claims.

What I claim is:—

1. The combination of a plurality of muller rolls, movable bearings for each roll and means for applying the force of a compressed elastic fluid medium directly to each bearing independently.

2. The combination of a muller roll, a shaft, a rocking yoke connected to the shaft

provided with a bearing for the muller roll, a cylinder and a piston operating therein, means for communicating the force of a compressed elastic fluid medium to the piston within the cylinder and a rod connecting the piston to said bearing.

3. The combination of a muller roll, a rock shaft, a yoke connected to the rock shaft provided with a bearing for the muller roll, a pivotally supported cylinder and a piston operating therein, means for communicating the force of a compressed elastic fluid medium to the piston within the cylinder and a rod connecting the piston to said bearing.

RALPH E. RITCHIE.