G. L. ABBOTT.

CRUSHING MILL.

APPLICATION FILED FEB. 11, 1914.

1,103,727. Patented July 14, 1914.

Fig. 1

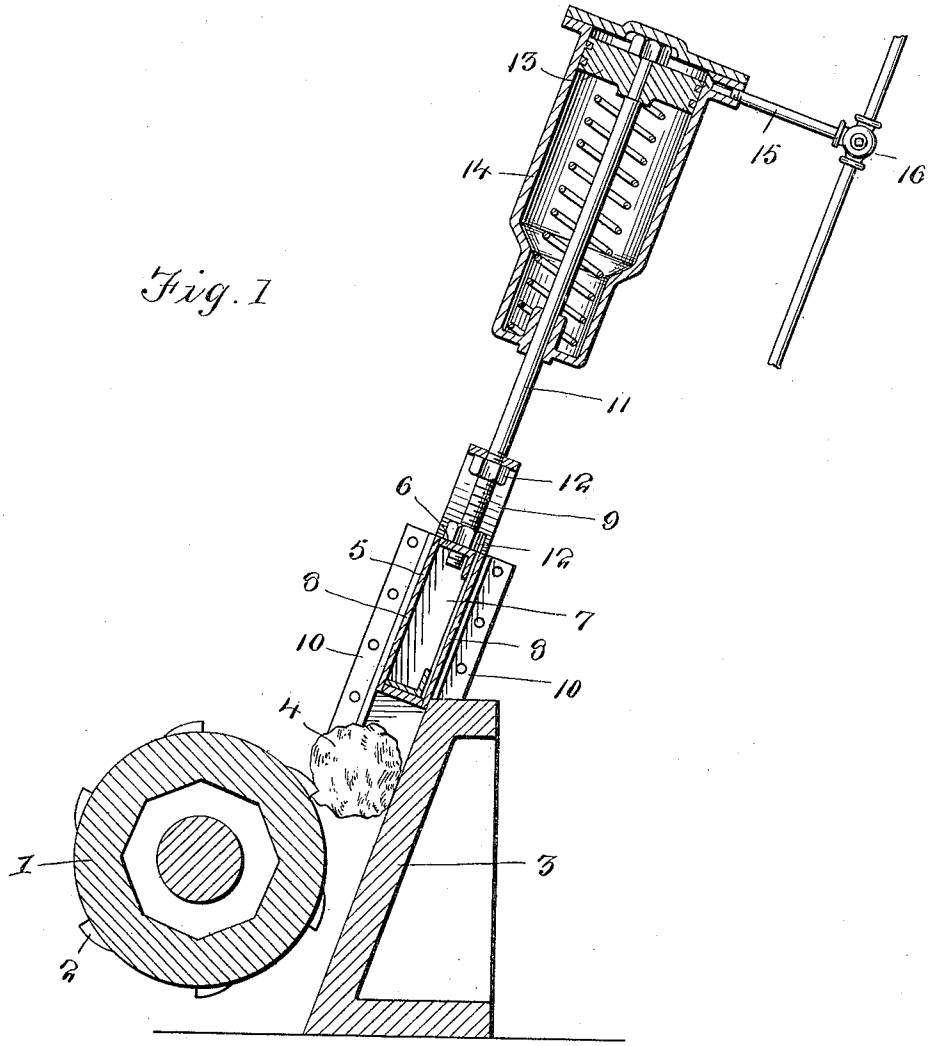
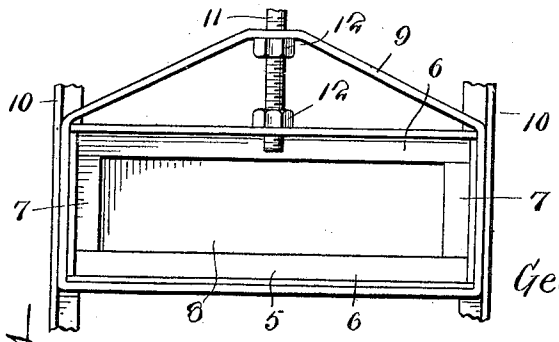


Fig. 2.



Witnesses

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GEORGE L. ABBOTT, OF MORRISTON, FLORIDA.

CRUSHING-MILL.

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To all whom it may concern:

Be it known that I, GEORGE L. ABBOTT, a citizen of the United States, residing at Morriston, in the county of Levy and State of Florida, have invented new and useful Improvements in Crushing-Mills, of which the following is a specification.

This invention relates to crushing mills and more particularly to the feeding means used in coöperation with the mill to feed the material to the crushing means.

The object of the invention is to provide such a feeding means which will intermittently force the material into contact with the crushing means in such a way as to allow the said crushing means to grip the material and efficiently crush the same.

The invention resides in the novel parts and combination of parts as will hereinafter be more fully described and defined in the claims.

One form of the invention is shown in the accompanying drawings, in which,

Figure 1 is a vertical section of the improved feeding means in combination with as much of the crushing mechanism as will aid in illustrating the invention, and Fig. 2 is a front elevation of the feeding hammer employed.

The crushing means designated by the numeral 1, is represented in the drawings as a crushing roller having the teeth 2 which bite into the material and crush the same in a well known manner. The exact form of the crushing mechanism while preferred is immaterial to the broad invention, since, obviously, the feeding means which forms the object of the invention will operate also in combination with other forms of crushing mechanism, such as the usual jaw crushers.

Coöperating with the roller 1 is a breast plate 3 between which and the roller 1, the material is fed. In the drawing, the material being acted upon is designated by the numeral 4 and may be clay, rock, or the like. In order to force the material 4 well into gripping relation with the crushing roller 1, the following means is employed.

A reciprocatory hammer 5 shown in detail in Fig. 2 is employed, preferably formed of longitudinal angle bars 6, 6 and the lateral angle bars 7, 7. The face of the hammer is preferably surfaced on both sides with a sheeting of metal, such as 8. In Fig. 2, however, the front sheeting has been omitted to show the arrangement of angle bars which constitute the frame-work of the hammer. Passed laterally around the angle bars and sheeting is a yoke 9. Obviously, any form of hammer may be employed, but the foregoing type has been found in practice to be very satisfactory. The hammer is guided in suitable guideways 10, in the present instance formed by angle bars. The angle of the guideway, preferably conforms to the angle of the breast plate 3, so that the hammer will reciprocate in a plane parallel to the plane of the surface of the breast plate. An actuating stem or rod 11 is connected to the hammer, preferably by inserting it through the top of the yoke 9 and the top angle bar, then securing the rod in place by the lock nuts 12 as will be readily understood from the drawings.

Any means may be employed for reciprocating the hammer, but preferably and in the present instance, it is actuated by fluid pressure means. The end of the rod or stem 11 carries a piston head 13 sliding in the cylinder 14 to which fluid under pressure is admitted through pipe 15 and a suitable controlling valve 16.

The operation of such a construction will be obvious from the foregoing description. As the hammer is reciprocated, the material fed between the crusher breast plate and crushing means is forced or wedged between said breast plate and the crushing means so that the latter will efficiently grip the material and thoroughly crush the same.

It will be obvious that, as the breast 3 is inclined downwardly and inwardly with relation to the working portion of the face of the crushing roll, and that, as the hammer moves in a path parallel with the breast, the action of the hammer on the material is twofold; first, to force the material down into the flaring space between the breast and roll, and, second, to force said material outwardly toward the roll and into engagement with the teeth thereof, thereby insuring a positive feed grip and crushing action.

I claim:—

1. In combination, a crushing roll provided with peripheral teeth and rotatable upon a horizontal axis, a breast plate arranged at an angle to the working face of the roll, and a hammer movable into the flaring space between the roll and breast plate and in a plane parallel with said breast plate.

2. In combination, a crushing roll pro-

vided with peripheral teeth and rotatable upon a horizontal axis, a breast plate opposite the working portion of the face of the roll and having a downward and inward inclination with relation to the vertical plane of the axis of the roll, to provide a tapering passage between the same and said working face of the roll, and a reciprocating hammer movable into said passage in a plane parallel with the breast plate.

3. In combination, a crushing roll provided with peripheral teeth and rotatable upon a horizontal axis, a breast plate opposite the working portion of the face of the roll, said plate having a downward and inward inclination with relation to the vertical planes of the axis of the roll, whereby a tapered feed passage is provided between the plate and roll, guides on opposite sides of and extending above the breast plate, a reciprocating hammer movable in said guides and downwardly into said flaring space in a plane parallel with the face of the breast plate, fluid pressure means for impelling the hammer on its working stroke, and spring means for impelling the hammer on its return stroke.

In testimony whereof I affix my signature in presence of two witneses.

GEORGE L. ABBOTT.

Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."