

No. 611,205.

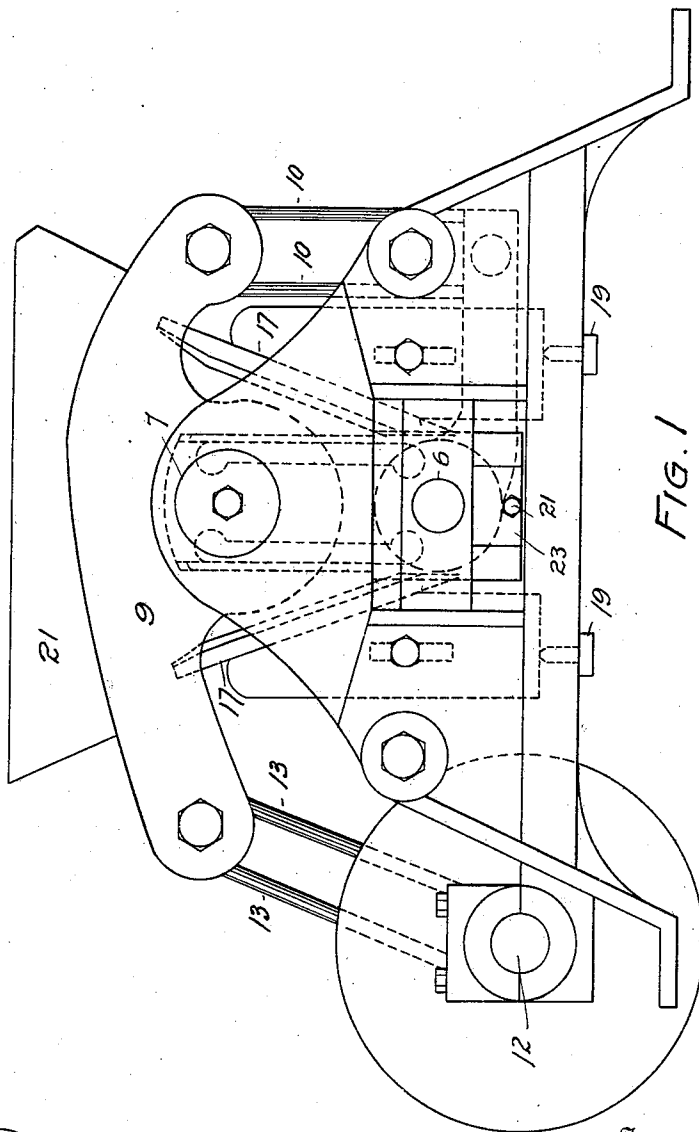
Patented Sept. 20, 1898.

J. R. MOFFITT.  
ROCK BREAKER AND CRUSHER.

(Application filed June 22, 1897.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses  
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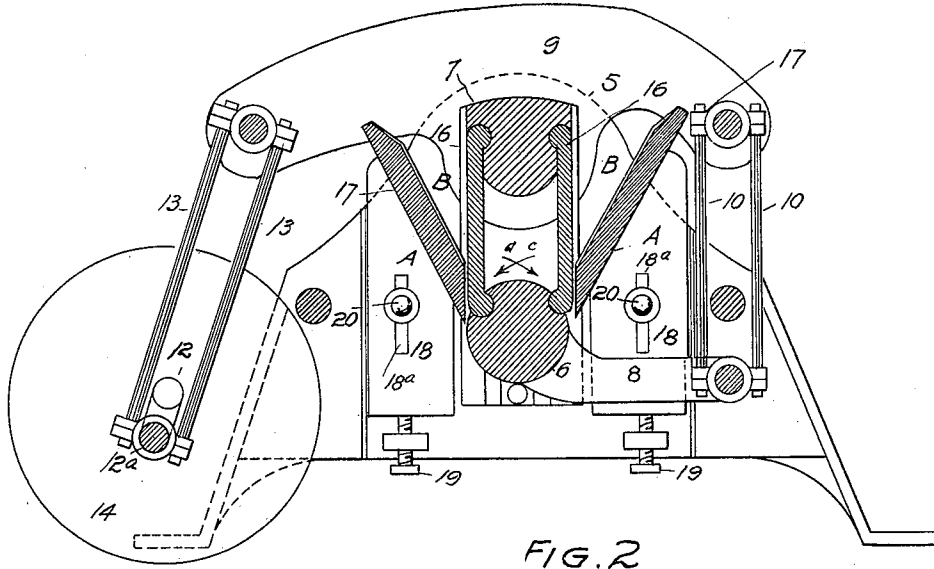


FIG. 2

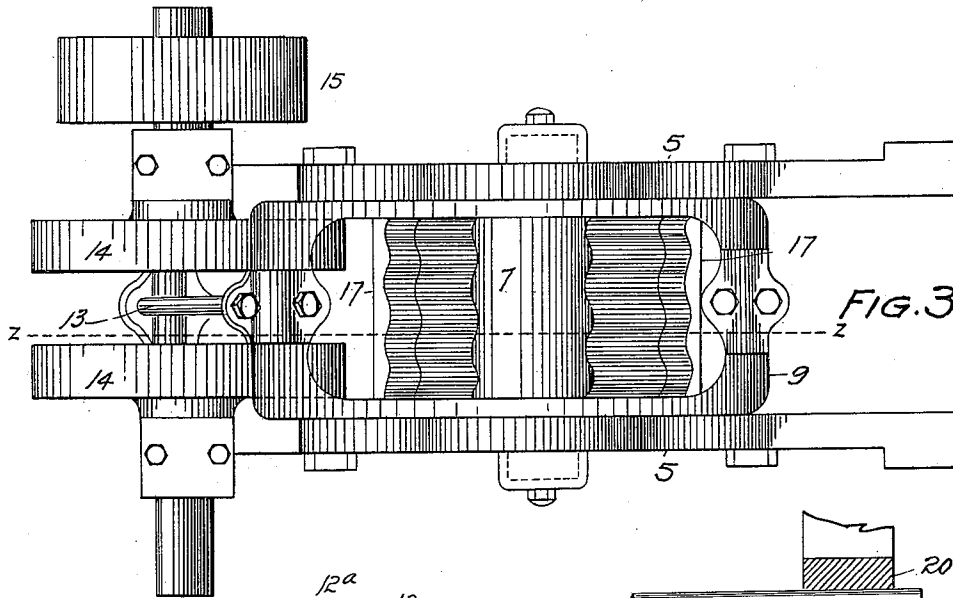


FIG. 3

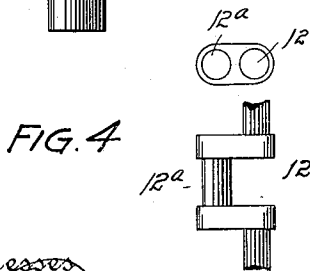


FIG. 4

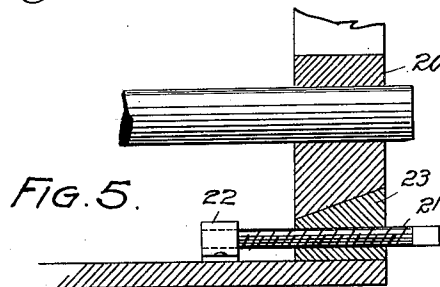


FIG. 5.

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# UNITED STATES PATENT OFFICE.

JOHN R. MOFFITT, OF DENVER, COLORADO.

## ROCK BREAKER AND CRUSHER.

SPECIFICATION forming part of Letters Patent No. 611,205, dated September 20, 1898.

Application filed June 22, 1897. Serial No. 641,830. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN R. MOFFITT, a citizen of the United States, and a resident of Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Rock Breakers or Pulverizers, of which the following is a specification.

My invention relates to improvements in rock breakers or pulverizers; and it consists of the features hereinafter described and claimed, all of which will be fully understood by reference to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a side elevation of my improved apparatus. Fig. 2 is a section taken on the line *z z*, Fig. 3. Fig. 3 is a top view of the apparatus. Figs. 4 and 5 illustrate details of construction.

Similar reference characters indicating corresponding parts in the views, let the numeral 5 designate a suitable stationary frame, in which are journaled two rock-shafts 6 and 7, one being located directly above the other. Made fast to the rock-shaft 6, which is lowermost, is an arm 8, whose outer extremity is connected with one extremity of a walking-beam or yoke 9 by a pair of connecting-rods 10. This walking-beam is journaled on the shaft 7, its central portion being provided with an opening to make room for the pulverizing-jaws and their cooperating plates hereinafter described. The opposite extremity of the walking-beam 9 is connected with a crank 12<sup>a</sup>, formed in the power-shaft 12 by a pair of connecting-rods 13. Made fast to the shaft 12 is a pair of fly-wheels 14, one being located on each side of the crank 12<sup>a</sup>. One extremity of this shaft is provided with a pulley 15, which may be connected with any suitable motor for the purpose of operating the machine. The two rock-shafts 6 and 7 are connected by a pair of vertical pulverizing plates or jaws 16, whose extremities are rounded to engage sockets formed in the respective shafts above their centers on opposite sides.

Adjacent each jaw 16 is a cooperating inclined plate 17, having beveled extremities, whereby it is reversible. Its lower extremity is separated from its corresponding jaw 16 by

a narrow space A, in which the fine pulverization is effected. The lower beveled extremity of each plate 17 lies in a plane parallel or approximately parallel with the pulverizing-face of the cooperating jaw 16. The width of the space A is regulated by vertically-adjustable plates 18, upon which the plates 17 rest. The plates 18 are supported underneath by set-bolts 19, and they are locked in any desired position of adjustment by set-screws 20, which are mounted on the frame 5 and engage slots 18<sup>a</sup>, formed in the said plates.

From a suitable hopper 21 the material to be treated is fed to the spaces B between the pulverizing-plates 16 and 17, whose operating-faces are corrugated to increase the pulverizing-surface.

In operating the machine power is applied to the shaft 12 and a rocking motion given to the walking-beam through the medium of the crank 12<sup>a</sup> and the connecting-rods 13. This movement of the walking-beam raises and lowers the arm 8 and imparts the movement to the rock-shaft 6 and thence to the rock-shaft 7 through the instrumentality of the jaws 16. As these rock-shafts 6 and 7 turn in one direction one jaw 16 moves away from its cooperating plate 17, while the other jaw approaches its corresponding plate 17. For instance, when the shafts 6 and 7 are moving in the direction indicated by the arrow *a* in Fig. 2 the jaw 16 farther to the left is moving away from its cooperating plate 17, while the jaw 16 farther to the right is approaching its cooperating plate 17. On the contrary, when the two shafts 6 and 7 are moving in the direction of the arrow *c* the jaw 16 farther to the right is moving away from its cooperating plate 17, while the jaw 16 farther to the left is moving toward its corresponding plate 17. As either jaw 16 moves toward its corresponding pulverizing-plate its movement is of a compound nature—that is to say, both outward and downward. Hence there is a crushing motion resulting from the pressure of the ore between the plates and a grinding or rolling action resulting from the downward movement of the pulverizing-jaw. This feature greatly increases the capacity of the machine.

My improved machine is constructed with reference to operation at a high rate of speed, whereby the material will not have time to fall through the spaces A adjacent to the beveled extremities of the plates 17 during the outward movement of the jaws 16, but will be caught by said jaws during their return movement and be pulverized before it can escape. This is an important feature of the invention.

The journal-boxes 20 of the rock-shaft 6 may be adjusted vertically for the purpose of compensating for lost motion resulting from the wear between the jaws 16 and the shafts 6 and 7. As shown in the drawings, (see Fig. 5,) this is accomplished by means of a screw 21, journaled in a lug 22, fast on the frame of the machine. This screw engages a threaded opening formed in a wedge-shaped block 23, having its upper face beveled and engaging the correspondingly-beveled lower face of the journal-box 20. It is evident that by turning the screw 21 the journal-box may be raised or lowered, as desired.

Having thus described my invention, what I claim is—

1. In an ore-pulverizer, the combination of two rock-shafts one located above the other, two pulverizing plates or jaws having their extremities movably connected with said shafts on opposite sides, the extremities of the two jaws engaging the same shaft, lying in a horizontal plane passed through the shaft to one side of its center, cooperating pulverizing-plates located in suitable proximity to said jaws, and suitable means for operating the rock-shafts.

2. In an ore-pulverizer, the combination of two rock-shafts one located above the other, two vertical pulverizing plates or jaws having their extremities movably connected with the rock-shafts on opposite sides, the points of engagement of the two jaws on each shaft, lying in a horizontal plane passed through the shaft to one side of its center, two inclined pulverizing-plates located adjacent to said jaws, suitable means for the vertical adjustment of the

inclined plates, and means for operating the rock-shafts.

3. In an ore-pulverizer, the combination of two rock-shafts one located above the other, two vertical pulverizing plates or jaws having their extremities movably connected with the rock-shafts, the points of engagement of each two jaws with the same shaft, lying in a horizontal plane passed through the shaft to one side of its center, two inclined reversible pulverizing-plates having beveled extremities located adjacent to said jaws, suitable means for the vertical adjustment of the inclined plates, and means for operating the rock-shafts.

4. In an ore-pulverizer, the combination of two rock-shafts one located above the other, two vertical pulverizing plates or jaws having their extremities movably connected with the rock-shafts, two inclined pulverizing-plates located adjacent to said jaws, suitable means for the vertical adjustment of the inclined plates, and means for operating the rock-shafts, comprising an arm made fast to one of the shafts, a walking-beam, a suitable connection between one extremity of the walking-beam and said arm, a crank-shaft, and a suitable connection between the opposite extremity of the walking-beam and the crank of said shaft.

5. In an ore-pulverizer, the combination of two rock-shafts, one located above the other, a pulverizing plate or jaw having its extremities rounded and engaging counterpart sockets formed in the respective shafts, the connection of each extremity of the jaw with its rock-shaft, lying in a horizontal plane passed through the shaft to one side of its center, a stationary pulverizing-plate located adjacent said jaw, and means for operating the rock-shafts.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

JOHN R. MOFFITT. [L. S.]

Witnesses:

G. M. DICKS,

E. E. CUNNINGHAM.