

T. WILLMA.
 ROCK AND ORE CRUSHER.
 APPLICATION FILED NOV. 27, 1911.

1,044,325.

Patented Nov. 12, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

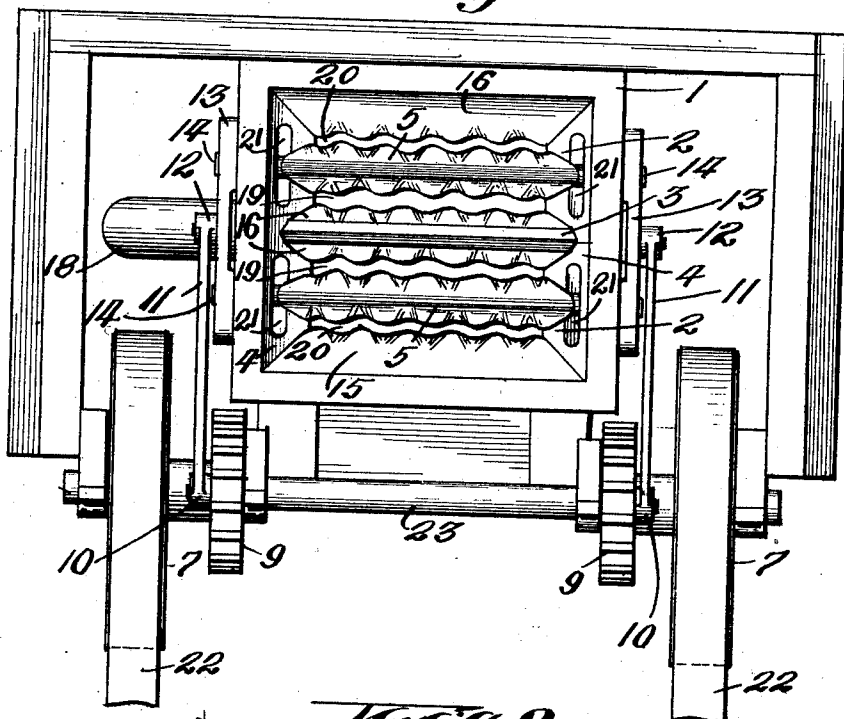
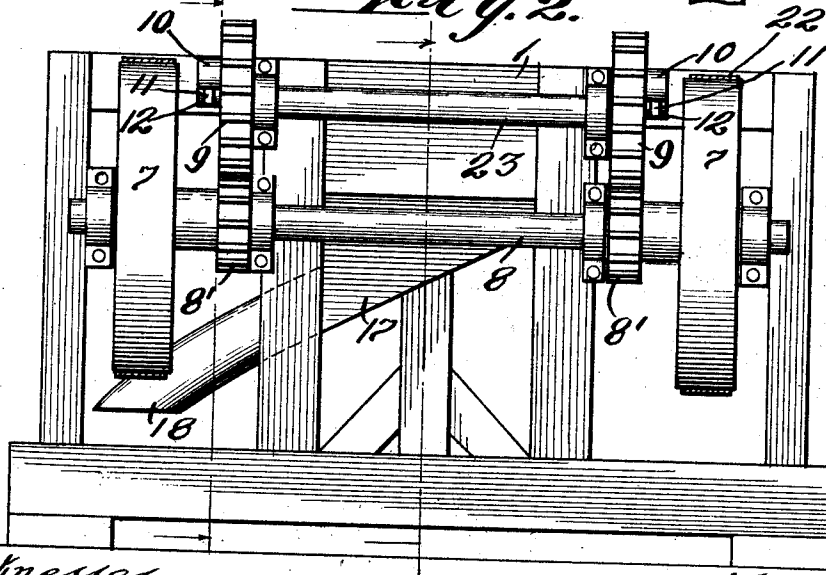


Fig. 2.



Witnesses

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Fig. 3.

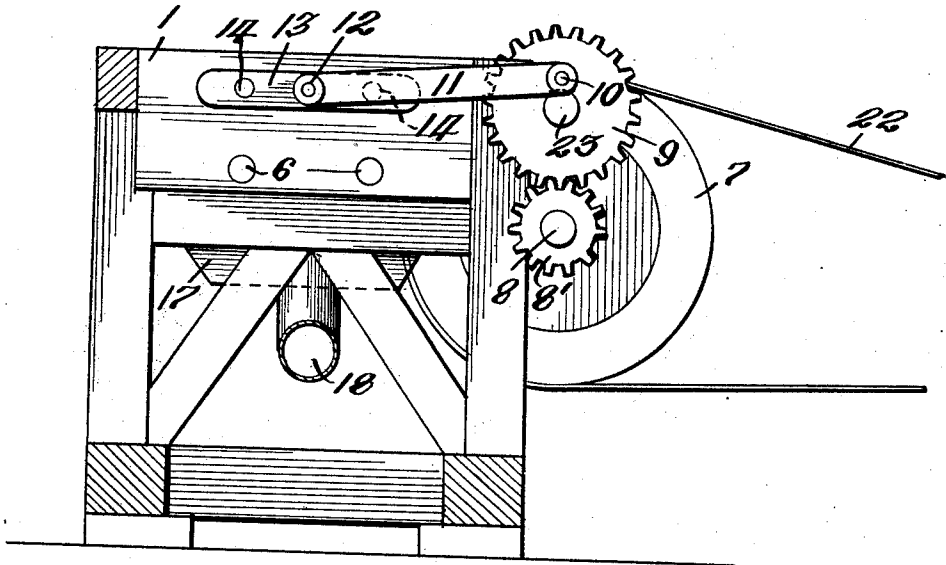
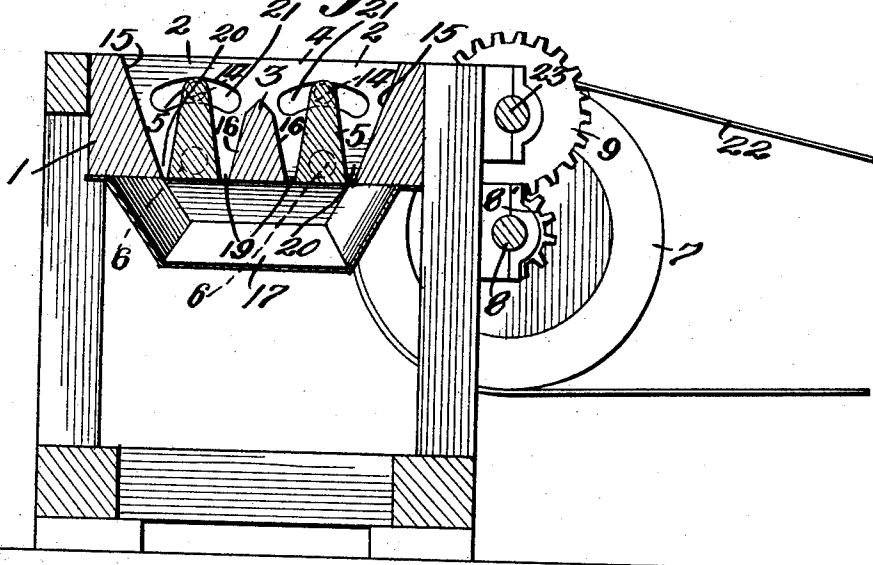


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

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ROCK AND ORE CRUSHER.

1,044,325.

Specification of Letters Patent.

Patented Nov. 12, 1912.

Original application filed February 16, 1911, Serial No. 608,952. Divided and this application filed
November 27, 1911. Serial No. 662,560.

To all whom it may concern:

Be it known that I, THEODOR WILLMA, a citizen of the United States, residing at Milwaukee, county of Milwaukee, and State of Wisconsin, have invented new and useful Improvements in Rock and Ore Crushers, of which the following is a specification.

My invention relates to a certain rock or ore crusher, for which Letters Patent of the United States, numbered 1,009,004, was issued to me November 14, 1911, and it pertains more especially to certain parts of the device shown in said patent, which were withdrawn from said application and made the subject matter of this divisional application in pursuance to the suggestions of the Examiner.

The subject matter of my present invention is further explained by reference to the accompanying drawings, in which—

Figure 1 represents a plan view thereof. Fig. 2 is an end view. Fig. 3 is a side view, and Fig. 4 is a vertical section.

Like parts are identified by the same reference numerals throughout the several views.

1 represents the hopper of the crusher, in which the rock or ore is placed preparatory to being crushed. The hopper 1 is subdivided into two compartments 2, 2, by the vertical partition 3, which is rigidly supported at its respective ends from the side walls 4 of the hopper.

5, 5, are crushing bars, each of which is pivotally supported at its lower end from the side walls 4 on the trunnions 6, 6, and motion is simultaneously communicated to both of said crushing bars 5 from the band wheels 7, through the shaft 8, pinions 8', gear wheels 9, pitmen 10, links 11, pitmen 12, reciprocating links 13 and trunnions 14. 14, said gears 9 being revolvably connected with the hopper supporting frame through the shaft 23, whereby as said band wheels 7 are revolved, said crushing bars are caused to rock backwardly and forwardly on their supporting trunnions, and whereby the rock or ore which is brought between said crushing bars 5 and the opposing walls 15 of the hopper and 16 of the partition, is crushed. As the ore is thus crushed, it drops from the hopper into the receptacle 17 below, when it descends of its own gravity from said re-

ceptacle 17 to the place of deposit, through the duct 18. The opposing surfaces of the crushing bars 5 and the walls 15 of the hopper converge downwardly, and the opposing surfaces of the partition 3 and crushing bars 5 also converge downwardly, whereby the space between said members is contracted, so that the rock or ore is retained in said hopper until it is crushed fine enough to pass down through the open spaces 19 and 20, when it is ready for use or to be subjected to an additional treatment, as circumstances may require.

The respective sides 4 of the hopper are provided with curved slots or apertures 21 for the reception of the trunnions 14, which trunnions are adapted to move forwardly and backwardly therein as the crusher is being operated.

Motion is communicated from the driving motor, not shown, to the band wheels 7 through the bands 22, 22. The band wheels 7 are supported upon the respective ends of the shaft 8. By this arrangement it will be obvious that the motive power is simultaneously communicated to both ends of the crushing bars, whereby both ends of said bars are caused to act with equal force against the ore or rock to be crushed, and the twisting strain that might otherwise be produced when the power is applied to one end of the crushing bar only, is avoided, and whereby the liability of the machine being broken in use, is reduced to the minimum.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a pair of straight converging fixed end members and a central downwardly diverging fixed member, of a pair of reversely inclined oscillatory crushing bars fulcrumed at a point below their centers, one of said oscillatory bars being interposed between said central member and the respective end members, and means for simultaneously communicating motion to both of said oscillatory bars from the same source of power.

2. The combination with a hopper and a pair of straight converging fixed end members and a central downwardly diverging fixed member, of a pair of reversely inclined oscillatory crushing bars fulcrumed at a

point below their centers, one of said oscillatory bars being interposed between said central member and the respective end members, said hopper having arcuate slots in its opposite walls, trunnions on said oscillatory bars near their upper ends working in said slots, means connected with said trunnions, and means for reciprocating said

means to oscillate said oscillatory crushing bars.

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

THEODOR WILLMA.

Witnesses:

FRANCIS J. BORCHARDT,
JAS. B. ERWIN.

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