July 7, 1925.

1,545,248

P. E. GARRETSON

ROCK CRUSHING MACHINE

Filed Feb. 26, 1921

Fig. 1.

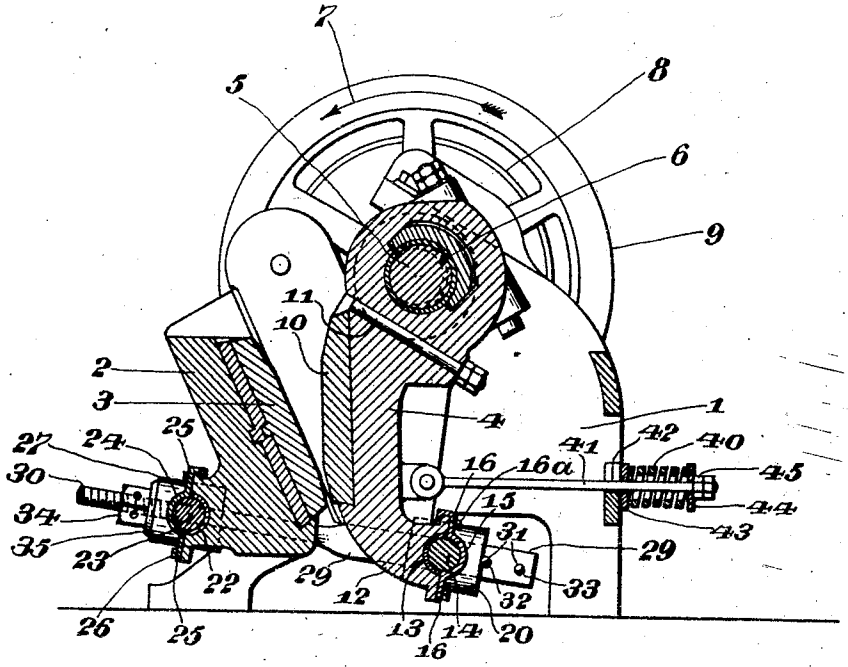


Fig. 2.

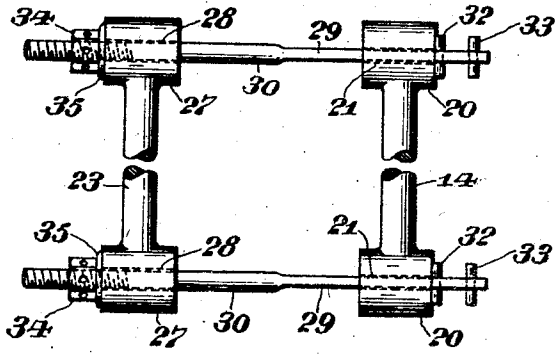
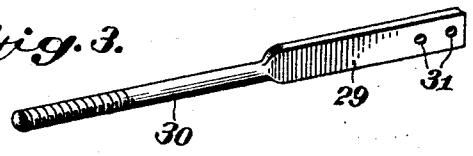


Fig. 3.



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UNITED STATES PATENT OFFICE.

PERCY E. GARRETSON, OF COLUMBUS, NEW JERSEY.

ROCK-CRUSHING MACHINE.

Application filed February 26, 1921. Serial No. 448,053.

To all whom it may concern:

Be it known that I, PERCY E. GARRETSON, a citizen of the United States, and a resident of Columbus, in the county of Burlington and State of New Jersey, have invented an Improvement in Rock-Crushing Machines, of which the following is a specification.

My invention relates to machines for crushing rocks and other like material and it has for one of its objects to provide an improved means for effecting adjustments of the crushing jaws with respect to each other.

Other objects of my invention will be pointed out in the detailed description which follows or will be apparent from such description.

In order that my invention may be readily understood and its practical advantages fully appreciated, reference may be had to the accompanying drawing in which I have illustrated one form of embodiment thereof. However, as will be understood, the invention is susceptible of embodiment in other forms of construction than that shown.

In the drawing:

Fig. 1 is a central vertical sectional view of a rock crushing machine embodying my invention;

Fig. 2 is a top plan view of the means for adjustably and operatively connecting the lower ends of the crushing jaws; and

Fig. 3 is a view in perspective of a connecting link comprised in said connecting means.

Referring to the drawing: 1 designates a frame, preferably, though not necessarily, of integral construction, having at its front side a stationary jaw 2 provided with a wear plate 3 which is adapted to be removed and replaced by another or new plate. The movable jaw 4 is supported upon an eccentric 5 upon a shaft 6 journaled in the opposite sides of the frame 1. The shaft is driven in the direction indicated by the arrow 7 by power applied to the drive pulley 8. Only one fly wheel 9 is shown in the drawing, but in practice a second drive wheel is employed which is fastened to the opposite end of the shaft 6.

The movable jaw 4 is provided with a wear plate 10 which is detachably secured and held in position by one or more key rods 11.

The lower end of the movable jaw 4 extends below the lower end of the stationary jaw 2 and is curved rearwardly as shown at 12 and is provided in the end of said rearwardly curved extension with a semi-cylindrical bearing 13 in which is journaled a shaft 14 which is retained in said bearing by a cap of thin sheet metal having a central semi-cylindrical portion 15 and flanges 16 which latter are seated against the lower end of said movable jaw and secured thereto by fastenings 16^a. The said shaft is provided with heads 20 at its opposite ends having rectangular shaped holes 21 extending therethrough.

A semi-cylindrical bearing or seat 22 is provided in the front side of the lower end portion of the stationary jaw 2 in which the shaft 23 is journaled which is retained in place by a cap of thin sheet metal having a semi-cylindrical portion 24 provided with flanges 25 secured to the stationary jaw by fastenings 26. The shaft 23 is provided with heads 27 through which cylindrical holes 28 extend. The shafts are connected together by means of tie bars which comprise rectangular portions 29 and cylindrical portions 30, the former extending through the rectangular holes or openings 21 through the heads 20 and the latter through the cylindrical openings 28 through the heads 27. The tie bars are provided with openings 31 adjacent their rear ends adapted to receive pins 32 and 33, the first of which are seated against the rear sides of the heads 20. The forward end portions of the tie bars are screw threaded, as shown, for adjustable nuts 34 which are seated against washers 35 intermediate the said nuts and the front sides of the heads 27, being in contact with the latter. In order to vary or adjust the distance between the jaws 2 and 4 it is only necessary to adjust the nuts 34 upon the tie bars. When the nuts are unscrewed so as to increase the distances between the same and the pins 32 a coiled spring 40, acting through a rod 41 connected at its forward end to the rear side of the movable jaw 4, will effect rearward swinging movement of the said jaw and at the same time a rearward movement of the tie bars. The outer end of the rod 41 extends through an opening 42 in the rear wall of the frame 1 and the spring 40 is coiled around the portion of said rod to the rear of said wall. The forward end of the spring bears against a washer 43 seated against the rear side of said rear wall, while

the rear end thereof bears against a washer 44 which is retained upon the outer end of said rod by an adjustable nut 45.

In the operation of the crusher the shaft 6 together with the eccentric 5 thereon is rotated. Such rotation effects vertical movements of the jaw 4 and also swinging or pivotal movements thereof about the shaft 14. Should some unusually hard object, such as a piece of iron, be fed into the machine serious injury thereof is avoided by the shearing or breaking of the pins 32. After the removal of such hard objects which caused the shearing or breaking of the pins 32 the pins 33 may be substituted for the broken pins 32 and the operation of the machine resumed.

It will be seen that I have combined in a single machine means whereby the crushing jaws may be readily adjusted with respect to each other and with means for relieving the movable jaw in case an unusually hard object, such as a piece of iron, such as a nut, bolt or the like, should find its way into the space between the jaws.

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

1. A rock crushing machine, comprising relatively movable jaws, shafts journaled in bearings upon the outer sides of the lower ends thereof, the opposite ends of one of said shafts being provided with openings extending therethrough polygonal in cross section and the opposite ends of the other of said shafts being provided with openings which are circular in cross section, tie bars connecting the said shafts, the opposite ends of said tie bars being adapted to fit the said openings, adjustable nuts upon the cylindrical ends of said tie bars, and means secured to the opposite ends of said tie bars adapted to release one of said jaws.

2. A rock crushing machine, comprising relatively movable front and rear jaws, the said jaws respectively being provided with bearings upon the front and rear sides of the lower end portions thereof, shafts journaled in the said bearings, the shaft which is journaled in the bearings upon the movable jaw being provided with rectangular openings extending through its opposite ends and the other of said shafts being provided with cylindrical openings extending therethrough, tie bars extending between the said shafts, the opposite ends of said tie bars being adapted to fit the openings through the said shafts, adjustable nuts upon the cylindrical end portions of the said tie bars for causing adjustment of the jaws toward and from each other, and the opposite ends of said tie bars being provided with means for releasing the movable jaw upon the application of a predetermined force thereto, substantially as described.

3. A rock crushing machine comprising a stationary front jaw, a pivoted rear jaw which is adapted to have swinging movements toward and from the said stationary jaw, shafts supported upon the front and rear sides of the lower end portions of the front and rear jaws, the opposite ends of the front shaft being provided with round holes therethrough and of the rear shaft with rectangular holes therethrough, tie bars connecting said shafts, the front end portions of said tie bars being cylindrical and screw threaded and extending through the round holes in the opposite ends of the front shaft and the rear end portions thereof being rectangular and extending through the rectangular openings in the opposite ends of the rear shaft, the said rear end portions of said tie bars having holes extending therethrough, pins in said openings for retaining the said rear shaft upon said tie bars, and adjustable nuts upon the screw threaded cylindrical front end portions of said tie bars for retaining the front shaft on said tie bars and for adjusting the said shaft toward or from each other, substantially as described.

In testimony that I claim the foregoing as my invention I have hereunto signed my name this 24th day of February, A. D. 1921.

PERCY E. GARRETSON.