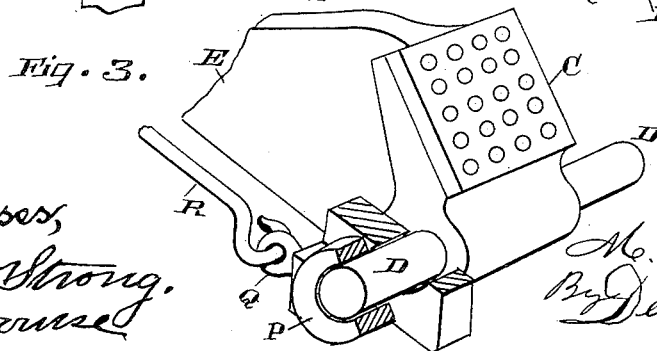
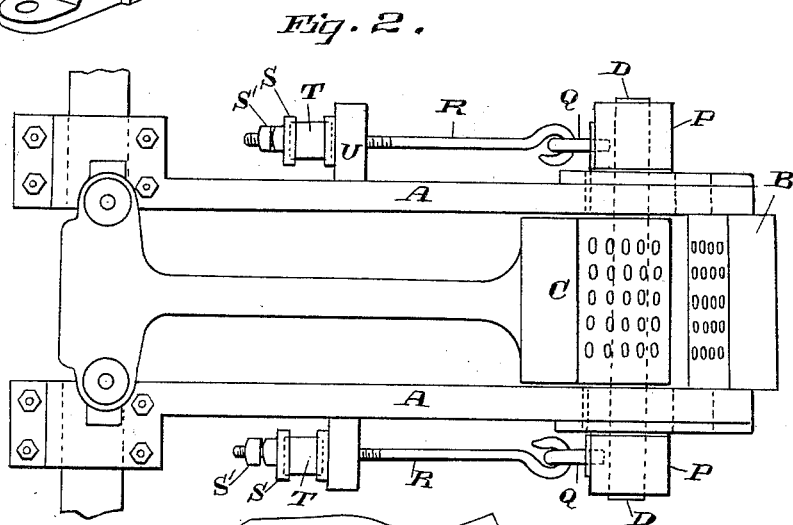
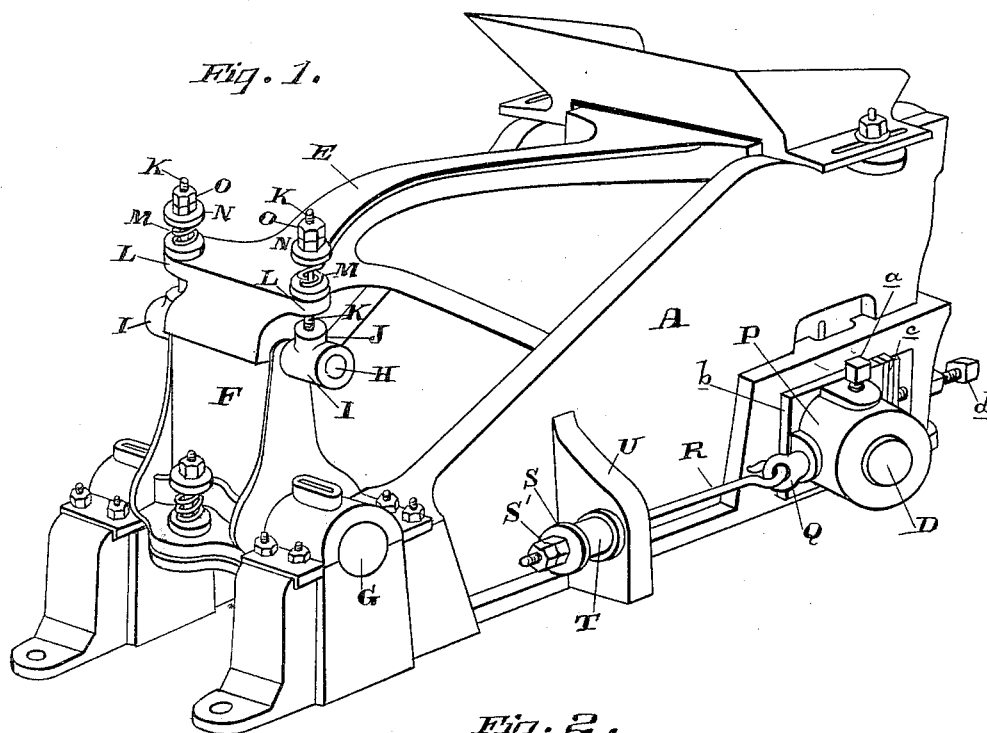


M. B. DODGE.  
ROCK BREAKER.

No. 419,247.

Patented Jan. 14, 1890.



Witnesses,  
Geo. H. Strong,  
J. H. House

Inventor,  
M. B. Dodge  
By Dewey & Co.  
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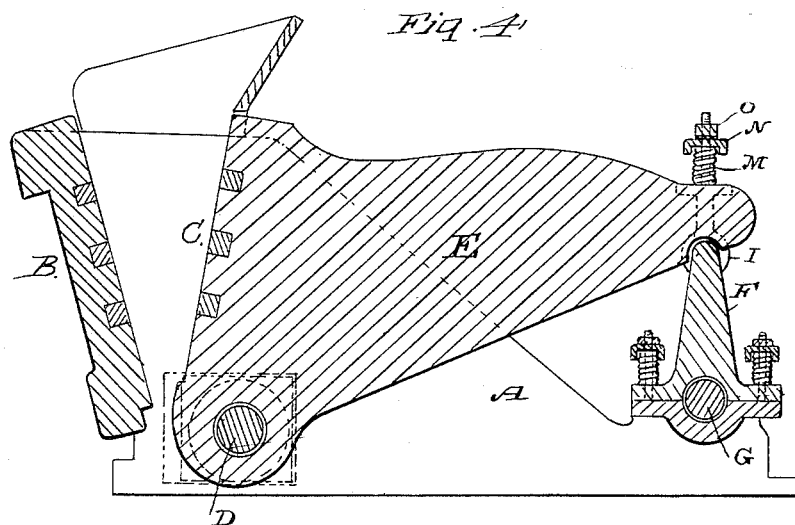
(No Model.)

2 Sheets—Sheet 2

M. B. DODGE.  
ROCK BREAKER.

No. 419,247.

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Witnesses,  
Geo. H. Strong  
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Inventor,  
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# UNITED STATES PATENT OFFICE.

MILES B. DODGE, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO PARKE & LACY, OF SAME PLACE.

## ROCK-BREAKER.

SPECIFICATION forming part of Letters Patent No. 419,247, dated January 14, 1890.

Application filed May 23, 1888. Serial No. 274,818. (No model.)

*To all whom it may concern:*

Be it known that I, MILES B. DODGE, of the city and county of San Francisco, State of California, have invented an Improvement in  
5 Rock-Breakers; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to certain improvements in rock-breakers; and it consists in the  
10 constructions and combinations of devices which I shall hereinafter fully describe and claim.

Figure 1 is a perspective view of my crushing device, showing the application of the  
15 springs. Fig. 2 is a broken plan or top view. Fig. 3 is a perspective view, partially in section, of a part of the movable jaw, showing the fulcrum-shafts and part of a box and collar with tension-rod. Fig. 4 is a longitudinal  
20 vertical sectional view.

A A are the side frames of the machine, at one end of which is fixed the stationary jaw B.

C is a movable jaw having the lower end provided with the fulcrum-shaft D, which  
25 vibrates in journal-boxes supported in the side frames A of the machine. From the rear of the jaw C a triangular-shaped lever arm or extension E projects, as shown in Figs. 1 and 4, and in its outer end, farthest from the  
30 crushing-faces of the jaws, is a semi-cylindrical groove or channel, which fits upon the corresponding upper end of the connecting plate or pitman F, through which power is applied from an eccentric upon the shaft G, so  
35 as to cause the lever E and the jaw C to oscillate about its fulcrum-shaft D. The lower edge of the crushing-face of C is sufficiently above the fulcrum to form with the jaw B a narrow discharge-throat which has the least  
40 movement, the upper part of the jaw having the greatest.

I have experienced considerable difficulty in maintaining a close contact between the end of the lever-arm E and the connecting  
45 plate or pitman F, especially when the machine is run at a high speed. In the present case I have shown the shafts or trunnions H projecting from the sides of the connecting-pitman F, and the sleeves I fit loosely upon  
50 these trunnions, having upwardly-projecting

extensions J, into which the bolts K are secured, as shown. These bolts pass upward from the extensions J through the lugs L at the end of the lever-arm E, and springs M surround these bolts and rest upon the upper  
55 side of the lugs L. Above these springs M are the washers N and the nuts O, which may be screwed down upon them, thus compressing the springs M to any desired degree of tension, and by this means the end of the lever E and the upper adjacent end of pitman  
60 F are held firmly in contact with an elastic pressure, which may be regulated at will by the tension of the springs M.

The boxes in which the fulcrum-shaft D  
65 vibrates soon become worn and loose under the heavy pressure, and when the discharge-throat is full of rock this will then become the fulcrum, and the lower part and the fulcrum-shafts will then have the to-and-fro motion in  
70 the boxes, which entirely prevents or greatly interferes with the efficiency of the crusher. In order to remedy this I secure collars P upon the projecting ends of the fulcrum-shaft D by means of set-screws a, or by other convenient  
75 means. Upon these collars are stout eyes Q, standing in an approximately-horizontal line with the center of the fulcrum-shaft D. The hook-bolts R are attached to these eyes and extend horizontally along the sides of the  
80 frame A, passing through projecting buttresses U, cast upon the sides of the frame A. Strong elastic buffers or springs T surround the projecting ends of the bolts R, and washers S are forced against the springs  
85 by means of nuts S'. By this means the fulcrum-shaft D is strongly held against the near sides of the bearing-boxes, and the fulcrum is thus maintained at this point. This insures  
90 a slight to-and-fro movement of the jaw at the throat, increasing from this point to the top of the jaw, where it is greatest.

The journal-boxes b of the fulcrum-shafts D are fitted to slide in guiding-slots in the bottom of the frame A, and plates or washers  
95 c are shown placed in the slots in front of the boxes, the whole being locked firmly by set-screws d. The opening of the throat of the machine is regulated by means of these plates. One or more may be removed from the front  
100

of the boxes and placed in the rear, the set-screw being again tightened to hold them securely.

5 It will be seen that by screwing the nuts S' farther upon the bolts R the tension upon the springs T will be increased to any required degree.

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

10 1. The frames A, having the projections or buttresses U upon the exterior sides, the rectangular openings near the ends, the journal-boxes adjustable within these openings, and  
15 the shaft upon which the movable crushing-jaw turns extending through said journal-boxes, in combination with the sleeves or collars secured to the projecting ends of the shaft and having the eyes Q upon the sides,  
20 the hook-rods R, connected with the eyes and passing through the projections U, the springs or buffers T, washers, and tension-nuts, substantially as described.

2. The jaw C, the fulcrum-shaft D, and the lever-extensions E, forming a part of the jaw, 25 with the lugs L L and the concave bearing at its outer end, in combination with the vertical thrust-plate F, the broad eccentric passing through its lower end and journaled in the stationary frame, the convex upper end 30 fitting the concavity of the lever E, the trunnions H, projecting therefrom, the sleeves fitting said trunnions and having the extensions J, the screw rods or bolts fixed in said extensions and passing through the lugs L, 35 and the springs M, washers, and tension-regulating nuts, substantially as described.

In witness whereof I have hereunto set my hand.

MILES B. DODGE.

Witnesses:

S. H. NOURSE,  
H. C. LEE.