

(No Model.)

2 Sheets—Sheet 1.

G. H. MALTER.
ROCK BREAKER.

No. 304,537.

Patented Sept. 2, 1884.

FIG. 1.

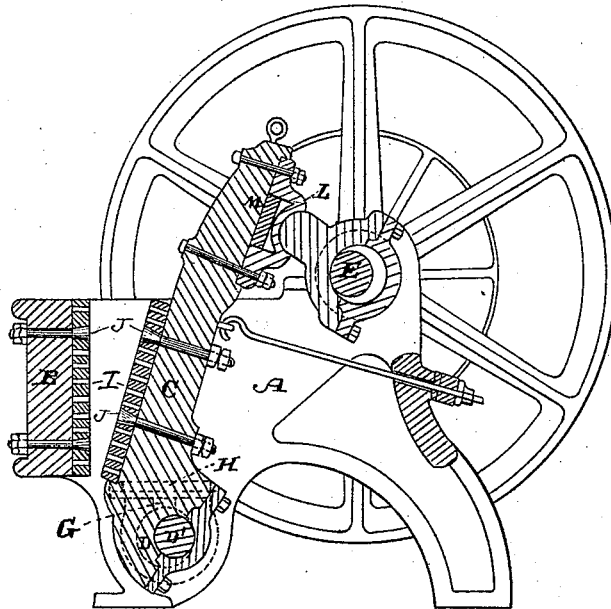
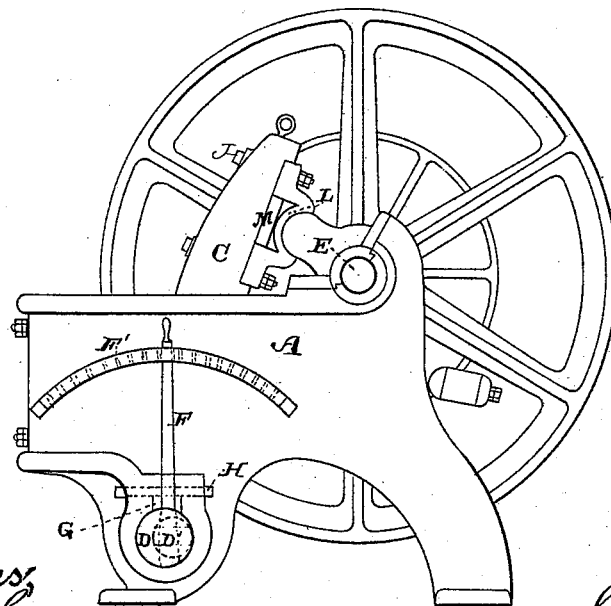


FIG. 2.



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

Inventor,
Geo. H. Malter.
By Dewey & Co.
attorneys

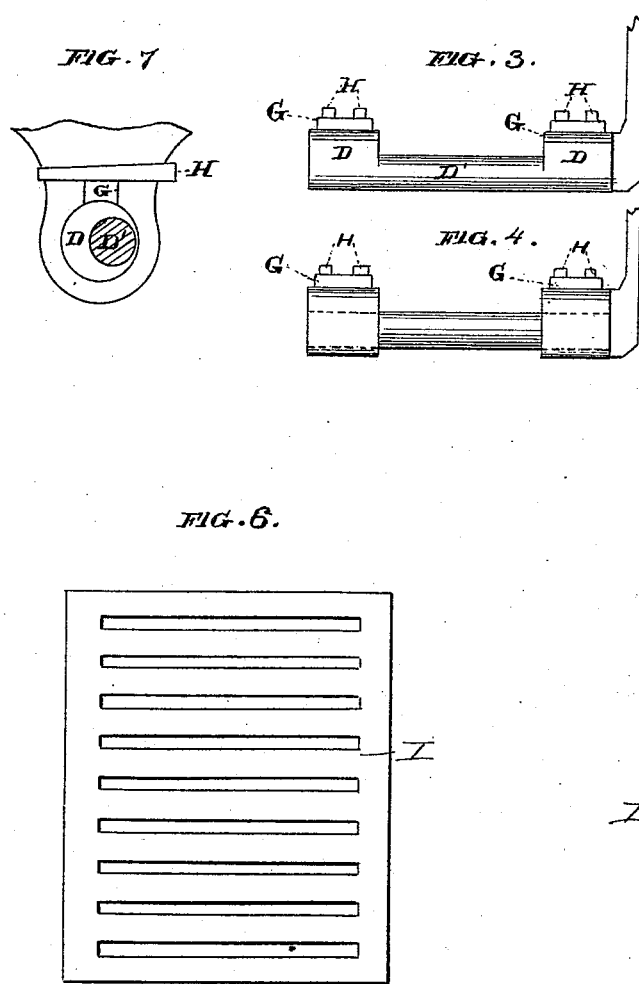
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Inventor,
Geo. H. Malter
Dervey & Co.
Attorneys

UNITED STATES PATENT OFFICE.

GEORGE H. MALTER, OF SAN FRANCISCO, CALIFORNIA.

ROCK-BREAKER.

SPECIFICATION forming part of Letters Patent No. 304,537, dated September 2, 1884.

Application filed September 3, 1883. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. MALTER, of the city and county of San Francisco, and State of California, have invented an Improvement in Rock-Breakers; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to certain improvements in that class of rock-breakers in which one or both of a pair of inclined jaws are caused to oscillate toward each other while the rock passes between them; and it consists in the arrangement and combination of devices, as will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a vertical section of a rock-breaker provided with my improvements. Fig. 2 is a side view of the same. Fig. 3 is a view of the eccentric adjusting-shaft. Fig. 4 is a modification of the same. Fig. 5 is a sectional view of a die, I. Fig. 6 is a front or face view of the same. Fig. 7 is a detail showing the gib and key.

Rock-breakers are often employed to break the rock to a certain size, and for this purpose it is necessary that the distance between the lower part of the crushing-faces should remain the same; but the wear of the dies and other parts is often so great that the space becomes too wide in a very short time.

In the present case, A is the frame of a rock-breaker. B is a fixed and C a movable jaw, each being provided with suitable dies or crushing-faces. The movable jaw has its lower end fitted to turn upon a shaft, D, which extends across the frame, and the upper end of the jaw is caused to oscillate to and from the fixed jaw by means of a crank, eccentric, cam, or other device, as shown at E. Two constructions are here shown for compensating for wear. In the first an eccentric shaft is shown, in the second a straight shaft with eccentric journals or boxes. (See Fig. 4.) By the first construction, in order to adjust the lower end of the jaw toward the fixed one to compensate for the wear of the dies, the shaft D has its central portion, D', turned eccentric to the ends which are supported in boxes upon the frame. The lower end of the jaw is fitted to the central portion of the shaft, so that the latter

may be turned around within it. It will be manifest that when the shaft is turned the eccentric portion will cause the lower part of the jaw to advance or recede, as desired. In order to produce this movement, I employ a lever, F, or other suitable mechanism connected with the shaft. In the present case I have shown a lever one end of which is rigidly fixed to the shaft, while the other extends upward to a sufficient distance to provide the necessary power to turn the shaft. A rack, F', is engaged by a pawl or set-screw upon the lever, to hold it at any desired point. Gibs G are fitted to the journals of the shaft, and are made tight by keys H in any well-known manner. When the shaft is to be turned around, these keys and gibs are loosened and the lever F moved to advance the jaw to the desired point of adjustment. The keys and gibs are again tightened, and the shaft and jaw will be held firmly in its new adjustment. In this manner the jaws may be kept at the desired distance apart, and the wear of the dies compensated until they are worn so thin that they must be renewed.

In order to produce a surface which will wear less rapidly than ordinary dies, I form the dies I of cast-steel, having parallel slots made transversely in them at short distances apart, and extending nearly or quite from side to side of the dies. Within these slots I fit tempered steel bars J, made harder than the metal of the die; and this surface will resist abrasion, while the unequal wear of the dies and bars will produce transverse ridges which will keep the rock from jumping out of the jaws while it is being crushed, which is an advantage.

In order to prevent the breakage of important parts under excessive pressure, the cap L, which is bolted to the upper part of the movable jaw C, and against which the arm from the operating eccentric presses, is made hollow, and a block of rubber, M, is placed within it, as shown. If any unusual pressure takes place, the socket upon which the pressure is exerted gives way, and the pressure is thus absorbed by the elastic-rubber block beneath, and is not communicated to the jaws. The machine may thus be stopped without

further injury, the impediment removed, and a new cap substituted. Other forms of breaking-pieces may be used; but this is very suitable.

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

1. In a rock-breaker, the crushing-jaws, the eccentric shaft for reciprocating one of said
10 jaws to and from the other, and the lower shaft, having eccentric ends and suitable boxes, in combination with the gibs and keys, a lever adapted to turn the shaft, and a rack by which it is held at any point after adjustment, sub-
15 stantially as herein described.

2. In a rock-breaker, the reciprocating jaw,

the eccentric shaft, and projecting arm, in combination with the hollow cap L and rubber block M, substantially as and for the purpose herein described.

3. In a rock-breaker, a jaw provided with a cast-steel die, I, having parallel grooves or channels made horizontally across its face, and tempered-steel bars J, secured in said channels, substantially as and for the purpose de-
25 scribed.

In witness whereof I have hereunto set my hand.

GEORGE H. MALTER.

Witnesses:

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