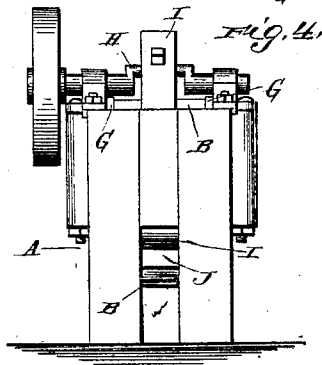
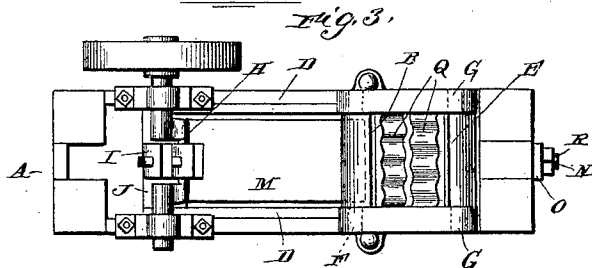
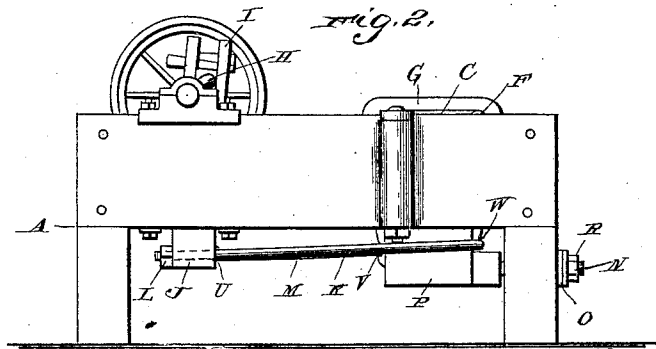
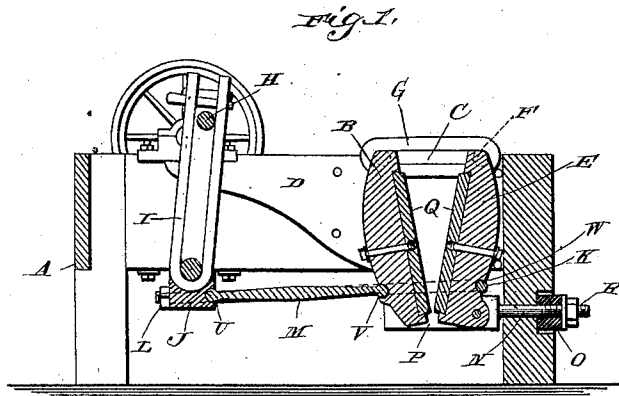


T. VARNEY & A. RIX.
QUARTZ CRUSHER.

No. 61,286.

Patented Jan. 15, 1867.



Witnesses:

Inventor:

United States Patent Office.

THOMAS VARNEY AND ALFRED RIX, OF SAN FRANCISCO, CALIFORNIA.

Letters Patent No. 61,286; dated January 15, 1867.

IMPROVEMENT IN QUARTZ CRUSHERS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that we, ALFRED RIX and THOMAS VARNEY, of the city and county of San Francisco, and State of California, have invented certain new and useful improvements in Stone and Quartz Rock Breakers; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a longitudinal central section view of a rock-breaking machine having our improvements.

Figure 2 is a side view of the same.

Figure 3 is a top view of the same.

Figure 4 is a rear view of the same.

Similar letters of reference in the different drawings indicate the same parts.

The principal feature of our improvements consists in arranging old and well-known parts so as to avoid the necessity of using the ordinary heavy iron frame.

The machine is supported by the wooden frame A. Between the side pieces of the frame is placed the stationary jaw B, supported by the flanges C resting upon and bolted to the frame, and also by the braces D. These braces D, being projections from the stationary jaw, extend to a point beneath the crank-shaft and bear upward against the bottom of the journal boxes of the same. The movable jaw E is hinged to the flanges C by the joints F. To hold the upper ends of the jaws in place and to receive the strain while working, the wrought-iron bands G are placed around the flanges C and joints F. To the crank H is suspended the connecting-rod I, to the lower end of which is jointed the cross-head J at its centre. Through each end of this cross-head passes an end of the toggle-binder K. This binder consists of a bar of wrought iron extending from one end of the cross-head forward to the back of the movable jaw, and turning thence at right angles across the back of the jaw in a semi-tubular groove therein; and thence at right angles backward to the other end of the cross-head where it is secured by a nut and screw, L, the other end of the binder being secured in like manner. Between the fixed jaw B and the cross-head J is the toggle-bar M, each end of it fitting into a semi-tubular groove. The rod N connects the movable jaw to the rubber spring O, by which, through the nut and screw R, the jaw can be held back with any desired degree of pressure. Iron plates P are placed at the sides of the jaws to protect the wood of the frame and keep the rock in place. The jaws are furnished with hard iron dies Q with corrugated faces fastened to the jaws by the bolts S, and so made as to be turned end for end as wear may require.

The operation is as follows: The shaft being turned either way, the cross-head J and the adjacent end of the toggle-bar M are carried up and down. During the motion downward, as the joint at U always works below the line drawn through the joints V and W, (the connecting-rod being made long enough to secure this result,) the cross-head swings forward toward the jaws, the spring O drawing it as well as the binder and movable jaw toward itself, by which the joints at U, V, and W are kept tight and the jaws made to open, between which the rock falls. During the motion upward the toggle lever power is applied to the jaws and the rock is crushed, as will plainly appear from the drawings. The distance between the jaws can be adjusted by the nuts and screws L. It will be observed that our arrangement of the several old parts, to wit, the jaws, toggle-bar M, and binder K is such as to allow the ordinary heavy iron frame to be dispensed with. In other machines the iron frame receives the outward pressure of the lever, in ours the outward pressure is received exclusively by the binder. By thus getting rid of the iron frame much weight and expense are saved and the machine is rendered much more simple and accessible.

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

The combined use of the wrought-iron binder K, the toggle-bar M, and jaws B and E, constructed and arranged substantially in the manner and for the purposes set forth.

ALFRED RIX,
THOMAS VARNEY.

Witnesses:

ALFRED BARSTOW,
JAMES BOWMAN.