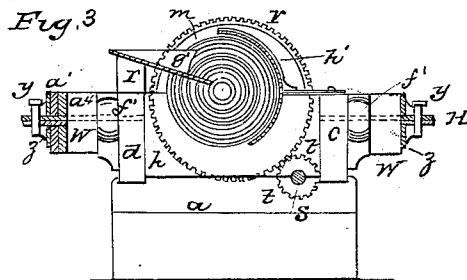
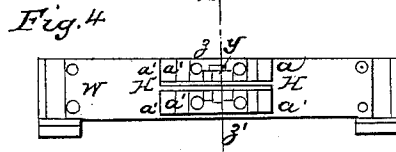
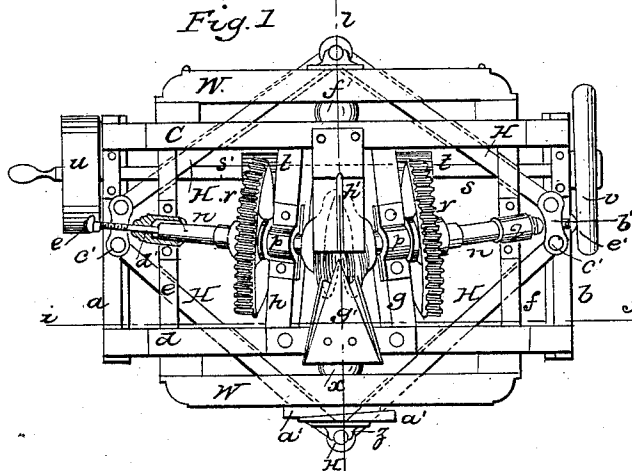
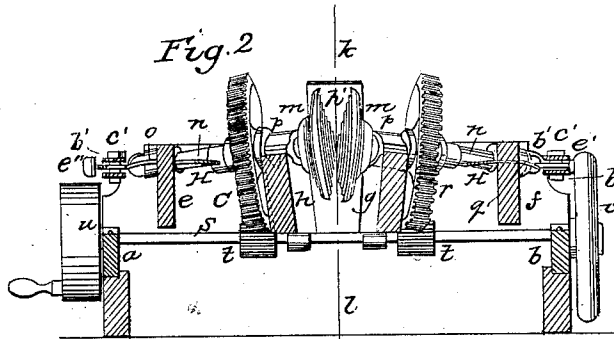


C. MASON.  
Quartz Crusher.

No. 61,347.

Patented Jan'y 22, 1867.



Witnesses  
L. L. Bond  
E. A. West,

Inventor  
Charles Mason

# United States Patent Office.

CARLILE MASON, OF CHICAGO, ILLINOIS.

Letters Patent No. 61,347, dated January 22, 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 I, CARLILE MASON, of the city of Chicago, in the county of Cook, and State of Illinois, have invented a certain new, useful, and improved Machine for Breaking, Crushing, or Pulverizing Quartz Rock, Coal, or other substances; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a top view.

Figure 2, a longitudinal section at the red line *ij*.

Figure 3, a transverse section on the line *kl*; and

Figure 4, a front view of the spring-beam *w*.

Like letters refer to similar parts in all of the figures.

The nature and object of my invention consist in constructing a crushing machine by so arranging two metallic cones that their apices will be nearly in contact, the axis of each being inclined so that on one side of the apices the surfaces will be parallel to each other and nearly in contact; the cones revolving on their axis, any substance placed between the cones at their open sides will be taken up and compressed, and when brought to the point where the surfaces are nearly or quite in contact, will then be thoroughly crushed and pulverized; and in providing such machine with tension-rods and springs to prevent breaking the machine when any substance gets into the machine which is beyond its power to crush.

To enable others skilled in the art to make and use my invention and machine, I will proceed to describe its construction and operation.

*a b c d e f g h* represents a framework of timber firmly bolted together. *m m* are two conical-faced heads, fixed to the inner ends of the shafts *n n*. These shafts *n n* rest on the cross-beams *e h* and *g f*, working in the boxes *o p q*; *r r* represent two bevelled cog-wheels, attached to the shafts *n n*; *s* is the driving-shaft, which is provided with a drum, *u*, at one end and a fly-wheel, *v*, at the other. To this shaft are also attached two pinion-wheels, *t t*, by which the wheels *r r* are driven. *w w* represent two spring-beams, bolted to the sides of the frame, as shown. *x x x x* represent four tension-bars or rods passing through slots or holes in the frame, and are connected by the pins *y y* on the outside of the spring-beams *w w*. The pins *y y* are fitted in the boxes *z z*. On one or both sides (one shown) wedges *a' a'* are driven in between the box *z* and the spring-beam *w*, (figs. 1 and 3,) by means of which the tension of the bars *x* and the space between the conical heads *m* is adjusted. The bars *x* are connected at the ends of the machine by the cross-heads *b' b'* and pins *c' c'*. Through these cross-heads *b'* are passed screws *e'*, which pass into the boxes *o* and *q*, or into one of them, to receive the lateral pressure upon the shafts *n*, and they are also used in adjusting the space between the conical heads *m* when the keys or wedges *a' a'* are insufficient. The upper half of the box *o* (fig. 1,) being removed, shows the position and office of these screws. *s' s'* represent springs placed between the spring-beams *w* and frame to strengthen the spring-beams. *g'* is a feeding-trough or hopper. *h'* is a concave shield or fender, partially surrounding the conical heads *m* and nearly in contact with the periphery of the heads. This fender is attached to the beam *e* of the frame. The conical heads *m m* are corrugated in consecutive circles, as shown, or otherwise, to prevent the material from slipping while being compressed or crushed. When the machine is fully constructed power is applied to the drum *u* attached to the shaft *s*, upon which are placed the pinion-wheels *t t*, and from these pinions communicated to the cog-wheels *r r* on the shafts *n n*, and the conical heads *m m* revolved; and in their revolutions they present two surfaces which are constantly approaching each other and coming nearly or quite in contact; and thus form, by their gradual approach, a powerful crusher which will crush or pulverize or simply crush, as the heads are brought together or separated. Rigidity of the machine is avoided by the system of tension-bars or rods *x*, cross-heads *b'*, spring-beams *w*, so that if iron or any substance which it is impossible to crush gets into the machine it will not thereby be broken. The distance between the conical heads is regulated and adjusted by the screws *e' e'*, which bear against the ends of the shafts *n n*, and by the keys or wedges *a' a'* of the tension frame.

It will be obvious that the machine needs to be made of great strength, and when so made will be found to

possess great power and effectually crush or pulverize quartz or other rock, anthracite coal, bones, or any other substance.

What I claim as new, and desire to secure by Letters Patent, is—

1. The conical crushing-disks *m*, having their faces corrugated, substantially as shown, and arranged to operate in connection with each other as set forth.
2. The tension-frame, consisting of the rods *x* and the keys or wedges *a*, arranged to operate in connection with the crushing disks *m*, as shown and described.
3. In combination with the tension-frame, as above described, I claim the spring-beams *w*, and the set-screws *e*, arranged and operating as and for the purpose set forth.

CARLILE MASON.

Witnesses:

E. A. WEST,  
L. L. BOND.