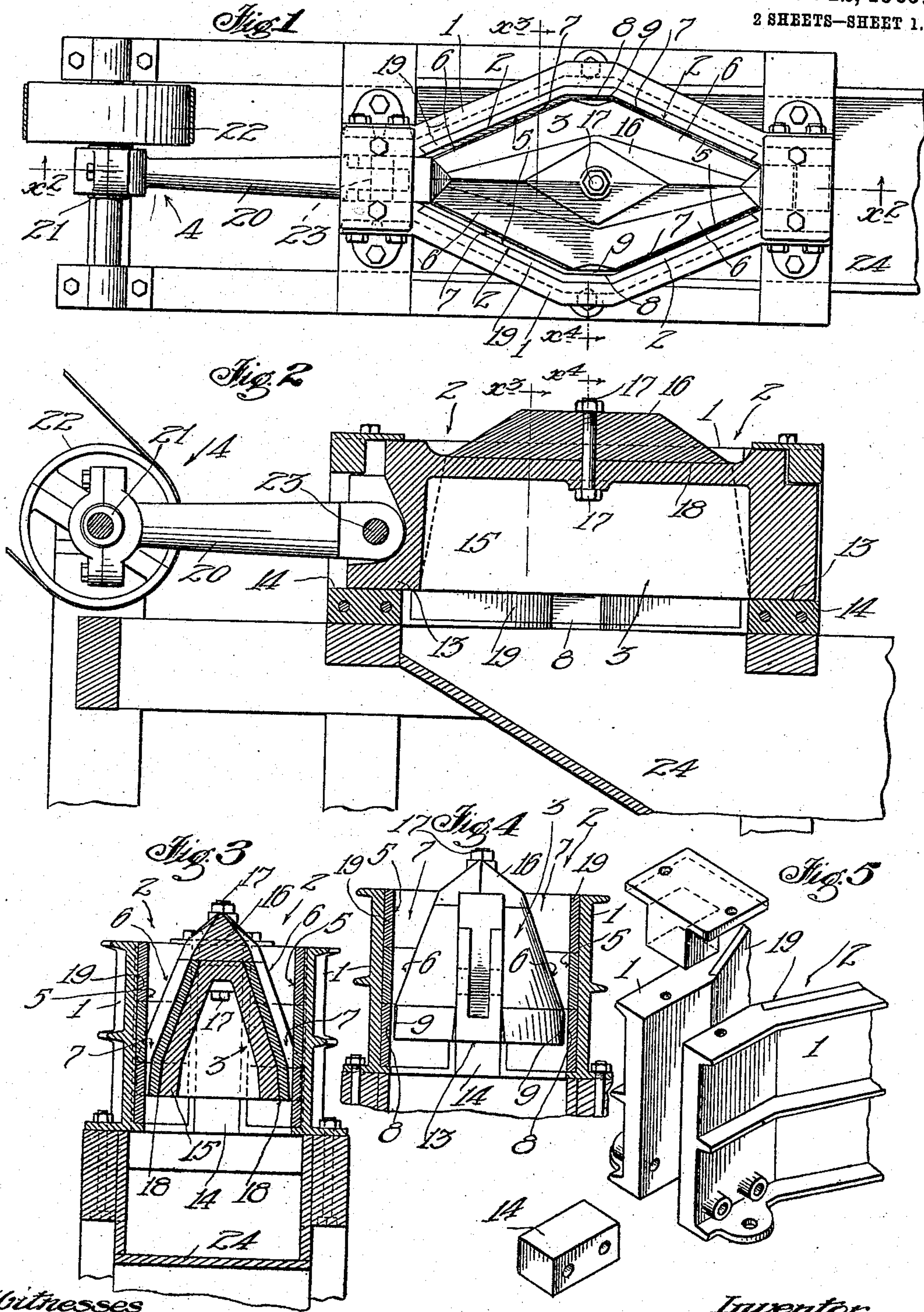


C. C. LANE.
 ROCK BREAKER.
 APPLICATION FILED JULY 16, 1906.

936,729.

Patented Oct. 12, 1909.

2 SHEETS—SHEET 1.



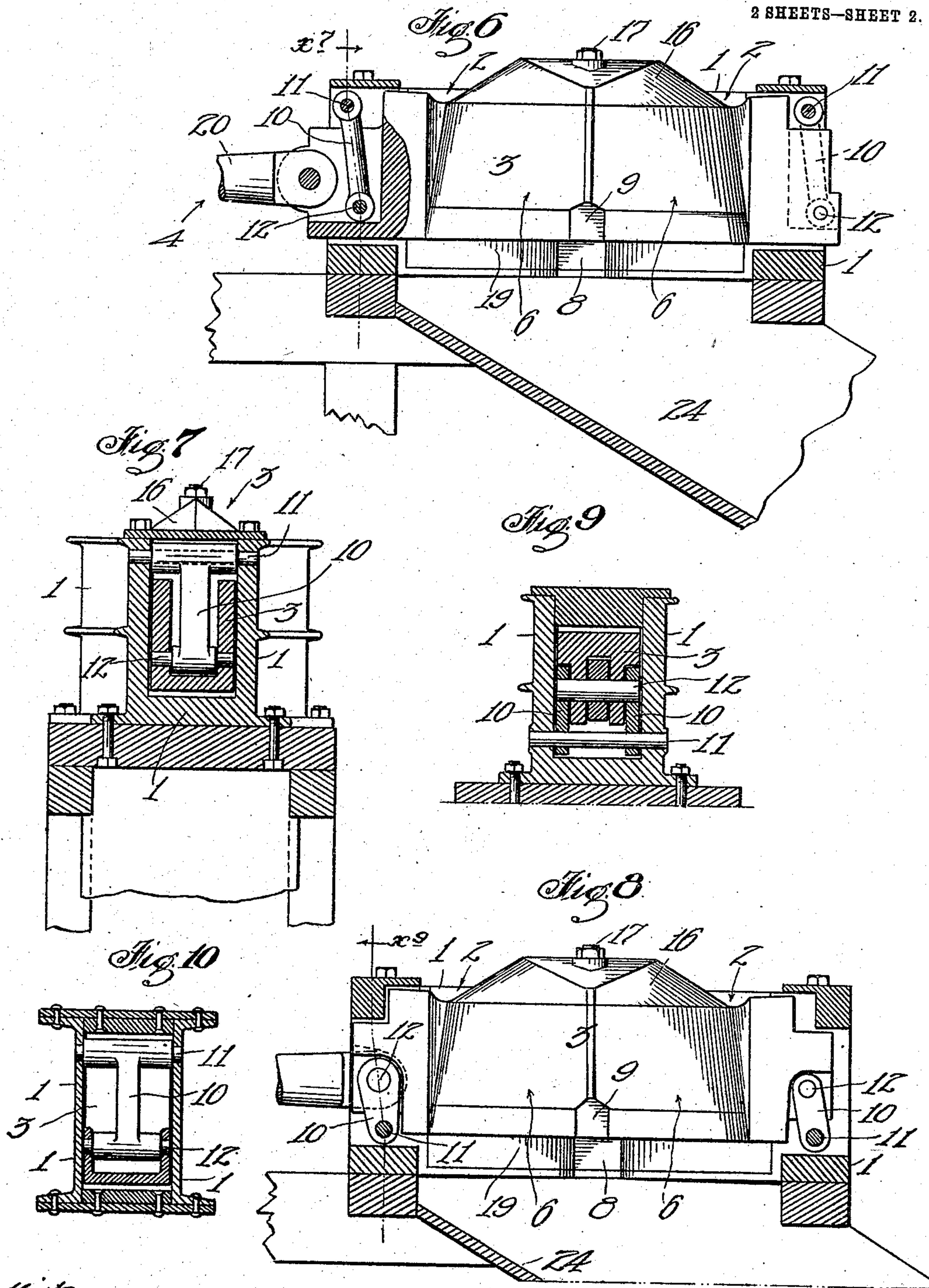
Witnesses
 J. M. Crawford
 J. Townsend.

Inventor
 Charles C. Lane
 by James R. Townsend
 his atty.

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 2 SHEETS—SHEET 2.



Witnesses
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 J. Townsend.

Inventor
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UNITED STATES PATENT OFFICE.

CHARLES C. LANE, OF LOS ANGELES, CALIFORNIA.

ROCK-BREAKER.

936,729.

Specification of Letters Patent.

Patented Oct. 12, 1909.

Application filed July 16, 1906. Serial No. 326,512.

To all whom it may concern:

Be it known that I, CHARLES C. LANE, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Rock-Breaker, of which the following is a specification.

It is the object of this invention to provide a powerful rock-breaker of maximum capacity, minimum weight, and minimum number of parts, which can be constructed of steel or other strong material in knock-down form and can be readily transported by pack animal into mountainous sections otherwise inaccessible, and which will enable prospectors and persons developing mines to provide themselves with means for developing and working such mines.

A principle of this invention is the application of means for employing high speed and short stroke with ready feeding of the rock or ore to be broken.

Other principles, objects and advantages may appear from the subjoined detailed description.

The accompanying drawings illustrate the invention:—

Figure 1 is a plan view showing my invention embodied in one form of rock-breaker. Fig. 2 is a sectional elevation on line x^2 , Fig. 1, the pitman being shown intact. Fig. 3 is a cross-sectional elevation on line x^3 , Figs. 1 and 2. Fig. 4 is an end elevation of the crushing body with frame in section on line x^4 , Figs. 1 and 2. Fig. 5 is a fragmental detail illustrating construction of the frame, parts being separated for clearness of illustration. Fig. 6 is an elevation showing the frame in longitudinal mid-section and the body or crusher in elevation. In this view the crusher body is shown suspended in the way by links. Fig. 7 is a sectional detail on line x^7 , Fig. 6. Fig. 8 is a view corresponding to Fig. 6, showing the body suspended by downwardly-extending links. Fig. 9 is a section on line x^9 , Fig. 8. Fig. 10 is a detail sectional view showing a form of construction for the frame and crusher body of rolled channel steel.

Arrows on line of section in the several views indicate the direction of sight.

The frame 1 has a vertical opening forming the crushing-chamber 2, said chamber being open at the top and bottom and diamond-shape in plan, and the walls of the

chamber being substantially vertical upon their inner faces. The crushing-hammer 3 is adapted to be mounted in the chamber 2, is diamond-shape in plan and of substantially the same shape as the chamber, and the crushing surfaces 6 slant downwardly and outwardly from the center, so that the inner face 5 of the crushing-chamber and the outer face 6 of the crushing-hammer form a wedge-shape opening 7 to receive the ore or rock to be crushed. Bearing-openings extend from each end of the crushing chamber, and slide-blocks extend from each end of the crushing-hammer into the bearing-openings, and links 10 connect the pivots 11 fixed in the frame to the pivots 12 fixed in the slide-blocks so that the crushing-hammer is supported by and swings upon the links, as shown in Figs. 6 and 8, and the links may depend from the pivots 11, as shown in Fig. 6, or extend upwardly from the pivots 11, as shown in Fig. 8; or the slide-blocks of the crushing-hammer may slide upon the ways 14, as shown in Fig. 2. By the link-support friction is avoided and a swinging motion is imparted to the crushing-hammer. The crushing-chamber has longitudinally straight portions 8 at its sides, and the crushing-hammer has corresponding straight portions 9 to allow reciprocation of the hammer in the chamber.

The machine may be built of cast or rolled steel, iron, or any other suitable material. The body 3 may be formed of a base as 15 and a frusto-pyramidal cap 16 detachably fastened to the base 15 by a bolt 17.

18 designates zinc backing for the various working parts which may be interposed between the same and the base 15 or the body of the frame. Detachable working faces may or may not be employed. 19 designates such detachable parts.

In practice, the crushing hammer 3 will be reciprocated horizontally at appropriate speed, say 650 or 1000 strokes per minute, more or less, the full length of a stroke from end to end being not to exceed one-half inch. The ore or rock to be crushed will be fed into the crushing-hammer on top of the cap 16 and will pass down the wedge-shape openings 7 and will be broken by an oblique blow between two parallel faces. As the crushing-hammer reciprocates in the direction of its longest dimension the crushing-chamber is practically divided into four parts, two parts receiving the force in one direction and two

parts receiving the force in the other direction, and the crushing-hammer serving as a wedge between the two corresponding parts.

As the rock is crushed it passes down
5 through the crushing-chamber 2 and escapes at the bottom thereof. The rock-crushing action takes place simultaneously on opposite sides of the crushing-hammer so that the crushing stress is borne by outward pressure
10 on the frame and inward pressure on the crushing-hammer, without causing any serious strains to wrench the crushing-hammer 3 out of its links or ways.

20 designates a pitman; 21 an eccentric and 22 a pulley for reciprocating the crushing-hammer to which the pitman is pivoted by pin 23; 24 is a chute to carry the crushed material away from the machine.

What I claim is:—

20 1. A rock-breaker comprising a frame having a vertical opening diamond-shape in plan and forming a crushing-chamber, a crushing-hammer mounted to reciprocate horizontally in the crushing-chamber, the upper
25 surface of the crushing-hammer slanting outwardly from a center, and the hammer being substantially the same shape in plan as the crushing-chamber.

30 2. A rock-breaker comprising a frame having a crushing-chamber diamond-shape in plan with vertical walls open at the top and bottom, a crushing-hammer mounted to reciprocate in the crushing-chamber, the crushing-hammer being approximately the same
35 shape in plan as the crushing-chamber and the upper surface of the crushing-hammer slanting outwardly from a center, and means for reciprocating the crushing-hammer, there being bearing-openings at the ends of
40 the crushing-chamber and blocks at the ends of the crushing-hammer extending into the bearing-openings.

3. A rock-breaker comprising a frame having a crushing-chamber diamond-shape in plan, open at the top and bottom, a crushing-hammer in the crushing-chamber and
45 corresponding to the chamber in plan shape and fitting loosely for reciprocation, there being a wedge-shape opening between the crushing-hammer and the wall of the crushing-chamber; bearing-blocks extending from
50 the ends of the crushing-chamber, blocks extending from the ends of the crushing-hammer into the bearing-openings, means for supporting the crushing-hammer in said
55 openings, a pitman connected to the crushing-hammer through one of said openings, and an eccentric-shaft for operating the pitman.

4. A rock-breaker comprising a frame having a crushing-chamber diamond-shape in plan and open at the top and bottom, a crushing-hammer in the crushing-chamber and corresponding to the chamber in plan
60 shape and fitting loosely for reciprocation, there being a wedge-shape opening between the crushing-hammer and the wall of the crushing-chamber; bearing-blocks extending from the ends of the crushing-chamber,
65 blocks extending from the ends of the crushing-hammer into the bearing-openings, links for supporting the crushing-hammer in said openings, a pitman connected to the crushing-hammer through one of said openings,
70 and an eccentric-shaft for operating the pitman.
75

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 10th day of July 1906.

CHARLES C. LANE.

In presence of—

JAMES R. TOWNSEND,
JULIA TOWNSEND.