No. 804,201. PATENTED NOV. 14, 1905.

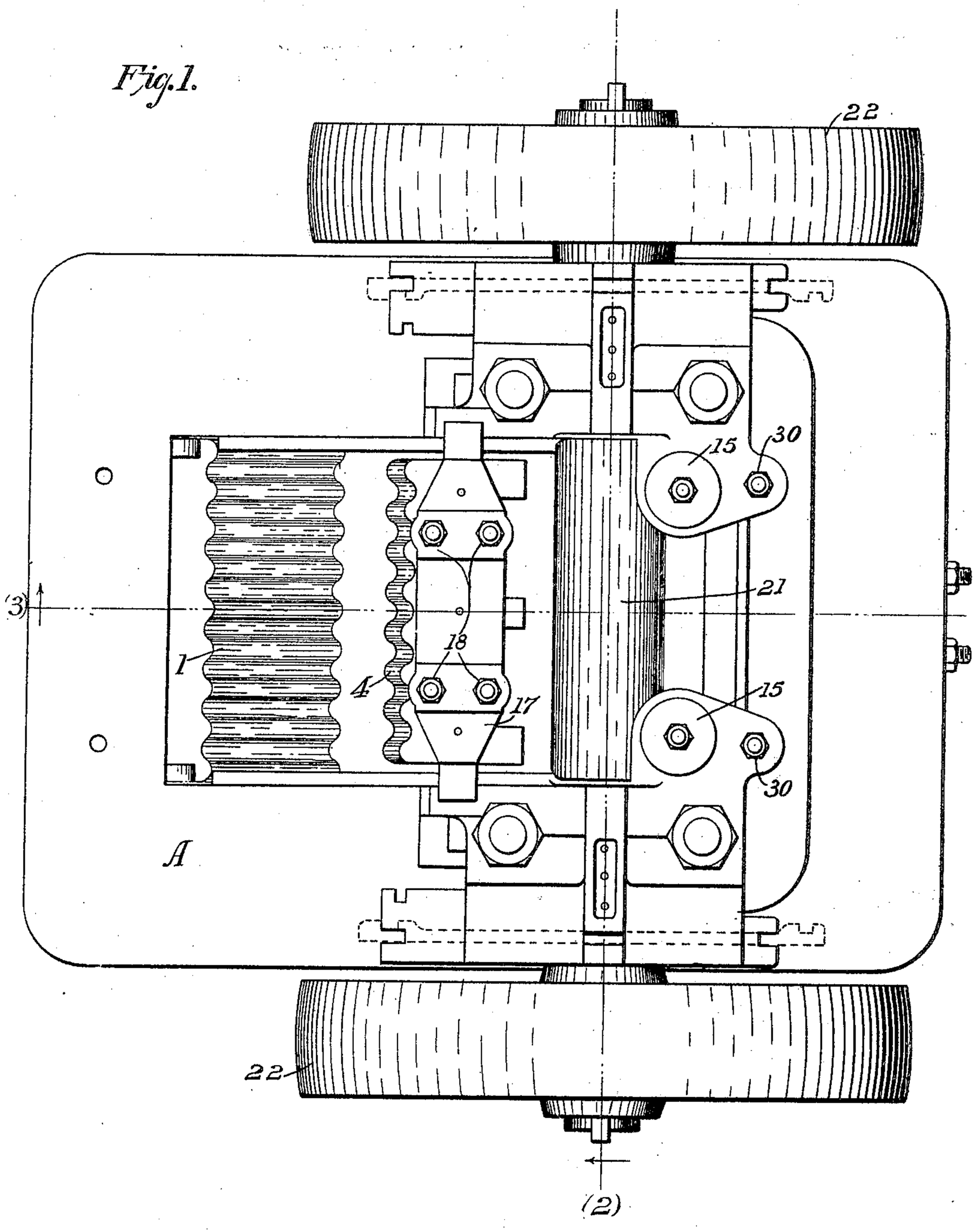
H. H. BLAKE.

ROCK CRUSHER.

APPLICATION FILED MAY 19, 1904.

4 SHEETS—SHEET 1.

Fig. 1.



Witnesses;
L. A. Williams
Cyril C. Crick

Inventor,
Henry H. Blake
per John H. Roney
his Atty.

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4 SHEETS—SHEET 2.

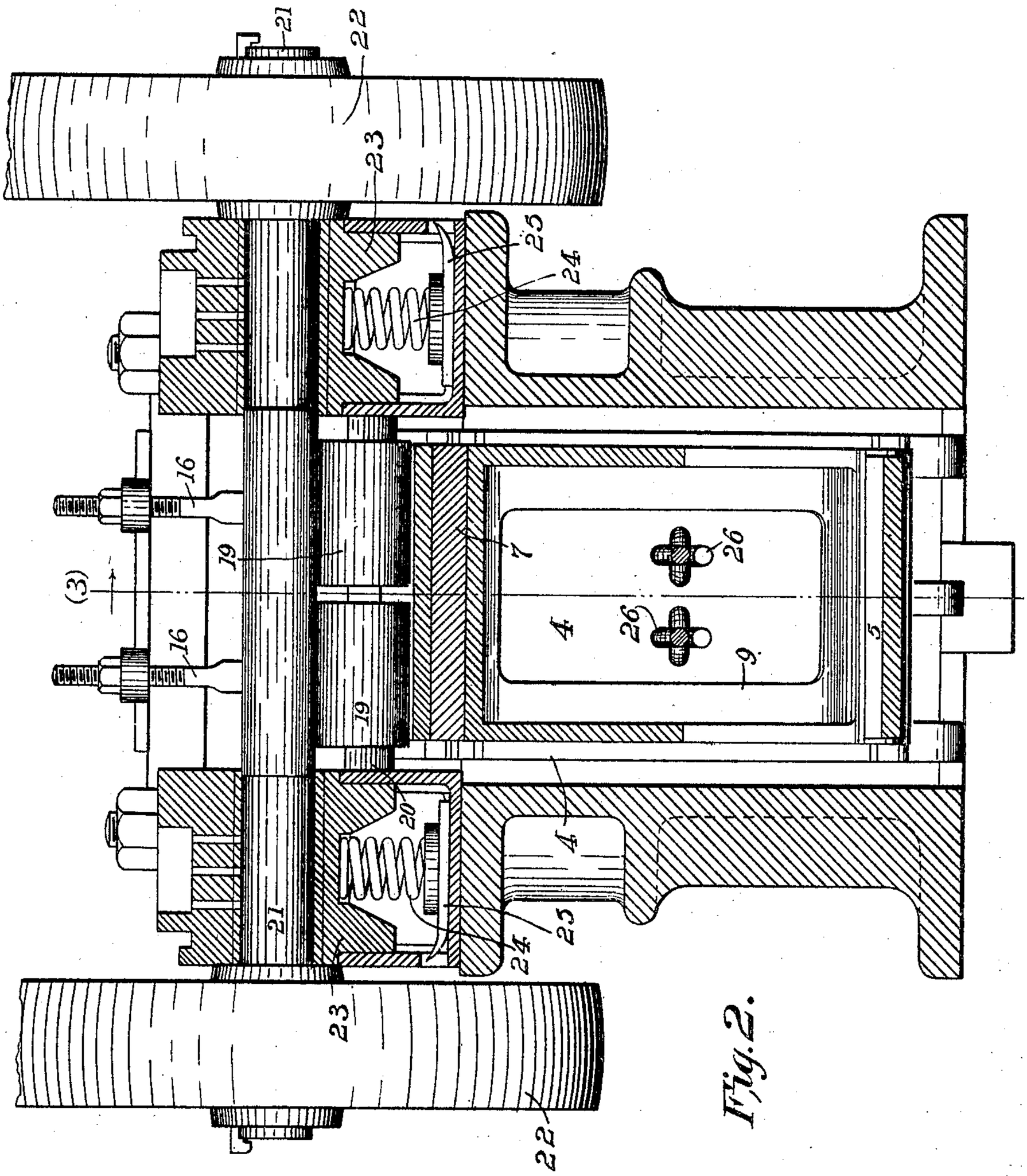

Fig. 2.

Witnesses;
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Cyril C. Crick

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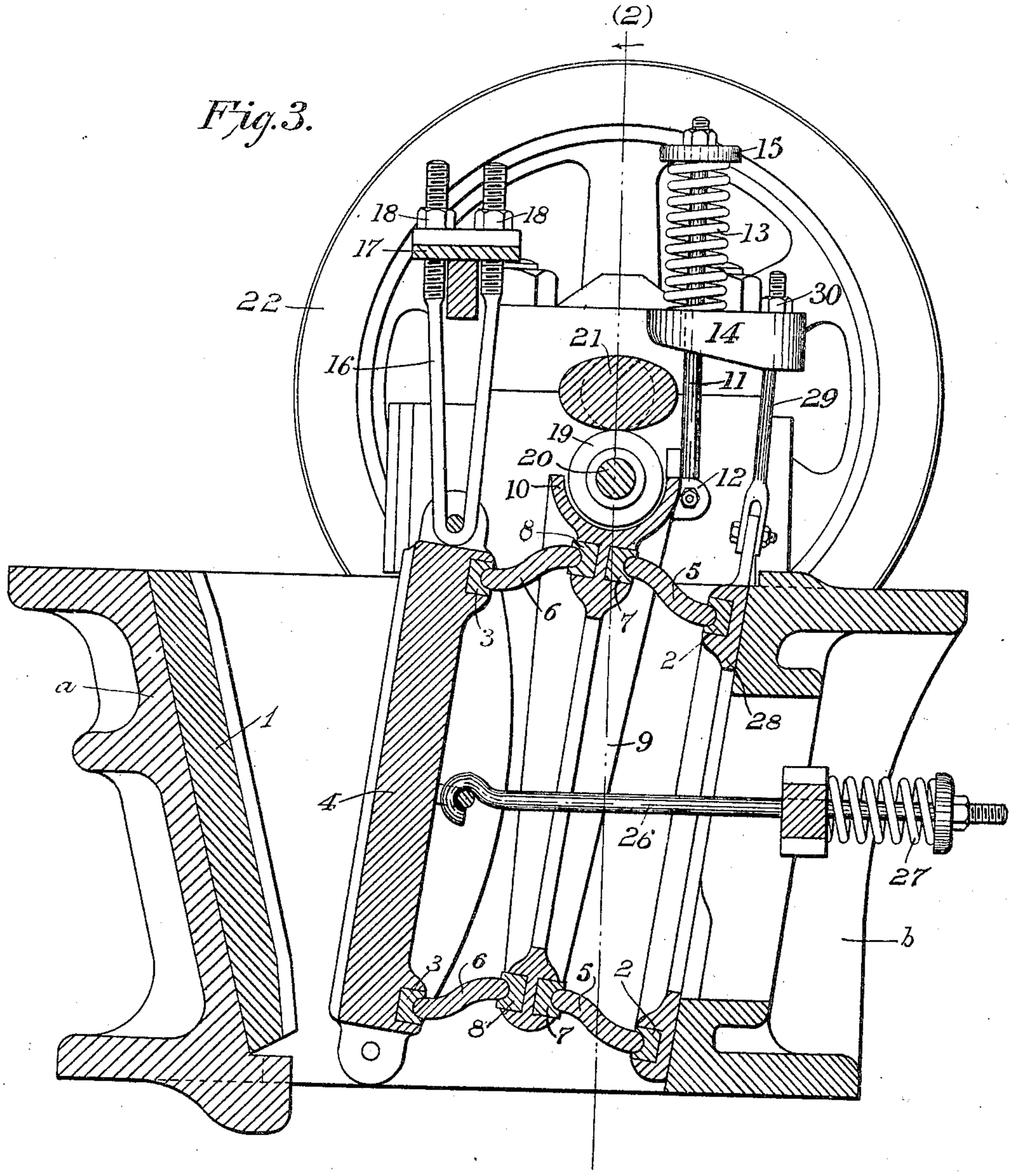
4 SHEETS—SHEET 3.

Fig. 3.



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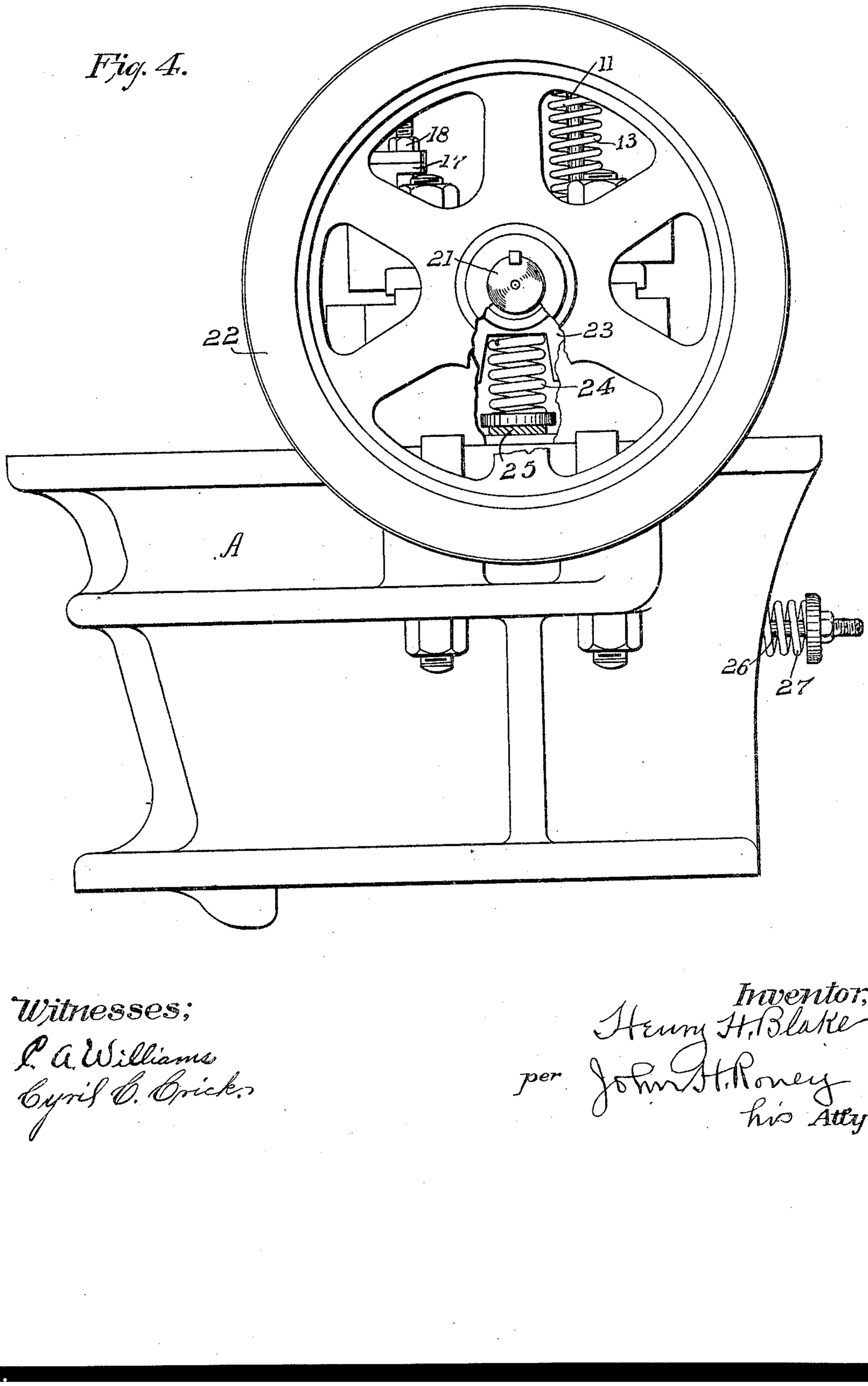
4 SHEETS—SHEET 4.

Fig. 4.



Witnesses;
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Cyril C. Crick.

Inventor;
Henry H. Blake
per John St. Roney
his Atty.

UNITED STATES PATENT OFFICE.

HENRY H. BLAKE, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO STERRIT-THOMAS FOUNDRY COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

ROCK-CRUSHER.

No. 804,201. Specification of Letters Patent. Patented Nov. 14, 1905.

Application filed May 19, 1904. Serial No. 208,669.

To all whom it may concern:

Be it known that I, HENRY H. BLAKE, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Rock-Crushers, of which improvement the following is a specification.

My invention relates to improvements in crushers, and particularly to that class of crushers used to crush stone and like material.

The object of my invention is to produce a crusher in which the wear upon the journals of the power-shaft is taken up by a journal-bearing supported from below by an expansible support and other novel features of construction hereinafter specified, reference being had to the accompanying drawings, forming part hereof, in which—

Figure 1 is a plan view of my improved crusher. Fig. 2 is a longitudinal central section on line 2 2 of Figs. 1 and 3. Fig. 3 is a transverse section on line 3 3 of Figs. 1 and 2. Fig. 4 is a side elevation in section to show the spring-supported bearing.

Referring to said drawings, A is a solid frame comprising ends, front *a*, in which the fixed abutment 1 is secured, and back *b*, in which the toggle-bearings 2 2 are secured, the corresponding toggle-bearings 3 3 being secured in the rear face of the jaw 4. The said bearings 2 2 and 3 3 receive the outer ends, respectively, of the toggles 5 5 6 6, the inner ends of which are supported in bearings 7 7 8 8, both sets of said toggles being secured on opposite sides of the vertical 9 near the top and bottom thereof. The upper end of said vertical terminates in an oil cup or trough 10, the said vertical being supported upon a rod 11, the lower end of which is connected to a lug 12 on said vertical and having mounted on the upper end thereof a heavy spring 13. The lower end of said spring rests upon the cap 14, which is provided with an orifice in which said rod projects, and the upper end of said spring engages against the bearing 15, which is mounted upon the upper end of said rod. The said jaw 4 is suspended upon stirrups 16 16, the upper ends of which are screw-threaded and screwed into holes made in blocks 17 on the top of the frame, heavy nuts 18 being used to hold said stirrups. Rollers 19 19 are loose on the arbor 20, the ends and center of which are square in cross-section to prevent said arbor rotating in its bearings formed in the inner sides of the frame. The shaft 21, on which the belt-wheels 22 22 are mounted, is secured in the bearing-boxes 23 23, which are supported on springs 24 24 for the purpose of constantly holding the said bearing against the shaft as said bearings are worn by use. Liners 25 25 are from time to time driven beneath said bearings as the same wear away, one end of said liners being turned upward, so as to permit the easy introduction of another liner beneath the same when required. Horizontally-disposed rods 26 26, having powerful springs 27 mounted on the outer ends thereof, serve to hold the jaw 4 in constant contact with the toggles. The central portion of said shaft 21 is eccentrically formed, as shown in Figs. 1 and 3, for the purpose of actuating the vertical 9 upwardly and downwardly as the conjugate and transverse diameters of said eccentric contacts with the rollers 19. This movement of the vertical causes the jaw to move toward and from the fixed abutment, the movement of said jaw being somewhat more marked at the bottom than at the top, whereby stones fed between the said jaw and abutment are broken into small-sized pieces. The said bearings 2 2 are formed in the plate 28, which rests against the inner portion of the rear wall *b* of the frame, being capable of adjustment by means of the rod or rods 29 29, the lower ends of which are connected to the upper end of said plate 28, the upper ends of said rods being screw-threaded and adjustably supported in the cap 14 by nuts 30.

I claim as my invention and desire to secure by Letters Patent—

1. In a crusher, the combination of a shaft, the center portion of which is formed eccentric to its axis, a vertical, rollers interposed between said vertical and the eccentric portion of said shaft in combination with bearings for said shaft and means for constantly pressing upwardly said bearings against said shaft.

2. In a crusher, the combination with a machine-frame, of a movable jaw, an operating-shaft having a cam, a vertical, means yieldingly suspending the vertical from the machine-frame, means for operating the jaw by said vertical, and a roller slidably mounted on

the machine-frame and bearing against the vertical and adapted to be moved by the cam.

3. In a crusher, the combination with the machine-frame, of the movable jaw, an operating-shaft having a cam, a vertical having a trough or cup, means yieldingly suspending the vertical from the machine-frame, means for operating the jaw by said vertical, and a roller adapted to be moved by the cam and slidably mounted on the machine-frame and received in and bearing against the trough or cup.

4. In a crusher, the combination with the machine-frame, of a movable jaw, an operating-shaft, bearings or journal-boxes on which said shaft rests, springs supporting said journal-boxes, and a jaw-operating member operated by said shaft.

5. In a crusher, the combination with a movable jaw, of an operating-shaft having a cam, flexibly-supported bearings for said shaft, a jaw-operating member, and flexible means holding said jaw-operating member in contact with the cam on the operating-shaft.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

HENRY H. BLAKE.

In presence of—
CLARENCE A. WILLIAMS,
JOHN H. RONEY.