

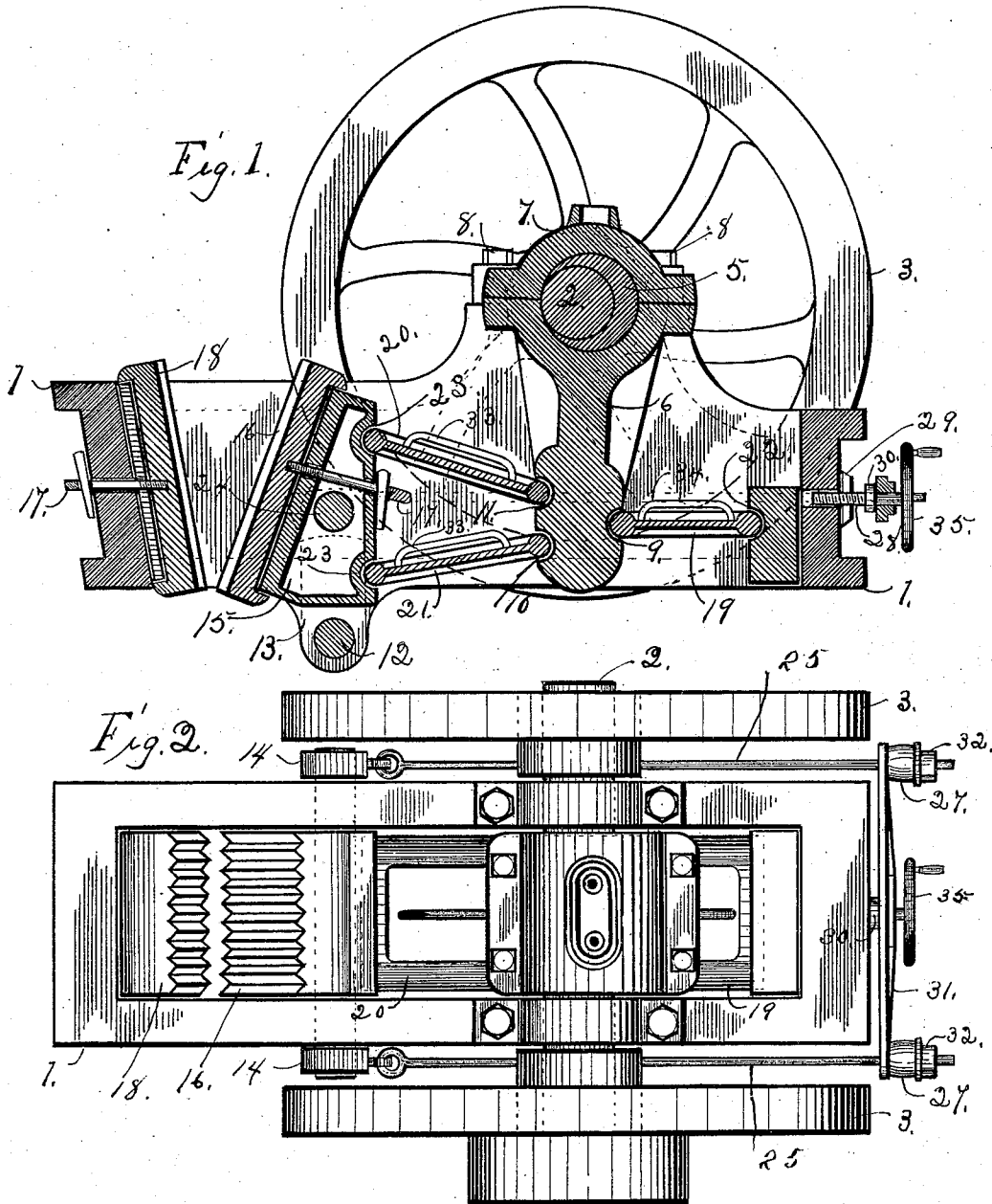
(No Model.)

2 Sheets—Sheet 1.

L. S. PFOUTS.
CRUSHING MACHINE.

No. 578,357.

Patented Mar. 9, 1897.



WITNESSES:

Joan S. Pfouts.
Bertha Finch.

INVENTOR

Leroy S. Pfouts.
BY Fred W. Bond

ATTORNEY.

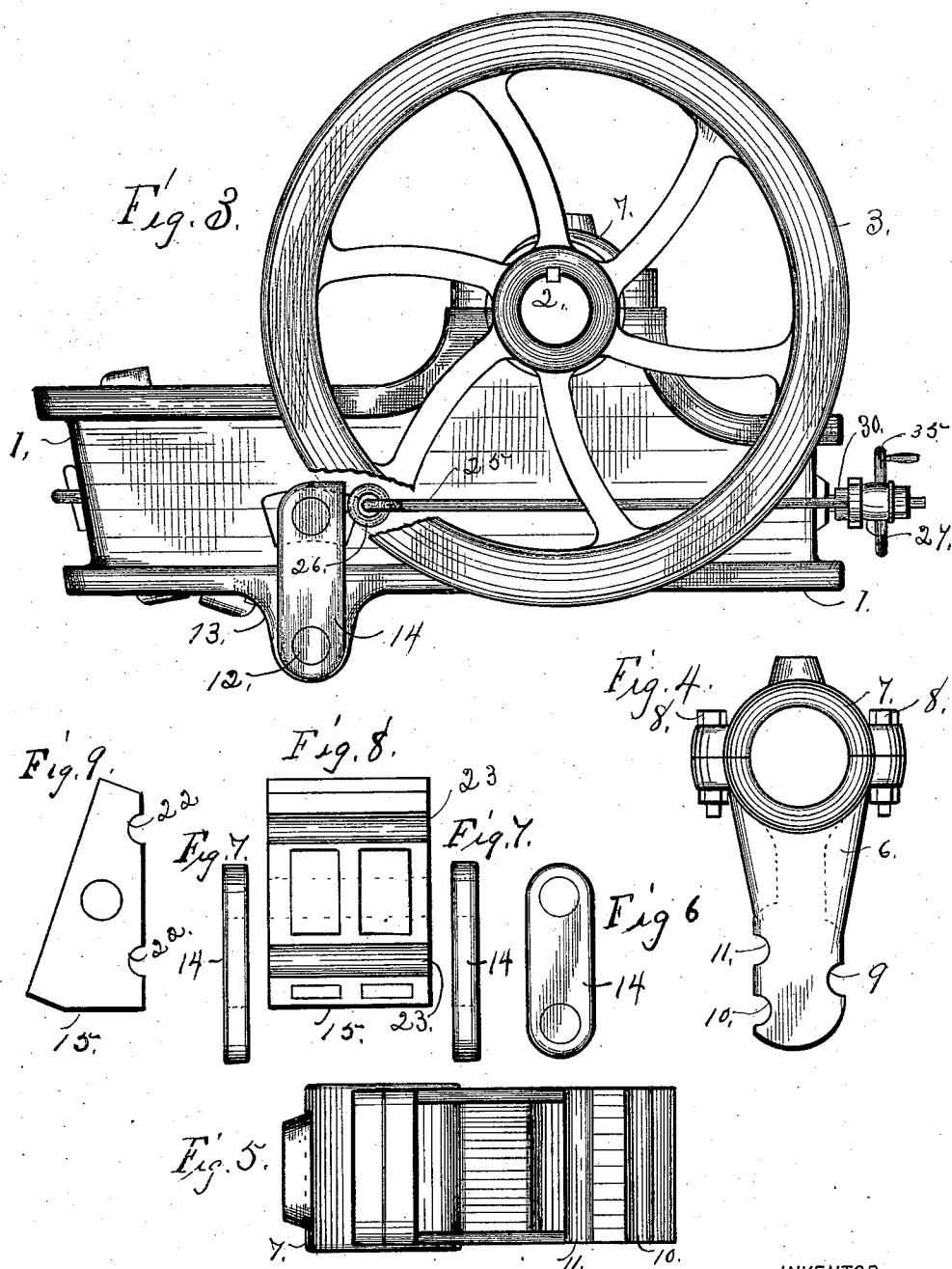
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UNITED STATES PATENT OFFICE.

LEROY S. PFOUTS, OF CANTON, OHIO.

CRUSHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 578,357, dated March 9, 1897.

Application filed March 2, 1896. Serial No. 581,529. (No model.)

To all whom it may concern:

Be it known that I, LEROY S. PFOUTS, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Crushing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the figures of reference marked thereon, in which—

Figure 1 is a horizontal section showing the different parts properly assembled. Fig. 2 is a top view of the machine. Fig. 3 is a side elevation. Fig. 4 is a detached view of the pitman, showing its cap connected thereto. Fig. 5 is a side view of the pitman. Fig. 6 is a side view of one of the crusher-head-supporting posts. Fig. 7 shows edge views of the supporting-posts. Fig. 8 is a side view of the crusher-head, showing the rear side thereof. Fig. 9 is an end view of the crusher-head block, showing the crushing-plate removed.

The present invention has relation to crushing-machines; and it consists in the different parts and combination of parts hereinafter described, and particularly pointed out in the claims.

Similar figures of reference indicate corresponding parts in all the figures of the drawings.

In the accompanying drawings, 1 represents the base or bed of the machine, which is formed of sufficient weight and strength to carry out the object and purposes of the machine. To the base or bed 1 is journaled the transverse shaft 2, which transverse shaft is provided with the ordinary balance-wheels 3 and the eccentric 5, which eccentric is preferably formed integral with said transverse shaft 2. Upon the eccentric is attached the top or upper end of the pitman 6, which pitman is properly connected to the eccentric by means of the cap 7, which cap is held in proper position by means of the clamping-bolts 8.

It will be understood that the cap 7 may be dispensed with and the top or upper end of the pitman 6 formed solid or in one piece and provided with the transverse aperture to re-

ceive the eccentric 5. The bottom or lower end of the eccentric is provided with the semi-circular grooves or recesses 9, 10, and 11, the groove 9 being located upon the opposite side of the pitman from that of the grooves 10 and 11 and about midway between said grooves 10 and 11, said grooves being so located and arranged for the purpose hereinafter described.

To the bed or base 1 is attached the shaft or bar 12 by means of the bearing-lugs 13. To the shaft or bar 12 are pivotally connected the posts 14, which posts are for the purpose of flexibly supporting the crushing-head 15, and at the same time providing a means for causing the crushing-head to move or describe the arc of a circle as it is oscillated, as hereinafter described.

To the crushing-head 15 is attached the crushing-plate 16 by means of the bolt 17 or its equivalent.

I do not desire to be confined to any particular manner of attaching the crushing-plate, inasmuch as it is immaterial as to the manner of attaching said plate, the only object being to securely attach said plate to the head. At the end of the frame or bed 1 and directly opposite the crushing-plate 16 is located the fixed crushing-plate 18, which crushing-plate may be attached in the ordinary manner. The bottom or lower end of the pitman 6 is held in proper operative position by means of the semicircular recesses 9, 10, and 11 and the toggle-links 19, 20, and 21, said toggle-links being located and arranged substantially as shown in Fig. 1, and, as shown, the link 19 is located between the rear end of the bed or frame and the rear side of the pitman 6 and the rear end of said link 19 seated into the semicircular recesses 22. The toggle-links 20 and 21 are located between the front side of the pitman 6 and the rear face or side of the crushing-head 15, said links being seated in semicircular grooves 23, formed in said crushing-head. For the purpose of increasing the leverage for producing an oscillating movement of the crushing-head 15 and its plate 16 the toggle-links 20 and 21 are located at an angle to each other, as illustrated in Fig. 1. It will be understood that as the shaft 2

is rotated the eccentric 5 will impart a reciprocating motion to the pitman 6, and at the same time an oscillating movement, and as the pitman 6 is elevated and brought forward the bar 20 will force the top or upper portion of the crushing-head toward the crushing-plate 18, said pitman 6 being fulcrumed against the toggle-link 19. During the upward and forward movement of the pitman 6 the lower end of the pitman will move rearward, thereby allowing the bottom or lower portion of the crushing-head to move away from the crushing-plate 18 and permit the crushed rock or other material to drop from between the crushing-plates 16 and 18, and at the same time permit the larger portions to lodge or become wedged between said crushing-plates. As the eccentric continues its rotation the bottom or lower portion of the crushing-head 15 and its crushing-plate 16 will be forced forward by means of the toggle-link 21 and the forward movement of the lower end of the pitman 6. Said forward movement of the crushing-head 15 will permit the upper portion of said crushing-head to move backward as the portion of the pitman 6 above the recess 9 moves backward, thereby imparting an oscillating movement to the crusher-head 15 and its plate.

It will be understood that by my peculiar arrangement I am enabled to provide a compound leverage upon the crushing-head, and at the same time produce a toggle-joint pressure upon the head 15, the toggle-joint pressure being accomplished by the reciprocating movement of the pitman 6.

For the purpose of allowing the crushing-head to oscillate it is supported upon the cross-shaft 24, which cross-shaft is connected to the top or upper ends of the posts 14, which posts are permitted to rock upon the shafts 12. It will be understood that the rocking movement of the posts 14 is but very slight, inasmuch as said posts are held against movement by means of the tension-bars 25, which are connected to the top or upper ends of the posts 14 by means of the links or eyes 26, which links or eyes are securely connected to said posts 14. It will be understood, however, that a slight reciprocating movement of the tension-bars 25 will be permitted, inasmuch as their rear ends are cushioned by means of the elastic heads or blocks 27. The main object and purpose of cushioning the tension-bars 25 is to remove the jar produced in crushing rock, thereby lessening the danger of breakage. For the purpose of adjusting the crushing-head 15 to or from the crushing-plate 18 the screw-threaded shaft 28 is provided, which screw-threaded shaft passes through the screw-threaded nut 29, said shaft 28 being provided with the fixed collar 30, which fixed collar rests against the inner side of the bar 31, through which bar the tension-rods 25 are passed and held by means of the screw-threaded nuts 32. The object and pur-

pose of providing means for adjusting the crushing-head 15 to or from the crushing-plate 18 is to adjust the machine properly for various kinds of work, as it will be understood that my improved device can be used for crushing shale and various kinds of stone. It will be understood that as the crushing-head 15 is adjusted to or from the plate 18 the space between said crushing-head and the pitman 6 will be varied, and in order to provide for various lengths of space I provide various lengths of bars, or, in other words, shorter or longer bars, to properly fill the space, and for the purpose of easily removing said toggle-links 20 and 21 they are each provided with the handles 33, which handles are located upon the upper sides of said links 20 and 21. I also provide the toggle-link 19 with the handle 34, thereby providing a convenient means for removing said toggle-link for any purpose, but it will be understood that the length of the toggle-link 19 is to remain the same regardless of the adjustment of the crushing-head. When the proper adjustment has been given to the crushing-head and the toggle-links 20 and 21 placed in position, the tension-bars 25 are properly tightened by means of the bar 31 and the screw-threaded shaft 28, said shaft being provided with the ordinary hand-wheel 35.

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

1. In an ore-crushing machine, the combination with a suitable base or frame carrying a stationary crushing-jaw, 18, of a transverse shaft 12 carried by said frame in rear of but on a plane lower than that of the stationary jaw, an arm or post 14 mounted upon each end of said shaft outside of the frame, a shaft 24 mounted in the upper ends of said arms or posts, a crushing-head centrally mounted upon said latter-named shaft so as to oscillate thereon, a crushing-jaw carried by the crushing-head, and means for oscillating the crushing-head, substantially as described.

2. In an ore-crushing machine, the combination with a suitable supporting base or frame, of a stationary crushing-jaw carried by said frame, a rocking post 14 pivotally connected to each side of the frame in rear of the stationary jaw, a transverse shaft 24, carried by said rocking posts, an oscillatory crushing-head 15 centrally mounted upon said transverse shaft, a crushing-jaw carried by the said head, means for oscillating the crushing-head, an adjustably-mounted transverse bar 31 at the rear of the machine and a rod 25 connecting each end of said bar with the rocking posts, substantially as described.

3. In a rock-crushing machine, the combination with a suitable base or frame, of a transverse shaft provided with an eccentric, a pitman connected to said eccentric, a stationary crushing-jaw, a centrally-pivoted and adjustably-mounted oscillating crusher-

head operating to and from said jaw, a pair of toggle-links arranged between the jaw and pitman, and a single toggle-link bearing against the rear side of the pitman and frame of the machine, substantially as described.

4. In a rock-crushing machine, the combination with a suitable base or frame, carrying a stationary crushing-jaw, of a transverse power-shaft provided with an eccentric, a pitman depending from said shaft, a shaft 12, carried by depending bearing-lugs 13 on said frame in rear of but on a plane lower than that of the stationary jaw, an arm or post 14 mounted upon each end of said shaft, a shaft 24 mounted in the upper ends of said posts, a crushing-head centrally mounted upon said

latter-named shaft so as to oscillate thereon, a crushing-jaw carried by the crushing-head, a pair of toggle-links located between the crushing-head and pitman, said links bearing upon opposite sides of the fulcrumed point of the crushing-head, and a horizontal toggle-link bearing against the rear face of the pitman and frame of the machine, substantially as described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

LEROY S. PFOUTS.

Witnesses:

F. W. BOND,
BERTHA FINCH.