(No Model.)

2 Sheets—Sheet 1.

J. O. BOSWORTH.

ROCK CRUSHER.

No. 342,999. Patented June 1, 1886.

Fig. 1.

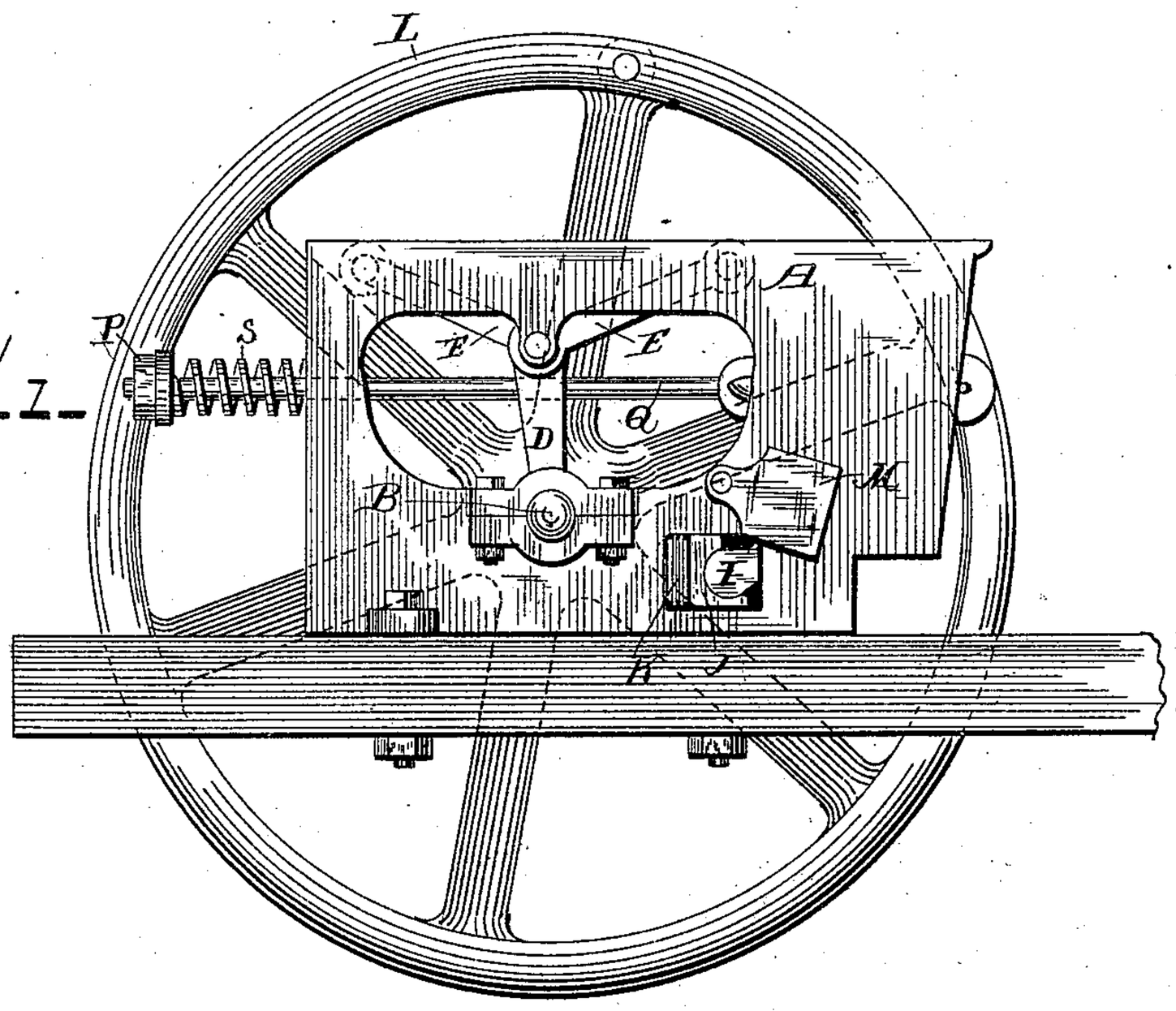


Fig. 5.

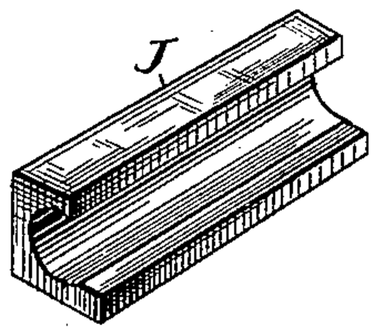
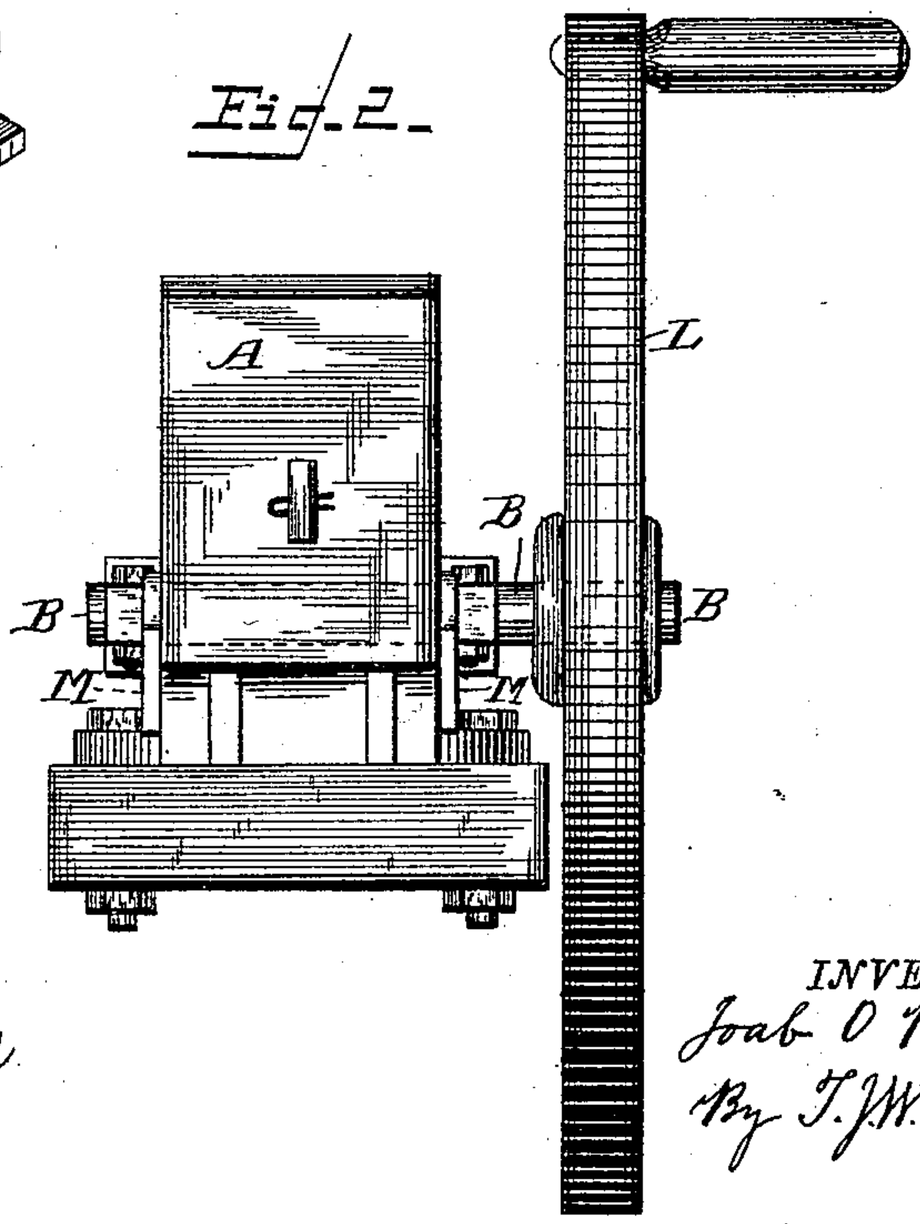


Fig. 2.



WITNESSES.

Hall. C. Robertson

E. J. Robertson.

INVENTOR

Joab O Bosworth

By T. J. W. Robertson

Attorney

(No Model.)

2 Sheets—Sheet 2.

J. O. BOSWORTH.

ROCK CRUSHER.

No. 342,999. Patented June 1, 1886.

Fig. 3.

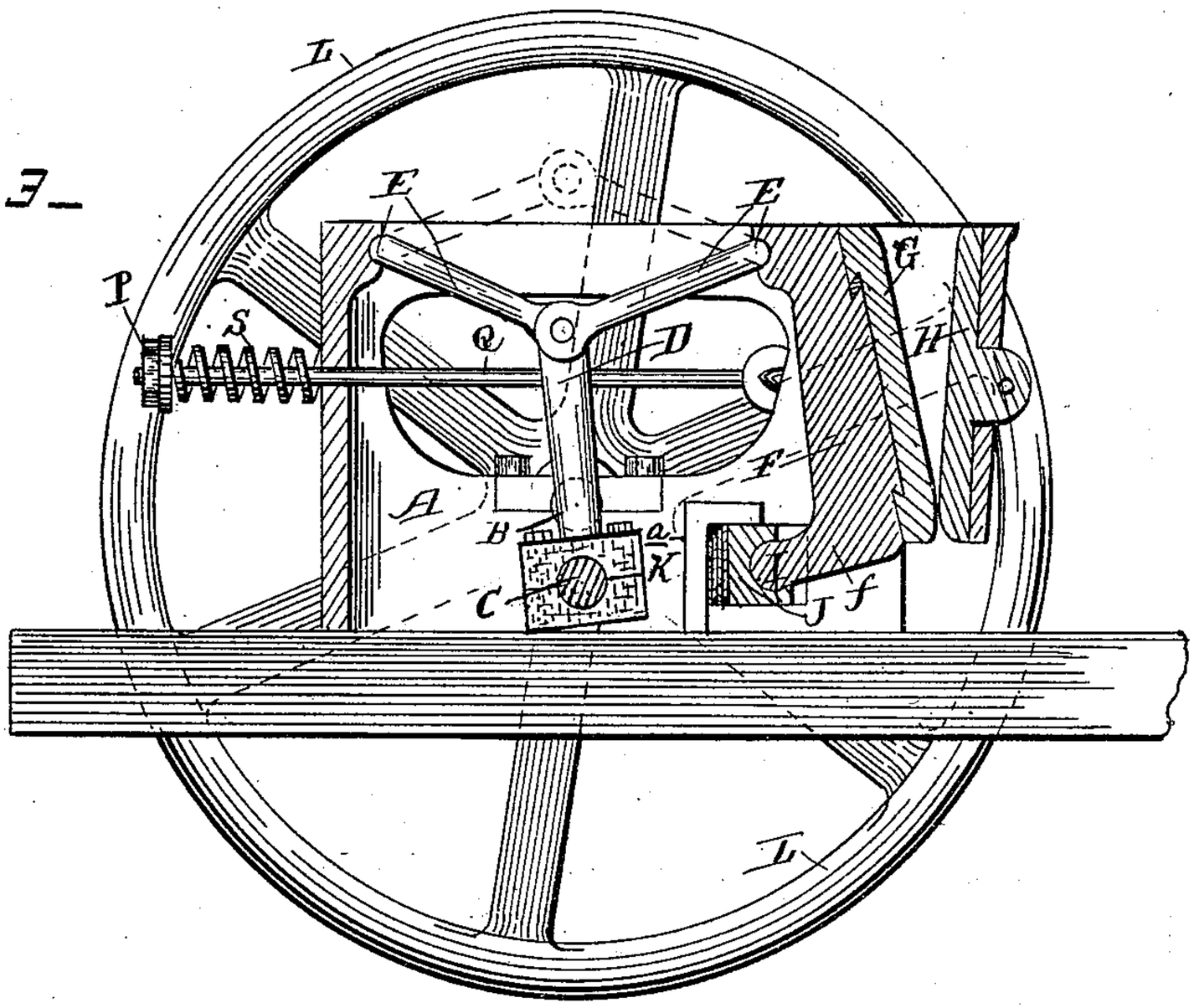
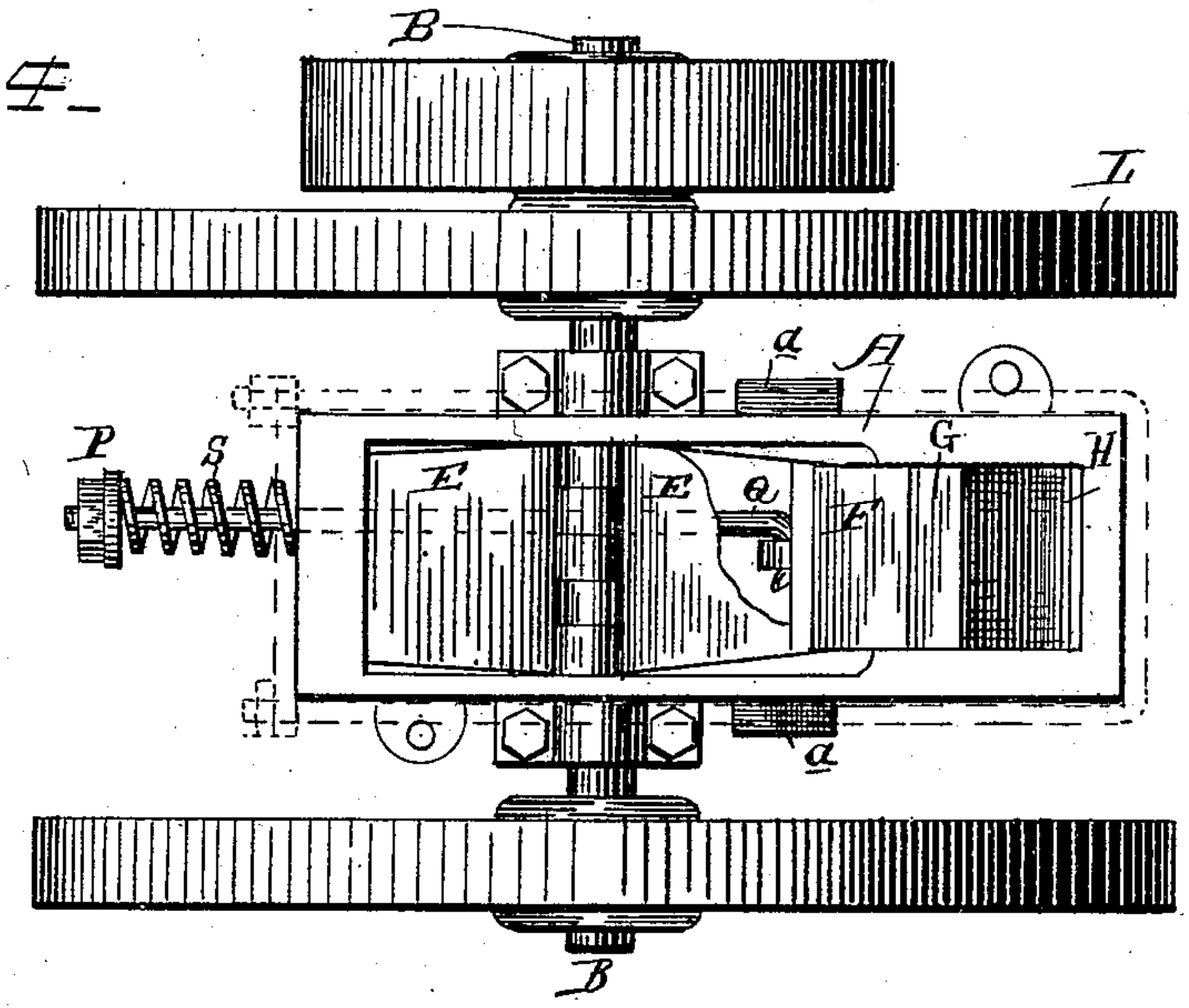


Fig. 4.



WITNESSES

Will. O. Robertson.

E. J. Robertson.

INVENTOR

Joab O. Bosworth

By T. J. W. Robertson

Attorney

UNITED STATES PATENT OFFICE.

JOAB O. BOSWORTH, OF DENVER, COLORADO.

ROCK-CRUSHER.

SPECIFICATION forming part of Letters Patent No. 342,999, dated June 1, 1886.

Application filed August 25, 1885. Serial No. 175,321. (No model.)

To all whom it may concern:

Be it known that I, JOAB O. BOSWORTH, a citizen of the United States, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Rock-Crushers, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 is a side elevation of a rock-crusher constructed according to my invention; Fig. 2, an end elevation; Fig. 3, a vertical longitudinal section; Fig. 4 a plan, and Fig. 5 a perspective detail.

This invention relates to rock-crushers of that class wherein toggles are employed to give the jaw a vibrating movement; and the invention consists in the peculiar constructions and combinations of parts, hereinafter more particularly described, and then pointed out in the claims.

Referring to the details of construction as shown in the drawings, A represents the frame, which may be of any suitable form; B, the shaft, having a crank, C, formed thereon, which carries the connecting-rod D, that operates the toggles E E, which give motion to the vibrating jaw F, which carries a removable chilled face, G, operating against the removable face H of the fixed jaw, both of which faces are preferably curved at the top and bottom, and may be fixed in their respective positions by any suitable means; but I prefer the means shown, which consist in the face-plate G of a dovetail and key, and in the face-plate H of a lug and pin. By this means the faces may be readily reversed when partly worn or removed when entirely worn out.

The jaw F is provided with a long heel, *f*, having a circular surface, I, which fits into a bearing-block, J, set transversely into apertures formed in the frame, and behind said block are set "shims" or thin metal plates K, bearing against the walls of the apertures, for adjusting the width of the opening between the bottoms of the jaws.

The jaw F, it will be seen, is of peculiar form, and it has the heel on which it works set at a considerable distance in the rear of its face, the distance from the heel to the bottom of the face of the jaw being about two-thirds of the length of the face. This construction will give a vertical motion at the bottom of the face equal to about two-thirds the horizontal motion of the upper end of the jaw. By this means the feeding of the material is much facilitated, and a grinding as well as a crushing action takes place at the bottom of the jaws.

Around the apertures in the frame through which the bearing-block J is passed I cast a projection, *a*, one for each aperture, as a means of strengthening the frame in this place, which may in large size crushers be placed on the outside, as shown in Fig. 4, thus giving the bearing-block J a chance to break (it being a cheap piece to replace) should anything fall into the crusher that would give it too severe a strain. The box J and shims K are kept in position by the removable covers M (shown in Figs. 1 and 2) or by any other suitable means.

At Q is shown a rod connected to the jaw F and passing through the frame A, and provided with a nut, P, and spring S, for the purpose of holding the movable jaw taut against the toggles and taking up any lost motion which may occur. I make the pitman of such length that the toggle rises and falls about an equal distance above and below a straight line, by which means the jaw has two motions to each revolution of the fly-wheel. In some cases I may omit the rod Q and connect the toggles with pins, as shown in dotted lines in Fig. 1.

I have shown but one fly-wheel in Figs. 1, 2, and 3; but I generally, when used in the laboratory and worked by hand, prefer to use two, as shown in Fig. 4, and when intended for power I add a belt-pulley, as shown in the same figure.

I have shown the frames as made entirely of cast-iron; but in some cases I intend to use tension-rods, as shown in dotted lines in Fig. 4.

By the construction shown and described a rock-crusher may be cheaply made that will be found to be very powerful, and one that will not be liable to get out of order or to be broken in any principal part under severe strains, and will also be found to be very efficient in action, as, owing to the peculiar arrangement of the parts, there is a grinding action as well as a crushing one, that will be found to add greatly to the capacity of such machines.

I attach importance to the fact that the frame

is provided with apertures, as shown, whereby the bearing-block and shims may be readily gotten at and adjusted or repaired, as occasion may require. I also attach importance to the projections *a*, cast around said apertures, by which the frame is greatly strengthened at this place.

What I claim as new is—

1. In a rock-crusher, the combination, with the frame A, provided with apertures, as described, of the bearing-block J, set transversely into said apertures, the shims K behind said block, the vibrating jaw F, having heel *f*, provided with circular surface I, engaging the groove in said block, and the pivoted covers M to the apertures in the frame, substantially as and for the purposes specified.

2. The combination, with the frame A, provided with apertures, as described, of the block J, set transversely into said apertures, the shims K behind said block, the vibrating jaw F, provided with heel *f*, seated in said block, and the projections *a*, cast about the apertures in said frame for strengthening the same at that place, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses, this 10th day of August, 1885.

JOAB O. BOSWORTH.

Witnesses:
W. T. CORNWALL,
CHAS. B. KIPP.