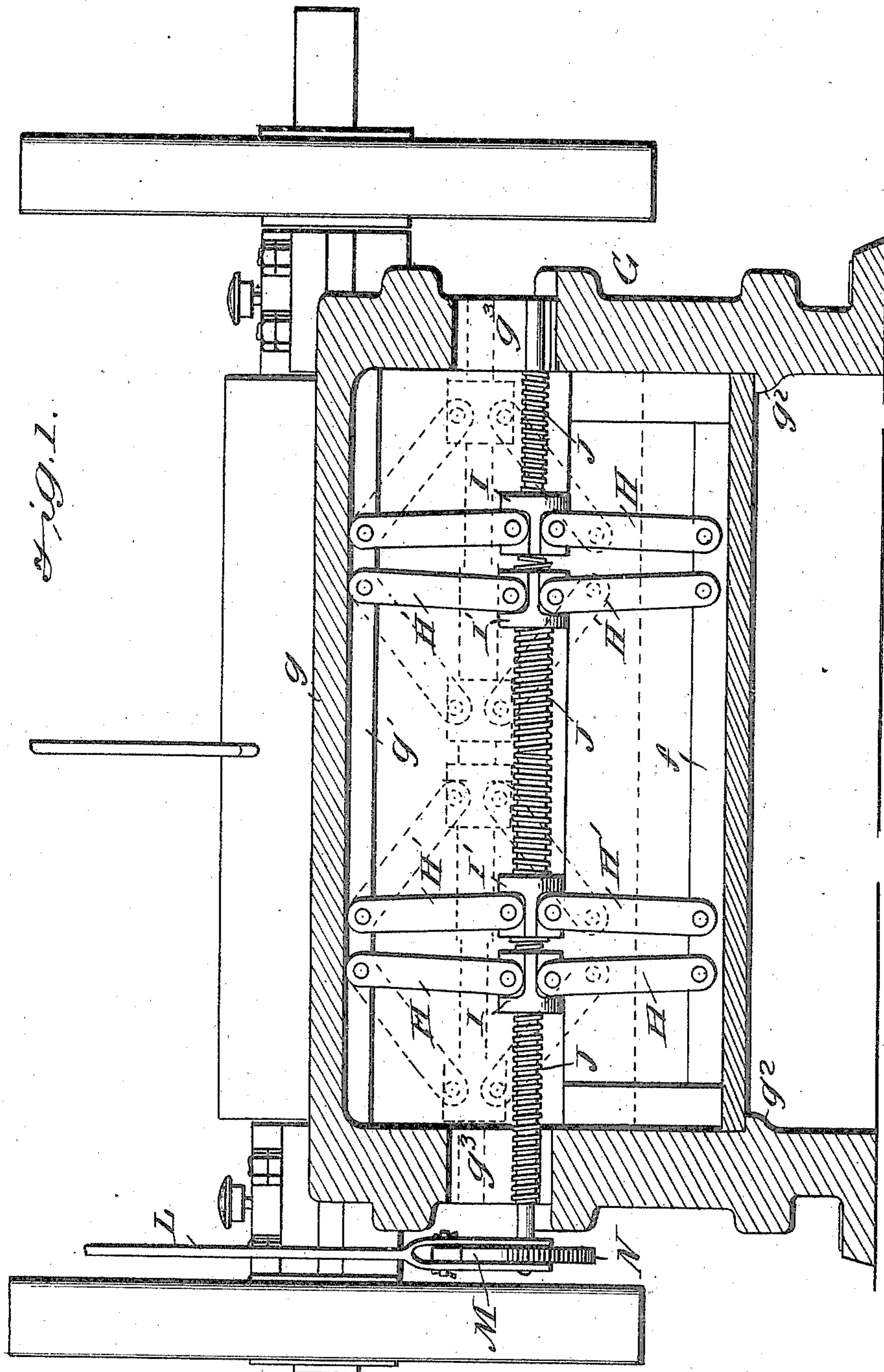


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STONE CRUSHING MACHINE.  
APPLICATION FILED MAY 14, 1909.

947,667.

Patented Jan. 25, 1910.

2 SHEETS—SHEET 1.



WITNESSES  
*F. C. Barry*  
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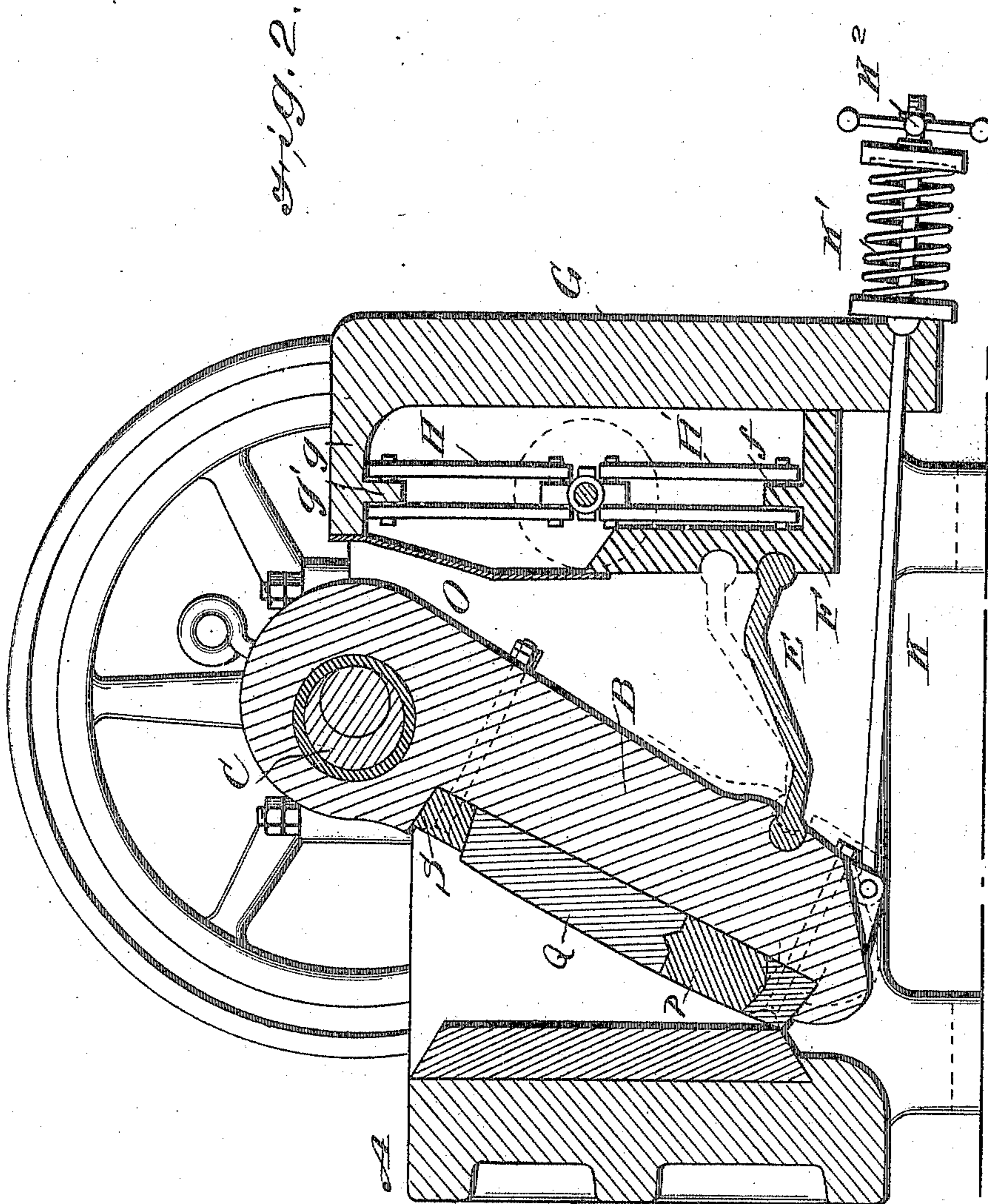
INVENTOR  
*ISAAC L. MITCHELL*  
BY *Munn & Co.*  
ATTORNEYS

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# UNITED STATES PATENT OFFICE.

ISAAC L. MITCHELL, OF CEDAR RAPIDS, IOWA.

## STONE-CRUSHING MACHINE.

947,667.

Specification of Letters Patent.

Patented Jan. 25, 1910.

Application filed May 14, 1909. Serial No. 495,936.

*To all whom it may concern:*

Be it known that I, ISAAC L. MITCHELL, a citizen of the United States, residing at Cedar Rapids, in the county of Linn, State of Iowa, have invented an Improvement in Stone-Crushing Machines, of which the following is a specification.

My invention is an improvement in that class of ore and stone crushers in which a stationary jaw and movable jaw are arranged opposite each other and the latter is operated by an eccentric to impart a compound movement.

I have devised an improvement in the means for adjusting the movable jaw toward and from the fixed jaw, as required to vary the size of the product.

The details of construction, arrangement, and operation of parts are as hereinafter described, and illustrated in the accompanying drawings in which—

Figure 1 is a vertical longitudinal section of the machine embodying my improvement. Fig. 2 is a vertical cross section of the same.

A indicates the fixed jaw, and B the movable one, the latter being hung upon an eccentric C, keyed upon a rotary horizontal shaft D, whereby a compound movement is imparted, that is to say, an endwise reciprocating motion and an oscillatory one. A strut E constitutes the fulcrum of the movable jaw B, and the rounded ends of the same are fitted in sockets, as shown. The outer end of the strut is adjustable vertically, it being socketed in a right-angular casting F which is adapted to slide vertically upon a heavy casting G forming a part of the heavy rigid frame, as shown in Fig. 1. The top portion *g* of the casting G which projects toward the shaft D is provided on the underside with a pendent rib or flange *g'*. The movable casting F is similarly provided on its upper side with a rib or flange *f*. These ribs or flanges serve as points of pivotal attachment for four pairs of toggle arms, or links, H and H', as will be readily understood from the drawing. The adjacent ends of the links are pivoted to nuts or threaded sleeves I, I', which are mounted upon a screw-threaded shaft J. As shown in Fig. 1, this shaft has different threaded sections; that is to say, the nuts I are arranged on sections whose thread runs in the same direction, while the nuts I' are arranged on sections whose thread runs in the opposite direction. Thus, when the

shaft J is rotated, the nuts I, I', of each pair, will be moved simultaneously toward or from each other. It is apparent that if the nuts move toward each other, the links H, H', will be brought nearer each other correspondingly, and that thereby the movable or fulcrum casting F will be carried downward and thereby the lower end of the movable jaw B will be adjusted nearer the stationary jaw A; while on the other hand, if the shaft J be rotated in the opposite direction, the nuts I, I', will be separated and the toggle arms will be raised correspondingly, and the movable jaw thereby allowed to recede from the stationary one, in which case, the device shown in Fig. 2, and consisting of a rod K with spring K', and nut K<sup>2</sup>, will serve to hold the jaw B firmly in contact with the strut.

For effecting the above described adjustment of the fulcrum of the movable jaw, various means may be employed to rotate the screw-shaft J. In this instance, however, I show a hand lever L fulcrumed on the projecting end of the screw-shaft and provided with a double pivoted pawl M which engages a toothed wheel N keyed upon the shaft J. It is obvious that by oscillating the lever L, the shaft J may be rotated in either direction, as required for adjusting the fulcrum casting F higher or lower, and that this movement may be effected while the machine is running as readily as when it is at rest. The toggle mechanism is one of great power and thus enables the required adjustment to be effected easily as well as very quickly. When once adjusted, the fulcrum casting F is held fixed in its position by the screw and toggle mechanism without the aid of any supplemental device.

As shown in Fig. 1, the casting F slides between the vertical parallel ends of the frame and the latter is provided with shoulders *g*<sup>2</sup> for supporting the casting when in its lowest position. The ends of the casting G thus serve as guides for the fulcrum casting F and are provided with slots at *g*<sup>3</sup> to receive the screw-shaft J, which, as will be obvious, must have considerable vertical play in order to enable the toggle mechanism to be operated in the manner described. It will be seen that the parts F and G are box-like in form and arrangement and thus mainly inclose and protect the mechanism for adjusting the fulcrum. A sheet metal

casing or apron O, see Fig. 2, is applied to cover the opening between the top *g* of the casting G and the upper end of the fulcrum casting F, so as to exclude dust, dirt, etc.

5 Thus the toggle mechanism and screw are well protected.

The lower portion of the face of the movable jaw is subjected to more wear than the upper portion, and I, therefore, provide a  
10 movable block or facing P which is constructed of manganese or chrome steel while the upper larger face Q is constructed of chilled steel. The block P is adapted for convenient attachment and detachment, its  
15 upper and lower edges being angular whereby they are adapted to fit in corresponding portions of the block Q and the abutment R. By removing the wedge block S that abuts the upper edge of the facing Q, the  
20 facing P may be easily detached and another inserted, when required.

What I claim is:

1. In a crushing-machine of the type indicated, the combination with a frame, a  
25 movable jaw, and means for imparting mo-

tion thereto, of the vertically movable fulcrum casting, a strut interposed between such jaw and casting, and means for adjusting the latter vertically consisting of a rotatable screw-shaft arranged horizontally 30 and provided with threads running in opposite directions, threaded sleeves mounted on such sections and threaded correspondingly in opposite directions, and links arranged in pairs and pivoted at opposite ends 35 to said sleeves and to the frame and fulcrum casting, substantially as shown and described.

2. The combination with a rigid frame, and a movable jaw, of a vertically movable 40 fulcrum, a strut interposed between the latter and the said jaw, and a screw and toggle mechanism operatively connecting the frame and fulcrum, and serving to adjust and hold the fulcrum at different heights, 45 substantially as described.

ISAAC L. MITCHELL.

Witnesses:

SOLON C. KEMON,  
AMOS W. HART.