

No. 658,071.

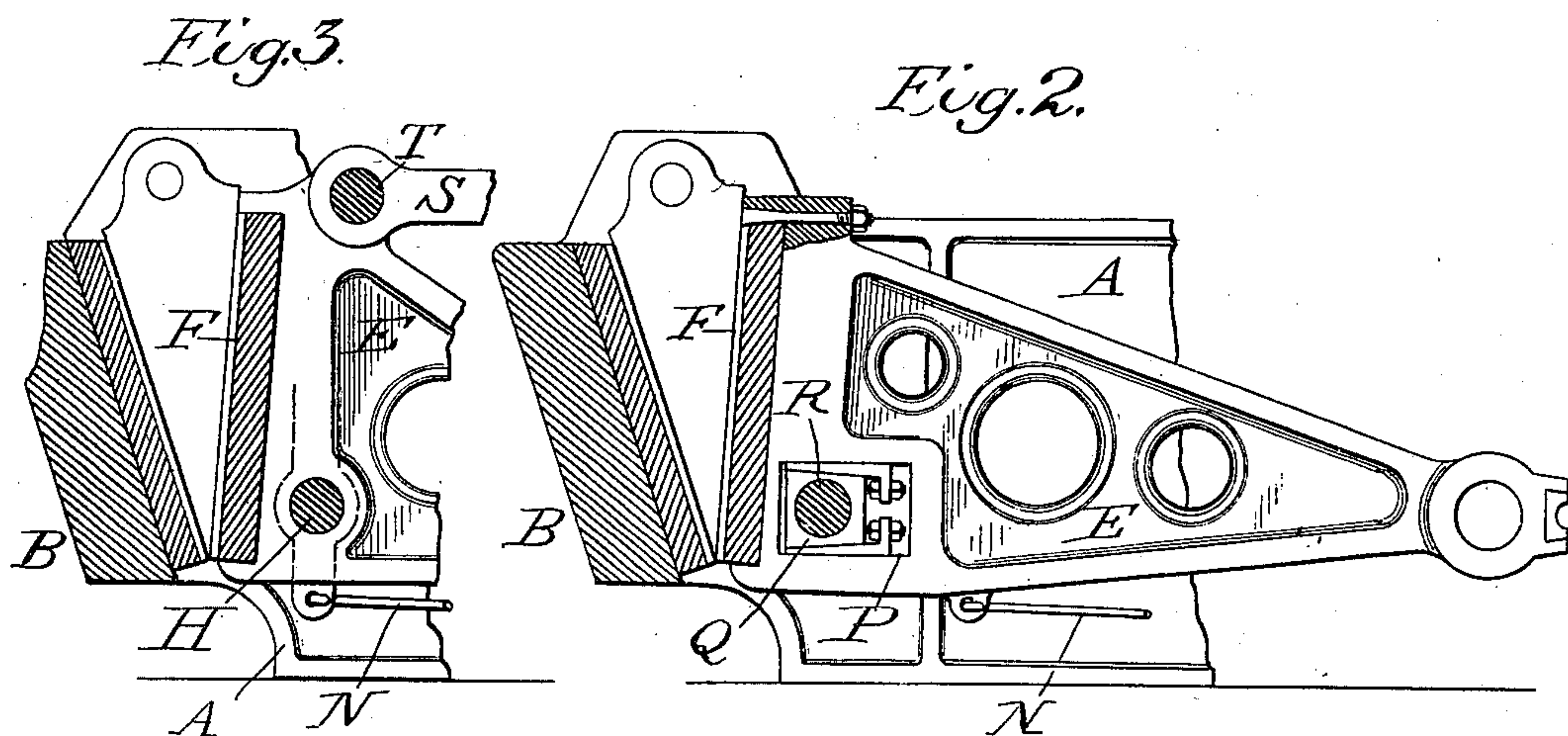
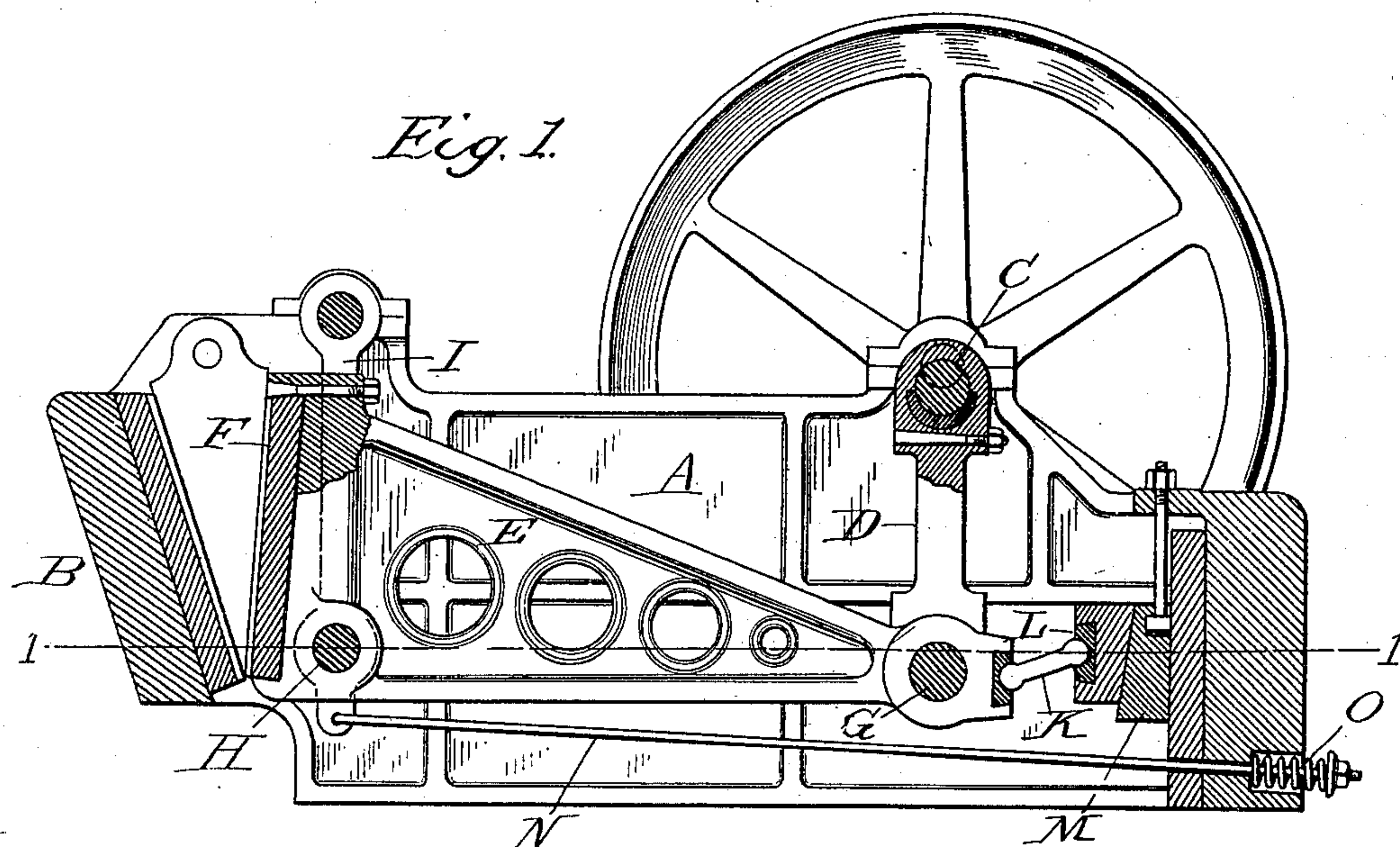
Patented Sept. 18, 1900.

E. REYNOLDS.  
CRUSHING MACHINE.

(Application filed Apr. 6, 1897.)

(No Model.)

2 Sheets—Sheet 1.



Attest;  
W. E. Brundine  
D. E. Brundine

Inventor;  
Edwin Reynolds,  
by Dodge & Sons,  
Attys.

No. 658,071.

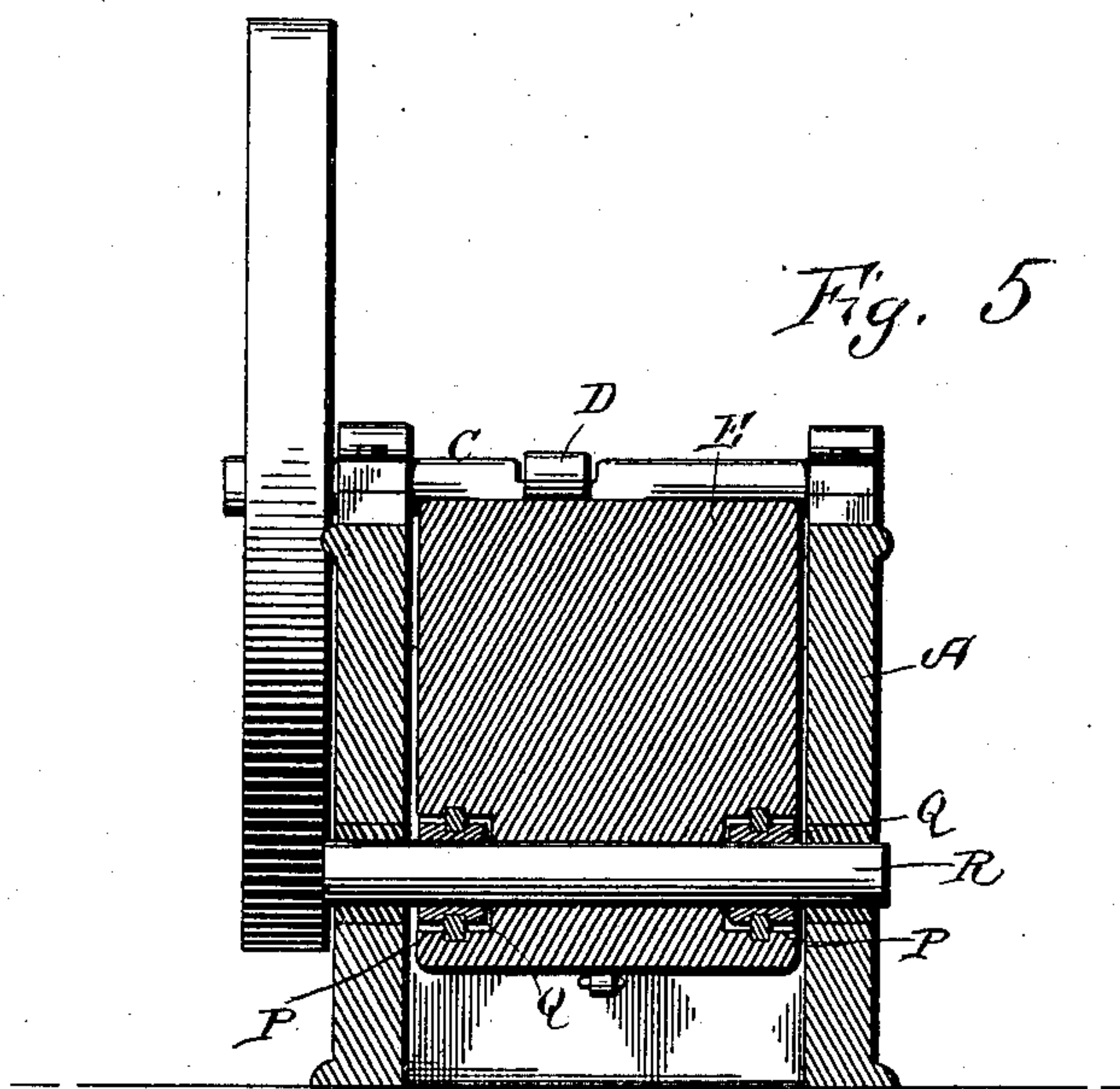
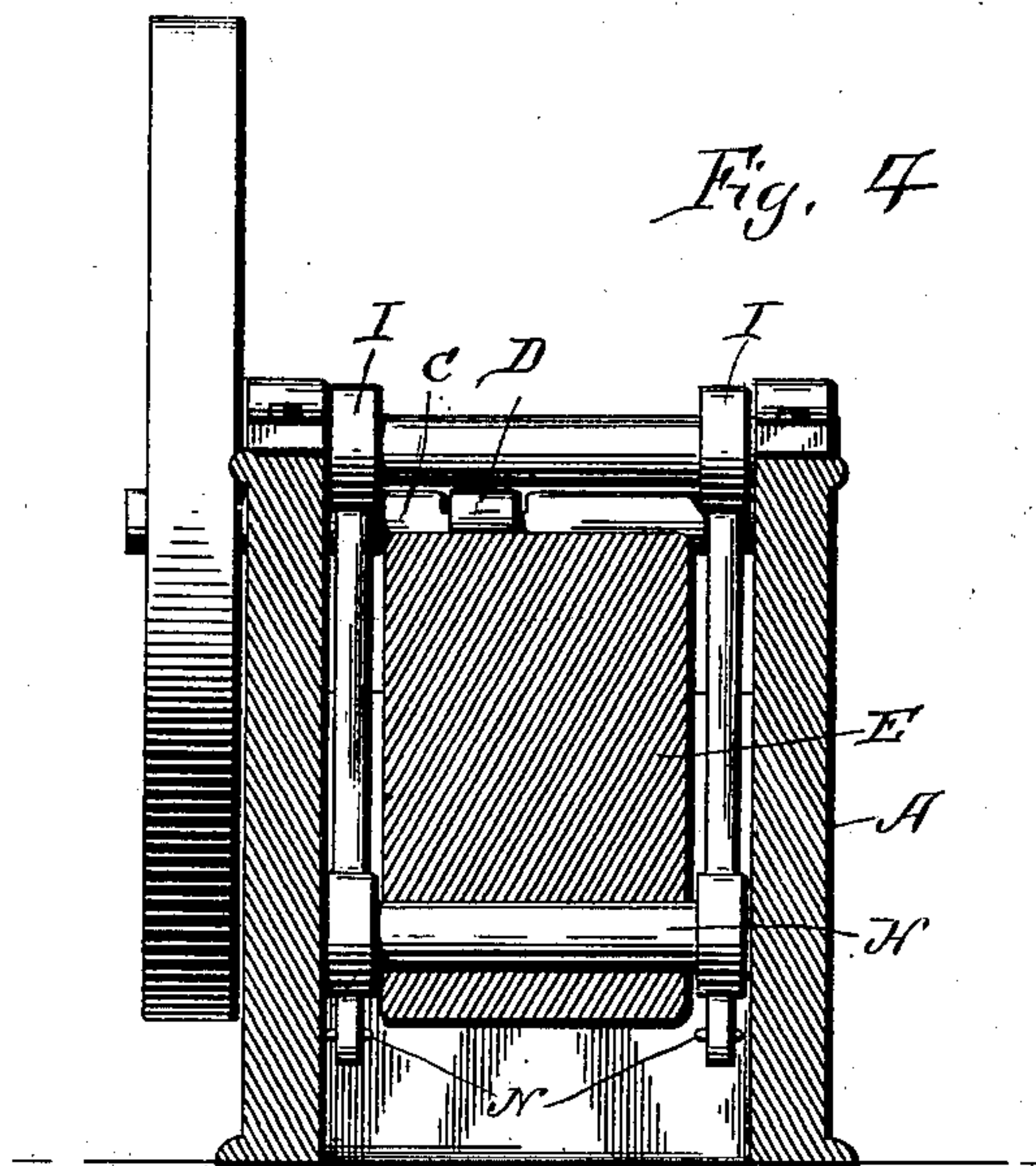
Patented Sept. 18, 1900.

E. REYNOLDS.  
CRUSHING MACHINE.

(Application filed Apr. 6, 1897.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses:  
D. L. Morris.  
D. E. Purdine.

Inventor:  
Edwin Reynolds,  
by Dodge and Sons  
Attorneys.



# UNITED STATES PATENT OFFICE.

EDWIN REYNOLDS, OF MILWAUKEE, WISCONSIN.

## CRUSHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 658,071, dated September 18, 1900.

Application filed April 6, 1897. Serial No. 631,042. (No model.)

*To all whom it may concern:*

Be it known that I, EDWIN REYNOLDS, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Crushing-Machines, of which the following is a specification.

My present invention relates to crushing-machines in which the material to be reduced is subjected to lateral pressure between the jaws of the machine.

In the accompanying drawings, Figure 1 is a longitudinal sectional view of my improved crusher; Figs. 2 and 3, views illustrative of certain modifications thereof; Fig. 4, a cross-sectional view taken through the movable jaw, showing the links for supporting the same; and Fig. 5, a similar view taken through the sliding blocks which form the support for the forward end of the sliding jaw shown in Fig. 2.

The object of my invention is to produce a more efficient machine than those now generally in use and to provide means whereby the crushing effect will be distributed over the entire jaw and a double action, when so desired, may be had upon the material which has been partially reduced.

In the annexed drawings, A denotes the base or frame of the machine, and B the fixed crushing-jaw. Upon the frame is journaled a shaft provided with an eccentric or crank C, to which is connected a pitman or link D.

E denotes a frame or casting the forward end of which is provided with a facing F, forming the movable crushing-jaw. The rear end of the frame is pivotally connected by a shaft or pin G to the link D, while the forward end is carried by a pin H, extending from links I, journaled upon the frame. A toggle-link K is interposed between the rear end of the frame E and a block L, seats or shoes being provided in said parts against which said link may bear. Block L may be adjusted in the usual manner by a wedge M, interposed between it and the frame of the machine. A rod N is connected to frame E at a point below the pivot H, said rod extending through the rear wall of the frame of the machine, where it is provided with a spring O, which acting on the rod tends to draw the frame or casting E back, keeping the link K

in its proper position and relation to the other parts and compensating for ordinary wear. When the parts are in the relation shown in Fig. 1 and the eccentric C is at its lowest position, a line, as 1 1, drawn through the center of the rear end of the toggle-link and through the pivot H will lie in a horizontal plane.

The crank being down, as shown in Fig. 1, the movable jaw is held away from the fixed jaw by the tension-rod N; but as the crank turns through an arc of about ninety degrees the link K gradually assumes a horizontal position, pushing the jaw F bodily forward a distance equal to the height of the arc described by the end of the link K, producing a crushing effect of the jaw at the lower end and notably along the line of centers. The same movement swings the top of the movable jaw through a certain angle, due to the angular rotation about pivot H caused by the upward movement of the jaw-arm E, thus adding to the movement of the jaw due to the straightening of the toggle-link. As the crank C gradually reaches the upper extremity of its throw the arm or casting E is pulled up still more, swinging the jaw farther about pivot H and causing the angles between the jaws to lessen, while at the same time the link passing upward above the horizontal allows the jaw to move bodily backward, aided by tension-rod N, a distance equal to the arc described by the link end, thus opening the jaws at the lower ends. As the crank advances ninety degrees farther frame E is depressed, and the jaw is rotated about pivot H, thus widening the angle between the jaws, while at the same time the jaw is pushed bodily forward, due to the straightening of the link along the line 1 1, thus again exerting its greatest crushing effect at the lower end of the jaws. A further quarter-revolution brings the parts back into the position shown in Fig. 1, the upper end of the jaw being swung toward the fixed jaw and the lower end retracted. Thus in one revolution of the power crank or eccentric C the jaws have a double crushing action along the line 1 1 due to the link twice passing the center line, while the upper end of the jaw has been given but one impulse, due to the rotation of the frame E about the pivot H.

It will be seen that owing to the angular



movement of the jaw about pivot H a certain grinding effect is produced, which action is highly beneficial in aiding the crushing of the material.

5 With the construction as above set forth the material as it is fed in between the upper ends of the jaws is subjected to pressure once for each revolution of the power-crank, and as it is crushed and the pieces become  
10 smaller and more numerous they work downward in between the jaws until, at or near the line 1 1, they are subjected to the double effect, and finally when properly reduced are discharged as the lower ends of the jaws are  
15 separated.

In Fig. 2 there is shown a construction wherein the journaled links I are dispensed with. In the lower forward end of frame E there is formed an elongated opening P, in  
20 which is mounted a sliding block Q. Said block is pivoted upon a shaft R, suitably mounted in the sides of the frame. This construction permits the casting or frame E to slide bodily back and forth and also to turn  
25 about the shaft as a pivot. The power may be applied at a point in the frame or casting E other than that shown in Fig. 1—for instance, as is shown in the construction in Fig. 3, wherein an arm S is journaled upon a  
30 shaft T, connected to the upper forward end of frame E, the power being applied to said arm. So, too, any means may be employed for imparting the requisite motion to the frame E other than the cam or eccentric C  
35 and link D, and I do not desire to limit myself thereto. By proper adjustment of the wedge-block M the distance between the jaws may be regulated, and compensation for wear not taken up by rod O may be had.

40 Having thus described my invention, what I claim is—

1. In a crushing-machine, the combination of a base or frame, a jaw pivotally mounted therein and a toggle-link arranged and de-

signed to act on said jaw in such manner as 45 to give to one end of said jaw twice the number of impulses as is imparted to the opposite end.

2. In a crushing-machine, the combination of a frame; a fixed jaw; a movable jaw; a 50 link journaled upon the frame and pivoted to the jaw at its lower forward end; a toggle-link bearing against the rear end of the jaw in line with the pivotal point of the jaw; and means for reciprocating the rear end of the 55 jaw and throwing the link above and below its greatest point of thrust.

3. In a crushing-machine, the combination of a frame; a fixed jaw; a movable jaw; a 60 movable pivot for said movable jaw at its lower forward end; an eccentric mounted upon the frame; a link journaled upon the eccentric and pivotally connected to the rear end of the jaw; and a toggle-link bearing 65 against the rear end of the jaw in line with the pivotal points thereof when the toggle is in its position of greatest thrust.

4. In a crushing-machine, the combination of a main frame; a fixed jaw; a jaw F 70 carried upon the forward end of a frame E; links I pivoted to the upper part of the frame and likewise connected to the lower forward part of frame E; an eccentric mounted upon the 75 frame; a link D connecting said eccentric and the rear end of the frame; and a link K bearing against a fixed portion of the main frame and the rear end of frame E, said link 80 being in line with the pivotal points of said movable frame E when the link is in its position of greatest thrust, substantially as de-

In witness whereof I hereunto set my hand in the presence of two witnesses.

EDWIN REYNOLDS.

Witnesses:

E. W. TUCKER,

IRVING H. REYNOLDS.