(No Model.)

J. O'NEIL, Jr.

STONE CRUSHING MACHINE.

No. 452,615. Patented May 19, 1891.

Fig. 1.

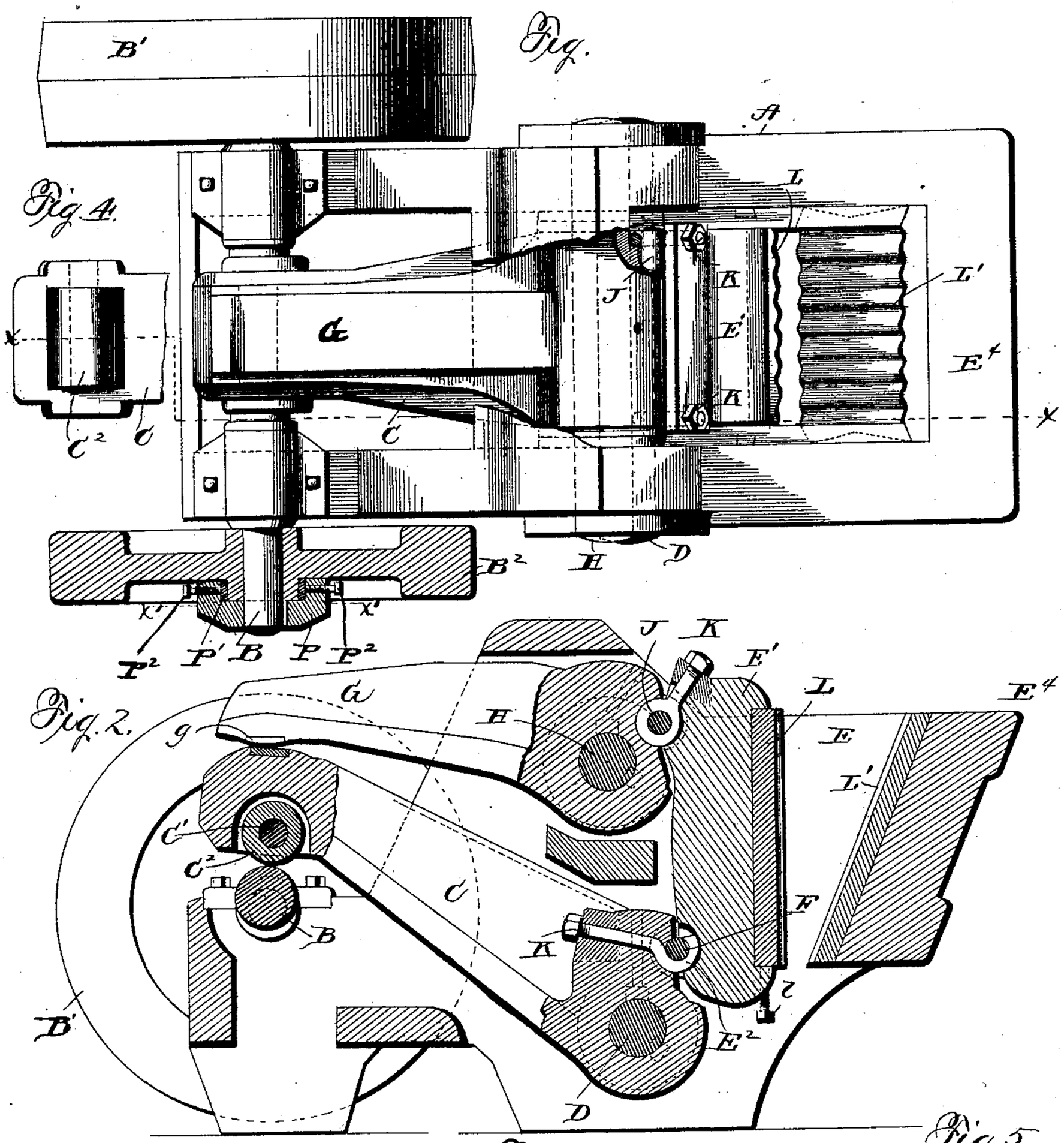


Fig. 4.

Fig. 2.

Fig. 3.

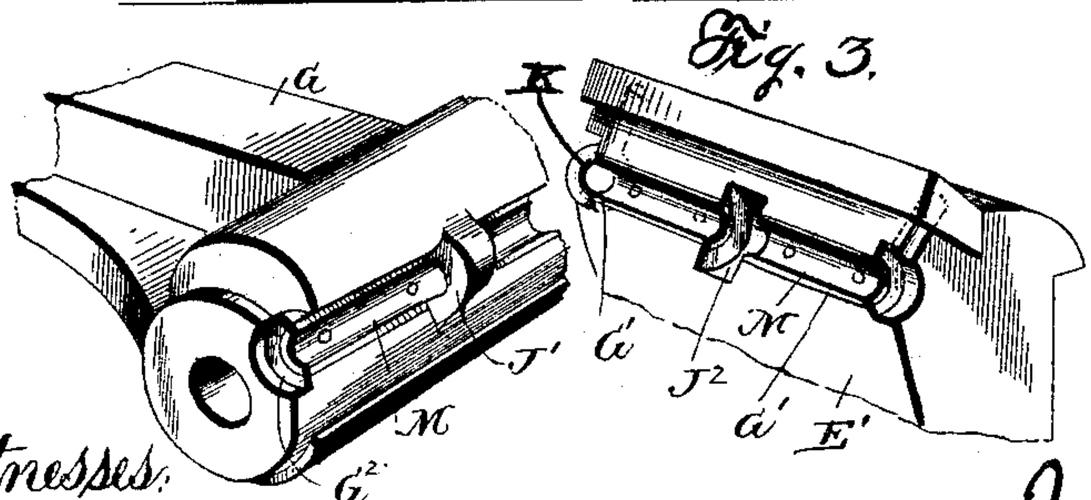
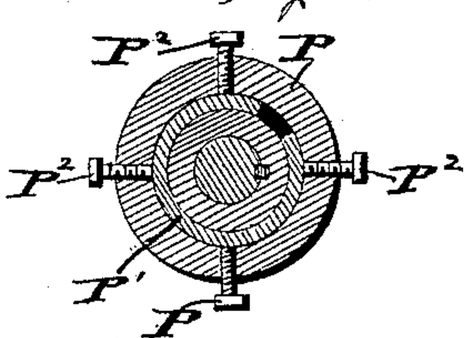


Fig. 5.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN O'NEIL, JR., OF KEESEVILLE, NEW YORK.

STONE-CRUSHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 452,615, dated May 19, 1891.

Application filed February 11, 1891. Serial No. 381,013. (No model.)

To all whom it may concern:

Be it known that I, JOHN O'NEIL, Jr., a citizen of the United States, residing at Keeseville, in the county of Essex and State of New York, have invented certain new and useful Improvements in Stone-Crushing Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to certain new and useful improvements in machines for crushing stone, ore, &c.; and it has for its object to simplify and cheapen the construction and at the same time to render more durable and efficient in operation this class of devices.

To these ends, and to such others as the invention may pertain, the same consists in the peculiar construction and in the novel combination, arrangement, and adaptation of parts, all as more fully hereinafter described, shown in the accompanying drawings, and then specifically defined in the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, like letters of reference indicating the same parts throughout the several views, and in which drawings—

Figure 1 is a plan view of a machine constructed in accordance with my invention, portions being broken away and the fly-wheel being shown in section. Fig. 2 is a longitudinal section on the line *x x* of Fig. 1. Fig. 3 is a perspective view of a portion of the upper operating-lever and the movable jaw separated. Fig. 4 is a bottom plan view of one end of the lower operating-lever, and Fig. 5 is a section upon line *x x* of Fig. 1.

Reference now being had to the details of the drawings by letter, A represents the frame of the machine, which is of cast-iron. Suitably journaled at one end of the frame is the transverse crank-shaft B, carrying upon one of its ends a belt-wheel B′, to which power may be conveyed from any suitable source, and upon its opposite end is secured the fly-wheel B^2.

C is the lower operating-lever, having journaled within suitable bearings at one of its ends a transverse shaft C′, and sleeved upon this shaft is a roller C^2, which is adapted to rotate within a suitable recess formed for its reception within the lower face of the lever, as shown, the said roller being operated by frictional contact with the crank-shaft B, upon which it rests. The end of the lever C, which is opposite to that which is provided with the shaft C′ and roller C^2, is sleeved upon a shaft D, which shaft is securely keyed at its ends within the side walls of the machine-frame near its base.

The movable jaw E′, which forms one of the sides of the hopper E, is hinged at a point upon its rear face near its lower edge to the operating-lever C by means of a hooked bolt E^2, the shank of which is seated within a suitable opening formed for its reception in the lever C, the hooked end of the bolt engaging a transverse shaft F, said shaft being seated within grooves formed in the movable jaw and lever, respectively, the manner of securing this shaft being in all respects similar to that employed in securing the corresponding shaft J, which forms the hinged connection between the upper edge of the movable jaw and the upper operating-lever, and which construction is shown in detail in Fig. 3 of the drawings and will be hereinafter more fully described. One end of the upper operating-lever G rests upon the upper face of the lever C, suitable wearing-plates *g* being provided at the point of contact, and at its opposite end the lever G is sleeved upon a fixed shaft H, which shaft is, like the shaft D, securely keyed to the frame of the machine.

The movable jaw E′ is provided upon its rear face and near its upper edge with a transverse semicircular recess G′, and within the end of the lever G is provided a corresponding recess G^2, and within the opening at the point of contact between the said lever G and movable jaw E′ is seated the transverse shaft J. The boss J′ serves to retain the shaft within the recess. A depression J^2 provided within the movable jaw receives the boss when the parts are connected, and thus

permits the jaw and lever to be brought into close contact.

Passed through an opening which extends downwardly and rearwardly through the upper edge of the movable jaw is an eyebolt K, the eye of the bolt being sleeved upon the shaft J, thus completing the hinged connection between the upper operating-lever G and the upper rear edge of the movable jaw.

The acting faces of the movable and fixed jaws E′ and E⁴, respectively, are provided with hardened metallic plates L and L′, which are provided with vertically-extended corrugations, as shown. The ends of the corrugated plate L′ are notched at the center, as indicated in dotted lines in Fig. 1 of the drawings, and these notched ends are seated within correspondingly-shaped recesses formed for the purpose within the side walls of the hopper, and the said plate is thus held securely against vertical displacement. The plate L is seated within a recess formed within the face of the movable jaw, and is locked securely in place by means of set-screws *l*. In order to compensate for wear, a steel half-bush M is inserted within the groove G².

In operation the rotation of the shaft B will cause the end of the lever C, which is provided with the roller C², to rise and fall alternately, as the eccentric movement is imparted by the crank portion of the shaft to the roller, and the motion will be imparted to the opposite end of the lever C, which, rotating slightly upon the fixed shaft D, will, through the medium of its hinged connection with the lower edge of the movable jaw E′, impart to the jaw a forward and downward movement. The lever G will in a like manner impart to the upper end of the movable jaw a similar movement, excepting that the position of the lever with reference to its pivotal points is such that a more pronounced forward movement of the jaw is produced, as will be readily understood.

In order to provide against possible injury, which might result to the machine in the event of a sudden stoppage, being caused by an obstruction—such, for instance, as might occur should a piece of iron or other exceedingly-hard substance find its way into the hopper—I have found it expedient that the heavy fly-wheel B², while normally fixed to the shaft B, at the same time should be held thereto by frictional contact only, so that in the event of sudden stoppage of the shaft the said wheel might be permitted to continue its rotation. This object I accomplish as follows: The wheel B² is fitted loosely upon its shaft and is provided upon the outer end of its hub with a collar or cap P, the opening in which for the passage of the shaft is adapted to fit the shaft closely and is keyed thereto, as shown in Fig. 5 of the drawings. Between the collar P and the shaft B is interposed a brass or other soft-metal broken ring P′, and passed through the collar P at intervals of its circumference are set-screws, which at their inner ends bear against the ring P′ and bind the same closely against the hub of the wheel B². It will be seen that by this construction the wheel B² will be normally held to the shaft B with sufficient force to cause the wheel to rotate with the shaft; but should the shaft be suddenly stopped the frictional contact of the ring P′ will be overcome and the wheel will continue to rotate.

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

1. The combination, with the main frame and fixed jaw, the movable jaw, the lower operating-lever sleeved upon a fixed shaft and having hinged connection at one of its ends with the movable jaw, the crank-shaft, the roller journaled within the lever and bearing upon the crank-shaft, of the upper operating-lever sleeved at one of its ends upon a fixed shaft and having hinged connection with the movable jaw, and the opposite end of the lever resting upon the upper face of the lower lever directly above the roller journaled therein, substantially as shown and described, and for the purpose specified.

2. The combination, with the movable jaw having a transverse recess, as G′, and an operating-lever provided with a corresponding recess, and boss J, of the shaft F within the said recess, and the eyebolts K, passed through openings formed in the lever with the eye of the bolts embracing the shaft, substantially as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN O'NEIL, JR.

Witnesses:
E. K. ROMEYN,
A. H. MUEN.