(No Model.) 2 Sheets—Sheet 1.

H. H. BLAKE.

MACHINE FOR CRUSHING ORE, &c.

No. 538,406. Patented Apr. 30, 1895.

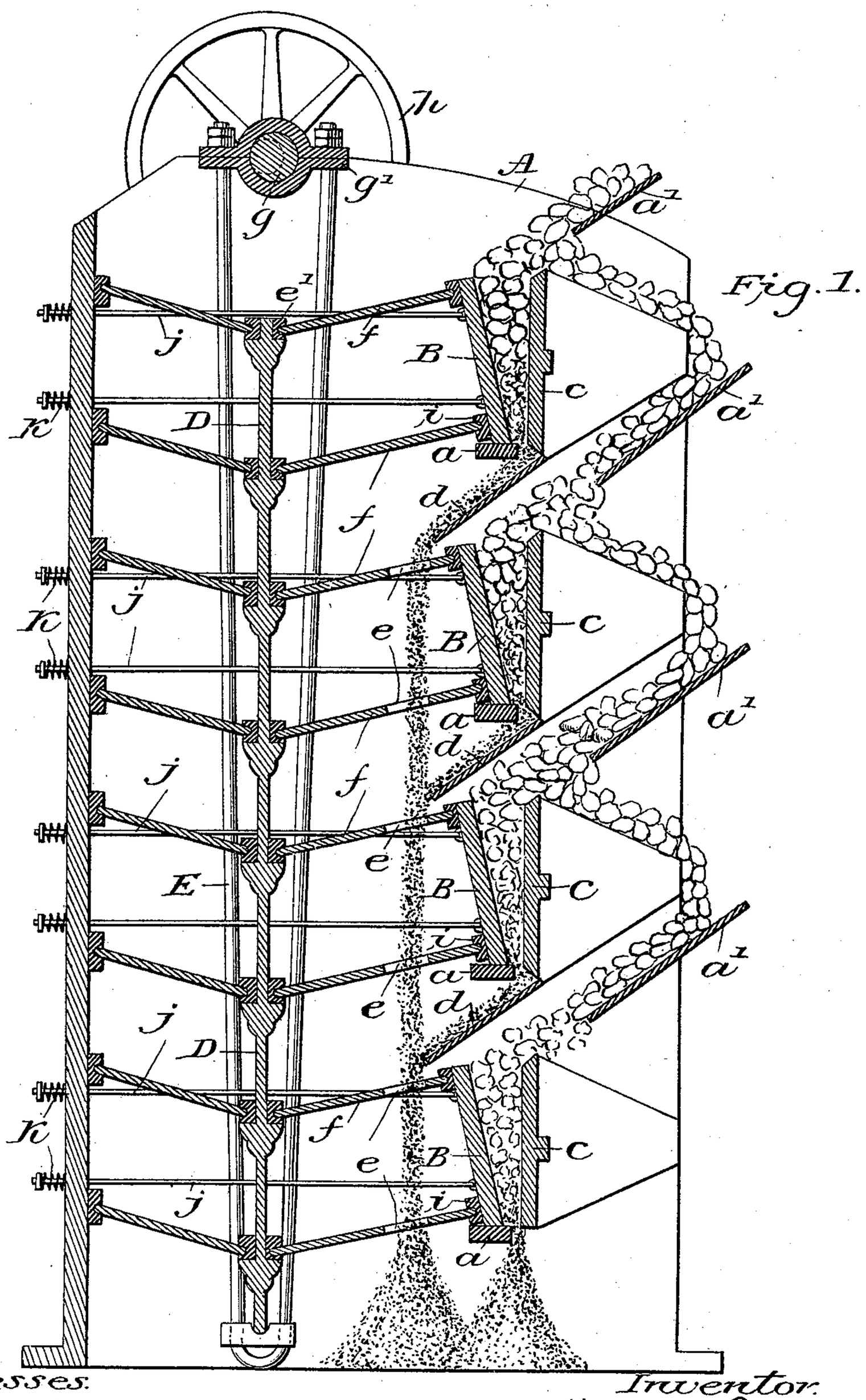

Fig. 1.

Witnesses:
C. A. Williams
L. P. Stone

Inventor:
Henry H. Blake
by John H. Roney
Atty

(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

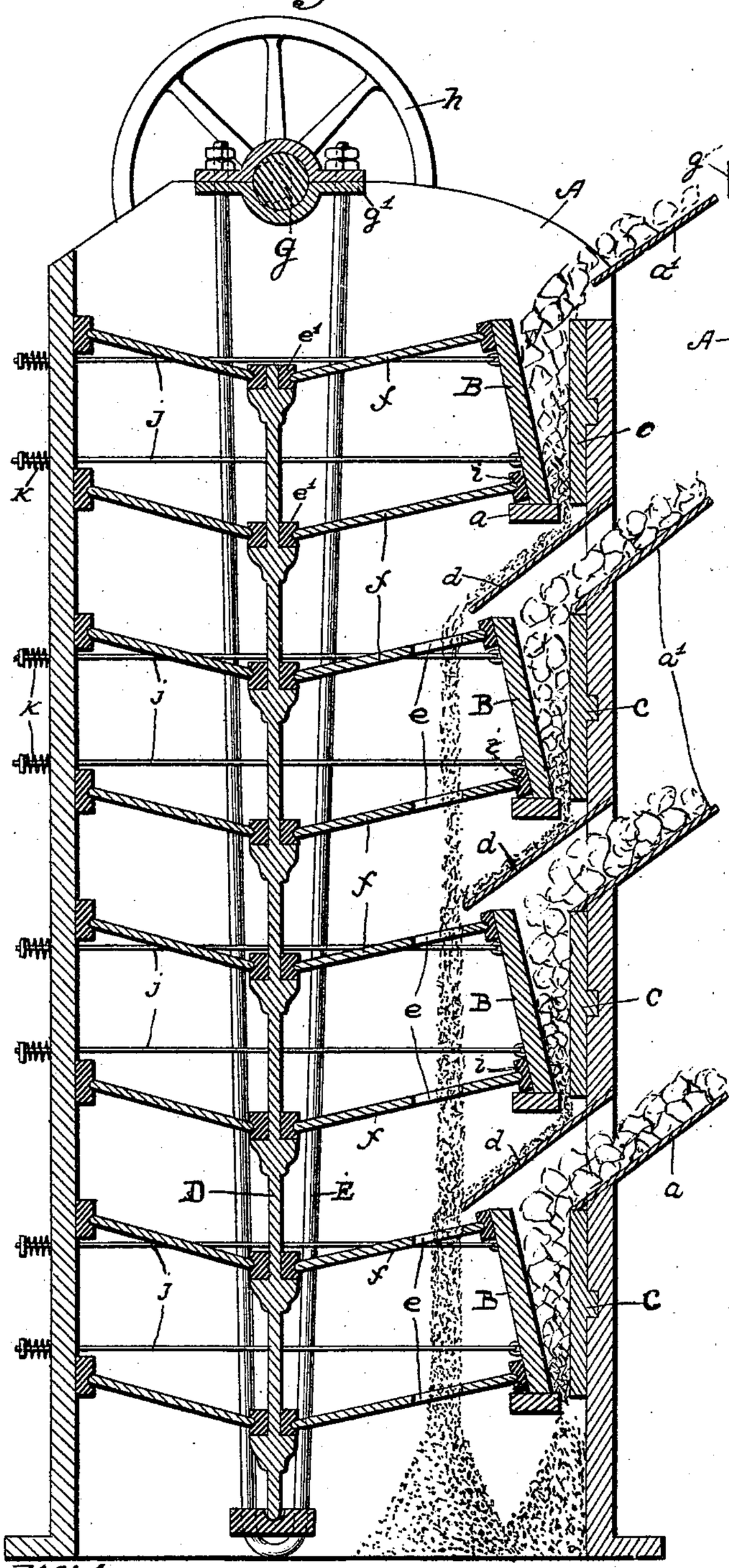
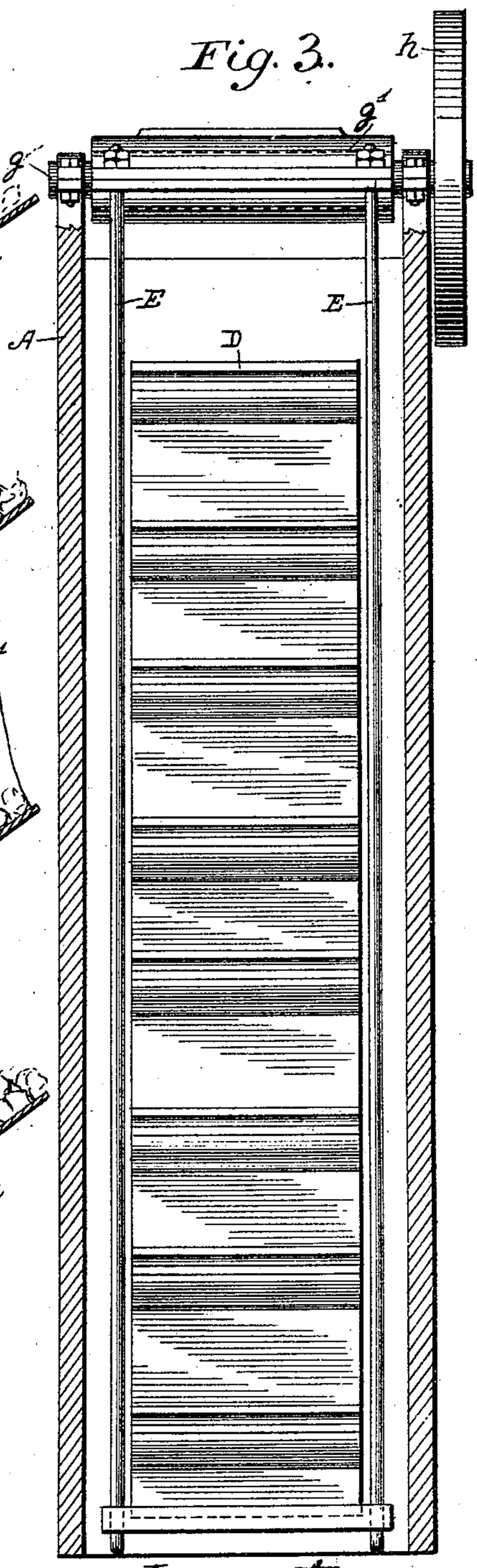


Fig. 3.



Witnesses
C. A. Williams
R. R. Lowry

Inventor.
Henry N. Blake
by
John H. Roney atty

UNITED STATES PATENT OFFICE.

HENRY H. BLAKE, OF PITTSBURG, PENNSYLVANIA.

MACHINE FOR CRUSHING ORE, &c.

SPECIFICATION forming part of Letters Patent No. 538,406, dated April 30, 1895.

Application filed February 27, 1894. Serial No. 501,714. (No model.)

To all whom it may concern:

Be it known that I, HENRY H. BLAKE, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Crushing-Machines; and I do hereby 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 pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, in which—

Figure 1 indicates a vertical longitudinal central section of my improved crusher. Fig. 2 is a vertical section of a modification. Fig. 3 is an end view of same partly in section.

My invention relates to devices adapted to crush stone, ore, &c., and my object is to produce a machine of this character having a series of jaws, or crushers arranged one above the other, and adapted to be operated simultaneously, and this I accomplish by the device hereinafter specifically described, reference being had to the accompanying drawings forming part hereof, in which like letters indicate like parts wherever they occur.

Referring to said drawings A is the frame, in the forward end of which is suitably secured a number of jaws B—B one above the other, and adapted to be reciprocated upon the cross bars *a*—*a* whereby rock, &c., falling from the chutes *a'*—*a'*—*a'* is forced against the crushing blocks *c* which are suitably secured in the inner side of the front of the frame, whereby said rock, &c., is broken into small pieces. The comminuted or reduced rock, &c., from the top and succeeding jaws falling downward upon the inclines *d* passes through channels or openings *e* in the second and succeeding series of toggles *f*—*f*, forming a common heap to the rear of the lowest jaw. Said jaws are arranged one above another to admit of rock, &c., overflowing from the highest jaw being crushed by the next succeeding jaws, as shown in the drawings, and also to admit of said rocks, &c., being reduced to different degrees of fineness if desirable, by varying the reciprocation of said jaws by changing the length of the toggles which reciprocate the same. Said jaws are reciprocated simultaneously by the action of the toggles *f*—*f*, two in number to each jaw, which are operated by the vertical bar or plate D. Said bar or plate is secured or supported in the lower looped portion of the pitman E, the upper ends of which are secured in the flanges *g'* forming bearings in which the shaft *g* is eccentrically journaled in the sides of said machine at the top of the same. Said bar or plate carries a series of bearings *e'* for the reception of the inner ends of the toggles *f*—*f* the outer ends of the forward members of said toggles being seated in the bearings *i* formed on the rear side of said jaws, and the inner ends of the rear members being seated in similar bearings formed in the rear frame of the machine, whereby when the wheel *h* mounted on said shaft is driven, the rotation of the shaft causes the pitman and the vertical bar or plate to reciprocate vertically, and the jaws through the action of the toggles to be reciprocated horizontally. The rods *j*—*j* the forward ends of which are secured to the jaws, and the rear end projecting in orifices in the rear frame of the machine, and having mounted thereon the springs *k*—*k* serve to retract said jaws after each successive forward motion by the toggles.

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

1. In an ore or stone crushing machine, the combination of a vertical pitman looped at the lower end, a vertical bar or plate supported thereby, and provided with a number of toggle bearings, and a number of jaws arranged one above the other, and adapted to be reciprocated by said vertical bar or plate and toggles, substantially as set forth.

2. In an ore or stone crushing machine, the combination of a vertical pitman looped at the lower end, a vertical bar or plate supported thereby, and provided with a number of toggle bearings, a number of jaws arranged one above the other, and a series of chutes to feed material to said jaws, the lower set being fed by the overflow of those above the same, substantially at set forth.

3. In an ore or stone crushing machine, the combination of a vertical pitman looped at the lower end, a vertical bar or plate supported

thereby, and provided with a number of toggle bearings, a number of jaws arranged one above the other, and a series of chutes to feed material to said jaws, the lower set being fed by the overflow of those above the same, and means to conduct the crushed material through channels in said jaws, or to one side of the same, substantially as set forth.

In testimony that I claim the foregoing I hereunto affix my signature this 26th day of February, A. D. 1894.

HENRY H. BLAKE. [L. S.]

In presence of—
C. A. WILLIAMS,
ALBERT J. WALKER.