

(No Model.)

O. WILLIAMS.
MACHINE FOR CRUSHING ORE, &c.

No. 574,841.

Patented Jan. 5, 1897.

Fig. 1.

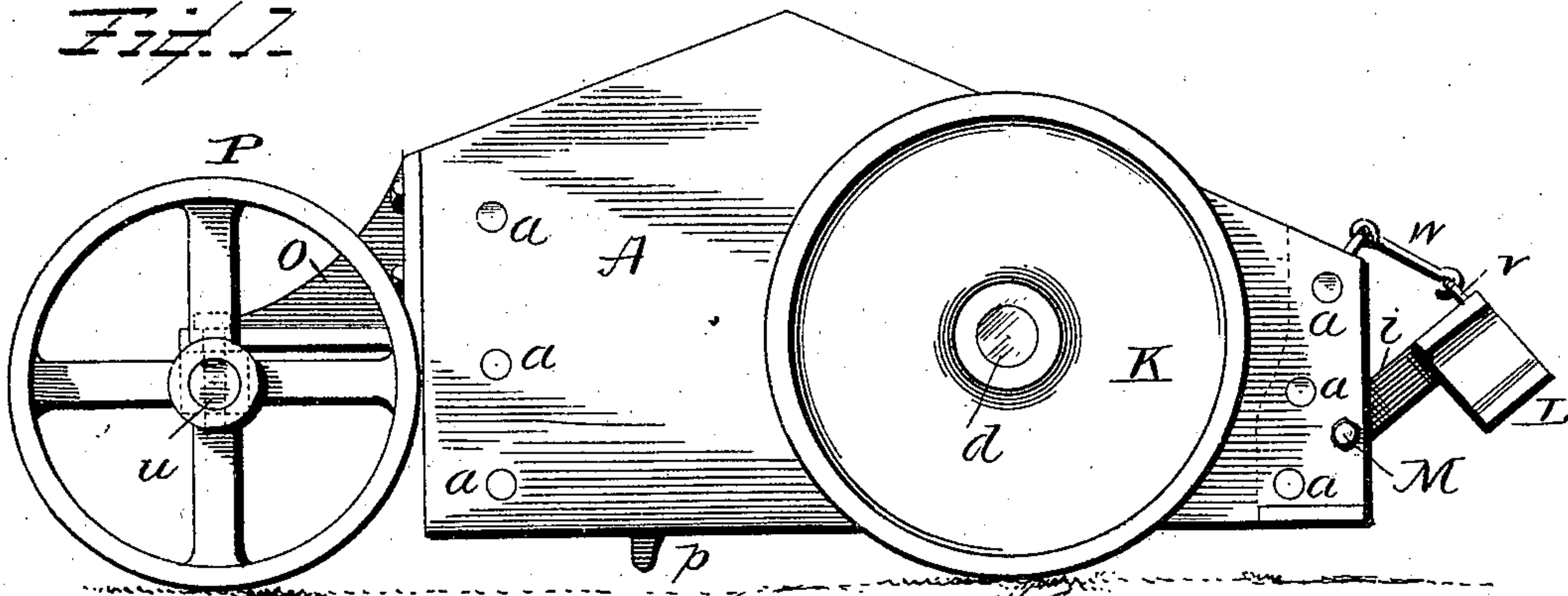


Fig. 2.

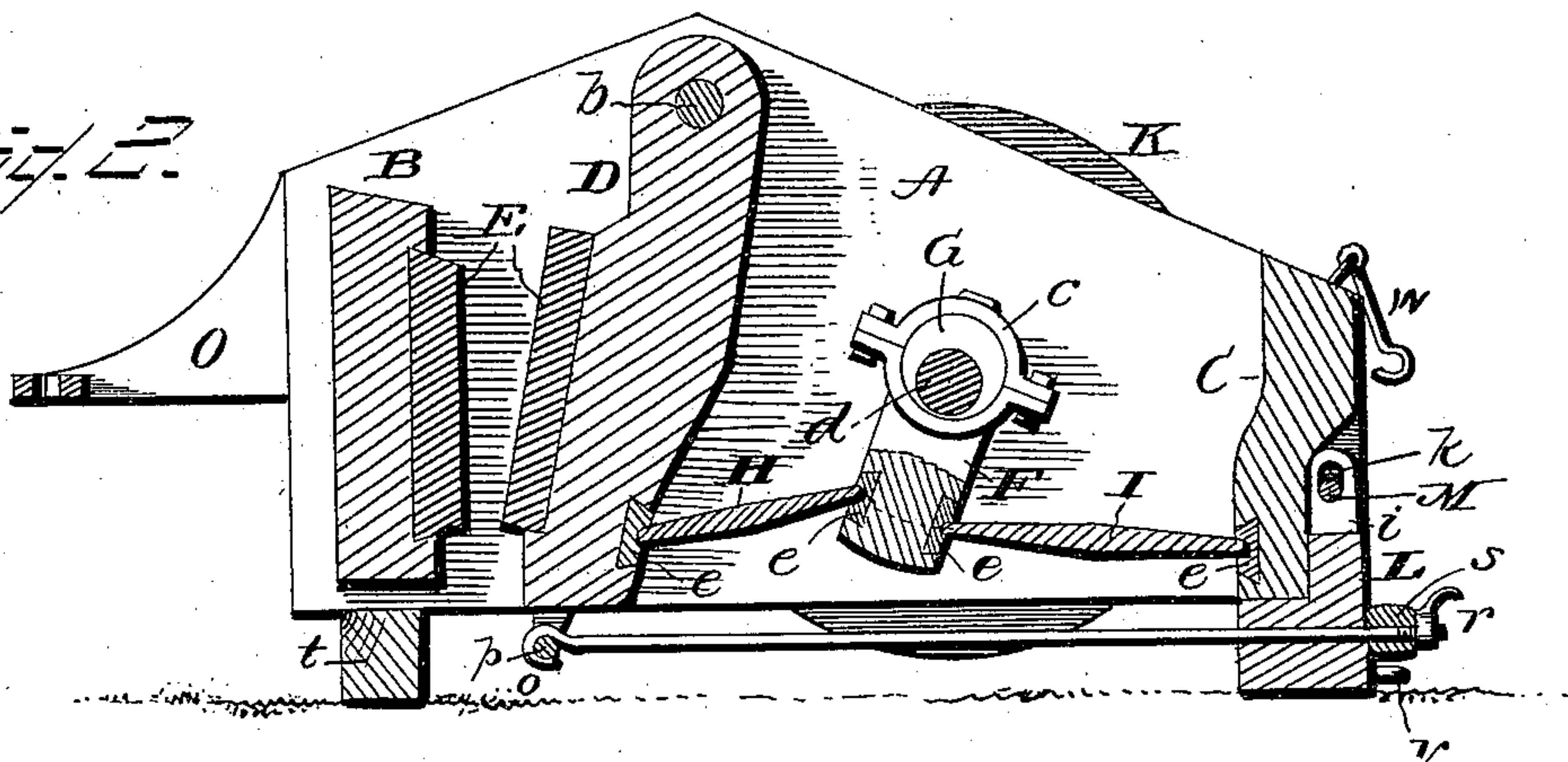
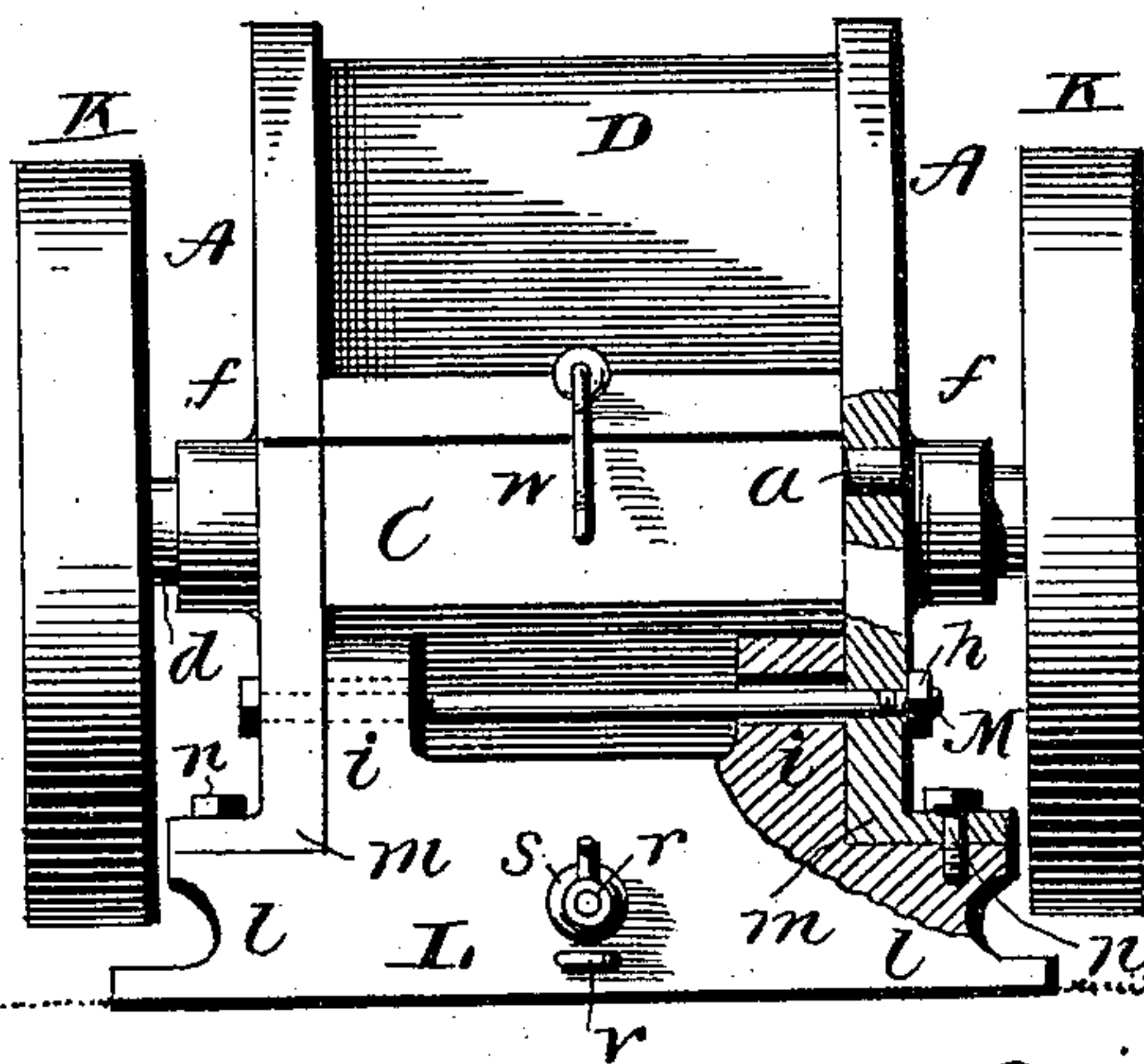


Fig. 3.



Witnesses
J. Williamson
Wm. J. Browning.

Inventor
Otis Williams.
per Cha. H. Fowler.
Attorney.

UNITED STATES PATENT OFFICE,

OTIS WILLIAMS, OF ST. JOHNSVILLE, NEW YORK.

MACHINE FOR CRUSHING ORE, &c.

SPECIFICATION forming part of Letters Patent No. 574,841, dated January 5, 1897.

Application filed May 25, 1896. Serial No. 592,953. (No model.)

To all whom it may concern:

Be it known that I, OTIS WILLIAMS, a citizen of the United States, residing at St. Johnsville, in the county of Montgomery and State of New York, have invented certain new and useful Improvements in Machines for Crushing Ore, Stone, and Analogous Material; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters of reference marked thereon.

The present invention has reference more particularly to that class of machines for crushing stone, ore, and similar material in which are employed a stationary jaw and a movable jaw operated by suitable mechanism and between which jaws the material to be crushed is introduced.

The object of the invention is to improve this class of machines in the several details of construction whereby its value and effectiveness are materially enhanced and the machine rendered more practical in its operation.

The invention therefore consists in a machine constructed substantially as shown in the drawings and hereinafter described and claimed.

Figure 1 of the drawings is a side elevation of the machine constructed in accordance with my invention, showing the front wheels attached and the rear or pivoted part of the frame in an elevated position when the machine is to be moved from place to place. Fig. 2 is a longitudinal section through the machine, showing the wheels at the front thereof removed and the rear pivoted part of the frame in the position it will assume when the machine is in use; Fig. 3, a rear end view of Fig. 2, partly in section.

In the accompanying drawings, A represents the side plates, of suitable metal and of any preferred shape, said plates constituting a part of the frame of the machine. These plates are held together and braced by means of the stationary jaw B and the block C, which jaw and block have dowel-pins *a* projecting from the sides thereof and entering corresponding holes in the plates.

Any suitable and well-known means may be employed for connecting the jaw and block

and the side plates together as may be found best adapted to the purpose.

The movable jaw D is pivoted to and between the plates A by means of the shaft *b*, upon which said jaw is loosely mounted, or any other well-known and suitable means may be employed for suspending the jaw so it will be capable of a swinging motion when acted upon by suitable mechanism.

The jaws B D are provided with removable chilled crushing-facings E of the usual construction.

A lever F is located between the plates A and is provided at its upper end with a sectional boxing *c* to form a bearing for an eccentric G upon a rotatable shaft *d*, by which means a swinging or vibratory motion is imparted to said lever. The lever F connects with the movable jaw D and the block C by means of suitable toggles H I and the usual steel steps or bearings *e*, as shown in Fig. 2 of the drawings.

The transverse shaft *d* extends through the sides of the plates A and has upon its ends suitable wheels K, said wheels serving as a belt-wheel to impart motion to the shaft and a balance-wheel, respectively. When the machine is not in use and is to be moved from one place to another, the wheels K will support the machine above the ground and serve in the same capacity as the ordinary wheels of a wagon. The plates A are cast or otherwise provided with outwardly-projecting hubs *f* to form bearings for the shaft *d*.

The rear or pivoted portion of the frame, which I term a "support" L, is connected to the plates A by means of a transverse coupling-rod M, said rod extending through the plates A and is headed upon one end and screw-threaded at its opposite end, with which engages a nut *h*. The support L has upwardly-extending arms *i*, which are located between the plates A, said arms having elongated slots *k*, through which the coupling-rod M extends.

The pivoted part of the frame, as shown at L, is formed with laterally-extending bearings *l* to receive the flanges *m* upon the lower edges of the plates A. These flanges rest upon the bearing *l* and are secured thereto by set-screws *n*, whereby said support is held in the

position shown in Fig. 3 of the drawings, in which position the machine is supported above the ground or other foundation ready for use.

The support L is further held in position by means of the longitudinal rod N, which rod has a hooked end *o* to engage with a suitable link *p* upon the lower end of the swinging jaw D.

The rod N extends through the pivoted part L of the frame, and its end is screw-threaded to receive a suitable thumb-nut *r*, and interposed between the nut and the support is a washer or elastic cushion *s*, through which the rod also passes.

When the machine is in position for use, as indicated in Figs. 2 and 3 of the drawings, the front of the machine is supported by placing under it a block of wood or any other object, as shown at *t*.

To the front of the machine is secured a suitable bracket O for attaching thereto the axle *u*, and upon the ends of this axle are mounted the wheels P. These wheels are only used when it is desired to move the machine from place to place, and when in position to be used the axle and wheels are removed, as shown in Fig. 2 of the drawings, and the machine set up for operation, as hereinbefore described.

When it is found necessary to move the machine, the axle and wheels are connected with the bracket at the front of the machine, the longitudinal rod N removed, the screws *n* disengaged from the support or part L of the frame, which latter is held suspended and out of the way by means of the hook *w*, engaging with the eye or staple *v*, as shown in Fig. 1 of the drawings.

The slotted arms *i* of the part L of the frame admit the latter being raised to the position above indicated, the slots in the arms being elongated for this purpose.

The toggles H I are arranged upon an incline, or, in other words, the points of contact of the toggles with the pitman F are on a higher horizontal plane than the points of contact of the toggles with the block C and swinging jaw D when the jaw is forced forward to crush the material between it and the jaw B. Now when the pitman F is put in motion by reason of revolving the shaft *d* with its eccentric G the direction of pressure of the toggle H against the swinging jaw D will be on an incline and in a downward direction, thereby utilizing the entire weight of the toggle, pitman, eccentric-shaft, and balance-wheels to assist the swinging jaw in its crushing action, thus lessening the power necessary to successfully crush the material between the jaws.

In the operation of the crusher the toggle, as previously stated, will press against the swinging jaw in a downward direction instead of in an upward direction to utilize the weight of certain parts of the machine to assist in crushing, and also by this extra weight the friction upon the bearings will be greatly

lessened by utilizing such weight in favor of the power.

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

1. In a machine for crushing stone, ore, and analogous material, a suitable frame and a support therefor pivoted at or near its end, means for holding the support or pivoted part of the frame in an elevated position, a longitudinal coupling-rod having a hooked end to engage with a link or other device on the lower end of the movable jaw, said rod extending through the support or pivoted portion of the frame, and means for drawing the rod tight to hold the toggles in position with relation to the lever, movable jaw, and block, substantially as and for the purpose set forth.

2. In a machine for crushing stone, ore, and analogous material, a frame consisting of side plates having outwardly-projecting flanges at their lower edges, a support or pivoted portion of the frame having laterally-extending bearings for the flanges, set-screws or other suitable means for holding the flanges in position thereon, and means for holding the support or pivoted part of the frame in a raised or lowered position, substantially as and for the purpose specified.

3. In a machine for crushing stone, ore, and analogous material, a frame consisting of side plates having outwardly and laterally extending flanges at their ends, the support or pivoted part of the frame having laterally-extending bearings for the flanges, set-screws or other suitable means to hold them in position thereon, upwardly-projecting arms on the support or pivoted part of the frame having elongated slots, a transverse coupling-rod extending through the slots in the arms, and means for holding the support or pivoted part of the frame in an elevated or lowered position, substantially as and for the purpose described.

4. In a machine for crushing stone, ore, and analogous material, a frame consisting of side plates having outwardly-extending flanges, a support for the frame pivoted to the side plates said support having laterally-extending bearings for the flanges, set-screws or other suitable means for holding the flanges to the bearings, a longitudinal coupling-rod extending through the support or pivoted part of the frame and having a hooked end to engage with the lower end of the swinging jaw, and means for holding the support or pivoted part of the frame in a raised or lowered position, substantially as and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

OTIS WILLIAMS.

Witnesses:

CHARLES EIGENBROEDT,
MARTIN WILLIAMS.