(No Model.) 3 Sheets—Sheet 1.

D. D. DRUMMOND.

STONE SAWING MACHINE.

No. 423,378. Patented Mar. 11, 1890.

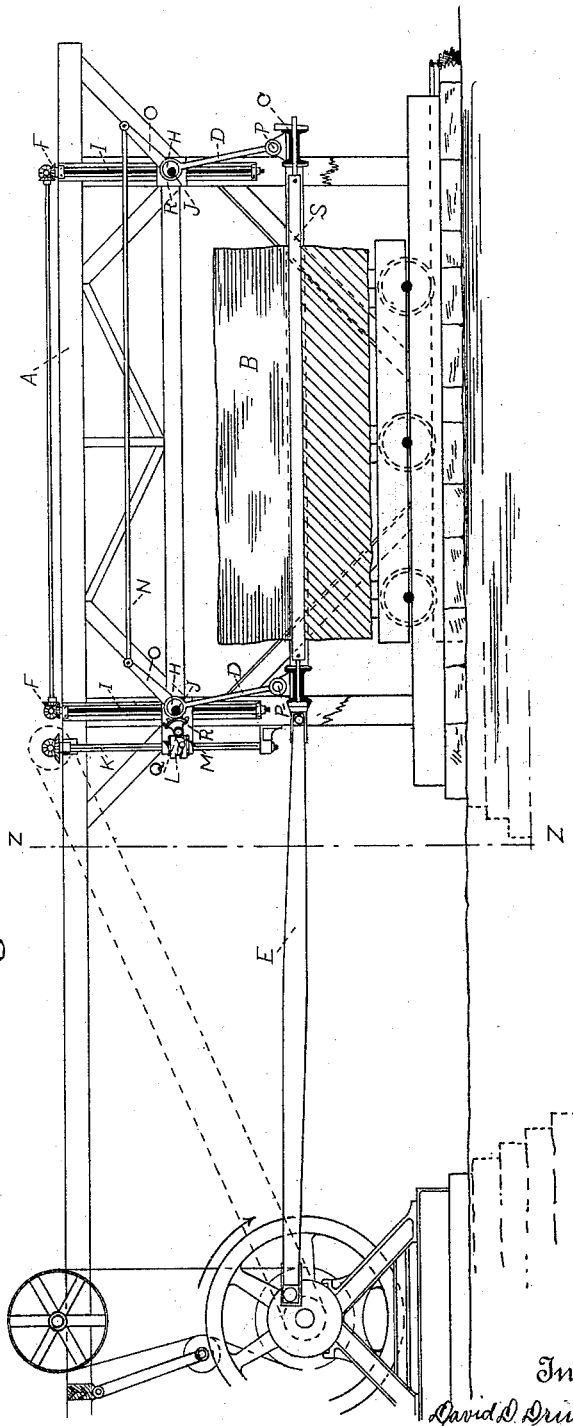


Fig 1.

Witnesses
Wm. M. LeMoyne
D. J. LeMoyne

Inventor
David D. Drummond.
By his Attorney
Louis V. LeMoyne

(No Model.) 3 Sheets—Sheet 2.

D. D. DRUMMOND.

STONE SAWING MACHINE.

No. 423,378. Patented Mar. 11, 1890.

Fig 3.

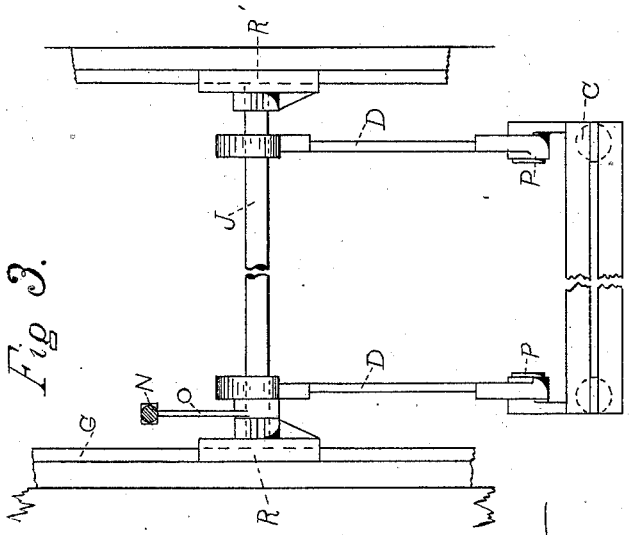
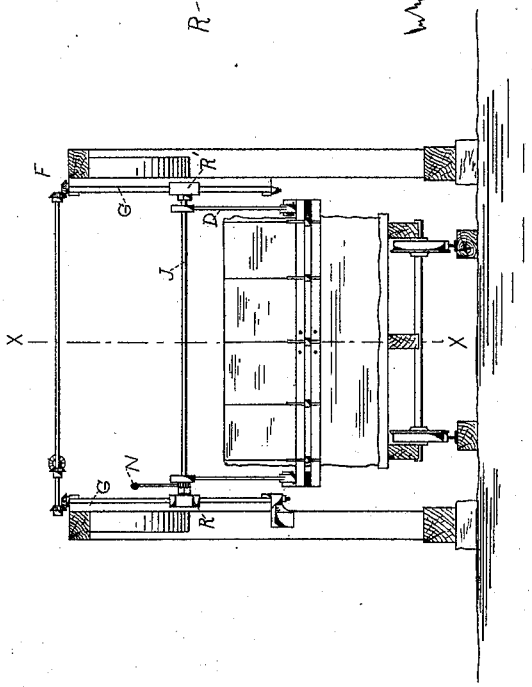


Fig 2.



Witnesses
Wm M. Le Moyne
F J Le Moyne

Inventor
David D. Drummond.
By his Attorney
Louis V. Le Moyne

(No Model.) 3 Sheets—Sheet 3.

D. D. DRUMMOND.

STONE SAWING MACHINE.

No. 423,378. Patented Mar. 11, 1890.

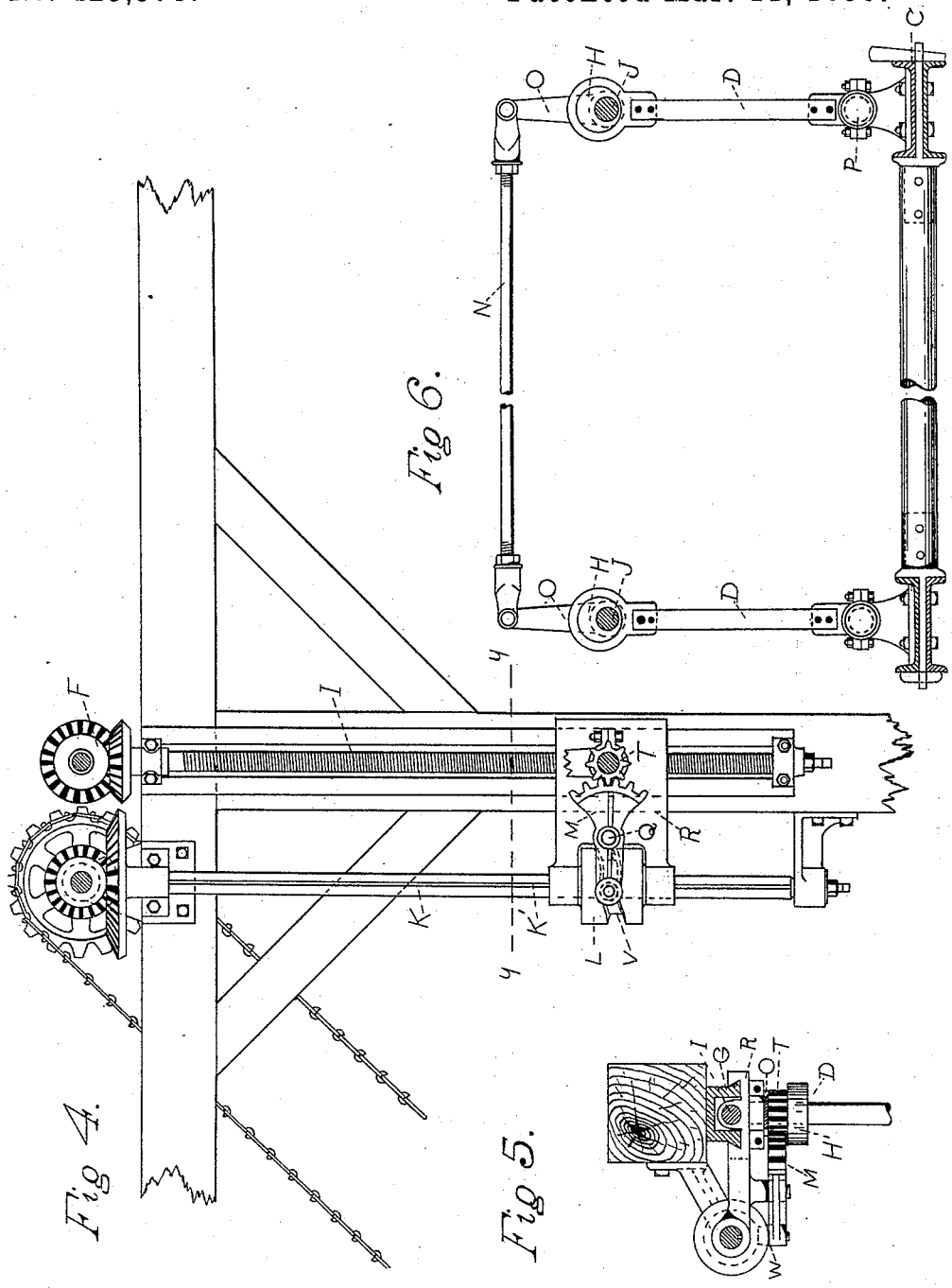


Fig 6.

Fig 4.

Fig 5.

Witnesses
Wm M- Le Moyne
F. J. Le Moyne

Inventor
David D. Drummond.
By his Attorney
Louis V. Le Moyne

UNITED STATES PATENT OFFICE.

DAVID D. DRUMMOND, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO LAURITZ I. LARSEN, OF SAME PLACE.

STONE-SAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 423,378, dated March 11, 1890.

Application filed December 23, 1889. Serial No. 334,622. (No model.)

To all whom it may concern:

Be it known that I, DAVID D. DRUMMOND, a citizen of the United States, residing at Chicago, county of Cook, State of Illinois, have invented a new and useful Improvement in Stone-Sawing Machines, of which the following is a specification.

My invention relates to that class of machines in which the saws are strung across between the frames of a sash which oscillates or reciprocates back and forth horizontally; and the object of my invention is to provide a mechanical movement capable of giving to the said oscillating frame a more even and perfect motion than has been heretofore given it. In the machines now in use the sash which carries the saws is usually suspended from hangers at each corner, which permit the frame to be swung back and forth like a pendulum, giving it of course a motion the lowest point of which is in the middle of each oscillation, and bringing the saws in contact with the stone that is being cut at that point, and being raised away from it at each end of the oscillation; but it is found that this motion of the frame gives the saws too short a contact with the stone for most effective cutting. Parallel motion and rollers have been tried, but in these the difficulty of raising the saws at the end of each stroke in order to allow the cutting material to get under them must be overcome. My invention aims at prolonging this contact and still raising the saws sufficiently at the end of each stroke, and this I accomplish by means of a system of cams and eccentrics and levers, as hereinafter described, and particularly pointed out in the claims.

Figure 1 is a sectional view of my machine, taken on line *x x*, Fig. 2. Fig. 2 is a sectional end view of same on line *z z*, Fig. 1. Fig. 3 is a detail view of a part of the machine, showing the hangers and the shafts from which they are suspended and the pins by which they are attached to the sash. Fig. 4 is a detail view of the cam, segment, and pinion by which the eccentric is actuated. Fig. 5 is a plan view of the same, taken on line *y y*, Fig. 4. Fig. 6 is a detail view of the eccentrics, hangers, connecting-rod, and sash.

A represents the frame of the machine; B, the stone to be operated upon; C, the sash in which the saws S are strung.

D D are the hangers by which the sash is suspended.

E is the pitman by which the sash is reciprocated.

F F are the gears which drive the feed-screws I I.

H H are the eccentric bearings fixed upon the axles or shafts J J, and from which the hangers D D are suspended.

P P are the pins by which the hangers are attached to the sash C at each corner.

O O are arms integral or attached to the eccentrics, and N is a connecting-rod by which all the eccentrics are moved simultaneously.

L is a grooved cylinder or cam upon the shaft K.

M is a toothed segment pivoted at Q upon the cross-head R.

G G are the guides upon which the cross-heads R R′ slide.

K′ is a feather way or spline on shaft K in which a feather upon the cam L slides, allowing it to slide longitudinally, but not to turn upon the shaft.

V is a groove in the cam L in which the stud W on the segment M runs. The segment M meshes with the pinion T, and by the rotation of the cam L, having the groove V, in which the stud W runs, the pinion T is revolved, and thereby the eccentric H, integral with or attached thereto. The groove in the cam is so shaped and the rotation of the cam so timed by the chain-wheel or other positive motion which drives it that as the sash C advances in its oscillation out of the perpendicular position shown in Fig. 6 the eccentric bearings H H, from which the sash is suspended, revolve sufficiently to lower the point of suspension, as seen in Fig. 1, keeping the sash at the same height throughout the stroke, and giving it a horizontal motion. When the pitman E reaches the position shown in Fig. 1 and its forward motion is about over, and while it is passing the dead-center, and the desired length of contact between the saws and the stone is reached, the revolution of the cam brings the arms O O into their vertical position, again raising the ec-

centric bearings and allowing the cutting material to get beneath the saws. Then by the time the return-stroke is about to begin, or as soon as it is well under way, the rotation of the cam will have swung the arms O O back to the opposite position to that shown in Fig. 1, and the same process gone through in the reverse direction. Thus it will be seen that during each complete forward and back stroke of the saws the arms O O are in the vertical position four times—once at each end and twice in the middle of the stroke.

The form of the cam L determines the movement of the eccentric bearings, and may be so varied as to give a longer or shorter contact of the saws or a greater or less clearance at each end of the stroke, as desired. I do not wish to limit myself in this respect. Also, in place of the segment M and pinion T a lever may be substituted, one end being attached to the eccentric and the other running in the groove of the cam. This same object, namely—the raising and lowering at will of the point of suspension of the hangers—may also be accomplished by means of a fixed lever, one end of which engages the cam and the other end carries the hanger-journals; but in this latter method the lever would simply be the equivalent of my eccentric. The eccentrics are fixed upon the shafts J J, and the arms O O, connected by the rod N, so that they all move together; but I do not consider this an essential feature of my invention, as other suitable connection may be used for moving them simultaneously.

The feed mechanism of the machine is of the usual form. The feed-screws I, driven by any suitable mechanism, as the gears F, pass through the cross-heads R R′, which carry the shafts J J and the eccentrics. By the revolution of the feed-screw the cross-heads are advanced as the stone is cut.

The cross-head R is extended to form journals for the shaft K and a yoke for the cam L. The cam advances with the cross-heads sliding in the spline K′.

What I claim, and desire to secure by Letters Patent, is—

1. The herein-described stone-cutting machine, consisting of the combination of the oscillating frame carrying the saws, the hangers by which said frame is suspended, the eccentric bearings from which said hangers are suspended, the adjustable cross-heads upon which said eccentric bearings are located, and the cam, segment, and pinion carried by said cross-head, by which said eccentric bearings are rotated, all substantially as shown and described.

2. The herein-described stone-sawing machine, consisting of the combination of the oscillating frame C, hangers D D, eccentric bearings H H, cam L, segment M, pinion T, arms O O, connecting-rod N, feed-screws I I, splined shaft K, and cross-heads R R′, all substantially as shown and described.

DAVID D. DRUMMOND.

Witnesses:
WM. M. LE MOYNE,
LOUIS V. LE MOYNE.