(No Model.) 3 Sheets—Sheet 1.

C. W. GREEN.

STONE CHANNELING MACHINE.

No. 386,313. Patented July 17, 1888.

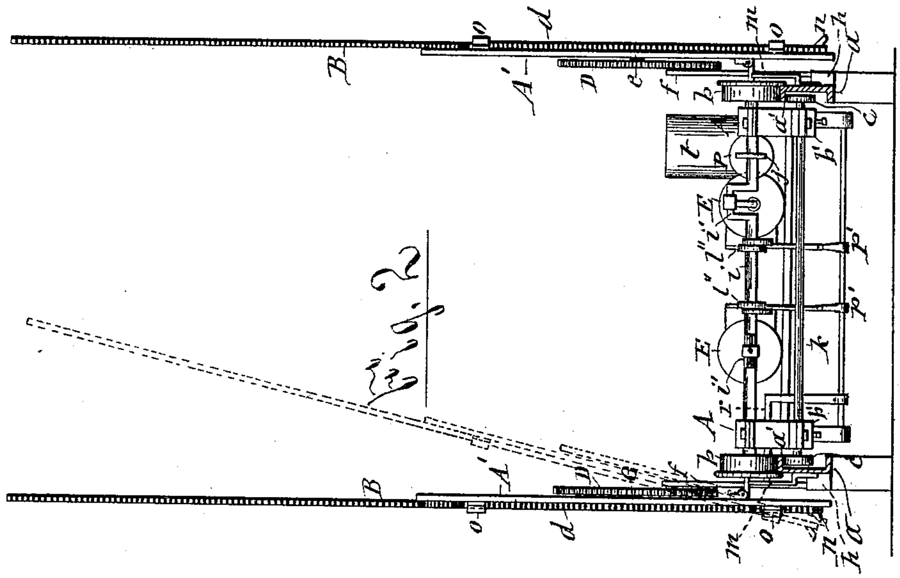

Fig. 2

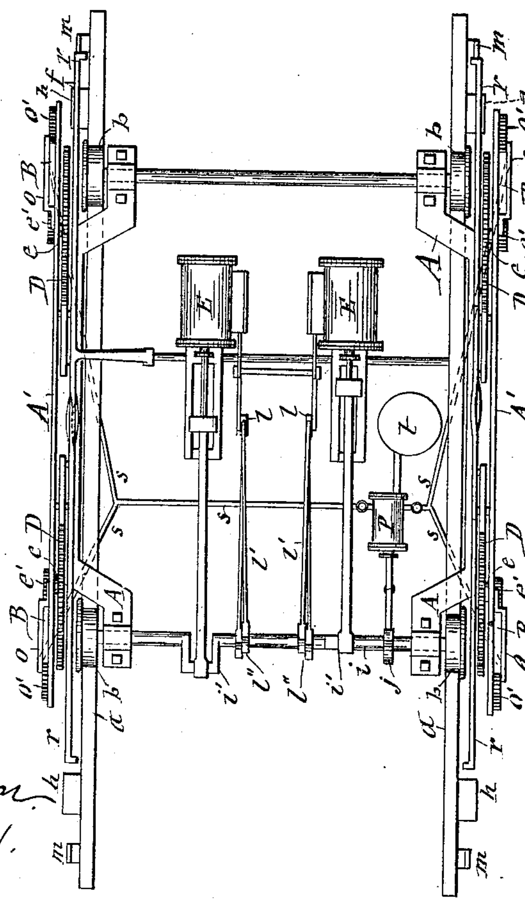

Fig. 1

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(No Model.) 3 Sheets—Sheet 2.

C. W. GREEN.

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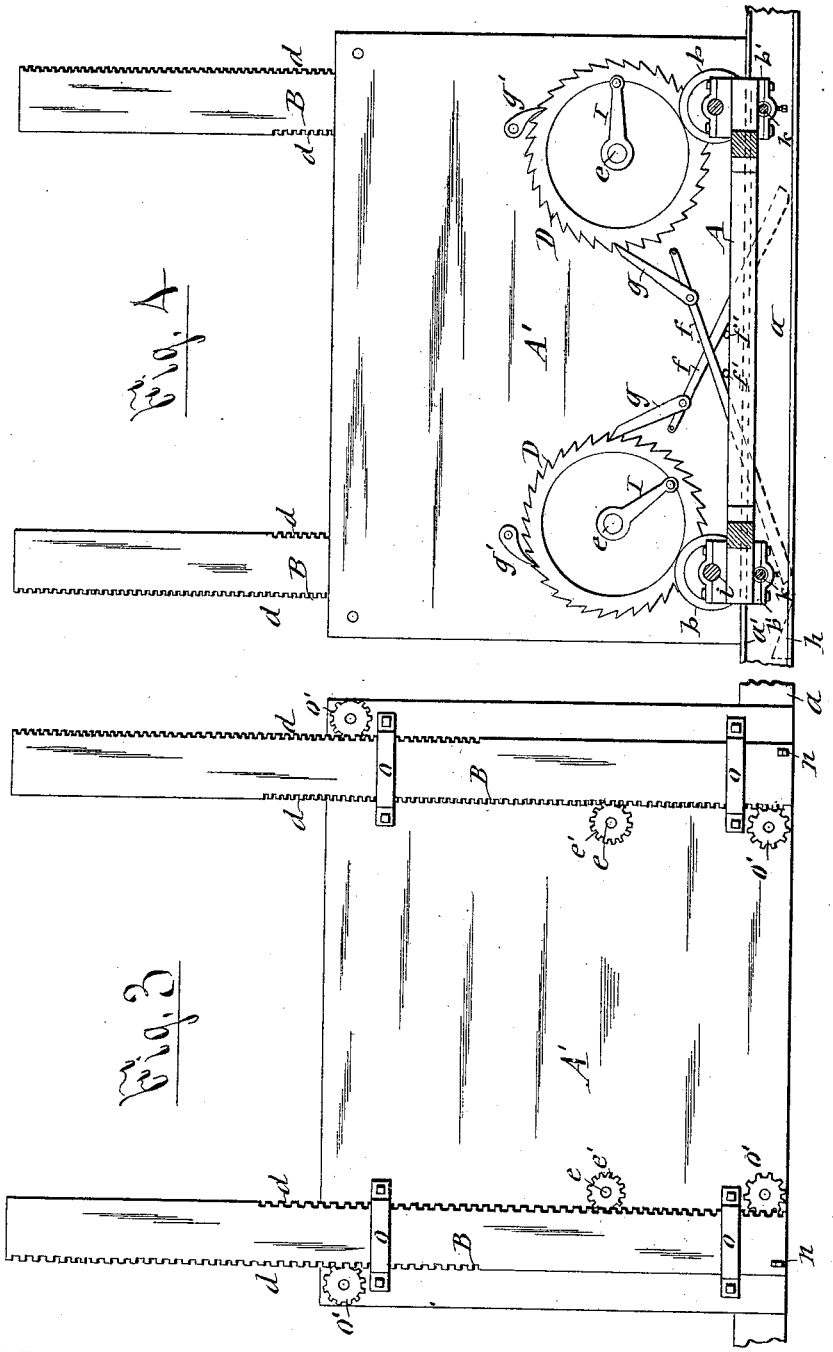

WITNESSES:
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(No Model.) 3 Sheets—Sheet 3.

C. W. GREEN.

STONE CHANNELING MACHINE.

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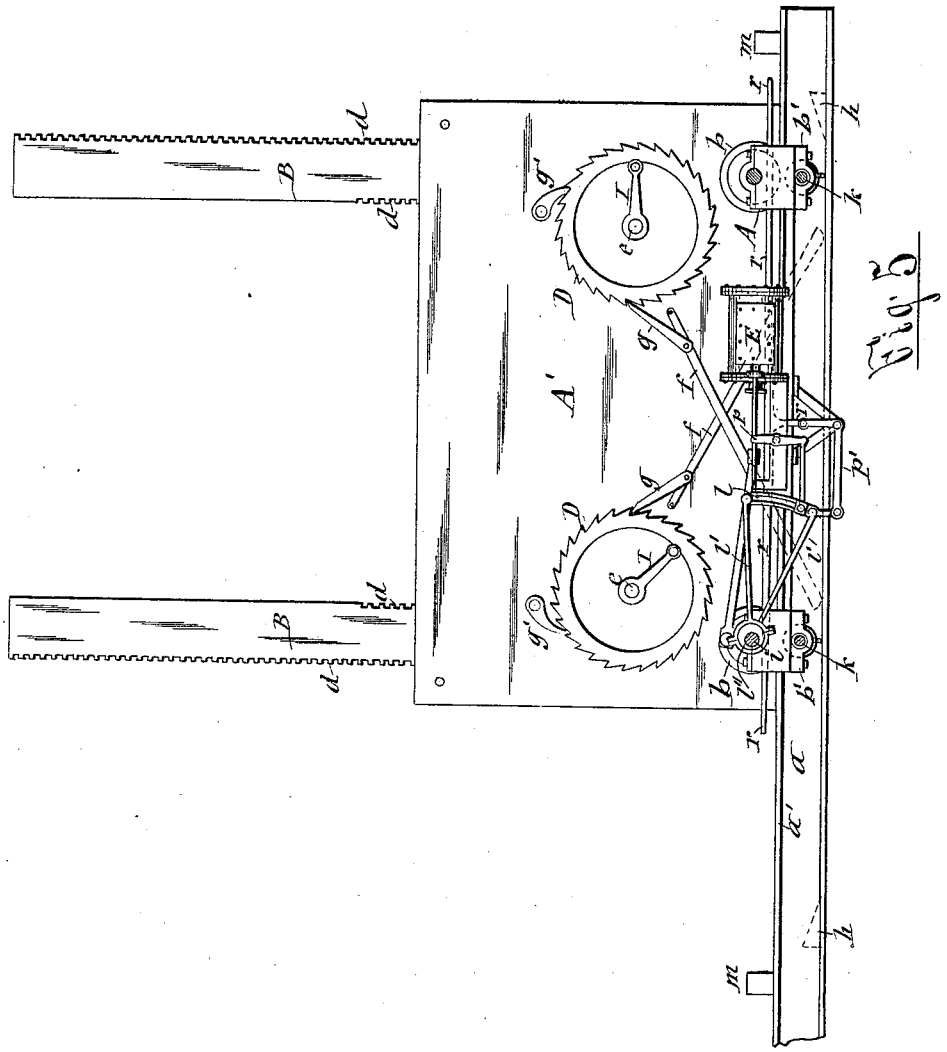

Fig. 2.

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UNITED STATES PATENT OFFICE.

CYREL WORINGTON GREEN, OF WEST RUTLAND, VERMONT, ASSIGNOR OF ONE-HALF TO DUNCAN M. SCHELL, OF SAME PLACE.

STONE-CHANNELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 386,313, dated July 17, 1888.

Application filed December 27, 1887. Serial No. 258,944. (No model.)

To all whom it may concern:

Be it known that I, CYREL WORINGTON GREEN, of West Rutland, in the county of Rutland, in the State of Vermont, have invented new and useful Improvements in Stone-Channeling Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention consists in a novel construction of a machine designed for use in quarries and for cutting channels in the stone or hard substance to be quarried, said machine being adapted to cut channels at either or both sides and capable of automatically governing its movement and its feed, all as hereinafter fully described, and specifically set forth in the claims.

In the annexed drawings, Figure 1 is a top plan view of a stone-channeling machine embodying my invention. Fig. 2 is an end elevation of the same. Figs. 3 and 4 are elevations of the outer and inner sides of the machine, and Fig. 5 is a vertical longitudinal section of the same.

Similar letters of reference indicate corresponding parts.

a a represent two track-rails, on which is mounted a carriage, A, having flanged wheels *b b*, by which it is carried and guided on the said rails. In order to hold the carriage to the track during the operation of the machine, I form the rails *a a* each with a horizontal flange, *a'*, and journal in boxes *b'* on the carriage A, underneath each of the main axles, a shaft, *k*, parallel with the axle, and having secured to it rollers *c c*, which bear with their peripheries on the under side of the flanges *a' a'*, as shown in Fig. 2 of the drawings. From opposite sides of said carriage rise walls or plates A' A', which are hinged in such a manner as to allow them to be set inclining, as illustrated by dotted lines in Fig. 2 of the drawings, in which position they are frequently required for working in a quarry. On each of said walls are carried the cutter-bars B B, having secured to them the diamond cutters *n n*. Said cutter-bars are arranged movable vertically or longitudinally in straps *o o*, attached to the walls A' A', and are provided with longitudinal racks *d d*, with which engage pinions *o' o'*, pivoted to the walls A' A', and serving to guide the cutter-bars. In the said walls are also journaled shafts *e e*, to one end of each of which is affixed a pinion, *e'*, engaging the rack *d* of one of the cutter-bars B B. To the opposite end of the shaft *e* is rigidly attached a ratchet-wheel, D, and to the same side of the wall A' are pivoted two levers, *f f*, to which are connected pawls *g g*, engaging the ratchet-wheels D D, as shown in Fig. 4 of the drawings. Said levers when at rest are supported on suitable stops, *f' f'*, projecting from the carriage. In the path of the carriage and in range with the free ends of the levers *f f* are inclines *h h*, secured firmly to the track and placed in such positions as to cause the free ends of the levers *f f* to encounter said inclines when the carriage has moved the desired distance in either direction. The free end of the lever sliding upon the incline lifts said lever, and thereby causes the pawl *g* to turn the adjacent ratchet-wheel D the distance of one or more of its teeth. Dogs *g'*, pivoted to the wall A' and engaging the ratchet-wheel, prevent the reverse movement of the latter. The aforesaid movement of the ratchet-wheel causes the pinion *e'* on the same shaft to lower the adjacent cutter-bar B, and thus the feed of the cutter is effected automatically. By means of hand-cranks I I, attached either to the shafts *e e* or to the ratchet-wheels D D, the said shafts can be turned to raise the cutter-bars when required.

On the carriage A is mounted a motor, preferably two steam-engines, E E, and one of the axles *i* of the carriage is utilized as a driving-axle by connecting thereto either cranks *i'* or eccentrics, with which the piston-rods of the engines are connected by pitmen. The valves of the two engines are operated by the so-called "link-motion," of which *l l* denote the links carried by the eccentric-rods *l' l'*, connected with eccentrics *l'' l''* on the driving-axle *i*, in the usual manner. A lever, *p*, pivoted to the engine-frame, is connected at one end to the valve-stem of the engine and has its opposite end fitted to slide in the link *l*, and by shifting the said link the motion of the

engine is reversed. This shifting is effected automatically by means of a push-bar, *r*, extended lengthwise the carriage and arranged movably longitudinally, and connected at or near its center with a bell-crank lever, *p'*, pivoted to the carriage, as shown in Fig. 5 of the drawings, one arm of said bell-crank lever being connected with the link *l*. To the track-rail *a* are rigidly secured stops *m m*, which are arranged in such positions as to cause that end of the push-bar which points in the direction of the movement of the carriage to collide with one of the said stops. The push-bar is thereby crowded back toward the carriage, and in this movement it actuates the bell-crank lever *p'*, so as to shift the links *l l* of the two engines.

P represents a pump, which is actuated by a pitman connected with an eccentric, *j*, on the driving-axle *i*. Pipes *s s*, leading from the pump to the cutters, are arranged to throw the water in the channel formed in the stone by said cutter, and thereby clears the channel. *t* denotes a water-tank from which the pump is supplied.

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

1. A stone-channeling machine composed of a stationary track, a carriage having carrying-axles, with wheels mounted on said track, cranks or eccentrics on one of said axles, the motor on the carriage, connected with the cranks or eccentrics, levers for reversing the valve-motion of the motor, and cutters sustained rigidly on the carriage, substantially as described and shown.

2. The combination of the track *a a*, carriage A, mounted on said track, the cutter-bars B B, supported movably longitudinally on the carriage and provided with racks *d d*, shafts *e e*, pivoted to the carriage, pinions *e' e'* on one end of the shafts, engaging the racks *d d*, ratchet-wheels D D, connected to the opposite ends of the shafts, levers *f f*, pivoted to the carriage, pawls *g g*, connected to the levers and engaging the ratchet-wheels, and inclines *h h* in the path of the carriage and in position to be encountered by the free ends of the levers *f f*, substantially as and for the purpose set forth.

3. The combination of the track *a a*, carriage A, provided with the driving-axle *i*, engines E E on the carriage and connected with the driving-axle, links *l l*, connected with the valve-gears of the engines, stops *m m* in the path of the carriage, a lever for shifting said links, and a push-bar adapted to come in contact with the aforesaid stops in the travel of the carriage, and thereby actuate the said shifting-lever, substantially as set forth.

4. In combination with the track-rails *a a*, formed with the horizontal flanges *a' a'*, the carriage A, having carrying-axles with wheels mounted on the aforesaid rails, the shaft K, journaled on the carriage parallel with the axle, and rollers *c c* on said shaft, bearing with their peripheries on the under side of the aforesaid flanges of the track-rails, and the cutter-bars B B, secured to the carriage, substantially as described and shown.

In testimony whereof I have hereunto signed my name in the presence of two witnesses, at West Rutland, in the county of Rutland, in the State of Vermont, this 19th day of December, 1887.

CYREL WORINGTON GREEN. [L. S.]

Witnesses:
GEO. R. REED,
JOSEPH E. MANLEY.