

A. S. GEAR.
Stone Channeling-Machines.

No. 142,096.

Patented August 26, 1873.

Fig. 1.

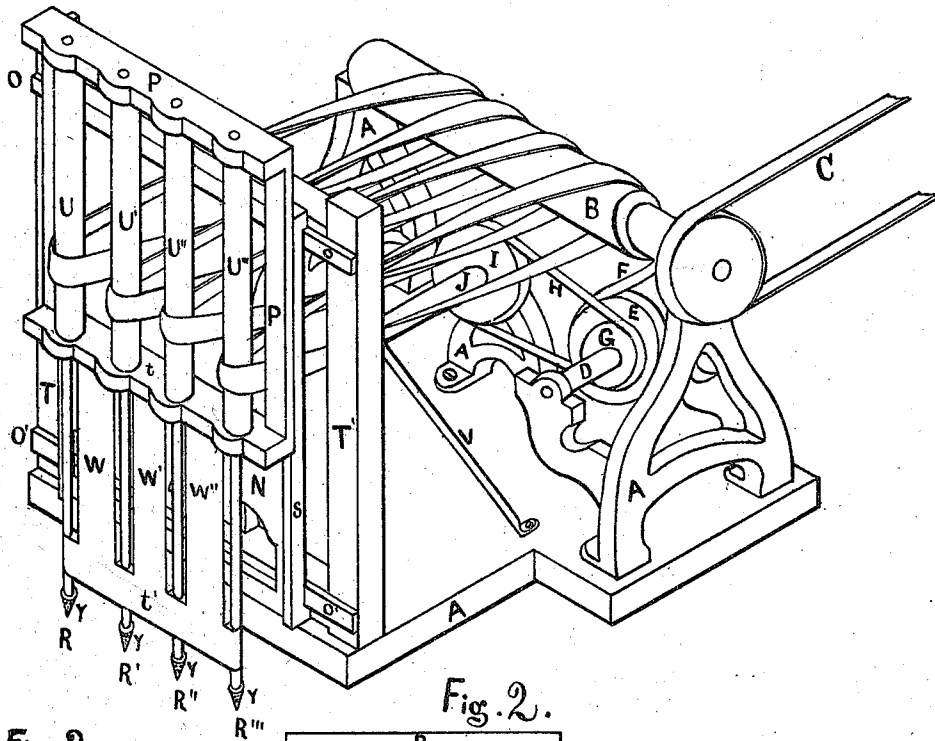


Fig. 2.

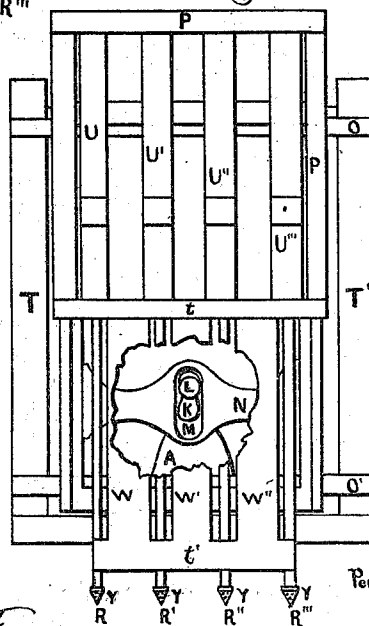
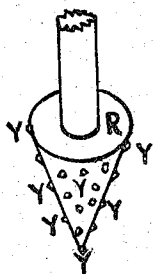


Fig. 3.



WITNESSES.

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IMPROVEMENT IN STONE-CHANNELING MACHINES.

Specification forming part of Letters Patent No. **142,096**, dated August 26, 1873; application filed May 1, 1873.

To all whom it may concern:

Be it known that I, ALONZO S. GEAR, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Stone-Channeling Machines, of which the following is a specification:

The first part of my invention relates to a series of small rotary cutter-heads, studded with diamonds, for channeling stone; and it consists in the combination of such cutter-heads with adjustable mechanism for imparting a reciprocating rotary motion to them, and allowing of their movement downward at the same time as the channel in the stone is being cut. It further consists of a frame, which is provided with suitable journal-bearings for carrying a horizontal drum, from which rotary and reciprocating motion is imparted to the several cutter-heads by means of belts passing from said drum to vertical shafts, upon which such cutter-heads are connected; and, also, by belts which connect with shafts and pulleys for imparting motion to a shaft carrying a crank whose end is provided with a friction-pulley operating in a slot in the frame carrying the cutter-heads, thus imparting the reciprocating motion to such frame at the same time the rotary motion is imparted to the cutter-heads, which are mounted in an adjustable vertical frame, allowing the cutter-heads to feed downward until the channel is cut the desired depth; then they may be raised up and removed to a new position upon the stone, when the operation may be repeated. Thus it will be seen that if four cutter-heads are arranged in this reciprocating frame, one foot apart, in a line, and the crank moving the same is six inches in length from center to center, each cutter-head will cut a channel one foot in length; each channel meeting it will make a channel four feet in length. These rotary cutter-heads may be more or less in number, and arranged more or less apart.

Figure 1 is a perspective view of a stone-channeling machine embodying my invention. Fig. 2 is a front elevation of the same, a portion being broken away so as to show the crank, friction-pulley, and slot in the reciprocating frame.

Fig. 3 is a perspective view of a rotary cutter-head studded with diamonds.

A is the main frame of the machine, which frame should be substantially constructed to resist the vibrations of the operative parts. B is a horizontal drum driven by a belt, C. This drum is mounted upon a shaft, and such shaft is provided with suitable bearings, which run in journal-boxes upon the rear of the frame A. Beneath this drum, and at right angles thereto, is a shaft, D, and pulley E connected to the drum, and receiving rotary motion through the belt F. Said shaft carries a small pulley, G, from which passes a belt, H, around pulley I upon shaft J. To the opposite end of this shaft is connected crank K, which is provided with friction-pulley L operating in slot M in the rear of frame N, which causes it to slide back and forth, this frame N being connected by guides O O' to the vertical adjustable frame P, which, in turn, carries the rotary cutter-heads R R' R'' R''', studded with diamonds Y Y Y Y, upon shafts U U' U'' U'''. This latter frame slides up or down freely in guides S S' upon the guides O O' upon the upright standards T T', which are supported by braces V V'. This vertical adjustable frame P has supports W W' W'', which connect with the top and bottom pieces t t' of the same. These are constructed of iron or steel, so as to give the required strength, and are thinner than the diameter of the cutter-heads, so as to pass into the channel as it is being cut.

These cutter-heads are constructed of steel, and studded with diamonds or other hard points. The shafts carrying them are also of steel. Instead of the several belts employed to drive these cutter-heads suitable gearing may be used to accomplish the same result; and mechanism may be applied for raising the frame and cutter-heads up out of the channel after it has been cut the desired depth, or whenever required.

Having thus described my invention, what I claim is—

1. The above-described stone-channeling machine for quarrying stone, composed of mechanism which imparts lateral, reciprocating, and rotary motion simultaneously to a series

of cutter-heads studded with diamonds, which extend below the bottom of the frame in which they are mounted in such manner as to allow of their continual movement downward as the channel in the stone is cut, substantially as set forth.

2. The combination of the drum B, shaft J, crank K, friction-pulley I, slot M, and reciprocating frame N with the vertical adjustable frame P, reciprocating rotary cutter-heads R R' R'' R''', studded with diamonds Y Y Y Y, and connected to shafts U U' U'' U''', and

mounted in frame A, such cutter-heads operating and extending below the bottom of said frame, motion being communicated to the operative parts by means of belts from the horizontal drum D, or their equivalents, substantially in the manner described, as and for the purposes set forth.

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Witnesses:

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