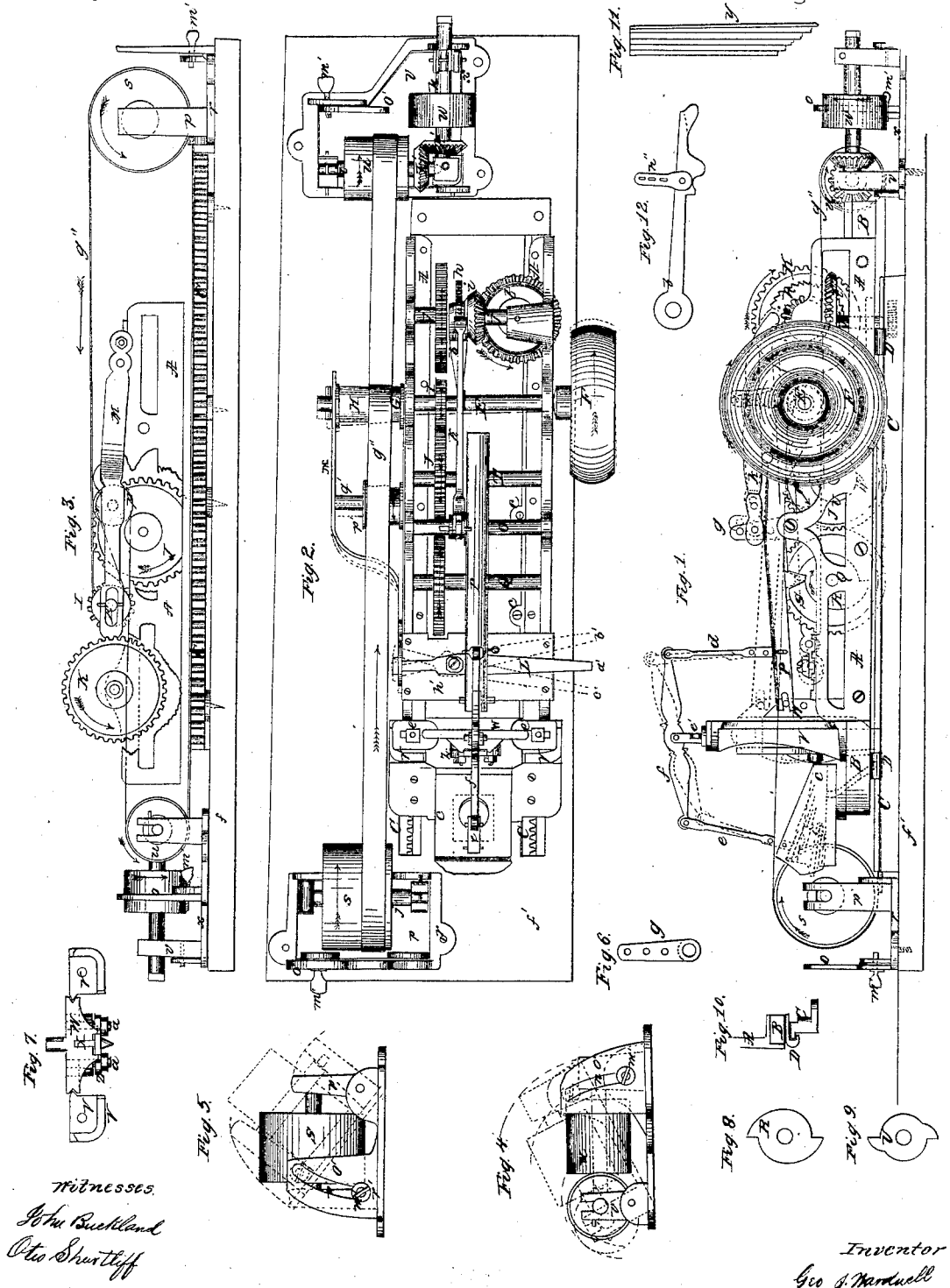
# G. J. Wardwell,

## Stone-Channeling Machine.

No. 26,802. Patented Jan. 10, 1860.




Witnesses.
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Otto Shurtleff

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AM. PHOTO-LITHO. CO. N.Y. (OSBORNE'S PROCESS)

# UNITED STATES PATENT OFFICE.

GEO. J. WARDWELL, OF BARNSTON, CANADA.

## STONE-DRESSING MACHINE.

Specification of Letters Patent No. 26,802, dated January 10, 1860.

*To all whom it may concern:*

Be it known that I, GEO. J. WARDWELL, formerly of Andover, Oxford county, State of Maine, but now of Barnston, county of Stanstead, Canada, have invented a new and useful Improvement in Machines for Cutting Marble and Stone; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a side elevation; Fig. 2, is a vertical view; Fig. 3, is an elevated section of the back side of the machine; Fig. 4, is an end view of the counter shafts, pulleys and bed frame; Fig. 5, is an end view of the bed frame, with single shaft and pulley; Fig. 6, is a side view of the arm for working the feed finger; Fig. 7, is a vertical view of the drill or cutter-head and posts, which serve as guides for the cutter head to move up and down on; Fig. 8, is a side view of the lifting cam; Fig. 9, is a side view of the driving or forcing cam; Fig. 10, is an end section of frame, sill, shoe, and rail or track; Fig. 11, is an enlarged side view of cutters or drills; Fig. 12, is a side view of the stay finger and sword, or arm for raising the feed finger.

Similar letters of reference indicate corresponding parts in each of the drawings.

A, is the frame of the machine, secured to the sills B.

C, C, are rails or track on which the machine moves a part of the top surface of the rails or track projects over one side forming a lip, the opposite side from the lip is furnished with a toothed rack.

D, are shoes or plates secured to the underside of the sills, and their lower surfaces resting on the top surface of the track; the shoes or plates extend over, around and below the lip on the track or rail forming a claw or clasp to prevent the machine from falling from the track when working on an angle, the clasps projecting over the front edge of each track or rail so that the machine will hang thereon, however much the front side may be raised above the other.

E, is the main driving shaft of the machine which extends through both sides of the frame carrying a balance wheel F on the outside, and the other end carrying a driving pulley G and loose pulley H, on the outside of the frame and back side of the machine; the driving shaft also carries a pinion I, on the inside which is thrown into, and out of gear with the wheels J and K by means of the lever L and shipper frame M.

O, is the rocker shaft, to which the beam P, is attached.

Q is a shaft situated below and forward of the rocker shaft carrying a lifting cam R, and gear wheel S, which receives motion from the gear wheel J, on shaft T, (situated below and back of the rocker shaft,) which shaft also carries a cam U, for forcing down the beam and drill or cutter head W, after being raised by the lifting cam.

V are posts situated near the forward part of the machine and secured to the sills, these posts are furnished with V shaped guides which extend below the sills on the inside, for the drill or cutter head to move up and down on. The cutter head has a vertical groove or slot X to receive the cutters or drills Y, which are secured in their place by means of the plate Z, and bolts *a*. The cutter head is connected with the beam by means of a pin working in a slot, in the end of the beam.

*g*, is an arm attached to the rocker shaft, which arm gives motion to the feed finger *k* working on the ratchet wheel *h* attached to the shaft *j*, situated back of the driving shaft. The shaft *j*, also carries the gear wheel K and bevel pinion *i*, which pinion works into the bevel gear *t*, attached to the vertical shaft *m*, carrying a pinion *n* on its lower end, which works in the toothed rack on the side of the rail or track.

*c* is a bellows situated in front of the cutter head, for blowing the dust from under the cutters or drills. Motion is communicated to the bellows from the beam P, through the connecting rods *e*, and *d*, and walking beam *f*.

The counter shafts *h'*, *i'*, *j'* carrying the pulleys *u* and *s*, and bevel gear wheels *k' l'* with frames *v*, *p*, are placed inside of the bed frames *x*, and *r*, and are made to swing on centers for the purpose of leveling the counter shafts and pulleys when the machine is working on an angle to keep the belt in its proper position on the pulleys *u*, *s*; otherwise, its own weight would cause it to work to the lower end of said pulleys, making it difficult to be kept thereon. The power is applied to the counter-shaft *h'*, by means of the pulley *w*, situated thereon.

The shafts are kept in position by the bolts $m'$ working in the slots $n'$ in the swords $o'$, as represented in Figs. 4 and 5; the bed frame $x$, and its attachments are placed at one end of a quarry or surface that is to be cut, and the bed frame $r$, with its pulley, &c, is placed at the other end, or at any convenient distance, and the machine mounted on the track is worked between them.

$g'$ is the belt by which the power is communicated from the counter shaft $i'$ to the machine. The lower half of the belt makes one continuous reach from the lower surface of the pulley $u$, to the lower surface of the large pulley $s$, leaving the upper surface in a direction parallel with the lower half until it reaches the small pulley G on the driving shaft E of the machine around which it makes a return, passing over the pulley $p'$ on the stud $q'$ in the shipper frame, leaving the pulley on its lower surface, and keeping the parallel course to the top surface of the pulley $u$ on the counter shaft $i'$; the belt arranged as described allows the machine to be moved forward and back on the track without loosening or tightening the belt.

The machine is intended to carry a gang of drills or cutters, (see Fig. 11.) The cutters are constructed with a sharp cutting edge, and a blunt or stunning surface, the stunning surface being back of the cutting edge, and even in depth with it; and the gangs are composed of cutters and stunning surfaces arranged alternately. Each cutter and stunning surface is placed a uniform distance lower than the one preceding it. A stunning surface without a cutter takes the lead in the gang.

$b$ is the stag finger to the ratchet wheel, hung loosely on the rocker shaft O.

$h''$ is a sword the lower end of which is attached to the stay finger and is connected to and swings with the feed finger $k$.

The operation of the machine is as follows, (the belt and driving shaft E are supposed to be moving:) When the lever L, is swung into the position as represented in red at $b'$ (see Fig. 2,) the shipper frame M and the end of the driving shaft E, with its pulleys and pinion I, swing with it, throwing the pinion into gear with the wheel J, giving motion to the cam shafts T and Q. At the same time the feed and stay fingers $k$ and $b$, which rested on the driving shaft are allowed to fall on to the ratchet wheel $h$. The lifting cam R raises the beam P, with the drill head W, and cutters Y, while the arm $g$ and feed finger $k$, causes the ratchet wheel $h$, with the shafts $j$ and $m$, and gear pinions $t$, $i$, $n$, to make a partial revolution, the pinion $n$ working in the toothed rack on the side of the rail or track C, thereby giving the machine a forward motion. After the beam with the drill head and cutters has been raised to their highest elevation, they are immediately forced downward by the cam U, acting on the back end of the beam, causing the gang Y with their cutting and stunning surfaces to come in contact with the stone or substance to be cut. The motions are then repeated until the machine has traveled the required distance. The machine is stopped by swinging the lever into its central position $a'$, which throws the pinion I out of gear and allows it with its shaft to hold an intermediate position between the gear wheels J and K. The machine is gigged back by swinging the lever to $c'$, which raises the stay and feed fingers off of the ratchet wheel, by the shaft E passing under the projection on the under or lower edge of the stay finger, and at the same time carries the pinion into gear with the wheel K, whose motion together with the shafts $j$ and $m$ and their gear and pinions $t$, $i$, $n$, are reversed, and the machine will travel back to the place of starting. When the lever is swung to its central position the motion stops, after which the gang of cutters can be set lower in the drill head and the operation repeated until the required depth is cut.

The feed of the machine can be varied by hanging the feed finger higher or lower on the arm $g$, and properly adjusting the pin in the sword $h''$ in relation thereto.

The number of cutters or drills and stunning surfaces is not necessarily limited to five, as any other may be used to suit the capacity of the machine; neither is it necessary to form a cutter and a stunning surface from a single bar as each of them may be made of separate pieces or bars.

The object of the stunning surfaces is to bruise or "stun" the marble or stone, previous to being cut, which allows it be more readily or easily removed by the cutters, as well as to insure a uniform depth of cut. They also will allow more power to be applied to the machine by lessening the liability of breaking or injuring the cutters.

When the machine is worked in a quarry the track and bed frames are bolted or secured to the marble or stone by screwing bolts into holes filled with wood, or in any other convenient way.

I do not limit the number of projections on the cams to two, as any other may be used and produce the same result.

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

1. The combination of a "stunner" and cutter together, or in the same instrument, the stunner preceding the cutter in its action, both to "stun" the material for the cutter, and to gage the depth of its cut, substantially as described.

2. I also claim the arrangement of the

shafts $i'$, and $j'$, of the band pulleys $u$, $s$, upon frames $v$, $p$, distinct from, and pivoted to, the bed frames $x$, $r$, so that said shafts may be brought to a horizontal position, (nearly or exactly,) when the machine is working in an inclined position in the manner and for the purposes herein specified.

3. I also claim the arrangement and combination of the lever L, shipping frame M, pulleys G, and $p'$, shaft E, pinion I, feed finger $k$, stay finger $b$, and sword $h''$, whereby the shipping frame and feed and stay fingers are operated by one and the same movement of the shipping lever, substantially in the manner and for the purposes herein specified.

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Witnesses:
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