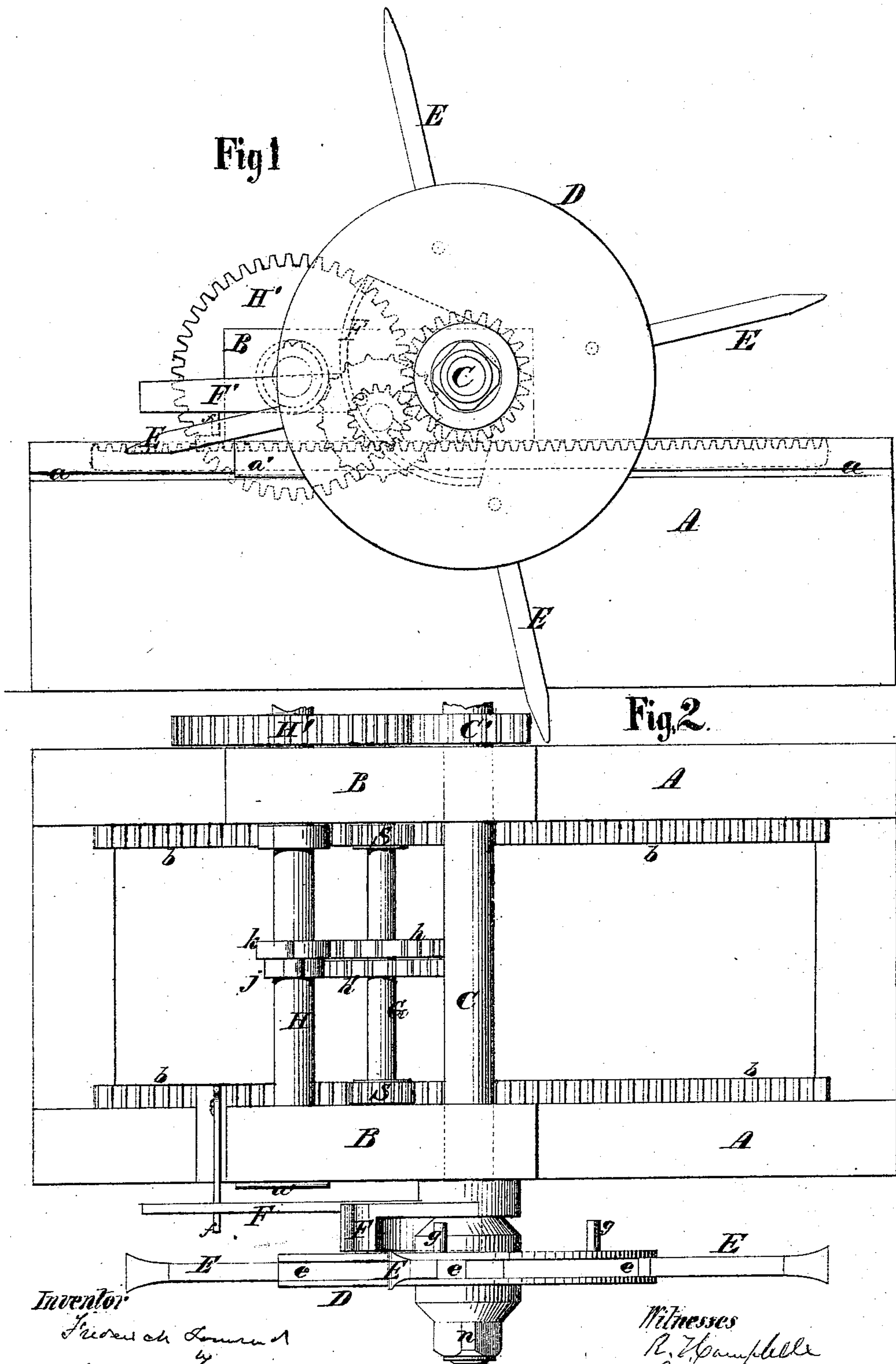


F. Townsend,
Chanelling Stone.

2 Sheets, Sheet 1.

No. 94,256.

Patented Aug. 31. 1869.



Inventor

Frederick Townsend

By Mason, Smith & Lamme

Witnesses

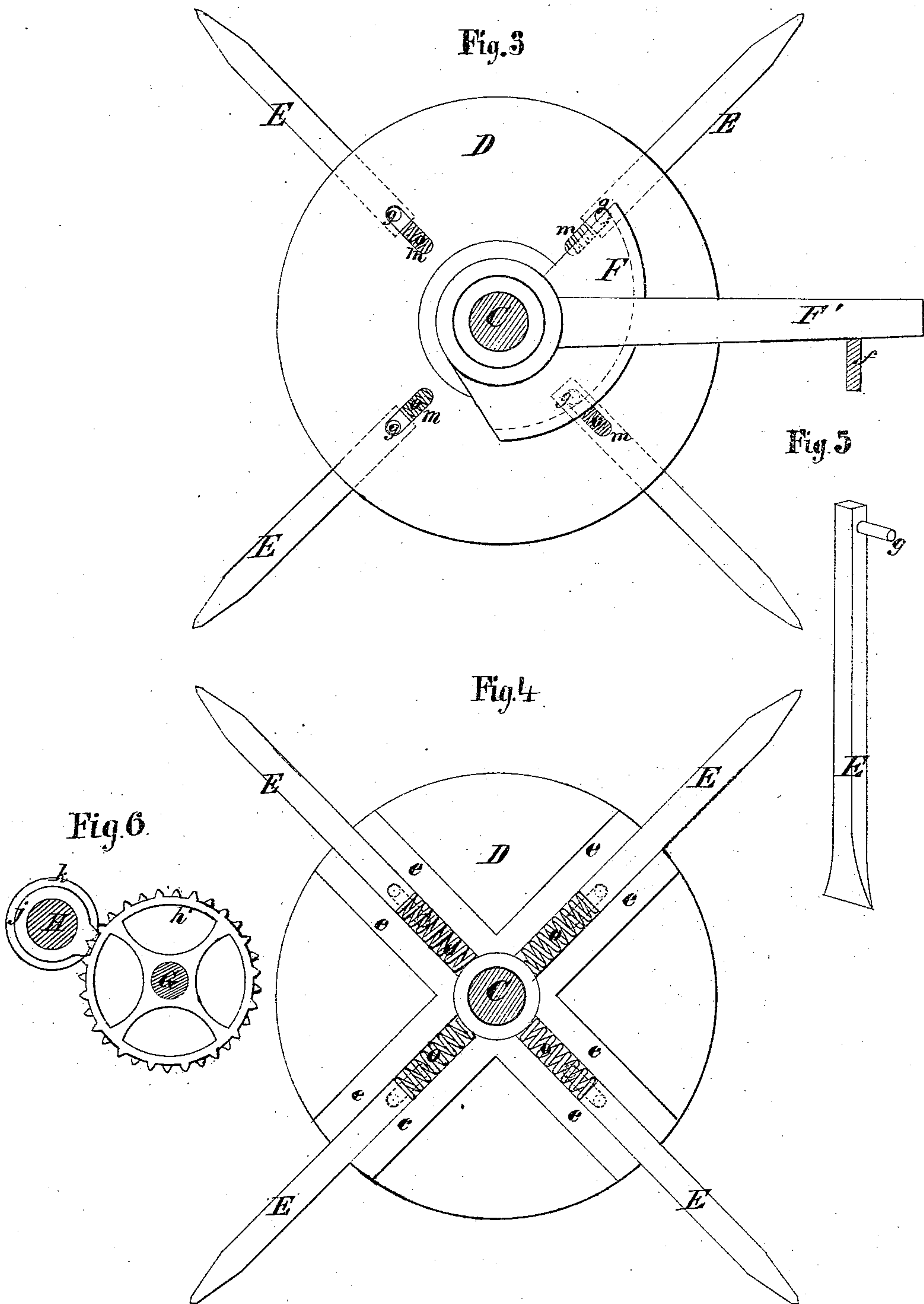
R. V. Campbell

Julius Hirsch

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R. T. Campbell
Julius Hirsch

Inventor
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United States Patent Office.

FREDERICK TOWNSEND, OF ALBANY, NEW YORK.

Letters Patent No. 94,256, dated August 31, 1869.

IMPROVED STONE-CHANNELLING MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, FREDERICK TOWNSEND, of Albany, in the county of Albany, and State of New York, have invented certain new and useful Improvements in Stone-Channelling and Stone-Facing Machinery; and I do hereby declare that the following is a full, clear, and exact description thereof; reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1, plate 1, is an elevation of one side of the improved machine.

Figure 2, plate 1, is a top view of the machine.

Figure 3, plate 2, is an inside view of the chisel-carrying wheel and its four chisels and cam.

Figure 4, plate 2, is a view of the interior of the chisel-carrying wheel, showing the manner of applying springs to the chisels.

Figure 5, plate 2, is a perspective view of one of the chisels.

Figure 6, plate 2, is a view of the feed and stop-wheels.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain novel improvements on machinery which is designed for cutting the face of stone, and channels or kerfs in stone, preparatory to removing the same from quarry-beds in regular-sided blocks.

The object of my invention is, mainly, to produce channels or kerfs in stone, by means of one or more chisels, applied in suitable guides, which radiate from and are secured to a shaft that receives rotary motion, said chisel or chisels being acted upon alternately, and at proper times, by a cam and a spring or springs, or other blow-giving power, in such manner, that during the revolution of the chisel or chisels, they will be drawn inwardly toward their axis of revolution; and, when they are in the proper position, and at the proper angle for striking a blow upon the stone, they will be released from the cam, and forcibly driven against the stone by the recoil of the springs, or other blow-giving power, as will be hereinafter explained.

Another object of my invention is to provide for causing one or more revolving stone-channelling chisels to strike at different angles, and at any desired angle, by the employment of a retracting and releasing-cam which is capable of being adjusted whether the chisels are rotating or at rest, as will be hereinafter described.

Also, to combine with rotary chisels which are adapted for cutting channels in stone, an intermittent feed-motion, which will move the chisels along as rapidly as the work progresses, and, at the same time, prevent backward motion, as will be hereinafter explained.

The following is a description of one practical mode of carrying my invention into effect.

In the accompanying drawings—

A A represent two ways, which are connected together at their ends, so as to form a strong rectangular frame or bed, upon which the channelling-devices are sustained, moved, and guided.

B B represent two bearing-blocks, which are mounted upon the parallel ways A A, and connected thereto by jaws *a'*, working in grooves *a*, or in any other suitable manner which will hold said blocks down in their places, and allow them to be moved back and forth upon their ways.

In practice, the ways will be mounted upon posts or standards, and made vertically adjustable, so that the machine can be adjusted parallel to the plane of the bed of stone upon which it is supported, and also so that the chisels can be depressed as the channel or kerf gradually becomes deeper.

C is the chisel-carrying shaft, which extends transversely across the bed-frame, and has its bearings in the blocks B B.

On one end of this shaft, a pinion spur-wheel, C', is keyed, which engages with the teeth of a spur-wheel, H', on a driving-shaft, H, that has its bearings in the blocks B B.

Shaft H carries a wheel, *j*, having a single tooth on its periphery, and also a wheel, *k*, having a notch in its periphery, in line with said tooth.

The tooth on the wheel *j* will engage with the teeth on a wheel, *k'*, on a feed-shaft, G, at every revolution of the shaft H, and move shaft G a given distance about its axis.

The wheel *k* is made of such diameter that its periphery lies between two of the teeth on wheel *h*, and prevents this wheel, its shaft G, and the wheel *k'* from turning, except when the tooth on the periphery of the wheel *j* engages with the teeth on wheel *k'*, at which time the notch in the periphery of wheel *k* will allow one tooth of the wheel *h* to escape, as indicated in fig. 6.

The shaft G has its bearings in the blocks B B, and carries pinion spur-wheels S S, which roll upon and engage with the teeth of racks *b b*, upon the inner sides of the ways A A.

It will be seen, from the above description, that during the rotation of the shafts H C, the shaft G will receive intermittent movements about its axis, and that the three shafts C G H, and their bearing-blocks, will be moved slowly along.

I am aware that the devices which I have described for moving the shafts and blocks upon the ways A A are not new, and I do not claim them irrespective of their combination with stone-channelling chisels. Nor do I confine my invention to the feed and stop-motion herein described, as other well-known contrivances may be used, which will operate to feed the chisels up to their work, and prevent backward movement.

I have represented one kind of feed and stop-motion for the purpose of explaining one practical mode of feeding the chisels over the stone, and, at the same time, giving them a rotary motion.

On one end of the shaft C, outside of the ways A, and rigidly secured to this shaft C, is a hollow wheel, D, composed of a central hub and two circular plates, secured together, at proper distance apart, and enclosing parallel guides *e e*, as shown in the drawings.

Between each pair of guides *e e*, a radial slot or space is formed, in which works freely a chisel, E.

I have shown four chisels applied to the shaft C, adapted for striking four blows upon the stone during each revolution of this shaft; but I do not confine myself to this number of chisels, as a greater or less number may be used. Nor do I confine myself to the use of the plates, as these may be dispensed with, and the chisels fitted into sockets formed in radial arms.

Each chisel is acted upon by a spring, *o*, which may be of a helical form, and which will operate to thrust the chisel outwardly; and each chisel is provided with a stud, *g*, near its inner end, which stud protrudes through an oblong radial slot, *m*, made through the inner circular plates of wheel D, as shown in fig. 3, plate 2.

F represents a flanged cam, which is formed on a circular hub, and applied loosely upon the shaft C, between the chisel-wheel D and the ways, and which is also constructed with a long arm, F', that which, at certain times, rests upon a pivoted support, *f*, projecting out laterally from one of the ways A, as shown in figs. 1 and 2, plate 1.

The cam F is made so that its greatest radius is at its highest point, and its least radius at its lowest point, as clearly shown in fig. 3.

By raising or depressing the free end of arm F', the cam F will be moved about the axis of shaft C, and in this way the chisels can be made to strike at different angles of inclination to the stone upon which the machine rests.

As the shaft C is rotated, the upper end of the flange of cam F will successively receive the studs *g*,

on the chisel-stocks, and move the chisels inwardly, or toward the axis of the said shaft, and compress the springs *o*; and, as the studs successively leave the lower end of the flange of said cam, the springs *o* will forcibly thrust the chisels outward, and cause their cutting-edges to strike the stone at an inclined angle, and at any angle which may be found best adapted to the kind of stone being cut.

The drawings represent only one retracting-cam applied on shaft C; but, in practice, another such cam may be applied upon the shaft C, outside of the chisel-wheel D, and made to operate upon studs that would also protrude from the outer face of the wheel D, so that the chisels can be caused to strike upon the stone in moving backward as well as forward.

I do not desire to be understood as confining myself to the precise construction of the devices herein described for carrying my invention into effect, as other means equivalent thereto may be adopted which will operate upon the same principle.

Having described my invention,

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

1. One or more chisels, applied to a rotary shaft, and operated upon by springs, or other blow-giving power, substantially as described.

2. One or more cams, or the equivalents thereof, adapted for retracting chisels which are applied to a rotary shaft, and which are acted upon by springs, substantially as described.

3. Providing for adjusting one or more chisel-retracting cams, so as to cause rotating chisels to strike at different angles of inclination, substantially as described.

4. Radially-reciprocating chisels, which are acted upon by springs, and which are applied to a wheel, composed of circular plates and guides, substantially as described.

FREDERICK TOWNSEND.

Witnesses:

J. H. CRANE,

E. M. ELLIS.