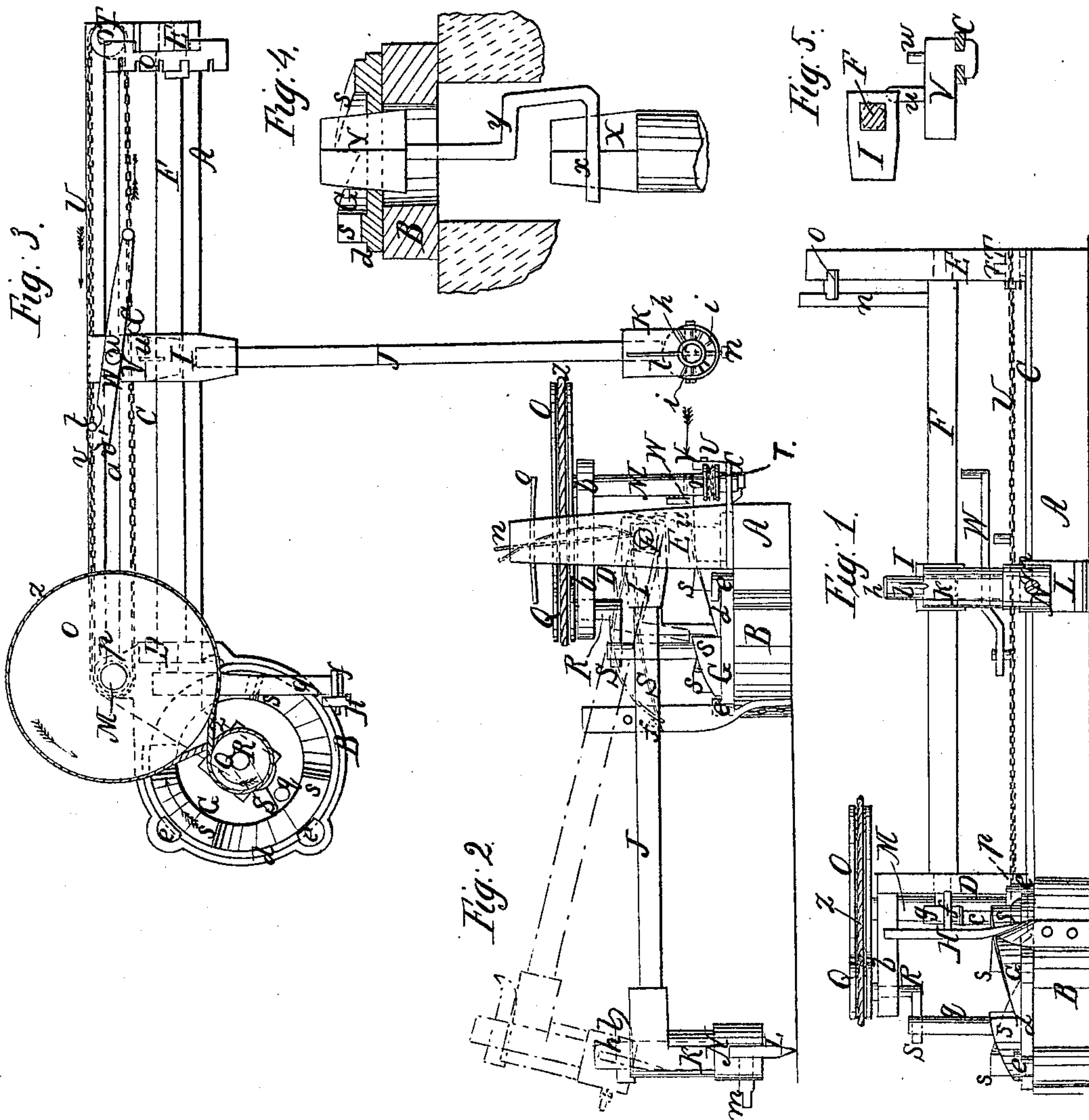


S. W. & R. M. Drayer,

Dressing Millstones.

N^o 8,967.

Patented May 25, 1852.



UNITED STATES PATENT OFFICE.

S. W. AND R. M. DRAPER, OF BOXBOROUGH, MASSACHUSETTS.

STONE-DRESSING MACHINE.

Specification of Letters Patent No. 8,967, dated May 25, 1852.

To all whom it may concern:

Be it known that we, S. W. and R. M. DRAPER, of Boxborough, in the county of Middlesex and State of Massachusetts, have
5 invented certain new and useful Improvements in Machinery for Picking and Furrowing Millstones and Dressing Stones of Any Description; and we do hereby declare
10 that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, is a front elevation. Fig. 2, is an end elevation. Fig. 3, is a plan or top
15 view. Fig. 4, is a sectional view of a part of the machinery. Fig. 5, is a detached view represented for the purpose of explaining Fig. 2.

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

Our invention consists in a shaft which is hung in bearings in a suitable frame or bed piece intended to act upon the stone itself or upon any convenient support near it and
25 which receives a vibratory motion through a cam driven either by the spindle of a mill or by other means, and which carries a hammer and pick by which the stone is operated upon, the said hammer being capable of sliding
30 along the shaft, the shaft and its frame being capable of adjustment to admit of the hammer and pick moving in various directions across the stone, the pick being capable of adjustment in the hammer to vary the
35 position of its edge, and the strength of the blow being regulated by springs applied for the purpose.

To enable others skilled in the art to make and use our invention we will proceed to describe fully its construction and operation.

A, represents a strong bar or bed piece of cast iron having a circular head piece B, at one end C, is a plate secured to the top of A, and hanging over the back side of it having
45 a slot *a* extending nearly all along it.

D, E, are two upright standards one at each end of the bar A; the standard B, has a horizontal arm (*b*), attached to it.

F, is a square shaft having journals at
50 its ends which fit in bearings in the standards D, E, one end projects through D, and carries a bent arm (*c*) through which it receives motion by the cam.

I, is a block fitted on the shaft F, so as
55 to be capable of sliding freely along it; this block receives the end of the hammer arm

J, which carries at its end the hammer socket K, which is of metal and bored at right angles to the length of the arm to receive the pick stock.

N, is the pick stock, which is a cylindrical metal socket having a cylindrical shank (*h*) fitting in the hammer socket K, and having a slit or opening across it which receives the pick L, which is secured in it
60 by a set screw (*m*); the shank (*h*) turns freely in the hammer socket, but can be secured in any position by a key (*l*) which passes through the part which projects above the hammer socket, the lower edge of the
65 said key enters one of a series of notches (*i*) (*i*) in the top of the socket and holds the edge of the pick in any required position.

G, is the cam which gives the vibrating
75 motion to the shaft F, it rests on the top face of the ring B, and has a square hole through it to receive the end of the mill spindle or other spindle which drives it; it has a flange all around its lower edge which
80 is overlapped by dogs (*e*) (*e*) which keep it in place but allow it to rotate, and it has any suitable number of inclined planes or projections (*s*) (*s*) on its upper face for the purpose of acting on the bent arm *c*, and
85 thus giving the shaft its motion; the bent arm (*c*) is kept in contact with the face of the cam by means of a spring (*g*) which is secured on its upper side, the end of this spring projects beyond the end of the arm
90 and bears under a pin (*s*) which is inserted in one of a series of holes in a small pillar H, which is secured to the head B; in addition to keeping the arm (*c*), on the cam the spring gives force to the blow of the ham-
95 mer, the amount of the said force being regulated by the height of the pin (*f*). There is also a spring (*n*) on the opposite end of the shaft F, which can be inserted in either one of a series of notches in a bar (*o*) se-
100 cured to the standard E; this spring serves the purpose of altering the force of the blows while working should there be any irregularity in the hardness of the stone at different parts of its surface.

M, is a vertical shaft working in bearings in the bedpiece and arm *b* it carries at its upper end a pulley, O, and at its lower end a smaller pulley (*p*); the pulley, O, receives motion by a band (*z*) from a small
110 pulley Q, on a vertical spindle R, which works in a bearing in the arm (*b*); the said

spindle receiving rotary motion through a crank S, on its lower end which is driven by a vertical pin (*q*) secured in the face of the cam G.

5 T, is a pulley hung loosely on a fixed stud *r*, secured in the bed piece.

U, is an endless chain running around the pulleys (*p*) and T, and carrying pins, studs, or knobs or any catches (*t*) (*t*) at any suitable distances apart.

10 V, (whose form is best seen in Fig. 5) is a small metal block which is fitted to the slot (*a*) in the plate C, so as to be capable of sliding along it; it has a small tongue (*u*) standing up from it which fits in a groove in the back of the block I, in such a manner as to allow the block I, to vibrate easily, but as to carry it along the bar F, when it is itself moved along the slot in the plate C.

20 W, is a catch bar which works on a pivot (*w*) on the top of the block V. It has two hooks or forks (*v*) (*v*) which may be brought in contact with either of the pins or knobs (*t*) (*t*) which when the chain U, is in motion will give motion to the block V, along the slot (*a*) and also to the block I, along the shaft F.

30 X, is intended to represent the top of a mill spindle, and Y, a false spindle which is of the same form as the top of the mill spindle; Y, has an eye (*x*) attached below it by a bent rod (*y*), the said eye fits to the top of the mill spindle and raises the false spindle so as to make it form an extension or continuation of the mill spindle; the use of this false spindle will be explained in describing the operation of the machinery.

40 We will now describe the operation of the machinery in picking and furrowing a pair of millstones supposing the bed stone to be first operated upon: the runner is first removed to expose the face and the bed piece A, laid upon the stone with the circular head B, over the eye of the stone; the top of the mill spindle passes through the head which has a circular opening through it, and is inserted in the square hole in the cam G. The bed piece is then brought to the required position on the stone for commencing operation and the blocks I, and V, are moved along the bar F, and the slot (*a*) to one end, we will suppose toward the end farthest from the center of the stone, and in order to effect this the catch bar is moved to bring its hook or fork (*v*) against one of the studs, knobs or catches (*t*) on the endless chain.

50 The mill spindle is then set in motion giving motion to the cam G. It is necessary here to observe that two cams should be provided for every machine, with their projections (*s*) (*s*) inclining opposite ways, as millstones do not always rotate in the same direction, then either cam can be used as the

case may require. In the drawing the cam revolves in the direction of the arrow shown upon it, and the stud (*g*) gives motion to the crank S, and pulley Q, the band (*z*) giving motion to the pulley O, and the pulley (*p*) giving motion to the endless chain U, the direction of the motion of all the several parts being indicated by arrows. The cam G, by its revolution acting on the arm *c*, raises it every time it ascends a projection S, and allows it to descend when it passes the end of the projection; every time the arm *c*, is raised the hammer and pick are raised by the motions given to the shaft to the position indicated in red lines in Fig. 2, and every time the arm falls the hammer falls also, and its weight assisted by the spring (*g*) causes the pick to strike the stone with sufficient force to make the required cut. By the motion of the endless chain the blocks V, and I, are moved along, carrying along the hammer and pick and causing them to cut in a direct line, until the blocks arrive at the end of their paths, when if it is desired to cut back again, the catch bar is moved to the opposite side of the chain and the hook or fork (*v*) brought into contact with one of the studs, knobs or catches (*t*) on the opposite side of the chain, when the hammer and pick commence cutting back in the same line; but if it is required to cut in another line or furrow, the bed piece is moved by hand just sufficient to bring the pick to the required point, when it returns in a new line; in this manner the operation proceeds, the motion of the hammer and pick being reversed at the end of each line cut, and the bed piece A, being moved on the stone every time it is required to cut in a new line. If in the cutting operation the pick comes in contact with a soft part of the stone, the spring (*n*) is drawn back into a more backward notch of the bar O, when the blow is lightened, but if it comes in contact with a hard part the spring is drawn forward and the force of the blow increased.

When the runner is to be cut, it is laid upside down upon the bed-stone and the bed piece A, is laid upon it in the same manner as upon the bedstone as before described, but in this case the mill spindle is not long enough to reach the cam, and the false spindle comes into use as shown in Fig. 5, and is placed on the top of the mill spindle and inserted in the cam, when the operation proceeds in the same manner as upon the bedstone.

The reverse motion of the hammer and pick may be given by various means as for instance the block V, may be permanently attached to the chain and the catch bar may be dispensed with, the chain being reversed by change gearing on the spindle R, and shaft M.

If the machinery is employed for dressing other stones, the bed piece A, is laid on the stone to be operated upon, and the cam must receive its motion by a shaft provided
5 and suitably driven for the purpose.

What we claim as our invention and desire to secure by Letters Patent is—

Hanging the arm J, carrying the pick upon a shaft F, which receives a vibratory
10 motion through a cam G, driven by a mill

spindle or other spindle provided for the purpose, and giving the said arm a motion lengthwise along the said shaft substantially as and for the purpose herein described.

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REUBEN M. DRAPER.

Witnesses:

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ASENATH HARTWELL.