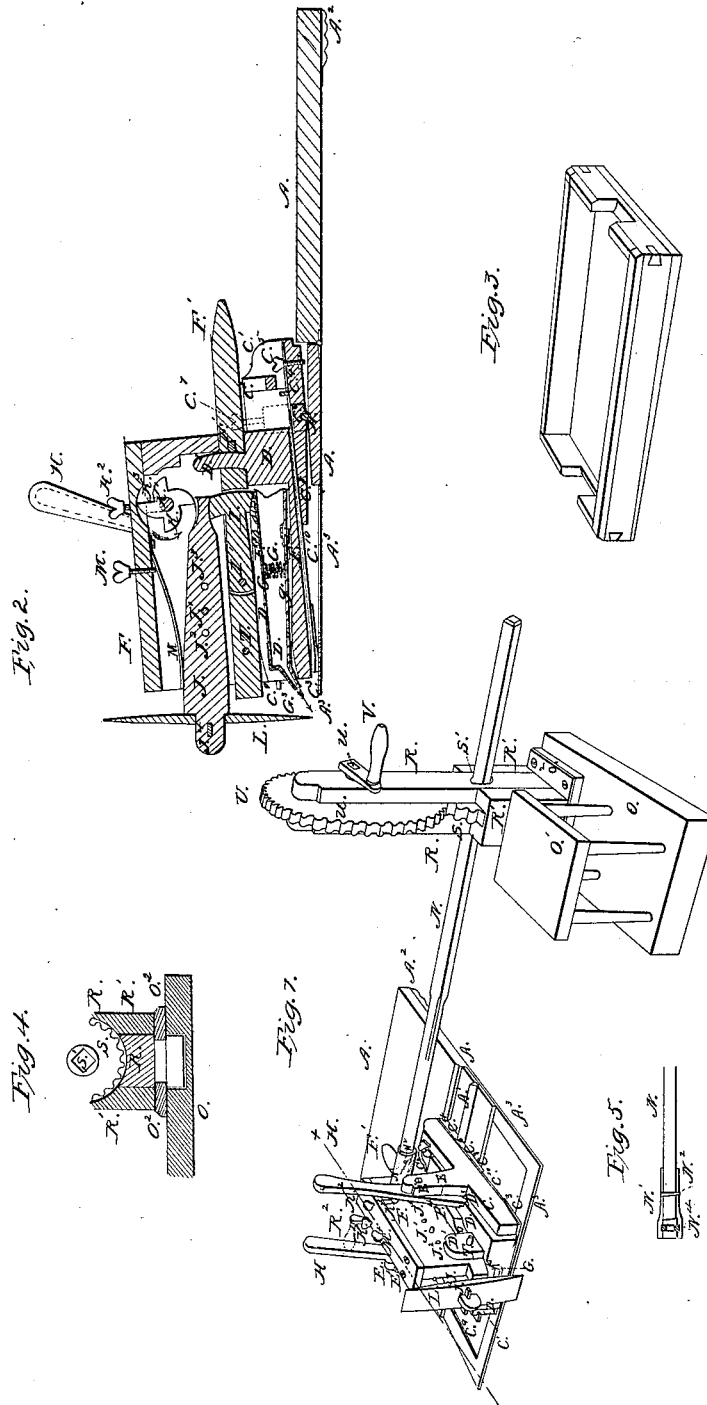


J. Kinman,
Dressing Millstones.
No. 5,577. *Patented May 16, 1848.*



UNITED STATES PATENT OFFICE.

JOHN KINMAN, OF MIFFLINSBURGH, PENNSYLVANIA.

MACHINERY FOR DRESSING STONES.

Specification of Letters Patent No. 5,577, dated May 16, 1848.

To all whom it may concern:

Be it known that I, JOHN KINMAN, of Mifflinsburgh, Union county, and State of Pennsylvania, have invented a new and useful Machine for Facing and Dressing Mill-stones, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is a perspective view of the machine. Fig. 2 is a longitudinal vertical section of the machine on the line *xx* of Fig. 1. Fig. 3 is a perspective view of the carriage which carries the pick and its appendages during the operation of dressing the face of the stone. Fig. 4 is a sectional view of the swivel joint of the propelling power. Fig. 5 is a section of the flexible tube showing the nut and its connection with the shaft.

The nature of my invention and improvement consists in a certain new and useful combination, arrangement, and operation of mechanical devices for dressing and facing mill-stones by manual, or other power, by which the inclined sides of the angular furrows are cut of the required inclination, form, and depth, by a pick secured to the end of a vibratory lever operated in the manner of a trip-hammer, whose fulcrum is in a block which is moved at right angles to the furrow while the pick is in operation and is placed in a carriage which is made to move longitudinally and parallel with the line of the furrows while they are being cut.

A Fig. 1 is the base, or platform, upon which the operative part of the machine is placed. It is made of wood, and is of rectangular form; about one third of it on the front side being tapered off so that its surface will correspond to a line radiating from the front edge of the guide plate. On the center of this sloping surface is placed, longitudinally, a rib, or way, *A'* of an angular form which is used as a guide for the carriage *C* which slides upon it. To the under side of the back part of the base a narrow cushion *A*² made of worsted cord, covered with leather, is secured, in a position parallel to and near the edge. This cushion is for the purpose of being forced into the cavities and accommodating itself to the irregularities of the surface of the stone by the pressure of the platform and the weights placed upon it. The insistent pressure acting in this manner holds the platform with the guide-plate rigidly in any position in which it may be fixed. To the front edge

of the platform is secured a metallic guide plate *A*³ which is of rectangular form the side next the furrow being straight on its upper and under sides which are parallel to each other, and on its front edge: It being also the way on which the front end of the carriage *C* slides.

C the carriage which slides parallel to the furrows; it is composed of two side pieces *C* and *C'* connected together at their rear end by a transverse piece *C*² framed into them. To the under edges of the sides and end a metallic bottom *C*¹⁰ is secured, which is strengthened across its front end by a metallic plate *C*³ which also forms the front slide of the carriage. Across the back end of the bottom a tapered board *C*⁴ is secured to which is attached on its upper side the adjustable stop *C*⁵ by means of a clamp screw. This stop is for the purpose of limiting the backward motion of the sliding block *D*.—In front of the last named transverse board and parallel thereto is placed another piece *C*⁶ having a groove made longitudinally along its under side of an angular shape corresponding to the way *A'* on which it slides. Near the ends of this grooved piece projecting from its upper side are two tenons which correspond to mortises in the under side of the frame into which they are inserted, the depth to which they enter the mortise being governed by the set-screw *C*⁷, which by being turned up or down, lower or raise, the rear end of the carriage, the angle of its inclination being thus adjustable so as to adapt it to the dressing of furrows whose sides vary in the degree of their declivity. In front of the grooved crosspiece and parallel to it is another tapering board *C*⁸ secured to the under edge of the sides of the frame by screws. It is for the purpose of giving additional strength and rigidity to the bottom. On the upper edge of the front end of the side *C'* is secured a hooked stop *C*⁹ having a tenon projecting from its under side, into a slit in the side piece corresponding to it. It is secured to the side by means of a clamp-screw which renders it easy of adjustment. This stop is for the purpose of limiting the forward motion of the sliding block. The bottom of the carriage *C*¹⁰ has a slight degree of curvature, which, in operating the machine causes the bottom of the furrow to be dressed of a similar figure.

D a block made of cast iron or other metal

to be placed in the carriage C, between whose sides it fits but is free to move in it longitudinally as far as the stops C⁵ and C⁹ will admit of. It has a cavity in its upper side sufficiently large to contain the bellows G which are attached to the under side of the box F. Near its front end, and on either side of the cavity for the bellows are erected the pillars D' having holes made through them corresponding with a hole made transversely through the box F into which the pin or bolt T on which F turns is inserted. Near its rear end is erected a segment post D². D³ D³ are cogs and spaces corresponding with the cogs and spaces on the end of the levers H, H.

E, E, are posts with tenons inserted into corresponding mortises made in the upper edge of the side pieces of the carriage. They are for the purpose of supporting the pivot or fulcrum E' upon which the lever H turns.

H, H, levers which turn upon fulcra E' E' having their lower ends forked or cogged, which cogs are inserted into the spaces between the cogs D³ in the sliding block D. The cogs of the lever and the cogs in the block, operating upon each other like a rack and pinion. These levers are for the purpose of moving the block D back and forth in the carriage.

F the box which contains the cam or tap-wheel K, the pick-lever J, the vibratory lever I, the spring M, the set screws M' and K², the wedge-shaped mortise F² and to the bottom of which box is attached the bellows G by means of the stirrup F³. This box is of a rectangular form made of wood, its bottom projecting backward and being dressed off to form the handle F' which is for the purpose of raising or depressing the pick by turning the box upon its fulcrum T. Through the back part of the bottom piece a vertical mortise, or slit, is made through which the segment post D² passes. Intersecting this vertical slit at its rear end is a horizontal tapering mortise F², this last mortise is for the purpose of admitting a wedge or key, which when the rear end of the box is raised up to any given elevation is driven in tightly by which the box is held firmly at the required degree of elevation. To the edges of the bottom piece are attached the cheeks F⁶ by means of screws. The cheeks are for the purpose of increasing the width of the bottom in order that a wider stirrup may be secured to it. The increased width of the stirrup admits of broader bellows. In the bottom of the box and over the bellows is a slit or mortise for the lever I to vibrate in.

F³ the stirrup secured to the cheeks of the box by screws. To its bottom the underside of the bellows is firmly attached.

G a single valve bellows constructed in the

usual manner with a spring G' secured to the bottom and pressing against the top to keep it distended at all times when it is not acted upon by the lever I. Its nozzle G³ at its issue is a long narrow slit the cavity enlarging inward. The bellows is for the purpose of blowing the dust and dirt off the surface of the stove and its nozzle is placed in such a position as to direct the blast to a point directly under the edge of the pick as indicated by the arrow.

I is a vibratory lever of a T shape which vibrates upon its axis I' in the slit in the bottom of the box F. Motion is communicated through this lever to the bellows from the pick-lever J, its lower end resting upon the bellows and its upper end reaching to the under side of the back end of the pick-lever.

J the pick-lever, it rests upon the fulcrum J' upon which it also turns by the action of the cam K upon it. When the tappets or corners of the cam strike the back end of the lever which they do in succession during their revolution it is depressed and the opposite end on which the pick is secured is raised; if it is desired to increase the stroke of the pick the fulcrum is removed into the hole J³ by this means the arc through which the front or pick end vibrates or sweeps is increased while the arc of the back end remains the same. To diminish the stroke or sweep of the pick the pin or fulcrum is removed to J².

M is a spring secured at one end to the top of the box F and bearing at its other end upon the outer end of the lever J for the purpose of increasing the momentum of the blow of the pick. M' is a set screw for the purpose of increasing the pressure of the spring upon the pick-lever, as in other machines for a similar purpose.

K is a cam, or "tap-wheel," for actuating the pick and bellows simultaneously. It is revolved in the direction indicated by the arrow. The axis K' projects beyond the sides of the box on both sides and on its projecting ends a right and a left screw are cut. The journals of the axis rest in boxes formed in the sides of the box F and are secured in their places by caps or blocks K³ held down by the set screws K².

L is the pick; it is made of the best cast steel in the manner and of the form in which hand picks are ordinarily made. When one end becomes dull, or worn, it is reversed on the lever, which brings the other end into action, the eye being in the middle.

N the connecting or propelling shaft. On one end of this shaft is secured a flexible tube N which embraces it tightly. There are two of these flexible tubes each having a nut N⁴ Fig. 5, secured in one of its ends, the nut of one having a right and the nut of the other a left hand screw cut in it. These

nuts correspond with, and fit upon, the screws cut upon the projecting ends of the cam shaft K' and with the tubes form a flexible universal joint which connects the cam with the propelling shaft. The other end of the rod is square and fits loosely in the eye S' which is made through the axle of the pinion S of the propelling power. This mode of connecting the shaft with the propelling power by sliding it loosely in the eye of the pinion, admits of the distance between the power and the pick being varied, by sliding the carriage C along the ways A' A^s of the platform A.

O the base or platform of the propelling power. On one end is erected the seat O' for the operator who turns the crank, to sit upon. On the other end is erected the standard or frame R which turns upon a swivel joint at its lower end and is made of wood. It supports the pinion S and wheel U and the hand crank V which is attached to the axis U' of the wheel U.

R the swiveled standard or frame is composed of two vertical posts R, R, connected together at their lower ends by two transverse pieces R', R'. The standard is made to turn on a swivel in order that the plane of motion of the wheel S may always be perpendicular to the connecting shaft N which passes through its hollow axis, that being important because it would not operate well in any other position. See Fig. 4.

R² is a hand crank for operating the machine by manual power.

Fig. 3 is a perspective view of the oblong rectangular platform or carriage, made of wood, and into which the sliding block D with the pick and its appendages are placed during the operation of facing the stone.

The following is the mode of operating the before described machine. Preparatory to dressing the furrows of a millstone its face must be dressed, so that all the protuberances are leveled and it forms a truly plane surface. In facing the stone I first chalk all the protuberances upon its surface in the usual manner by means of the red-staff. Next I place the carriage Fig. 3 with the pick and its appendages, in it, in the proper position on one side of the center of the stone, the propelling power being on the other. The operator of the propelling power is seated on the bench O' while the attendant of the pick is seated upon a low stool placed upon the stone. The propeller lays hold of the handle of the crank V. The machine is then operated and moved about upon the stone until sufficiently dressed. Having faced the stone in the usual manner the next operation is to lay off the furrows in lines,

which being done the platform A is placed upon the stone the front edge A^s of the guide plate being placed accurately on the line of the furrow on the side of the feather edge thereof, weight sufficient to hold the platform firmly in its position being placed upon its rear end. The bottom of the carriage C is now adjusted to the angle at which it is desired to dress the furrow by means of the set screws C⁴. The stop gage C⁵ is next adjusted so that it will allow the sliding block D to move backward just far enough to bring the edge of the pick to the feather edge of the furrow, then the stop gage C⁶ is adjusted so as to admit of the block being moved forward to bring the edge of the pick precisely over the back or deep edge of the furrows and there arrest it. Thus the adjustment of the gages governs the width of the furrows. The pick with its sliding block and appendages being placed in the carriage C which is placed upon the ways on the platform A in its proper position, the propelling gear being connected with it and properly adjusted upon the opposite side of the center of the stone. The propelling power is now put into motion as before described and the attendant takes hold of the handle F' of the box and applying force moves the carriage with its appendages to the right and to the left along the furrow from one end to the other, and, simultaneously taking hold of the lever H, sliding the block D and box E with the pick from the feather edge of the furrow to its opposite or deep side and back again. By these means the furrow is cut and dressed throughout its entire length and breadth by successive operations. During the operation of the pick the bellows performs its office of blowing away the grit as fast as it is created by the action of the pick.

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

Combining a bellows with a vibrating pick and operating them simultaneously by the same revolving tappet, or cam wheel, in the manner and for the purpose above set forth, whether the several parts of the machine be arranged and operated precisely in the manner herein described, or in any other mode which is substantially the same and by which analogous results are produced.

In testimony whereof I have hereunto subscribed my name before two witnesses this 7 day of July A. D. 1847.

JOHN KINMAN.

Witnesses:

WM. P. ELLIOT,
A. E. H. JOHNSON.