2 Sheets. Sheet 1.

Hedrick Tash & Kreidler,

Dressing Stone.

No. 111,206. Patented Jan. 24. 1871.

Fig. 1.

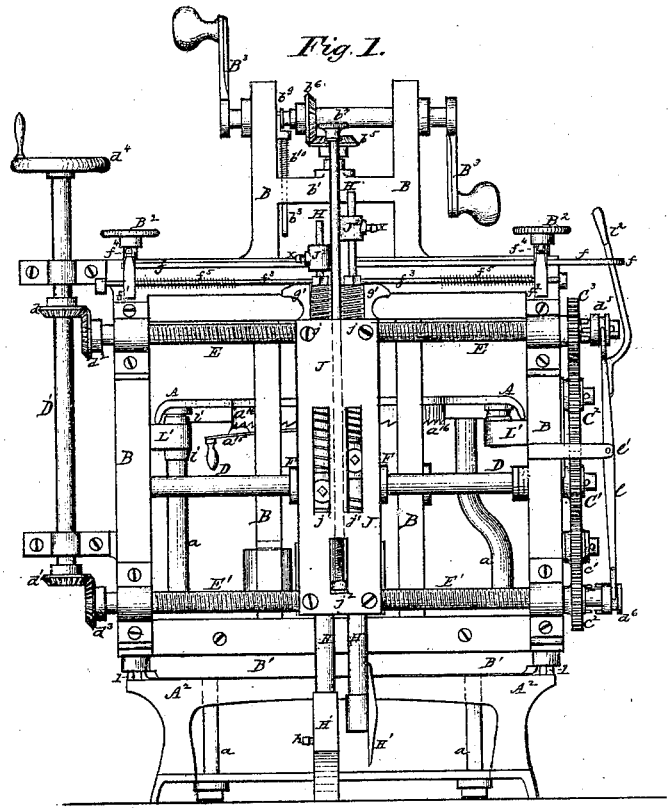
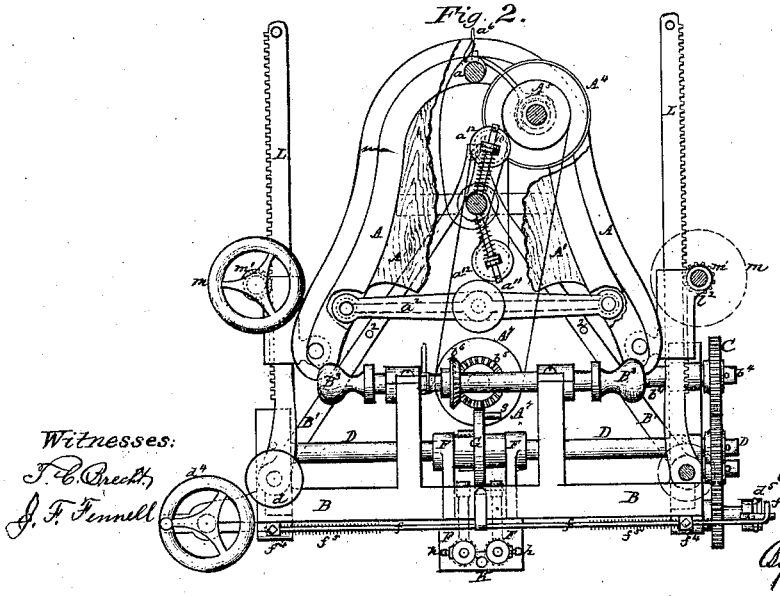


Fig. 2.



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2 Sheets, Sheet 2.

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Fig. 3.

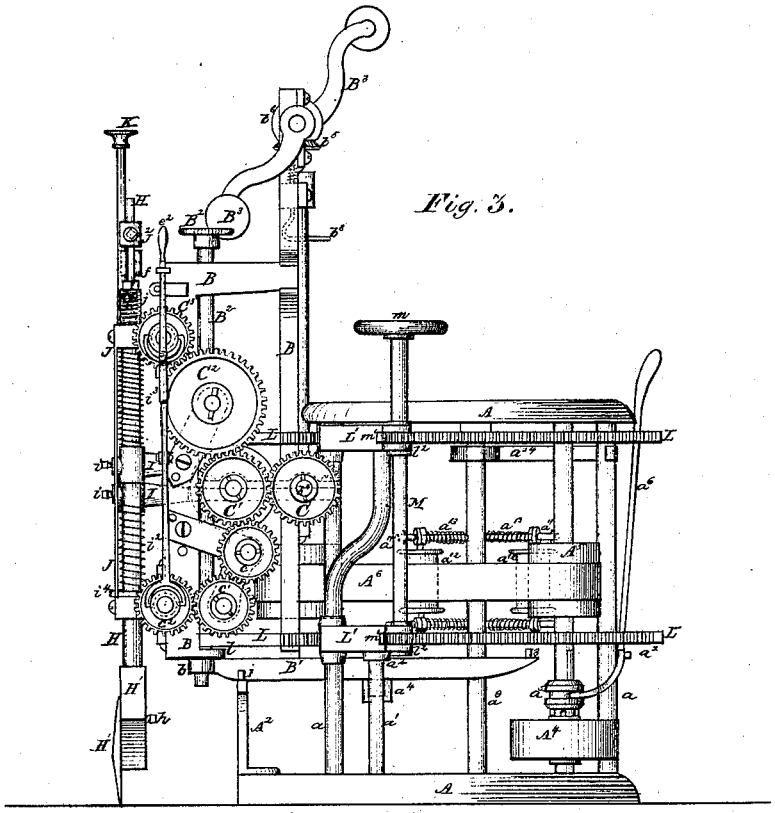

Fig. 4.

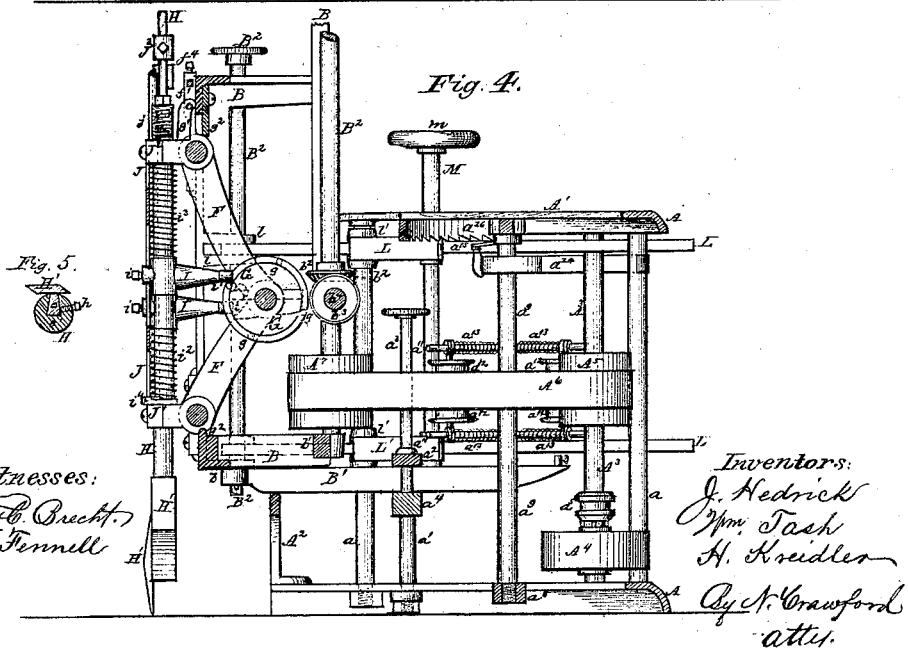

Fig. 5.

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UNITED STATES PATENT OFFICE.

JACOB HEDRICK, WILLIAM TASH, AND HENRY KREIDLER, OF YORK, PA.

IMPROVEMENT IN MACHINES FOR CUTTING AND DRESSING STONE.

Specification forming part of Letters Patent No. **111,206**, dated January 24, 1871.

To all whom it may concern:

Be it known that we, JACOB HEDRICK, WILLIAM TASH, and HENRY KREIDLER, of York, in the county of York, in the State of Pennsylvania, have jointly invented certain Improvements in Machines for Cutting and Dressing Stones, and especially for dressing the faces of millstones, of which the following is a specification.

The object of our invention is to produce a machine for cutting stone in which the cutting-tools can have a greater variety of changes in position with relation to the supporting-frame, the driving-power, and the stone being cut, and without any change in the position of the supporting-frame itself than has ever before been used within our knowledge; and it consists in the construction, arrangement, and combination of the parts that produce the changes and movements necessary to carry out the objects of the invention and produce the result required.

In the drawings, Figure 1 is a front view of the machine. Fig. 2 is a top plan view. Fig. 3 is a side view, and Fig. 4 is a longitudinal sectional view.

A represents the main supporting-frame, having posts *a a a*, and A′ is a platform or seat inserted in the top of frame A. The supporting-frame A has at its forward or front side a bearing-beam, A^2, the top of which is raised a sufficient height above the bottom of the frame A to support and guide some of the operating parts of the machine, and at the extreme ends of beam A^2 are lugs or stops 1 1.

Upon the supporting-base of frame A are two posts, a' a'. These posts a' a' have a plate, a^2, at their top ends, and made fast thereto, and through the center of its length is a hole to receive a temper-screw, a^3, and which freely turns in the hole in said plate a^2. The temper-screw a^3, with a screw-thread on its lower end, after passing through plate a^2, enters into a screw-hole in the center of a sliding beam, a^4, which freely slides between posts a' a', and is adjusted up or down by means of the temper-screw a^3, which has a collar fast to the rod parts of the screw above and resting upon plate a^2, so that by turning the temper-screw the beam a^4 is raised or lowered, as desired.

Standing upright upon the base of the supporting-frame A is shaft A^3, which has placed upon it at proper heights pulleys A^4 and A^5 and sliding sleeve-clutch a^5. Pulley A^4 is the driving-pulley freely turning upon shaft A^3, and having clutch or driving pins on the upper edge of the eye of the pulley A^4. Sliding sleeve-clutch a^5 has clutch or driving pins on its lower end and freely slides up or down on shaft A^3, but does not revolve thereon, because it is prevented by having a groove cut in the eye that fits upon a feather fast in the shaft A^3; but when the sliding sleeve is let down the clutch or driving pins on its lower side engage with the clutch or driving pins on the upper edge of the revolving pulley A^4, which gives motion to and revolves shaft A^3 by means of a belt or other convenient way of giving such motion from the driving-power. Sliding clutch a^5 is thrown into or out of contact with pulley A^4 by means of the forked lever a^6, which has its fulcrum at a^7 on the rear post, *a*, of frame A. Pulley A^5 is also firmly attached to said shaft A^3, and communicates motion to the operating parts of the machine through belt A^6.

Standing upon and revolving in cross-girt a^8 is shaft a^9, having arms a^{10} on opposite or nearly opposite sides of said shaft a^9. On each side of shaft a^9, and sliding upon arms k^{10}, are sliding rods a^{11}, which carry pulleys a^{12}. These pulleys revolve freely upon the sliding rods a^{11}, and are surrounded by belt A^6, as seen in Figs. 2, 3, and 4, and are used to keep the belt A^6 in proper tension upon the driving-pulleys A^5 and A^7 by the spiral spring a^{13} around arms a^{10} forcing the sliding rods from the shaft a^9 and the pulleys a^{12} hard against the belt A^6, and always keeping it in the right strain to prevent slipping. Shaft a^9 has attached near its upper end a coil-spring, a^{14}, which causes the shaft a^9 and pulleys a^5, to be forced to bear against the belt A^6. The shaft a^9 is held at any time in rigid position by means of the spring-catch a^{15} catching into teeth a^{16} on the under side of the platform or top part of frame A, as seen in Figs. 1 and 4.

B B represent the frame which contains and supports the moving operating parts and the acting cutting-chisels of the machine.

B′ B′ are pivoted guiding and sustaining arms, pivoted at *b* to the under side of frame B by means of the hand screw-rods B^2. These inclined guides and sustaining-arms B′ rest upon beam A^2 near their forward ends, and pass between plate a^2 and adjustable beam a^4

on frame A, and are guided in their reciprocations and oscillations and prevented from getting out of place by the guide-pins 1 1 at the extreme ends of beam A^2, lugs on the under side of plate a^2, and pins 2 and 3 on the upper side of said guide-arms, as when frame B, with the guide-arms B′ B′, is forced back, the outside of arms B strike against pins 1 1, pins 2 2 strike against plate a^2 on its front side and prevent its further progress in that direction, and when frame B is forced forward pins 3 3 will strike against the plate a^2 on its rear side and stop its further advance in a forward direction, while the lugs on the under side of plate a^2 prevent the arms from sliding laterally too far toward each other, and the posts a' will keep them from spreading outward beyond control.

Equidistant from the center line from front to rear of the machine, and between the front and the platform or seat A′, are erected two perpendicular posts, which form a part of the movable frame B. Between these two posts, and supported by horizontal girts b' b', is an upright shaft, B^2, working in proper journal-boxes in or attached to said girts b' b'. Near the lower end of shaft B^2, and fast thereon, is pulley A^7, by which the shaft B^2 is revolved. Higher up on shaft B^2, and fast thereon, is gear-wheel b^2, which gears into gear-wheel b^3 on horizontal shaft b^4, which is journaled in bearings on frame B, and has toothed gear-wheel C fast on its outer end and outside of the side of frame B. At the top end of shaft B^2 is gear-wheel b^5, gearing into gear-wheel b^6 on horizontal shaft b^7, which has journal-bearings in the upright posts of frame B at their top ends, and extends far enough on either side of the said posts to receive hand cranks or winches B^3. The object of this arrangement being to drive the picks or chisels by hand-power, the operator sitting upon platform or seat A′ and forcing clutch-lever over so as to raise the sliding clutch a^5 out of contact with the driving-pulley A^4, and turning the hand cranks or winches B^3, motion will be communicated to the chisels, and in small machines for dressing and picking millstones this will generally be the means of operating the picks or chisels.

Horizontal shafts b^7 are constructed and arranged so as to slide longitudinally, and when reciprocated in one direction gear-wheel b^6 is thrown out of gear with gear-wheel b^5, and is held in this position or in gear with wheel b^5 by means of the forked lever b^8 engaging in grooves b^9 in shaft b^7, and is retained in such position by spiral spring b^{10} around lever b^8.

As above described, revolving motion is given to toothed wheel C on shaft b^4 either through driving-pulleys A^4 A^5, belt A^6, pulley A^7 on shaft B^2, or, when operated by hand, through the gear-wheel on horizontal shaft b^7, upright shaft B^2, to horizontal shaft b^4 upon which toothed wheel C is made fast. Toothed wheel C gears into and drives wheel C′ on horizontal shaft D, which is supported upon and has and revolves in journal-boxes on arms that form a part of frame B. Wheel C′ becomes a leader and gears into and revolves intermediate wheel, C^2, on a short axle that is secured to frame B. This intermediate wheel gears into and revolves wheel C^3, which is loosely fitted upon the end of the horizontal upper feeding screw-rod, E, which goes transversely across the entire machine. Leader-wheel C^2 also gears into and revolves intermediate gear-wheel, c, which in turn gears into and drives wheel c', and wheel c' gears into and revolves wheel c^2, which is loosely fitted upon one end of the horizontal lower feeding screw-rod, E′, which also goes transversely across the entire front of the machine and directly underneath feeding screw-rod E. Both feed-rods revolve in journal-boxes secured to the front of frame B. This system of gear-wheels is so arranged and connected together that they cause the upper and lower feeding-rods, E and E′, to revolve in the same direction, and so that the pitch of the screw-thread will cause whatever is connected to and driven by said feeding screw-rods to be fed along at the same speed by either feed-rod, and in the same direction.

On the opposite side of the machine from the driving-gear above described is an upright shaft, D′, which revolves in journal-boxes secured to frame B. This upright shaft D′ has gear-wheels d and d' firmly secured thereto. Wheel d gears into gear-wheel d^2, that is made fast to the upper horizontal feeding screw-rod E, and wheel d' gears into gear-wheel d^3, that is fast on the lower horizontal feeding screw-rod E′, by which arrangement of gear-wheels the two screw feeding rods are connected together and their movements coincident. Upon the upper end of upright shaft D′ is attached a hand-wheel, D^4, and by means of which shaft D′ and screw feeding-rods E and E′ may be revolved. On the ends of the feeding screw-rods E and E′, that have wheels C^3 and c^2 loosely fitted thereon, and outside of said wheels, are sliding sleeve-clutches d^5 and d^6, which slide longitudinally upon the screw-feeding rods, but are prevented from turning on said rods by feathers inserted longitudinally in the rods and projecting beyond the surface of the rods, and fitting in grooves in the sleeve-clutches. On the inner or that side toward the gear-wheels C^3 and c^2 of sliding sleeve-clutches are driving-pins that engage with corresponding driving-pins on the outside of wheels C^3 and c^2.

e is a double-forked lever pivoted centrally at e' to frame B, the forked ends fitting in grooves in the sliding sleeve-clutches d^5 and d^6.

e^2 is an extension or continuation of lever e, extending upward, and is grasped by the horizontal reciprocating rod f. Upon this rod f are two sliding and adjustable gage-stops f' f^2. Arranged in suitable position, and firmly held at its ends in proper place on the front of frame B, is guide-rod f^3. The gage-stops f' and f^2 have a hole entirely through

cut a new pathway across the top or face of the stone, at the same time regulating the force of the blow upon or the depth to be cut by the chisels or picks by adjusting the hand screw-rod K as may be required. Frame B is adjusted as to height at either side by means of the upright screw-rods B^2, by which adjustment the chisels or picks may cut deeper in the stone at one side of the machine than at the other, or they may be raised out of contact with the stone entirely by turning down the screw-rod B^2 far enough to accomplish such result. The chisels or picks are also adjustable on their shaft to project below the shaft more or less, as desired.

We do not confine ourselves to the exact construction of the parts in detail as herein described, as there are many ways of constructing the same without departing from the principle of construction and operation that we have shown and described—as, for instance, we have described only two chisel or pick shafts; but it is evident that any number of shafts and chisels or picks may be used, or belts and pulleys may be substituted for gear-wheels, or other mechanical means used for moving the frame B to different positions than the toothed rack arms and pinions, and yet be the same invention.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The combination of shaft a^9, arms a^{10}, carrying sliding axles a^{11}, pulleys a^{12}, and springs a^{13}, in the manner and for the purpose herein described.

2. The driving and intermediate gear-wheels, C, C′, C^2, C^3, c, c', and c^2, in combination with the clutch-lever e, sliding clutches d^5 and d^6, feeding-screws E and E′, shaft D′, gear-wheels d, d', d^2, and d^3, sliding rod f, with its adjustable gage-stops f^2, sliding frame F, rod f^3, and springs f^5, constructed and arranged to operate substantially in the manner and for the purpose set forth.

3. The driving and intermediate gear-wheels, C, C′, C^2, C^3, c, c', and c^2, above enumerated, shaft D, sliding and revolving wiper-wheel G, having wipers g, in combination with the chisel or pick shafts H, having adjustable lifting-arms I, constructed and arranged to operate substantially in the manner shown.

4. The chisel or pick shafts H, cylinder-adjusting nuts j, adjustable stops J^2, and springs i^3, when constructed and arranged in the manner shown.

5. The hand screw-rod K, base-plate i^4, springs i^2, in combination with the adjustable lifter-arms I, and chisel or pick shafts H, in the manner and for the purpose described.

6. The slotted guide-plate J, in combination with the base-plate i^4 and lifter-arms I, when constructed and arranged to operate in the manner and for the purpose set forth.

7. The adjustable picks or chisels secured to their shafts H by means of the dovetail rib o on the pick and the dovetail slot o' in the shafts H, and held by the holding-screw h, in the manner shown.

8. The hand-wheel shafts M, pinions m', rack-arms L, and guideways L′, in combination with the frame B, when the parts are constructed and arranged to operate in the manner and for the purpose substantially as described.

9. The reciprocating, sliding, and supporting arms B′, when constructed and arranged to operate in the manner described.

10. The temper screw-rod a^3, sliding beam a^4, and plate a^5, in combination with the sliding and supporting arms B′, when constructed and arranged in the manner and for the purpose described.

11. The hand screw-rods B^2, in combination with the supporting-arms B′, arranged to operate in the manner described.

12. The stone-cutting and stone-dressing machine herein described, when the several parts are combined and arranged to operate in the manner and for the purpose substantially as shown.

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