2 Sheets—Sheet 1.

J. C. COOKSON & S. L. HART.

Millstone-Dressing Machine.

No. 214,889. Patented April 29, 1879.

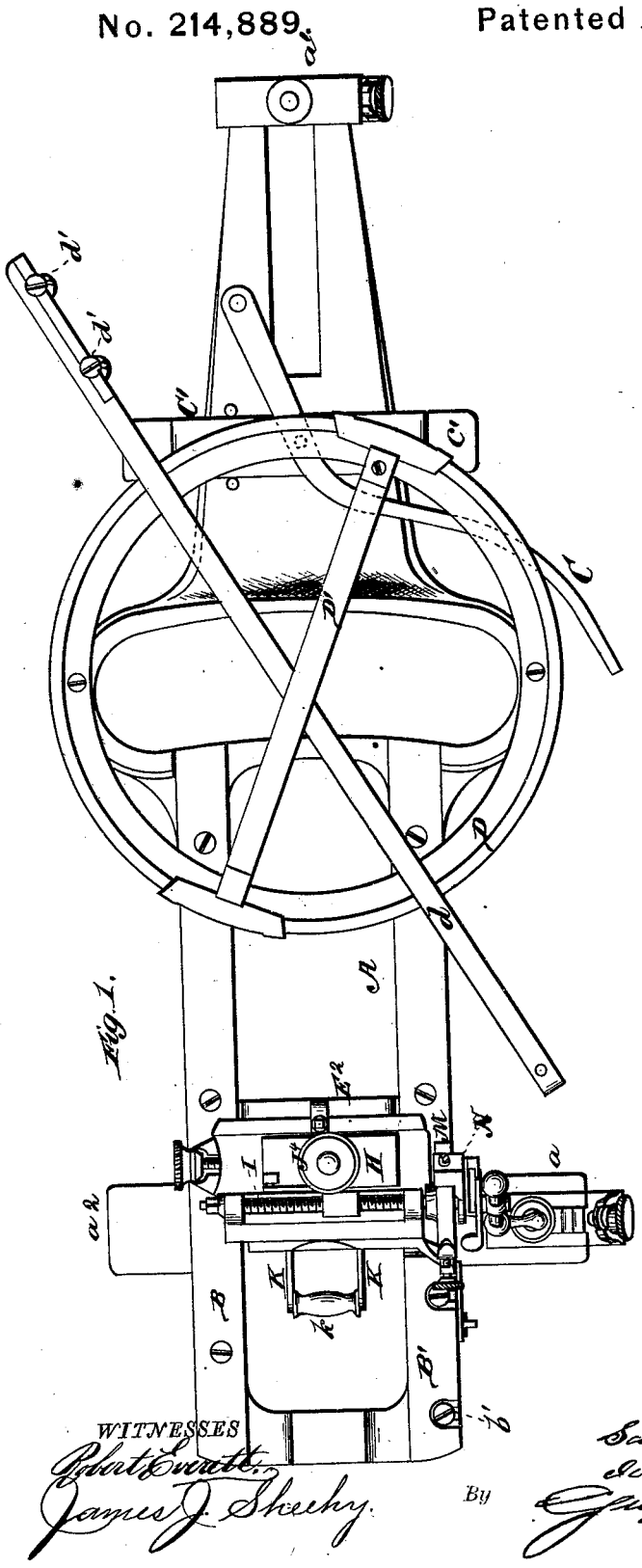

Fig. 1.

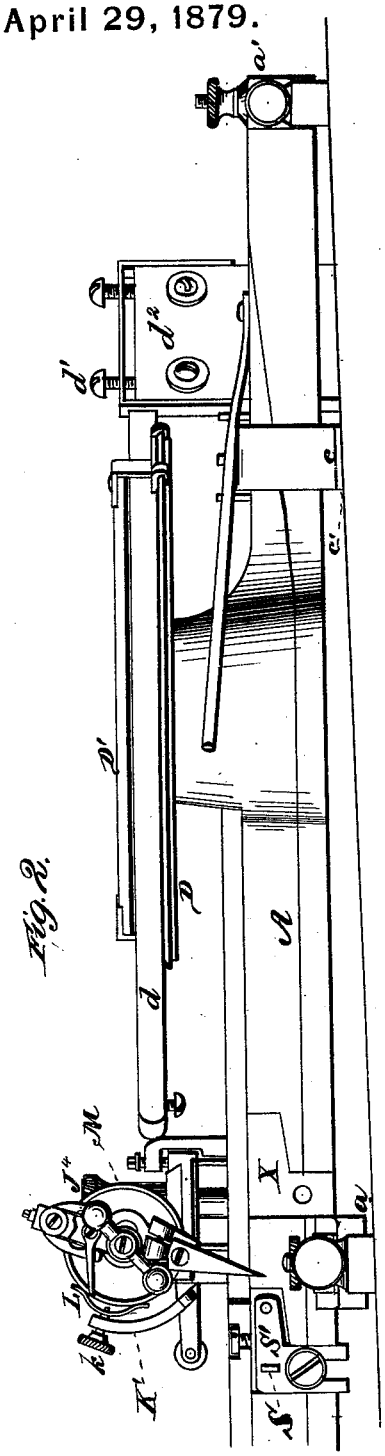

Fig. 2.

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2 Sheets—Sheet 2.

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Fig. 3.

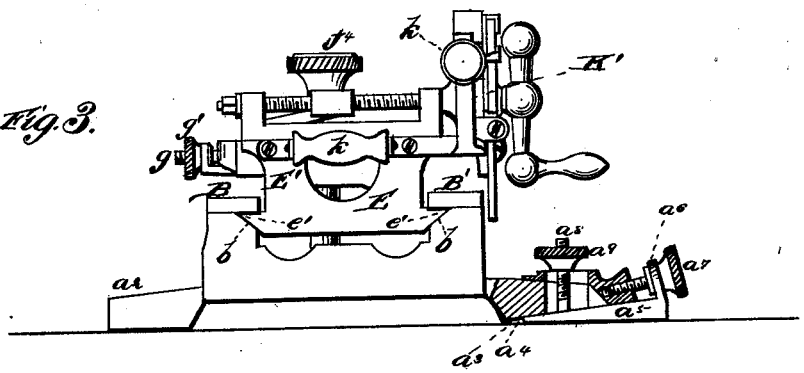

Fig. 4.

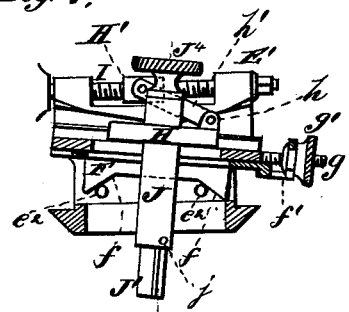

Fig. 5.

Fig. 6.

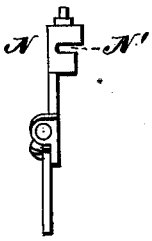

Fig. 7.

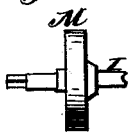

Fig. 8.

Fig. 9.

Fig. 10.

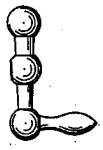

Fig. 11.

Fig. 12.

Fig. 13.

Fig. 14.

Fig. 15.

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UNITED STATES PATENT OFFICE.

JOHN C. COOKSON AND SAMUEL L. HART, OF MENASHA, WISCONSIN, ASSIGNORS TO SAID COOKSON.

IMPROVEMENT IN MILLSTONE-DRESSING MACHINES.

Specification forming part of Letters Patent No. **214,889**, dated April 29, 1879; application filed September 28, 1878.

To all whom it may concern:

Be it known that we, JOHN C. COOKSON and SAMUEL L. HART, of Menasha, in the county of Winnebago and State of Wisconsin, have invented a new and valuable Improvement in Millstone-Dressing Machines; and we 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, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a top plan of our millstone-dressing machine. Fig. 2 is a side elevation of the same. Fig. 3 is an end view, part sectional. Fig. 4 is a longitudinal sectional view of the carriage, and Figs. 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 are detail views of the same.

Our invention relates to a machine for dressing millstones and the like, and the novelty of construction, adaptation, and arrangement will be hereinafter set forth.

Our invention is designed as an improvement upon the devices shown in Patents No. 185,125, of December 5, 1876, No. 191,938, of June 12, 1877, and others.

The great desideratum in this art is to obtain a true face on a stone; and to this end our invention consists, first, in resting the machine-frame on three feet or bearings placed in triangular position on the frame, two or more of which are so constructed as to allow of vertical adjustment at will. One of these adjustable feet is placed on the forward end of the machine, and adapts the machine to vertical longitudinal adjustment, either on a true horizontal plane or at any desired angle above or below the same. On each side of the rear end of the machine is secured a foot, one or both of which may be adjustable to afford ready facility for obtaining a true horizontal laterally, or any angle or incline that may be desired.

The importance of this construction is obvious when it is understood that in dressing around the face of a stone the forward end, which rests upon the undressed portion, is upon a higher surface than the rear end, which rests upon the dressed portion, and great nicety of adjustment is required. The facility and correctness with which our device can be adjusted constitutes its advantage over the machines which rest upon the whole surface of the frame, or those which have no adjustment.

In dressing around the face of a stone it is obvious that the foot which precedes rests upon a higher surface than the one which follows upon the dressed surface, and in such case to adjust for uneven surfaces the foot which follows may be made adjustable and the other be fixed.

Our machine is adapted to extend entirely across the face of the stone to be dressed, the eye of the stone lying about the center of the machine, which, resting upon three points, each of which is near the periphery of the stone, affords a more extended and firmer bearing, and prevents oscillation of the bed-plate.

Our invention consists, second, in the construction of the adjusting-feet. In the lower surface of a horizontal block or bar we form a mortise or slot having an inclined bottom, which slot receives a sliding wedge actuated longitudinally by a screw. This wedge is adapted to rest upon the surface of the stone, and it serves to raise or lower the bed-plate as the wedge is forced inward or outward by the screw.

A screw-rod passing upward through a slot in the foot-block receives a thumb-nut, and said rod being rigid with the wedge the same may be firmly secured against displacement at any desired point of elevation by screwing down the thumb-nut until it binds upon its bearings above the slot.

The diamond or tool working upon the surface of the stone exerts a continuous upward force, and in dovetail or triangular bearings tends to bind the carriage in the wedge-shaped guideways.

To avoid this evil our invention consists, third, in constructing our guideways with a true horizontal upper surface to correspond with a similar bearing-surface on the flange of the carriage, thus avoiding any wedging or binding tendency from the upward pressure of the carriage.

To accomplish this we form the inner edge of the two parallel sides of the bed-frame at a bevel or incline, and secure by bolts or otherwise upon the top of each side a flat plate or strip, which extends over the beveled portion, as shown. This construction of guideway also

enables the operator to adjust the "give" more closely and to take up lost motion, which is a great desideratum in this art.

It is further obvious that the flat bearing-surface in our device allows less of lost motion than in the triangular grooves, and avoids the danger of injury or displacement of the parts consequent upon the continuous wedging force.

The fourth and fifth parts of our invention consist in a tilting adjustable carriage-frame, by means of which the drill or diamond may be inclined either to the right or left, adapting it to dress the beveled furrows. Upon the inner surface of the standards of the main carriage we form two lugs, upon which rest reversely-inclined surfaces upon each downwardly-extending side of the carriage-frame. A perforated ear upon this carriage-frame receives a threaded rod on the transverse carriage-way, and a thumb-nut serves to force the carriage-frame either to the right or left, and the inclines, acting upon the lugs, deflect the transverse carriage-way in either direction, and consequently direct the tool or diamond at any angle desired. To adapt this tilting transverse carriage-way to the mechanism which operates the transverse carriage, and which will be hereinafter described, we employ a loose connection, consisting of a nut, which traverses a horizontal transverse screw-rod, and a link, loosely pivoted thereto, which link is also loosely pivoted to a lug on the transverse carriage. This loose connection allows the ready and important adjustability of the tool-holder, as is obvious. By this construction I obviate the necessity of employing an extra cross-head.

The staffing device constitutes the sixth part of our invention; and it consists in a metal ring secured to the upper portion of the frame near the center, and perfectly true with the plane of the same in any direction. A tramming-bar secures a straight arm to the ring, at the end of which arm is an adjustable paint-block adapted to sweep the face of the stone and indicate the condition of the surface.

The seventh part of our invention consists in an automatic device for impelling the transverse carriage to the right or left. A disk, rigid with a horizontal threaded transverse bar, is acted upon by a clutch, which, by means of a double spring and eccentric, can be made to operate in either direction—that is to say, when the eccentric is turned in one direction the clutch will gripe and turn with the disk in one direction a certain distance with each traverse of the main carriage; but on the return of the clutch it will ride uselessly along the surface of the disk, and, turning the eccentric in the opposite direction, will obtain a directly-opposite result. A spring-trigger, operating upon an adjustable stud on the side of the bed-frame with each traverse of the main carriage, operates the clutch. It will thus be observed that, after the clutch has operated the horizontal threaded bar in one direction until the nut which operates the transverse carriage has traversed the length of said bar, it is only necessary to change the eccentric to make the said nut move in the opposite direction. By throwing the clutch out of action, however, the transverse carriage may be turned back by means of a crank on the end of the shaft.

The eighth part of our invention consists in a device for moving the machine around on the face of the stone. A lever is pivoted to the bed-frame near its forward portion, and to this lever is pivoted a cross-bar, slightly longer than the width of the frame, having downward-projecting ends, upon which are feet adapted to rest on the face of the stone. The length of the downward projections is slightly greater than the distance from the top of the frame under the cross-bar to the surface of the stone. When the shoes rest upon the stone the lever operates to both lift the frame and move it to the right or left, as desired.

In dressing stones of smaller diameter it is desirable that the traverse of the main carriage should not exceed the distance of the surface to be dressed.

To accommodate our device to this condition of things, the ninth part of our invention consists in having two or more sunk bearings on the side of the frame in which to receive the slotted plate which carries the stud against which the spring-trigger operates. A portion of the cap-plate which forms the guide-way for the main carriage is in sections, and the fastenings work in transverse slots, allowing the section to be forced inward, and constitute a stop against which the main carriage will abut at the end of the traverse.

Referring to the drawings, A represents the bed-frame, having open center, as shown, and provided with feet a a^1 a^2, one on each side of the body and one at the forward end; two or more of which may be adjustable.

The lower surface of the adjustable feet is provided with a slot, a^4, having an inclined bottom, a^3, adapted to receive a wedge-shaped shoe, a^5, having an ear, a^6, which receives and is operated by a screw-bolt, a^7, which works in the foot a. Rigid with and extending upward from the shoe a^5 is a threaded rod, a^8, which passes through a slot in the shoe and receives a thumb-nut, a^9.

The inner upper edge of the bed-frame A is beveled at b, and secured to the upper surface of the parallel sides of the frame are plates B B′, extending over the beveled portion, the latter of which is made in sections, the rear sections having transverse slots b'.

To the forward portion of the bed-frame A is pivoted a lever, C, and to said lever is pivoted a cross-bar, C′, having downwardly-extending projections, c, upon which are formed feet or bearings c'.

Near the middle of the frame upon its upper surface is secured a ring, B, true in any direction with the plane of the bed, to which

is loosely held a straight arm, d, by a tramming-bar, D′. Upon the outer end of the arm d is adjustably secured by screws d^1 a paint-block, d^2.

In the guideway formed by the parts B B″ b traverses the main carriage E, having flanges e^1 to correspond with the guideway. E¹ represents the back standard of the main carriage, and E² the front standard, and between these standards is a transverse framing, F, having reverse inclines $f\,f$ formed in its downwardly-projecting sides, which reverse inclines rest upon lugs e^2 in each of the standards E¹ E². A perforated ear, f', upon the end of the frame F receives a threaded rod, g, upon the end of the transverse carriage-way G, and this rod is acted upon by a nut, g', which being turned in either direction tilts the transverse carriage, carriage-way, and framing to the right or left, as desired, in consequence of the inclines $f\,f$ acting upon the lugs e^2.

In the guideway of the carriage-way E operates the transverse carriage or tool-holder H, from a perforated lug, h, at one end of which is pivoted a link, h', which is pivoted at its other end to a nut, H′. This nut traverses a screw-threaded rod, I, journaled in the upper part of the standard E¹.

The tool-holder is constructed of an outer cylinder J, which is provided near its lower end, on the inside, with a guide-pin, j, which sets into a vertical groove on the outside of an internally-threaded tool-holder, J¹. A vertical adjusting rod or shaft provided with a screw-threaded downward extension (not shown), engages with the internally screw-threaded tool-holder, so as to adjust the same upward or downward, according to the direction in which the hand-wheel J⁴ on the top of the rod is turned. The diamond is thus adjusted so as to cut deep or shallow, as desired.

This construction is not fully shown in the drawings of this application, but forms a part of the patents hereinbefore cited.

To a bar, K, secured to the back side of the standard E¹, is attached a handle, k, and an arm, K′, extending upward, carries a thumb-screw, k', which operates upon a spring-brake, L. This brake acts upon the periphery of a disk, M, which is rigid with the horizontal screw-threaded rod I, and revolves with it in any direction.

A lever, N, is provided at its center with a slot, n, which receives the shaft of the rod I, and is provided at its upper portion with a slot, N′, which receives the rim of the disk M, and at its lower portion with a spring-trigger, O. Pivoted to the upper end of this lever N is a lever, P, holding a double spring, R, which, being acted upon by a double-acting eccentric, R′, throws the lever N to the right or left, according to the direction in which the eccentric is turned. This action of the lever N forces the portion of said lever which embraces the rim of the disk M to act as a clutch.

The spring-trigger O, striking the stud S on the plate S′, adjustably secured to the side of the frame A, as the main carriage F is traversed in either direction, serves, in connection with the clutch, to turn the rod I a certain distance at each traverse.

Sunk bearings X on the side of the bed-frame A allow the adjustable plate S to be moved nearer to the center of the machine in dressing small stones, and in such cases the rear sections of the plates B′, having the slots b', are forced inward, and serve as a stop to the main carriage.

From the foregoing description the operation of our machine is obvious.

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

1. A stone-dressing machine provided with three feet or bearing points placed triangularly, one on the forward end of the bed-frame and one on each side near the back end, the former and one or both the latter being adjustable vertically, as and for the purpose set forth.

2. The foot-block a, having horizontal inclined slots a^3 and vertical slot, combined with the wedge-shaped shoe a^5, having screw-rod a^8, the nut a^9, and the actuating-screw a^1, as and for the purpose set forth.

3. The guideways for the operating carriage, formed by the bevel b upon the inner sides of the bed-frame, and the flat plates B B′, secured upon the top thereof, substantially as and for the purpose specified.

4. The standards E¹ E², having lugs e^2, in combination with the carriage-frame F, having reverse inclines $f\,f$, the transverse carriage-way G, having screw-rod g, and the actuating nut g', as specified.

5. The adjustable tilting transverse carriage, as described, in combination with the link h', traversing nut H′, and transverse rod I, as and for the purpose set forth.

6. The combination of the ring D, rigid with the bed, with the tramming-bar D′, the arm d, and adjustable paint-block d^1 d^2, as and for the purpose specified.

7. The combination of the disk M, lever N, clutch N′, double spring R and eccentric R′, with the spring-trigger O and stud S, as specified.

8. The combination of the pivoted lever C, pivoted cross-bar C′, having downward projection c and shoes c', with the frame of a mill-stone-dressing machine, as and for the purpose specified.

9. The bed-frame A, having two or more sunk bearings, X, in combination with the slotted plate S′, having studs S, the sectional cap-plate B′, having transverse slots, and the main carriage E, as and for the purpose specified.

In testimony that we claim the above we have hereunto subscribed our names in the presence of two witnesses.

JOHN C. COOKSON.
SAMUEL L. HART.

Witnesses:
P. V. LAWSON, Jr.,
E. E. KEYES.