2 Sheets—Sheet 1.

P. M. HAAS.

Machine for Dressing Millstones.

No. 211,567. **Patented Jan. 21, 1879.**

Fig. 1.

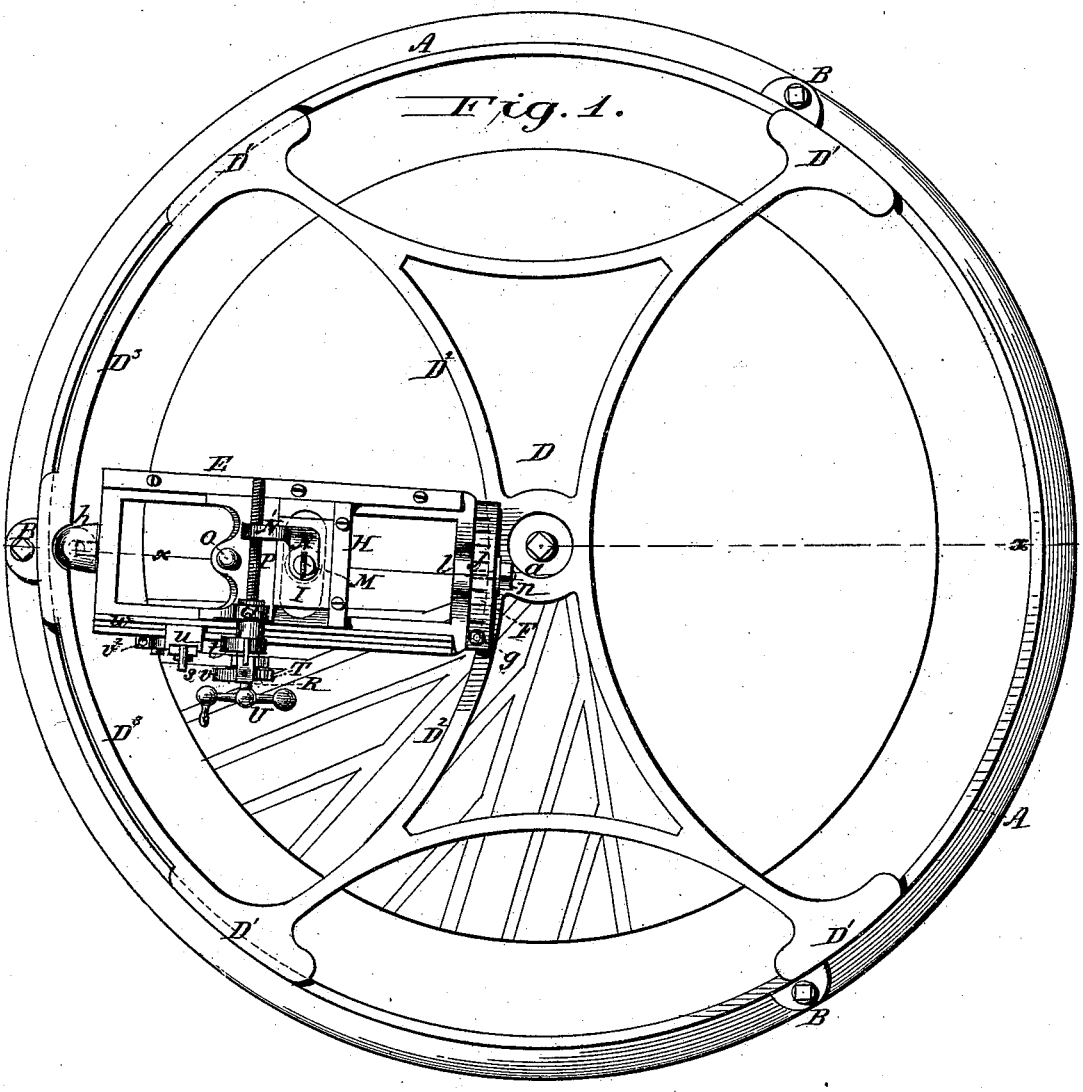
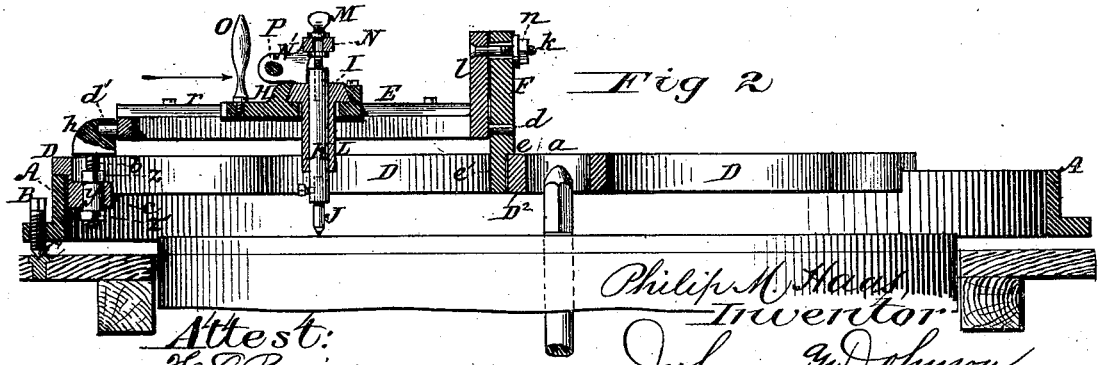


Fig 2



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Atty's

2 Sheets—Sheet 2.

P. M. HAAS.

Machine for Dressing Millstones.

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Fig. 3.

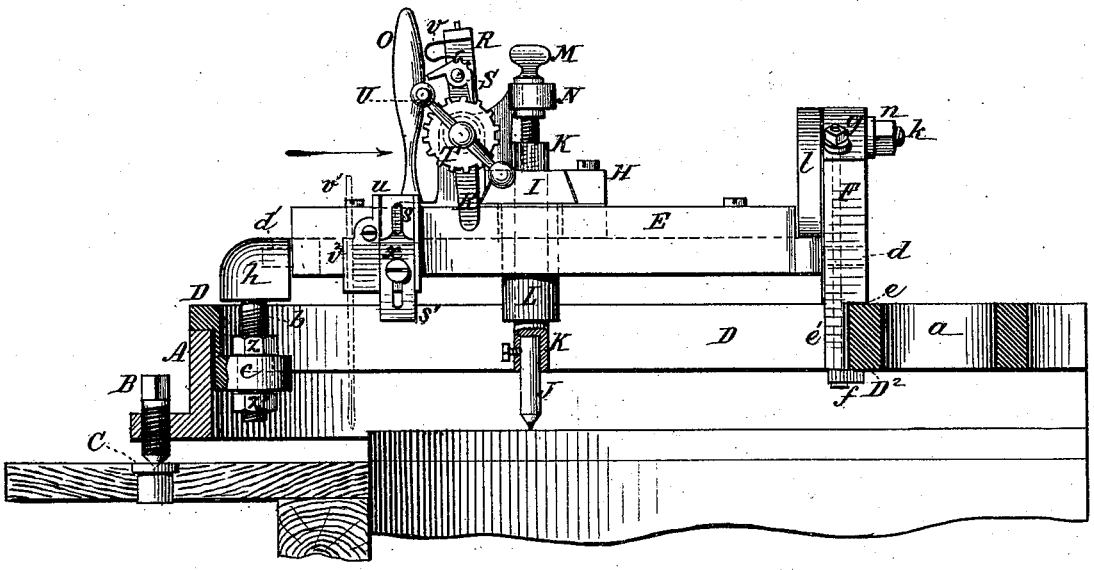


Fig. 4.

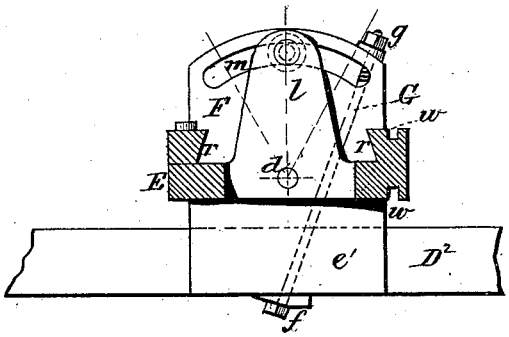
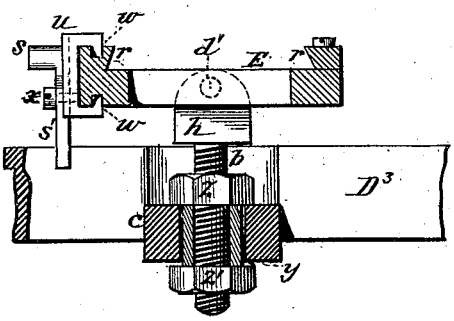


Fig. 5.



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UNITED STATES PATENT OFFICE.

PHILIP M. HAAS, OF WARREN, OHIO, ASSIGNOR OF ONE-HALF HIS RIGHT TO DAVID DANIEL LUCAS, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR DRESSING MILLSTONES.

Specification forming part of Letters Patent No. **211,567**, dated January 21, 1879; application filed November 26, 1878.

To all whom it may concern:

Be it known that I, PHILIP M. HAAS, of Warren, in the county of Trumbull and State of Ohio, have invented certain new and useful Improvements in Machines for Dressing Millstones, of which the following is a specification:

My improved machine is designed for dressing millstones with a diamond or carbon point.

A distinguishing feature of my invention consists in the construction and adaptation of the machine for operation and adjustment independent of any support by the stone or the spindle to effect a true facing and a true dressing.

A circular flanged rim of greater diameter than the stone supports the operating parts of the machine, and is mounted, by set-screws, upon corresponding iron pins fixed in the floor, by which the machine is adjusted true to the face of the stone and arranged concentric therewith.

A revoluble frame is supported upon the adjusting circular guide-rim, and carries a pivoted frame adapted for adjustment thereon horizontally in the arc of a circle from a vertical pivot arranged at or near the circumference of the revoluble frame and outside of the circumference of the stone. The carriage which carries the diamond-holding device is mounted upon this pivoted frame, the adjustment of which will present the diamond so as to conform to the furrows or lands, as required. This adjustment is made by moving and clamping the inner end of said oblong frame upon a conforming guideway of the revoluble frame.

In the operation of dressing the entire face of the stone, the base guide-rim remains fixed, and the revoluble frame is turned a full revolution, first, to determine, by means of a marker or quill, the true adjustment of the machine in relation to the face of the stone, and then turned, as may be required, in connection with the adjustment of the pivoted frame, to conform the diamond to the draft or direction of the furrows or lands. The range of movement of the inner end of the pivoted frame upon its swiveling pivot is equal on both sides of a radial line, and sufficient to adapt it for work in dressing stones running either to the right or to the left. A vertical head-block supports the inner end of this frame, and serves to clamp it when adjusted upon the curved guideway of the revoluble frame. This pivoted frame is hung upon trunnions arranged in the head-block and in the swiveling pivot-head, whereby it is inclined to either side to adapt the diamond for furrowing a right or left millstone.

The diamond-carrying slide is adjusted automatically to suit the required width of the furrow, and by hand to suit the distance between the furrows; and the feed of the diamond is made to suit either a right or left dressed millstone.

The machine is adapted, by its novel construction and capacity for adjustment, to produce any kind of dress which may be desired, and in this particular it is highly advantageous.

Referring to the drawings, Figure 1 represents a top view of my improved machine for dressing millstones; Fig. 2, a vertical section taken lengthwise through the pivoted frame; Fig. 3, a side view of said frame, showing the device for feeding the diamond in relation to the width of the furrow; Fig. 4, a cross-section of the pivoted frame, showing the manner of clamping its head-block to the curved guideway of the revoluble frame, and Fig. 5, an enlarged view of the swiveling pivot.

A circular metallic flanged rim, A, forms the base of the machine and has three or more equally-disposed set-screws, B, passing vertically through enlarged parts of the horizontal flange of said rim, and which fit into corresponding socket-pins C in the floor, by which to adjust the flanged base true with the face of the stone before commencing the operation of forming the furrows. This flanged base is of greater diameter than the stone, and when set upon the pins is concentric with the stone. This construction adapts the machine for operation and adjustment independent of the stone, and in this particular is important in effecting the true adjustment of the machine with the stone and of maintaining such adjustment during the operation of dressing.

A horizontal revoluble metallic frame, D, is fitted and supported by three or more lap-bearings, D′, upon the vertical base-rim, so as

to be centered and turned thereon within and against the inner wall of said rim. I prefer to have this frame open, with curved bracing, as shown; but it may be made in any suitable way that will give a bearing upon and within the rim. It has a central opening, *a*, to receive the mill-spindle. At one side of the center, and upon the top of this frame, I arrange a horizontal oblong frame, E, which carries the diamond holding and feeding devices, and which is pivoted and supported at its outer end by a swiveling screw, *b*, secured in a boss, *c*, on the inner side of the rim of the revoluble frame, while the inner end of this frame E is supported by means of a horizontal trunnion, *d*, fitted in a vertical head-block, F, which, by means of a shouldered seat, *e*, and a foot-extension, *e'*, rests upon the top and against the concave side of a segmental guideway, D^2, which joins the curved bracing, and a segmental rim, D^3, which support the swiveling-screw bearing-boss. This guideway D^2 is concentric with the swiveling screw *b*, is less than a semicircle, and upon it the pivoted frame E is supported and adjusted as may be required, in connection with the revoluble frame, to bring the diamond in position to do its work. In such adjustment the inner end of this frame is turned on either side of a radial line, as required.

By this construction and arrangement of frame, adjustable from a single point outside of the circumference of the stone, in connection with the revoluble frame, the furrows can be formed without being confined to a specific dress.

When the pivoted frame is set for work, it is clamped in place by means of a clamp-screw, G, passing downward through the head-block, with a head, *f*, on its lower end, overlapping the under side of the segmental guideway D^2, and a thumb-nut, *g*, on its upper end, bearing upon the head-block, so that by this thumb-nut and clamp-screw the head-block can be clamped and unclamped, as may be required during the work.

The swiveling screw *b*, while serving the function stated, serves also, by having a head, *h*, as the bearing for a trunnion, *d'*, on the outer end of the pivoted frame, and, coincident with the head-block trunnion *d*, to allow the frame to be turned on these trunnions to incline it either to the right or left, to suit the furrowing of a right or left millstone.

A gage, *j*, on the top of the head-block serves to determine the degree of side inclination of this frame, while a screw, *k*, projecting from a vertical arm, *l*, at the inner end of the pivoted frame, through a segmental slot, *m*, in the upper part of the head-block, serves, by means of a nut, *n*, to clamp the frame in whatever position it may be desired to incline or operate the diamond.

The diamond carrying and feeding devices are arranged upon a carriage, H, fitted within longitudinal side ways or guides *r* of the pivoted frame. A slide, I, fitted in cross ways or guides on this carriage, supports and carries the diamond-holding stem J, which is secured to a tubular carrier, K, fitted within a sleeve, L, projecting downward from the slide. The tubular carrier is adjusted vertically with its diamond by a thumb-screw, M, secured in a bracket, N, on the slide, and fitting a socket-screw in the upper end of the tubular carrier K, while the lateral adjustment and feed of the diamond is made by a feed-screw, P, secured in a bracket, Q, on the carriage H, and screwing into an arm, N', on the slide.

The carriage is operated to carry the diamond back and forth by a handle, O, and the feed of the diamond to suit the width of the furrow is effected automatically by a tripping rocker-bar, R, mounted loosely upon the stem of the feed-screw P, and carrying a double pawl, S, adapted to engage with a spur-pinion, T, fixed on the feed-screw stem, so that as the bar R is rocked or vibrated with the pawl the latter turns the spur-pinion and its screw P and feeds the diamond-carrying slide.

The bar is rocked to turn the pinion and feed-screw by its lower end coming in contact with a projection, *s*, on the side of the pivoted frame as the carriage is moved forward. The bar is tripped over the projection and returned to its normal vertical position by a spring, *t*, fixed to said bar and to the bracket Q, and in which the pawl passes over the pinion-teeth without turning it. The side projection *s* has a slotted part, *s'*, which fits into a guide-seat in a carrier, *u*, by which said projection can be adjusted vertically to give the bar more or less movement, and thereby regulate the lateral feed of the diamond. The projection and the foot of the rock-bar are beveled or rounded, to allow of the proper tripping action. The double pawl can be adjusted to engage with the pinion for a right or left dress, and in such adjustment it is held by a spring, *v*, which is also adapted to hold said pawl out of action when the diamond is shifted by hand by the crank-handle U on the feed-screw.

The carrier *u* for the tripping feed projection serves, also, as the means of carrying the marker or quill v^1, which is inserted in a socket, v^2, for determining the true horizontal adjustment of the stone. This carrier *u* for this purpose is fitted, by top and bottom angle-lips, into corresponding grooves *w*, Figs. 4 and 5, in the side bar of the pivoted frame, so that it can be moved along the length of said frame toward the center of the stone, and thus test the level of the latter at different points in relation to the plane of the flanged adjusting base as the revoluble frame is turned around over the stone. When this adjustment is determined, the carrier is fixed by a screw, *x*, in proper position to effect the feet of the diamond.

The adjustment of the diamond for causing it to cut the furrows deeper toward the center of the stone is effected by adjusting the swiveling screw *b* vertically, said screw passing through a thimble, *y*, Fig. 5, seated in the boss projection *c* on the inner side of the re-

voluble frame. This thimble is slightly longer than the boss-projection, and lock-nuts *z z'* upon the pivot-screw bear upon the top and bottom of the thimble, so that the nuts, thimble, and pivot turn together as the pivoted frame is turned upon its segmental guideway, and the outer end of the pivoted frame is raised and lowered, as may be required, to vary the longitudinal depth of the furrow by adjusting said nuts upon the swiveling screw. By this thimble-bearing the nuts are held to their adjustment when made, and the swiveling screw bound secure in its seat.

By this construction it will be seen that the pivoted frame has three separate and distinct adjustments upon the revoluble frame, and these adjustments, together with that of the flanged base, are all independent of the stone, which gives important advantages in holding the diamond, when set, properly and rigidly to its work, and prevent it from riding over hard spots in the stone and cutting deeper into soft spots.

From the foregoing description it will be seen that the face of the stone is dressed from the independent base-guide rim as a gage; and if the rim be true, the stone must necessarily have a true face, and thus dispense with "staffing" the stone, which is a very difficult and nice matter to do properly. This facing is to take off the high points and make the surface true. If the face of the stone is in wind the variation must be averaged by the proper adjustments of the base-rim, and the pivoted frame set level. The revoluble frame is then turned as each land is dressed until the face of the stone has been traversed in the same manner as in furrowing the stone. In facing the stone the feed of the revoluble frame must be so slight that the tool will take off all the raised points, and the pivoted frame for this purpose must be adjusted horizontally by the swiveling screw and nuts, so that the tool will not be raised or lowered.

In cracking the face of the stone the feed must be changed so that the cracks will be from a sixteenth to an eighth of an inch apart. This cracking is to take off the gloss that gets on the face of the stone.

The machine will face, crack, and furrow with the same tool and wholly independent of the stone as a support for the device, and by means of the co-operating adjustments of the revoluble and pivoted frames, each time a furrow is cut, any kind of dress can be made.

I claim—

1. In a millstone-dresser, the circular flanged guide base-rim, provided with adjusting-screws, and upon which the operating parts are adjustably mounted, in combination with floor-stud supports, whereby the machine is adapted for adjustment and use independent of the stone as a support therefor.

2. The combination, with the adjustable flanged guide base-rim, of a revoluble frame mounted thereon, and a pivoted frame carrying the tool-carriage, mounted upon said revoluble frame, for adjustment in the arc of a circle at its inner end upon an outer swiveling screw and crosswise obliquely upon its end pivots, for operation in cracking and dressing the stone.

3. The frame carrying the tool-carriage, mounted by a pivot at its outer end upon a swiveling screw to the rim of the revoluble frame, and at its inner end by a pivot to a head-block, arranged and supported for adjustment in the arc of a circle upon a segmental guideway of the revoluble frame, for adjustment and operation on either side of a radial line of said frame in making either a right or left dress.

4. The adjustable head-block F, carrying the inner trunnion of the pivoted frame E, and having a slot, *m*, and clamp-screw *k*, for adjusting said frame at a crosswise angle, in combination with the clamp-screw G and the segmental guideway D^2 of the revoluble frame, whereby both the pivoted frame and its head-block are clamped when properly adjusted for use.

5. The combination, with the pivoted frame E and its horizontally-adjustable head-block, of the swiveling adjusting-screw *b*, its boss-thimble *c*, and the adjusting lock-nuts *z z'*, for the purpose stated.

6. The combination, with the pivoted carriage E, of the vertically-adjustable feed-tripping arm *s s'* and its horizontally-adjustable carrier *u*, having also the marking-pencil holder v^2, all arranged and adapted for use as described.

7. A millstone dresser and facer consisting of the adjusting flanged guide base-rim, mounted upon floor-studs independent of the stone, a revoluble frame mounted upon said guide base-rim, a pivoted frame mounted upon said revoluble frame for adjustment with its head-block in the arc of a circle at its inner end, and the tool-carrying and feeding devices mounted upon said pivoted frame, the several parts being adapted for operation substantially as described.

8. In a millstone-dress, a pivoted frame carrying the tool-operating devices, and having an adjustable swiveling connection outside of the diameter of the stone and an adjustment upon a segmental guideway at its end, near the center of the stone, and adapted for operation on either side of a radial line from said center, to produce any desired dress.

In testimony whereof I have hereunto set my hand in the presence of two witnesses.

PHILIP M. HAAS.

Witnesses:
W. A. REEVES,
D. D. LUCAS.