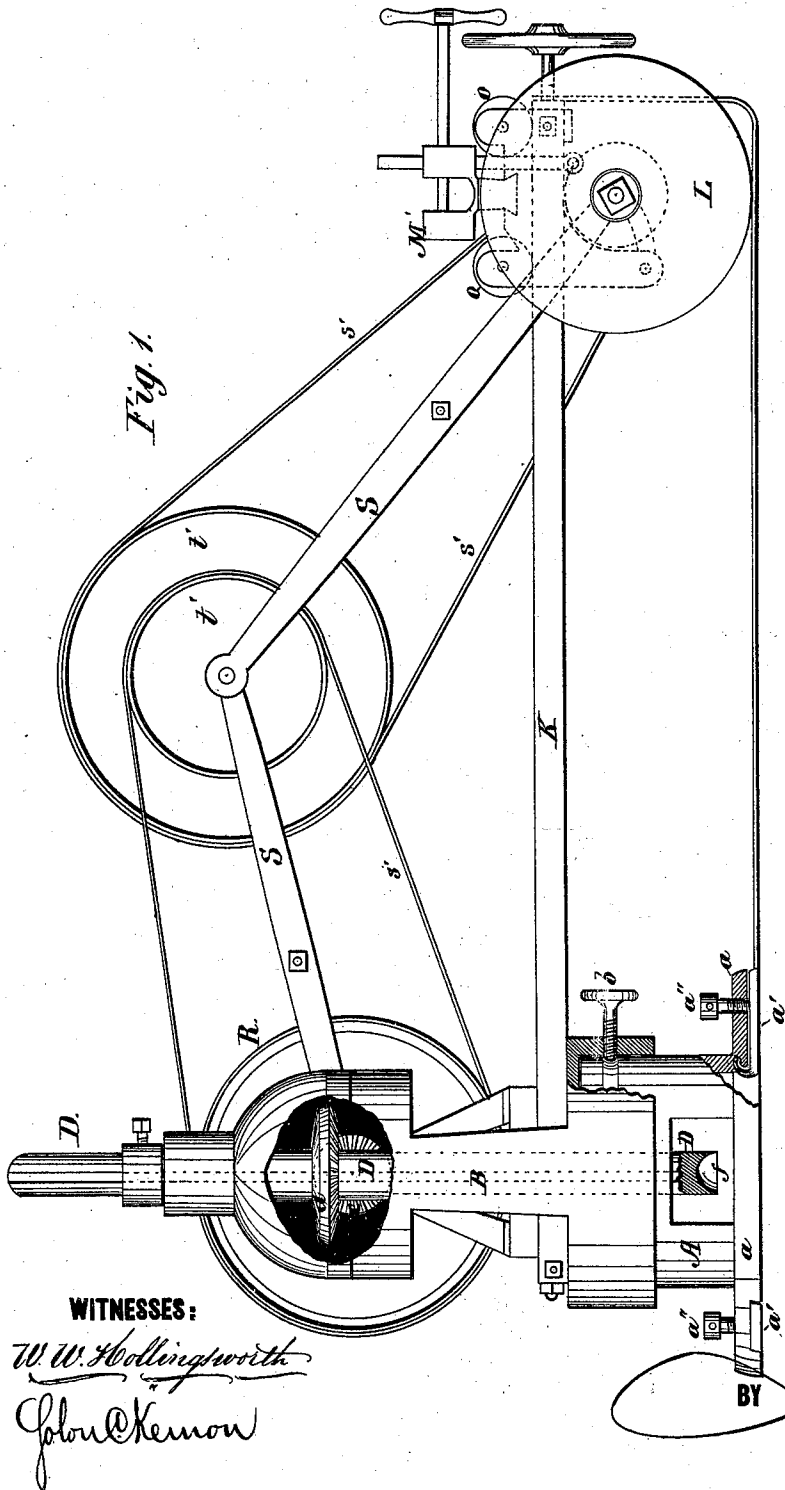


A. HOPPIN.
MILLSTONE DRESSING MACHINE.
No. 173,634. Patented Feb. 15, 1876.



WITNESSES:

W. W. Hollingsworth
John Kemou

INVENTOR:

A. Hoppin
New V. C.

BY

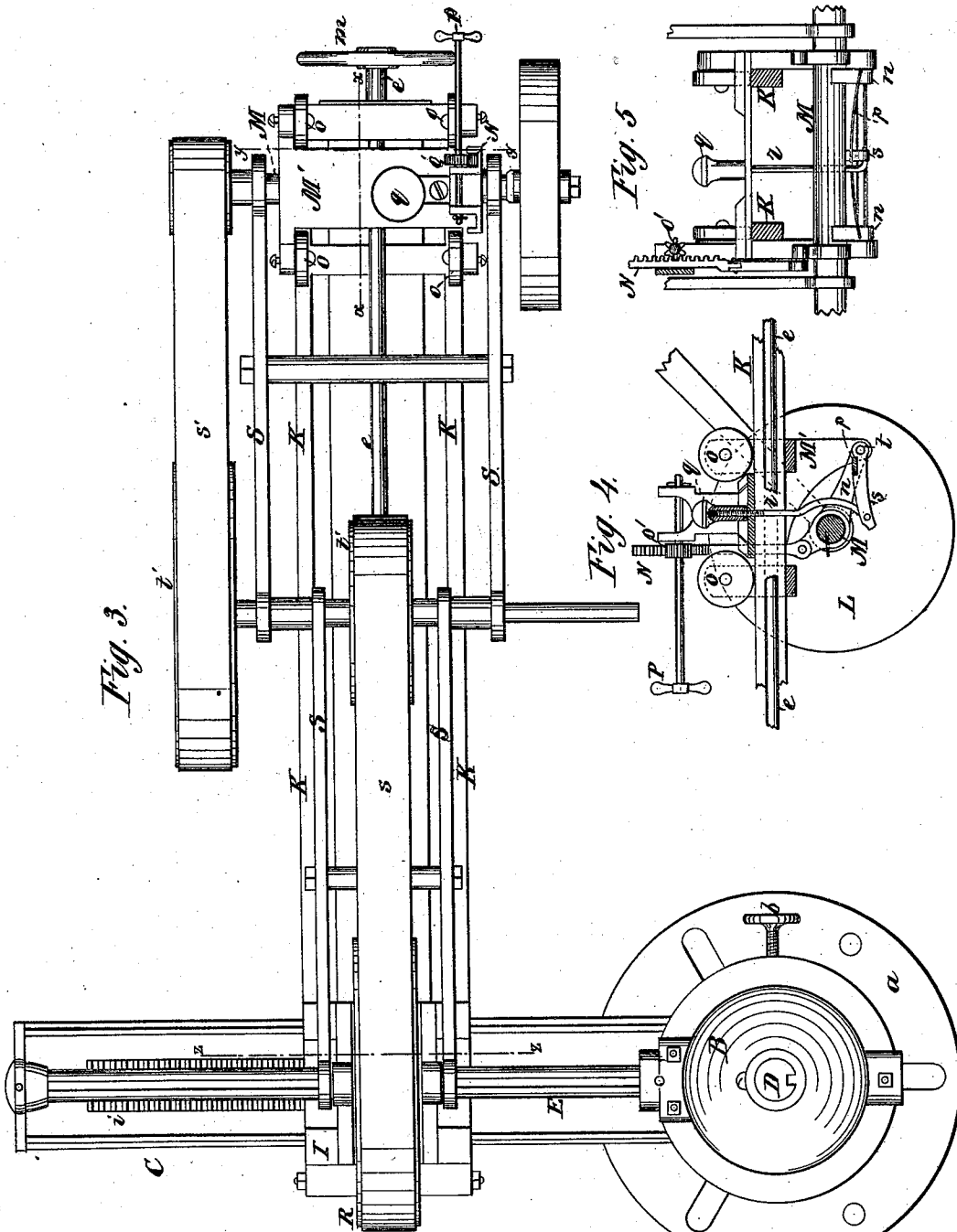
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John A. Kemmer

INVENTOR:

A. Hoppin
BY Allen & Co.

ATTORNEYS.

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Fig. 6

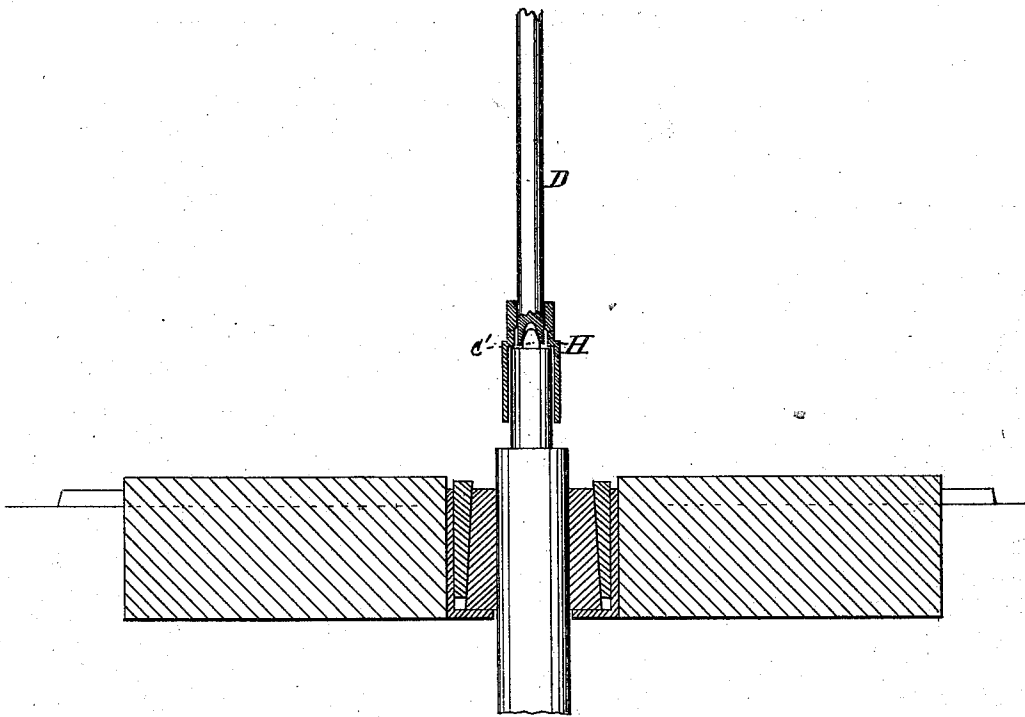
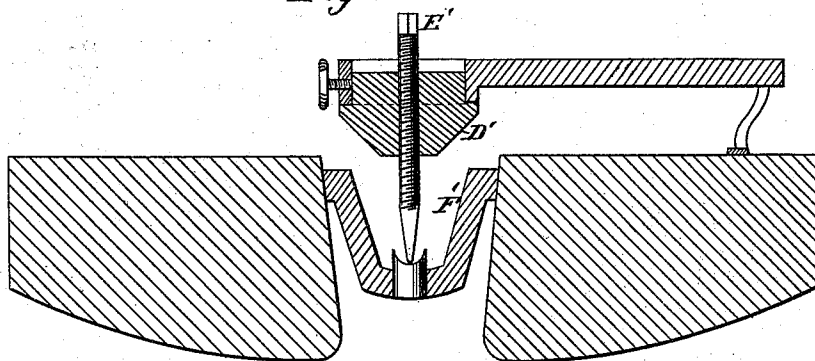


Fig. 7



WITNESSES:

W. W. Hollingsworth
John Kemou

INVENTOR:

A. Hoppin
BY *Heun & Co.*

ATTORNEYS.

UNITED STATES PATENT OFFICE.

ALBERT HOPPIN, OF LA CROSSE, WISCONSIN, ASSIGNOR TO HIMSELF AND
AMASA K. OSTRANDER, OF SAME PLACE.

IMPROVEMENT IN MILLSTONE-DRESSING MACHINES.

Specification forming part of Letters Patent No. **173,634**, dated February 15, 1876; application filed
January 12, 1876.

To all whom it may concern:

Be it known that I, ALBERT HOPPIN, of the city and county of La Crosse and State of Wisconsin, have invented a new and Improved Millstone-Dressing Machine; and I do hereby declare that the following is a full, clear, and exact description of the same.

The use of emery-wheels for dressing mill-stones has proved economical, and also produced a better mechanical result than the devices previously employed; but the machines hitherto devised for the purpose have been cumbersome, or otherwise objectionable.

The object of the present invention is to furnish a machine better adapted for the work, and to this end I adopt the construction and arrangement of parts hereinafter described and claimed.

In the accompanying drawing, forming part of this specification, Figure 1 is a side elevation of part of the machine, with certain details shown in section; Fig. 2, a detail sectional view on line *z z*, Fig. 3; Fig. 3, a top-plan view of the entire machine. Figs. 4 and 5 are detail sectional views on lines *x x y y*, respectively, of Fig. 3. Figs. 6 and 7 are detail sectional views.

A represents a tubular post, having a horizontal slotted base-flange, *a*, and adapted to be set over the eye of the bed-stone, and encircle the spindle thereof. It is provided with hinged plates *a'*, on which set-screws *a''* are arranged to bear, as shown, for the purpose of leveling the post on the stone. A tubular head, B, is fitted on said post, and from it radiates the draft-way C, Fig. 3, to which the chief operating parts of the machine are attached, as hereinafter described. The head B turns freely on post A, but may be secured in any desired position by means of a clamp-screw, *b*. The upper portion of the head forms a bearing for the upright shaft D and the horizontal shaft E, from which latter the emery-wheel derives motion. The transmission of rotary motion from shaft D to shaft E is by ordinary bevel-gears, *d e*, Fig. 1; but in order to allow the former to be adjusted higher or lower, the gear *d* has a spline-connection therewith. This adjustment is necessary, owing to

the difference in the height of different mill-spindles. The lower end of shaft D has a conical recess, *f*, which adapts it to fit and center itself upon the cock-head C', Fig. 6. The shaft D is locked to the mill-spindle by a sleeve-clutch, H, Fig. 7, so that both will rotate together. The outer end of the way C is supported by a foot, and the shaft E by a standard or bracket, which rises vertically from said way. A head-block, I, Fig. 3, is attached to and slides on the way C, and is provided with suitable bearings or ways for the parallel steel bars K, to the outer ends of which the emery-wheel is attached. These bars K slide lengthwise in and through said head-block I, transversely of or at right angles to the way C, and may be clamped thereto by screws. The means for adjusting the head-block along way C is a rack, *i*, and pinion, *k*, Figs. 2 and 3. The latter is rotated by a rod, *e*, having a spline-connection therewith, and provided with a hand-wheel, *m*, on its outer end. The rod is therefore adapted to slide through the pinion, which is fixed in the head-block I, and therefore moves bodily with it, although arranged for being rotated independently. The shaft of emery-wheel L is mounted in a long tubular bearing, M, which is arranged beneath and transversely of the bars K, and connected by hinged arms *n* to a frame, M', which slides longitudinally on said bars, and is supported thereon by friction-rollers, *o*. Said wheel is supported or held up off the face of the stone by means of a spring, *p*, which bears against the under side of arms *n*, Figs. 4 and 5.

The tension of the spring can be regulated at will by a screw-nut, *q*, which is applied to the free end of a rod, *r*, pivoted to the arm *s* of a rock-shaft, *t*, the spring being interposed between said arm *s* and arms *n*.

The means or devices for forcing emery-wheel down into contact with the stone are a rock-bar, N, which is jointed to an arm of the tubular bearing M, and a pinion, *o'*, operated by a T-handled shaft, P, having its bearings in the frame M. This feature is one of the most important parts of the invention, as by it the action of the emery-wheel is placed

under the perfect control of the operator, and can be moved back and forth, and also made to cut light or heavy, as desired.

A band-wheel, R, Figs. 1 and 3, having a spline-connection with shaft E, communicates motion through belts *s'* and pulleys *t'* to the shaft of the emery-wheel. Said pulleys are mounted in a jointed frame, S, arranged as shown, Figs. 1, 3.

The operation of the machine is as follows: To dress the bed-stone or under stone, the machine is placed over the center of the stone, and the upright shaft slipped down, so that the conical hole in the lower end may rest upon the cock-head of the mill-spindle. The shaft is connected with the spindle by suitable coupling, H, Fig. 6. Motion is then communicated to the spindle, and from thence, by the arrangement of shafts, gears, pulleys, and belts, before described, to the emery-wheel.

For dressing the face, a square-faced wheel is used, and for dressing the furrows a bevel-faced wheel is used. The stone is then staffed the same as in hand-dressing with the pick, and the operator, taking hold of the hand-wheel and T-handle, before mentioned, brings the wheel to cut off the inequalities on the stone, shown by the staff, as much or little as may be required. He is thus enabled to finish the face and furrows of the stone to a point of excellence far beyond that heretofore attainable.

To dress the runner or upper millstone, I employ a somewhat different apparatus. The runner is removed from the bed-stone, and placed in an inverted position near the bed-stone, and as nearly as practicable in the same plane with it. The hollow post A is taken out of the machine, and the iron block D' and screw-shaft E', Fig. 7, inserted in its place. The screw-shaft E' is then adjusted so that its point may rest in the socket of the bale F', and the machine adjusted level with the face of the inverted stone. Motion is communicated to the upright shaft of the machine from the mill-spindle as follows: An upright shaft is connected to the mill-spindle by the same arrangement of conical hole and couplings as

before described, and is supported in a perpendicular position over the spindle by a small stand, of wood or metal. A pulley is placed upon the upper end of this shaft, and also one upon the upper end of the upright shaft in the machine. These are connected by a belt, and the motion of the spindle is thus imparted to the upright shaft of the machine, and from thence to the emery-wheel, as before described.

The remaining part of the work is the same as on the bed-stone.

What I claim is—

1. The combination, with the post A, having the horizontal flange *a*, of the plates *a'*, pivoted at the inner end by means of hooks, and the set-screws bearing on said plates, as shown and described.

2. The upright shaft D, having a conical recess or cavity in its lower end, as shown and described, for the purpose specified.

3. The combination of the head-block I, the sliding bars K, emery-wheel, jointed frame S, and pulley and belt gear *s' t'*, as shown and described.

4. The head-block I, rack and pinion *e k*, the shaft E, and band-wheel R, having a spline-connection therewith, in combination with the bars K, carrying the emery-wheel L, and the belt and pulley-gear, as shown and described.

5. The emery-wheel mounted on a vertically-adjustable spring-supported bearing, substantially as shown and described.

6. The emery-wheel mounted on a rock-shaft, M, the rack and pinion for adjusting it and controlling the pressure of the wheel upon the stone, as shown and described.

7. The spring, and its tension-regulating screw, in combination with the rock-shaft and adjustable bearing of the emery-wheel shaft, as shown and described.

8. The emery-wheel carriage, arranged to slide on the bars K, substantially as shown and described.

ALBERT HOPPIN.

Witnesses:

A. K. OSTRANDER, Jr.,

H. I. BLISS.