2 Sheets—Sheet 1.

H. WILHELM & F. D. DAVIS.

DIAMOND MILLSTONE DRESSING-MACHINE.

No. 188,713. Patented March 20, 1877.

Fig. 1.

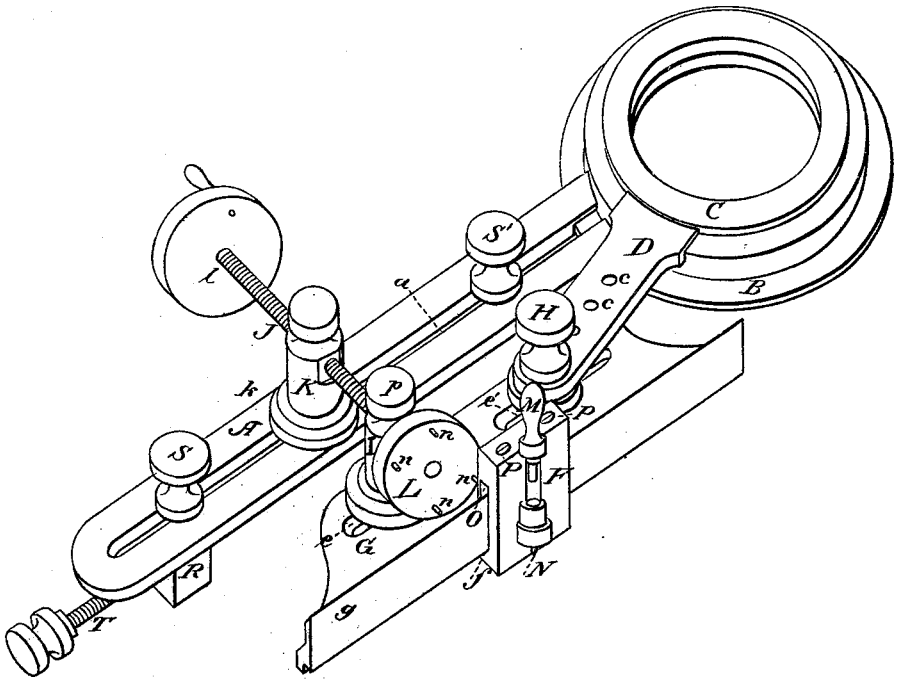
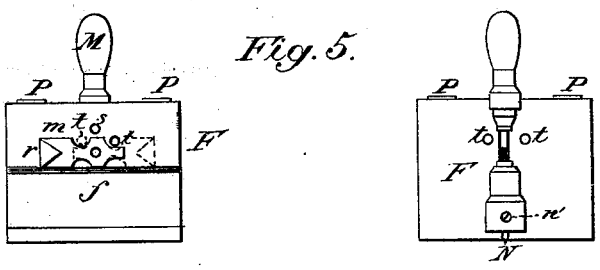


Fig. 5.



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Jno. P. Brooks.

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Inventors:

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2 Sheets—Sheet 2.

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Fig. 2.

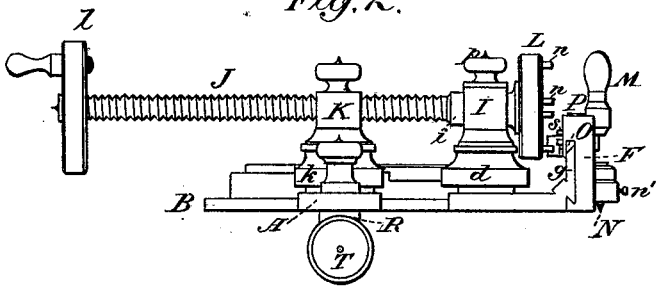


Fig. 3.

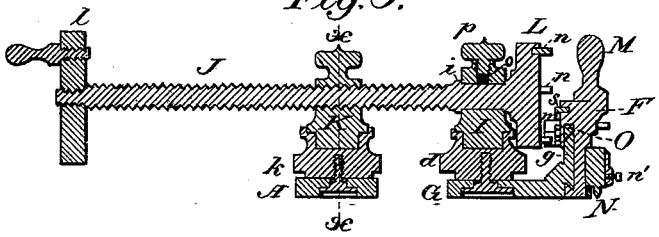
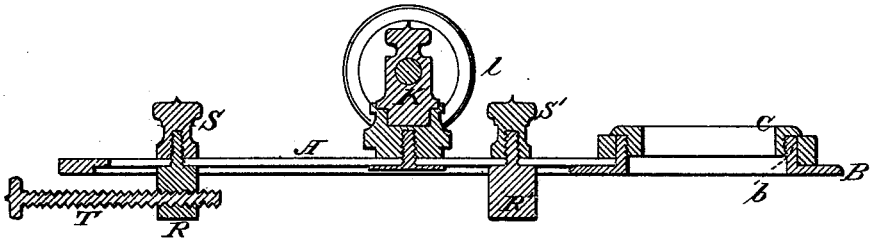


Fig. 4.



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UNITED STATES PATENT OFFICE.

HENRY WILHELM AND FREMONT D. DAVIS, OF MINERVA, OHIO.

IMPROVEMENT IN DIAMOND MILLSTONE-DRESSING MACHINES.

Specification forming part of Letters Patent No. **188,713**, dated March 20, 1877; application filed February 12, 1877.

To all whom it may concern:

Be it known that we, HENRY WILHELM and FREMONT D. DAVIS, of Minerva, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Diamond Millstone-Dressing Machines; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a perspective view. Fig. 2 is an end view. Fig. 3 is a cross-section. Fig. 4 is a longitudinal section on line *x x* in Fig. 3, and Fig. 5 shows the carriage detached.

Similar letters of reference indicate corresponding parts in all the figures.

This invention relates to diamond-tool machines for dressing millstones; and it consists in the improved construction, arrangement, and combination of parts, hereinafter more fully shown and described.

In the drawings, A is a metallic plate, having a slot, *a*, extending through its entire length. B is a ring, bolted to one end of or cast in one piece with plate A, the under surface of the plate and ring being smooth and level. Ring B has a neck, *b*, upon which is adjusted another closely-fitting, but freely-revolving, ring, C, having an arm, D, provided with a series of perforations, *c c*. G is the bed-plate of the machine, upon which slides the carriage F, holding the diamond tool, the carriage having a dovetailed recess, *f*, corresponding with the guide-strip *g* on the side of the bed-plate upon which it slides.

The bed-plate G has two longitudinal slots, *e e'*, through one of which, *e'*, passes a screw-bolt, by means of which and a set-screw, H, the bed-plate is connected with the revolving ring C by one of the perforations *c* in arm D. Through the other slot, *e*, passes a screw-bolt, by which and a screw-cap, *d*, a standard, I, forming one of the bearings for the feed-screw J, is attached to the bed-plate. The other bearing for the feed-screw is formed by a standard, K, attached to plate A by a bolt and a screw-cap, *k*, the bolt passing through the slot *a*, in which it slides. The end of the feed-screw J which has its bearing in the standard I is not screw-threaded. It is of a smaller diameter than the rest of the screw, and the shoulder *i* thus formed rests against the standard I. The end of the feed-screw is provided with the rigidly-affixed feed-wheel L, by which and the shoulder *i* the feed-screw is permanently retained in the bearing, while, at the same time, it may revolve freely. The bearing in standard K is screw-threaded, and the screw has at the end projecting therefrom a crank-wheel, *l*, by which it may be readily operated, the result of the operation being to bring the plates A G apart or together.

The feed-wheel L consists, simply, of a circular metallic disk, having on the side facing the guide-strip *g* of the bed-plate four equidistant projections, *n*, which engage with the trigger *m* upon the carriage F, when this is operated, in such a manner as to cause the operation of the feed-screw, &c., as hereinafter described. The top of the standard I has a screw-threaded perforation, into which fits a plug, *o*, and a set-screw, *p*, by which latter the plug may be forced down against the shaft of the feed-screw, the friction upon which thus causes it to operate with ease or not, as desired.

The carriage F is a square block of metal, having a handle, M, and a diamond tool, N, which latter is held in place by a set-screw, *n'*, which enables it to be raised or lowered, as desired. The dovetailed recess *f*, by which it fits upon the guide-strip *g*, is formed by the solid under side of the block F, and by an adjustable cleat, O, which latter may be so adjusted by set-screws P P as to compensate for wear, and cause the carriage to always run smoothly and true.

The trigger M, by which the feed-wheel is operated, is pivoted just above the recess *f*, and consists of a narrow strip of metal, having at the end a triangular lateral projection, *r*. Above the trigger the carriage has a small stud, *s*, which prevents the trigger from turning out of position; and on each side of the trigger is an adjustable pin, *t*, which holds it in position for operation. The trigger is thus reversible, and may be made to operate either way, the reversed position being shown in dotted lines in Fig. 5.

R R′ are two studs or blocks of metal, which may be adjusted on the under side of plate A by screw-bolts which pass through the slot *a* and set-screws S S′. By means of these blocks the machine is secured in position upon the millstone that is to be dressed. The outer block R has also a lateral set-screw, T, which aids in securing the machine safely and immovably.

The operation of our improved millstone-dressing machine is as follows: The machine is placed upon the bed stone, the circular ring B being placed around the neck of the spindle, (the block R′ being previously removed.) The block R is now pushed against the edge of the stone, and secured by the set-screw S, and the machine is finally tightened securely by the set-screw T. If the running stone is to be dressed the method of adjusting the machine is the same, with the exception that the block R′ is placed in the eye of the stone and secured by screw S′. The feed-screw is now operated by crank-wheel *l*, so as to bring the plates A G close together, as shown in Fig. 1. The pedestals I K, which form the bearings for the feed-screw, are placed in proper position, and secured by their respective tightening-screws, and the position of the arm D is similarly adjusted. The diamond tool is now raised or lowered, so as to make a groove of suitable depth, and the trigger *m* placed in proper position for operating the feed-wheel.

The operator now takes hold of the handle of the carriage, and slides it from the periphery of the stone toward its center, pressing at the same time upon the carriage sufficiently hard to make a distinct cut or groove in the stone. The projection *r* of trigger *m* by this operation is lifted by the lowermost of the projections *n* on the face of the feed-wheel, over which it slides, the stud *s* preventing the trigger from turning round or out of position. When the carriage is slid back, the pressure upon it is ceased, or it is slightly raised, so as to prevent the tool from cutting. One of the sides of the triangular projection *r* is now presented to the lowermost projection *n* of the feed-wheel, with which it engages, turning it one-fourth of a revolution, and thus increasing the distance between the plates A G by a space equal to one-fourth the width of the screw-threads upon feed-screw J, and thus placing the machine in position for the next dress-cut. This operation is repeated again and again until the length of the feed-screw is run out, when the position of the machine must be changed.

The distance between the dress-cuts will, as above stated, be equal to one-fourth the width of the screw-thread upon the feed-screw J. Thus, if, for instance, the screw J has seven threads to the inch, the stone will, directly under the screw, have twenty-eight dress-cuts to the inch; but, as the cuts converge as they approach the center of the stone, it follows that the distance between the dress-cuts can be easily increased or diminished by simply changing the position of the standards I K. By moving these toward the center of the stone the distance between the cuts will be increased, and by moving them in the opposite direction the distance will be diminished.

Our improved millstone-dressing machine may be used for making either right or left hand dress-cuts by reversing it as follows: The bed-plate G is detached, and brought to the opposite side of plate A. The feed-screw J is then turned with its pivoted bearing K, so as to bring the standard I to the opposite side of plate A, where it is reattached to plate G. The arm D is now similarly reversed by turning ring C, and reattached to the bed-plate. The trigger *m* of the tool-carriage is finally reversed, and the machine is then ready for operation.

The advantages of our invention will be readily understood from the foregoing description. It is easily and quickly adjusted upon the millstone in proper position for cutting. The arrangement of the cleat O in the tool-carriage is simpler than where two cleats having slots and clamp-screws are used for the same purpose, while at the same time the object, which is to compensate for wear and cause the carriage always to run true, is accomplished equally well. The feeding mechanism, operated by the trigger *m* upon the tool-carriage, is simple and effective, the set-screw *p* and plug *o* in standard I serving to regulate the friction upon the feed-screw J, which is thus prevented from rotating too far when impelled by the trigger of the tool-carriage. After the length of the feed-screw has run out, the machine is easily reset for operation, the screw being returned, and the plates A G brought together, by operating crank-wheel *l*. The distance between the dress-cuts can be easily and speedily adjusted by simply changing the position of the bearings I K of the feed-screw. The dress-cuts converge as they approach the center of the stone—an advantage the importance of which will be obvious to all practical millers; and, finally, the machine may be reversed, as already described, so as to make either right or left hand dress-cuts. The general construction of our machine is simple, it is easily operated, and is not apt to get out of order.

Having thus described our invention, we claim and desire to secure by Letters Patent of the United States—

1. The combination of the plate A, having slot *a* and ring B, with the ring C, having arm D, slotted bed-plate G, feed-screw J, and pivoted adjustable bearings I K, substantially as and for the purpose herein shown and specified.

2. In a diamond-tool millstone-dressing machine, the slotted plate A, having ring B, and adjustable fastening-blocks R R′, with set-screws S S′, the outer block R having additional horizontal set or clamping screw T, substantially as described, for the purpose set forth.

3. In a diamond-tool millstone-dressing machine, the feed-screw J, arranged in pivoted adjustable bearings I K, and having feed-wheel L, provided with four equidistant projections, *n*, and friction-regulating set-screw *p*, substantially as and for the purpose herein shown and specified.

4. The diamond-tool carriage F, having reversible trigger *m*, provided with triangular projection *r*, in combination with the feed-wheel L, having four equidistant projections, *n*, substantially as and for the purpose herein set forth.

5. The carriage F, having reversible trigger *m*, stud *s*, and adjustable pins *t t*, substantially as and for the purpose herein shown and specified.

6. In a millstone-dressing machine, the detachable bed-plate G, adapted to be adjusted on either side of the main plate A, for the purpose of causing the machine to make right or left hand dress-cuts at option, when arranged substantially in the manner herein shown and described.

7. The combination of the detachable and reversible head-plate G with the carriage F, having reversible trigger *m*, substantially as and for the purpose herein shown and specified.

8. The improved diamond-tool millstone-dressing machine herein described, consisting essentially of the slotted plate A, having ring B, ring C, having arm D, slotted bed-plate G, having guide-strip *g*, carriage F, feed-screw J, having pivoted adjustable bearings I K, feed-wheel L, and adjusting-blocks R R′, having set-screws S S′, all combined and arranged to operate substantially in the manner and for the purpose herein shown and specified.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in presence of two witnesses.

HENRY WILHELM.
FREMONT D. DAVIS.

Witnesses:
F. C. MESSMORE,
W. C. HIBBETS.