2 Sheets—Sheet 1

T. McFEELY.

Diamond Millstone-Dressing Machine.

No. 213,996. **Patented April 8, 1879.**

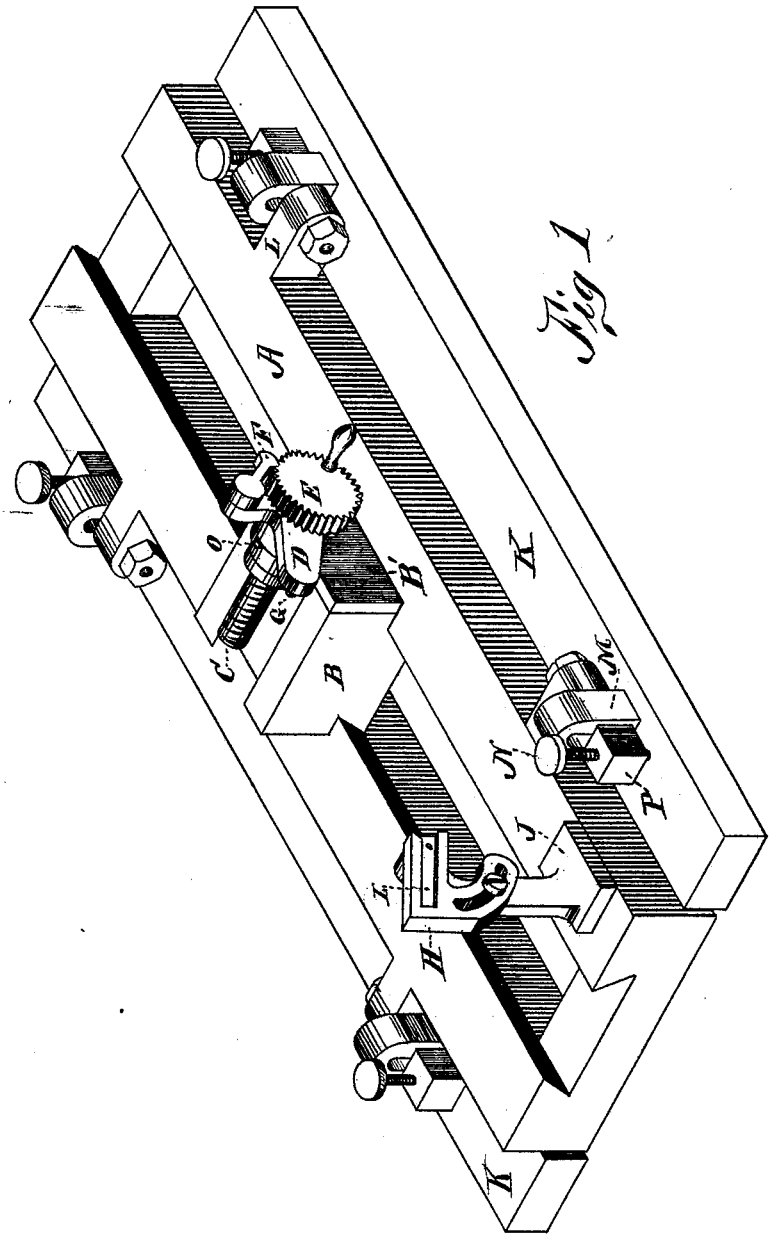

Fig 1

WITNESSES:

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Geo. P. Langemann

Thomas McFeely *INVENTOR*

by James N. See *ATTORNEY*

2 Sheets—Sheet 2.

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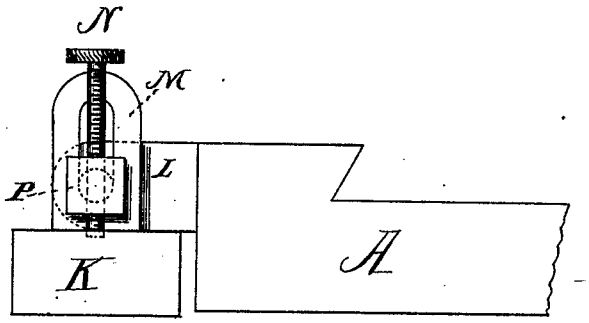

Fig 2

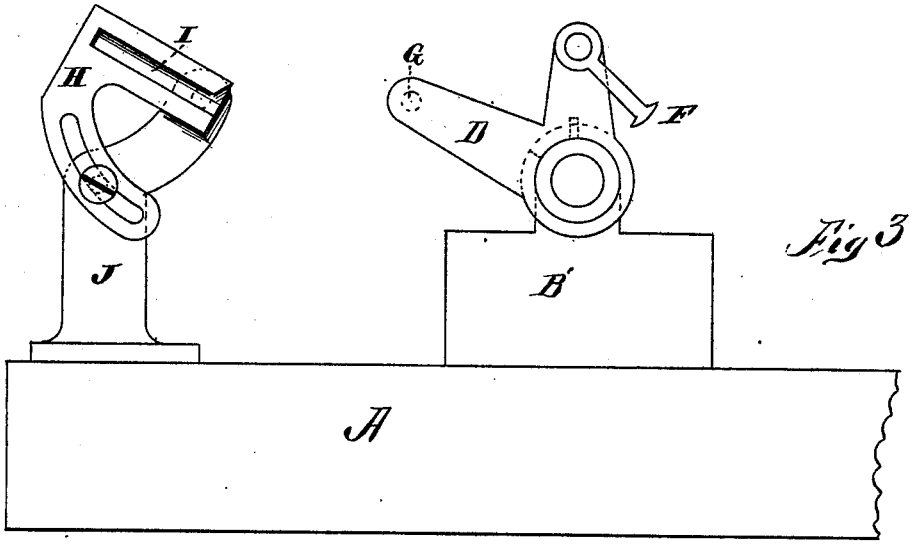

Fig 3

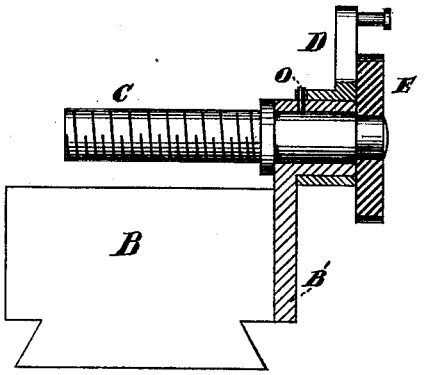

Fig 4

WITNESSES:

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UNITED STATES PATENT OFFICE.

THOMAS McFEELY, OF UNION CITY, INDIANA.

IMPROVEMENT IN DIAMOND MILLSTONE-DRESSING MACHINES.

Specification forming part of Letters Patent No. **213,996**, dated April 8, 1879; application filed February 1, 1879.

To all whom it may concern:

Be it known that I, THOMAS McFEELY, of Union City, Randolph county, Indiana, have invented a new and useful Improvement in Diamond Millstone-Dressing Machines, of which the following is a specification:

My invention relates to that class of machines which are used for dressing millstones by means of a diamond reciprocated by hand or power. Machines of this class consist, essentially, of a post for holding the diamond, a transversely-feeding carriage guided in longitudinal movement by a bed-plate, and mechanism for effecting the transverse-feed movement at each longitudinal stroke of the diamond. The first machines of this class constructed were arranged so as to have the true bottom surface of the bed-plate set upon the surface of the millstone, and the diamond's transverse-feed motion parallel with these surfaces. The only way of dressing furrows with such machines was by shimming up one side of the bed-plate; and experience showed that no amount of skill could relocate the shims upon a resetting of the machine. This knowledge led me some years since into the invention of a machine having an angular adjustment upon the transverse guides, so that the transverse movement might be at any required angle to the face of the stone. Subsequently Uhlinger patented a machine pivoted at each end of the bed-plate to a secondary plate in such manner that the machine proper was caused to assume an angle with reference to the surface of the stone. The device of Uhlinger was open to the grave objection of having the main guide of the machine suspended at each end, thereby allowing it to sag in the center and vitiate the truth of the diamond's longitudinal movement; also, that when set for angular work one entire side of the guide-plate was left totally unsupported. The transverse movement of the diamond has generally been effected in this class of machines by means of a screw and ratchet. The ratchet-pawl was, in these cases, actuated at the beginning of each stroke by stationary tappets on the bed-plate, and the return movement of the pawl was actuated by a spring. The tappets were of a complicated and delicate character, necessarily containing retreating devices to allow the return passage of the diamond-carriage. Upon reversing the direction of the feed, the spring gave the feeding motion and the tappets gave the return motion to the pawl. It followed that the feed in one direction was positive feed, and in the other direction a spring feed, and that the feeds were of a complicated, variable, and erratic character.

The object of my improvement is to provide a machine having a substantial angular adjusting device for furrowing, and a substantial non-complicated positive feed-motion.

My invention consists of a dressing-machine whose base-plate is hinged at its sides to a single or double sub-plate in such a manner that at all times the bed-plate is so supported as to prevent, as far as possible, any deflection of the bed-plate, and of a ratchet-feed motion, wherein the pawl-bearing arm is actuated at the stroke end by an adjustable incline.

In the accompanying drawings, Figure 1 is a perspective view of such parts of the machine as are necessary to exhibit my improvements. Fig. 2 is an end elevation of one side hinge. Fig. 3 is a side elevation of my novel feed device, and Fig. 4 a vertical section of the feeding devices connected directly with the feed-screw.

In Fig. 1, A is the bed-plate, which forms the longitudinal guide of the machine. The transverse movement of the diamond is unalterable with reference to this bed-plate, being governed by rigid guides across the cross-head B, as in the oldest machines.

Lugs L project from the side of the bed-plate, and form parts of the hinges by which the bed-plate is connected with sub-plates K. These sub-plates are truly faced upon the under side, and rest directly upon the millstone. They may be so connected at their ends as to be, in fact, one plate; and they may be prolonged at the farther end, so as to cross the stone and staff upon its farther side. The lugs L upon the bed-plate engage with lugs M upon the sub-plates, and by means of pivot-bolts P form hinges. The lugs L are dressed true with the bed-plate, and the surface of the sub-plates under the lugs is dressed true with the bottoms of the sub-plates. By this means everything holds a true position when in a normal condition, independent of the hinge-bolts, which may be quite loose.

The lugs upon the sub-plates are slotted, so that the hinge-bolts may rise in them, and adjusting-screws N are placed in each hinge-bolt, for the purpose of adjustment.

When the machine is to be used for furrowing, the bolts P are all loosened, and one side of the bed-plate is raised by the adjusting-screws N to the proper angle. The hinge-bolts are then tightened, and the machine is solid in its angular position.

The lugs are so located with reference to the length of the machine as to support it in the greatest possible degree against deflection.

For permanent use on surface-work the sub-plates may be removed and laid away, if desired.

Should it be found desirable to effect a deeper cut at one end of the stroke, the bed-plate may be raised at one end before the bolts P are tightened, and the desired results are obtained without shimming, the adjusting-screws N serving for this adjustment as well as the transverse angle adjustment.

In practice, I so arrange the parts that the bottom of the bed-plate will clear the stone, thus throwing all the weight upon the sub-plates, and I also make use of the usual weight-pad to secure greater adhesion.

The feed movement of the diamond-post (not shown in the figures) across the cross-head B is effected, as usual, by means of the screw C. This screw carries the usual ratchet-wheel E, operated by the pawl F. Any of the usual forms of pawls may be used.

It is well known that all ratchet-motions are defective, in that they tend to recover somewhat during the return motion of the pawl. This undesired recovery or backing is caused by the friction due to the backward drag of the pawl, and to the friction between the pawl-arm and the body of the screw, it being the universal practice to journal the pawl-arm directly upon the screw.

In devising my improved feed, I have removed all damaging friction due to the rocking bearing of the pawl-arm by journaling the pawl-arm upon a stationary boss surrounding the screw, as shown in Fig. 4. The inside of this boss forms the bearing for the screw.

The arm which carries the pawl is provided with a side arm, D, which carries the projecting pin G.

By means of the stop O, or any equivalent arrangement, the arm D is held normally in one position, while it may be lifted to some extent—that is, the oscillation of the arm has a definite limit in one direction.

Upon the bed-plate of the machine is bolted the standard J, which supports the slotted block H in such position that upon the approach of the cross-head the pin G will enter the slot.

It is obvious that if the slot be level or parallel with the bed-plate no movement of the pawl-arm will take place; but if the slot be fixed at an angle the pin G will follow the direction of the slot and oscillate the pawl-arm, and in returning will return the arm to its normal position.

The slotted block H is pivoted upon the standard J, and may be set at any required angle; the greater the angle the greater the amount of the oscillation of the arm and the greater the amount of feed.

It will be seen that the oscillation is positive in both directions, and that either direction may be utilized as the feed by turning the pawl one way or the other. It is seen that the whole feed mechanism is devoid of springs.

In practice, I do not fasten the feed-standard permanently on the bed-plate, but fit it in a slot, so that it may be located at any point upon the length of the bed-plate corresponding with one end of the desired stroke of the cross-head.

In practice, I may also leave the slot I open at both ends, so that the pin may pass entirely through it. By this means the stroke need not be so nicely terminated as when the slot is closed at one end, as shown.

When I use the open slot I so design the standard as not to interfere in any way with the passage of the cross-head by it; and I also provide the pawl with a friction device, which will sustain it at any point where the slot may leave it. This friction device takes the place of the stop O, and has the advantage of acting as a stop at either termination of the oscillation.

I claim as my invention—

1. In a diamond millstone-dressing machine, the bed-plate A, hinged at its sides to the sub-plates K by means of hinges having vertically-adjustable pivots, substantially as and for the purpose specified.

2. In a diamond millstone-dressing machine, the bed-plate A, hinged to the sub-plates K, and provided with the hinge-bolts P, having the adjusting-screws N passing vertically through them, substantially as and for the purpose specified.

3. In a diamond millstone-dressing machine, the slotted or double-acting incline I and the ratchet-arm D, arranged to engage with it and be operated by it, all combined substantially as described.

THOMAS McFEELY.

Witnesses:
JAMES W. SEE,
W. N. GRAY.