(No Model.) 2 Sheets—Sheet 1.

# J. T. OBENCHAIN.

## MACHINE FOR DRESSING MILLSTONES.

No. 282,760. Patented Aug. 7. 1883.

Fig. 6.

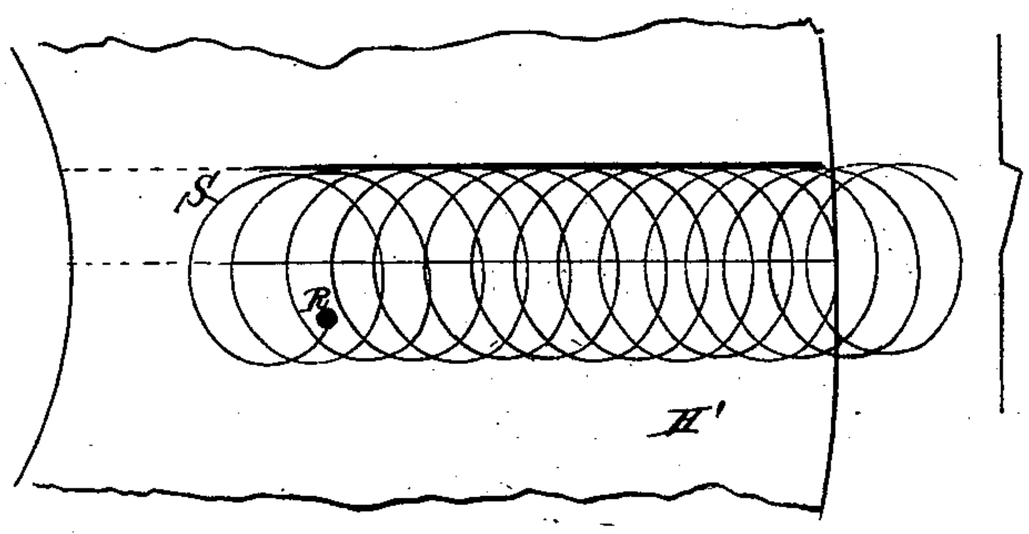



Fig. 1.

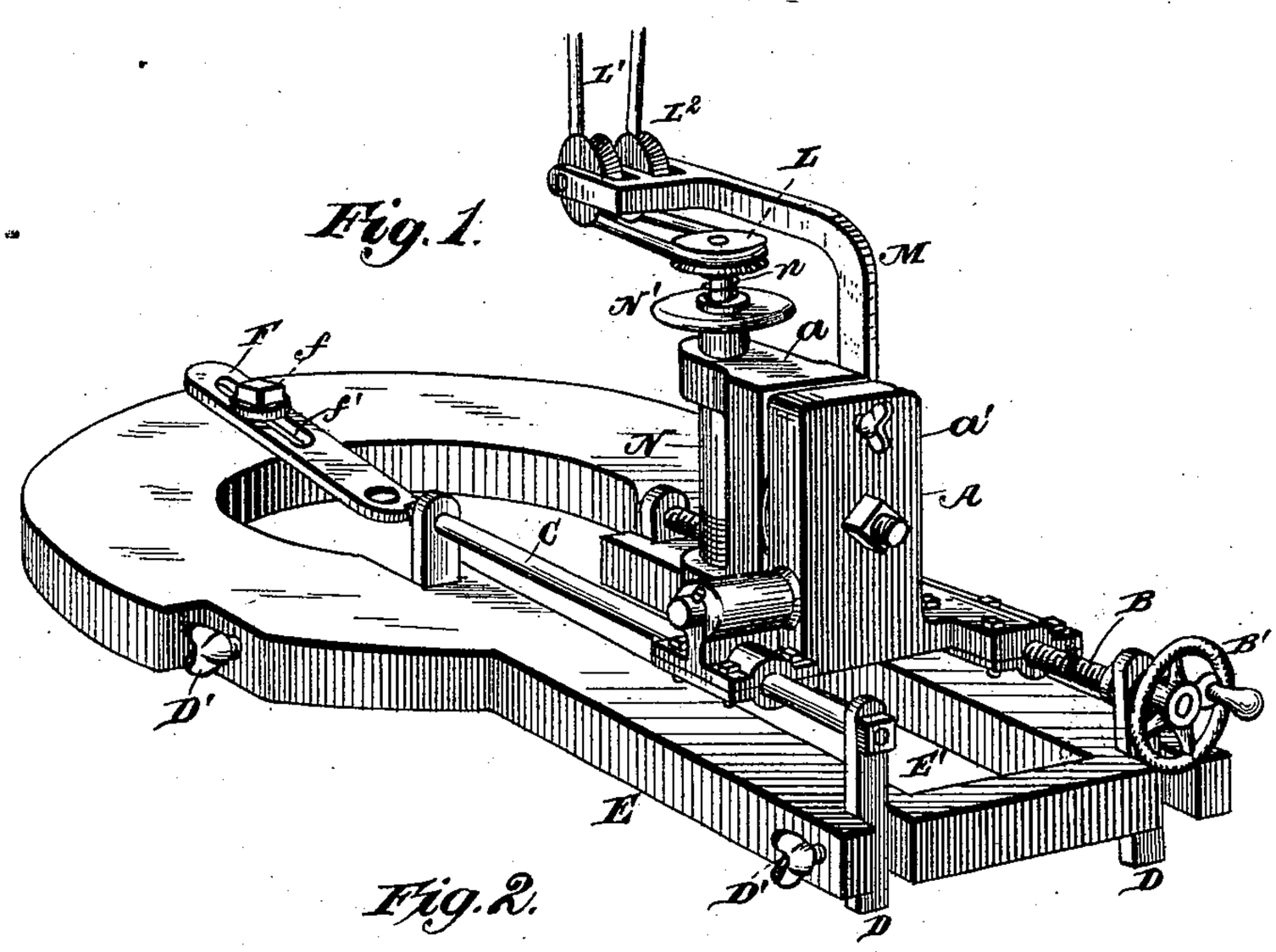
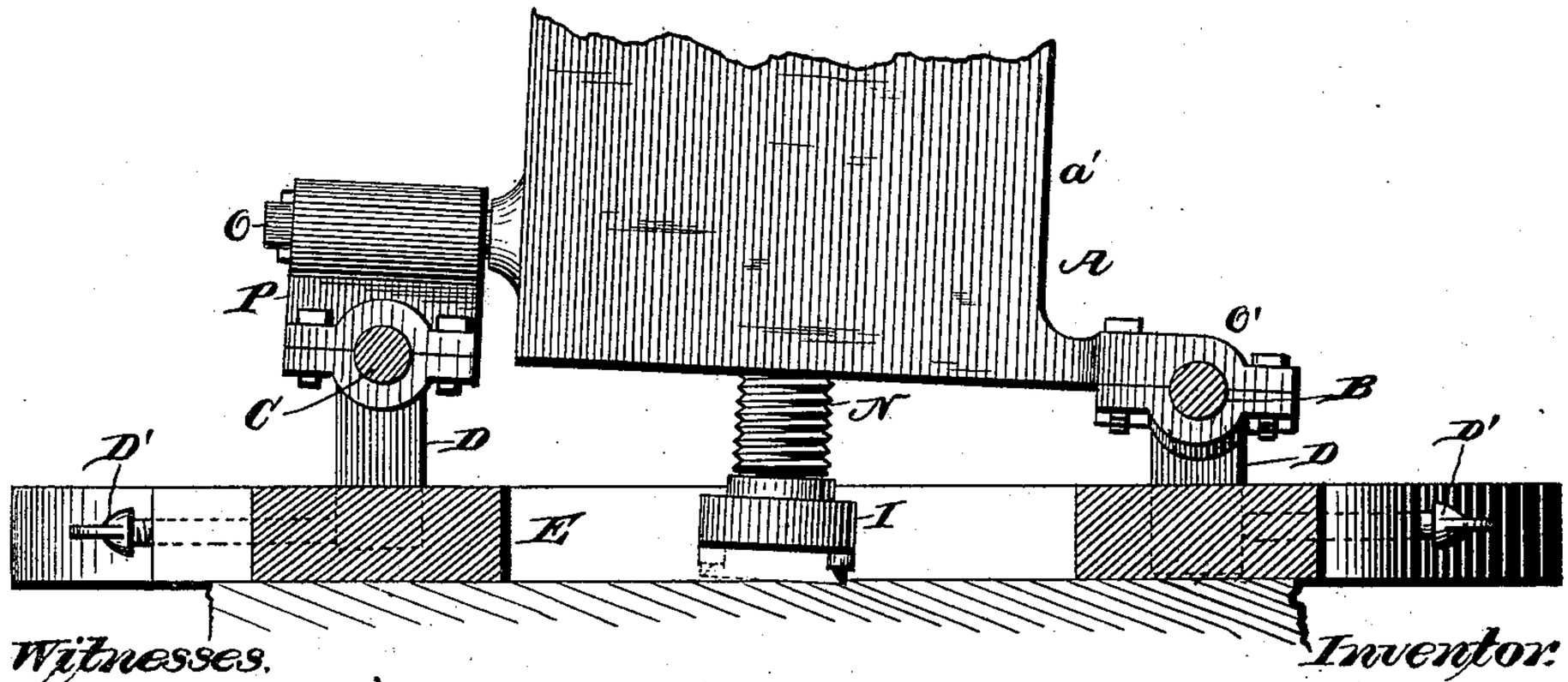



Fig. 2.




Witnesses.
Robert Everett.
J. A. Rutherford

Inventor:
John T. Obenchain.
By James L. Norris.
Atty.

(No Model.) 2 Sheets—Sheet 2.

# J. T. OBENCHAIN.

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Fig. 3

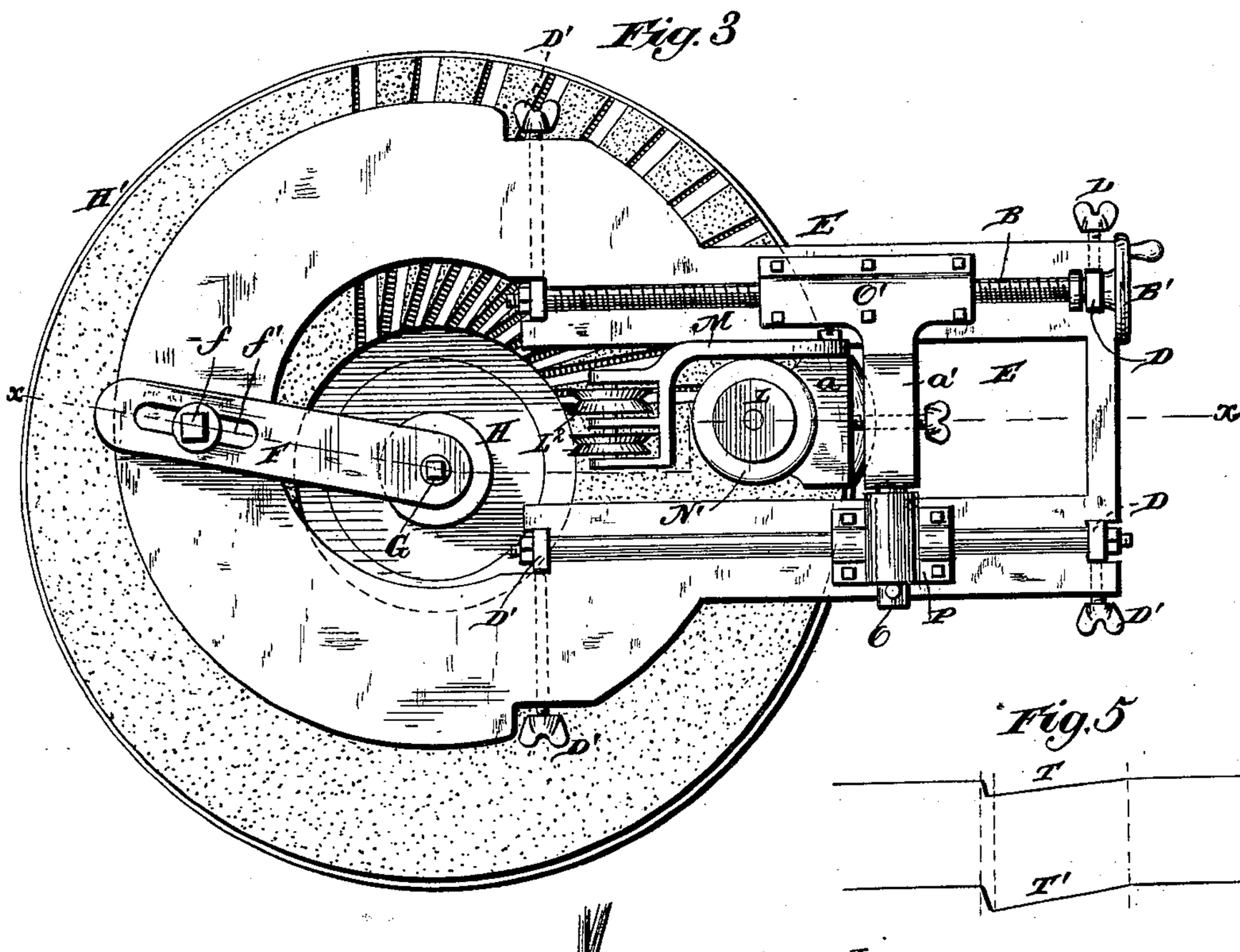



Fig. 5

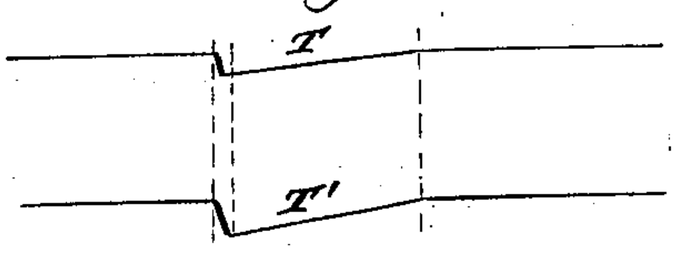
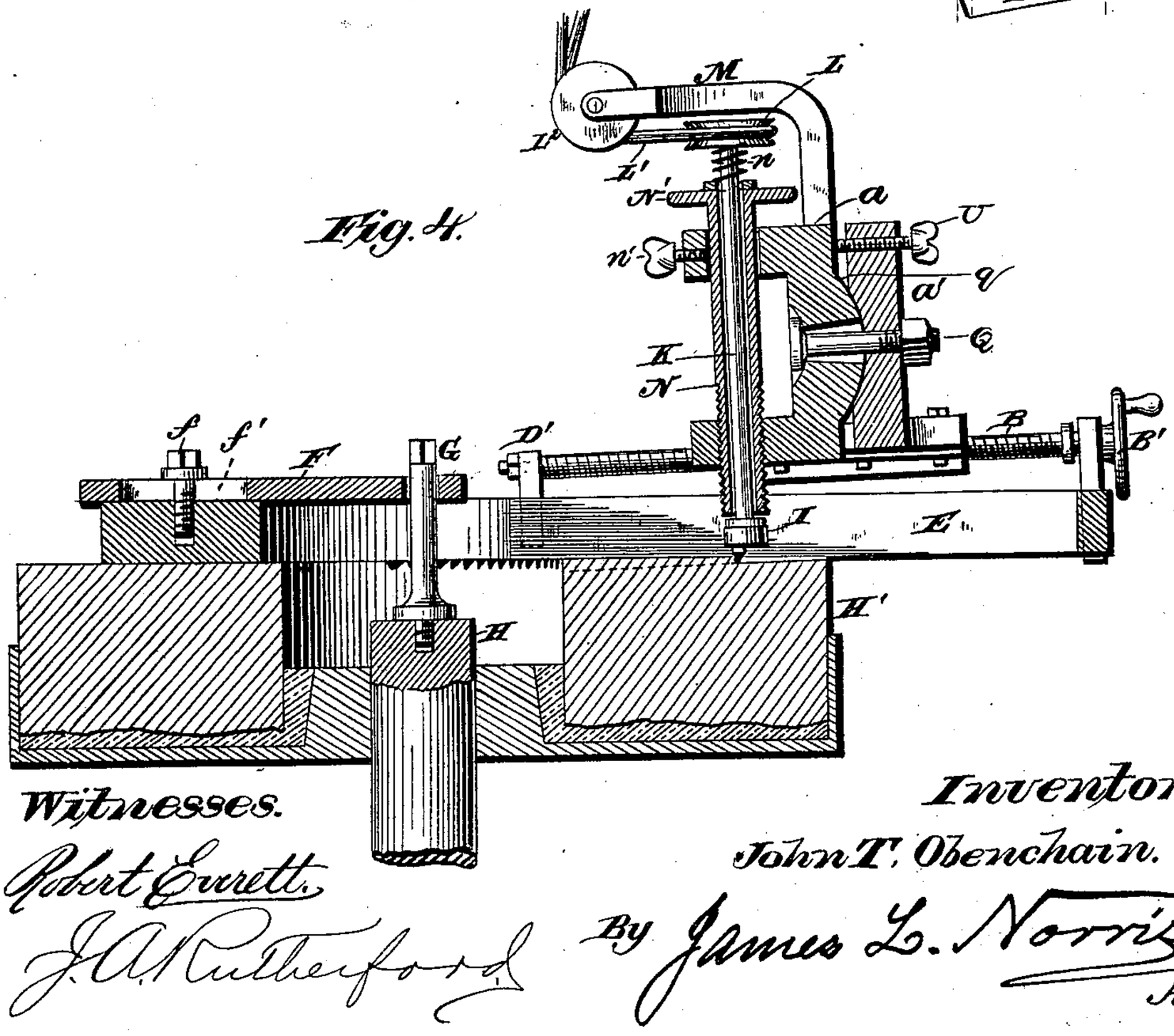



Fig. 4.

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# UNITED STATES PATENT OFFICE.

JOHN T. OBENCHAIN, OF LOGANSPORT, INDIANA.

## MACHINE FOR DRESSING MILLSTONES.

SPECIFICATION forming part of Letters Patent No. 282,760, dated August 7, 1883.

Application filed November 14, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN T. OBENCHAIN, a citizen of the United States, residing at Logansport, in the county of Cass and State of Indiana, have invented new and useful Improvements in Machines for Dressing Millstones, of which the following is a specification.

This invention relates to a machine adapted for dressing the furrows which have been roughed out in a millstone, and also for dressing off any lumps occurring in the face or lands of the stone.

The object of my invention is to provide means for adjusting and supporting the rotary cutter-shaft either in a vertical or in an inclined position, so that the cutter shall rotate in a plane coincident with the surface to be dressed; also, to provide means for adapting the cutter to make a deeper cut toward either end of the furrow, and to give a twist to the bottom of the same; and, further, to adapt the rotary cutter, while being fed along the furrow, to either preserve the same depth of cut throughout or to deepen the furrow at either end, and also to either widen the furrow toward either end thereof or to preserve the same width throughout, whereby the furrow can be either widened and deepened or narrowed and deepened at either end.

A further object is to provide certain novel features of construction and combination tending to produce an improved machine for dressing millstones, all as hereinafter described, and illustrated in the annexed drawings, in which—

Figure 1 is a perspective view of the machine; Fig. 2, an enlarged elevation of the rear of a portion of the carriage with the supports and cutter, the bed-plate being shown in this figure in cross-section. Fig. 3 is a top or plan view, and Fig. 4 is a section taken on dotted line *x x*, Fig. 3. Figs. 5 and 6 are in the nature of diagrams, one showing the furrow and the other representing the path of the diamond-cutter.

A indicates the carriage for the rotary cutter. This carriage is supported on a screw, B, and a guide-rod, C, the former of which passes through a screw-threaded bearing at one side of the base of the carriage, and is provided with a suitable crank or hand wheel, B′, by means of which the screw can be turned in order to propel the carriage, and thereby cause the rotary cutter to traverse the face of the stone to be dressed. The screw and the guide-rod are supported so as to be capable of being raised or lowered at either end. For such purpose the said rods can be adjustably connected with supports fixed to the bed-plate, or they can be supported by vertically-adjustable standards D, which rise from the bed-plate E and are adjustably secured thereto by means of set-screws D′ or other suitable devices, whereby both the rod and the screw can be supported in inclined positions, so as to cause the cutter to vary the depth of cut as it is carried along the bottom of the furrow, as hereinafter described.

The bed-plate E is provided with a longitudinal slot, E′, for the passage of the cutter while dressing the stone. This bed-plate is adapted to rest upon the stone, as shown in Figs. 2, 3, and 4, and is adjustably held thereon by means of a horizontal arm, F, connected at its inner end with a vertical pivot, G, centered in the eye of the stone, and at its outer end connected with the bed-plate by means of a set-screw, *f*, which passes through a slot, *f′*, in the arm and fits in a screw-threaded socket in the bed-plate. This arm can be fixed by means of its adjustable connection with the bed-plate, so that when its inner end is fitted upon pivot G the machine will be set more or less to one side of the center of the stone, so as to vary the line of draft. The pivotal connection of the bed-plate with the pivot through the medium of the arm also admits of the machine being swung round over the face of the stone, so as to bring the cutter in position for dressing the several furrows. The pivot G is shown fitted in a shaft or standard, H, upon which the stone H′ is supported.

I indicates the rotary cutter-head, which is provided with a black diamond or carbon for dressing the stone.

The rotary cutter-shaft K is provided at its upper end with a belt-pulley, L, for a belt, L′, which passes around belt-pulleys $L^2$, mounted in an arm, M, which is secured to the carriage. In order to give a vertical adjustment to the cutter-shaft, and also to take up lost motion and hold the cutter down to the work, I provide a sleeve, N, through which the cutter-shaft passes and adjustably connects said sleeve with the carriage by screw-threading a portion of the

sleeve which passes through one of a pair of arms on the said carriage, and arranging a spring, *n*, upon the cutter-shaft between the belt-wheel thereon and the upper end of the sleeve, which is provided with a hand-wheel, N′. This sleeve, which is secured by a set-screw, *n′*, passing through a bearing on the carriage through which the sleeve passes, can be adjusted vertically by loosening said screw and turning the sleeve. The lower end of the sleeve, abutting against the cutter-head, will, if the sleeve is lowered, depress the said cutter-head, while if the sleeve is raised the spring will lift the cutter-shaft and cutter to an extent proportionate to the elevation of the sleeve.

The carriage A consists of two parts, *a* and *a′*, the former of which is provided with bearings for the sleeve, through which the cutter-shaft passes, while the latter part is supported upon the guide-rod C by means of a trunnion, O, fitted in the trunnion-box P, which slides upon said guide-rod, and on screw B by a box, O′, through which said screw passes. By providing this trunnion at one side of the carriage it will accommodate itself to the positions of the screw or rod when the end of either is lowered, thus allowing the carriage to tilt proportionately to the depression of said rod or screw, so as to admit of a furrow of varying width and depth being cut by the diamond or carbon. The two parts of the carriage are connected together by means of a universal joint, formed, for example, by a bolt, Q, passing through said two parts, and serving to maintain a convex projection, *q*, on one part of the carriage within a concave seat in the remaining part. The hole through which this bolt or pivot passes in part *a* of the carriage increases in diameter from front to rear, so as to allow the forward part, *a*, of the carriage to be tilted to the angle required after the nut upon said bolt has been loosened.

The operation of my machine is as follows: The furrows are laid off upon the stone, and then roughed out by means of a millstone-pick or other suitable tool. The bed-plate is then placed upon the face of the stone, and the arm F adjusted so as to throw the machine sufficiently to one side of the center of the stone to cause the cutter, as it is carried along the bottom of the furrow, to travel in a true line with the furrow to be dressed, and also so that, after one furrow has been dressed and the cutter moved out from the verge of the stone, by then turning the entire machine about its pivot G the cutter can be brought into position to enter the succeeding furrow, along which it will move in a true line with said furrow. In order to cause the rotating cutter to conform in its revolutions to the angle or transverse inclination of the bottom of the furrow, the entire carriage can be tilted to one side by lowering the standards supporting screw B, or by lowering the screw or guide independently of the standards when it is adjustably connected therewith; or in place of lowering the screw or guide the forward part of the carriage carrying the cutter can be tilted to one side by reason of its universal joint, already described. Where the furrow is of the same depth from the verge to the eye of the stone, the screw-guide rod or the guides, where two are employed in connection with a propelling mechanism, will be both adjusted in horizontal planes. To vary the depth, and at the same time maintain the width of the furrow, either end of the screw B or the guide-rod can be raised or lowered by adjusting one of its supporting-standards, or by independently adjusting the screw or guide, whereby the carriage will be tilted in a direction diagonally to the line of travel of the cutter. This causes the depth of the furrow to be increased as it approaches either the verge or the eye of the stone, according to which end of the screw or guard is the lowest, and by thus causing the angle of the furrow to vary, a twist will be given to the bottom of the same. To increase the depth of the furrow at one end and widen the furrow at the opposite end, it will only be necessary to lower one end of screw B and raise the end of rod C at this end of the machine.

It will of course be understood that where two guides and suitable propelling mechanism are employed for the carriage said guides will be adjusted in the same way, or substantially the same way, as screw B and rod C, as herein shown.

It will be seen that by means of the adjustable guides, and also by reason of the universal joint of the carriage, the cutter can be adapted to substantially every conceivable kind of furrow. The carriage is impelled by turning the hand-wheel B′ and the cutter driven by the belting hereinbefore described. The cutter will be revolved with great rapidity, so that the stone will be evenly dressed.

Fig. 6 illustrates the motion of the cutter, in which R indicates the cutter and S the line of its travel.

In Fig. 5 the furrow is indicated by T and T′, the former indicating the shallow and the latter the deeper portion of the furrow.

In case a slight adjustment of the forward part, *a*, of the carriage should be found necessary the nut Q can be slightly loosened and a set-screw, U, turned on its bearing in part *a′* of the carriage, so as to adjust the forward part of the said carriage.

I have shown the carriage supported on a guide-rod, C, and on a propelling-screw, B, which also acts as a guide; but it will be obvious that the carriage could be supported on two guide-rods or guides capable of being adjusted to various degrees of inclination either by adjusting the guides on their supports or by adjusting the supports themselves, and in such instance a screw or other analogous motor could be employed simply for propelling the carriage.

It will also be seen that the connection between the carriage and the pivot around which it is turned might be varied in construction. As, for example, arm F might be connected

with the bed-plate by an arch having a key; or it could be clamped onto the bed-plate in a variety of ways which will be obvious to any mechanic.

It will be seen that by securing arm M or a suitable bracket to the front part or section, *a*, of the carriage which carries the rotating cutter-shaft, and by providing said arm with guide-pulleys for the cord or band which transmits motion to the pulley fixed on the cutter-shaft, the belt or cord is at all times maintained in line with the pulley upon said cutter-shaft.

The machine can be readily turned, so as to bring the cutter in position to successively enter the furrows, and, if desired, the guides can be adjusted in horizontal planes, and the machine turned so as to remove any lumps from the face or lands of the stone.

By adjusting the carriage or the guides, in the manner hereinbefore described, the cutter can be caused to increase the depth of the furrow toward either end, or to preserve the same depth throughout its length, and also to vary the width of the furrow, or to preserve a uniform width from end to end of the same.

What I claim is—

1. In a machine for dressing millstones, the combination of a slotted base-frame, parallel guide-rods mounted thereon, means, substantially as shown, for raising or lowering said guide-rods at either end and side of the base-frame, a horizontally-sliding carriage fitted upon said guide-rods, and a vertical revolving spindle carrying a bottom cutting-tool, mounted in said reciprocating carriage, substantially as and for the purpose described.

2. In a millstone-dressing machine, the combination of the carriage consisting of the front bracket or section having a cone-shaped back and tapering opening, and the rear portion having a concave seat and clamping-bolt passing through the same, and the front section, with the rotary cutter, mounted in said carriage, and the supporting-frame having devices for adjusting the carriage, substantially as and for the purpose set forth.

3. In a millstone-dressing machine, the combination of the vertically-adjustable sleeve N, having screw-threaded lower end and flanged top, and the rotary cutter-spindle K, passing through said spindle, and having a spring, *u*, with the adjustable carriage having a screw-threaded socket for the spindle, and the base or supporting frame, substantially as and for the purpose set forth.

4. The carriage for the rotary cutter, consisting of two parts connected together by a universal joint, one of said parts being supported on guides adapted to be adjusted in different planes, one of said guides consisting of a feed-screw working in a box on said part of the carriage, and the remaining guide being composed of a rod which passes through a box in which a trunnion on the said part of the carriage is mounted, whereby the carriage will adjust itself to the inclinations of either guide, substantially as described.

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

JOHN T. OBENCHAIN.

Witnesses:

JAMES L. NORRIS,

J. A. RUTHERFORD.