

(No Model.)

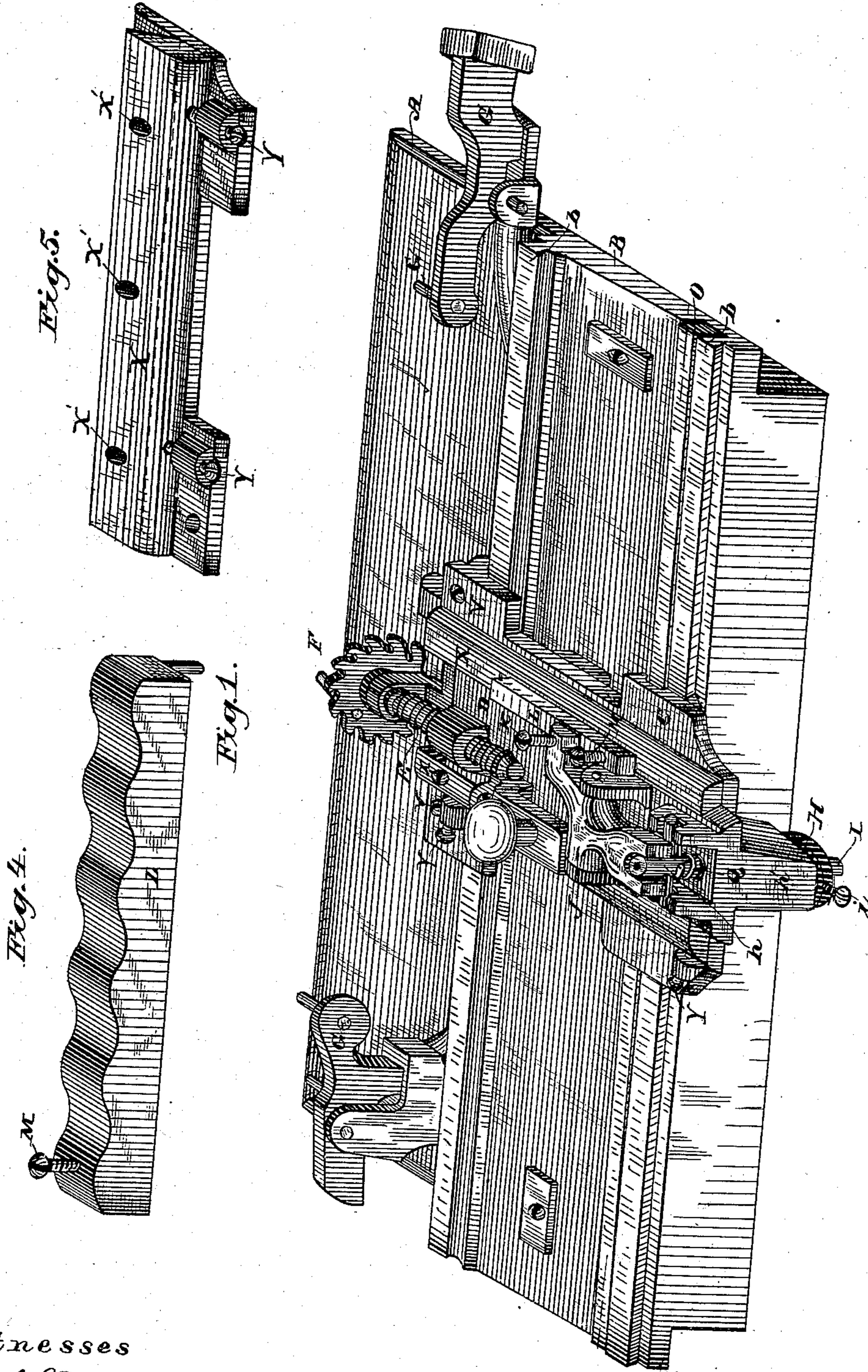
2 Sheets—Sheet 1.

C. S. HOOVER.

MILLSTONE DRESSING MACHINE.

No. 271,849.

Patented Feb. 6, 1883.



Witnesses
 Wm. J. Tanner
 Harry G. Davis

By his Attorney

Inventor
 Cornelius S. Hoover
 by W. H. Babcock
 Attorney

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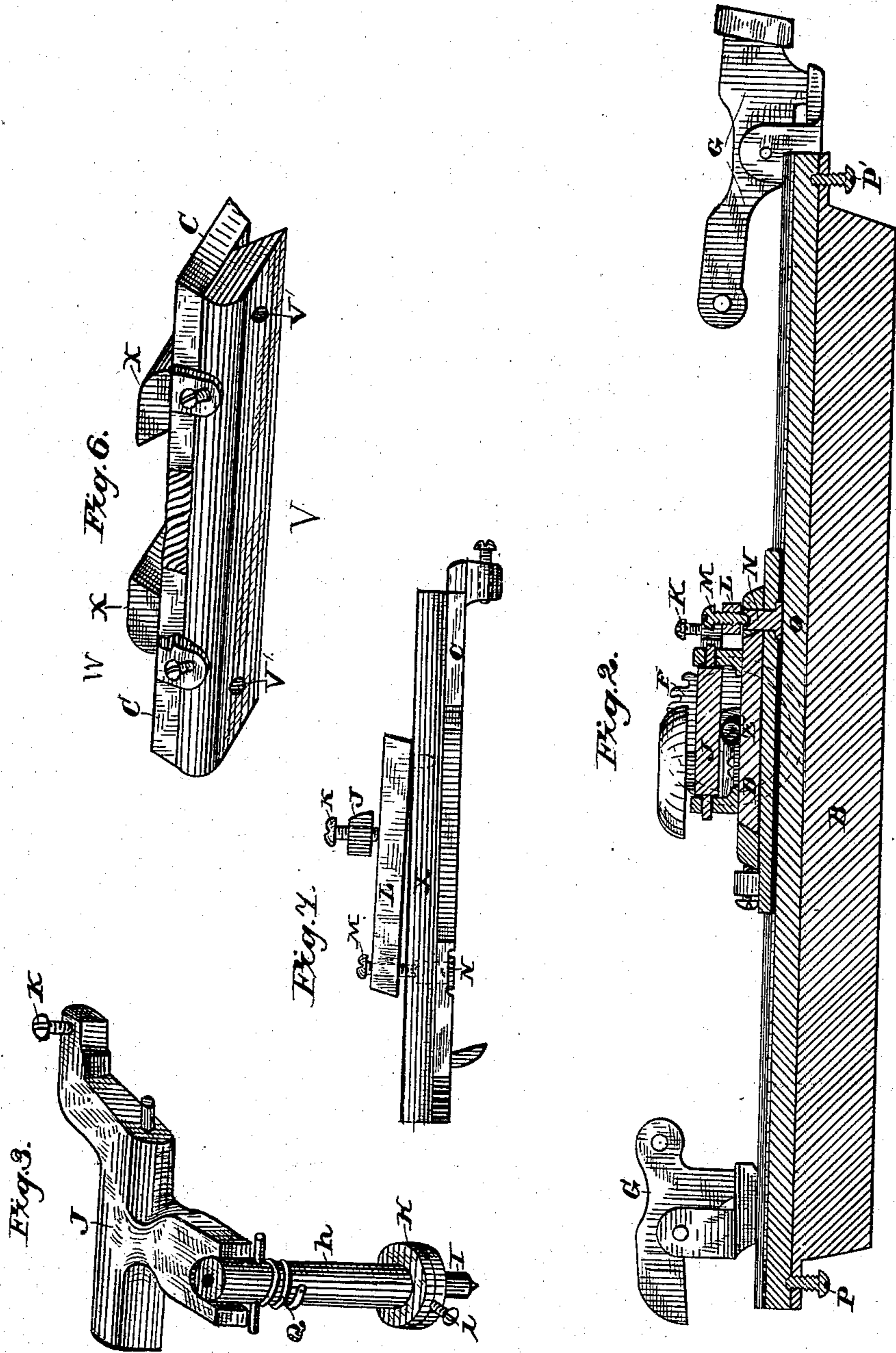
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UNITED STATES PATENT OFFICE.

CORNELIUS S. HOOVER, OF LANCASTER, PENNSYLVANIA.

MILLSTONE-DRESSING MACHINE.

SPECIFICATION forming part of Letters Patent No. 271,849, dated February 6, 1883.

Application filed November 9, 1882. (No model.)

To all whom it may concern:

Be it known that I, CORNELIUS S. HOOVER, a citizen of the United States, residing at Lancaster, in the county of Lancaster and State of Pennsylvania, have invented certain new and useful Improvements in Millstone-Dressing Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form apart of this specification.

In said drawings, Figure 1 represents a perspective view of a diamond millstone-dressing machine embodying my invention. Fig. 2 represents a longitudinal vertical section of the same on a line taken through the adjusting devices for regulating the inclination of the furrows. Fig. 3 represents a detail perspective view of the lever and tool-stock hereinafter described. Fig. 4 represents a detail perspective view of a modified form of the upper inclined bar which regulates the transverse inclination and the form of the furrow. Fig. 5 represents a detail view of the movable plate and screws which take up the wear of the slide in its guideway. Fig. 6 represents a detail view of the side bar of longitudinally-moving carriage and the devices for taking up wear between it and its guideway, and Fig. 7 represents a detail side view of the upper inclined bar and proximate devices.

In the several figures of the drawings the same letters indicate the same parts, respectively.

This invention relates to diamond millstone-dressing machines; and its object is to provide novel means for regulating the cut of the tool and the depth and inclination of the furrows, both from end to end and transversely. To effect these objects I employ a vibrating tool, a lever whereby said tool is sustained and vibrated up and down, an inclined bar which causes this vibratory motion as the slide carrying the lever is automatically fed transversely, and devices for adjusting this inclined bar so as to increase or decrease the inclination at will. My invention is in many

respects broader than the specific devices hereinafter set forth; but I will describe and illustrate one form of machine embodying my improvements, and will then claim what I consider to be my invention.

In the accompanying drawings, A designates the bed-plate of the machine, on which is erected a guideway, B, provided with longitudinal guide-rails *b b*, which are grooved to receive the correspondingly-shaped frame of the longitudinally-movable carriage C. This carriage is constructed with a broad flaring middle groove or passage, which serves as a guideway for the transversely-moving slide D, which is operated in the usual manner by the feeding-screw E, its cam-toothed wheel F, and the vibrating fingers G, which are attached to standards and arranged to engage with said wheel and turn it and the screw. The parts thus far referred to and the automatic method of feeding thereby the tool-carrying slide D have been described in my previous patents, and need not be more fully set forth here.

As shown in the drawings, the tool overhangs the side of the machine; but it may obviously be extended down through a longitudinal slot made between rails *bb* of the guideway. The tool holder or stock H consists of a disk or block attached to or formed with the lower end of a rod, *h*, the latter being guided in a block or casting, *h'*, which is formed with or attached to said slide D.

The tool proper consists of a small cylinder, I, which sets into a recess in the bottom of said stock, where it is held by a screw, *i*. The diamond is in the lower end of said cylinder I. The form of tool and tool-holder may, however, be widely varied.

The upper end of rod *h* is provided with lateral studs arranged under the outer end of a horizontal lever, J, of the first kind, the rear end of which is provided with an adjusting-screw, K, which bears on an inclined bar, L. By turning said screw in one direction or the other the depth of the diamond may obviously be regulated without affecting any of the other devices.

The inclination of bar L is caused and regulated by an adjusting-screw, M, which works

down through the outer end of said bar against the upper end of a pin, N, the latter being free to move up and down in a vertical passage or aperture of carriage C. This pin rests upon a bar, O, which sets into a longitudinal recess of guideway B parallel to one of the rails *b*. Screws P P' work up through the bottom of said guideway, at or near the ends thereof, against the bottom of said bar O. The operation of these adjusting devices is as follows: When the operator desires to regulate the transverse inclination of a furrow he turns the screw M until the outer end of bar L is sufficiently raised or lowered to give the degree of inclination desired. It is obvious that as the slide D is fed automatically across the carriage C the screw K in approaching screw M will rise gradually, following the inclination of bar L, and carrying the rear or inner end of lever J up with it. This of course will correspondingly depress the operating end of said lever and the tool-holder carried thereby. To regulate the inclination of the furrows longitudinally from skirt to eye, or the reverse, one of the screws P or P' is turned so as to raise its end of the movable bar O, and thereby incline the latter. As the carriage C moves along guideway B toward the upper end of the incline thus formed, the pin N rides along the top of bar O, mounting said incline and correspondingly raising screw M and the outer end of bar L. This of course increases the inclination of said bar L, and thereby causes the tool-stock and tool to move downward, making a gradually-deepening cut. As the carriage moves toward the lower end of the inclined bar O a replacing-spring, Q, raises the tool-stock and lever to correspond to the downward motion of screw M, pin N, and the outer end of bar L. Thus said tool-holder has a slow longitudinally-reciprocating motion. The latter bar is shown without attachment to the machine, except the clamping action of screws K and M; but any form of attachment may be employed which will allow the necessary action hereinbefore described. By varying the shape of the top of bar L a great variety of shape may be given to the furrows. Fig. 4 shows said bar provided with an undulating upper face for the purpose of giving a similar contour to a furrow on the "land" between the furrows. When the machine is to be used for the latter purpose the bars L and O are allowed to assume a level instead of an inclined position, and the tool is then operated in the usual manner. I find it convenient under such circumstances to provide the rear end of lever J with a screw, which will bear on slide D, thus doing the work of screw K in holding the lever and tool in proper position, but without wear on bar L. Of course other adjusting devices may be substituted for the adjusting-screws hereinbefore described.

In order to compensate for wear between the carriage C and guide-rails *b b*, and thereby secure accuracy of fit between them and

avoid rattling and irregularity of motion, said carriage is provided with a movable side bar, V, which engages with a groove in the exterior of one of said rails. Said bar is secured to the body of said carriage by screws *vv*, and is constructed with short transverse slots V', which receive said screws and allow said bar to be moved laterally by horizontal adjusting-screws W. For a similar purpose the guideway of slide D is provided with a movable piece, X, which is attached to said carriage by screws *x*, that pass through slots *x'* therein, said piece being forced against one side of the said slide D by screws Y.

The corresponding faces of the movable and immovable contiguous parts are inclined in both cases, so that the action of said adjusting-screws W or Y will tighten the parts properly, and the displacement by vertical motion of the slide or carriage will be effectually guarded against.

The grooves in the guideways may be either external or internal, and the position of the parts V X, which enter said grooves, may of course be similarly varied.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a millstone-dressing machine, a slide and its automatic feeding devices, in combination with a diamond-holder carried by said slide, a lever arranged to force said diamond-holder toward the stone, and an inclined bar arranged to be in contact with said lever while said slide moves back and forward, substantially as and for the purpose set forth.

2. In a millstone-dressing machine, a tool-holder, a spring which constantly forces it from the stone, a slide which carries said holder, a lever which operates to force said holder toward the stone, and an inclined bar which acts on said lever to cause it to gradually increase its pressure on the tool-holder during the motion of the slide in one direction, substantially as set forth.

3. In a millstone-dressing machine, a tool-holder, a lever arranged to force said tool-holder toward the stone, a slide which carries said holder and lever, a spring which opposes the action of said lever, and a pattern-bar which by its contact with an attachment of said lever, as the slide is fed from side to side, governs the dress of the stone face or furrows, substantially as set forth.

4. In a millstone-dressing machine, a tool-holder, movable toward and from the stone, in combination with a slide which carries said holder, a lever and bar which act on said holder to prevent the diamond from leaving the stone, and a screw between said lever and bar, whereby the position of the holder with respect to the stone may be adjusted, substantially as set forth.

5. In a millstone-dressing machine, a tool-holder movable toward and from the stone, a spring which tends to raise it therefrom, a le-

ver and inclined bar which hold the tool against the stone, a slide carrying said holder and moving in a line parallel to said bar, and a device for adjusting the inclination of said bar, substantially as set forth.

5 6. In a millstone-dressing machine, a tool-holder held constantly against the stone, a transversely-moving slide carrying said holder, a longitudinally-moving carriage for the slide, 10 an inclined bar parallel to the line of motion of said carriage and adjustable vertically independently thereof, and the necessary intervening devices whereby said bar causes the tool to cut more deeply as the carriage moves 15 toward the upper end thereof.

7. In a millstone-dressing machine, a tool-holder held constantly against the stone, a transversely-moving slide carrying said holder, a longitudinally-moving carriage for the slide, 20 an inclined bar parallel to the line of motion of said carriage and vertically adjustable independently thereof, the necessary intervening devices whereby said bar causes the tool to cut more deeply as the carriage moves to- 25 ward the upper end thereof, and an adjusting-screw for regulating the inclination of said bar, substantially as set forth.

8. In combination with the tool-holder slide, opposing spring and lever, and carriage moving at right angles to the line of motion of the slide; two inclined planes, one parallel to the line of motion of the slide and the other to that of the carriage, and both combining to control the dress of the millstone as said slide and carriage are slowly fed, substantially as set forth.

9. In combination with a bed plate or frame, a carriage, and a transversely-moving slide, all immovable in a vertical direction, a diamond-holder and its operating-lever, both carried by said slide, a transverse bar of variable inclination, a longitudinal bar on which one end of said transverse bar rests, and a device for adjusting the inclination of said longitudinal bar, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CORNELIUS S. HOOVER.

Witnesses:

JAS. P. RYON,
WM. H. BABCOCK.