

(No Model.)

2 Sheets—Sheet 1.

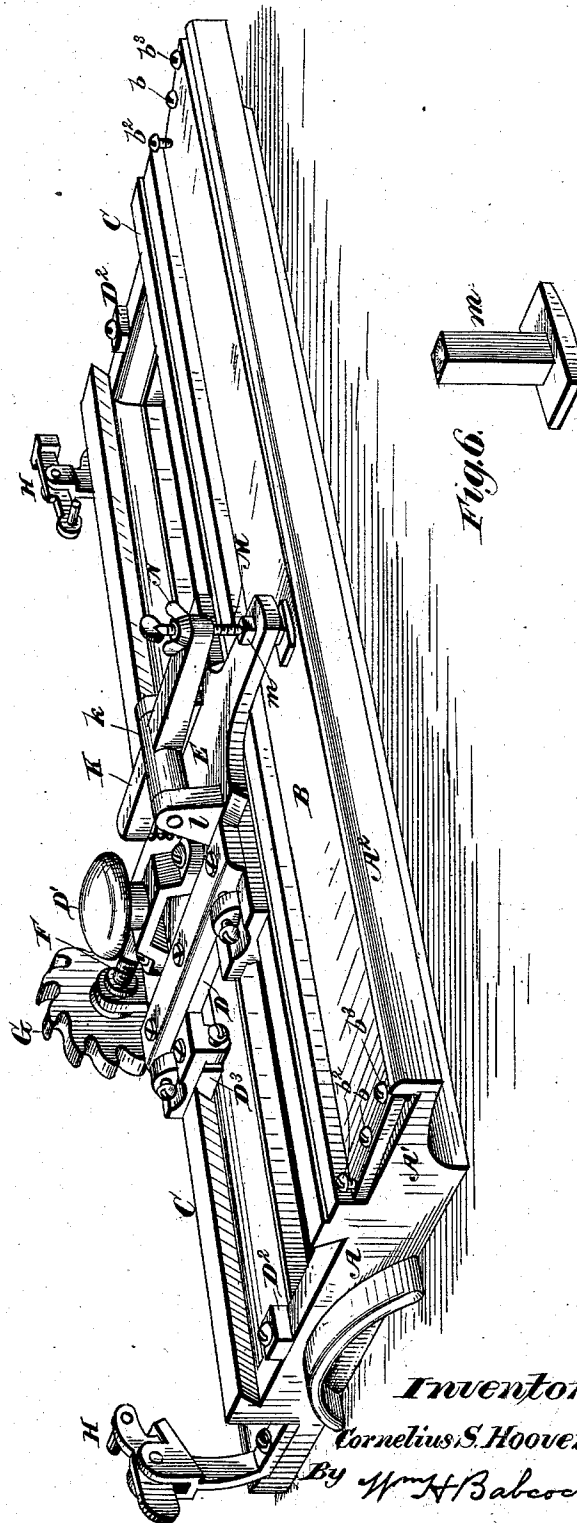
C. S. HOOVER.

MILLSTONE DRESSING MACHINE.

No. 278,335.

Patented May 29, 1883.

Fig. 1.



Witnesses.

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Inventor.

Cornelius S. Hoover.

By Wm H Babcock

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(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

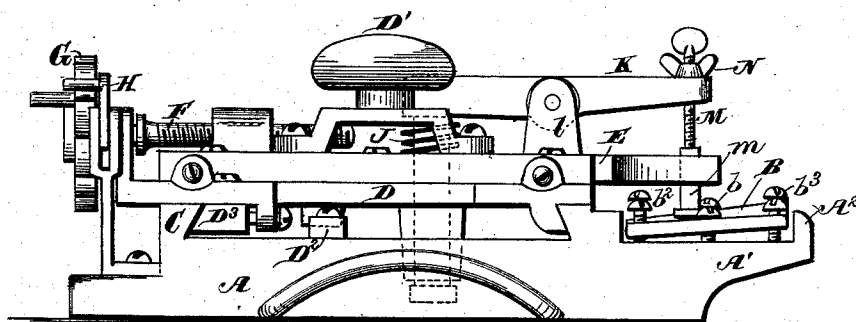


Fig. 3.

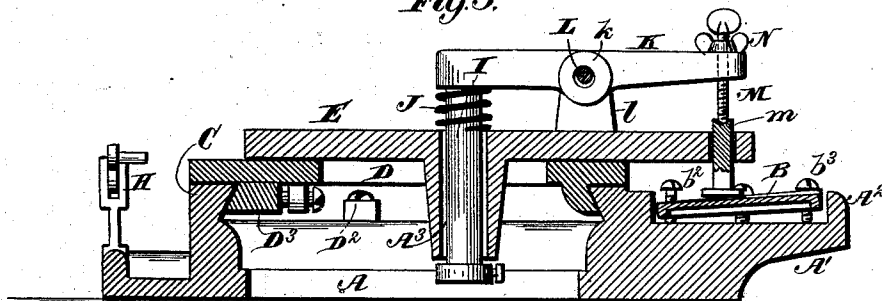


Fig. 4.

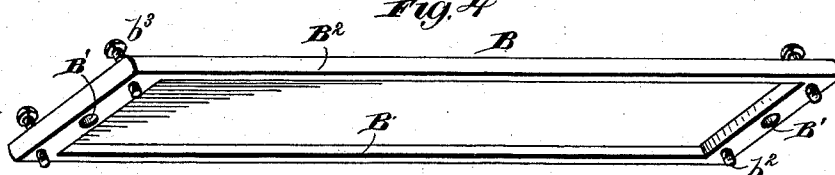
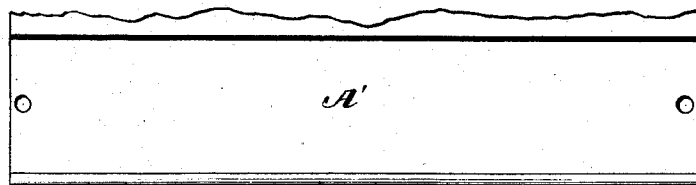


Fig. 5.



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UNITED STATES PATENT OFFICE.

CORNELIUS S. HOOVER, OF LANCASTER, PENNSYLVANIA.

MILLSTONE-DRESSING MACHINE.

SPECIFICATION forming part of Letters Patent No. 278,335, dated May 29, 1883.

Application filed February 5, 1883. (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 a part of this specification.

This invention relates to diamond millstone-dressing machines, and is an improvement on my patent dated February 6, 1883. In said patent two inclined bars are employed, in combination with the diamond-holder and its transversely-moving slide and longitudinally-moving carriage, to give both the longitudinal and transverse inclination to the furrows.

The chief object of the present invention is to further simplify the machine by making one bar do the work of two. For this purpose I employ a single broad longitudinal bar, arrange it to be in contact with the lever which presses on or forms part of the holder, and provide it with suitable devices for adjusting its inclination both from end to end and from side to side, the parts being arranged so that such adjustment will govern the depth and inclination of the cut.

There are other and minor features of my invention, which will be hereinafter set forth; but this inclined bar, constructed, arranged, and combined with the other devices, as stated, to do double duty, is what I regard as of chief importance.

In the accompanying drawings, Figure 1 represents a perspective view of a millstone-dressing machine embodying my invention. Fig. 2 represents an end view of the same. Fig. 3 represents a transverse section of the same through the holder and its lever. Fig. 4 represents a detail view of the inclined bar, shown in perspective. Fig. 5 represents a detail plan view of the bed for said plate, the latter being removed; and Fig. 6 represents a detail view of the step for the screw.

The same letters of reference indicate the same parts in the different figures.

A designates the bed of the machine, and A' a lateral extension thereof, into which is set a broad bar or plate, B, which is parallel to bed A, and is adjustable in said extension or supplemental bed A', so as to be inclined longitudinally or laterally, or both, to any required degree. This adjustment is effected by means of screws, as shown, although wedges or equivalent adjusting devices may be employed instead. The said screws, as shown in the drawings, consist of three at each end of the bar. The middle screw, *b*, at each end passes through a slightly-enlarged opening, B', in said bar or plate B, into a screw-threaded opening or recess in the supplemental bed A'. Its office is simply to hold the said bar to the said bed. It is loosened when the former is to be adjusted to an inclined position, the opening B' allowing the tilting of said bar without binding against said screw *b*. The two adjusting-screws *b*² *b*³ at each end of the bar are arranged one on each side of said screw *b*. The bar B is screw-tapped for them at or near each corner, and their lower ends bear against the face of bed A'. By loosening the holding-screws *b* sufficiently to raise their heads out of the way of bar B, and then turning one of the screws *b*² or *b*³, so as to raise its corner of the bar, the desired combined longitudinal and transverse inclination is obtained. Any corner being arranged to be raised in this manner, the operator is quite free to make his choice of the exact tilt or inclination to be given to produce the shape of furrow required, and the degree of said inclination is also within his control. If, for any reason, a longitudinal inclination of the bar is desired alone, both the screws *b*² and *b*³ at one end of the bar are turned equally to raise said end. If only a transverse inclination is desired, both of the screws *b*² or *b*³ on one side of the bar are turned equally to raise that side. By one or the other of these two screw adjustments the bar B may be tilted at either end or either side. When the six screws are all turned home the bar is in its lowest position and perfectly horizontal. When the screws *b* are loosened and the other screws all turned equally to raise the bar it is then again horizontal, but in a higher plane. In either of these latter positions it may be used for dressing the land or face of the stone, the depth of cut depending on the elevation

of the bar. It may also be slightly inclined while at any elevation or in its lowest position, and used for dressing the face for certain purposes and with certain advantages which will be set forth near the end of this specification; but when furrows are to be cut, the tilting of one corner, as first described, will be most frequently resorted to for the purpose of giving said bar, and consequently the furrow, the oblique inclination, (compounded of longitudinal inclination and transverse inclination,) which is most frequently desired. As described in my prior patent, this bar B may have any desired configuration of surface, making it a pattern-bar for transferring its contour to the millstone-dress. The said bar is preferably provided, as shown in Fig. 4, with longitudinal ribs or flanges B², which extend, somewhat like sled-runners, longitudinally under its sides, and are connected at the ends by transverse bars, forming a frame which serves to brace said bar, allowing it to be made with less material in the intervening part, and thus lightening the machine to some extent. The bed A' is provided with a raised border, A², within which said bar sets, as in a frame, and the inner face of said border is inclined upwardly and outwardly on all sides to allow the tilting of said bar, as hereinbefore described.

C designates the main guideway of the machine, which is formed on the bed A thereof; D, the carriage, which slides longitudinally on said guideway; E, the slide, which moves in a supplemental transverse guideway on the top of said carriage; F, the feed-screw, whereby said slide is caused to traverse said carriage; G, the cam-wheel on the shaft of said screw; H, the two arms, pivoted to suitable standards, whereby said cam-wheel is engaged to turn said screw a given distance at each longitudinal movement of the carriage; I, the tool-holder, carried by the slide, and extending down through an opening, A³, in the bed A, between the rails of guideway C, and J a spring which tends to force said tool-holder away from the stone. The guideways and the parts of the carriage and slide, respectively, in contact therewith are constructed by beveling, (or otherwise,) so as to prevent the moving of either the carriage or the slide away from the bed A. The slide E is provided with a raised handle, D', whereby the operator is enabled to give the carriage its longitudinal horizontal motion, and stops D² are raised upon the bed-plate to limit this motion in either direction. One of the two depending bars D³ of the carriage, which set into the grooves of the guideway C, is preferably made adjustable toward the same to take up wear. One of the side pieces of the guideway on the carriage is preferably made similarly adjustable toward the slide for the same purpose. All of these devices described in this paragraph may have substantially the same construction as in my prior patent hereinbefore referred to. No further description of them is deemed necessary here.

Instead of making my lever which bears on said tool-holder I an independent part of the machine, I prefer to make it in one piece therewith. Thus in the present drawings said lever is an arm, K, of said tool-holder, extending outward over the bar B, and having a transverse tubular part, k, between the tool-holder and the outer end of the arm. Through this tubular part k of the arm extends a transverse pivot pin or rod, L, which is attached at its ends to lugs or short standards l, raised on the slide E. The opening surrounding said rod L is made large enough to allow such automatic shifting of the said pivot-rod L from one bearing-line to another as will compensate for the constantly-changing inclination of arm K, and allow the tool-holder to ascend and descend in a vertical line, according to the inclination and configuration of the bar B, without straining or binding. The lever or arm K may, however, be, as heretofore, separate from the tool-holder, though bearing thereon, without affecting the operation of the machine or the utility of the other improvements herein described. A screw, M, passes down through the inner end of the arm or lever K, which is tapped to receive it, and bears on a step, m, which has a broad smooth face that is pressed against the face of bar B and slides easily over the same. The top of this step is preferably provided with a concave recess, m', to receive the lower end of the screw and prevent separation therefrom, as well as to insure the presentation of the entire base of the step to the bar below, notwithstanding the changes of inclination of the screw. This step is not absolutely necessary, for the screw may bear directly on the bar B; but it is serviceable as lessening the wear on said bar. By turning this screw up or down, the depth of cut may be adjusted without moving the bar B. The same device appears in my previous patent. In this instance I provide it with a thumb-nut, N, above bar K; but it will work very well without any thumb-nut.

The operation of the machine needs very little additional explanation. The carriage is moved longitudinally backward and forward by hand in the usual manner. At each movement the slide is automatically fed, as usual, a predetermined distance transversely, and the inclination given to bar B, as stated, is necessarily reproduced in the furrow traced in the millstone through the media of step m, screw M, arm or lever K, tool-holder I, and the tool carried thereby, the spring J holding step m against the face of bar B and tending to raise the tool from the stone. Of course this spring will not be needed if the end of the arm to which screw M is attached be made sufficiently heavy to counterbalance the weight of the holder and the other end of the arm; but this involves increasing the weight of the machine. The latter has, for dressing the land near the furrows, a decided advantage over the machine described in my former patent

hereinbefore mentioned. It is often desirable to give a very slight inclination to the land or face of the millstone at the edge of the furrow, and to have this inclination uniform in depth transversely. This I can now effect by simply raising very slightly one end of my bar B, keeping its sides even. In the former machine described in said patent the inclination of the longitudinal bar involves the inclination of the transverse bar also. Consequently the leverage increases at each traverse of the carriage, and consequent transverse step-by-step motion of the slide. Therefore the inclination thus dressed in the face of the stone will be lateral as well as longitudinal, whereas my present machine enables me to cut a smooth, gentle incline from the skirt to the eye of even depth at all points on any transverse line.

By a slight change in construction and arrangement of the parts the holder may obviously be made to work outside of the main guideway, while the inclined bar B is arranged within the same.

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

1. In combination with the carriage, slide, and tool-holder of a millstone-dressing machine, a bar adjustable to both longitudinal and transverse inclination, and arranged to be in contact with an attachment of said holder, or of a lever bearing thereon, for the purpose set forth.

2. In combination with the carriage, slide, and tool-holder of a millstone-dressing machine, a bar parallel to the main guideway thereof, having longitudinal inclination, and arranged to be in contact with an attachment of said holder, or of a lever bearing thereon, and movable independently of said slide, whereby the tool is caused to cut an incline in the face of the stone without any transverse inclination, substantially as set forth.

3. In combination with the carriage, slide, and tool-holder of a millstone-dressing machine and automatic feeding devices for said slide, an arm attached to or bearing on said tool-holder and pivoted to said slide, a longitudinal bar arranged to have any one of its corners raised, so as to give it an oblique inclination, and a suitable attachment of said pivoted arm, which is in contact medially or immediately with said bar, and travels over it both longitudinally and transversely, for the purposes set forth.

4. In combination with the carriage and slide

of a millstone-dressing machine and automatic feeding devices for said slide, a tool-holder having an arm cast therewith and pivoted to bearings on the slide, a spring which tends to raise said holder and depress the other end of said arm, and an inclined bar against which an attachment of this latter end bears, for the purposes set forth.

5. In combination with the carriage and slide of a millstone-dressing machine and automatic feeding devices for said slide, a tool-holder having an arm cast therewith and pivoted to bearings on the slide, and an inclined bar, against which an attachment of said arm bears, substantially as set forth.

6. In combination with a tool-holder and devices for automatically moving it transversely step by step at each longitudinal movement, a bar which is traversed both longitudinally and transversely by an attachment of said tool-holder, and adjusting devices whereby said bar may be tilted from any one corner toward the diagonally-opposite corner, substantially as set forth.

7. In combination with a tool-holder, carriage, slide, and feeding devices for said slide, a bar arranged parallel to the line of motion of said carriage and adjustable to transverse inclination, a tool-holder carried by said slide, and a pivoted arm or lever, one end of which bears on said holder, or is integral therewith, and the other end of which bears, through a suitable attachment, on said bar, substantially as set forth.

8. The bar B, provided at each corner with an adjusting-screw and at each end with an intermediate holding-screw, in combination with a tool-holder and its pivoted arm, the latter bearing on said bar through suitable attachments, and the carriage, slide, guideways, and feeding devices, for the purpose set forth.

9. The bar B, having screws b^2 b^3 , arranged and operating substantially as set forth, in combination with a tool-holder moving longitudinally and fed transversely step by step at each longitudinal movement, and a pivoted arm attached to or bearing on said tool-holder, and provided with an attachment which correspondingly traverses said bar both lengthwise and crosswise, substantially as set forth.

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

CORNELIUS S. HOOVER.

Witnesses:

A. J. SPURRIER,
GEO. A. LANE.