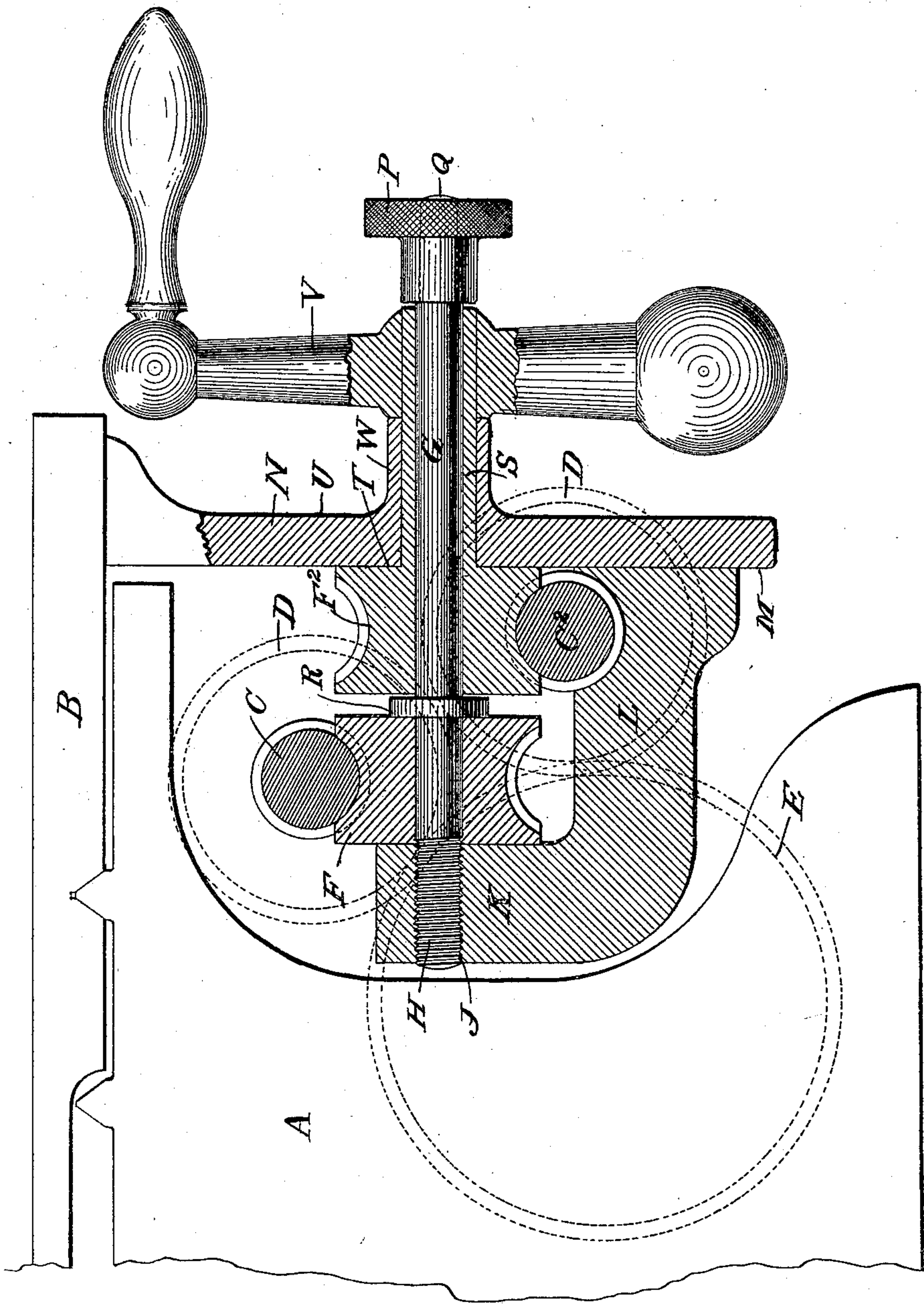


(No Model.)

G. F. BALLOU.  
SLIDE LATHE.

No. 359,381.

Patented Mar. 15, 1887.



WITNESSES

*Francis M. Brown,*  
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# UNITED STATES PATENT OFFICE.

GEORGE F. BALLOU, OF WALTHAM, MASSACHUSETTS.

## SLIDE-LATHE.

SPECIFICATION forming part of Letters Patent No. 359,381, dated March 15, 1887.

Application filed November 20, 1886. Serial No. 219,496. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE F. BALLOU, of Waltham, in the county of Middlesex and State of Massachusetts, have invented certain  
5 new and useful Improvements in Slide-Lathes, of which the following is a full, clear, and exact description.

This invention relates to that class of slide-lathes having two horizontal parallel geared  
10 leading-screws located on one and the same side of the lathe-bed or shears, a slide-carriage to be moved from the rotation of said leading-screws upon and lengthwise of the lathe-bed, and mechanism upon said carriage  
15 through which the carriage can be made to receive its movement from either of said leading-screws, as may be desired.

In substance the improvements of this invention consist of two horizontal parallel lead-  
20 ing-screws located on one and the same side of the lathe-bed or shears and having threads preferably of opposite directions, and preferably geared to run in the same direction, a slide-carriage arranged upon the lathe-bed to  
25 be capable of moving lengthwise thereon in either direction, and mechanism which is located upon the slide-carriage and is constructed and arranged as to its separate parts and in relation to said leading-screws so that  
30 it can be adjusted and set to place the slide-carriage either into or out of operative connection with either leading-screw, and out of operative connection with both leading-screws, in the latter case with the leading-screws at  
35 rest, enabling the slide-carriage to be then moved along the lathe-bed in either direction through the rotation by hand of the part of said mechanism meshing with one of the said leading-screws, all substantially as hereinafter  
40 described.

In the drawing forming part of this specification, the figure is an end view of the lathe-bed or shears in part, and a transverse vertical section of the two leading-screws, and of  
45 portions of the slide-carriage, and of mechanism located on the carriage through which to place it into or out of operative connection with either or out of connection with both of said leading-screws.

50 As shown, the carriage is in operative connection with one of the leading-screws.

In the drawing, A is the lathe-bed or shears,

and B is the slide-carriage, and C C<sup>2</sup> the two horizontal parallel and upper and lower leading-screws at one and the same side of the  
55 lathe-bed, and all, except as hereinafter described, the same as ordinary or as well known, or otherwise, as may be suitable.

Each leading-screw C C<sup>2</sup> at one end is provided with a similar gear-wheel, D, which  
60 meshes with a common gear-wheel, E, which is located at the head-stock end of the lathe, and otherwise is arranged and driven all as well known in slide-lathes.

The rotation of the gear-wheel E rotates  
65 both leading-screws C C<sup>2</sup>, and, as is plain, in the same direction. The threads of the leading-screws preferably run in opposite directions—that is to say, the thread of the one is right-handed and the thread of the other is  
70 left-handed; but they may both run in the same direction. The leading-screws are in different vertical and horizontal planes.

F F<sup>2</sup> are two similar worm gear-wheels, both  
75 carried by and loose upon a common horizontal stationary spindle, G, of the slide-carriage. This spindle G, at its inner end, H, is screw-threaded, and it is screwed into a screw-threaded socket, J, in the upper portion, K, of a bracket-arm, L, fixed to the rear or inner  
80 side, M, of the apron N of the slide-carriage, and at its outer end, Q, it is provided with a milled head, P, for convenience in turning it. The worm gear-wheel F is directly inside of the upper portion, K, of the bracket-arm L,  
85 and between it and a collar, R, surrounding the spindle, and meshes with the upper leading-screw, C. The worm gear-wheel F<sup>2</sup> is between said collar R and the rear or inner face or side, M, of the apron N of the slide-car-  
90 riage, and it meshes with the lower leading-screw, C<sup>2</sup>, and it also has a sleeve, S, which forms a shoulder, T, at the inner side of the apron, and extends loosely through the apron to and beyond its front or outer face, U, where  
95 it is provided with a winch or crank-handle, V.

The carriage-apron N is provided with a horizontal outward extension, W, to give increased length of bearing for the sleeve-extension R of the worm gear-wheel F<sup>2</sup>.

100 By screwing the spindle G in one direction—that is, into the screw-threaded socket J therefor of its bracket-support L of the slide-carriage—its collar R will be brought to bear



against the inner worm gear-wheel, F, and thereby said gear can be firmly bound to the bracket and secured against rotation. Again, by screwing the spindle G in the other and opposite direction—that is, out of the screw-threaded socket J therefor of its bracket-support L of the slide-carriage—its collar R will be brought to bear against the outer worm gear-wheel, F<sup>2</sup>, and thereby said gear-wheel can be firmly bound to the apron N of the slide-carriage and secured against rotation. With the inner worm gear-wheel, F, bound and secured, as described, the outer worm gear-wheel, F<sup>2</sup>, is free for rotation about and upon the spindle, and vice versa, and by turning the spindle so that its collar R is free of contact or of a bearing upon either of said worm gear-wheels both are free for rotation upon and about their said common spindle.

Binding and securing either of the worm gear-wheels, as has been described, makes such worm gear-wheel a screw-nut to the leading-screw meshing with it, so that in the then rotation of such leading-screw the slide-carriage will be given a movement in accordance with the direction of the thread of that leading-screw—that is, to the right or left, as the case may be—along the lathe-bed or shears. With both worm gear-wheels unbound or released, as has been described, with the leading-screws then at rest, by turning the outer worm gear-wheel, F<sup>2</sup>, by its handle V, the lower leading-screw, C<sup>2</sup>, makes a gear or toothed rack, securing from its action, in co-operation with the rotating worm gear-wheel, the movement of the slide-carriage along the lathe-bed to the right or left, as the case may be, and according to the direction in which the handle may be turned.

With two leading-screws constructed and arranged and geared to rotate all as described, in combination with the mechanism of the slide-carriage having worm gear-wheels F F<sup>2</sup>, meshing, respectively, with the leading-screw-shafts and otherwise, all substantially as described, under the rotation of the leading-screws the slide-carriage can be given a movement along the length of the lathe-bed or shears in direction right or left, according as the said mechanism may be adjusted as described for operation from either the right or the left handed leading-screw of the two leading-screws, and the slide-carriage can be made capable of a movement along the lathe-bed in either direction—that is, to the right or left—by hand, both leading-screws at that time being at rest.

The threads of the leading-screws C C<sup>2</sup> may be of the same direction, either right or left handed, in lieu of opposite directions, as has been particularly described, without departing from the invention; and, again, the lead-

ing-screws may be geared directly together, in lieu of through an intermediate gear-wheel, E, as has been described.

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

1. In a slide-lathe, in combination, two horizontal parallel leading-screws located on one and the same side of the lathe-bed, two worm gear-wheels, each meshing with a leading-screw and free to rotate on a common spindle which is carried by the slide-carriage and is constructed and arranged to secure either worm gear-wheel against and leave them both free for rotation, and means for rotating one of the worm gear-wheels by hand, substantially as described, for the purposes specified.

2. In a slide-lathe, in combination, two horizontal parallel leading-screws geared to rotate in the same direction and located on one and the same side of the lathe-bed, two worm gear-wheels, each meshing with a leading-screw and free to rotate on a common spindle which is carried by the slide-carriage and is constructed and arranged to secure either worm gear-wheel against and leave them both free for rotation, and means for rotating one of the worm gear-wheels by hand, substantially as described, for the purposes specified.

3. In a slide-lathe, in combination, two horizontal parallel leading-screws with threads of opposite directions and geared to rotate in the same direction and located on one and the same side of the lathe-bed, two worm gear-wheels, each meshing with a leading-screw and free to rotate on a common spindle which is carried by the slide-carriage and is constructed and arranged to secure either worm gear-wheel against and leave them both free for rotation, and means for rotating one of the worm gear-wheels by hand, substantially as described, for the purposes specified.

4. In a slide-lathe, in combination, two horizontal parallel leading-screws, C C<sup>2</sup>, located on one and the same side of the lathe-bed, two worm gear-wheels, F F<sup>2</sup>, each meshing with a leading-screw and free to rotate on a common spindle, G, having a collar, R, between said gears and carried by the slide-carriage, and constructed and arranged to secure either worm gear-wheel against and leave them both free for rotation, and sleeve-extension S of gear F<sup>2</sup>, having a suitable handle for rotating it by hand, substantially as described, for the purposes specified.

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

GEO. F. BALLOU.

Witnesses:

ALBERT W. BROWN,  
FRANCES M. BROWN.