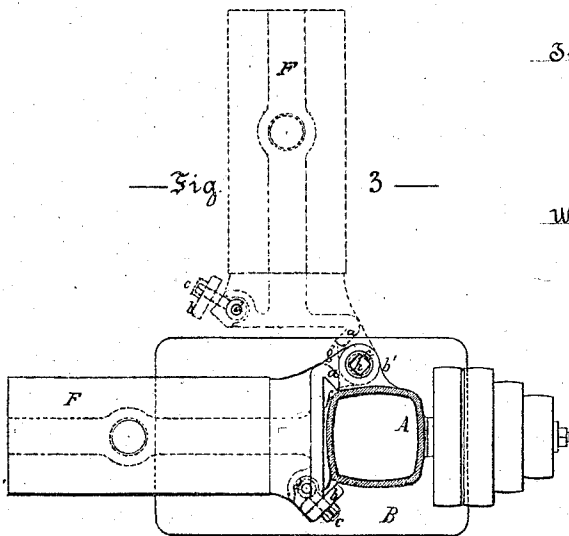
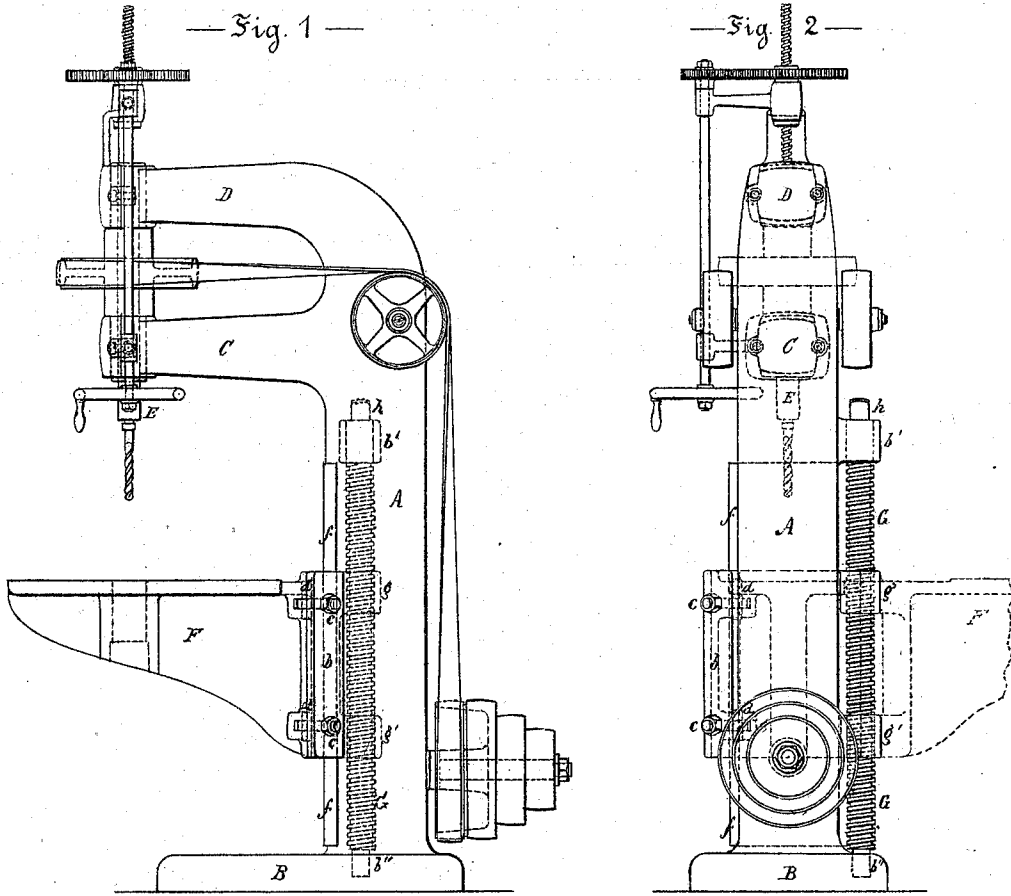


W. SELLERS.

Improvement in Drilling-Machines.

No. 128,665.

Patented July 2, 1872.



Inventor:

Wm. Sellers

Witnesses:

Baltis De Long

J. Thomson Bell

UNITED STATES PATENT OFFICE.

WILLIAM SELLERS, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN DRILLING-MACHINES.

Specification forming part of Letters Patent No. 128,665, dated July 2, 1872.

To all whom it may concern:

Be it known that I, WILLIAM SELLERS, of the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Drilling-Machines, of which the following is a specification:

My improvements relate to that class of drilling-machines in which the drill-spindle stands in a vertical position above a horizontal platen or table supporting the work, to which the drill is fed in a downward direction. In nearly all machines of this class a strongly-constructed column or upright standard is used as the main supporting structure, carrying the spindle with its driving-gear and feed mechanism on laterally-extending arms or projections at the top, while the table or bracket supporting the work is secured to the lower vertical portion of this main standard, from which it projects in the direction of the parts above it carrying the spindle, the distance between the axis of the drill-spindle and the adjacent side of the post being the limit of over-reach or capacity of the machine to take in a circular piece for drilling or boring through its axis. A vertical adjustment of considerable range is generally provided to alter the height of the supporting bracket or table for work of various descriptions, and sometimes the table is swung entirely out of the way from under the drill-spindle to allow the use of all available height between the floor and drill for the admission of pieces of large dimensions. The objects of my invention are to simplify the construction of the parts used for supporting and vertically adjusting the table, and to enable the same parts to support the table when detached from the post and swung out sidewise from under the spindle; to which ends my improvements consist in the combination of an adjusting-screw, a table capable of being swung around said screw out of the way of the drill-spindle, and devices for clamping the table to the frame when in use, as hereinafter set forth.

In the accompanying drawing, Figure 1 is a side elevation of a vertical drilling-machine embodying my improvements; Fig. 2, an end view of the same; and Fig. 3, a sectional plan, with the top of the machine removed to show its construction more clearly.

The frame or main supporting structure of the machine consists of a hollow post, A, wid-

ened at the bottom into a base, B, and terminating at the top in two laterally-projecting arms or brackets, C D, which carry the vertical drill-spindle E and its driving and feed mechanism; but as these parts do not contain any feature of my present improvements, and may be constructed in any manner best suited for a given class of work without departing from the spirit of my invention, a detailed description of them is unnecessary. The work is supported upon a bracket or table, F, which may be provided with slides for compound adjustment of the work instead of the plain top surface shown in the drawing. The table F is secured to the post A by means of beveled clamps taking hold of a dovetailed projection, *f*, on the post, as clearly shown in the drawing. One of the clamps, *a*, is cast on the table, while the other, *b*, consists of a detachable shoe attached to the table by clamping-bolts *c*, and so arranged as to swing about the common vertical axis of the fulcrum-pins *d d* of these bolts, which thus support the shoe *b*, and allow it to be entirely detached from the projection *f* on the post A without separating any of the parts of the fastening. A strong screw, G, provided with a coarse thread, is supported in bearings *b'* and *b''* in the post A. This screw furnishes a vertical adjustment for the table F, which has two bearings, *g g'*, cast on the side of the beveled clamp *a*. One of these bearings, *g*, acts as a nut for the screw G; the other is a plain guide fitting the outside diameter of the screw. By applying a suitable wrench to the squared top *h* of the screw G, the latter may be turned about its axis to raise or lower the table to suit various kinds of work; but, instead of turning the screw G by hand by means of a handle or wrench, it may be fitted with gearing and driven by belt power for the vertical adjustment of the table.

It will be evident that the table, whether clamped to the post or entirely detached therefrom, remains at all times supported in its screw-bearing *g* on the screw G, and the position of this screw-fulcrum relative to the clamp *a* and *b* is such as to allow the table F to be swung bodily about the axis of the screw G away from the clamping and sliding surfaces on the post, as shown in dotted lines at Fig. 3. While the table F is in this position the whole space between the floor and the drill-

spindle is available for the admission of work of too great weight or bulk to be used upon the table.

The simplicity of construction and practical advantages of making the vertical adjusting-screw the axis, about which the table may be swung to one side, and on which it remains supported when so swung to one side, will be evident when compared with some of the plans heretofore in use for supporting and vertically adjusting the table and for swinging it to one side.

An arrangement frequently employed has been to make the post of the machine cylindrical and to support the table thereon in such manner that it may be swung about the axis of the cylindrical column and placed in any radial position, either a screw embedded in the column or a rack confined endwise between stops, but turning with the table about the axis of the post, being used to raise and lower the table. This mode of construction is very expensive and practically defective, because the weight of the overhanging table is at all times supported by the sliding surfaces in such manner as to throw all the wear of the vertical or radial motion on two diagonally-opposite bearing points, and proper maintenance of the condition of the surfaces of the table relative to the axis of the spindle is impracticable.

Another and a similarly-defective arrangement that has sometimes been adopted consists in providing a plate or saddle sliding vertically on bearing-surfaces on the side of the upright, on which it is adjustable by a rack or screw. On this saddle the table is arranged to slide sidewise outside of the vertical sliding surface or beyond the center of the drilling-spindle. This mode of construction is likewise

defective as regards unequal wear of the sliding and clamping surfaces, they having the overhanging weight of the table to sustain at two opposite bearing points.

Referring to my improved combination of devices for clamping, moving sidewise, and vertically adjusting the table, it will be found that the clamping surfaces on which the accurate level of the plane of the table depends are not subjected to any strain or wear while the table is raised or lowered or swung away from under the drill-spindle, since the screw *G* contains in itself the combined means of vertically and radially adjusting the table and supporting it in its bearings *g* and *g'* while detached from the clamping surfaces on the side of the post. Any wear of these bearings *g* and *g'* cannot impair the accuracy of the table while in use, as its position then depends on and is corrected by the clamping surfaces, which, being used for clamping only, cannot become inaccurate from unequal frictional wear.

I claim as my invention—

1. The combination, in a drilling-machine, of a supporting-post, an elevating-screw, a table, and a clamp securing the table to the post, these parts being combined and operating substantially as set forth.

2. The combination, in a drilling-machine, of a supporting-post and a table with a swinging clamp pivoted to the table to secure the table to the post, substantially as set forth.

In testimony whereof I have hereunto subscribed my name.

WM. SELLERS.

Witnesses:

J. SNOWDEN BELL,
EDWD. C. DAVIDSON.