S. Wilmarth.

Planing Machine.

No. 90,907. Patented June 1, 1869.

Fig. 2.

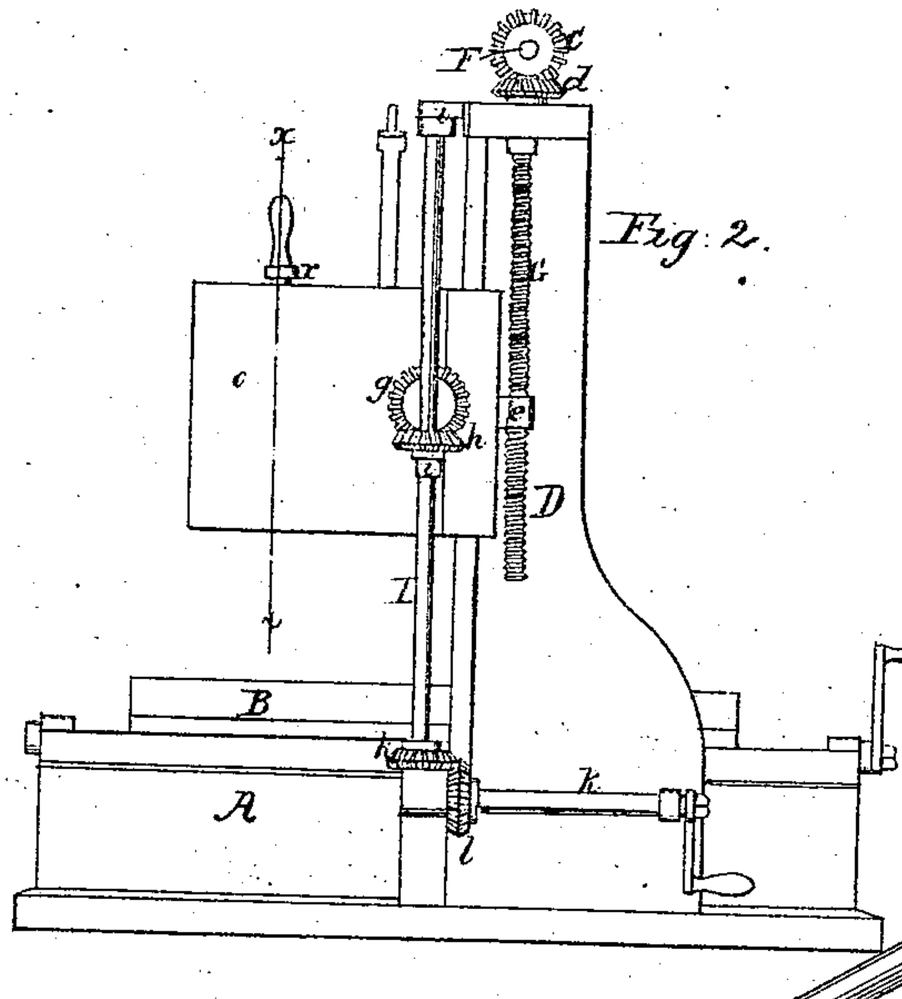


Fig. 3.

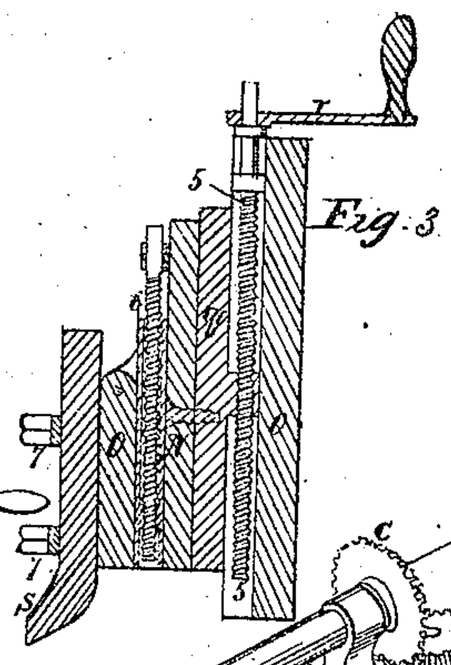
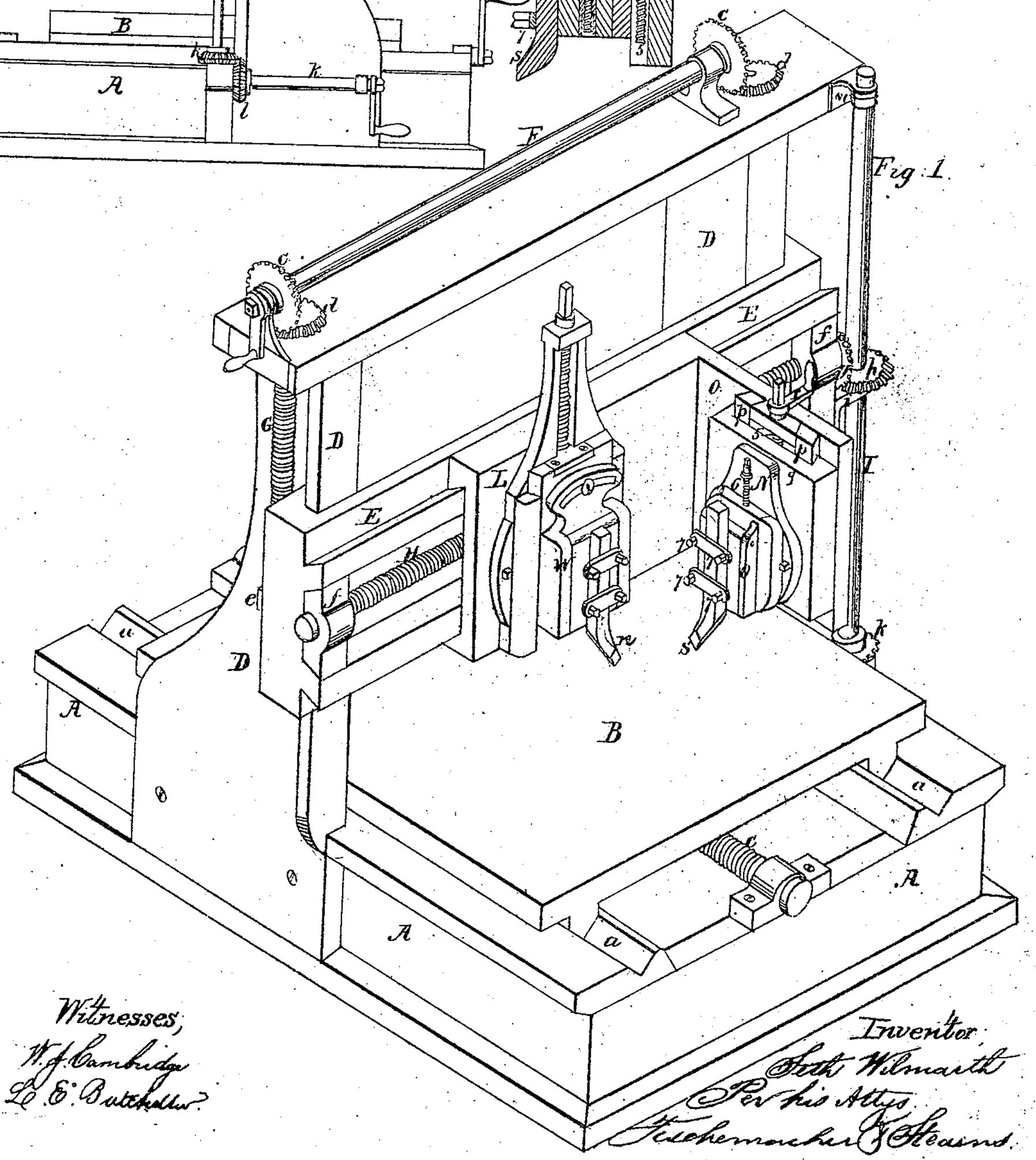


Fig. 1.



Witnesses;
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SETH WILMARTH, OF MALDEN, MASSACHUSETTS.

Letters Patent No. 90,907, *dated June* 1, 1869.

IMPROVED PLANING-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, SETH WILMARTH, of Malden, in the county of Middlesex, and State of Massachusetts, have invented certain Improvements in Planing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of a planing-machine with my improvements applied thereto.

Figure 2 is a side elevatian of the same.

Figure 3 is a vertical section on the line *x x* of fig. 2.

In machines for planing metal, as heretofore constructed, the work, after being securely placed in its desired position upon the "platen," is moved, in common therewith, in a longitudinal direction, under and against a tool, or cutter, which is held stationary while the work is being moved, after which the tool is fed by a screw transversely across it a distance equal to the width of the tool, to make a new cut. Where the casting to be planed is large and heavy, considerable power is required to move it.

Again, where numerous projections and recesses are formed, it is impossible to obtain access to their surfaces without frequently turning the casting, to bring to the upper side the surface to be planed.

To remove the above-mentioned difficulties is the object of my invention, which consists in a tool-holder, placed at right angles to the plane of the ordinary tool-holder, the tool in the former being moved transversely across the work, which is held stationary while the tool is moving, the power employed for driving the tool being the screw usually employed for feeding the ordinary tool, and the work is fed by the screw usually employed as the power-screw, by which construction it will be seen that less power is required to move the tool transversely across the stationary work than to move the work longitudinally against a stationary tool, and the necessity of frequently turning the casting, to allow of its various surfaces being adjusted to the position of the tool is thereby dispensed with.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings—

A is the frame-work, in suitable dovetailed guides or ways *a*, in the top of which moves the bed, or "platen" B, the power for moving the same consisting of the ordinary horizontal screw-shaft C, passing longitudinally across the centre of the machine, and through a lug projecting down from the centre of the "platen" in a well-known manner.

On standards D, rising from opposite sides of the frame-work, a cross-bar, E, is made to slide up and down by bevel-gear *c c*, on opposite ends of a horizontal shaft, F, engaging with and driving similar bevel-gear *d d*, secured to the tops of two upright screws G G, which pass through lugs *e* on the back side of each end of the cross-bar. (See figs. 1 and 2.)

H is a screw-shaft, passing longitudinally across the centre of the cross-bar E, having its bearings therein at *f*. One end of this screw-shaft extends beyond its bearing, and is provided with a bevel-gear, *g*, which is driven by a bevel-gear, *h*, on a vertical shaft, I, which revolves in bearings *i*, within or projecting from the sides of the frame-work.

The lower end of the vertical shaft I carries a bevel-gear, *k*, which is driven by a corresponding gear, *l*, on one end of a horizontal driving-shaft, K, which may be revolved by hand or by power, transmitted through suitable connections from the main screw-shaft C.

The screw-shaft H, extending longitudinally across the centre of the cross-bar E, passes through the back of an ordinary sliding cross-head, L, which is moved along upon the cross-bar E, for the purpose of feeding the tool-holder W and its tool *n* laterally over the work on the "platen," when the work has finished its longitudinal transit, under the tool, preparatory to having a fresh cut made thereon, in a well-known manner.

It will be seen from the foregoing that the tool *n* is stationary during the operation of planing, and that the work on the "platen" moves longitudinally under the tool, the main screw-shaft C serving as a power for moving the work while the screw-shaft H serves to periodically feed the tool *n* successive distances, each equal to the width of the cut previously made, or that of the planing-tool.

I will now particularly describe the construction and operation of the mechanism which forms the feature of my invention.

The sliding cross-head L, which carries the tool-holder W, is bent around at right angles, as seen in fig. 1.

Upon the portion *o* of this sliding cross-head is formed a pair of vertical dovetailed guides, *p*, upon which a slide, *q*, is made to move by turning a crank, *r*, attached to the upper end of a screw, 5.

To the slide *q* is pivoted the centre of a cross-head, N, which carries a tool-holder, O, adjustable by means of a screw, 6, which causes it to slide therein, and the tool-holder O carries a tool, *s*, which is capable of being adjusted therein by operating a series of screw-nuts, 7, by which construction the tool may be swung around the entire circumference of a circle, and be secured at any desired angle, and in any desired position.

When a heavy casting of irregular shape, and provided with a number of projections and recesses, is to be planed, the power required to carry it and the "platen" longitudinally, under a stationary tool similar to *n*, is very considerable, and much time and labor are consumed in constantly turning over the casting to present its surfaces properly to the stationary tool; beside which there are some situations where the sta-

tionary tool could not operate, for instance, where the vertical face of a piece of metal is to be planed, as the work would soon come in contact with the cross-bar, because the tool *n* could not be fed down but a short distance in the tool-holder, without having a weak and insufficient bearing therein, which would thus cause it to chatter; moreover, the cross-bar E cannot be fed down but a short distance before the work would come in contact therewith.

By means of my improvements, and by making the screw H (ordinarily used to feed the tool *n*) of a slightly larger size, it may be employed as the power-screw for moving the tool *s* transversely across the work secured to the platen, when stationary, the main screw C ordinarily used as the power for moving the platen and work, and may serve as the feed for the movable tool *s*.

When the vertical face of a casting is to be planed by my movable tool, the casting is secured upon the platen, and the tool-holder O is swivelled around to the desired angle, after which the tool is run out horizontally to the point on the face of the casting where the planing-operation is to commence, when it will be seen that nothing prevents the cross-bar from going down to the top of the platen, and allowing the tool to plane the lower edge of the work resting thereon, and by moving the tool out by turning the screw 6, I am enabled to plane the entire vertical surface of an upright piece equal to the height of the standards, or posts D.

To plane the under side of a large casting, partially revolve the tool-holder L, so as to turn it, with its tool *n*, out of the way, when the tool-holder O is turned by the screw 6, up to the top of the slide, or rest *q*, and the crank *r* is removed, after which the cross-bar E and tool-holder O are run nearly down to the upper side of the "platen."

When the work is supported on four standards, the tool *s* may readily travel back and forth upon the under surface, the main power-screw serving as the feed-screw for simply moving the work periodically a distance equal to the width of the cut, or that of the tool.

Where the surfaces of the valve-ports of a steam-cylinder are raised above the bearing of the steam-chest, or bonnet, after planing off the upper surface, and two of the opposite sides of the seat of the steam-chest, with either tool, the other tool may be employed for planing the other two sides of the seat, or bearing, which is below the surface of the valve-seat; that is to say, I am enabled to plane all around an elevated centre without moving the work, which operations cannot be performed by the use of the planing-tool, as ordinarily constructed and arranged.

From the foregoing it will be seen that the time and labor necessary in moving the casting, and the necessity of frequently adjusting it to the proper level, (incident to ordinary planing-machines,) are avoided, and much of the power required to effect the planing-operation is dispensed with, as it is easier to move the tool than the work while planing.

Claims.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In combination with the cross-bar E, the cross-heads L and O, standing at right angles to each other, and the tool-holders W and N, substantially as described.

2. The shaft K, with its bevelled gearing *l*, and the vertical shaft I, with its gearing *h k*, in combination with the screw H, for working either or both of the cross-heads L and O, standing at right angles to each other, substantially as set forth.

SETH WILMARTH.

Witnesses:
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