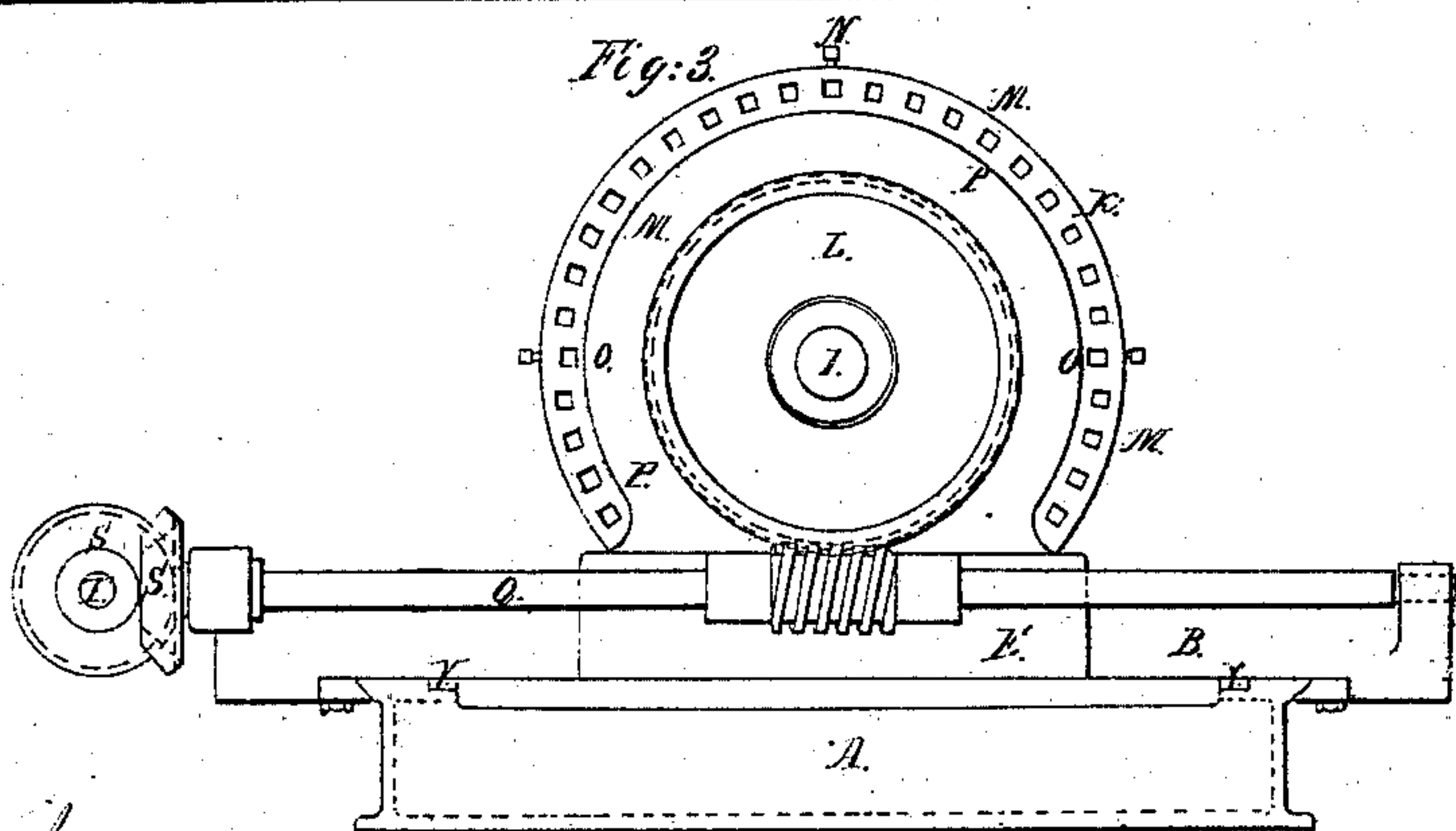
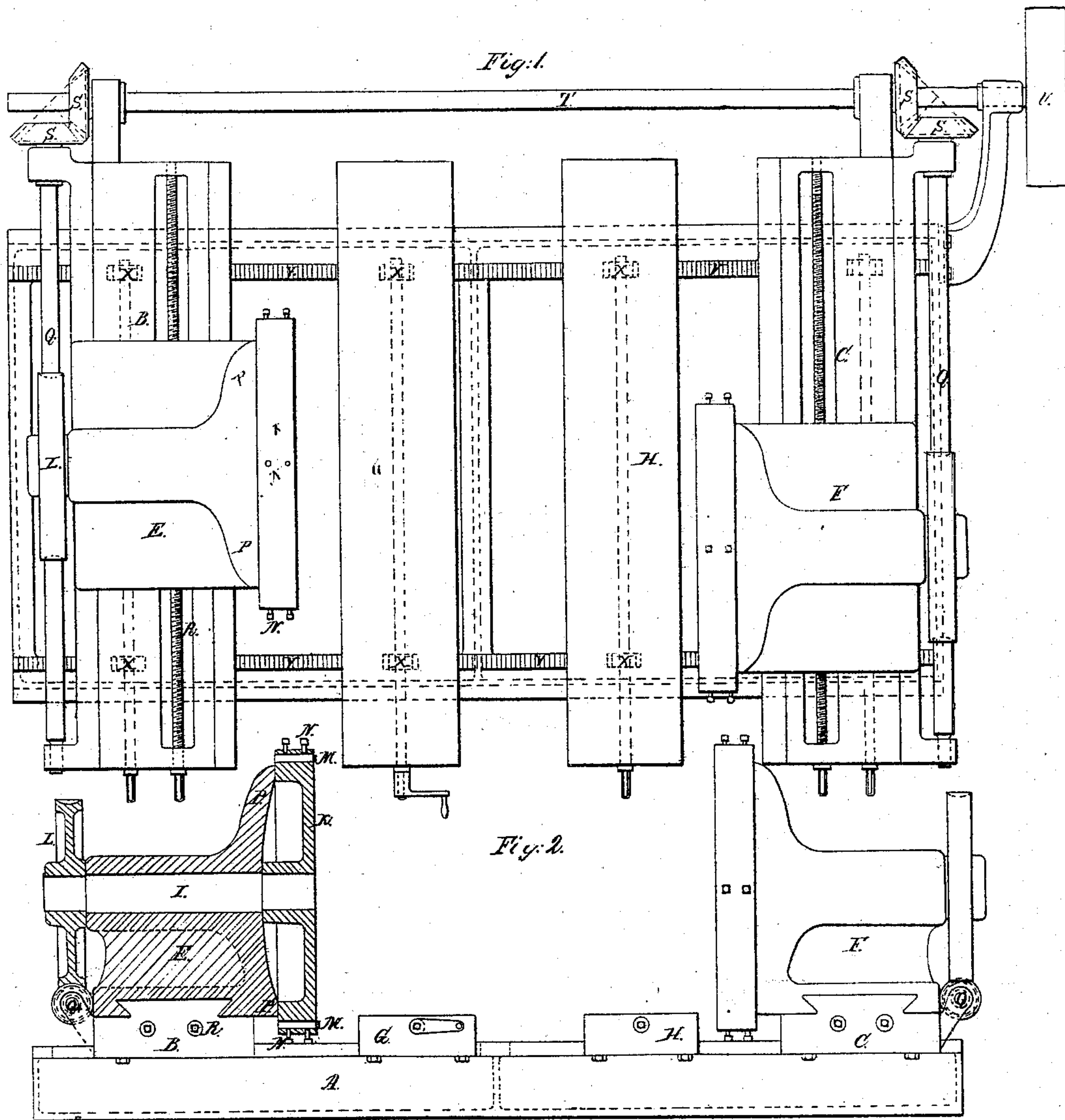


# W. Sellers, Metal-Planing Machine.

N<sup>o</sup> 43137.

Patented Jun. 14. 1864.



Witnesses:  
John Sellers Jun  
Charles B. Rogers

Inventor:  
Wm. Sellers



# UNITED STATES PATENT OFFICE.

WILLIAM SELLERS, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN METAL-PLANING MACHINES.

Specification forming part of Letters Patent No. **43,137**, dated June 14, 1864.

*To all whom it may concern:*

Be it known that I, WILLIAM SELLERS, of Philadelphia, in the State of Pennsylvania, have invented certain Improvements in Machines for Planing Metal; and I do hereby declare the following to be a full and exact description thereof.

The objects of my invention are to provide a means of dressing plane surfaces of metal in a more rapid and perfect manner than has heretofore been done, and also to provide a means of dressing the opposite sides or ends of the same piece at the same time. I effect this object by making use of rotary cutter-heads, which carry a succession of tools acting consecutively upon the metal to be planed, the cutter-heads having their bearing or support so arranged as to give great steadiness to the cut, while the work is held upon tables which admit of ready adjustment.

The nature of my invention can, however, be better understood from the following description, in which I refer to the annexed drawings, making part of this specification.

Figure 1 is a plan of the machine; Fig. 2, a front elevation; Fig. 3, an end elevation.

Similar letters refer to similar parts in each.

Upon the bed A are two saddles, B and C. These saddles are provided with slides, upon which travel the cutter-heads. The saddles B and C can be moved to and from each other on the bed A, so that their motion is in line with the bed A, while the motion of the cutter-heads E and F upon the saddles is at right angles to the bed. Between the saddles B and C are two plane-tables, G H, capable of being moved on the bed A in the same direction as the saddles B and C. They are intended to support the work to be planed. The cutter-heads E and F are similar in every respect, and the description of one will answer for both. They are, however, made right and left hand, so that their face-plates face each other.

In the head E is a spindle, I, upon one end of which is the face-plate K and on the other the worm-wheel L. The face-plate K has around its edge a series of holes, in which are inserted steel cutting-tools M M, securely fastened by set-screws N N. Two of these tools, O O, on opposite sides of the plate, are one-half inch nearer to the center of the plate

than the other tools, all of which are equidistant from the center of the plate. The cutters O O are made flat on their cutting-edge for finishing-tools, the majority being roughing-tools.

As the operation of so many cutters upon the metal surface involves considerable force and requires great stiffness in the machine, I arrange a supporting-bearing, P P, at the outer edge of the plate K, against which the plate runs, and which gives to the plate great stability. This is an important feature in my invention, as without it the bending strains on the axle I would be enormous. The worm-wheel L is driven by a worm on a shaft, Q. The worm is feathered onto this shaft so as to slide along it as the head moves on the saddle. In the saddle is a screw, R, the nut of which is attached to the cutter-head. This screw serves to feed the cutter-head across the work to be planed. The shafts Q Q are driven by bevel-wheels S S from a shaft, T, which receives its motion from a driving-pulley, U. The shaft T is splined its whole length, the bevel-wheels being feathered to it, and capable of sliding as the saddles are moved on the bed A. The bed A is provided with racks V V its entire length, into which gear pinions X X in the saddles and in the tables. These pinions are keyed in pairs onto shafts, thus insuring perfect parallelism to the tables. By means of these racks and pinions the tables can be moved into any required position on the bed, and the cutter-heads be fed up to their work.

To understand the operation of the machine, we will suppose the work to be planed (such as a column) is firmly bolted to the tables G H, and it is required to dress the two ends truly parallel to each other, the cutter-heads being drawn to the front of the machine, and so adjusted that the distance from edge to edge of the cutting-tools shall equal the required length of the column. The machine being started, the heads E and F are fed toward the column on the saddles B and C, and as the cutter begins to act, they, each in succession, take a separate cut, so that if there be in each cutter-head eighty-four roughing-tools, and each tool cuts one eighty-fourth of an inch in depth, one revolution of the plate will have permitted the head to advance one inch, so



that if the surface to be planed is twelve inches long twelve revolutions of the plate will have completed the work.

I have in the drawings shown no means of feeding the heads by power; but this can be done by any of the well-known methods for such purposes. I have shown the tables and saddles as being moved by racks and pinions to insure parallelism; but it must be evident to every intelligent mechanic that the same thing could be accomplished by parallel screws in a great variety of ways. Gearing could also be used in place of worms and worm-wheels. All these devices are therefore capable of being modified to suit circumstances.

The essential feature of my invention, however, consists in arranging on a bed a table or tables which move lengthwise with the bed of the machine, a cutter head or heads capable of moving crosswise with the bed, or at right angles to the motion of the tables; of also arranging tables to carry the work capable of being adjusted on the bed at distances suited to the work to be held, so that the two cutter-heads may be made to operate at the same time on both ends or both sides of a piece of work, or may be used separately as two machines, each planing the work bolted upon either of the tables. It is not essential, however, that the machine should be made double, as I have described it, as a single cutter-head with one or more tables for work would be an efficient machine for some kinds of planing.

The stability of the machine and steadiness of cut are due mainly to the supporting-surface of the cutter-head, which is close to the tools, for it is obvious that as the cut is a segment of a circle no amount of pressure could tilt

the face-plate on the back bearing, the line of pressure being a chord to the circle of cutters, the chord falling within the outer edge of the supporting-plate.

I am well aware that rotating cutters have been used for planing iron, the ordinary milling-machine being of this character; hence I do not claim them *per se*; but

What I do claim as new, and desire to secure by Letters Patent, is—

1. Providing a rigid support for the revolving cutter-head as near as possible to the cutting-tools, substantially as and for the purpose specified.

2. Traversing the revolving cutter-heads E and F at right angles to the main supporting-bed, in combination with one or more tables, G and H, when either or both the heads E and F and tables G and H can be adjusted to or from each other, substantially as described, and for the purpose specified.

3. The two revolving cutter-heads having a traversing motion at right angles to the main supporting-bed A, substantially as described, when one or both of said heads has an adjustment parallel to the main supporting-bed, substantially as described, and for the purpose specified.

4. Two or more tables, G and H, in combination with one or more cutter-heads, E F, when so arranged with reference to each other as to be capable of moving in two or more directions, substantially as described.

WM. SELLERS.

Witnesses:

JOHN SELLERS, Jr.,  
THEODORE BERGNER.