

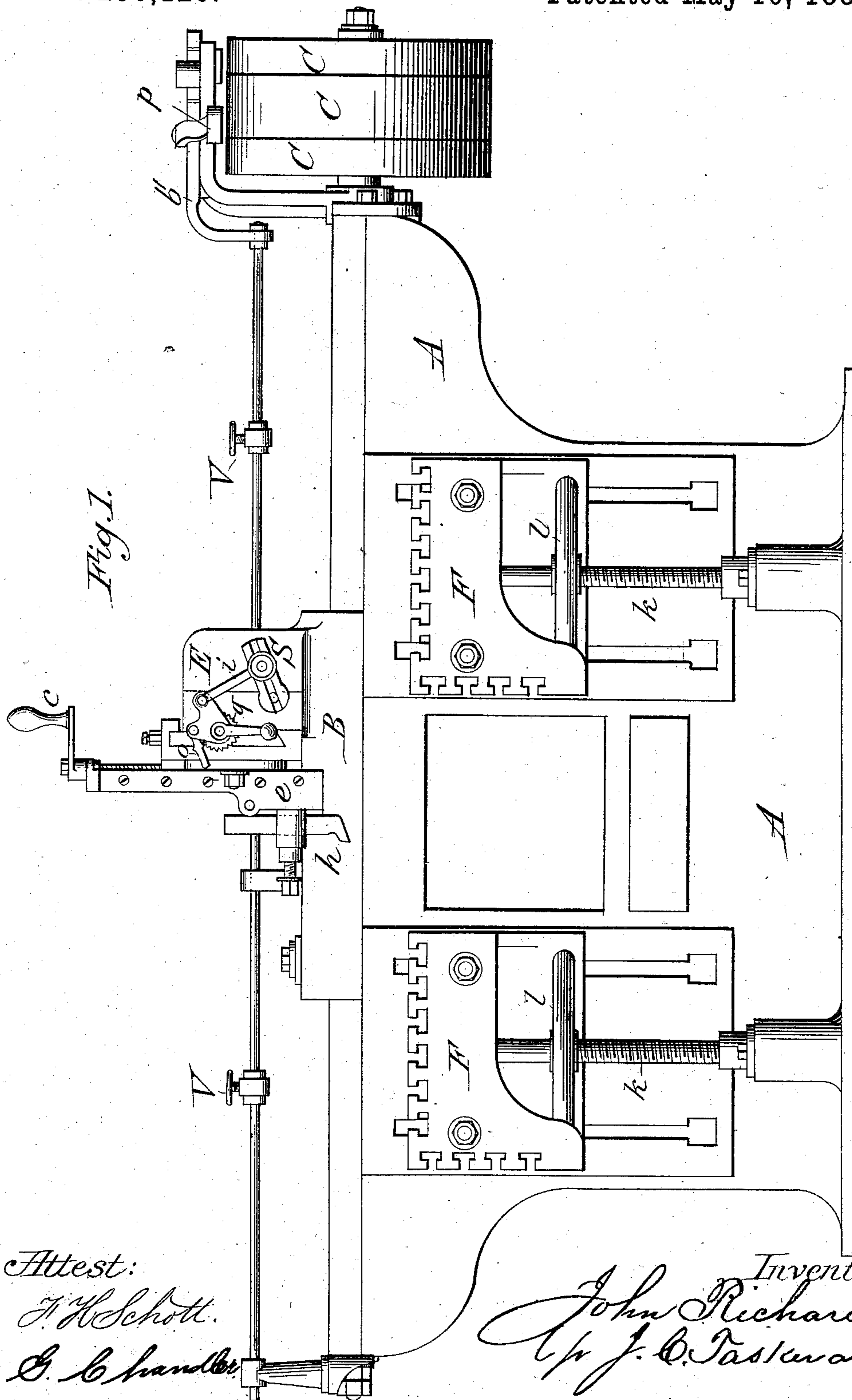
(No Model.)

4 Sheets—Sheet 1.

J. RICHARDS.
METAL PLANING MACHINE.

No. 258,120.

Patented May 16, 1882.



(No Model.)

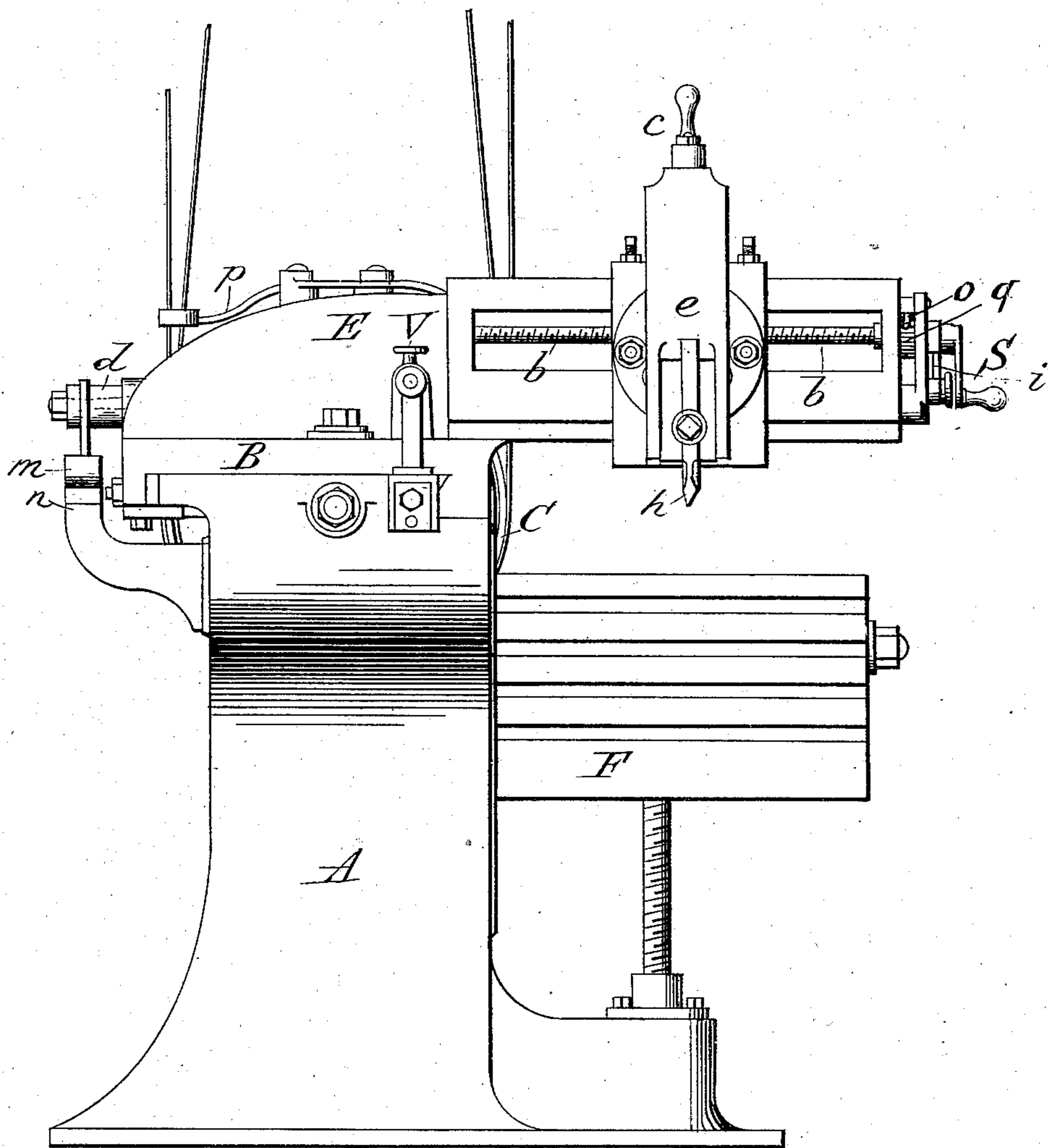
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Fig. 2.



Attest:

J. H. Schott.
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Inventor:

John Richards
per J. C. Parker atty.

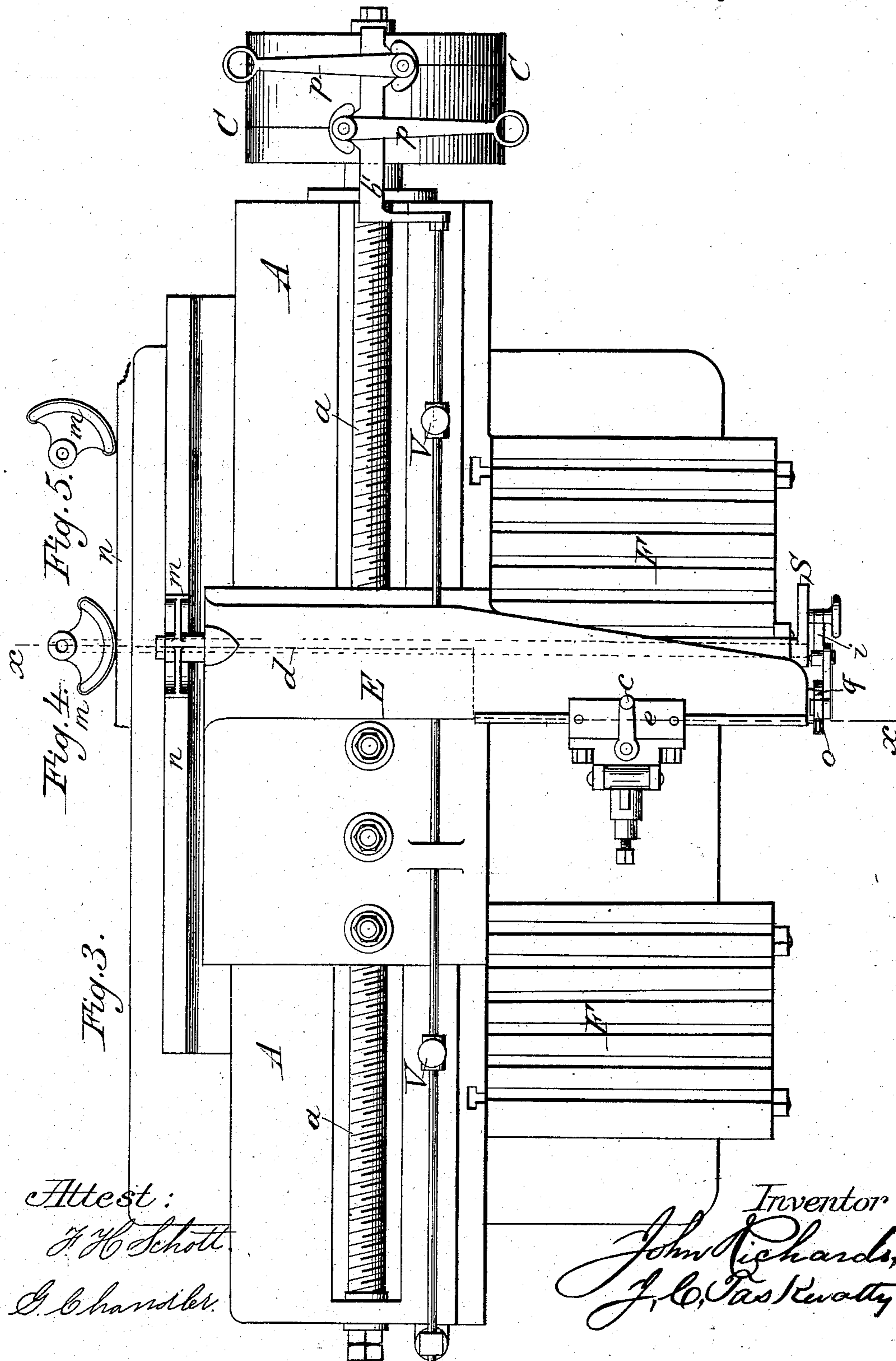
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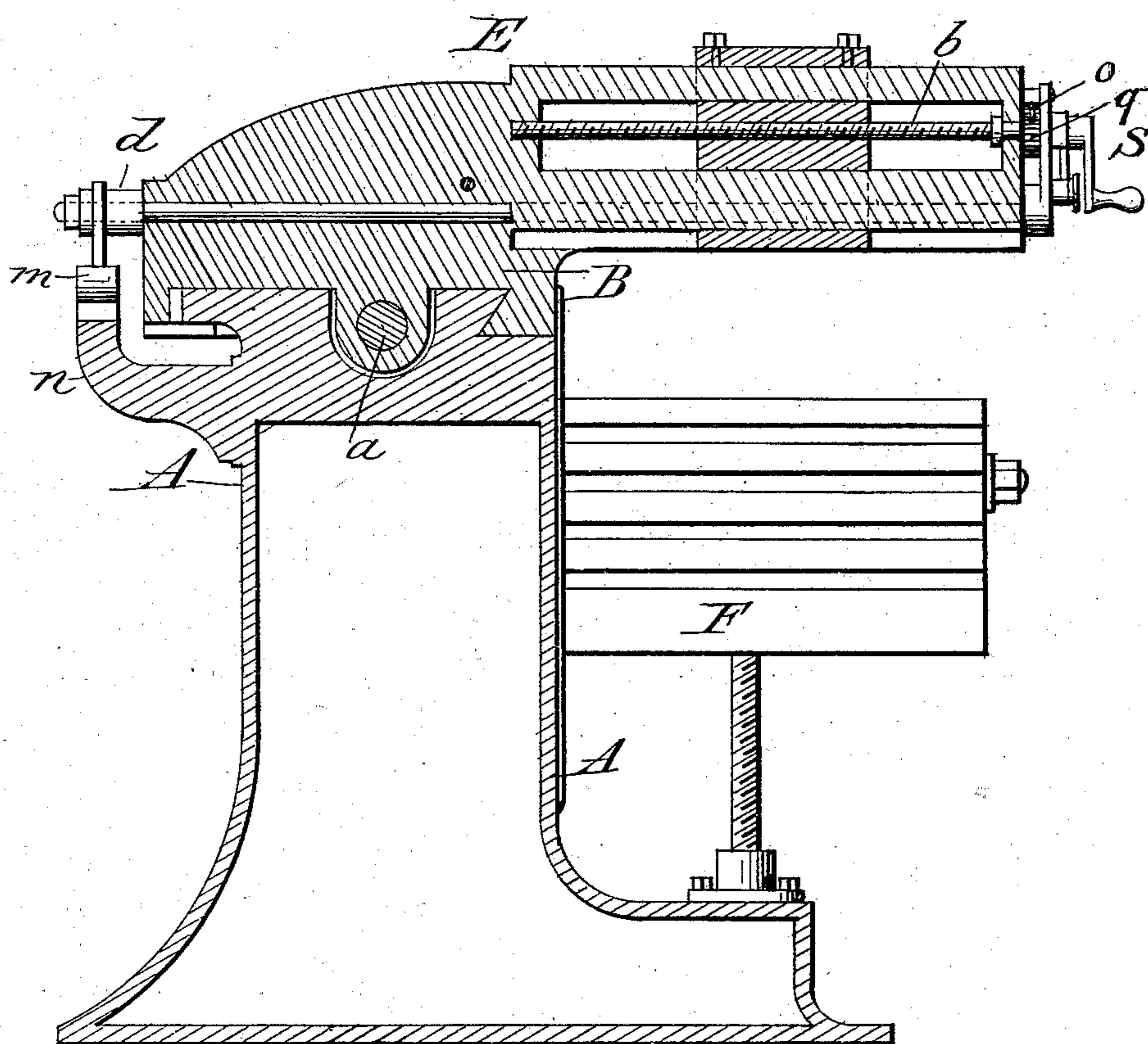
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Fig. 6.



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att'y

UNITED STATES PATENT OFFICE.

JOHN RICHARDS, OF SAN FRANCISCO, CALIFORNIA.

METAL-PLANING MACHINE.

SPECIFICATION forming part of Letters Patent No. 258,120, dated May 16, 1882.

Application filed July 19, 1881. (No model.)

To all whom it may concern:

Be it known that I, JOHN RICHARDS, a citizen of the United States of America, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Metal-Planing 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 planing and shaping metal; and it consists in a machine arranged so as to perform the various operations common to what are called "planing and shaping machines," as hereinafter more fully described and claimed.

The cutting-tools, instead of acting transversely to the frame, as in common shaping-machines, move parallel with the main framing and tables, like a common planing-machine, so that pieces of greater length can be planed, and the capacities of the machine be thus increased to meet nearly all ordinary requirements in metal-planing.

I am aware that planing-machines have been constructed for plate-planing and other purposes, the tools moving parallel to the main frame and tables; but such machines are made only with a vertical feed movement of the cutting-tools, and for that reason are confined to special kinds of work. In my machine the main feed movement is in a horizontal plane, and in that and other respects the operation is much the same as in the case of a common planing-machine. The work to be planed, when not too large, is mounted on two or more vertically-adjustable tables, which can be set at different heights, relatively, as may be required. One side being open, large or irregular pieces, such as would not pass through the framing of a common machine, can be planed; or, by removing the supporting-tables, pieces of almost any size or shape can be placed beneath the tools and planed. In my machine, the cutting movement being given to the tools, the length of the stroke can be as long as the machine, less the length of the traveling saddle or tool-

frame, thus saving much room required when the tools are stationary and the main frame nearly twice as long as the pieces to be planed.

In the drawings, Figure 1 is a front side view. Fig. 2 is an end view; Fig. 3, a plan of Figs. 1 and 2. Figs. 4 and 5 are details to show the method of actuating the feed device. Fig. 6 is a transverse section of the machine on the line *x x* of Figs. 3 and 4.

Similar letters of reference in the different figures indicate corresponding parts.

A is the main frame. B is a traversing saddle or carriage, firmly mounted on the main frame by gibways, as shown in Fig. 2. This carriage B is driven by a strong screw, *a*, Fig. 3, on the end of which are placed the driving-pulleys C. On the carriage B is a strong projecting bracket, E, on which slide the usual tool-supporting devices, *e*. To move or feed the tool-supports on the bracket E there is a screw, *b*, as shown in Fig. 2. This screw is in turn operated through the medium of the ratchet-wheel *g* by a pawl, *o*, in the usual manner, as shown in Figs. 1 and 2, motion being brought across from the back of the machine by a shaft, (indicated by dotted lines at *d*, Fig. 3.) This shaft is given a rocking motion each way by means of a friction-quadrant, *m*, rolling on a bar or bracket, *n*. When the saddle or carriage B moves either forward or back this quadrant *m* impinges on the bar *n* and turns until it rolls out of contact, as shown in Fig. 5. The rocker-arm S, Fig. 1, is thus given a reciprocating movement, so that the tool can be fed outward or inward from the main frame as the pawl *o* may be set, and at such speed as the position of the link *i* may determine. The stroke is changed by shifting the two stop-collars V, and the bands are shifted differentially by means of the slide-bar *b'* and the eye-levers *p*.

The tables F are adjustable vertically by means of the screws *k* and hand-wheels *l*; or they can be removed entirely when it is desired to plane large pieces. By placing a filling-piece between the tables or employing a single table of the whole length of the supporting-frame the surface may be made to correspond with that of an ordinary planing-machine; but for most work two or more independent tables will be found more convenient. Two or more of these tables may be employed and receive a vertical

adjustment at varying heights in such a manner as to accommodate pieces of work that are of uneven or irregular contour on the under side, the necessary adjustment of each table independent of the others being readily accomplished by means of the hand-wheels *l* and screws *k*, as before mentioned.

The usual devices, *c*, are provided for giving a vertical adjustment to the holder *e*, carrying the cutting-tool *h*.

I am aware of the description of planing-machines set forth in English Patent No. 1,571 of 1865, in which the work is fixed to an adjustable bed and the cutter or cutters made to traverse along it, the bed being provided with a longitudinal slide on one or both sides and one or more moving uprights and cross slide or slides, which carry the tool or tools, the said uprights being propelled by one or two screws worked by pulleys placed at one end of the machine, with or without the intervention of gearing and shafts, and a self-acting reverse motion being imparted to the machine by means of devices for shifting the driving strap or straps from one pulley to another. This construction, however, I do not broadly claim.

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

1. In a metal-planing machine, the combination, with the frame A and carriage B, mounted

thereon, and provided with screw *b* and tool-holder *e*, of the shaft *d*, having a quadrant, *m*, adapted to rock on an arm, *n*, attached to the main frame, at each reciprocation of the carriage, and suitable mechanism for transmitting motion from the shaft *d* to the screw *b*, whereby a transverse feed is imparted to the tool-holder, substantially as shown and described.

2. In a metal-planing machine, the combination of the frame A, carriage B, mounted thereon, and provided with arm or bracket E, longitudinal screw *a*, arranged to engage with the carriage, and provided with pulleys C C, tool-holder *e*, adapted to slide on the arm of the carriage, transverse screw *b* for actuating said tool-holder, shaft *d*, having a quadrant, *m*, adapted to rock on an arm, *n*, attached to the frame, and the rocker-arm S, link *i*, pawl *o*, and ratchet-wheel *q* for imparting motion to the screw *b* and regulating its speed, whereby the cutting-tool is adapted to receive a transverse feed during the longitudinal reciprocation of the carriage, substantially as shown and described.

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

JOHN RICHARDS.

Witnesses:

GEO. A. ALDRICH,
M. J. BARRY.