

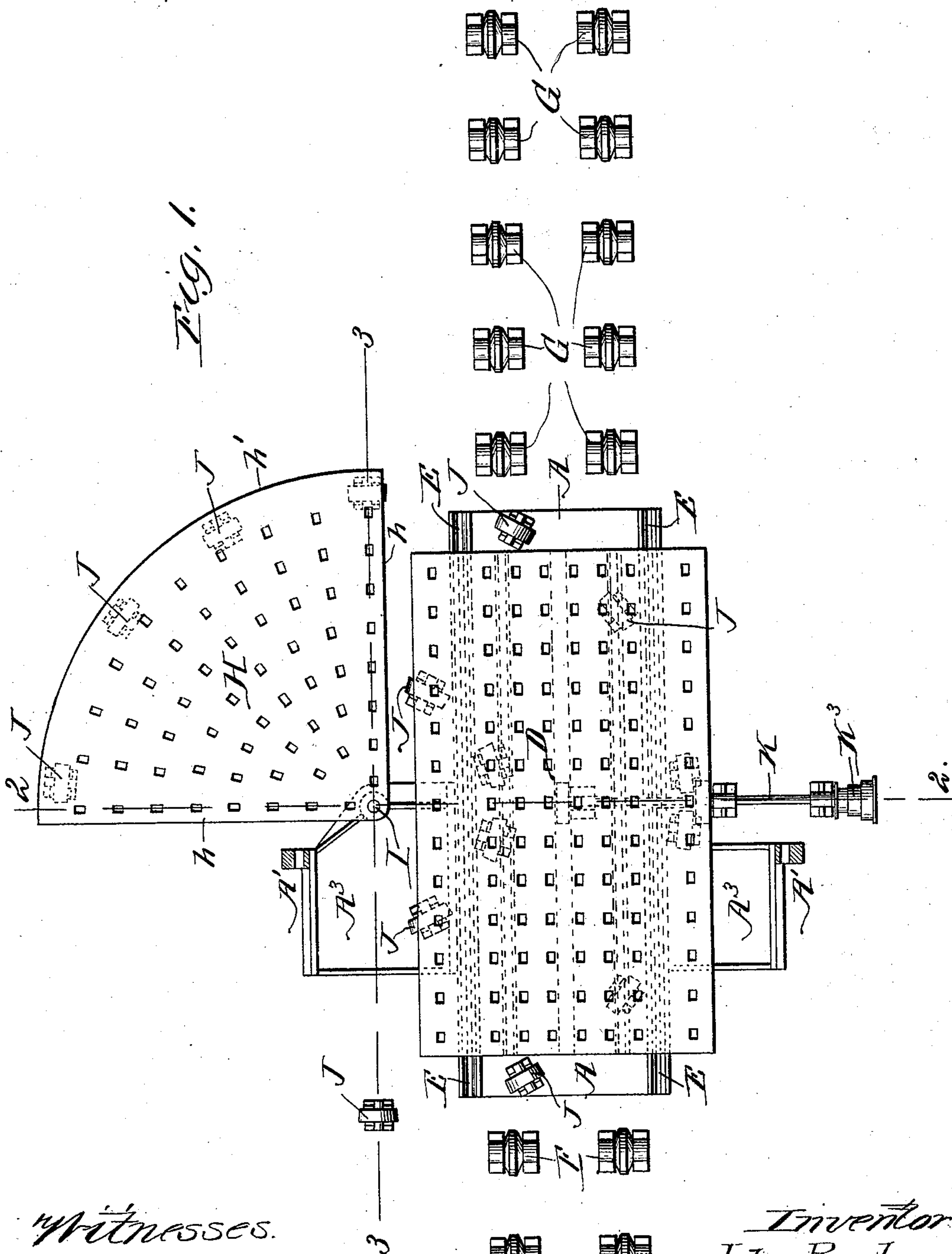
(No Model.)

3 Sheets—Sheet 1.

J. RAWLE.
PLANING MACHINE.

No. 534,577.

Patented Feb. 19, 1895.



Witnesses.

Fred. S. Mills.
Louis H. Whitehead.

Inventor
John Rawle

By Dayton
Boles Brown
his Attys

(No Model.)

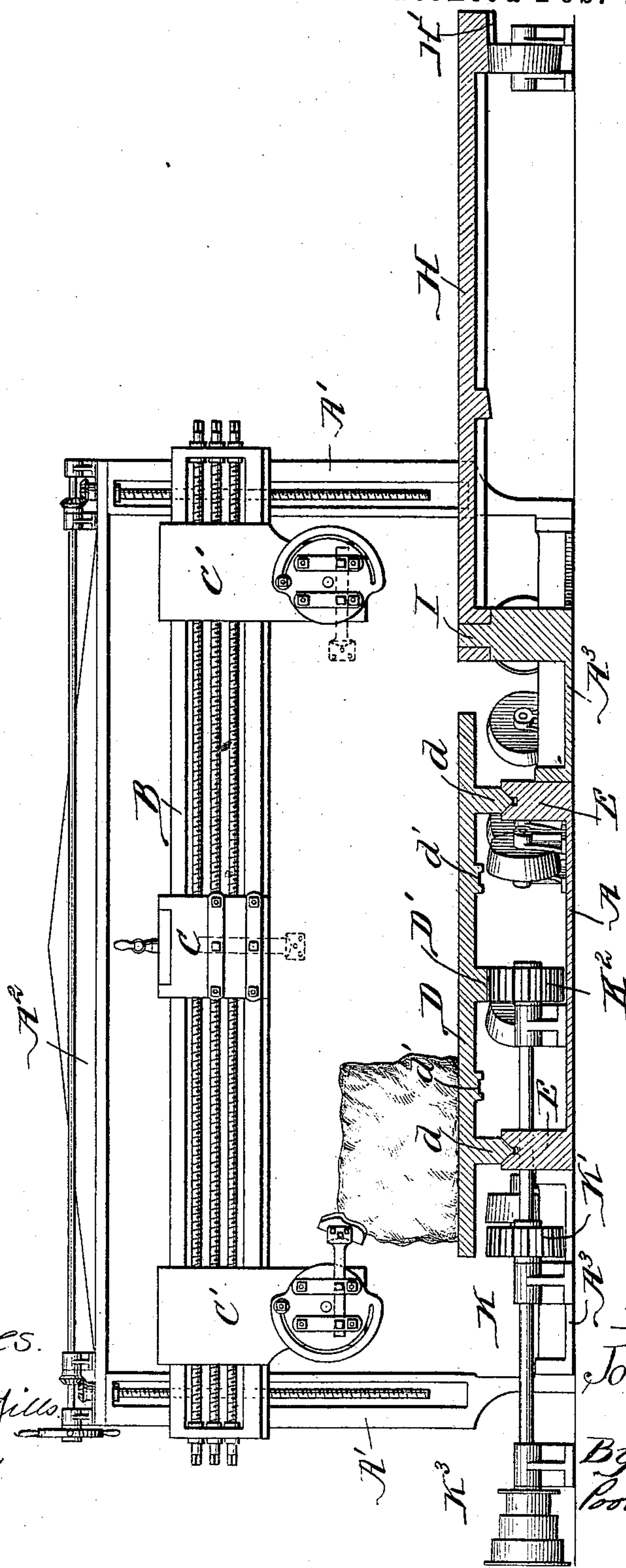
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Fig. 2.



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3 Sheets—Sheet 3.

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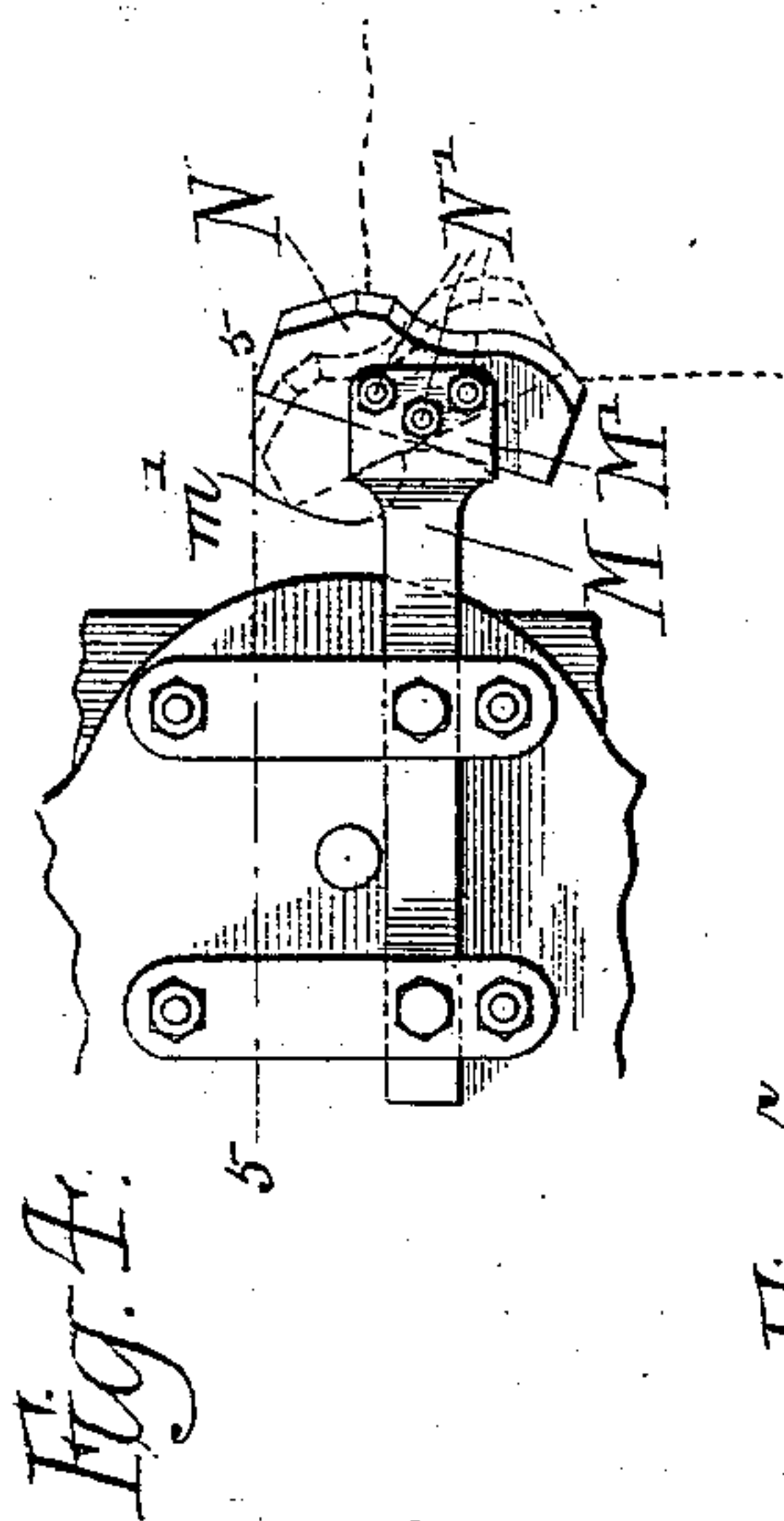


Fig. 4.

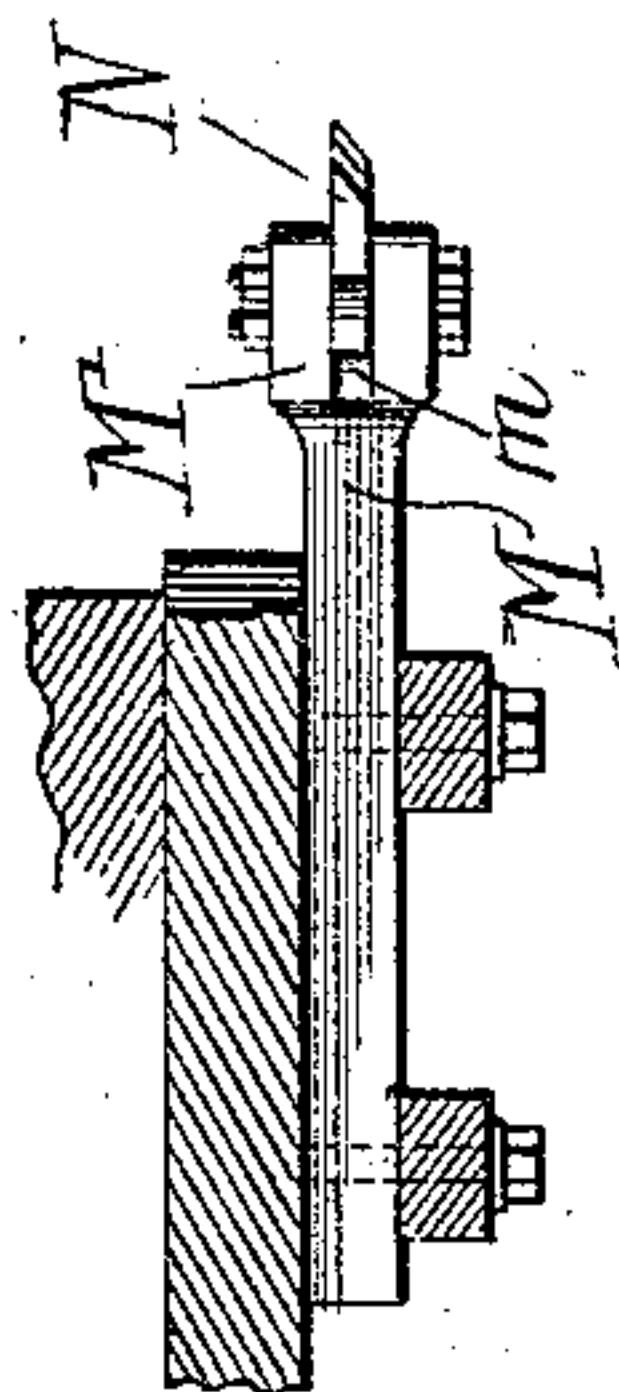
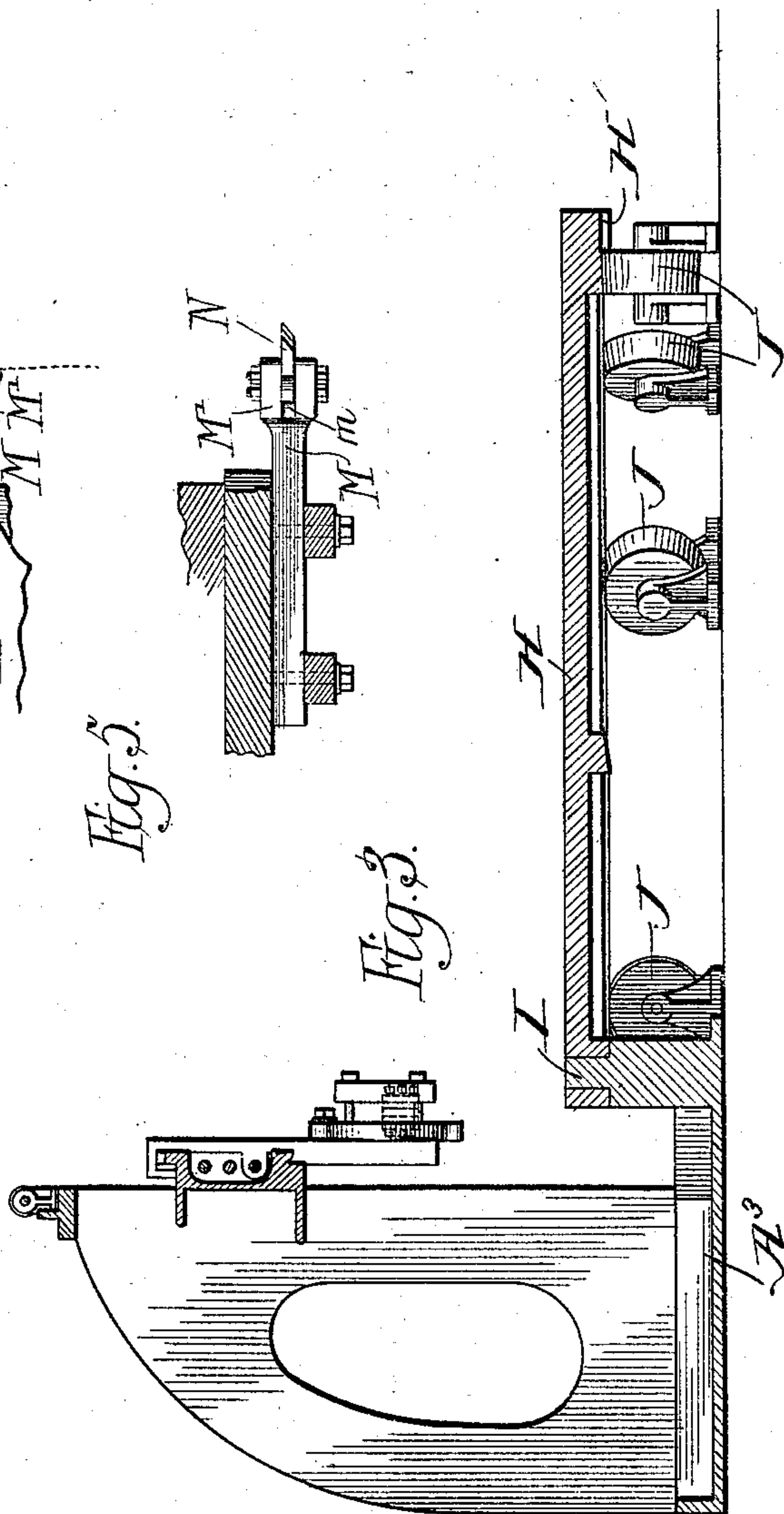


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN RAWLE, OF CHICAGO, ILLINOIS.

PLANING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 534,577, dated February 19, 1895.

Application filed October 27, 1892. Serial No. 450,143. (No model.)

To all whom it may concern:

Be it known that I, JOHN RAWLE, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Planing-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to planing machines for metal or stone of that class embracing a reciprocating bed on which the work is secured and a frame located over the bed and adapted to support the tools with which the planing is accomplished.

The object of the invention is to provide a planing machine of the character described, adapted for both straight and curved work and to this end it embraces as its principal feature a suitable frame carrying the planing tools combined with a reciprocating table for supporting the straight work and an oscillating table pivoted at one side of the path of the straight table for supporting circular or curved work.

As illustrated in the appended drawings: Figure 1 is a plan view of a planing machine embodying the invention. Fig. 2 is a transverse vertical section thereof, taken on line 2—2 of Fig. 1. Fig. 3 is a longitudinal section taken on line 3—3 of Fig. 1. Figs. 4 and 5 are detail views of my improved adjustable tool.

As illustrated in the drawings, the frame of the machine consists of a horizontal bed plate A, uprights A' A' located at opposite sides thereof, and a cross-piece A² rigidly connecting the upper ends of the uprights; the lower ends of the uprights being connected rigidly with the sides of the bed-plate by horizontal frame plates A³ A³ having upright marginal flanges by which they are bolted to the bed plate and uprights.

B is a cross-slide mounted to slide vertically upon the frame uprights A' A', and C C' C' are tool holders or boxes mounted on the cross-slide in the usual manner; the outer boxes C' C' being intended more particularly for holding tools to work on the sides of the object to be planed, while the intermediate tool-holder C is intended for holding a tool or

tools which act on the top surface of said object.

D is a longitudinally reciprocating table movable between the frame-uprights and beneath the cross-slide B in the same manner as the similar tables of planing machines as heretofore commonly constructed. Said table is provided with longitudinal guideribs *d d* resting in stationary guides E E formed on or attached to the stationary horizontal bed plate A. The guides E E are shown as made slightly longer than the bed D and a plurality of supporting rollers F F and G G are arranged at opposite ends of the said guides to support the table D when the latter passes beyond the guides. Said rollers F F G G are shown as arranged out on line with the guides E E and adapted to engage longitudinal grooves *d' d'* in the lower surface of the table.

H is an oscillating table located at one side of the path of the table D and desirably made in the form of a segment of a circular disk, the table herein shown having adjacent sides *h h* at right angles to each other, and a third curved side *h'* which extends through an arc of ninety degrees. Said table H is adapted to swing or oscillate about a stationary pivot I which is located near the side of the table D and approximately in the same vertical plane with the cross-slide B; the table being engaged with the said pivot I at its angle or corner formed by the intersection of the adjacent side edges *h h*. The pivot I is shown as supported by the frame plate A³ whereby it is rigidly held in position relatively to the bed A and the parts by which the tools are supported. The oscillating table H is supported by a plurality of rollers J J arranged in a circular path concentric with the pivot I of the table; part of said rollers J J being located beneath the path of the table D and those which come between the guides E E being mounted on the bed plate A in the manner illustrated. The said supporting rollers J J extend through an arc of about two hundred and seventy degrees, thereby enabling the table to be moved or swung practically the full distance permitted by the frame upright A' which is located adjacent to the pivot I of said table H. Those of the rollers J J which are at one side of the said table D serve

o sustain the said table H when the latter is not in use, while those which are within the path of said table D serve to sustain said oscillating table when the latter is in position for operation; it being of course understood that said table D is moved or shifted out of operative position to allow the table H to be swung beneath the cross-slide and into position for use.

It will be clear from the above that the two tables D and H are adapted for alternative use, the table D being used for planing straight work and the table H for planing curved surfaces.

As hereinbefore stated, the pivot I is located approximately in the same vertical plane with the cross-slide B, the pivot being placed somewhat in advance of the outer face of the cross-slide so that it will be in the same vertical plane with the tools carried thereby. This construction is obviously necessary in order that the tools may act in a radial line of the table H and will be presented in proper position to the article being planed.

For actuating the tables D and H a single horizontal shaft K is mounted beneath the path of the table D at right angles to the same and said shaft is provided with two gear wheels K^1 K^2 , one of which, K^1 is adapted to engage a gear segment H^1 on the table H and the other with gear teeth or a rack D^1 on the under surface of the table D. Said shaft K is furthermore provided with the usual belt pulleys K^3 by means of which motion is transmitted thereto by suitable straight and crossed belts so that it may be driven alternately in opposite directions by a suitable belt shifting device. It will of course be understood, however, that other driving mechanism may be employed for driving the said shaft alternately in opposite directions as is necessary for giving reciprocatory motion to the table D and oscillatory motion to the table H. It will of course be seen that a driving shaft arranged as described will serve equally well to operate both of the tables D and H as the action of the shaft on the table will be the same when either of said tables is brought into position to engage the gear wheels on the shaft.

In Figs. 4 and 5 I have shown in detail my improved adjustable plane tool, which is constructed as follows: M is a stout bar or shank clamped to the tool holder in the usual manner and having at one end a slot m within which a cutter N is adjustably secured by suitable clamping devices, preferably by set screws N^1 , as shown. To insure sufficient strength that end of the bar M which carries the cutter is, in the approved form shown, enlarged to form a head M^1 , the additional metal thus provided compensating for that cut away in forming the slot, and the side of the enlarged head forming additional surface within which to properly space the set-screws N^1 . The back of the slot m is preferably formed

with a curved convex surface as shown, in order that the cutter N may have a firm bearing against the same regardless of the angle at which said cutter is adjusted. The working edge of the cutter N is shaped according to the profile desired in the piece which is to be planed, each cutter serving, however, to produce a variety of profiles which vary according to the angle which the cutting edge presents to the work; the adjustment of said angle being effected in the manner above set forth.

Any number of cutters may be provided with each shank so that a single such tool comprising one shank with several cutters, will serve to produce a large variety of work and will enable the operator to dispense with the great number of tools ordinarily found necessary.

The machine herein illustrated is more particularly adapted for use in planing stone, but the same principles of construction may be applied to machines used for planing metal and other materials.

I claim as my invention—

1. The combination with a support for a tool or tools, of a reciprocating table movable in a straight line and an oscillating table pivoted at one side of and movable into and out of the path of the reciprocating table, substantially as described.

2. The combination with the cross-slide and tool holders of a planing machine, of a reciprocating table movable in a straight line beneath the same, and an oscillating table movable about a pivotal axis located outside the path of the reciprocating table and in the same vertical plane with the tool holders, substantially as described.

3. The combination with tool supporting devices, of a reciprocating table movable in a straight line, an oscillating table pivotally supported at one side of the path of the said reciprocating table, and supports for both of said tables extending beyond their usual range of movement when in operation whereby either table may be shifted into and out of position for operation, substantially as described.

4. The combination with a tool support, of a reciprocating table movable in a straight line, an oscillating table pivoted on one side of and movable into and out of the path of the reciprocating table, and mechanism for driving the tables independently of each other embracing a single shaft provided with two rigidly attached gears adapted to intermesh, one with a rack on the reciprocating table and the other with a rack on the oscillating table, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

JOHN RAWLE.

Witnesses:

TAYLOR E. BROWN,
GEORGE W. HIGGINS, Jr.