

No. 683,178.

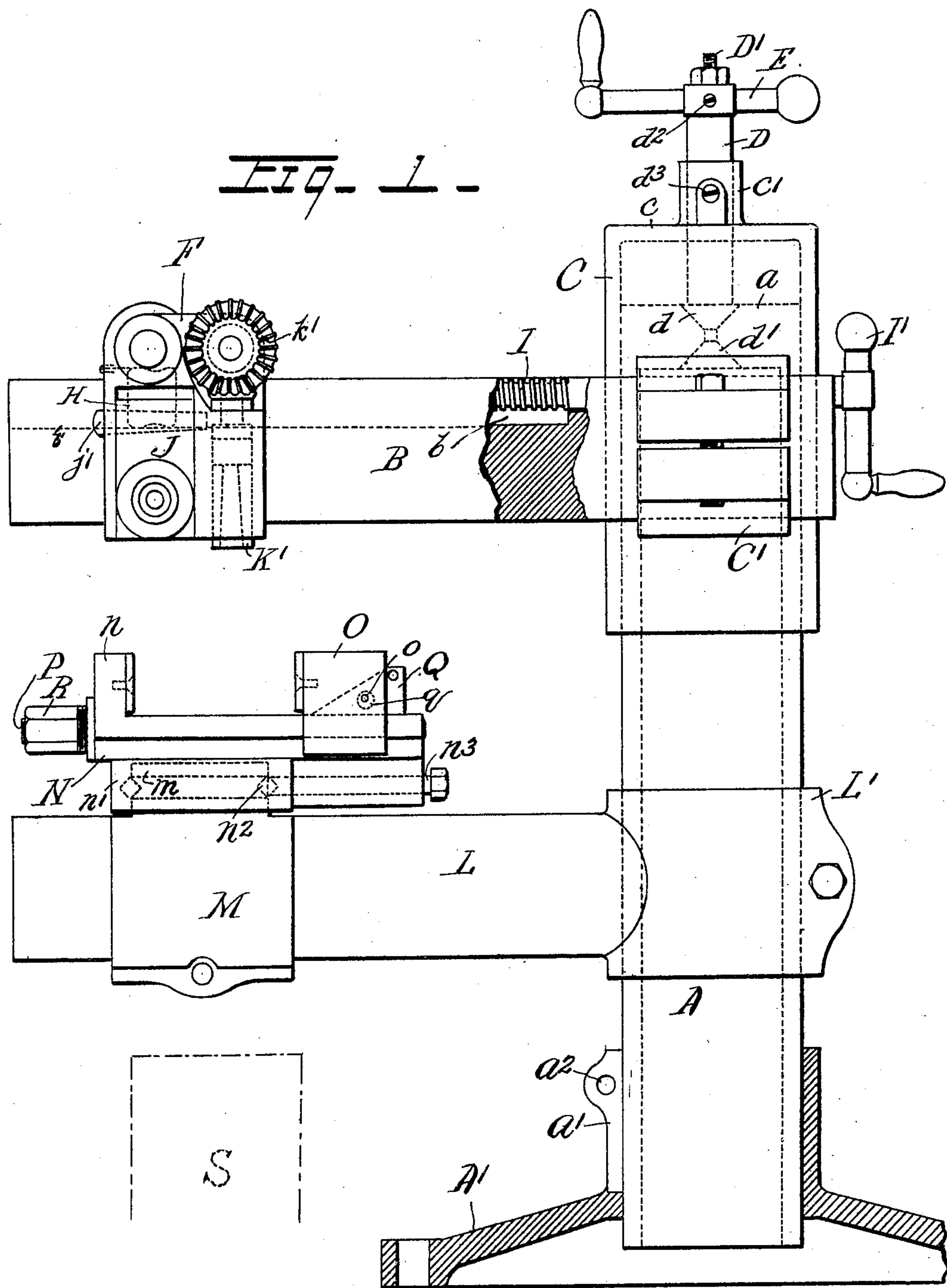
Patented Sept. 24, 1901.

C. JACKSON,
MACHINE TOOL.

(Application filed Dec. 26, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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by

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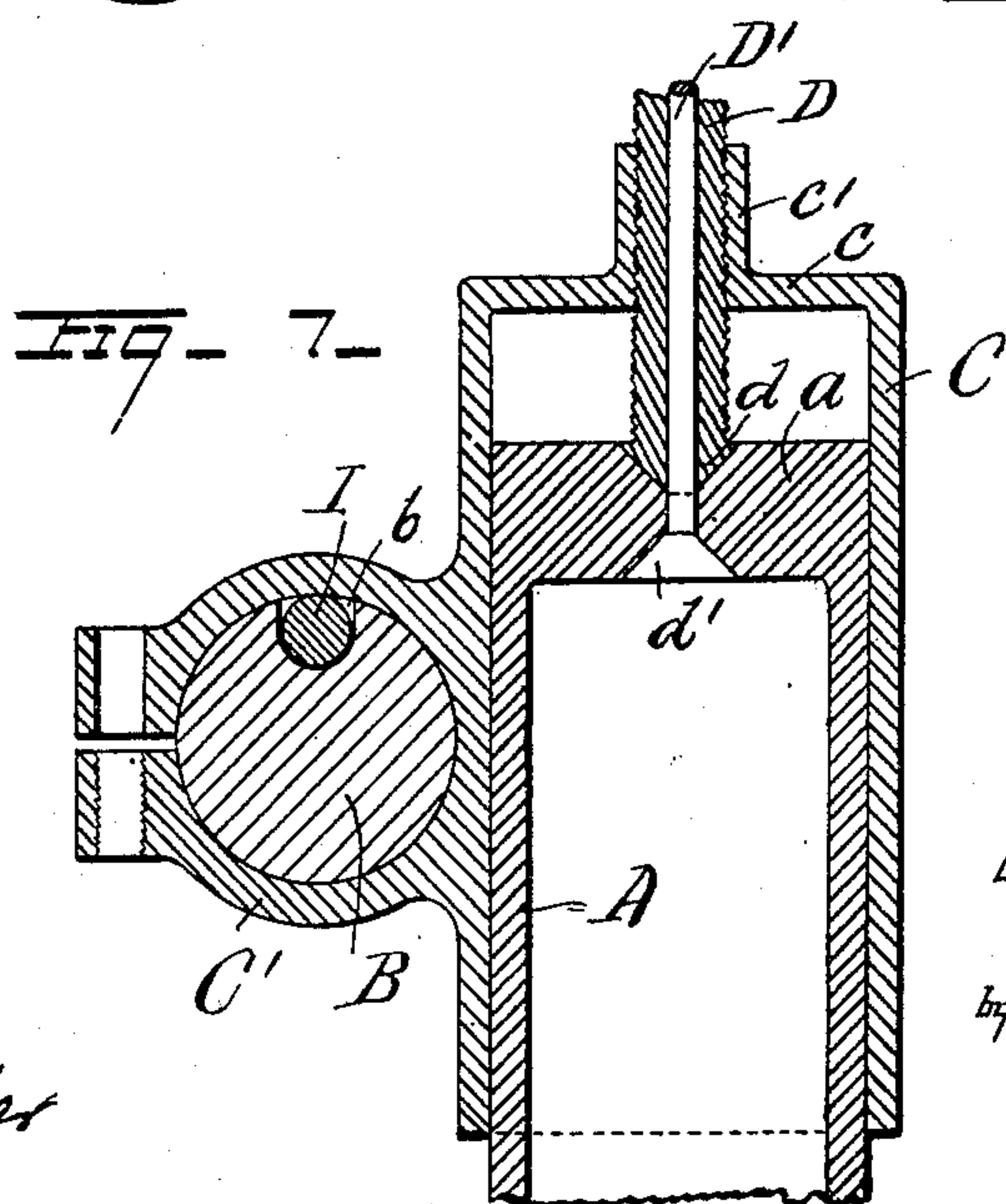
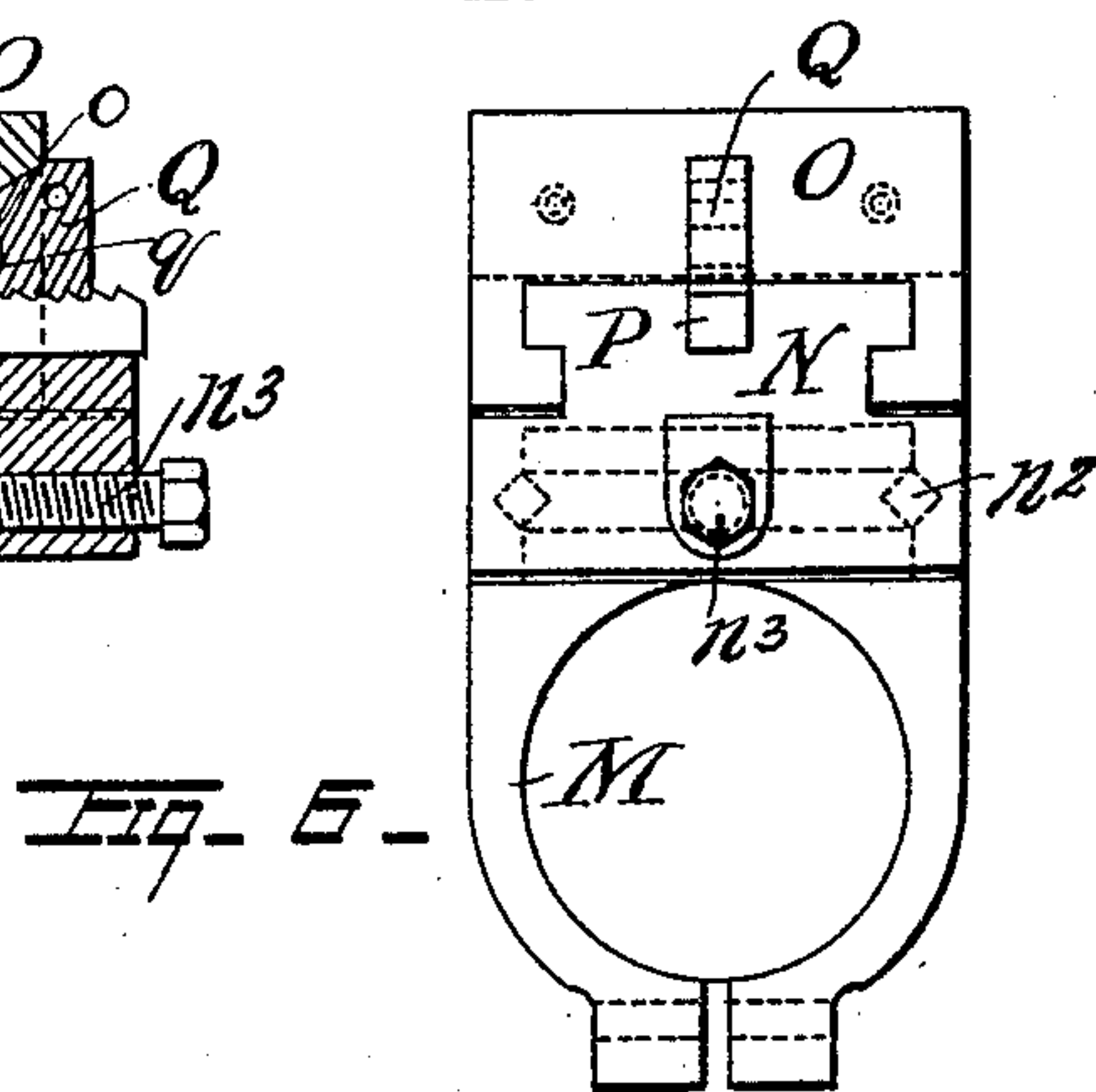
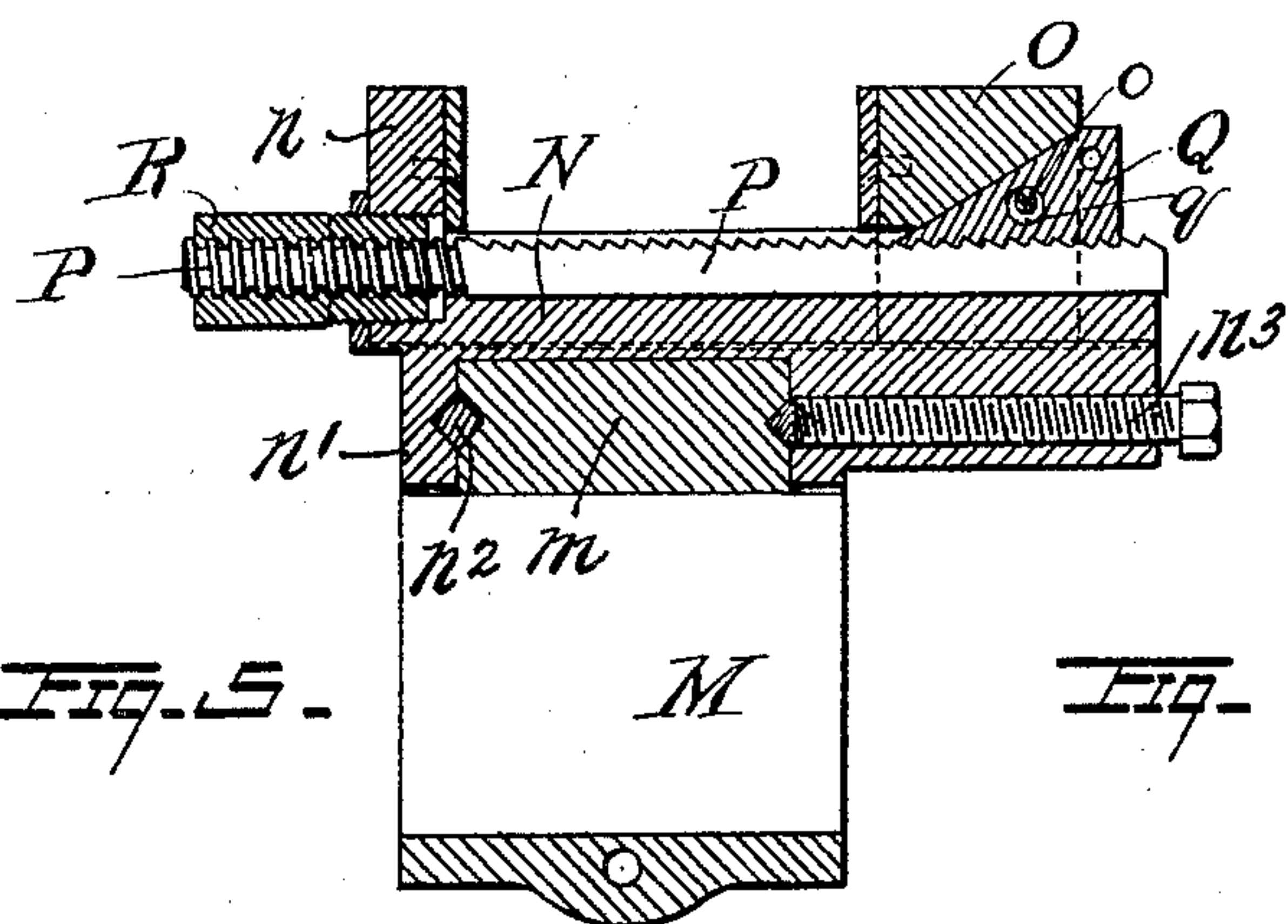
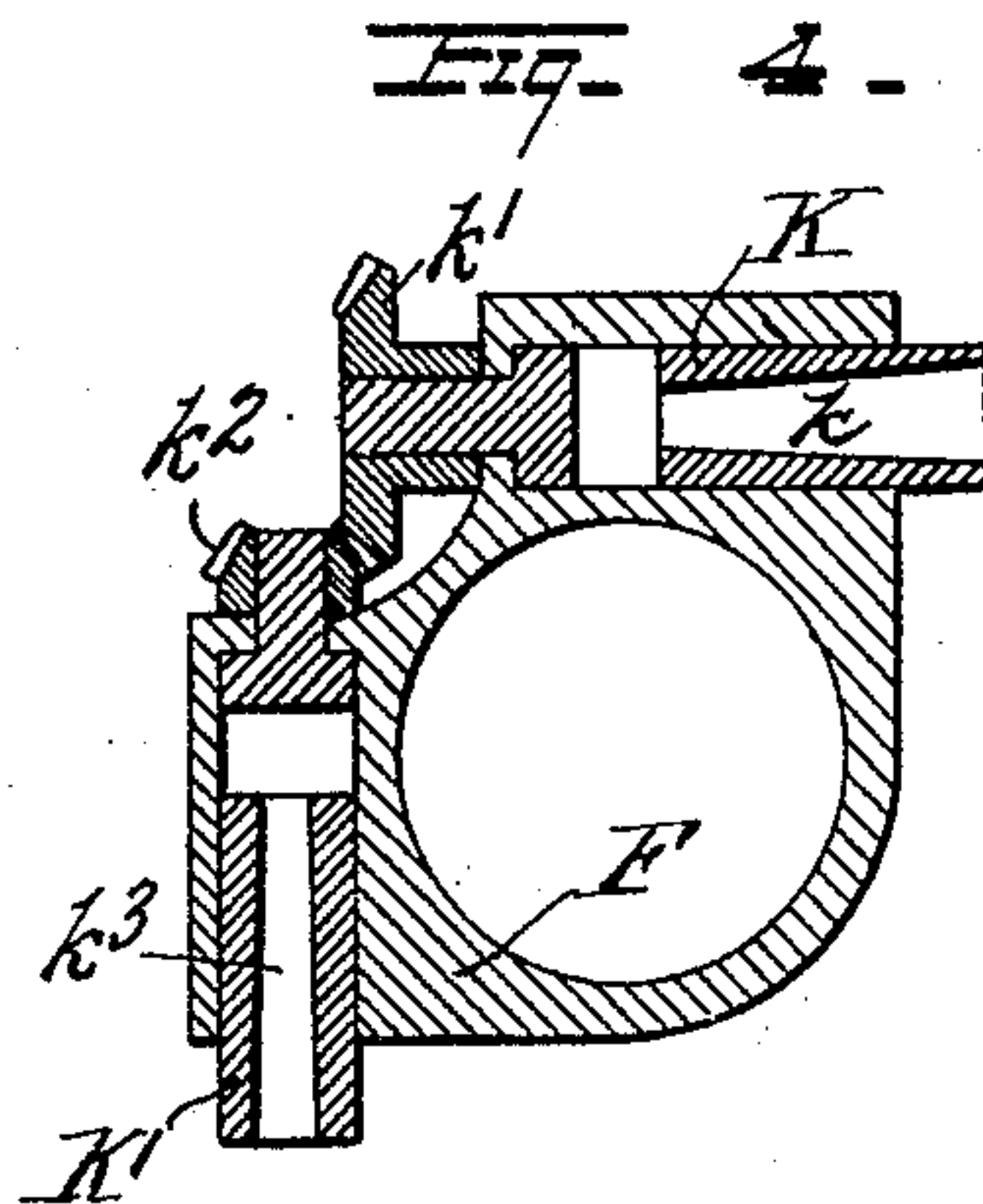
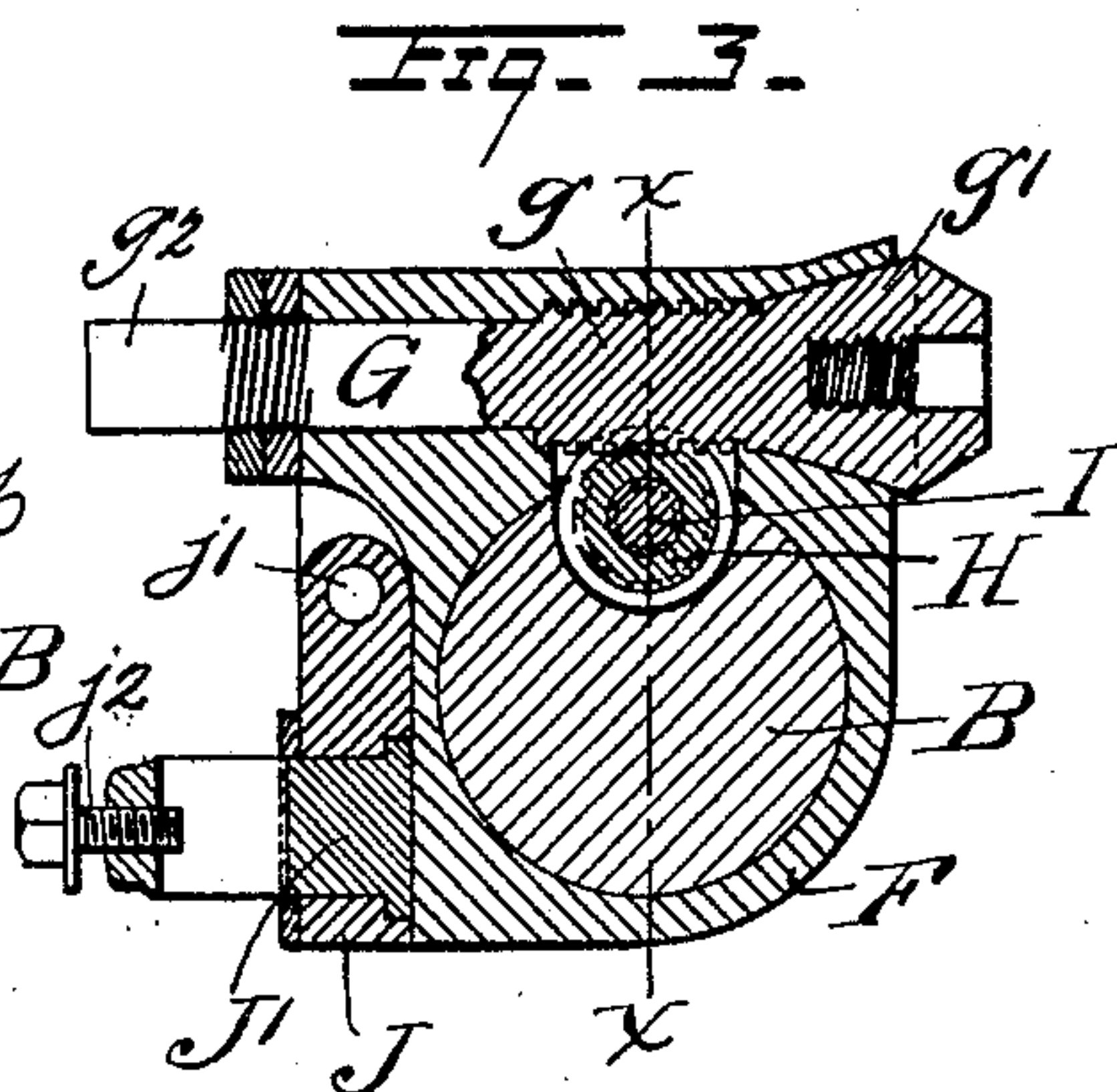
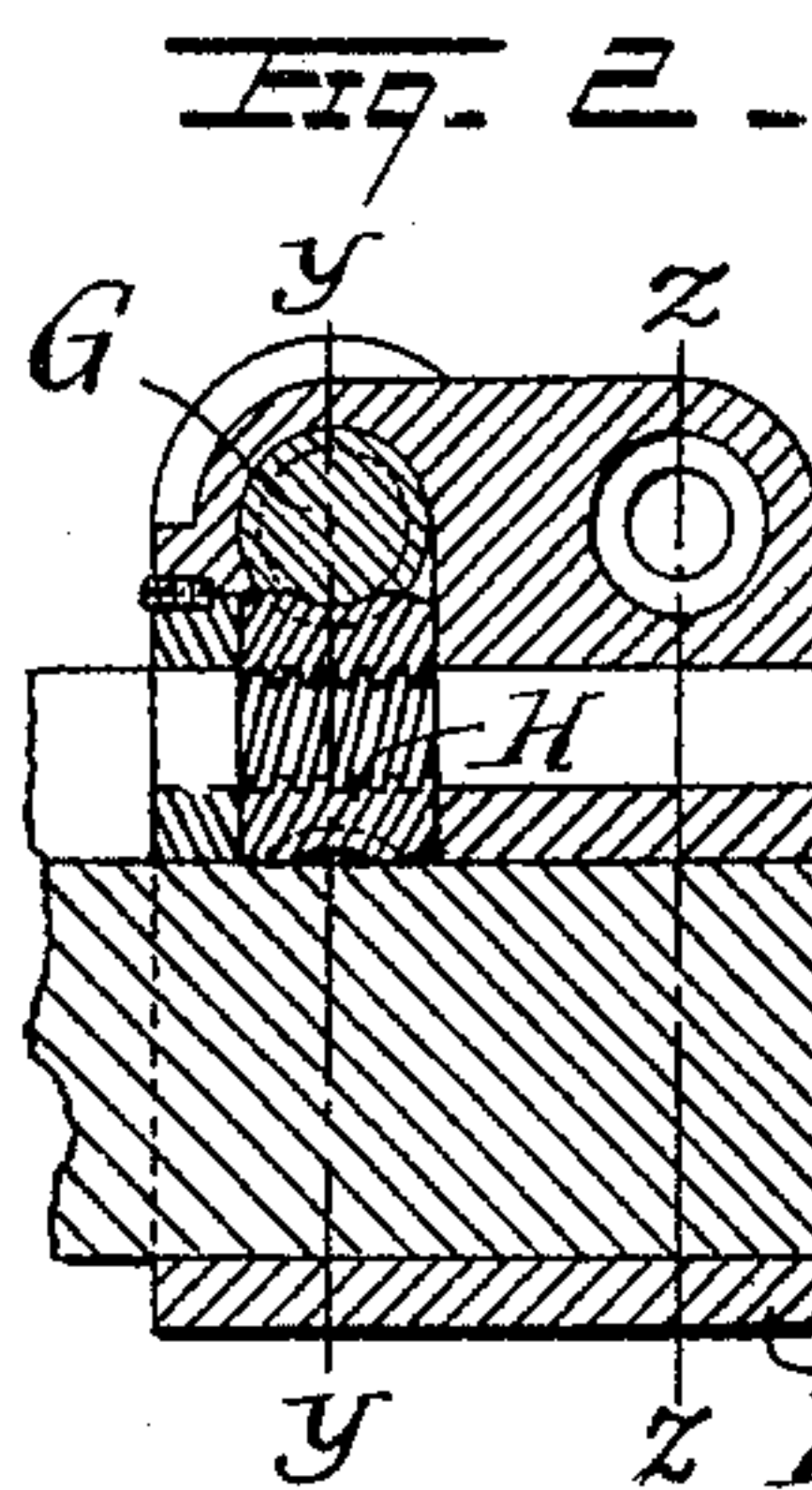
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C. JACKSON,
MACHINE TOOL.

(Application filed Dec. 26, 1899.)

(No Model.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

CALVIN JACKSON, OF READING, PENNSYLVANIA.

MACHINE-TOOL.

SPECIFICATION forming part of Letters Patent No. 683,178, dated September 24, 1901.

Application filed December 26, 1899. Serial No. 741,502. (No model.)

To all whom it may concern:

Be it known that I, CALVIN JACKSON, a citizen of the United States of America, and a resident of Reading, in the county of Berks and State of Pennsylvania, have invented certain new and useful Improvements in Machine-Tools, of which the following is a specification.

My invention relates to an improved form of machine-tool adapted to permit of the effecting of a variety of operations heretofore commonly requiring a variety of machines upon a single machine of simple and inexpensive construction, yet capable of performing accurate work.

The invention is fully described in connection with the accompanying drawings, and the novel features are specifically pointed out in the claims.

Figure 1 is an elevation of a complete machine embodying my invention in preferred form. Fig. 2 is a longitudinal sectional view of the tool-carriage, shown in elevation in Fig. 1, the section being on the line xx of Fig. 1. Fig. 3 is a cross-sectional view of the tool-carriage on the line yy of Fig. 2, and Fig. 4 is a similar view on the line zz of Fig. 2. Figs. 5 and 6 are respectively a longitudinal section and an end view of the work-clamping mechanism, shown in elevation in Fig. 1. Fig. 7 is a sectional elevation of the top portion of the column and of the swinging arm mounted thereon, the section being taken at right angles to the view of same shown in Fig. 1.

A represents the supporting-column of the machine, which is preferably provided with a separately-formed base A' , split at a' , and adapted to firmly clamp the column in adjustable position by means of a bolt at a^2 .

B represents a horizontal arm mounted upon the column A by means of a sleeve C encircling the top portion of the latter, said sleeve being provided, as shown, with a clamping-ring C' to receive and adjustably secure the arm B and having itself a vertical adjustment on the column, while at the same time free to turn thereon with the swinging arm B. This vertical or feed adjustment is effected, as shown, by means of a feed-screw D, which passes through a screw-threaded opening in the central lug c' on the closed

top c of the sleeve and has its lower conical end d seated in a corresponding recess in the closed top a of the hollow column, a similar recess on the face of said closed top forming a seat for the conical head d' of an adjustable extension of said bolt D, formed by a smaller interior bolt D' , which passes through the latter and is locked thereto, when properly adjusted, by means of a set-screw d^2 . By turning said screw D by means of a handle E the cap-sleeve C is thus readily adjusted either up or down upon the column A, a set-screw d^3 being provided to lock the screw D to the sleeve, so that the latter may be freely swung upon the column without varying the adjustment.

The arm B, as shown, is provided with a tool-carriage comprising a stock F, bored to fit upon the arm and slidable thereon by means of a longitudinal feed-screw I, mounted in a recess $b b'$ in the latter and engaging a nut H, suitably secured in the stock, said screw being provided with a handle I' at the arm. Mounted in the stock F around the arm B, on which it slides, are different tool-holders, either of which, as desired, can be set into operative position by properly adjusting the arm in its sleeve connection C' . Two of these holders are arranged in the plane yy , as shown in Figs. 2 and 3, G representing a milling-tool holder and J a planer-tool holder. The former, as shown, has a screw-threaded spindle g , forming a worm, which meshes with the toothed exterior surface of the nut H, so that the latter will be slowly rotated as a worm-wheel by the rotation of the holder G. A circular cutting-tool may be secured to the head g' of the latter by means of an arbor screwed therein, and a crank may be secured at the opposite end g^2 to rotate the holder and tool, which will at the same time be automatically fed onward slowly by the resulting rotation of the nut on the feed-screw I instead of requiring that the latter should be operated for this purpose.

As shown in the drawings, the planer-tool holder J is in proper position to operate upon work supported below the arm B, the milling-tool holder G, already described, being shown in raised position, though it may be readily lowered into convenient operative position, as already stated, by merely turning

the arm B a half-turn in its sleeve connection C'. The holder J, as shown, is arranged at right angles to the holder G and is pivoted at *j'* to the stock F and provided with an ordinary adjustable tool-post J', the tool being thus free to ride over the work on the return stroke, as usual.

To provide for doing drilling or the like on my machine, I arrange in the stock F around the arm B two rotary drill holders or sockets K and K', geared together, as shown, so as to rotate at different speeds, and adapted for different sizes of drills, the slower socket K being arranged to receive drills of larger size than the other and each being adapted for the application of an operating-crank. These holders K and K' are preferably mounted in the same stock with the holders G and J previously described, as shown, though, if desired, separate stocks may obviously be provided. Different forms of holders may also be employed in a similar way. To provide for conveniently holding the work to be operated upon by the different tools thus carried on the swinging arm B, I employ a second arm L, also carried by the column A, to which it is adjustably clamped, as indicated at L', and arranged parallel with the arm B, as shown. Upon this arm L, I preferably provide a pivot ring or stock M, adjustably secured thereto, and upon the projecting pivot *m* on said ring I rotatably mount a planer-chuck, adjustably securable thereto by means of a set-screw *n*³. This planer-chuck preferably consists, as shown, of a table N, mounted on said pivot-ring, as stated, and provided with a fixed jaw, a movable jaw O freely sliding in ways on said table and provided with a separately-formed toothed key Q, preferably attached thereto by means of a pin O passing loosely through an opening *q* in said key, so as to allow of a limited disengaging movement of the latter with a longitudinal screw-rack P, recessed into the clamping-face of the table N and movable by means of a clamping-nut R on its projecting end. This nut is preferably threaded exteriorly to engage the interiorly-threaded opening in the end of the table, through which it passes, as well as internally to engage the screw-threaded end of the screw-rack P, thus preventing movement of the latter except by turning the nut and this latter movement amounting only to the difference between the pitch of the two threads, thus increasing the clamping pressure upon the work held between the fixed and movable jaws. The latter, it will be understood, can be freely moved in either direction when the toothed key is raised out of engagement with the screw-rack, so that only a slight movement of the latter is required to effect the final clamping movement of the same. The toothed key Q, though attached to the movable jaw O by the transverse pin *o*, as shown, may be readily lifted out of engagement with the longitudinal screw-rack P when the latter is free

from clamping tension owing to the enlargement of the opening *q*, through which the pin *o* passes, which permits a rearward and upward movement of the key when seized by the projecting end.

In case it is desired to use my machine in connection with a suitably-mounted emery-wheel S (indicated in dotted lines in Fig. 1) the arm L can be moved out of the way and the work to be operated upon be suitably carried upon the upper arm B and swung over said wheel to grind the same. For this purpose the work-clamping device described can be used, if desired, it being made transferable from the arm L to the arm B.

My improved machine, it will be seen, is particularly adapted to effect a large variety of metal work on a small scale without requiring separate machines involving considerable expense and floor-room. It is thus especially desirable for small shops and for use by amateurs. The adjustments and different tool-holders provided permit of a considerable range as well as variety of work being effected, and its accuracy is generally equal to that attainable on expensive and pretentious machines.

What I claim is—

1. In a machine-tool the combination with a column, of a horizontal arm provided with a cap-sleeve rotatably mounted on said column and a screw mechanism for adjusting the same vertically on said column, substantially as set forth.

2. In a machine-tool the combination with a hollow column having a closed top with a central interiorly and exteriorly countersunk opening, of a horizontal arm provided with a cap-sleeve rotatably mounted on said column and an adjusting-screw passing through the closed end of said cap-sleeve and having a fixed head engaging the exterior countersink and a secondary head engaging the interior countersink and adjustably connected to the adjusting-screw substantially as set forth.

3. In a machine-tool the combination with a horizontal swinging arm of cylindrical form, adjustable on its own axis and provided with a longitudinal feed-screw, of a tool-carriage comprising a stock slidable on said arm, by means of a nut engaged by said feed-screw, and separate tool-holders carried by said stock around the swinging arm.

4. In a machine-tool the combination with a horizontal swinging arm of cylindrical form provided with a horizontal feed-screw, of a tool-carriage comprising a stock slidable on said arm by means of a nut engaged by said feed-screw and a rotary tool-holder mounted in said stock and in gear with said nut so as to simultaneously move the carriage.

5. In a machine-tool the combination with a supporting-arm, of a tool-carriage thereon comprising a stock slidable on said arm and tool-holders mounted in said stock in planes

at right angles to each other substantially as set forth.

5 6. In a machine-tool the combination with a horizontal swinging arm of cylindrical form of a tool-carriage comprising a stock ad-justably carried on said arm, and separate tool-holders mounted in said stock around said arm and each adapted to be set into op-erative position by proper adjustment of the
10 stock substantially as set forth.

7. In a machine-tool having a column and a cylindrical horizontal work-arm carrying movably mounted thereon, a work-clamping device comprising a pivot ring or stock ad-justably secured to said cylindrical arm, and
15 a rotary planer-chuck mounted on said pivot-ring substantially as set forth.

8. In a machine-tool a work-clamping de-vice comprising a table having a fixed jaw at
20 one end thereof, a jaw slidable on said table,

a clamping screw-rack sliding on said table, and a toothed key adapted to rigidly connect said slidable jaw and said slidable rack when firmly inserted between them and when with-drawn to disconnect the same. 25

9. In a machine-tool a work-clamping de-vice comprising a table having a fixed jaw at one end thereof, a jaw slidable on said table, a clamping screw-rack sliding on said table, and a separately-formed toothed key loosely
30 attached to said movable jaw and having a limited movement adapted to engage or dis-engage the latter from said screw-rack.

Signed by me at Reading, Pennsylvania, this 19th day of December, 1899.

CALVIN JACKSON.

Witnesses:

W. G. STEWART,

WOOD M. SCHWARTZ, Jr.