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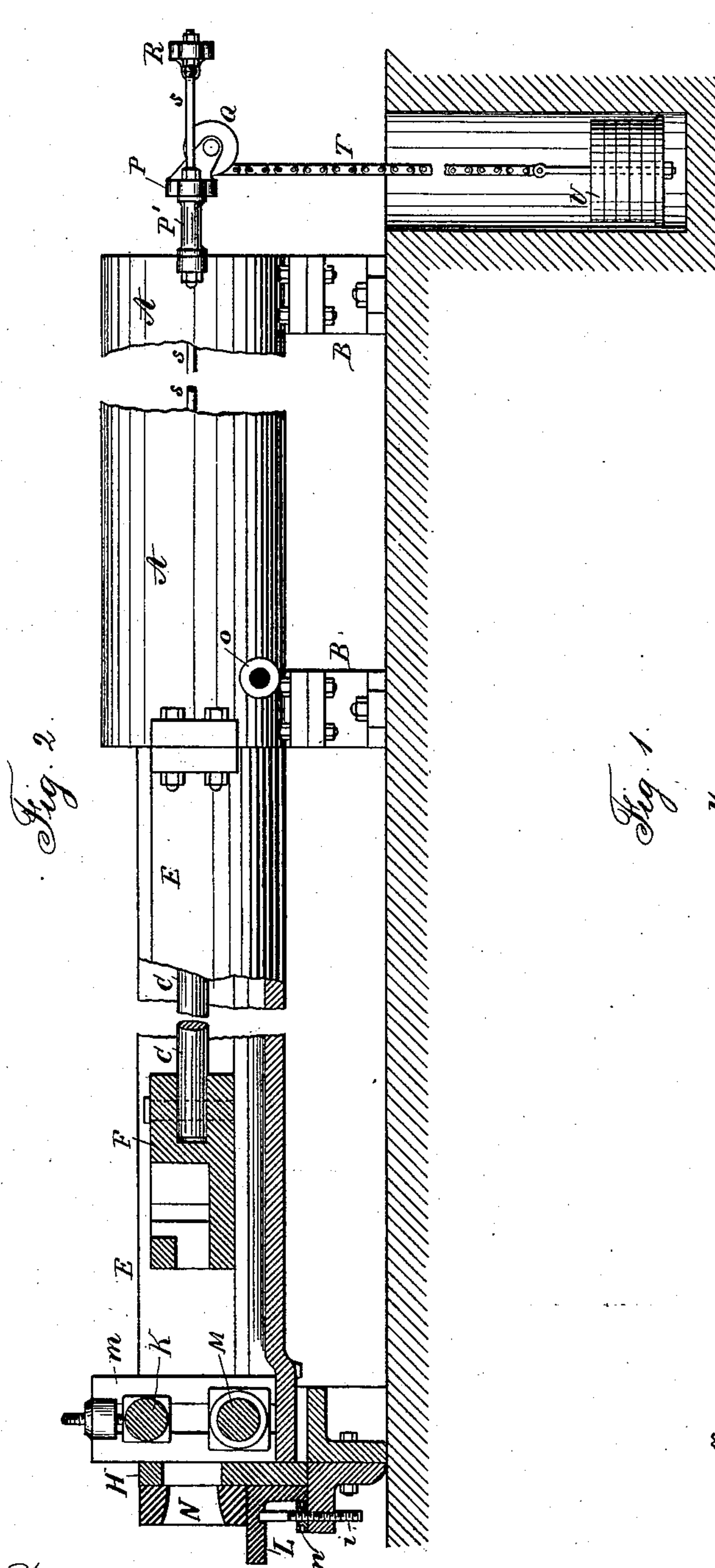
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W. R. WALTON.

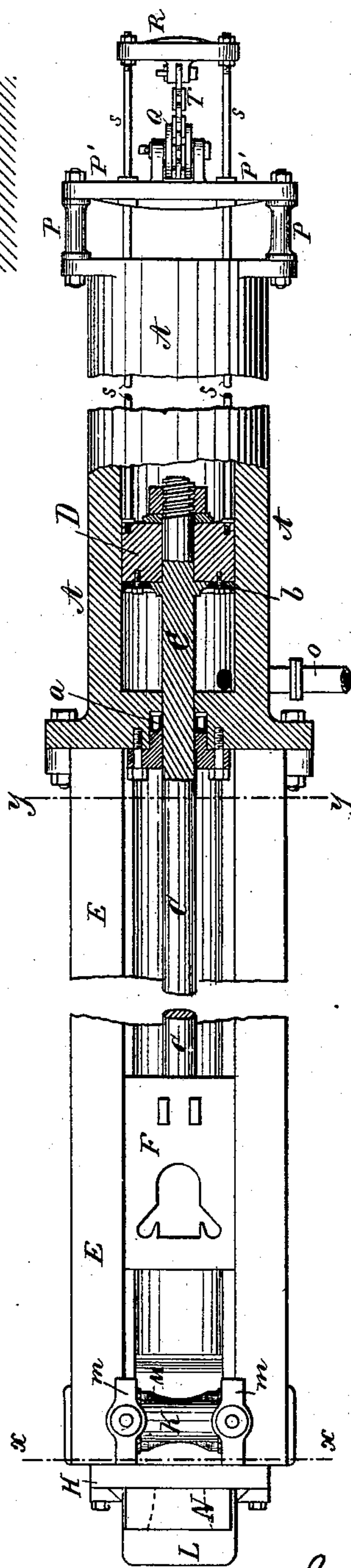
DRAW BENCH.

No. 324,506.

Patented Aug. 18, 1885.



Witnesses:
J. Staib
Chas H Smith



Inventor:
William Robert Walton
per Lemuel W. Serrell atty

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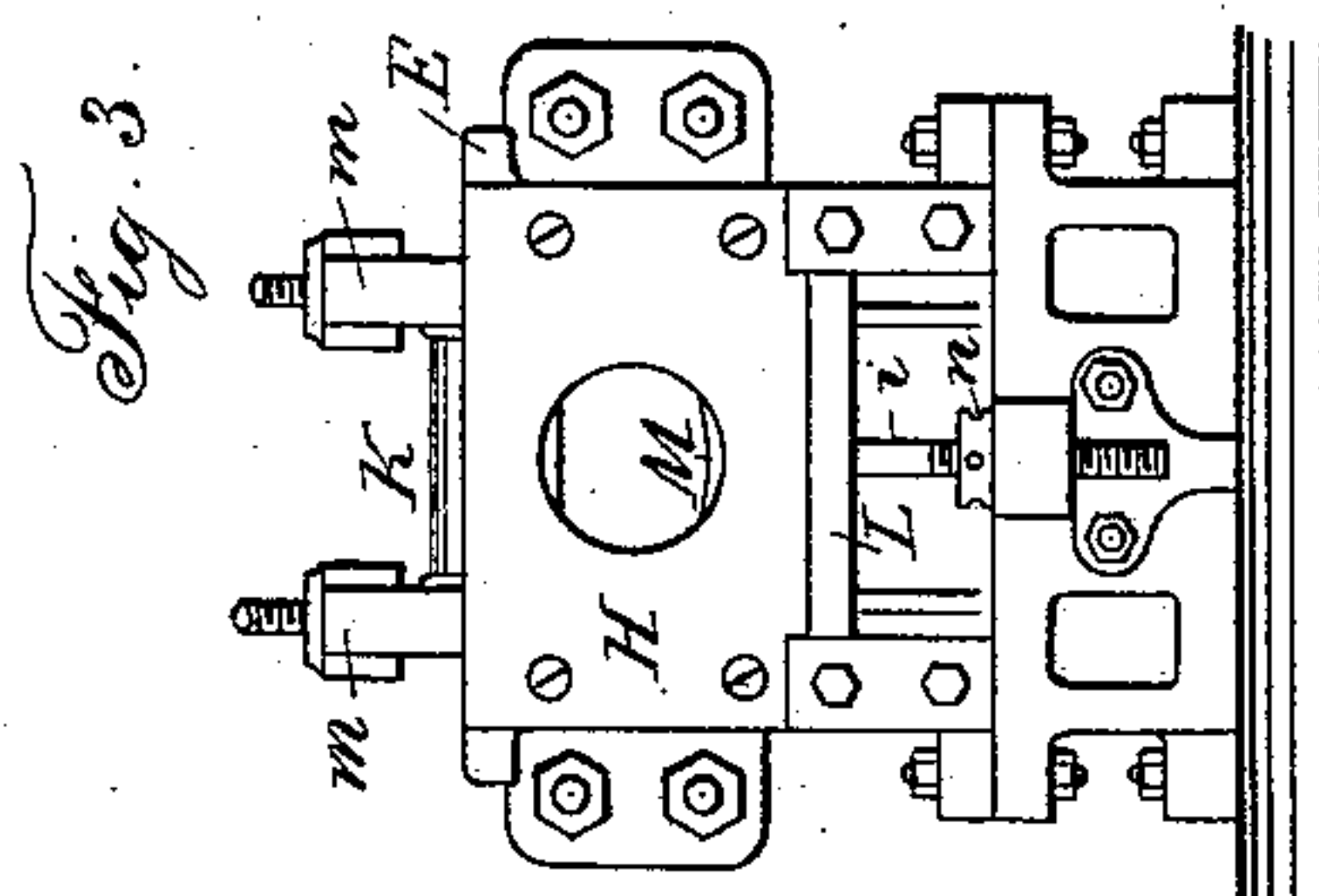
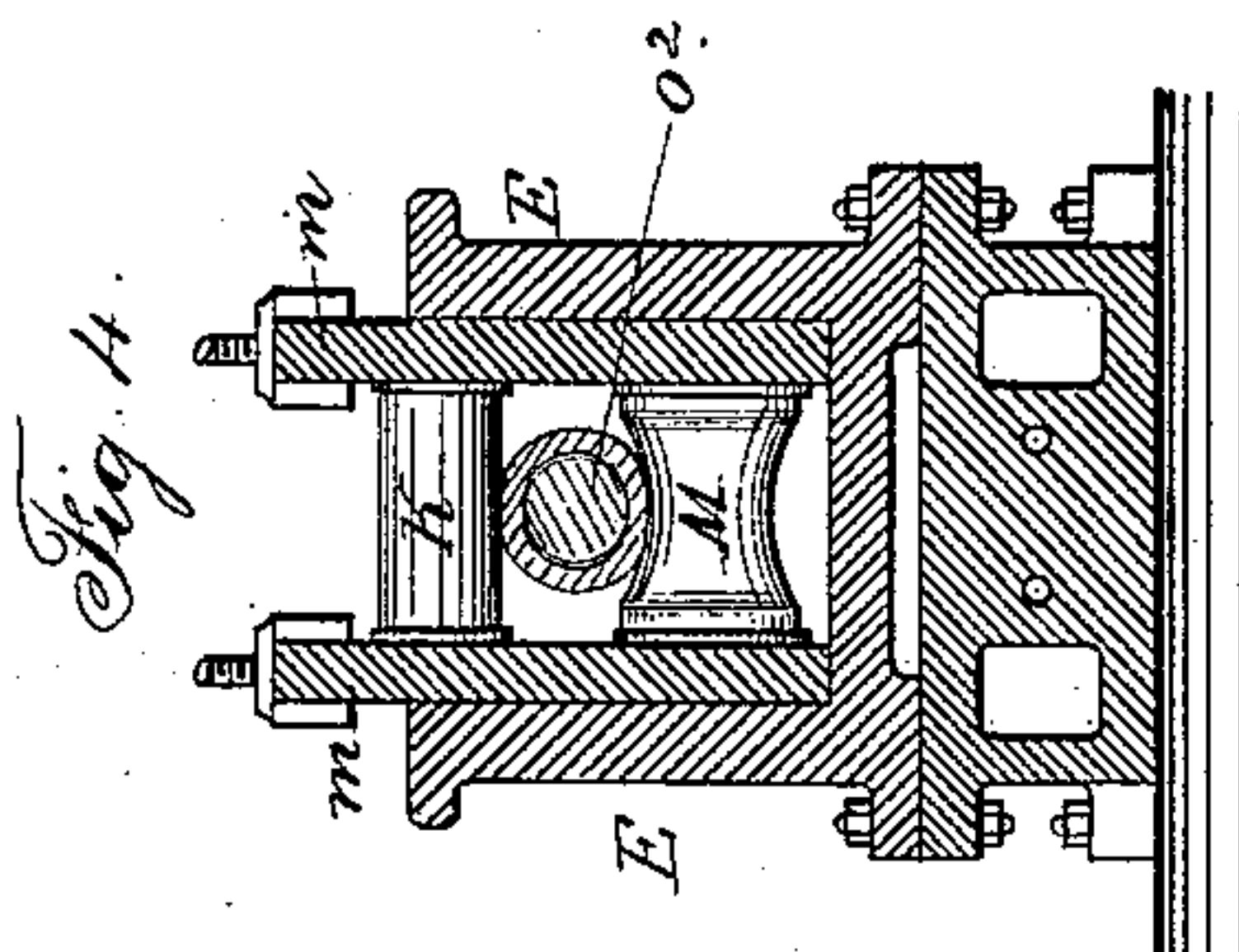
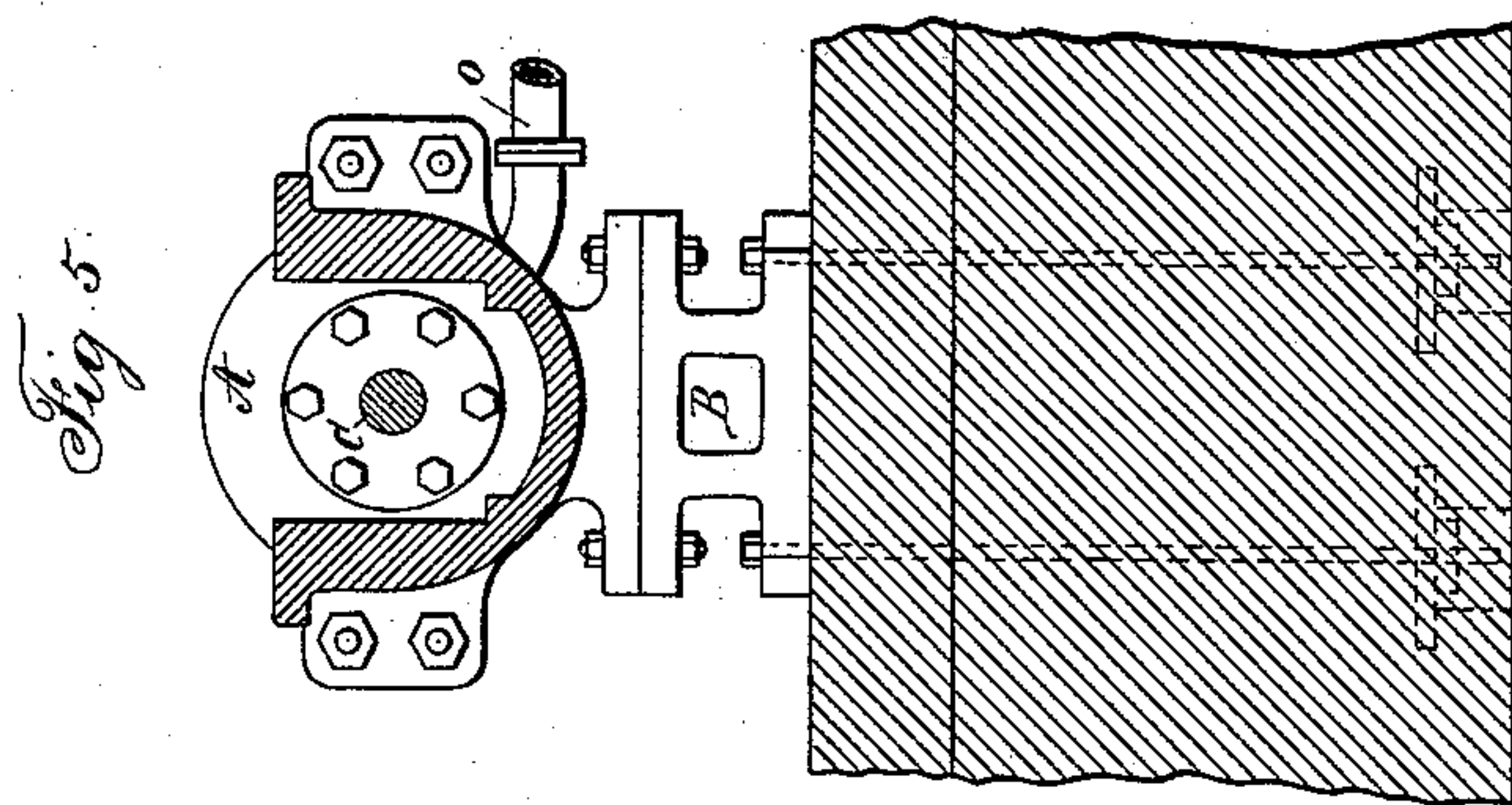
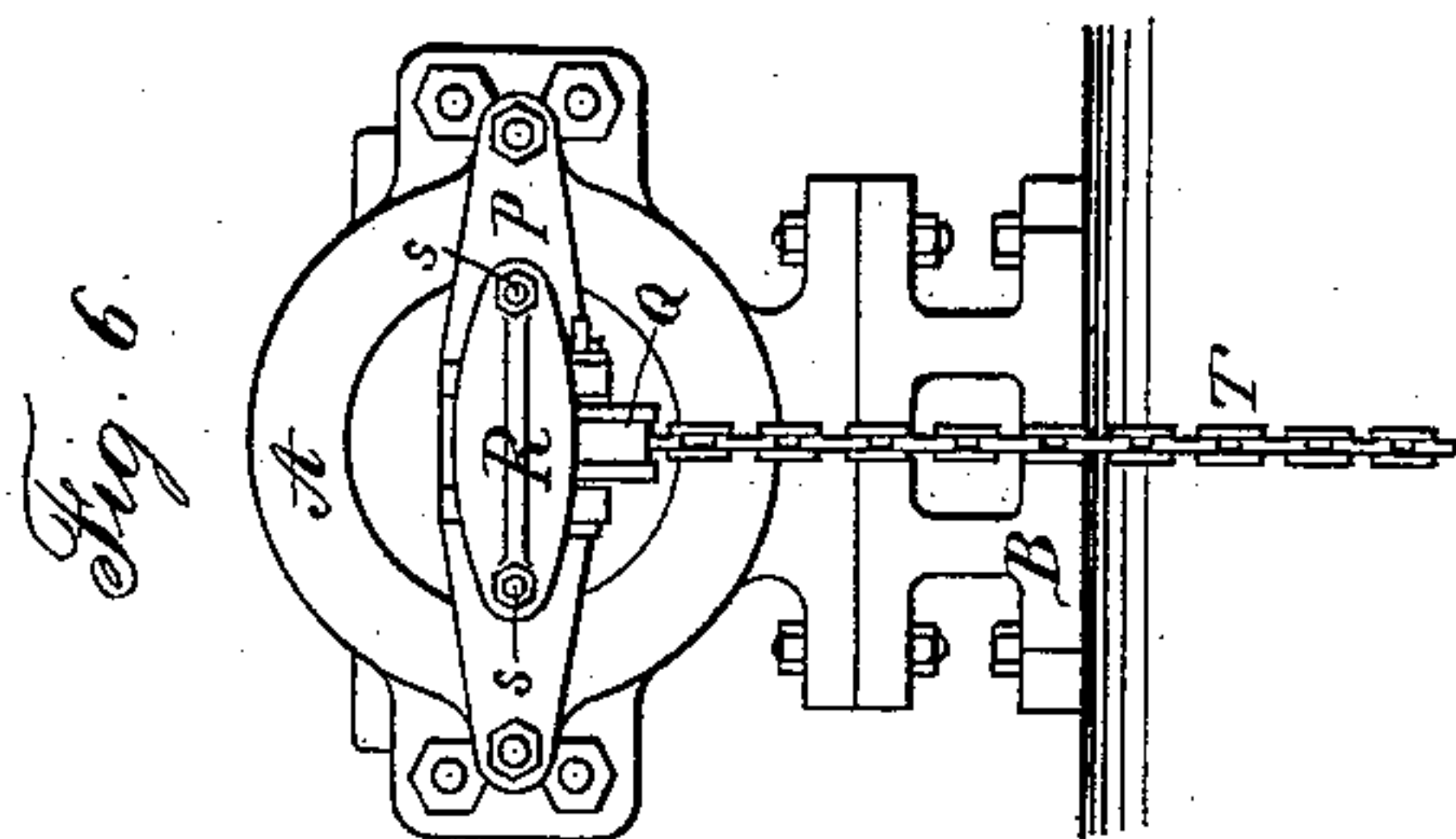
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DRAW BENCH.

No. 324,506.

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Witnesses:
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Chas. Schmidt

Inventor:
William Robert Walton
per Lemuel W. Serrell
att'y

UNITED STATES PATENT OFFICE.

WILLIAM R. WALTON, OF ANSONIA, CONNECTICUT, ASSIGNOR TO THE
ANSONIA BRASS AND COPPER COMPANY, OF SAME PLACE.

DRAW-BENCH.

SPECIFICATION forming part of Letters Patent No. 324,506, dated August 18, 1885.

Application filed January 2, 1885. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM ROBERT WALTON, of Ansonia, in the county of New Haven and State of Connecticut, have invented an
5 Improvement in Draw-Benches, of which the following is a specification.

The object of this invention is to operate the draw-bench by hydraulic power, so as to obtain the required force for drawing large
10 articles—such as copper and brass tubes—and also run back the plunger with sufficient rapidity to prevent loss of time when the stock for the pinchers is being moved toward the draw-plate preparatory to grasping and draw-
15 ing through another tube and its mandrel.

In carrying out this invention, I make use of a cylinder and a ram operated by hydraulic power, and this is connected with the stock and pinchers that draw the mandrel and tube
20 through the die, and as these are being moved a weight is also being drawn up by a chain or chains. When the operation is completed, the water-supply to the hydraulic cylinder is shut off, and a discharge-cock opened,
25 and the weight runs down and carries the ram and stock rapidly back to the place of beginning.

In the drawings, Figure 1 is a plan view of the machine with the cylinder partially in section. Fig. 2 is a side elevation, with the draw-
30 head in section. Fig. 3 is an end view. Fig. 4 is a section at the line *x x*, Fig. 1. Fig. 5 is a section at the line *y y*, and Fig. 6 is an elevation at the rear end.

The cylinder A is supported upon suitable foundation-bearers, B B. It is open at the rear end, and closed by a head at the front end, through which passes the piston-rod C, there being a hydraulic packing at *a*, and the
40 rod C is connected with the piston D within the cylinder A, and *b* is the hydraulic packing for said piston. At the forward end of the cylinder there is an open trough-shaped bed, E, having ways in which the head-block F is
45 supported and slides. This head-block is connected to the piston-rod C, and is moved back and forth lengthwise of the machine and within the bed E. This head-block is made hollow, and receives the back ends of the pinch-
50 ers or jaws that are used to grasp the mandrel and the pipe that is to be drawn.

At the front end of the bed E there is a vertical cross-plate, H, that forms a support for the die or draw plate N, which draw-plate rests at its lower edge upon the table L, and
55 this table may be raised or lowered by the screw *i* and adjusting-nut *n*, so as to bring the center of the draw-plate into line with the axis of the piston-rod.

The hydraulic pump is connected with the
60 cylinder A by the pipe *o*, and cocks are provided for allowing the water to escape from the cylinder A after the drawing operation has been finished.

At the back end of the cylinder A there are
65 columns P and a cross-head, P', upon which is a pulley, Q, and there are rods *s s*, connected at their inner ends to the piston, and passing freely through holes in the cross-head P' and terminating in the cross-head R, and there is
70 a chain, T, connected at one end to this cross-head R and passing over the pulley Q to the weight U that is within the vertical well or case, so that as the water is forced into the cylinder A and the piston is driven back, the
75 cross-head R, being also moved back, draws up the weight, and when the tube or rod has been drawn through the die the tube or the mandrel and tube, when both are drawn
80 through together, are to be loosened from the pinchers and lifted out of the bed E, and the discharge-cock opened for the water to pass out of the cylinder A. The weight U now descends and moves the piston and rod toward
85 the die or drawer plate and ejects the water from said cylinder, so that head-block F has been returned to the front end of the machine by the time that another tube and mandrel have been inserted through the die ready for
90 the pinchers, thus saving considerable time in returning the piston and the head-block F.

In drawing tubes it is usual to hold the mandrel stationary and pull the tube through the die around the stationary mandrel. My
95 before-described improvements are available in draw-benches worked in this manner; but having sufficient power to "break down" the metal and effect a large reduction, I find it advantageous to draw the mandrel, with the
100 tube upon it, through the die, the mandrel being sufficiently long to allow for the extension of the tube. When this is done in the

manner heretofore employed the tube is difficult to remove from the mandrel. I loosen the tube upon the mandrel, after passing through the die, by pressing upon it with 5 rollers at two or more places around the pipe, so as to slightly thin the pipe at these places, and spread the tube laterally and increase its circumference. The movable frame *m* is received into vertical channels in the faces of 10 the bed E adjacent to the plate H, and in this frame there are rollers K and M, which press upon the tube at opposite sides of the mandrel *o*², Fig. 4. The mandrel can be drawn out in the ordinary manner after the mandrel 15 and tube have been passed entirely through the die.

I claim as my invention—

1. The hydraulic cylinder A, open at the rear end, in combination with the piston, piston-rod, head-block, bed, and die, and the rods 20 *s s*, cross-heads, chain, pulley, and weight, substantially as set forth.

2. The combination, in a draw-bench, of a support for the die, a hydraulic cylinder, piston, and piston-rod for drawing the tube or 25 rod through the die, a weight and connections to the piston, whereby the weight is raised as the draw-bench is operated, and the weight returns the parts to the place of beginning, when the water is allowed to escape from the 30 cylinder, substantially as set forth.

3. The combination, with the cylinder and piston, and mandrel, in a draw-bench, of a die through which the mandrel and tube are drawn, and two rollers to apply pressure at 35 two or more places upon the tube, for the purposes and substantially as set forth.

Signed by me this 23d day of December, A. D. 1884.

WILLIAM R. WALTON.

Witnesses:

JOHN W. DREW,
B. DOTY.