

(No Model.)

2 Sheets—Sheet 1.

W. THIEM.

MECHANISM FOR OPERATING DRILLS.

No. 389,613.

Patented Sept. 18, 1888.

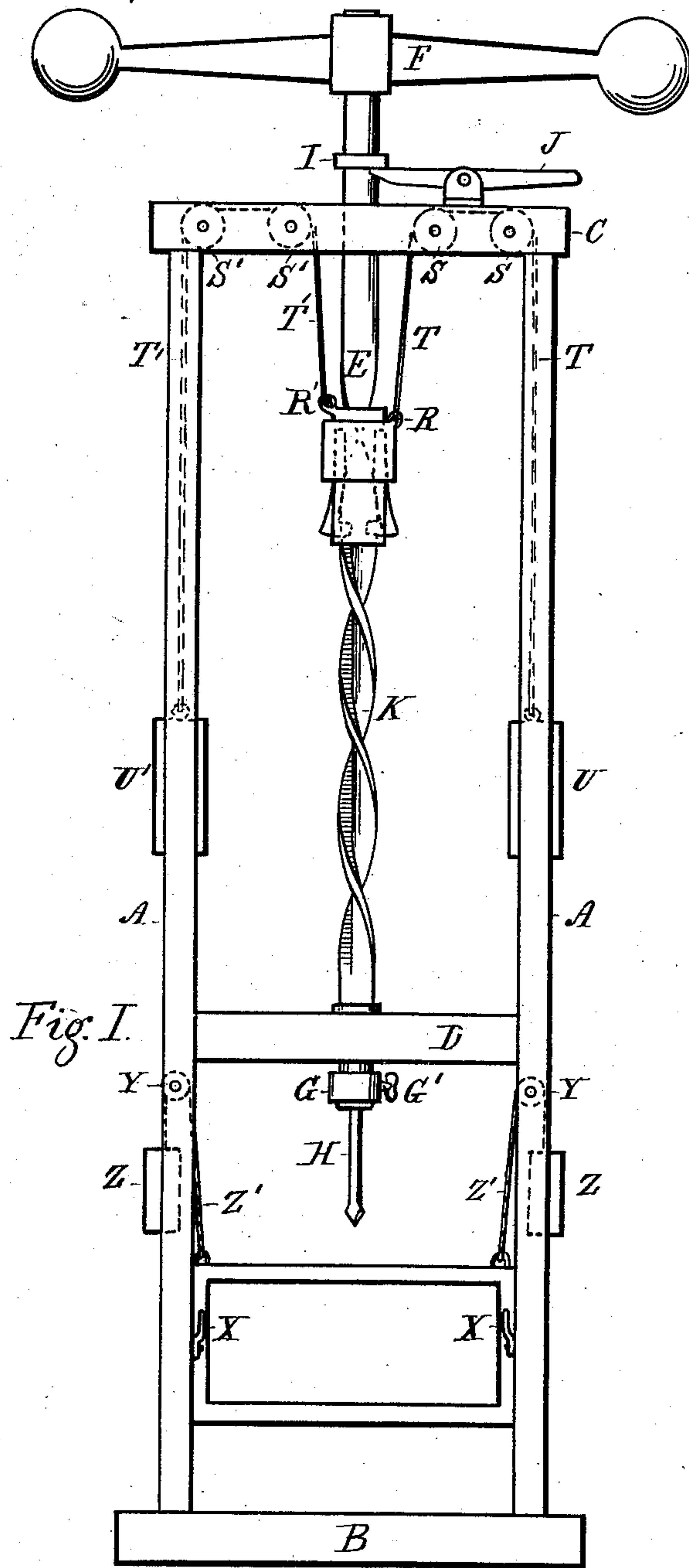


Fig. I.

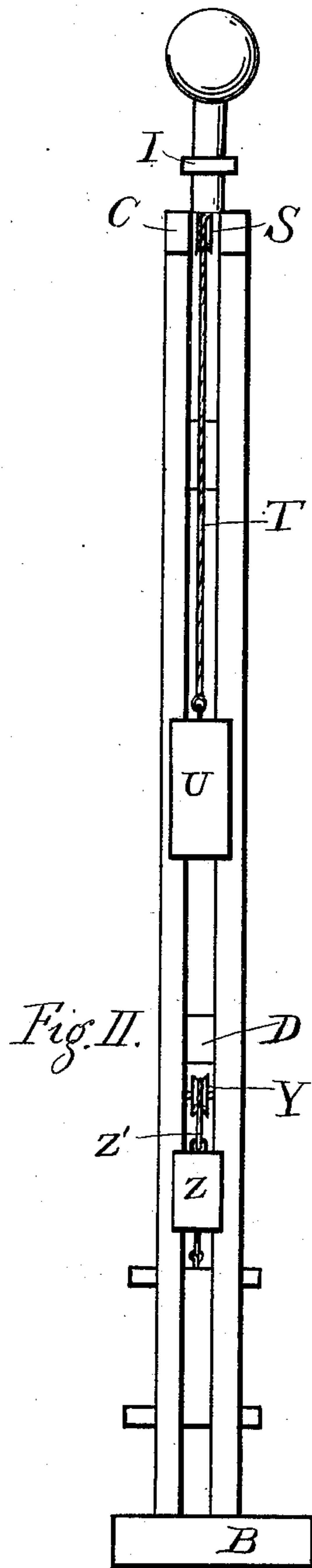


Fig. II.

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Jacob Harlow

INVENTOR :

Wilhelm Thiem.

By *J. S. Zerbe* Attorney.

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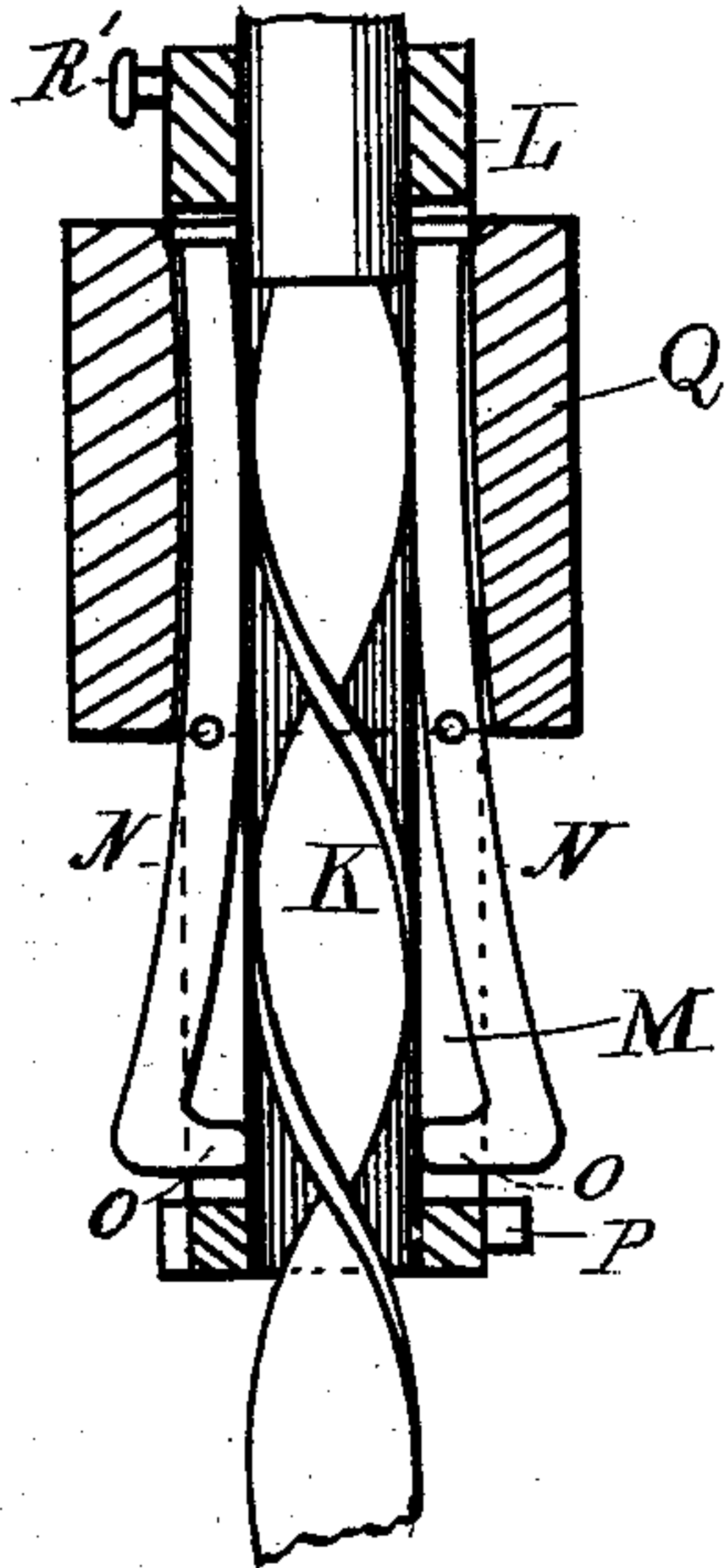


Fig. III.

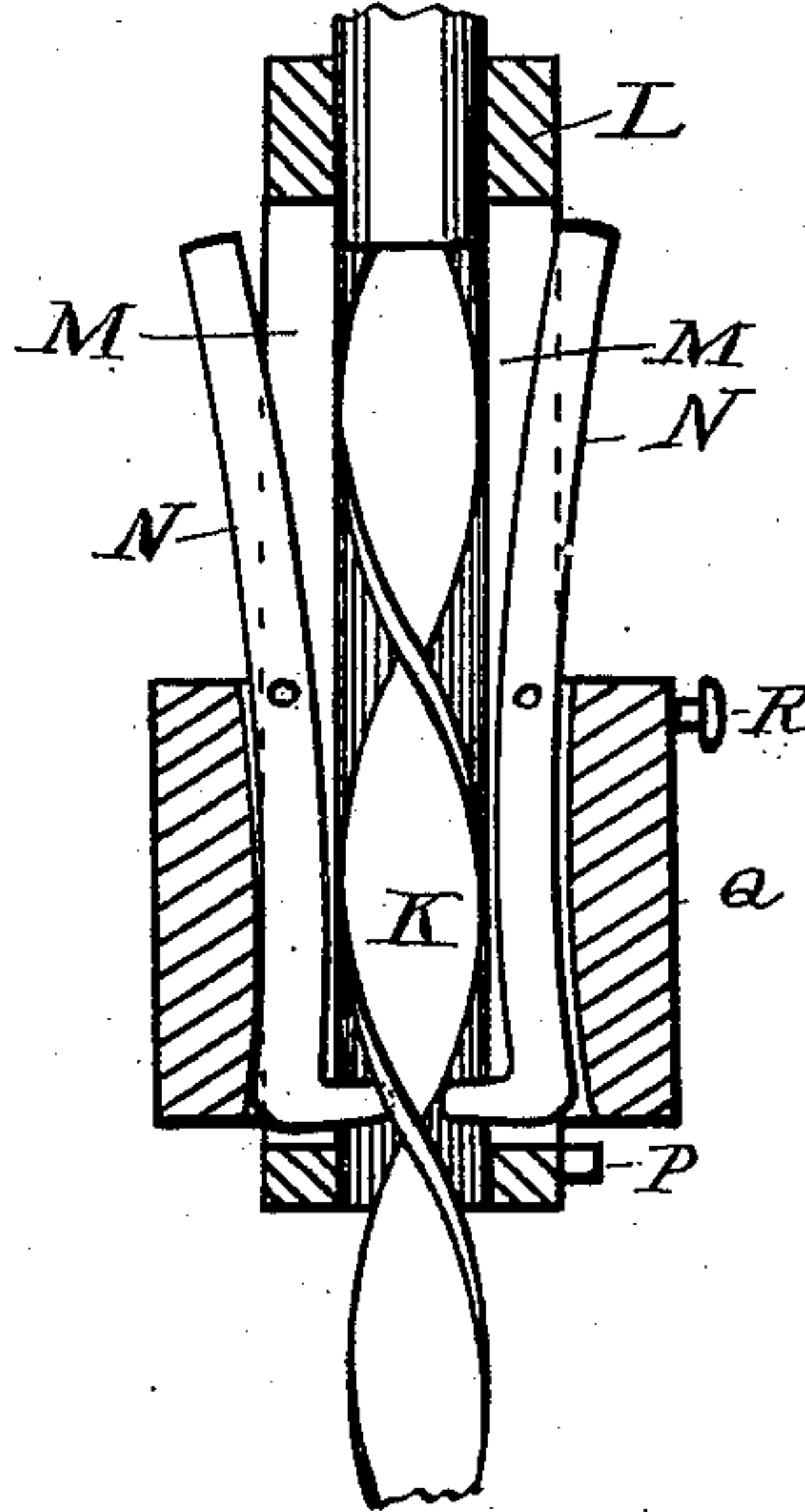


Fig. IV.

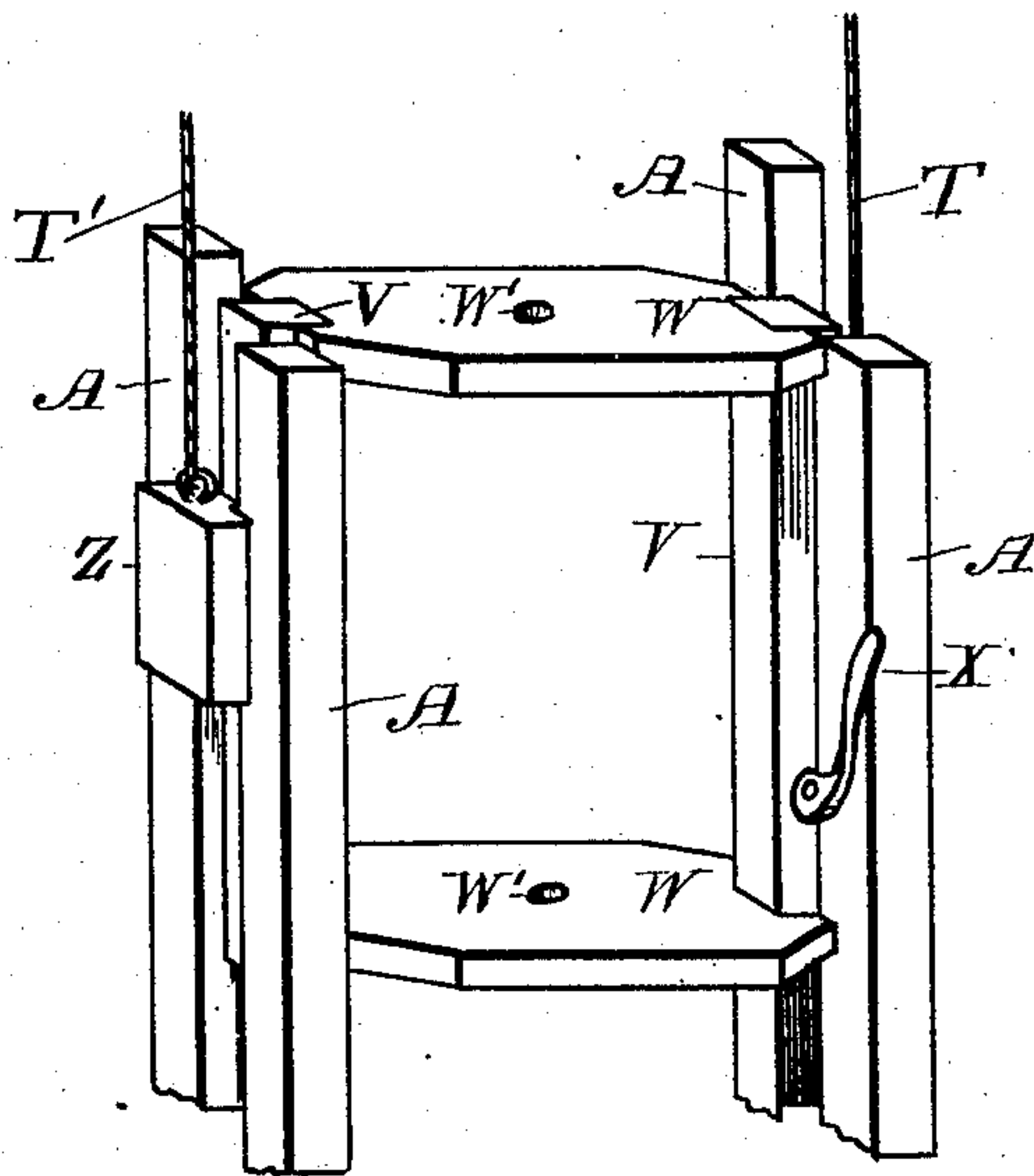


Fig. V.

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UNITED STATES PATENT OFFICE.

WILHELM THIEM, OF BELLEVUE, KENTUCKY.

MECHANISM FOR OPERATING DRILLS.

SPECIFICATION forming part of Letters Patent No. 389,613, dated September 18, 1888.

Application filed February 2, 1888. Serial No. 262,755. (No model.)

To all whom it may concern:

Be it known that I, WILHELM THIEM, of Bellevue, in the county of Campbell and State of Kentucky, have invented a new and useful
5 Improvement in Mechanism for Operating Drills, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a front view of my mechanism
10 for operating drills. Fig. 2 is an edge view of the same; Figs. 3 and 4, vertical sectional views of the holder for manipulating the drills, and Fig. 5 detail perspective view of the lower portion of the frame.

15 The object of my invention is to construct a mechanism for operating drills by hand; and it consists of a vertical frame having centrally a horizontal cross-bar, to which bar and the cross-beam above is journaled a vertical twist-
20 bar, the lower end of which has a socket for attaching thereto a bit, and the upper end of which is provided with a balance-wheel or arms. This twist-bar carries a tubular sliding piece provided with hinged pawls, and over
25 this tube is a sliding holder tubular in form, so that when the hand grasps the sliding holder and presses it downward it will slide to the lower end of the tubular piece and cause the pawls to engage with the twisted grooves of
30 the bar and rotate the same. Two weights attached, respectively, to the tubular piece and to the sliding holder serve to raise these parts when the downward pressure is released. The lower half of the frame is provided with a ver-
35 tically-sliding frame, on which the material to be drilled is placed, and this frame is counter-balanced by suitable weights.

In the accompanying drawings, A represents a pair of posts parallel with each other
40 mounted on a suitable base, B, and secured to a similar pair of posts by means of the top beam, C, and central cross-bar, D. The posts thus form guideways on each side, between which the counterbalancing-weights are
45 placed, as will be hereinafter shown.

E is a vertical shaft journaled to the beams C D midway between the posts A A. The upper end of this shaft is provided with a balance-wheel or weighted arms, F, and at its lower end
50 a head, G, provided with a socket to receive a bit, H, and a thumb-screw, G', on one side for tightening the bit. The shaft is further pro-

vided with a collar, I, a short distance above the journal in the beam C, and a lever, J, fulcrumed to the beam C, has one end placed under this
55 collar, the opposite end being constructed so that it projects slightly beyond the beam C. The shaft E being capable of a limited vertical motion the lever J is employed to raise it when desired in the operation of boring. 50

The shaft E is constructed with a twist, or, preferably, with twisted grooves K, on opposite sides. The construction shown in the ordinary twist-bit will answer for this purpose satisfac-
65 torily. 65

In Figs. 3 and 4 I show vertical sectional views of a tubular piece, L. This is made of suitable size to fit loosely on the twisted shaft E. On each side it is provided with a slot, M,
70 to which slots are pivoted centrally levers N, which are slightly curved, the lower ends having inwardly-turned pawls or teeth O. The lower end of the tubular piece L has a lug or stop, P. This tubular piece is designed to re-
75 ceive the tubular holder Q, which slides thereon. The upper end of the tubular holder Q has at one side a lug or pin, R, while the upper end of the tubular piece L on the opposite side has
80 a similar pin, R', to which the weighted ropes are respectively attached. In the beam C, on one side of the shaft E, are two grooved pul-
85 leys, S S, one of them being directly above and in line with the pin R on the tubular holder Q, and the other in line with the weight U, between the posts A. A rope, T, attached to the
85 tubular holder Q, passes over these grooved pulleys S S, and thence down to the weight U. In like manner grooved pulleys S' S' are located in the beam C on the other side of the bar E,
90 and a rope, T', attached to the tubular piece L, passes over these pulleys and thence down to the weight U'.

The lower half of the frame, or that portion below the central beam, D, is provided with a vertically-movable frame or table, the vertical
95 side limbs, V, of which are properly guided, so they will slide between the parallel posts A. These vertical pieces are joined at their upper and lower ends by means of cross-pieces or
100 tables W, which tables are provided centrally with apertures W', through which the bit H can pass. Each vertical limb V has on its side an eccentric or cam lever, X, which in opera-
tion binds against the post A. The object of

this is to hold the sliding frame in any position desired.

Y Y are grooved pulleys located directly below the central beam, D, between the posts A; and Z Z, weights which slide between the posts A.

Z' Z' are ropes attached to the frame and weights in order to counterbalance the frame and elevate it.

10 The operation is as follows: The bit H being adjusted, the article to be drilled or bored is placed on the table W of the sliding frame. If the bit is a short one, the upper table can be used. If a long bit is employed, the lower table
15 can be used. The weights Z are preferably heavier than the table, so as to elevate both the table and the article to be bored, which may be placed thereon. The operator then grasps the tubular holder Q and forces it down-
20 ward with a rapid motion, causing it to slide down on the tubular piece L until it reaches the stop P, as shown in Fig. 4, and then both tubular pieces are moved downward on the twisted rod E. The noses or pawls O of the
25 levers N are forced into the grooves of the rod E, and thereby cause the latter to rotate. When these tubular pieces have reached their lowest limit, they are drawn back suddenly, and the effect of the initial motion is to return the tubu-
30 lar holder Q to its original position, as shown in Fig. 3, thus disengaging the pawls O. The balance-wheel or weighted arms F in the mean time continue the motion of the rod E. The operation of the tubular holder is then repeated,
35 the weights U U' being utilized to draw up the tubular holders after each downward motion.

What I claim as new is—

1. In mechanism for operating drills, a frame having therein a vertical rotatable twist-shaft

provided with a balance-wheel or arms at its 40 upper end and a bit-socket at its lower end, in combination with a tubular piece and a tubular holder sliding thereon having pawls for engaging with the twist shaft or rod, and suitable ropes and weight for elevating said tubular 45 holders, substantially as herein set forth.

2. In mechanism for operating drills, a vertical twist shaft or rod for carrying the bit, having thereon a sliding tubular piece provided with centrally-hinged levers in the sides, pro- 50 vided with inwardly-projecting pawls on their lower ends, in combination with a thimble or sliding holder on said tubular piece, which moves to and fro thereon for engaging and dis- 55 engaging the pawls with the twist-shaft, substantially as herein set forth.

3. The vertically-journaled twist-shaft for carrying the bit, having thereon a sliding tubular piece provided with rocking levers and pawls, and the thimble or holder thereon for 60 operating said levers, in combination with a rope and weight connected with the tubular piece, and an independent rope and weight connected with the thimble, substantially as 65 herein set forth.

4. In mechanism for operating drills, a frame having journaled in the upper part a vertical bit-shaft, in combination with a vertically-sliding frame carrying two tables in the lower 70 part of the frame, and counterbalancing weights, substantially as herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 1st day of October, 1887, in the presence of witnesses.

WILHELM THIEM.

Witnesses:

ROBT. S. MILLAR,
CHRIST GARDoux.