

(No Model.)

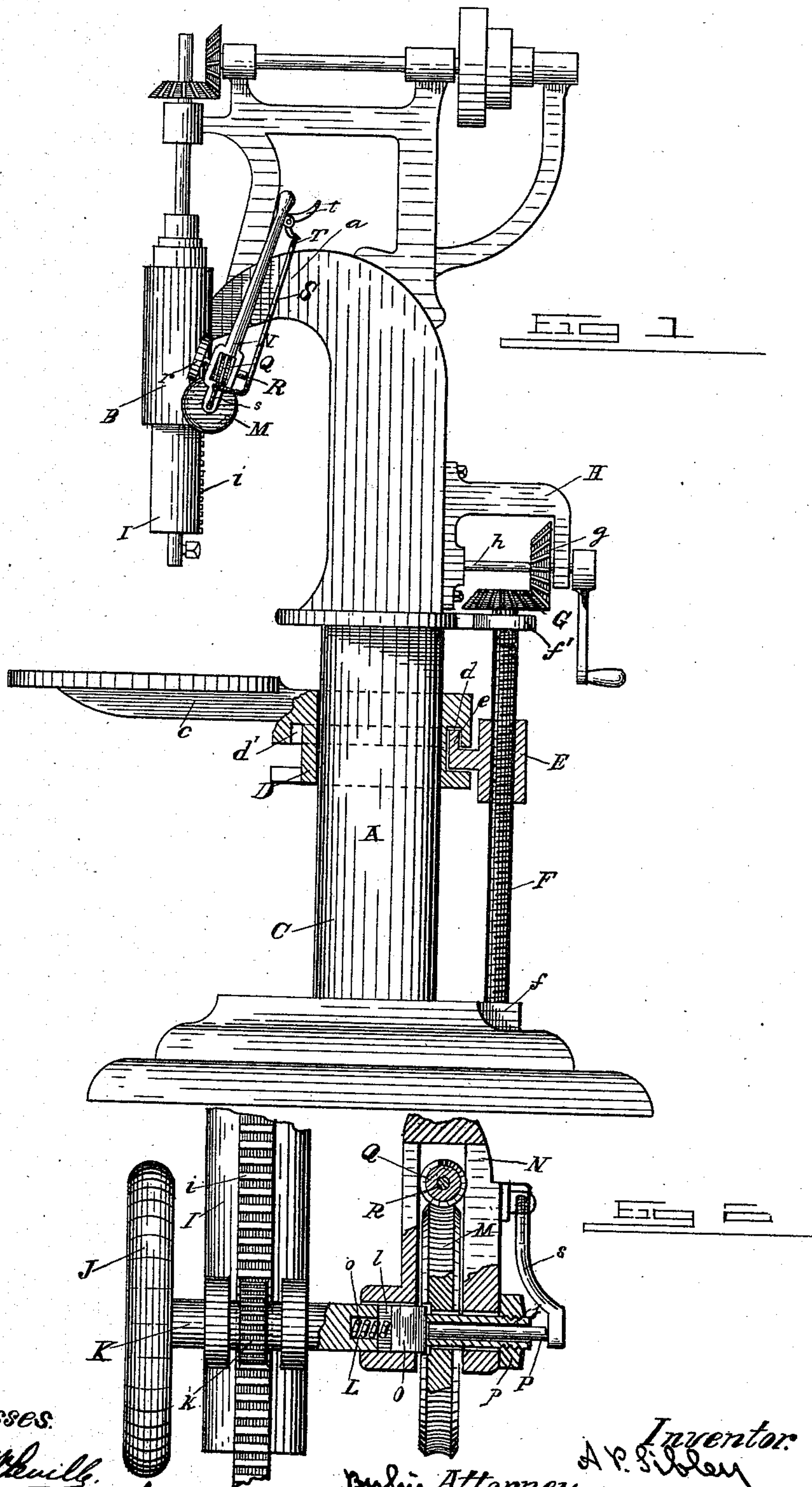
2 Sheets—Sheet 1.

A. P. SIBLEY.

DRILL PRESS.

No. 412,677.

Patented Oct. 8, 1889.



Witnesses:

W. H. Smith
P. L. Brooks

My Attorney

Inventor:
A. P. Sibley
J. S. Alexander

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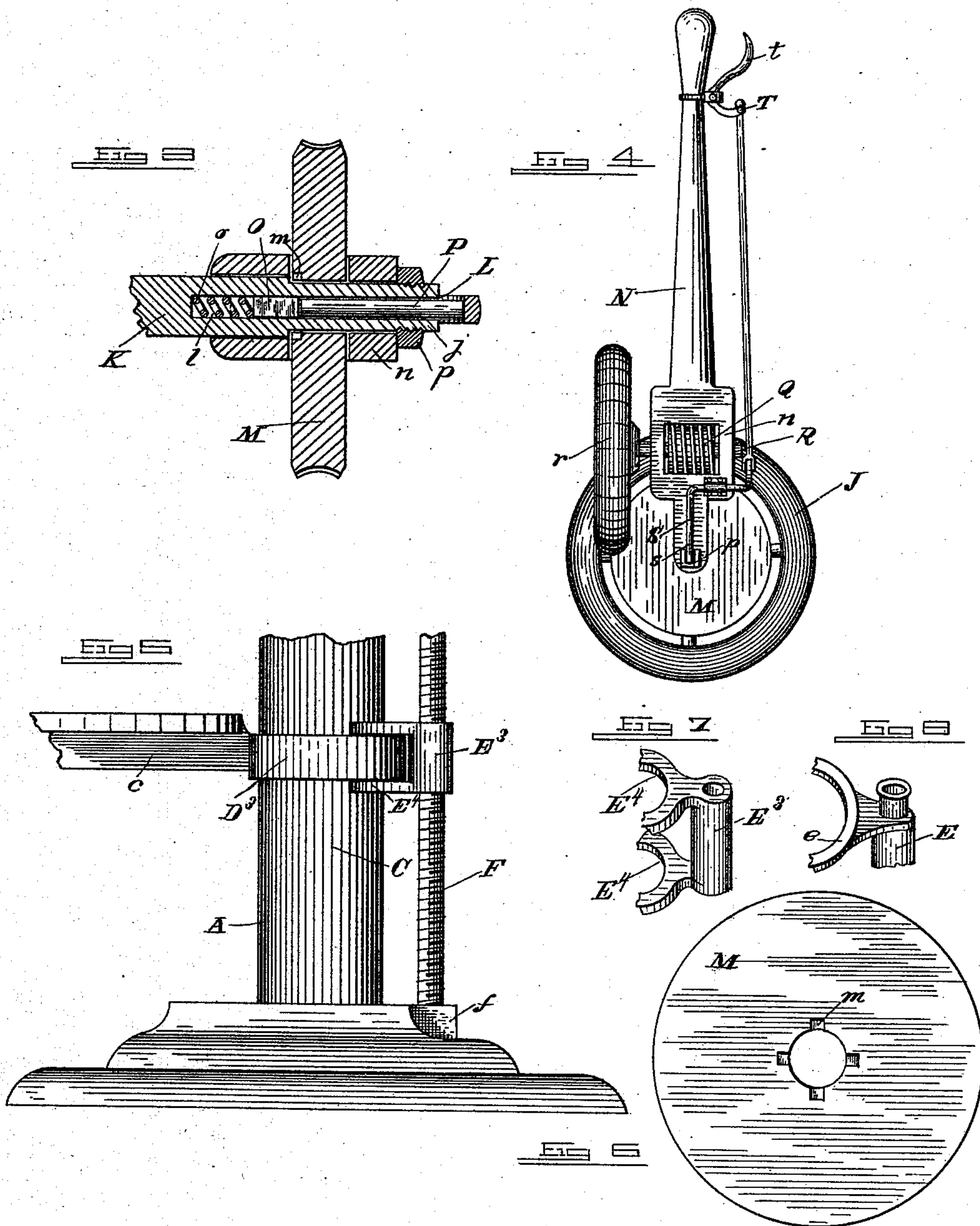
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UNITED STATES PATENT OFFICE.

ALBERT P. SIBLEY, OF SOUTH BEND, INDIANA.

DRILL-PRESS.

SPECIFICATION forming part of Letters Patent No. 412,677, dated October 8, 1889.

Application filed May 25, 1889. Serial No. 312,099. (No model.)

To all whom it may concern:

Be it known that I, ALBERT P. SIBLEY, of South Bend, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Drill-Presses; 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 part of this specification, in which—

Figure 1 is a side elevation, partly in section, of my improved drill-press. Fig. 2 is an enlarged sectional face view of the feed mechanism. Fig. 3 is a detail sectional view of said mechanism. Fig. 4 is a side view of said mechanism enlarged. Fig. 5 is a detail side view showing a modification of the table-adjusting mechanism. Fig. 6 is a face view of the worm-wheel. Figs. 7 and 8 are views of the table-adjusting nuts.

This invention is an improvement in drill-presses; and its objects are to provide a vertically and horizontally adjustable table and an improved feed device, whereby the drill can be rapidly adjusted to, or from the work and gradually and forcibly fed thereto; and it consists in the novel construction and combination of parts hereinafter clearly set forth.

Referring to the drawings by letters, A designates the supporting-post of the machine, mounted on a proper base and having its upper portion *a* curved forward and downward, and carrying a vertical barrel B, in which works the drill-spindle.

The lower part C of post A is cylindrical, and upon it is an annular collar D, which has an annular peripheral groove *d* in it that is L or T shaped in cross-section. To said collar is rigidly secured the horizontal table *c* of the press, and below this table is a slot *d'*, formed by cutting away a short portion of the lower wall of groove *d*.

E designates a nut having a lateral outstanding rib *e*, the face of which is curved and flanged correspondingly to the groove *d*, in which said rib is engaged, as shown, being introduced therein through slots *d'*, and then slipped around in said groove to the rear of the post, where the nut is engaged upon a vertical screw-threaded shaft F, that is journaled

in proper bearings formed in a lug *f* at the base of the machine, and a bracket *f'*, near the center of post A. On the upper end of said screw-shaft is a bevel-gear G, that meshes with a similar gear *g*, mounted on a short horizontal shaft *h*, supported in a bracket H, attached to the post, and provided with an operating-crank, as shown. By this means the nut, annulus, and table can be vertically adjusted, as is evident, and the table and annulus can be turned laterally, rib *e* of the nut sliding in the groove *d*. Instead of annularly grooving annulus D, a plain collar D³ could be employed, and the nut E, having one outstanding rib *e*, replaced by a nut E³, having two outstanding ribs or lugs E⁴ E⁴, which embrace between them the collar D³, and support the same vertically, while permitting it free rotatory or lateral movement, as shown in Fig. 5.

I designates the drill-spindle, sliding in sleeve B and having a rack *i*, which is engaged by a pinion *k* on the shaft K, journaled in bearings in sleeve B through a slot in said sleeve. This spindle is driven by a loose bevel-gear and gearing and belts mounted on the upper end of the post, as usual, and is provided with ordinary devices for attaching the drill to its lower end. The shaft K has on one end at one side of the sleeve a hand-wheel J, by which it can be turned, and its other end, at the opposite side of the sleeve, is reduced, as at *j*, said reduced portion being interiorly bored at L, and at the shoulder formed by said reduced portion the shaft is laterally slotted, as at *l*.

M designates a small worm-gear slipped on the end *j* of shaft K.

N is a lever, having a sleeve *n*, which is vertically and transversely slotted to embrace wheel M, and is bored interiorly, so as to fit over slot *l*, and also to fit the reduced portion *j*, as shown.

O designates a key slipped into slot *l* and controlled by a spring *o*, seated in the end of bore L and forcing the key outward.

P is a pin in bore L exterior to key O, and projecting slightly beyond the end of the shaft. After the key and spring are in place gear M is slipped into the slot of the lever-sleeve and the latter slipped on the end of the

shaft K until gear M abuts against the shoulder thereof. The lever is then secured by a nut *p*, screwed onto the end of part *j*.

In the inner face of gear M are formed a series of radial notches *m*, into which key O is partly forced by a spring *o* when the gear is properly turned in relation thereto. Gear M is engaged by a worm-screw Q in a lateral opening in the lever above the gear, and mounted on a short shaft R, journaled in said lever, as shown, and having a hand-wheel *r* on its end.

S designates an angular bell-crank lever, pivoted at its bend on the lever N and having an arm *s*, which bears against the projecting end of pin P. The other end of crank S is connected by a link T with a spring-controlled tripping-latch *t*, pivoted on the end of lever N and in position to be grasped by the hand of the operator. By drawing latch *t* inward the crank S is operated, forcing P inward, and the latter disengages key O from gear M. The shaft K can then be readily turned in either direction by hand-wheel J to rapidly raise or lower the drill-spindle. When latch *t* is released, spring *o* forces key O outward into engagement with gear M, and the lever N can be turned downward to rapidly raise or lower the drill-spindle, as the screw Q forms a lock between the lever and worm-gear.

When the drill is at work, by turning hand-wheel *r* a slow rotatory motion is imparted through the worm-gears to shaft K to feed the drill forcibly and slowly to its work. The worm-gear M should be disengaged by key O, so as to run loosely on shaft K while the spindle is being adjusted to the work by wheel J, which is useful in adjusting the spindle at the commencement of the work, so that it will be unnecessary to turn lever N entirely around with shaft K, or to slowly set the spindle by the worm-gearing.

Having thus described my invention, I claim—

1. The combination of the supporting-post, the collar thereon, and the drill-table supported by said collar, with a screw-shaft exterior to the post, and a nut on said shaft loosely engaging the said collar, substantially as described.

2. The combination of a drill-spindle, its sleeve, and the shaft and gearing for adjusting said spindle, with the worm-gear loosely mounted on the end of said shaft, the adjustable key engaging said gear, the lever carrying a worm-screw engaging said gear,

and the mechanism for disengaging said key and worm-gear, all substantially as specified.

3. The combination, in a drill-press, of the supporting-post, the collar thereon grooved exteriorly, and the drill-table supported by said collar, with a screw-shaft and a nut on said shaft having a lateral rib engaging the groove in said collar, substantially as described.

4. The combination of the drill-spindle, the shaft for operating the same, and the worm-gear on said shaft having radial notches in its face, with the lever mounted on the shaft, a worm-screw carried on a short shaft journaled in said lever and engaging said worm-gear, the spring-controlled key engaging said worm-gear and the bell-crank lever, and pin and latch for shifting said key, all substantially as set forth.

5. The combination of the supporting-post and collar thereon, and a table rigidly connected to said collar, with a vertical screw-threaded shaft exterior to the post, gearing for operating the same, and a nut thereon engaging the collar, substantially as specified.

6. The combination, with the sleeve, the spindle, its rack, and the shaft journaled in said sleeve carrying a pinion engaging the rack and a hand-wheel, and having its other end reduced, bored, and slotted, substantially as described, of the worm-gear mounted on the reduced end of said shaft having radial notches in its inner face, the spring-controlled key in the slot of the shaft engaging said worm-gear, and the lever embracing said worm-gear and carrying a worm-screw shaft and hand-wheel for operating the same, and a bell-crank pivoted on said lever and operating a pin in the end of the shaft engaging said crank and the key, all substantially as described.

7. The combination of the supporting-post and collar thereon having an L-shaped peripheral groove, and a table rigidly connected to said collar, with a vertical screw-threaded shaft, gearing for operating the same, and a nut on said shaft having a lateral flanged rib engaging the groove of the collar, substantially as specified.

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

ALBERT P. SIBLEY.

Witnesses:

JAMES DUSHANE,
JEANIE ANDERSON.