(No Model.) 2 Sheets—Sheet 1.

J. RICHARDS.

METAL DRILLING MACHINE.

No. 261,044. Patented July 11, 1882.

Fig. 1.

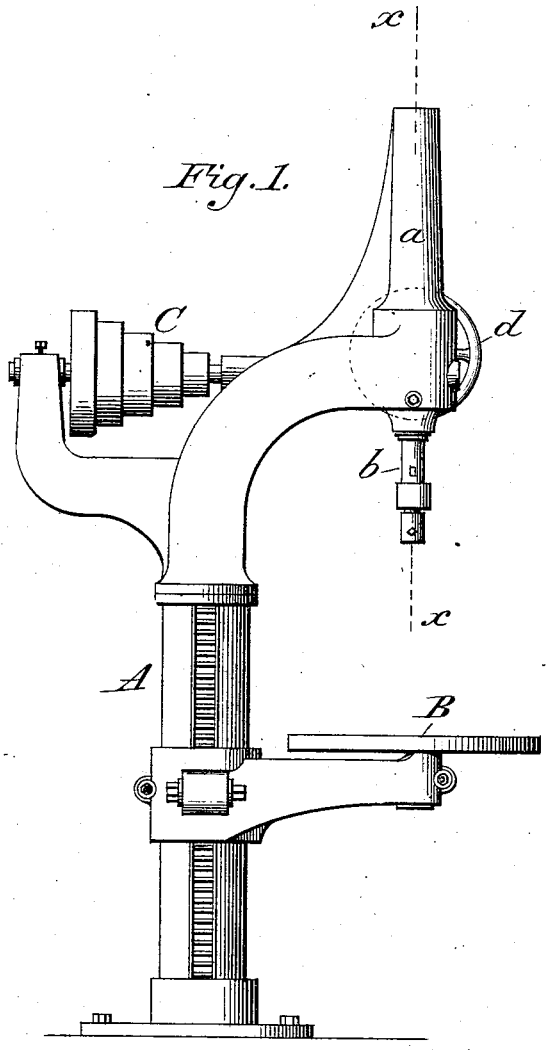
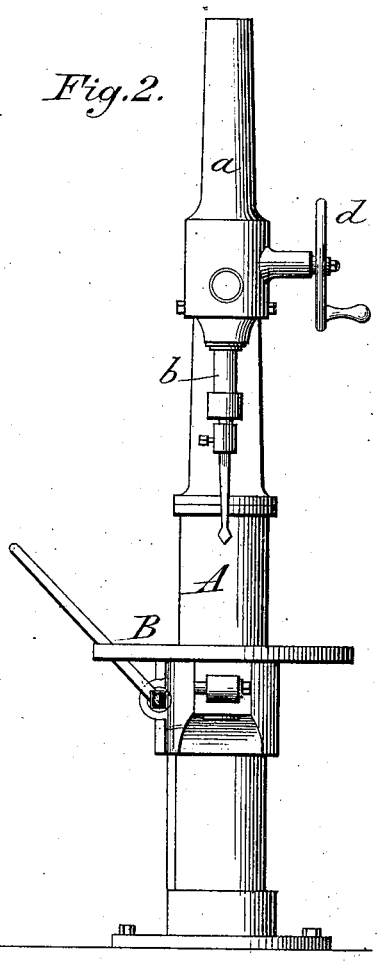


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.

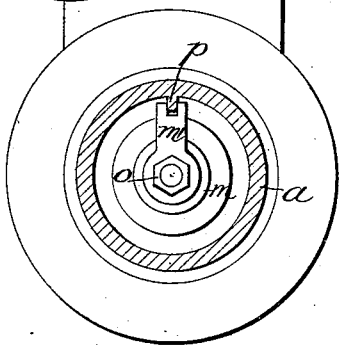
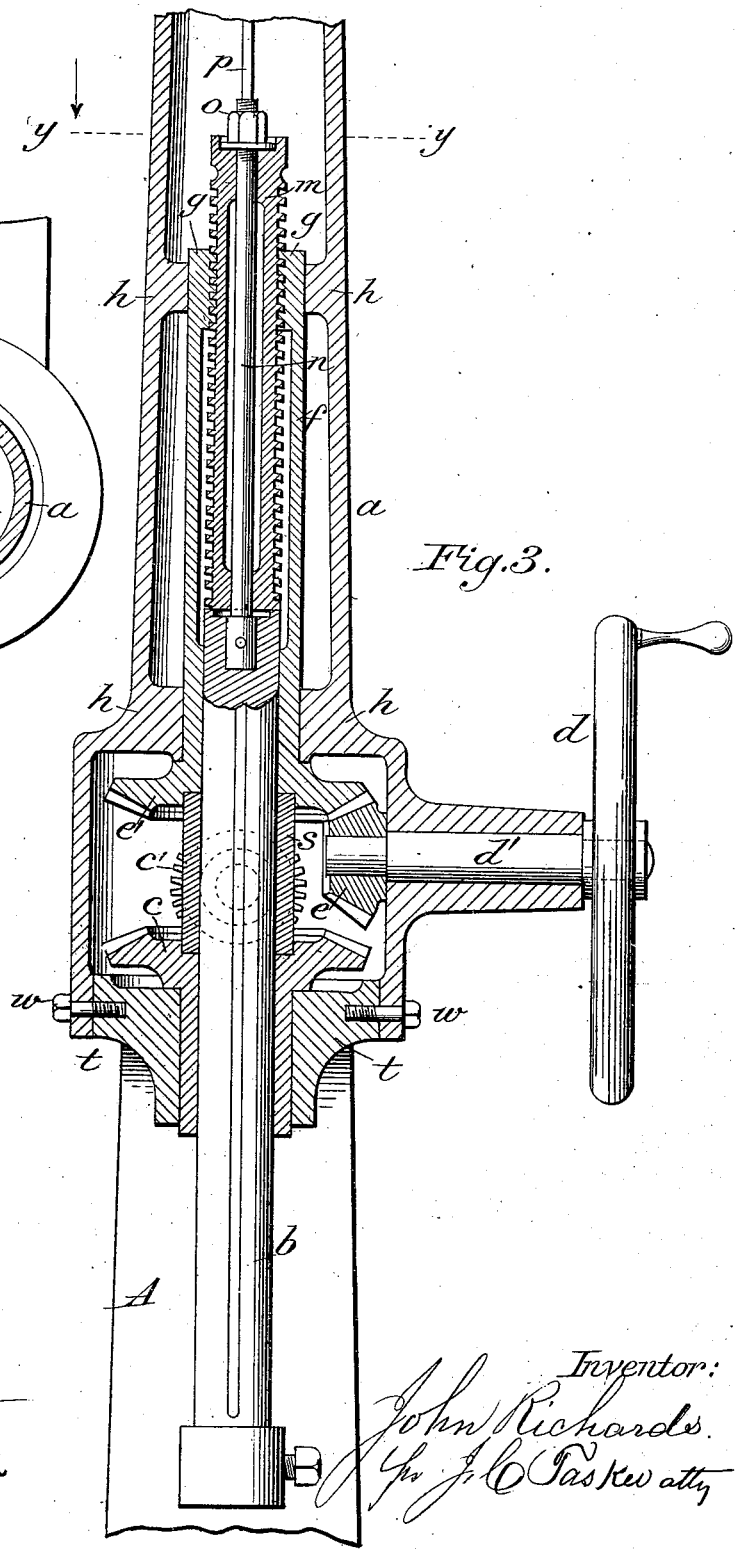


Fig. 3.



Attest:
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UNITED STATES PATENT OFFICE.

JOHN RICHARDS, OF SAN FRANCISCO, CALIFORNIA.

METAL-DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 261,044, dated July 11, 1882.

Application filed January 17, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN RICHARDS, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Metal-Drilling Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to machines for drilling metal; and it consists in a new and simple mechanism for feeding and adjusting the spindle of such machines, and in so arranging such mechanism that it can be inclosed in the spindle-frame, as hereinafter more fully set forth.

In the annexed drawings, which fully illustrate the invention, Figures 1 and 2 represent front and side elevations, respectively, of a metal-drilling machine embodying my invention. Fig. 3 is an enlarged section on the line *x x* of Fig. 1, and Fig. 4 is a plan and section on the line *y y* of Fig. 3.

Like letters indicate like parts in the several views.

A is the main frame of the machine, and B is a table adapted to be adjusted vertically to any desired position. The main frame A has a forward-projecting arm, at the end of which is a hollow cylindrical frame or casing, *a*, in which is supported the drilling-spindle *b* and its operating mechanism. This drilling-spindle is actuated by the bevel-gear wheels *c c'* and cone-pulleys C in the usual manner. To move the drilling-spindle *b* up and down, the hand-wheel *d* is turned accordingly. This wheel, by means of its shaft *d'*, operates the upper pair of bevel-gears, *e e'*, which correspond in general to the gears *c c'* inverted. On the upper horizontal wheel, *e'*, is formed a sleeve, *f*, which is supported in bearings *h h*. At the upper end of this sleeve, which curves inward at *g*, is formed, on its inner face, a series of screw-threads fitting corresponding threads on a sleeve, *m*, which is attached to and forms a continuation of the spindle *b*, but does not revolve with it. At the top of the inner sleeve, *m*, there is a notched extension, *m'*, (shown in plan in Fig. 4,) which notch engages with a rib or feather, *p*, in the interior of the cylindrical case or frame *a*, and thus prevents the inner sleeve, *m*, from turning when the outer sleeve, *f*, is revolved. The spindle *b* is suspended by a through-rod, *n*, that passes up through the sleeve *m*, and is held by nuts *o* at the top. This rod *n* is fastened to the spindle *b* and revolves with it. The gear-wheel *e'* and sleeve *f* are sustained by a distance-collar, *s*, that is counterbored into the two horizontal wheels *e'* and *c*, so that the spindle *b* will have a continuous bearing throughout its range.

The operation of these feeding devices will be obvious from the construction illustrated in the drawings. When the hand-wheel *d* is turned the sleeve *f* is caused to revolve, and the sleeve *m* and spindle *b* are moved up or down accordingly.

The spindle *b* can be readily removed by unscrewing the nut *o*, and all the parts in the casing *a* can be taken out by removing the foot-bearing *t*, which is held by screws *w w*, as shown in Fig. 3.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a metal-drilling machine, the combination, with the casing *a*, having feather *p*, the spindle *b*, provided with rod *n*, having nut *o*, and the threaded sleeve *m*, surrounding said rod and provided with notched projection *m'*, engaging with the feather *p*, of the threaded sleeve *f*, gears *e e'*, and hand-wheel *d*, substantially as described.

2. In a metal-drilling machine, the combination, with the casing *a* and spindle *b*, inclosed therein, of the threaded sleeve *m*, having a loose connection with said spindle, the threaded sleeve *f*, having gear *e'*, the gear *e* and hand-wheel *d* for actuating the sleeves *f* and *m* to feed the spindle, and the gears *c c'* and cone-pulley C for rotating said spindle, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN RICHARDS.

Witnesses:

E. R. STEVENS,

D. J. PADDOCK.