J. HALL.

Boring and Drilling Apparatus.

No. 200,285. Patented Feb. 12, 1878.

Fig. 1.

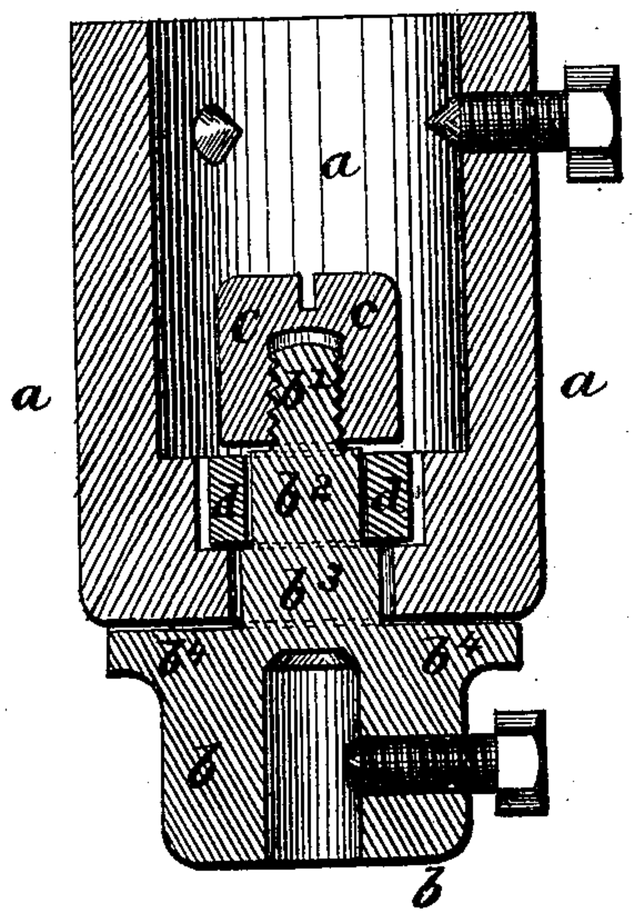

Fig. 2.

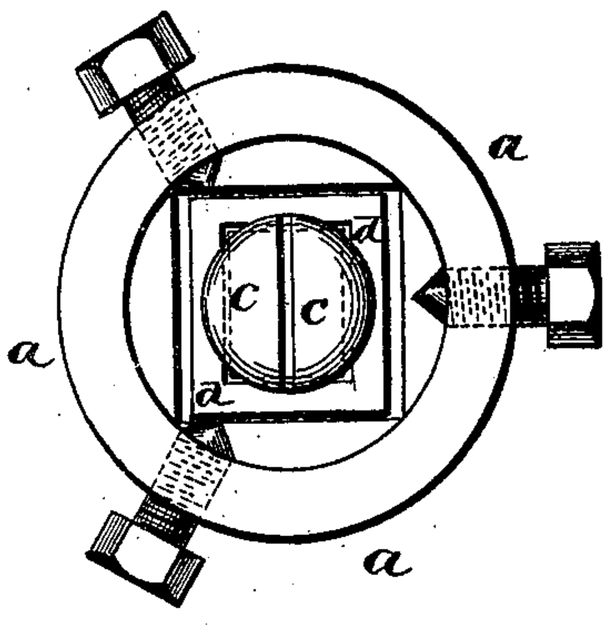

Fig. 3.

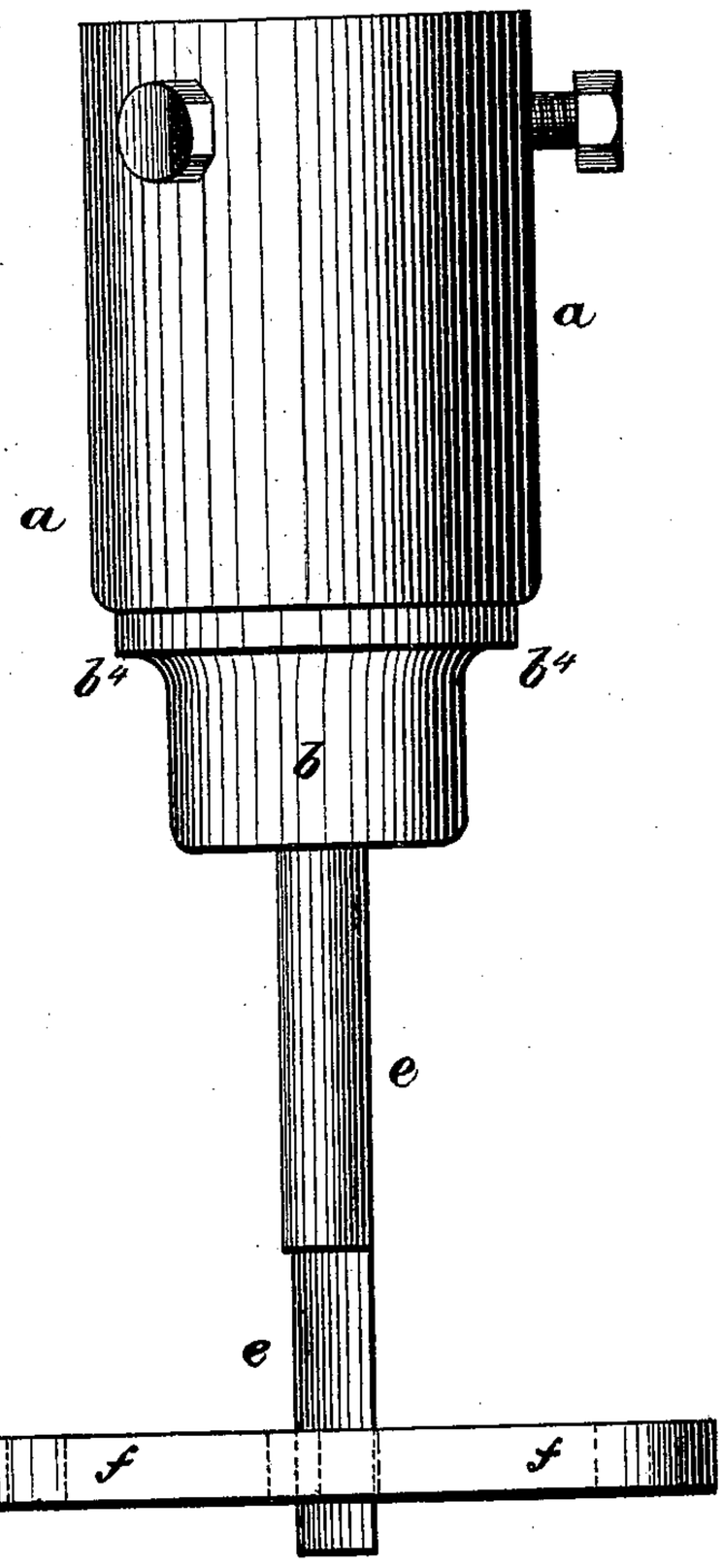

Fig. 4.

Witnesses:

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN BORING AND DRILLING APPARATUS.

Specification forming part of Letters Patent No. **200,285,** dated February 12, 1878; application filed January 16, 1878.

To all whom it may concern:

Be it known that I, JULIUS HALL, of 90 Chancery Lane, in the county of Middlesex, England, have invented certain new and useful Improvements in Tools and Fittings for Drilling and Boring Apparatus; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention relates to devices for drilling square holes, or modifications of the same, in metals or other substances by rotary motion; and it consists in the construction and arrangement of the chuck or cylinder, drill-holder, and drill, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, which forms a part of this specification, and in which—

Figure 1 is a central vertical section of my invention. Fig. 2 is a plan view of the same. Fig. 3 is a side elevation thereof, showing also a guide-bar used therewith. Fig. 4 is a bottom view of the guide-bar, with transverse section of the drill.

a represents the drill-chuck, constructed in the form of a hollow metal cylinder, with a circular cavity bored out from the top to fit on the drilling-spindle, to which it is fastened by one or more set-screws. In the bottom this cavity is a square recess, and below the same is a circular hole, coming within the limits of said recess.

b is the drill-holder, provided in its lower end with a suitable recess for receiving the shank or upper end of the drill *e*, which is held therein by a set-screw or other suitable means.

The extreme upper end of the holder *b* forms a screw, b^1, and below the same is a square shoulder, b^2, and then two concentric circular shoulders, b^3 and b^4. The holder is inserted through the hole in the bottom of the chuck until the shoulder b^4 meets the bottom thereof.

A loose square collar, *d*, with an oblong rectangular slot, is placed within the chuck, in the recess in its bottom, and around the square part b^2 of the holder. A nut, *c*, is then screwed on the screw b^1 down to the shoulder b^2, leaving the collar *d* free to work on said shoulder.

It will be seen that the drill-holder can then readily travel in a horizontal plane such distance as is permitted by the movement of the collar *d* in its recess, and by the square part b^2 in the slot of said collar.

The drill *e* is made three-sided, and the sides either flat or fluted, forming in cross-section an equilateral triangle. The bottom or cutting edges of the drill are made perfectly flat, and three in number, each cutting-edge extending from one of the outer corners to the center of the triangle.

The horizontal travel or play of the drill-holder should be proportionate to the size of the hole to be drilled.

Near to the lower end or cutting-edges of the drill I fix rigidly a metal guide bar or plate, *f*, having a hole similar to the hole to be drilled; and the size of the drill should be such that it can rotate within said hole.

The guide-bar *f* is to be rigidly fixed above the point where it is required to drill; and the drilling-spindle, with the chuck, made to revolve, and fed downward, whereby the drill will work through the guide *f*, and drill a hole similar in size and form to that in said guide-bar.

The guide-bar may be fixed upon the article operated upon.

My invention may also be used in a lathe, ratchet-brace, &c., for working horizontally, as well as in a vertical drilling-machine.

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

1. The drill-holder *b*, constructed as described, with screw b^1, square shoulder b^2, and circular concentric shoulders b^3 b^4, and arranged to work or play laterally in any direction within or on a rotating chuck at the same time as it is revolved by said chuck, substantially as herein set forth.

2. The combination of the drill-holder *b*, having screw b^1, square shoulder b^2, and circular shoulders b^3 b^4, the chuck *a*, with square recess, as described, and the loose collar *d*, and nut *c*, all substantially as and for the purposes herein set forth.

3. The guide-bar *f*, with hole through the same, and the triangular drill *e*, in combination with the holder *b* and chuck *a*, all constructed substantially as and for the purposes herein set forth.

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Witnesses:
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