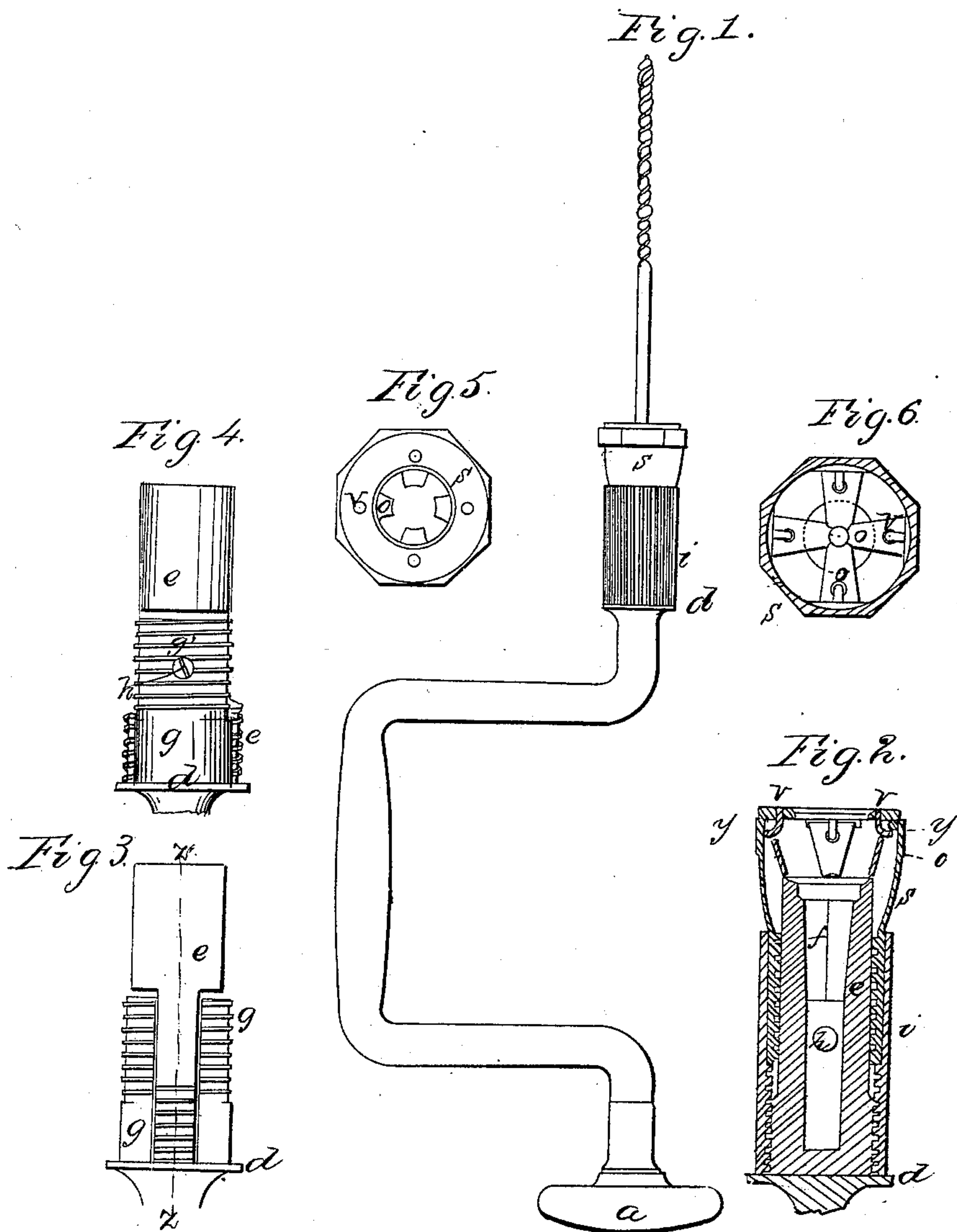


J. W. & F. M. Thompson,
Bit Stock.

N^o 82,179.

Patented Sep. 15, 1868.



witnesses.

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Letters Patent No. 82,179 dated September 15, 1868.

IMPROVEMENT IN BIT-STOCKS.

The Schedule referred to in these Letters Patent and making part of the same.

KNOW ALL MEN BY THESE PRESENTS:

That we, JOHN W. THOMPSON and FRANCIS M. THOMPSON, both of Greenfield, in the county of Franklin, and Commonwealth of Massachusetts, have invented a new and useful Improvement in Bit-Stocks and Tool-Holders; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

The object of this invention is to construct a bit-stock or tool-holder, so that the shank of the bit or boring-tool may, without any filing or alteration, be easily placed in position, truly and automatically centred, and readily and firmly secured.

The invention consists of a cylindrical follower, having in one end an orifice, square, but with the sides inclining as the orifice deepens, for the reception of the square bevelled end of the bit. The other end of the cylindrical follower, for about two-thirds of its length, has, on two opposite sides, about half its diameter cut away, so that it may play loosely in a vertical slot made in the shank of the bit-stock.

On the outside of this shank, for about two-thirds of its length from the lower end, is run a screw, which fits in a corresponding female screw on the inside of a sleeve, which is corrugated the whole of its external length, and, in connection with the increased size of the screw on the lower end of the follower, serves to move the follower up and down, and thereby secure or release the bit, by pressing it against the pallets, to be hereafter described.

On the lower third of the end of the follower, which runs in the slotted shank, is cut a thread, which projects out a little beyond the periphery of the shank.

By this device, when the follower is up to its place, and the sleeve at the upper end of the shank, the turning of the sleeve, engaging with both screws, forces the follower down, and secures the bit.

Many bits or boring-tools are made at the end opposite to that which cuts with a truncated quadrangular-pyramidal form, the shank of the bit being cylindrical adjoining the end last mentioned. Bit-stocks made for the reception of said bits have, in their rotating-end, a hole or socket, of a similar pyramidal form, in which the bits are held by various devices, among which are the well-known catch and set-screw arrangements. Commonly, where it is desired to have the shank and other parts of such bits rotate truly, the pyramidal end has to be filed and fitted to the pyramidal socket.

Now, by our invention, we are enabled to make use of the kind of bits mentioned in the condition in which they came from the tool-maker, and without the cost and trouble of filing and fitting; our improved holder operating to centre the bits of the kind referred to, so as to centre them truly by their cylindrical shanks, and to turn them positively, by coupling their pyramidal ends in a corresponding socket.

Our invention consists in an improved holder for bits or cutters, held and rotated by a brace or bit-stock, which holder is made substantially as follows, reference being had to the drawings which accompany and form part of this specification, of which—

Figure 1 represents a general elevation of a bit-stock embodying our invention, said view being made on a reduced scale.

Figure 2 is a sectional view of that part of the stock in which our invention is concentrated, the section being taken in a plane passing through the axis of rotation of the bit, said plane being taken in the line *z z*, seen in

Figure 3, which is an elevation of a portion of the parts shown in fig. 2;

Figure 4 being an elevation of the parts shown in fig. 3, turned ninety degrees toward the observer from the position of fig. 3.

Figure 5 is a plan of the end of our holder nearest the bit; and

Figure 6 is a transverse section of the holder, taken in the plane of the line *y y*, seen in fig. 2, and showing in plan, beyond the sectional plane, the devices which operate on the cylindrical part of the bits to centre them

The end of the stock opposite the end, *a*, to which pressure is applied, is made as a cylinder, with a flange, *d*, said cylinder having screw-threads cut thereon for about half its length, from its salient end, and being slotted centrally from said end to the flange *d*, for the reception of the piece *e*, which we term the follower, and in which is made, at *f*, the pyramidal socket for receipt of the quadrangular-pyramidal fasteners of the bits. This piece *e* is secured in the slot of the partially screw-threaded cylinder *g* by the pin *h*, the piece *e* being slotted, so that it can move longitudinally in the slot in cylinder *g*. The lower end of piece *e* is provided with screw-threads of the same pitch with the threads on cylinder *g*, but the outer diameter of the threads on *e* is slightly in excess of the outer diameter of the threads on *g*.

The roughened or fluted sleeve *i* has nut-threads formed therein for a portion of its length, the threads beginning at the end of the sleeve which abuts against the shoulder or flange *d*, and being of the same pitch with the threads on *g* and *e*.

If, now, the position of *e* relative to *g* is substantially that shown in figs. 2, 3, and 4, and if the sleeve *i* is screwed down upon said parts till the end of the sleeve touches shoulder *d*, the nut-threads of the sleeve will disengage from the screw-threads on the cylinder *g*, and will be coupled with the screw-threads formed upon *e*, this being, in a measure, effected by slightly coning the threaded parts, in a way that will be obvious to mechanics.

With the sleeve coupled fully upon the screw-threads of *e*, it will be seen that the piece *e* may be thrust forward, and may be withdrawn by rotation of the sleeve in reverse direction. This reciprocating movement of the follower is made to operate the pieces *o*, to cause them to clasp upon and to centre the bits by biting upon their cylindrical shafts or shanks. Said pieces *o* are pivoted, and at one end, about the axis of rotation of the holder, the piece *s*, which screws upon the end of *g*, serving to hold the pivots *v*, on which pieces *o* swing toward and from the bit-shanks as the piece *e* is moved toward and from said pivots.

The pieces *o* should always rest in the concave formed in the end of *e*, so as not to give trouble by swinging into a position parallel with the axis of the holder.

It will be seen that the approximate fit of the quadrangular-taper end of the bit in the socket *f* suffices to couple the tool and tool-holder, so that the former will be turned by the latter, and it will also be obvious that as the pieces *o* are of equal length, and are hung at equal distances from the axis of rotation, and have their free ends all operated from the same plane, they must perfectly centre the object grasped by said free ends, while the angle at which they grasp the shank is such that they hold the tighter as the strain is increased to pull the tool from the holder.

What we claim as our invention, and desire to secure by Letters Patent, is—

A bit-stock or tool-holder, constructed and arranged so as to operate substantially as described.

In witness whereof, we have hereunto subscribed our names, this day of August, A. D. 1868.

JOHN W. THOMPSON,
FRANCIS M. THOMPSON.

Witnesses:

ALMON BRAINARD,
GEORGE PIERCE, Jr.