

A. Allan,
Boring Tool.
No. 95627.

Patented Oct. 12. 1869

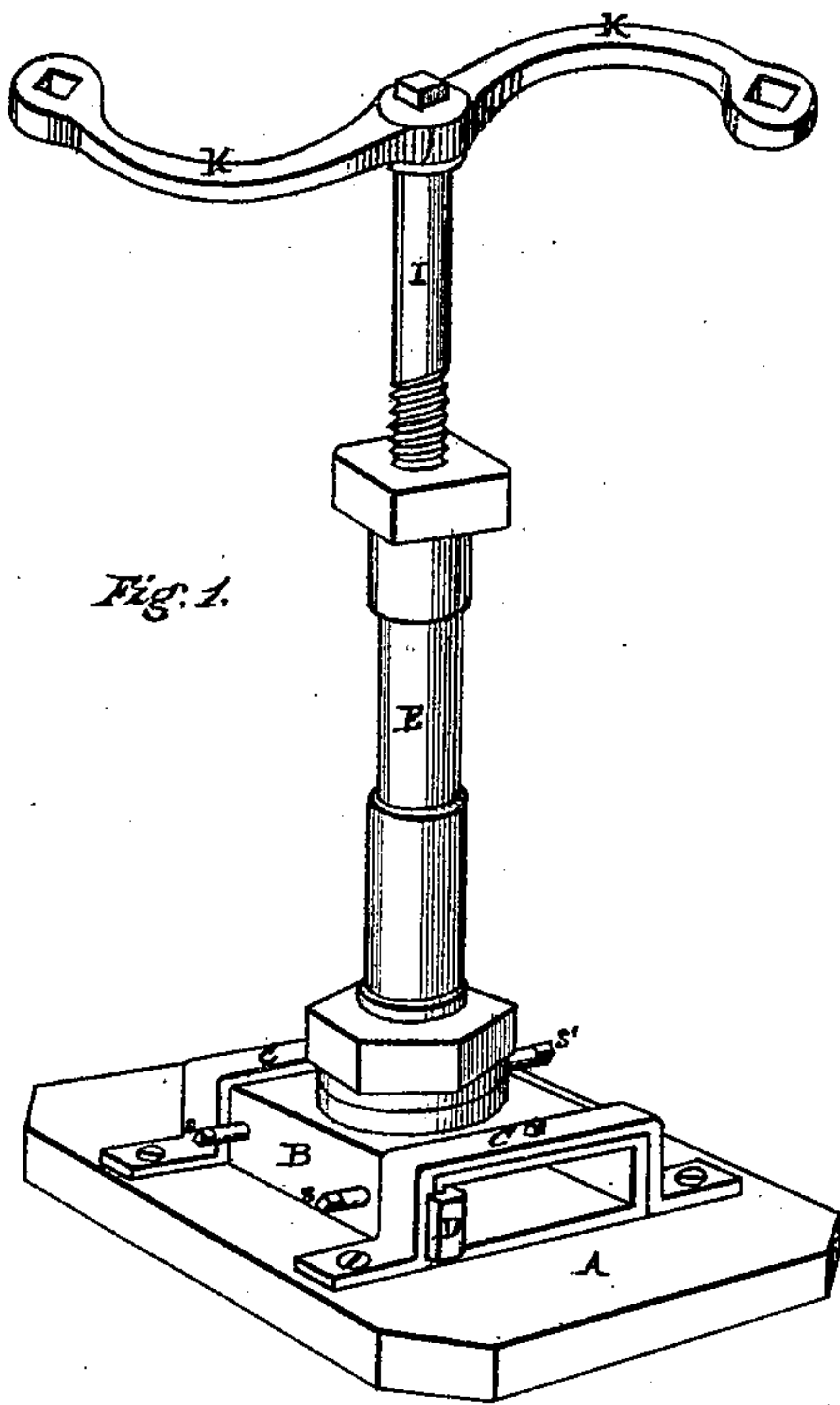


Fig. 1.

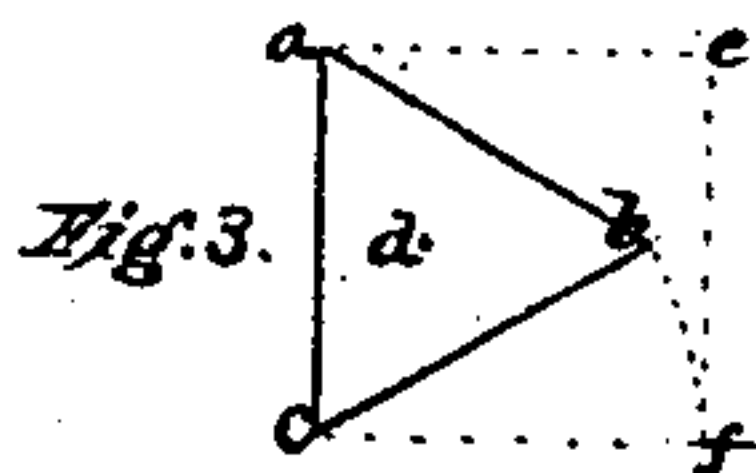


Fig. 3.

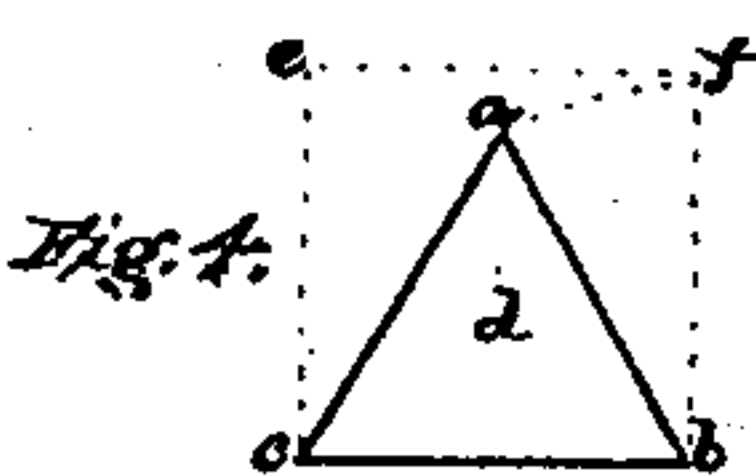


Fig. 4.

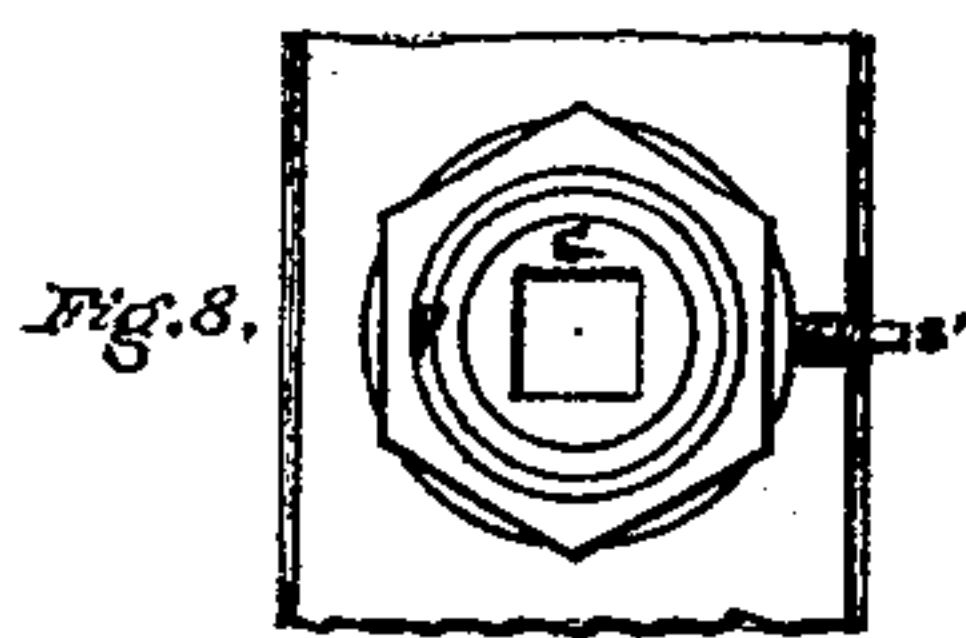


Fig. 8.

Fig. 2.

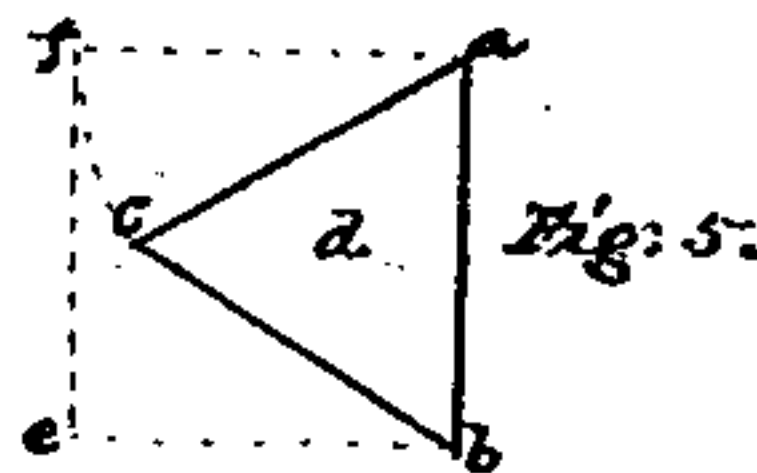
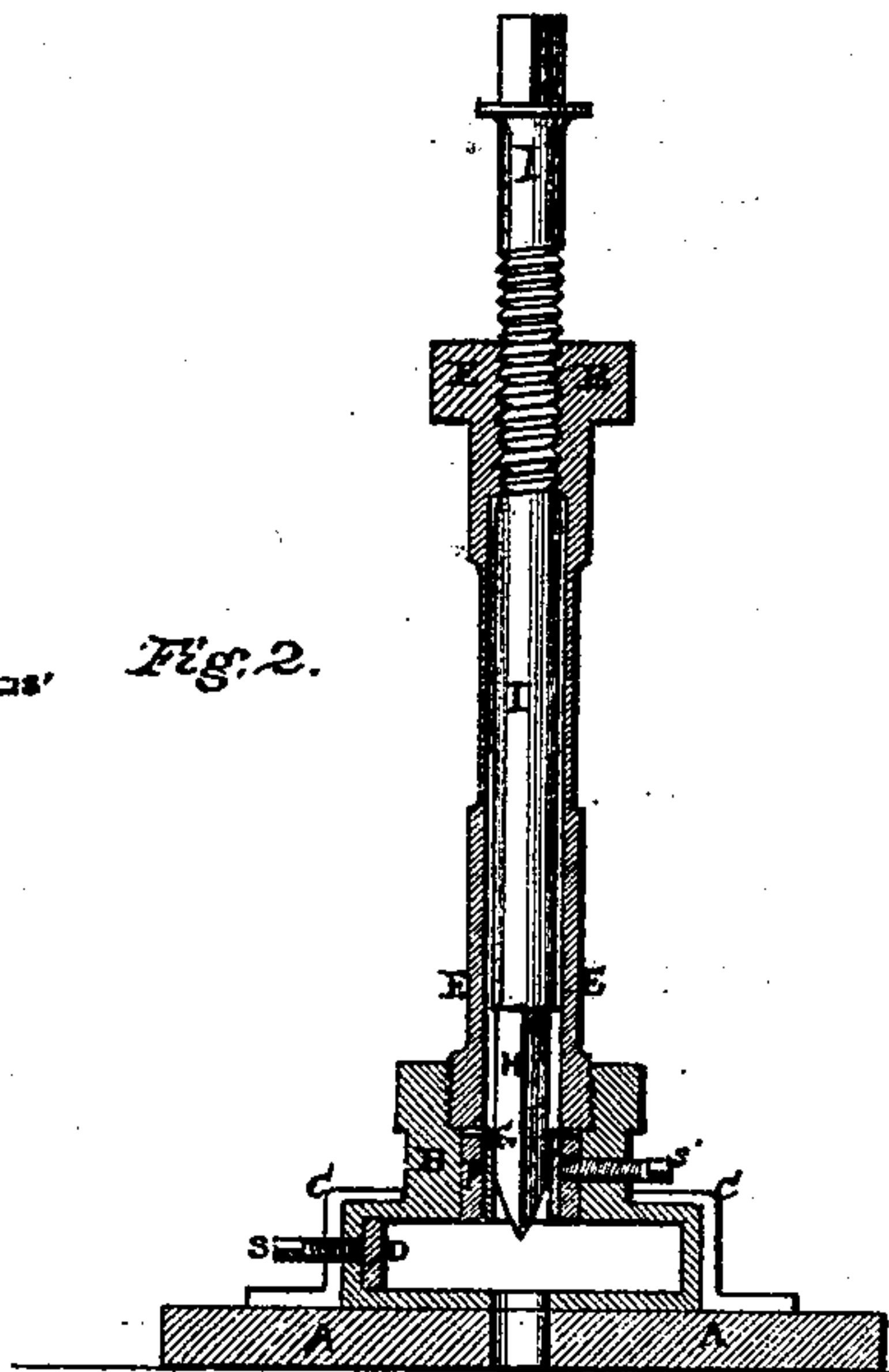


Fig. 5.

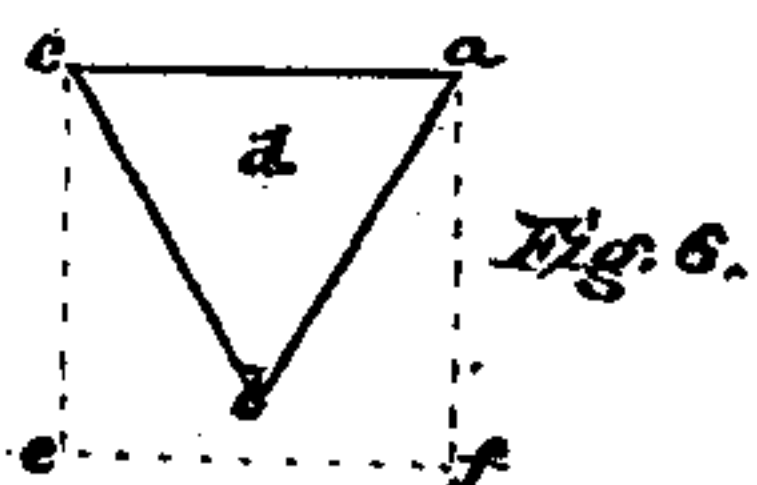


Fig. 6.

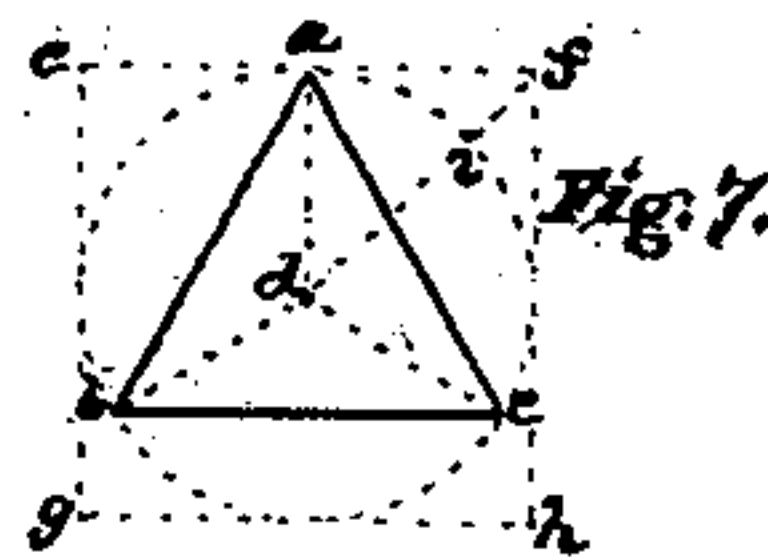


Fig. 7.

Witnesses
J. H. Howard
ac Bradley

Inventor
Alex. Allan
By his Attorney
Chas. J. Ransbury

United States Patent Office.

ALEXANDER ALLAN, OF NEW YORK, N. Y.

Letters Patent No. 95,627, dated October 12, 1869.

IMPROVEMENT IN BORING-TOOL.

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

To all whom it may concern:

Be it known that I, ALEXANDER ALLAN, of the city, county, and State of New York, have invented a new and useful Tool for Boring Square Holes; and I do hereby declare the following to be a full and correct description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of the tool.

Figure 2 is a vertical section of the same.

Figures 3, 4, 5, 6, and 7, are diagrams illustrating the theory of the operation of the tool.

Figure 8 is a top view of the tool-guide and its ring.

The same letter marks the same part of the tool wherever it occurs.

The nature of the invention consists in the peculiar manner of constructing, attaching, and operating a boring-tool, by which it is made to bore square, or nearly square holes, in wood, sheet-metal, or other materials, as hereinafter more particularly set forth.

To enable others to make and use my boring-tool, I will proceed to describe its construction and operation.

The tool is supported on a firm base, A, to which is attached the clamping-box B, by means of the straps C C.

Inside of box B is the clamp D, which holds the work, and which is adjusted by the screws s s.

From the top of the box B rises the hollow standard E, which is screwed into a recess in B, as shown in fig. 2.

Below the standard E is inserted a ring, F, which turns in the recess, which receives it and is held in any desired position by the set-screw s'.

In the middle of this ring is the square guide G, figs. 2 and 8.

This guide receives the triangular cutting-tool H, which turns in it while performing its work.

The tool H is inserted in a tool-stock, I, threaded at its upper end, and working loosely in a female screw in the upper end of the standard E.

A small amount of play of the tool-stock is essential to the proper operation of the tool, but a slight excess of play is not detrimental.

A handle, K, attached to the top of the tool-stock I, serves to operate the tool.

The operation is as follows:

The article to be bored is inserted in the clamp-box B, and held by the clamp D, adjusted by the screws s s.

The guide G is adjusted to its proper relative position to the work by turning the ring F and holding it by the set-screw s'.

By means of the handle K, the tool H is caused to descend till it passes into the hole in the base A, through the article subjected to its action.

The hole produced will be square, and correspond in size with the opening in the guide G.

The hole may be characterized by a slight rounding in the corners.

The cross-section of the tool H is an equilateral triangle, whose sides correspond in length with the sides of the square opening in the guide G.

The point of the tool is pyramidal, the apex being the centre of the triangle forming its cross-section.

The rationale of the operation will be explained by reference to the diagrams, figs. 3, 4, 5, 6, and 7.

In these diagrams, *a b c* is an equilateral triangle, representing the cross-section of the tool H, *d* marking the point of the tool.

In fig. 7, the triangle is shown in the middle of a square, *e f g h*, representing the square opening in the guide G.

The line *i f*, in this figure, shows the amount of play necessary to the proper operation of the tool in a guide of this size.

In figs. 3, 4, 5, and 6, the triangles *a b c* represent the four positions of the tool, in relation to the square opening in the guide G, assumed during one revolution.

The action appears to be as follows:

When the point *d* of the tool encounters the surface of the wood or metal to be bored, it meets with sufficient resistance to thrust it to one side until one of the angles of the tool is driven into one of the angles of the guide. It then occupies, let us suppose, the position represented in fig. 3. In that position, the angle *c* becomes a centre of rotation, and the angle *b* describes the arc *b f*. This brings the tool into the position represented in fig. 4. Here the point *b* becomes a centre, and the point *a* describes the arc *a f*. This brings the tool into the position represented in fig. 5, where the point *a* becomes a centre, and the point *c* describes the arc *c f*.

The tool is now in the position shown in fig. 6, point *c* becoming a centre, and the point *b* describing arc *b e*.

This last movement brings the tool into its initial position in relation to the guide, with the exception that the side *b c* of the tool is in contact with the left side of the guide-opening, instead of the side *a c*, as in fig. 3.

By changing the form of the guide, angular holes, of other forms than square, may be bored on the same principle of operation.

Practice will enable a skilful workman to use the tool without a guide, in an ordinary brace, giving the requisite eccentricity or play to the tool by his judgment alone.

The guide supplies the place of this skill to inexperienced hands.

Having thus fully described my invention, and the principle of its operation,

What I claim, and desire to secure by Letters Patent, is—

1. The triangular tool H, with the pyramidal point working in the guide G, with the necessary eccentricity to reach the angles of the guide, as described.
2. The combination and arrangement of the clamping-box B, hollow standard E, tool-stock I, and tool H, in the manner and for the purpose specified.
3. A tool, constructed as described, for boring rec-

tangular and other angular holes, by having an eccentric movement or "play" communicated to it by the operator, in the manner set forth.

The above specification of my said invention, signed and witnessed at Washington, this 24th day of May, A. D. 1869.

ALEX. ALLAN.

Witnesses:

A. C. BRADLEY,
CHAS. F. STANSBURY.