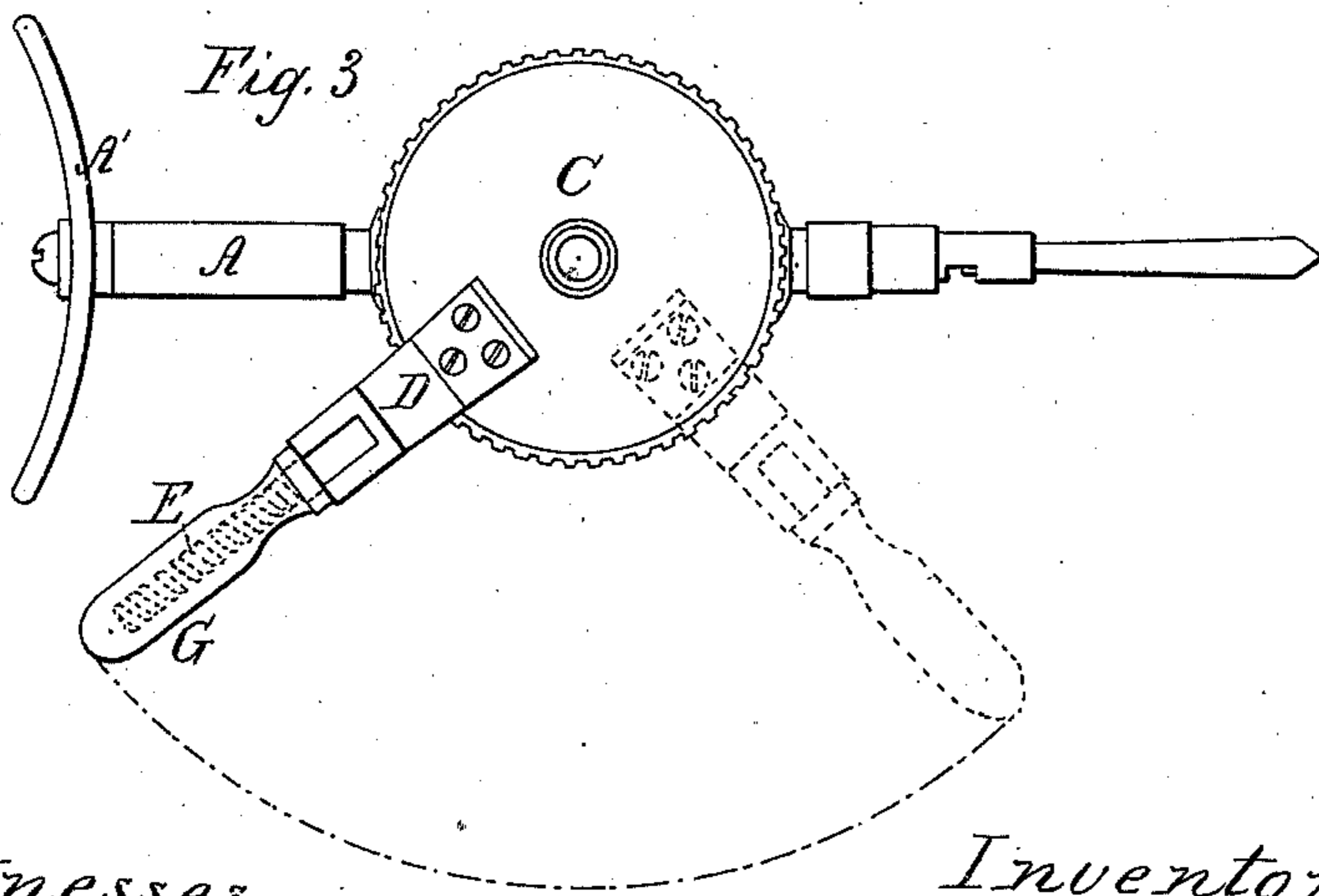
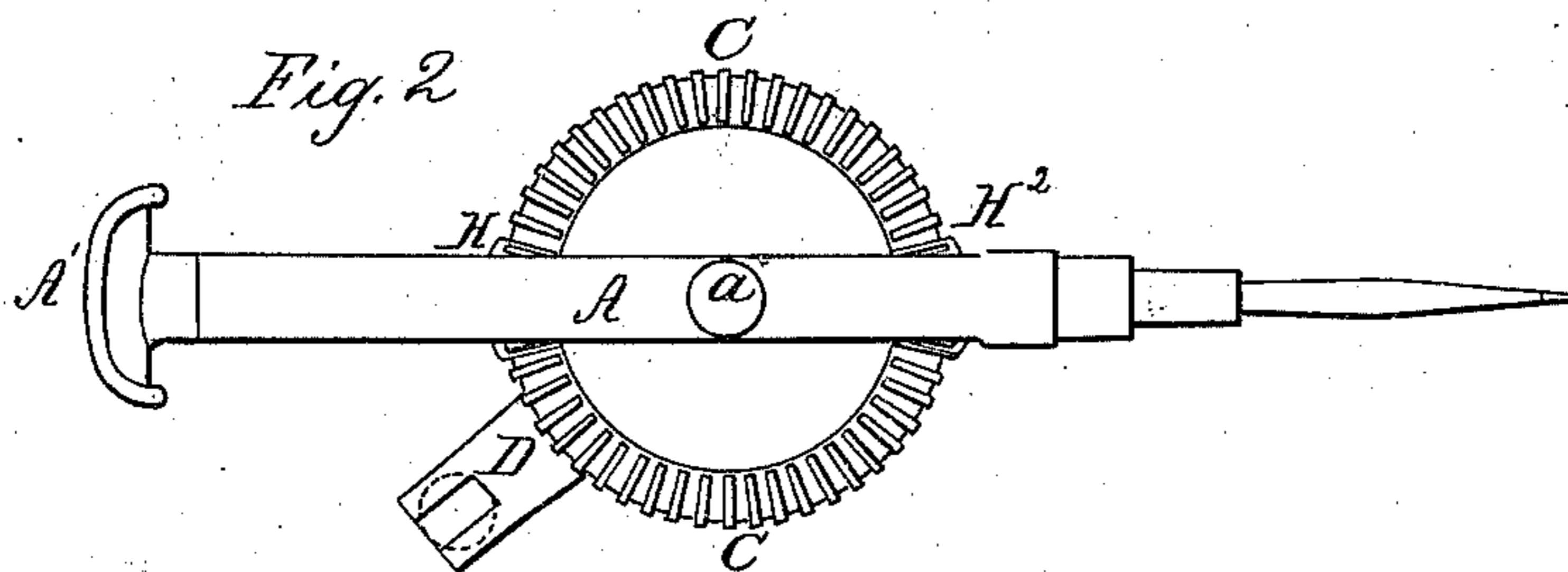
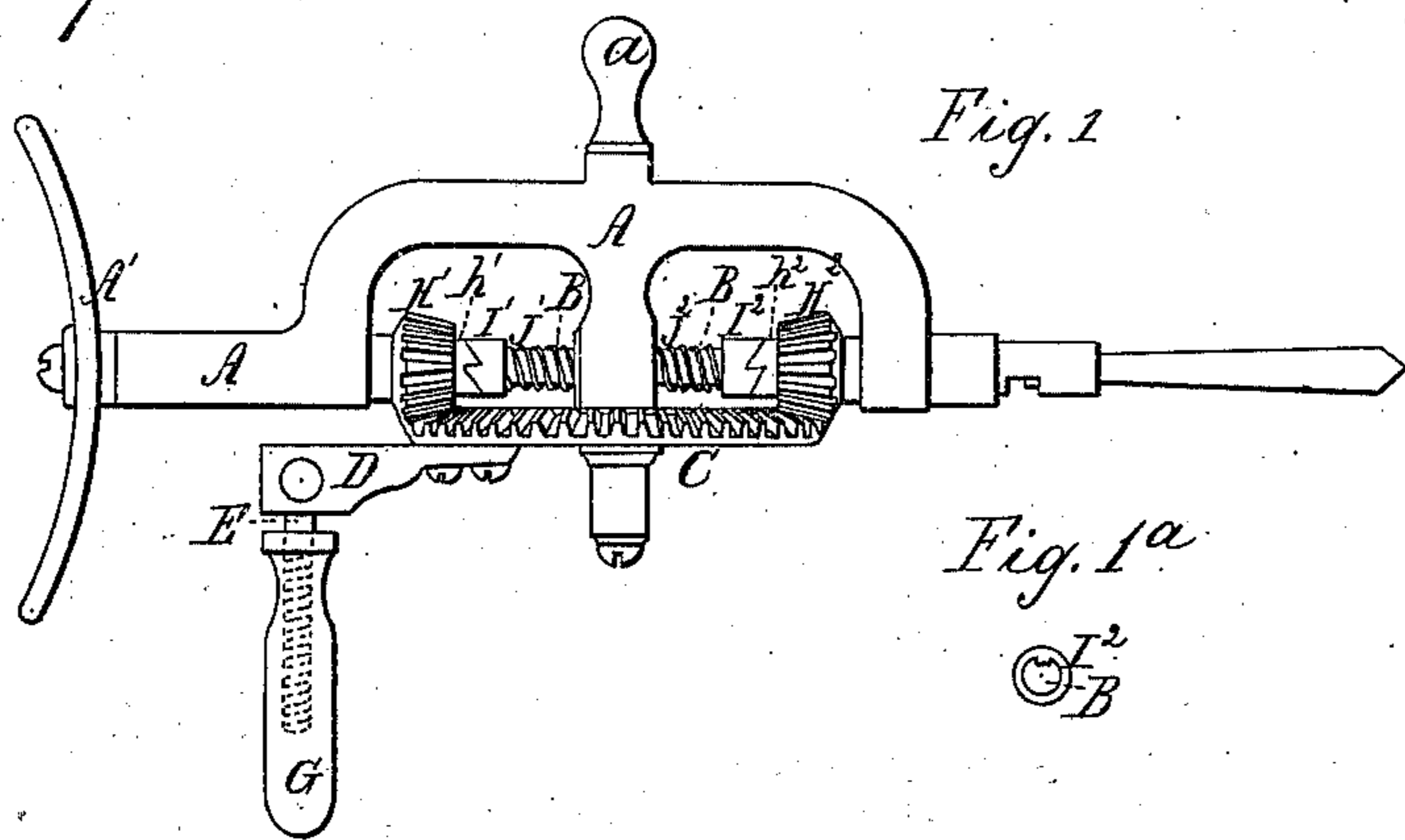


*F. Glasser,*

*Drill,*

*N<sup>o</sup> 81,769.*

*Patented Sep. 1, 1868.*



*Witnesses*

*b. b. Livings*  
*W. C. Dey*

*Inventor*

*F. Glasser*  
*By his attorney, J. S. Stearns*

# United States Patent Office.

FRANK GLASSER, OF MYSTIC BRIDGE, CONNECTICUT.

*Letters Patent No. 81,769, dated September 1, 1868.*

## IMPROVEMENT IN DRILLS.

*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, FRANK GLASSER, of Mystic Bridge, in the county of New London, in the State of Connecticut, have invented certain new and useful Improvements in Machines or Tools for Drilling; and I do hereby declare that the following is a full and exact description thereof.

My invention is intended for drilling after the manner of an ordinary ratchet-drill or brace-drill. It can drill iron, or any material capable of being treated with a revolving drill with the ordinary driving or pressing force.

My improvement consists of a ratchet and breast-drill united, so that the same compound tool may be used for one or the other, as circumstances may require.

I will proceed to describe what I consider the best means of carrying out my invention, and will afterwards designate the points which I believe to be new.

The accompanying drawings form a part of this specification.

Figure 1 is a view of the entire tool at right angles to the axis of the operating-wheel.

Figure 2 is a view in the line of the said axis.

Figure 3 is a view in the same line from the opposite side, the operating-handle and rest for the breast alone having been changed in position.

Similar letters of reference indicate like parts in all the figures.

Tints are employed merely to aid in distinguishing parts, and do not imply differences of material. The material of the whole may be iron and steel.

A is the frame, of malleable cast iron. It is provided with a handle, *a*, which is grasped by the left hand of the operator to steady it, while the breast of the operator, or other convenient force, is applied against the rest A'. This rest is fitted upon the frame A, so that it may swivel freely, as will be readily understood. B is a shaft, which is supported in bearings in the frame A. An operating-lever, D, is firmly fixed at one end to the outer face of the bevel-wheel C; and at the other end of this lever D, a screw, E, is fixed by means of a pivot, and the handle G is applied to the screw E. The outer end of the lever D has rectangular faces, as represented. The screw E may be turned so as to stand either in line with the lever D, as indicated in fig. 3, or at right angles, as indicated in fig. 1.

To effect a change of position, the handle G is unscrewed a little ways on the screw E, as indicated in fig. 1. In this condition the handle may be changed to assume either position required, and then, by screwing the handle down tightly on the screw E, the parts are adjusted ready for use.

It will thus be seen that the handle can serve either as an extension of the straight lever D, and thus increase the leverage for giving motion to the wheel C, or it may be adjusted in the manner of a crank, so as to be in position for conveniently turning the wheel C with a reduced leverage. I adjust the handle in either position, according as the wheel C is required to be turned continuously around in one direction, to operate the drill as a breast-drill, or to be reciprocated backwards and forwards through a quarter or some other portion of a circle, after the manner of a ratchet-drill.

The parts which communicate motion from the wheel C to the shaft B are adapted to turn the shaft in the same direction without any adjustment, whether the wheel C be turned continuously or be reciprocated. There are two gear-wheels, H<sup>1</sup> and H<sup>2</sup>, mounted loosely on the shaft B, these wheels being both always, when geared with the wheel C, necessarily turned in opposite directions one to the other on the shaft B. Each is provided in a face with ratchet-teeth *h*<sup>1</sup> *h*<sup>2</sup>, as represented. These teeth match to corresponding teeth in blocks I<sup>1</sup> I<sup>2</sup>, which are fitted on the shaft B by means of a spline and feather, that each may move endwise on the shaft B, but is not capable of revolving thereon. This is a construction familiar to mechanics, and is shown by section in Figure 1<sup>a</sup>. Coiled springs, J<sup>1</sup> J<sup>2</sup>, encircle the shaft B, as represented, and exert a constant force, tending to urge the blocks I<sup>1</sup> I<sup>2</sup> into intimate contact with the wheels H<sup>1</sup> H<sup>2</sup>.

In operating my improved tool as a breast-drill, the breast being applied against the rest A', and the left hand firmly holding the fixed handle *a*, the changeable handle G is adjusted firmly in the position of a crank,

as indicated in figs. 1 and 2, and the wheel C is turned by this means continuously around and around. In this mode of operating the device, the wheel H<sup>2</sup> locks continuously with the block I<sup>2</sup>, and gives a continuous rotary motion to the shaft B, while the wheel H<sup>1</sup> revolves idly in the opposite direction, and the block I<sup>1</sup> slides axially on the shaft B, to allow each tooth of the ratchet h<sup>1</sup> to pass. This motion continues, the ratchet h<sup>1</sup> clicking idly against the block I<sup>1</sup>, so long as the tool is used in this manner.

When it becomes desirable, for any reason, to change the action of my tool to that of a ratchet-drill, the handle G is loosened by unscrewing slightly, then turned into a straight position, in line with the lever D, and again screwed tight, as indicated in fig. 3. It is now reciprocated, as indicated in fig. 3, causing the wheels H<sup>1</sup> and H<sup>2</sup> to come into play alternately, and to impart motion to the shaft B; that is to say, when the handle is moved in one direction, the wheel H<sup>2</sup> imparts motion to the shaft B by the means and in the same manner as before described. At the end of the motion of the handle G in one direction, all the parts come to rest. On commencing the return-motion of the handle G, the wheel C turns in an opposite direction, and the wheel H<sup>1</sup> imparts motion to the shaft B, in the same direction as before, through the aid of the teeth h<sup>1</sup> and the block I<sup>1</sup>; and during this half reciprocation of the handle, the wheel H<sup>2</sup> revolves idly in a direction opposite to the motion of the shaft B. In this condition of the parts, the ratchet h<sup>2</sup> and the block I<sup>2</sup> click idly together, and thus the drill B is rotated in the same direction, and with precisely the ordinary effect of a breast-drill or a ratchet-drill, as the convenience of the operator or the necessities of the situation may require.

My improved drill may also be worked as a single-acting ratchet. This is done by keeping the handle G at right angles with the shaft B, and twisting it and the entire frame A backward and forward in the direction the drill is to move. Both of the clutches are in gear during the forward motion. During the backward motion both of the clutches slip, and the drill is stationary during this half of the motion, which makes it the same as the ordinary common single-acting ratchet.

It is frequently the case that the contracted space, or other circumstances, where a hole is to be produced, will necessitate the use of the tool as a ratchet-drill. In all such situations, in addition to the twisting about of the whole frame, as above suggested, the adjustment and operation indicated in fig. 3 may be used, and the pressure, forcing the drill to its work, may, in such cases, be applied either by the breast, or a lever, or other convenient force.

In cases where the space will allow the forming of complete revolutions of the wheel C, it will generally be preferred to adjust the machine in the manner indicated in figs. 1 and 2, and to give the operating parts complete and continuous revolutions.

Some degree of advantage may be derived from the use of the other parts of my invention, without the peculiar adjustable handle D E G. So, also, some degree of advantage may be derived from the use of this handle in connection with a different construction of the other parts. I much prefer, however, the use of all the parts together, as here represented and described.

Having now fully described what may render clear my invention, I would expressly disclaim as new any combination, arrangement, or specific part not hereinafter mentioned, and only desire to secure by Letters Patent as follows:

The adjustable lever, attached to the drill-stock, as described, and consisting of the pivoted handle G, screw E, and fixed arm D, all operating as set forth.

FRANK GLASSER.

Witnesses:

GEO. W. MALLERY,  
E. P. RANDALL.