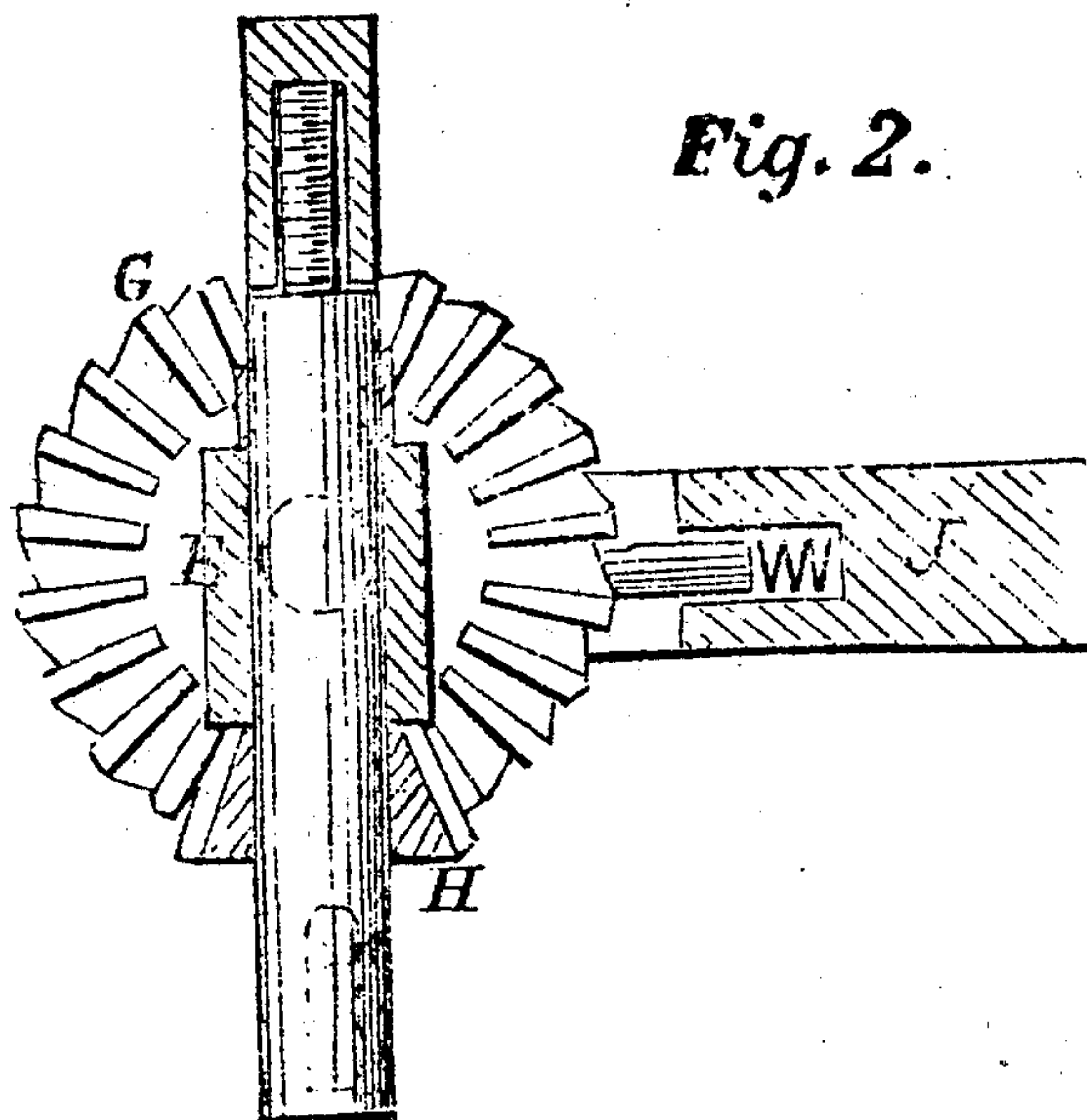
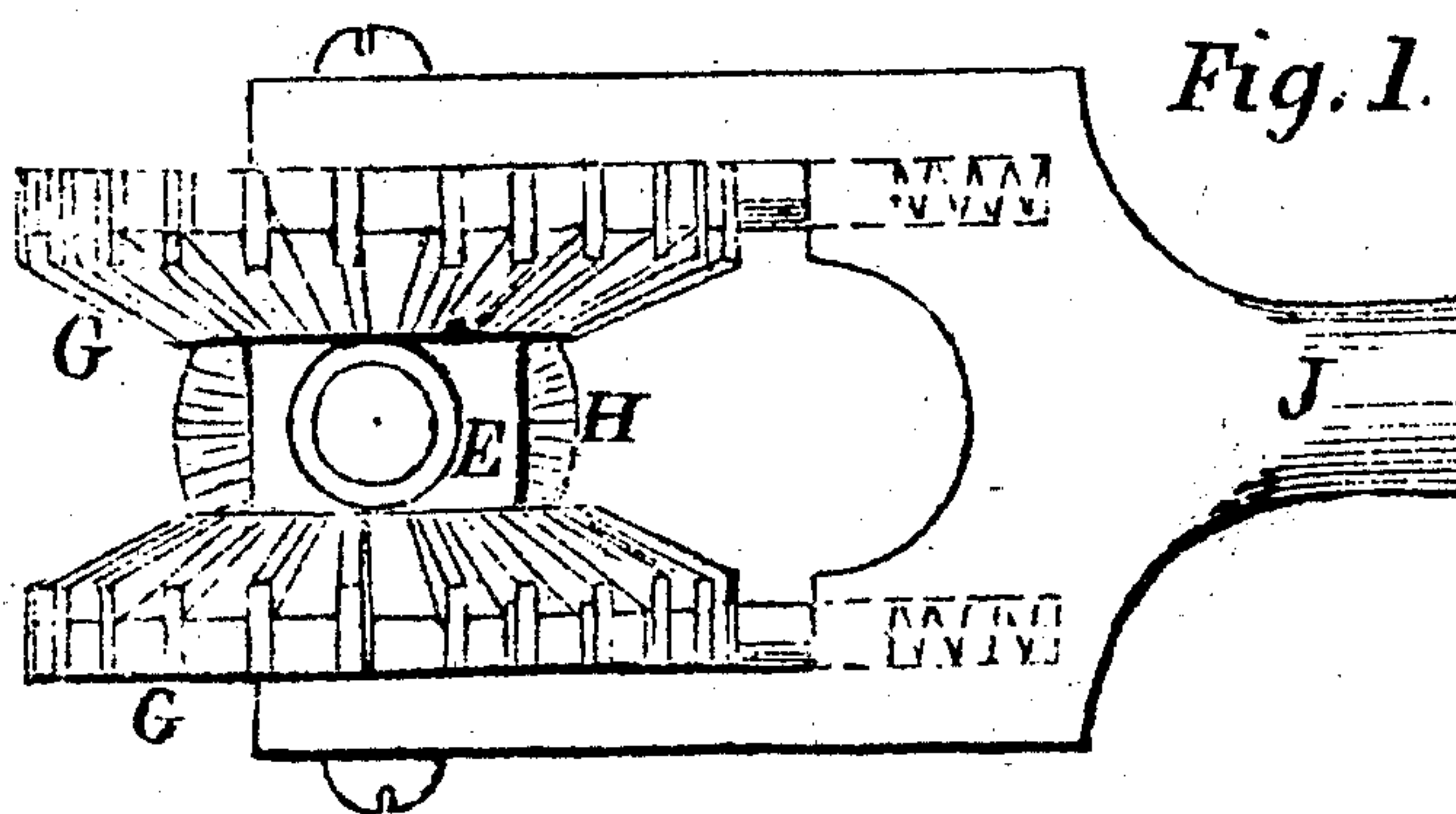


S. INGERSOLL.
PAWL DRILL.

No. 11,787.

PATENTED OCT. 10, 1854



TAKEN FROM PATENT OFFICE REPORT
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ONLY DRAWING ACCESSIBLE (1913)

UNITED STATES PATENT OFFICE.

SIMON INGERSOLL, OF NEW YORK, N. Y.

PAWL-DRILL.

Specification of Letters Patent No. 11,787, dated October 10, 1854.

To all whom it may concern:

Be it known that I, SIMON INGERSOLL, of the city, county, and State of New York, have invented certain new and useful Improvements in a Pawl-Drill; and I do hereby declare that the same are described and represented in the following specification and drawings.

There have been two or more kinds of pawl drills constructed prior to my invention, one consisting of a straight shaft with two ratchet wheels fastened upon it with a lever to work loose between to carry two pawls to act upon the wheels as the lever is vibrated so as to rotate the shaft and drill. The other consisting of a shaft to carry the drill with two ratchets upon it, also two bevel wheels fitted to turn loose upon the shaft and carry two pawls to act upon the ratchets fastened to the shaft; the two bevel wheels being operated by a bevel wheel fitted to turn on a stud, which stud is fitted to turn loose upon the shaft between the two ratchets; the last mentioned wheel being operated by a lever fastened to it so as to vibrate in a plane parallel to the shaft and drill but not in the same plane; while in the drill first described the lever had to be vibrated in a plane at right angles to the shaft and drill therefore a hole could not be bored with it unless there was room to vibrate the lever in a plane at right angles to the shaft and drill. And in the one described last the lever being vibrated in a plane parallel to the shaft and drill but not in the same plane, there is a constant tendency to crowd or press the drill out of the proper position so as to render it difficult to drill a straight and true hole.

Now the object of my invention is to obviate the defects above mentioned, which I have effected by arranging my lever so that it can be vibrated in the same plane in which the shaft and drill is operated; or in a plane at right angles to it, so that my drill has the advantages of both the drills above mentioned, without the tendency to pass one side like the one last mentioned. For my improvement consists of a center piece fitted to turn on the shaft or stock of the drill, with two gudgeons projecting from it in opposite directions upon which two bevel and ratchet wheels turn which drive a pinion fastened to the shaft and operate the drill; which gudgeons form or support the fulcrum of the vibrating lever, which carries two pawls to

operate the ratchet and bevel wheels above mentioned.

To enable others skilled in the art to make and use my improvements I will proceed to describe their construction and operation, referring to the drawings above mentioned, in which the same letters indicate like parts in each of the figures.

Figure 1 is a plan and Fig. 2 a section through the line $z z$, Fig. 1.

A is a shaft with a socket B for the shank of a drill; and a male screw C on the opposite end to which the female screw in the tube D is fitted, to which tube the friction is to be applied to retain it and force the drill forward in boring a hole. There is a center piece E fitted to turn on the shaft A with two pivots F F projecting from it in opposite directions at right angles to the shaft A (represented in dotted lines). The bevel gears G G, are fitted to turn on the pivots F, and drive the pinion H, fastened to the shaft A, to turn it. The edges of the bevel gears G are scored across so as to form ratchet teeth which the sliding pawls I I catch against, which pawls are inserted in holes fitted for them in the lever J, and are pressed against the gear or ratchet by the spiral springs K K placed in the holes behind the pawls for that purpose.

The lever J is forked at one end so as to embrace the gears G G, and the ends of both parts are perforated for the screws L L which screw into the ends of the pivots F F and form the fulcrum upon which the lever J is vibrated so as to turn the gears G by the pawls I I, which are sharpened by beveling so that the thin points stand in opposite directions so as to turn one gear when moved in one direction and the other when moved in the opposite, so as to operate the pinion H and turn the shaft A to operate a drill or other tool inserted in the socket of the shaft A. The center piece E is retained in its proper position by the pinion H on one side, and the collar M on the other side, both of them being fastened to the shaft A. When the lever J is vibrated in the direction of the arrow N the drill is turned when it is moved either way; but when the lever is vibrated in the direction of the arrow O it moves the drill when it is vibrated in one direction only. When the lever is vibrated in the same plane with the shaft and drill the vibrations tend to press the drill first one way and then the other so that the motion in

one direction counteracts the other so as to bore a straight and true hole.

I contemplate making the gudgeon or pivots to extend beyond the wheels so that
5 the ends of the lever may be fitted to them by making scores or bearings in the ends and applying a cap or some equivalent fixture.

What I claim as my invention and desire
10 to secure by Letters Patent in the above described drill is—

The center piece E constructed with two gudgeons or pivots or their equivalents for the wheels G G to turn upon and to form or

support the fulcra of the lever J by which
15 the drill is operated: thereby enabling the operator to vibrate the lever in the same plane with the shaft and drill; or in a plane at right angles to it as may be most convenient substantially as described. 20

In testimony whereof, I have hereunto signed my name before two subscribing witnesses.

SIMON INGERSOLL.

Witnesses:

JOHN O'NEIL,
J. DENNIS, Jr.