(No Model.)

E. HOLMES.

PORTABLE ELECTRIC DRILL.

No. 606,549. Patented June 28, 1898.

Fig. 1.

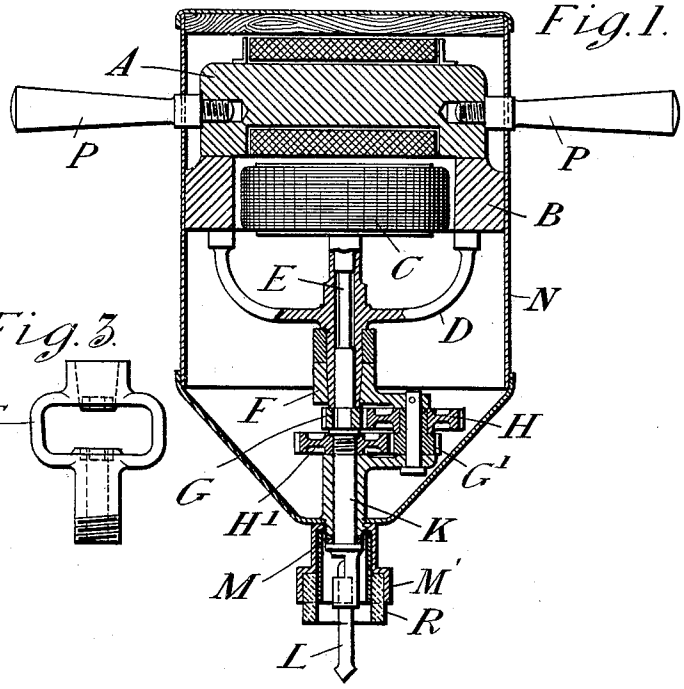
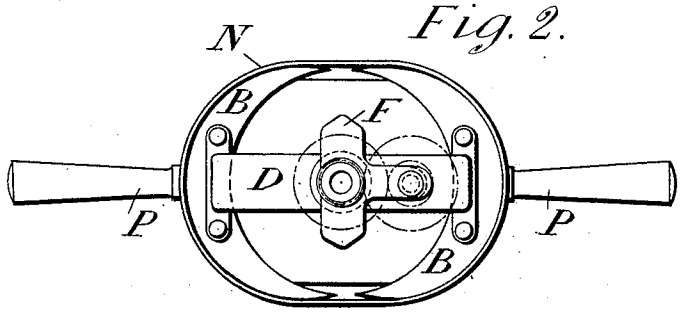


Fig. 3.

Fig. 2.



Witnesses
H. B. Keeler
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ERNEST HOLMES, OF LONDON, ENGLAND, ASSIGNOR TO SIEMENS BROTHERS & CO., LIMITED, OF SAME PLACE.

PORTABLE ELECTRIC DRILL.

SPECIFICATION forming part of Letters Patent No. 606,549, dated June 28, 1898.

Application filed November 18, 1897. Serial No. 658,986. (No model.) Patented in England June 26, 1896, No. 14,187.

To all whom it may concern:

Be it known that I, ERNEST HOLMES, a citizen of England, residing at 3 Champion Terrace, Charlton, London, in the county of Kent, England, have invented a certain new and useful Portable Electric Drill, (for which I have obtained a patent in Great Britain, No. 14,187, bearing date June 26, 1896,) of which the following is a specification.

This invention relates to a drill which a workman can carry from place to place and apply with the pressure of his hands to drill a hole, the rotation of the drill-spindle being effected by an electric motor mounted within the casing of the drill and connected by flexible conductors to a source of electricity which may be stationary and at more or less distance from the place where the drill is applied.

Figure 1 of the accompanying drawings is a vertical section, with the armature shown in elevation, of a drill according to this invention. Fig. 2 is a plan looking from below, the lowest conical part of the casing being removed to show the framing, gearing, and field-magnets.

A is the magnet-core, wound with insulated wire and having attached to it pole-pieces B of crescent shape, between which revolves the armature C and from which projects downward a yoke D, bored centrally to form bearings for the armature-spindle E. On the lower boss of the yoke D is fixed an under frame F, of which Fig. 3 is a side view. In this frame is arranged reducing-gear consisting of a pinion G, fixed on the armature-spindle and gearing with a wheel H, and a pinion G′, fixed to H and gearing with a wheel H′ on the drill-spindle K, which extends downward and terminates in a holder for the drill L. Between the lower end of the under frame F and a collar of the drill-holder are interposed a number of washers M to constitute a thrust-bearing. The motor and framing are inclosed within a covered casing N, through which pass two handles P, screwed into the magnet. A workman holding the whole by the handles can carry it to the spot where a hole has to be drilled in a plate and press it against the plate.

In order to deaden shock when the drill has passed through the plate, a ring R, of caoutchouc or other elastic material, is held in a socket or sleeve M′, which is screwed upon the lower end of the under frame F, and this ring R strikes the plate when the drill has passed through.

The commutator, brushes, electrical connections, and switch for turning on or off the current are omitted from the drawings for the sake of clearness, these appliances being all of well-known kind and adapted to the motor in the usual way.

Having thus particularly described and ascertained the nature of this invention and the best means I know for carrying the same into practical effect, I claim—

In a portable electric drill, the combination with a magnet-core and magnet, of two crescent-shaped pole-pieces B secured to the under side of the core, a yoke-frame D secured to and depending from the said pole-pieces and terminating in a central spindle-bearing, an armature-spindle E journaled in said bearing, an armature C fixed to the upper end of said spindle and arranged to rotate between the pole-pieces, an under frame F mounted below the said yoke-frame and forming a drill-spindle bearing, a drill-spindle K journaled in said bearing and provided with a gear-wheel H′, a pinion G fixed to the armature-spindle, a gear-wheel H and a pinion G′ journaled one above the other in said under frame, said latter gear-wheel and pinion meshing with the aforesaid wheel and pinion, a sleeve screwed upon the lower end of the said under frame, a drill fixed to said spindle, an elastic washer fixed in said sleeve and having its lower edge exposed below the same, handles secured to the magnet-core, and a casing surrounding the operating mechanism of the drill and having its lower portion tapered toward and secured to the under frame.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 8th day of November, A. D. 1897.

ERNEST HOLMES.

Witnesses:
FRED C. HARRIS,
JNO. P. M. MILLARD.