(No Model.)

I. E. STOREY.

ELECTRIC DRILL.

No. 408,269. Patented Aug. 6, 1889.

Fig. 3.

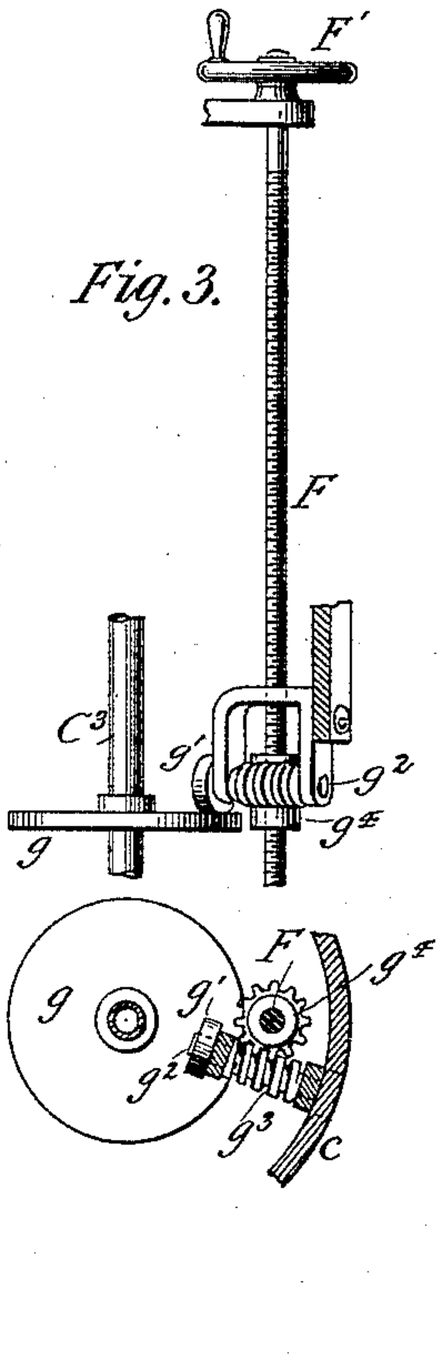


Fig. 1.

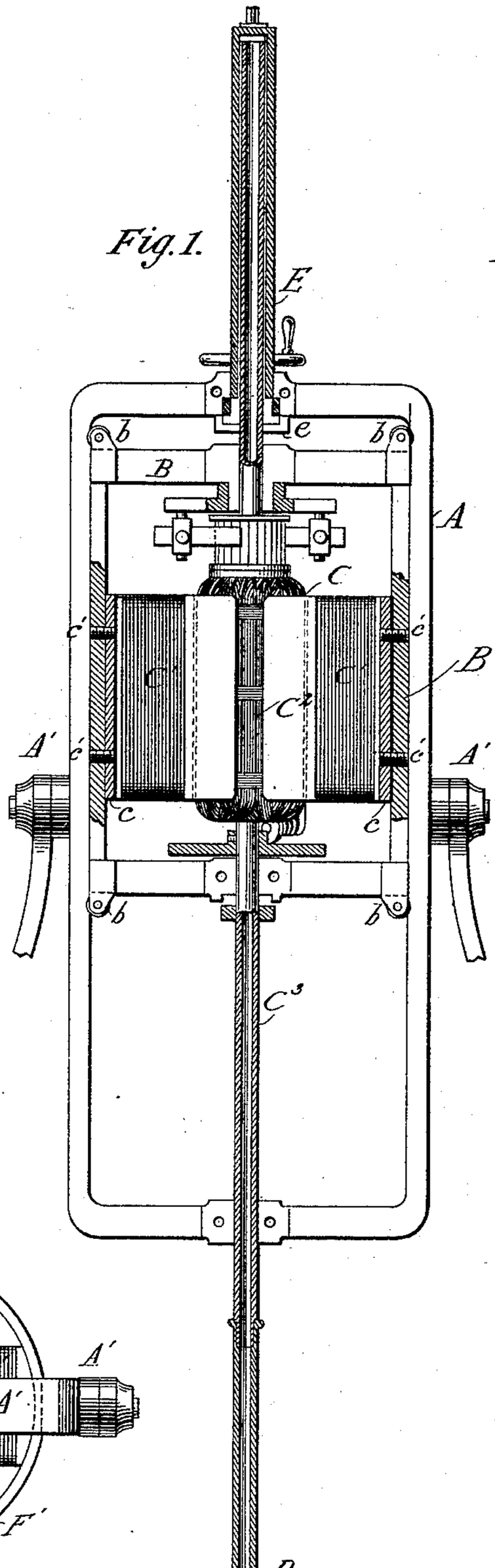


Fig. 4.

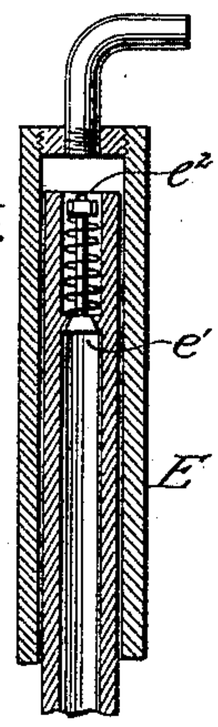


Fig. 5.

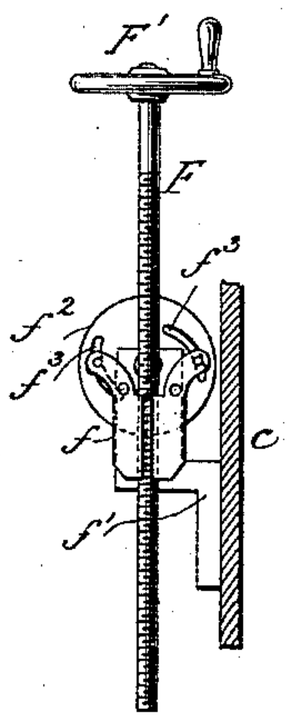
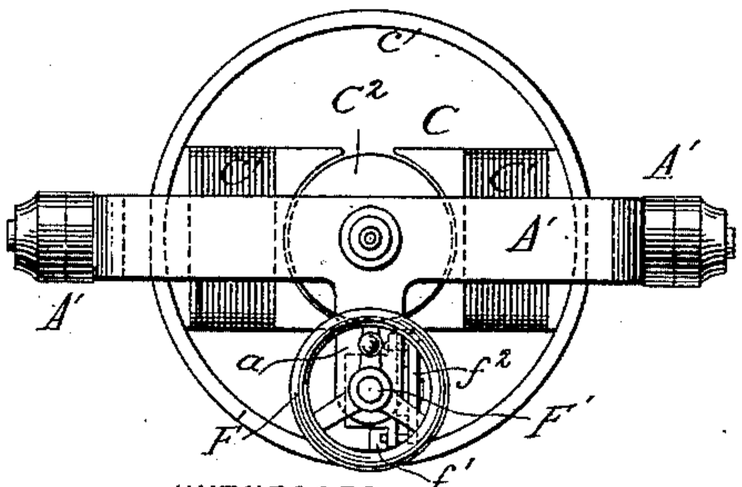


Fig. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

IMLE E. STOREY, OF BOULDER, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE STOREY ELECTRIC, DRILL, AND POWER COMPANY, OF COLORADO.

ELECTRIC DRILL.

SPECIFICATION forming part of Letters Patent No. 408,269, dated August 6, 1889.

Application filed August 1, 1888. Serial No. 281,609. (No model.)

To all whom it may concern:

Be it known that I, IMLE E. STOREY, a citizen of the United States, residing in Boulder, in the county of Boulder and State of Colorado, have invented certain new and useful Improvements in Electric Drills, of which the following is a specification.

My invention relates to electric drills, with particular reference to drills in which the tool rotates in distinction from those in which the tool reciprocates. The object of the invention is to provide a device of this kind which shall be as compact as possible, easy of manipulation, simple in construction, and adapted to feed the drill either automatically or by hand.

The invention consists, briefly, of a rectangular frame having mounted within it on suitable ways a supplemental sliding frame carrying an electric motor. The drill-tool is connected directly with the armature-shaft of the motor, and is hollow to allow the passage of water or other lubricant to the drill-point.

The details of construction and operation will be clearly set forth in the following description, reference being had to the accompanying drawings, in which—

Figure 1 represents a side elevation of the apparatus, parts of the same being shown in section. Fig. 2 represents a plan of the device; and Figs. 3, 4, and 5 represent details.

Referring to the drawings by letter, A represents the main frame of the apparatus. It is supported upon a tripod from trunnions A′, centrally located. There is mounted within this frame a second or supplemental frame B, which slides or reciprocates within the frame A. To facilitate the sliding movement, antifriction wheels or rollers *b* are located at the four corners of the frame B, and they bear upon tracks formed in the frame A. The electric motor C is rigidly mounted in the frame B. The field-magnets C′ are secured to an annulus *c*, the latter in turn being bolted to the frame B, as shown at *c*′. The drawing shows but two field-magnets. It is obvious, however, that any desired number may be placed radially within the ring and secured in the same manner as the two mentioned.

The armature C^2 is mounted on a hollow shaft C^3. This shaft passes through bearings in each end of the frames A and B. The lower bearing on the frame B is a double one, one part being a ball-bearing to receive the thrust from the tool, and the other being a smooth bearing in which the shaft rotates. The tool D, which is ordinarily diamond-pointed, is secured to the shaft by screw-threaded connections or clamped in any suitable way. At the upper end of the frame A a shaft C^3 passes through a water-tight stuffing-box *e* into a sleeve or water-chamber E. This chamber has a fitting at the upper end for connecting a hose-pipe leading from any suitable water-supply. The extreme upper end of the shaft is provided with a valve *e*′, as shown in Fig. 4. This valve has a seat within the shaft, and its upwardly-extended stem is surrounded by a spring, the tension of which may be adjusted by a nut e^2. This spring normally tends to hold the valve against its seat; but the pressure of water above forces the valve from its seat and passes into the passage below and thence to the drill-point. Thus the quantity of water admitted to the hollow shaft and to the drill-point may be regulated by adjusting the spring controlling the valve.

The frame A at the top has a lateral extension *a* (shown in Fig. 2) for the purpose of supporting a bearing for a shaft F. The said shaft is provided with a hand-wheel F′, and is screw-threaded its entire length below the bearing. This shaft passes downward through a pair of internally-threaded jaws *f*, which are pivoted to a bracket *f*′, bolted to the annulus *c*, which supports the field-magnets. There is also hung on this bracket a disk f^2, which is provided with eccentric slots f^3, engaging with studs in the outer ends of the pivoted jaws *f*. The disk f^3 has a handle by which it may be rotated to throw the jaws out or away from the screw-shaft in an obvious manner. By this arrangement of screw and clutch the motor and its supporting-frame, together with the shaft and tool, may be fed back and forth by hand as fast as the nature of the case requires. When it becomes necessary to change the tools or to remove the whole apparatus or for any other purpose, the pivoted jaws may be thrown out of engage-

ment with the screw and the motor-frame moved back and forth at will. Besides this hand feeding device I have also provided an automatic feed, which ordinarily will be used in preference to the hand-feed. This consists of a roughened disk g, rigidly secured to the drill-shaft. Upon the upper face of this disk bears a friction-roller g', of leather or other suitable material, which is mounted on the end of a short shaft g^2, secured in bearings to a bracket from the frame B. The shaft g^2 is provided with a worm g^3, which gears into an exterior sprocket formed upon an internally-threaded sleeve g^4. Through this last-mentioned sleeve the shaft F passes, and is adjusted up and down by means of the motion communicated from the disk g in an obvious manner.

It is designed to cover the whole apparatus with a suitable covering of sheet metal, leather, or other suitable material, to prevent dust and water from falling upon the machinery.

It is obvious that the details of construction of the machine may be varied somewhat without departing from the principle of my invention. I therefore wish it to be understood that I do not limit myself to the precise construction described.

Having described my invention, I claim—

1. In an electric drill, a main frame provided with tracks or ways and having an upwardly-extending water-reservoir, a supplemental frame mounted within the main frame and adapted to slide back and forth the full length of the main frame, an electric motor and its main shaft mounted in said supplemental frame, the said shaft of the motor being hollow and extending through both ends of the main and supplemental frames and entering the water-chamber, and a drill-tool attached to the end of the shaft opposite the water-chamber, substantially as described.

2. A main frame provided with a water-chamber, in combination with a supplemental frame adapted to slide within said main frame, and an electromotor mounted within said supplemental frame, the main shaft of the motor being hollow and extending beyond said supplemental frame and entering the water-chamber in said main frame.

3. The combination, with a sliding frame carrying the rotating tool, of a pair of friction-disks and suitable worm-gearing geared to the rotary shaft and to the sliding frame in such a manner that the rotation of such shaft will cause the sliding movement of said frame, as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

IMLE E. STOREY.

Witnesses:
FRED. LOCKWOOD,
ISAAC L. BOND.