2 Sheets--Sheet 1.

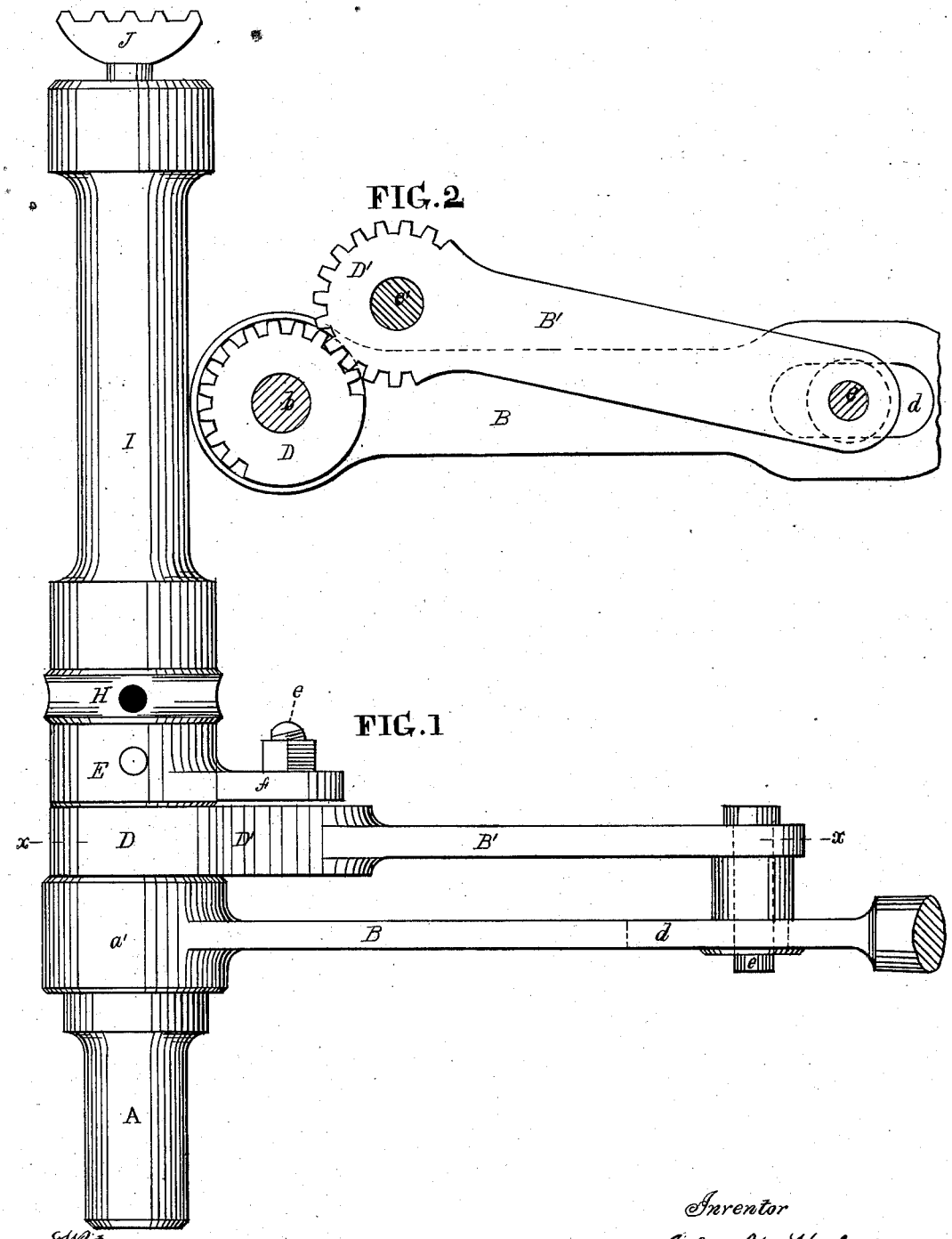
J. M. KOEBERLE.

Ratchet Drill.

No. 164,686. Patented June 22, 1875.

FIG. 2

FIG. 1



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2 Sheets--Sheet 2.

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FIG. 3

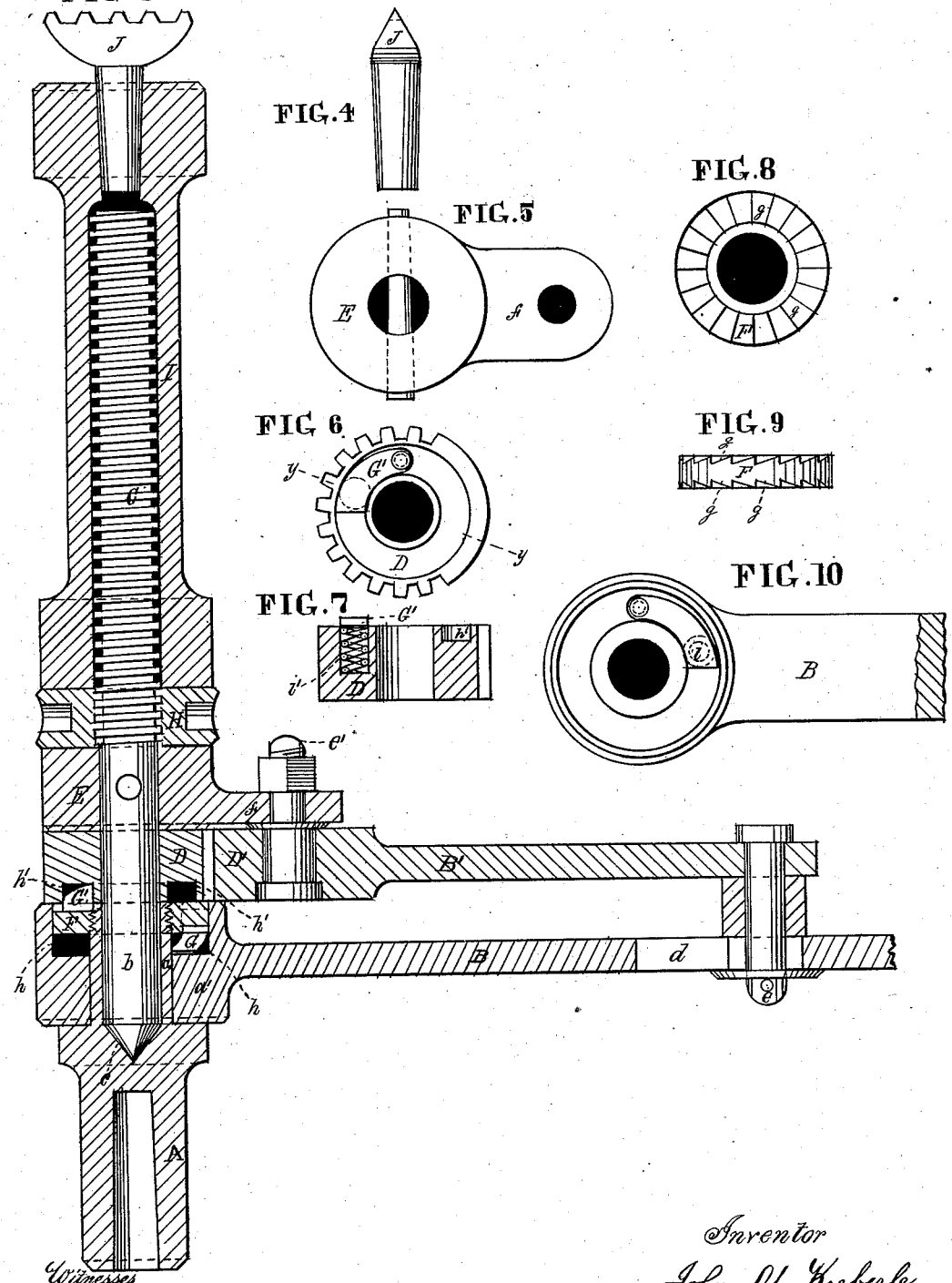

FIG. 4

FIG. 5

FIG. 8

FIG. 6

FIG. 9

FIG. 7

FIG. 10

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UNITED STATES PATENT OFFICE.

JOHN M. KOEBERLE, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN RATCHET-DRILLS.

Specification forming part of Letters Patent No. **164,686**, dated June 22, 1875; application filed February 19, 1875.

To all whom it may concern:

Be it known that I, JOHN M. KOEBERLE, of the city and county of Philadelphia, in the State of Pennsylvania, have invented an Improvement in Ratchet-Drills, of which the following is a specification:

My invention consists of a double-acting ratchet-drill, on which the stock has a continuous revolution by means of a double ratchet-wheel on a hub of the bit-stock, in combination with a hand-lever, which oscillates on said hub, and has a jointed and geared connection with a wheel above the ratchet-wheel in such a manner that spring-pawls connected with the said lever and wheel, acting alternately on each side of the ratchet-wheel, produce a continuous rotation of the bit-stock, and cause the drill to turn to the right in all movements of the lever. This arrangement requires the upper end of the stock to remain stationary. This is effected by means of a frog on its upper end, which bites into any suitable support. The feed-screw has an adjustable nut, which bears against the lower end of the barrel. Beneath the nut the screw-stem is smooth, and turns in the hub of the drill-stock and parts attached. The end of the stem is conical, and turns in a corresponding depression in the drill-stock.

In the accompanying drawings, Figure 1 is a side elevation of my improved ratchet-drill. Fig. 2 is a horizontal section taken at the line *x x* of Fig. 1. Fig. 3, Sheet No. 2, is a vertical section of the drill. Fig. 4 is an edge view of the frog J. Fig. 5 is a face view of the wheel E, having an arm, *f*. Fig. 6 is a face view of the wheel D. Fig. 7 is a cross-section at the line *y y* of Fig. 6. Fig. 8 is a face view of the ratchet-wheel F. Fig. 9 is an edge view of the same. Fig. 10 is a face view of the lever B.

Like letters of reference in all the figures indicate the same parts.

A is the bit-stock, which has a hub, *a*, on which the hub *a'* of the lever B turns freely, and which receives the stem *b* on the lower end of the screw-rod C. The end of the stem is conical, and rests in the conical step *c*. D is a cog-wheel situated on the stem *b*, on which it turns freely, and rests on the hub *a'* of the lever B. With this wheel the semi-wheel D' of the lever B' is geared, as seen more clearly in Fig. 2. The outer end of the lever B' is jointed to the lever B by means of the slot *d* and pin *e*. E is a stationary ring on the stem *b* above the geared wheel D. It has an arm, *f*, which is jointed to the semi-wheel D' of the lever B' by means of the pin *e'*.

By this connection of the levers B and B' and wheels D D' and ring E it will be seen that when the lever B is caused to oscillate back and forth on the hub *a* of the bit-stock the ring E remains stationary, and that the hub *a'* of the lever B will have a reciprocating movement around the hub *a* of the drill-stock, and said wheels D and D' have a reciprocating movement in the same manner, the pin *e* changing its position accordingly in the slot *d* of the lever B. For the purpose of giving a continuous forward rotation to the bit-stock A its hub *a* is provided with a ratchet-wheel, F, which has teeth *g* on each side. The ratchet-wheel is fast on the hub *a* of the stock, and there is a pawl, G, in the recess *h* of the hub *a'* of the lever B, which connects with the teeth on the under side of the ratchet-wheel, and a like pawl, G', in the recess *h'* of the wheel D, which engages with the teeth in its upper side, so arranged that the two pawls act alternately on the ratchet-wheel as the lever B is reciprocated, and thus impart a continuous rotation to the bit-stock A. The pawls G and G' are sprung into connection with the ratchet-wheel F by means of the springs, as seen at *i'*, in recesses of the hub *a'* of the lever B and in the wheel D. The ratchet-wheel may have the teeth on its periphery instead of on its face, as shown in the drawings, in which case the spring-pawls will be connected with the outside of the lever and wheel.

On the screw-rod C is an adjustable feed-nut, H, which bears against the lower end of the barrel I, which has a central opening to receive the screw-rod C. The upper end of the barrel is provided with a frog, J, which is caused to bite into any suitable support sufficiently to prevent the turning of the barrel as the bit-stock is rotated. By the alternate action of the pawls G G' upon the stationary

ratchet-wheel F the drill-stock is always turned to the right, no matter in which direction the lever B is turned.

I claim as my invention—

1. In a ratchet-drill, the stationary barrel-stock I, provided with a frog, J, or equivalent device for holding it in a fixed position, and a screw-rod, C, for the longitudinal movement of the bit-stock, substantially as set forth.

2. The bit-stock A, having a double ratchet-wheel, F, in combination with the stationary barrel I and feed-screw rod C, having an adjustable nut, H, substantially as and for the purpose set forth.

3. The combination of the levers B and B′, wheels D D′, spring-pawls G G′, and double ratchet-wheel F, for giving a continuous rotary movement to the bit-stock A, substantially as set forth.

JOHN M. KOEBERLE.

Witnesses:

THOMAS J. BEWLEY,

STEPHEN USTICK.