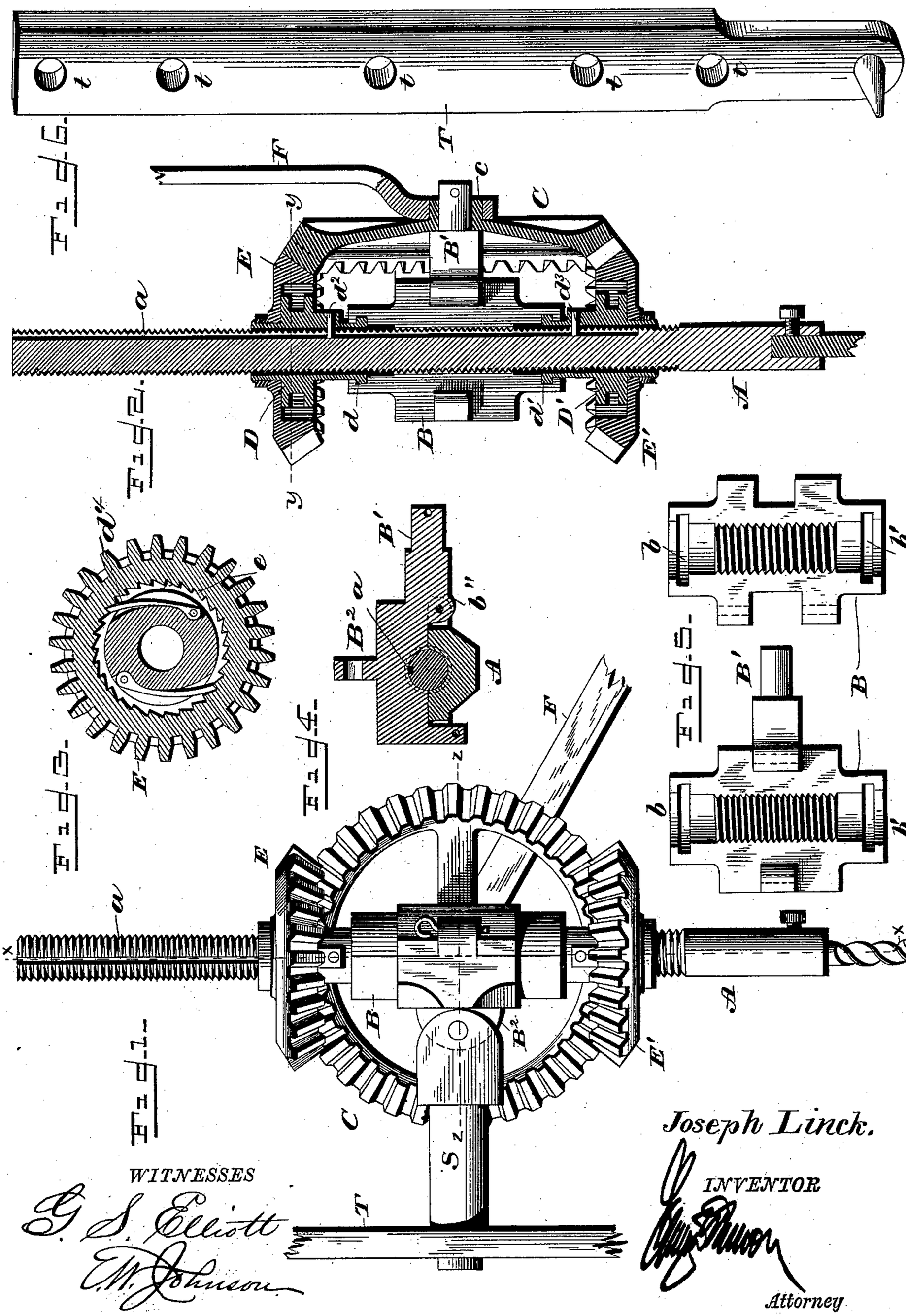
(No Model.)

J. LINCK.

COAL DRILLING MACHINE.

No. 361,167. Patented Apr. 12, 1887.



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JOSEPH LINCK, OF SNODDY'S MILLS, INDIANA, ASSIGNOR OF ONE-HALF TO MATTHEW ARMSTRONG, OF SAME PLACE.

COAL-DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 361,167, dated April 12, 1887.

Application filed November 11, 1886. Serial No. 218,622. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH LINCK, a citizen of the United States of America, residing at Snoddy's Mills, in the county of Fountain and State of Indiana, have invented certain new and useful Improvements in Coal Drilling and Mining Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to machines designed for the drilling or boring of metal or other substances, and more particularly to machines for mining.

The machine which I am about to describe may be arranged to be driven by hand or power, although I shall confine myself to the plain description of a hand-driven machine.

The objects of the invention are, first, to enable the drilling-tool to be operated at various angles from a fixed base; second, to provide for the ready removal of the driving-gear or feeding-screw for the purposes of repair or renewal; and, third, in minor objects, which will be specifically set forth hereinafter.

With these objects in view the invention consists in novel features of construction and combinations, to be fully described in the ensuing specification, and claimed in the clauses at the close thereof.

In the accompanying drawings, Figure 1 illustrates my improved drilling-machine in side elevation. Fig. 2 is a longitudinal section of the same. Fig. 3 is a sectional detail of one of the driving-pinions. Fig. 4 is a horizontal section on line *z z* of Fig. 1. Fig. 5 is a detail of the feeding-nut. Fig. 6 is a perspective view of the base-frame.

Referring to the drawings, A designates the drill-spindle, provided, as is usual, with a socket at one end to receive a bit or tool, and with an exterior thread, by means of which the tool is advanced or fed in its work. The threaded portion of the spindle A is provided with a spline or groove, *a*, for a purpose to be hereinafter explained. A two-part interiorly-threaded sleeve, B, embraces the spindle A, and is provided at one side with a hub, B′, upon which is journaled a beveled gear-wheel, C, and is also provided with a lug, B^2, by which it is connected to a supporting-standard, S.

Mounted upon the spindle A, at each end of the sleeve B, are collars D D′, the inner ends of which are provided with flanges *d d′*, engaging with circular recesses *b b′* in the sleeve B. These collars D D′ fit the spindle loosely and turn freely within the sleeve B; but to prevent the rotation of said spindle with relation to the collars, the latter are provided with feathers or keys d^2 d^3, engaging the spline or groove *a* in said shaft.

The collars D D′ have each an elongated hub, upon which are mounted to rotate beveled pinions E E′, the parts herein described being so proportioned relatively that the pinions E E′ will constantly mesh with the gear-wheel C, hereinbefore referred to.

The pinions E E′ are each provided interiorly with ratchet-teeth *e* to engage spring-pawls d^4, carried by the collars D D′; and these ratchet-teeth may be cut to face in the same or opposite directions, to enable the drill to be rotated in opposite directions or in but one direction, as preferred. I prefer, however, that these ratchet-teeth be so arranged that the bit or tool be rotated in one direction as it is advanced in its work, and in the opposite direction for withdrawal from the drill-hole; and in order that the operation of withdrawal may be carried on with greater rapidity than the operation of drilling I contemplate making the pinion—say, for instance, E—which controls the operation of drilling, of greater diameter than the pinion controlling the operation of withdrawal. To accomplish this end, the teeth of gear-wheel C should be of, say, double the length of the teeth of pinions E E′, in order that said pinions E E′ may work at different distances from the center of the gear-wheel C.

In order that the spindle A and collars D D′ may be removed for repair or other purposes, I have constructed the sleeve B of two sections joined together at one side by a hinge-connec-

tion, *b''*, the free ends of the hinged sections being secured together by a bolt or other suitable means; and in order that the working end of the bit or tool may be raised or depressed I connect said sleeve B pivotally to its supporting-standard S, as shown.

The lower end of the supporting-standard is swivelingly connected to a base-frame, T, which in the instance shown consists of a flat piece provided at suitable intervals with apertures *t* for the reception of the lower ends of the supporting-standard S, said base-piece being provided also with one or more spurs designed to be driven into the floor of the mine facing the breast. These spurs, however, may be dispensed with and the base-piece secured upon the floor of the mine by pegs driven through the apertures *t* not occupied by the lower end of the supporting-standard.

The drilling mechanism may be actuated by a hand-crank, F, as shown, to rotate the bit or tool in one direction; or, in lieu of said hand-crank, an oscillating hand-lever may be secured upon the hub *c* of the gear-wheel C, to give the tool an intermittent movement.

It will be understood that I do not desire to confine myself strictly to the construction here shown, as many changes may be made without departing from the spirit of my invention, said changes coming more properly within the province of the skilled mechanic.

I claim—

1. In a drilling-machine, the combination of the threaded spindle having a longitudinal groove, an interiorly-threaded sleeve with extended ends having recesses *b b'* formed therein, collars D D', with flanges which engage with the recesses *b b'*, and keys which engage with the groove of the spindle, and pawls attached to the collars so as to engage with the ratchet-teeth of the wheels E E', substantially as shown.

2. In a drilling-machine, the combination, substantially as before set forth, of the threaded spindle having a longitudinal groove, the interiorly-threaded sleeve embracing said spindle, the collars having their hub-extensions journaled in said sleeve and provided with keys engaging the longitudinal groove of the spindle, and the driving mechanism.

3. In a drilling-machine, the combination of the threaded spindle A, provided with a longitudinal groove, a separable sleeve having interior screw-threaded portions, end recesses, *b b'*, and a projecting portion which serves as a bearing for the main gear-wheel, collars D D', having flanges *d d'*, keys d^2 d^3, and spring-pawls which engage with ratchet-teeth of the beveled pinions, and a crank-arm, F, the parts being organized substantially as shown.

4. In a drilling-machine, the combination of the spindle, the sleeve, the collars having their ends journaled in the sleeve, the pinions mounted to turn in one direction on the collars, and the driving gear-wheel meshing with the pinions, substantially as described.

5. In a drilling-machine, the combination, substantially as before set forth, of the spindle, the sleeve, the collars having their inner ends journaled in the sleeve and keyed to the spindle, the pinions E E', journaled on the outer ends of the collars, and the driving gear-wheel meshing with the pinions.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH LINCK.

Witnesses:
FRANK LANICH,
MATTHEW ARMSTRONG.