(No Model.)

V. F. PRENTICE.

DRILLING MACHINE.

No. 418,383. Patented Dec. 31, 1889.

Fig. 1.

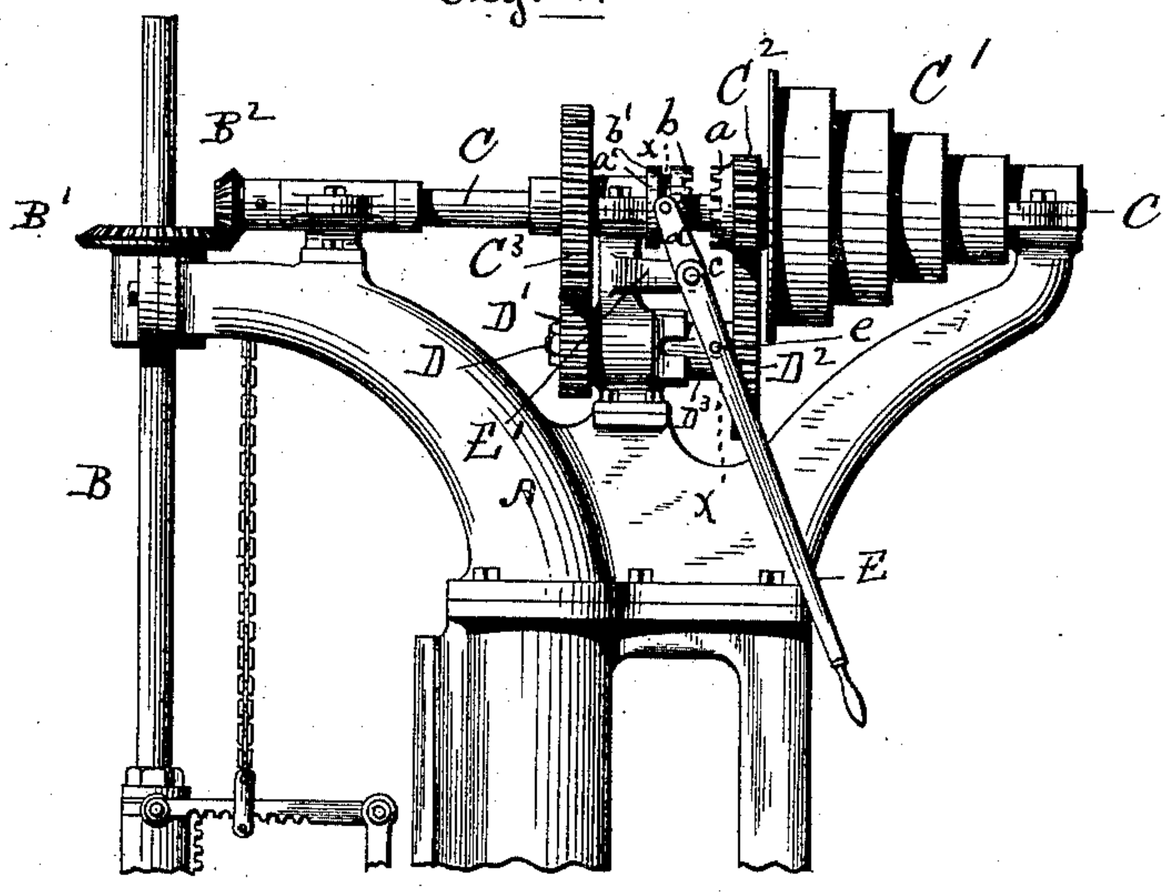
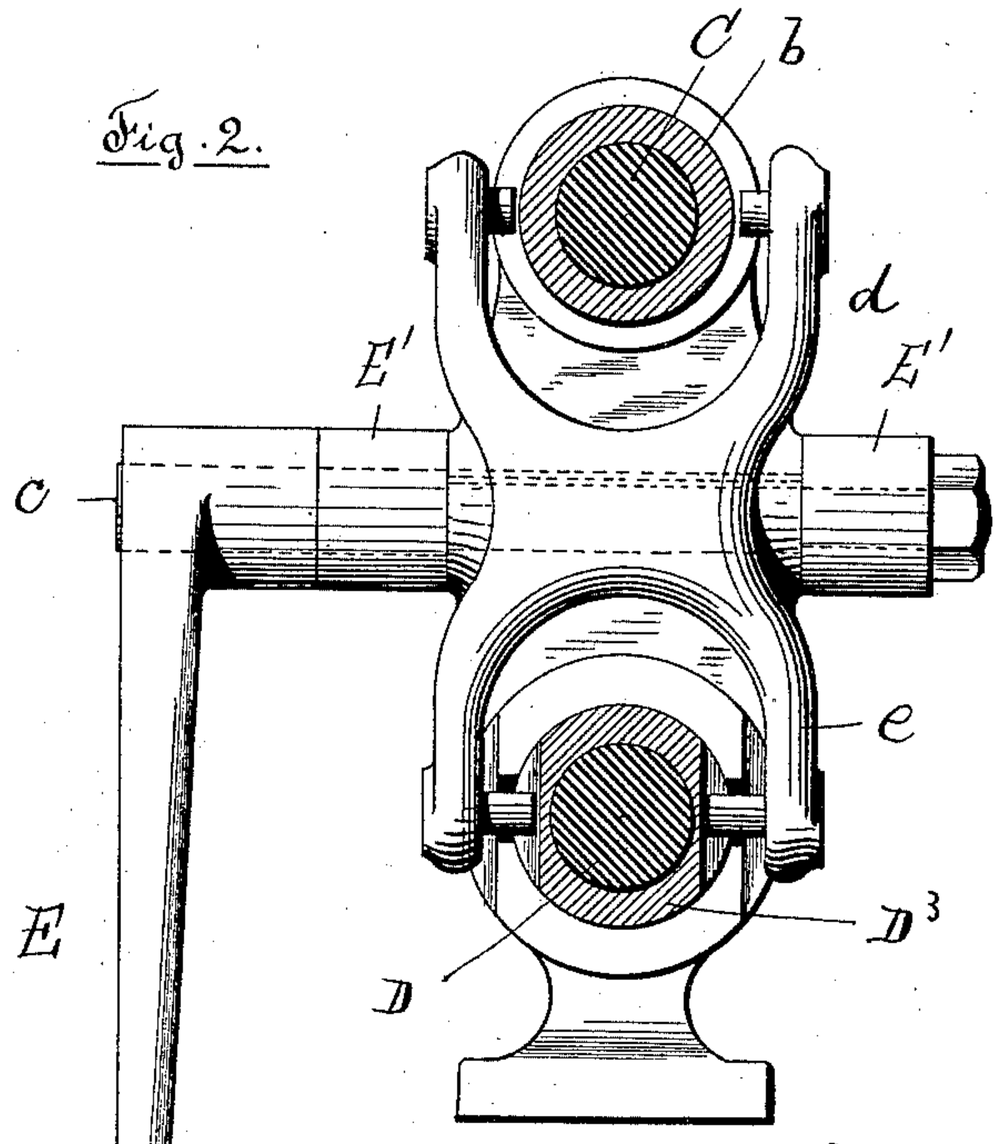


Fig. 2.



Witnesses
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UNITED STATES PATENT OFFICE.

VERNON F. PRENTICE, OF WORCESTER, MASSACHUSETTS.

DRILLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 418,383, dated December 31, 1889.

Application filed November 4, 1889. Serial No. 329,134. (No model.)

To all whom it may concern:

Be it known that I, VERNON F. PRENTICE, a citizen of the United States, and a resident of Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Drilling-Machines, of which the following is a specification, reference being had to the accompanying drawings, representing such portions of a drilling-machine as embody my invention, and in which—

Figure 1 represents the upper portion or "head" of a drilling-machine embracing the mechanism by which the "back gears" are brought into engagement; and Fig. 2 is an enlarged view of the shipping device by which the back gears are brought into engagement, the two shafts C and D being shown in sectional view on line X X, Fig. 1.

Similar letters refer to similar parts in both views.

Referring to the drawings, A denotes the upper part of the frame-work of a drilling-machine supporting the upper end of the drill-spindle B and the upper driving-shaft C, from which rotary motion is imparted to the drill-spindle B by means of the beveled gears B′ B². The upper horizontal shaft is driven through a belt-connection with a counter-shaft (not shown) by the cone-pulley C′, running loosely upon the shaft C. To the cone-pulley C′ is attached a pinion C², provided with clutch-teeth *a* upon its side, and sliding upon the shaft C, with a spline-connection therewith, is the opposing half-clutch *a′*, provided with teeth *b*, and having an annular groove, forming a neck *b′*, to receive the prongs of a shipping-fork. Below the shaft C, and parallel therewith, is journaled the short shaft D, having an attached pinion D′, engaging the gear C³, attached to the shaft C, as represented in the drawings, Fig. 1. Upon the opposite end of the short shaft D is attached a gear D², engaging the pinion C² upon the cone-pulley C′, and when the gears C², D², D′, and C³ are in engagment, as shown, the motion of the cone-pulley will be communicated through the gears mentioned to the shaft C, and through the gears B′ B² to the drill-spindle B.

Upon the short shaft D is a collar D³, provided with an annular groove, forming a neck to receive the prongs of the shipper-fork *e*. Journaled in the lugs E′ E′, attached to the rigid portion of the frame-work, is a rocking shaft *c*, carrying upon one end the operating-lever E, and carrying between the lugs E E the shipping-forks *d* and *e*, the former extending upwardly to engage the sliding half-clutch *a′*, and the latter extending downwardly to engage the collar D³ upon the shaft D. When it is desired to disconnect the back gears and connect the cone-pulley C′ directly with the shaft C, the lever E is moved to the left, Fig. 1, thereby sliding the short shaft D in its bearings and carrying the gears D′ and D² to the left and out of engagement with the gears C² and C³, and at the same time sliding the half-clutch *a′* along the shaft C and into engagement with the clutch-teeth *a* upon the cone-pulley C′. The cone-pulley is thus connected with the shaft C through the clutch-teeth *a* and *b*, or through the back gears carried upon the shaft D, as may be desired.

I do not claim, broadly, the employment of back gears carried upon a shaft parallel with the driving-shaft and having a sliding motion in a line parallel with the axis of the shaft, as such has been in use; but

What I do claim as of my invention, and desire to secure by Letters Patent, is—

In a drilling-machine, the combination, with the driving-shaft C, having an attached gear C³, and a cone-pulley C′, running loosely upon said shaft and having an attached pinion C², of the clutches *a* and *b*, the sliding shaft D, carrying the gears D′ and D², and an oscillating shipper comprising the shaft *c*, forks *d* and *e*, engaging the clutches, and sliding shaft and operating-lever E, substantially as described.

Dated at Worcester, in the county of Worcester and State of Massachusetts, this 2d day of November, 1889.

VERNON F. PRENTICE.

Witnesses:
RUFUS B. FOWLER,
H. W. FOWLER.