

W. C. BROWN & T. JOHNSON.
 DRILLING MACHINE.
 APPLICATION FILED OCT. 3, 1908.

914,479.

Patented Mar. 9, 1909.

2 SHEETS—SHEET 1.

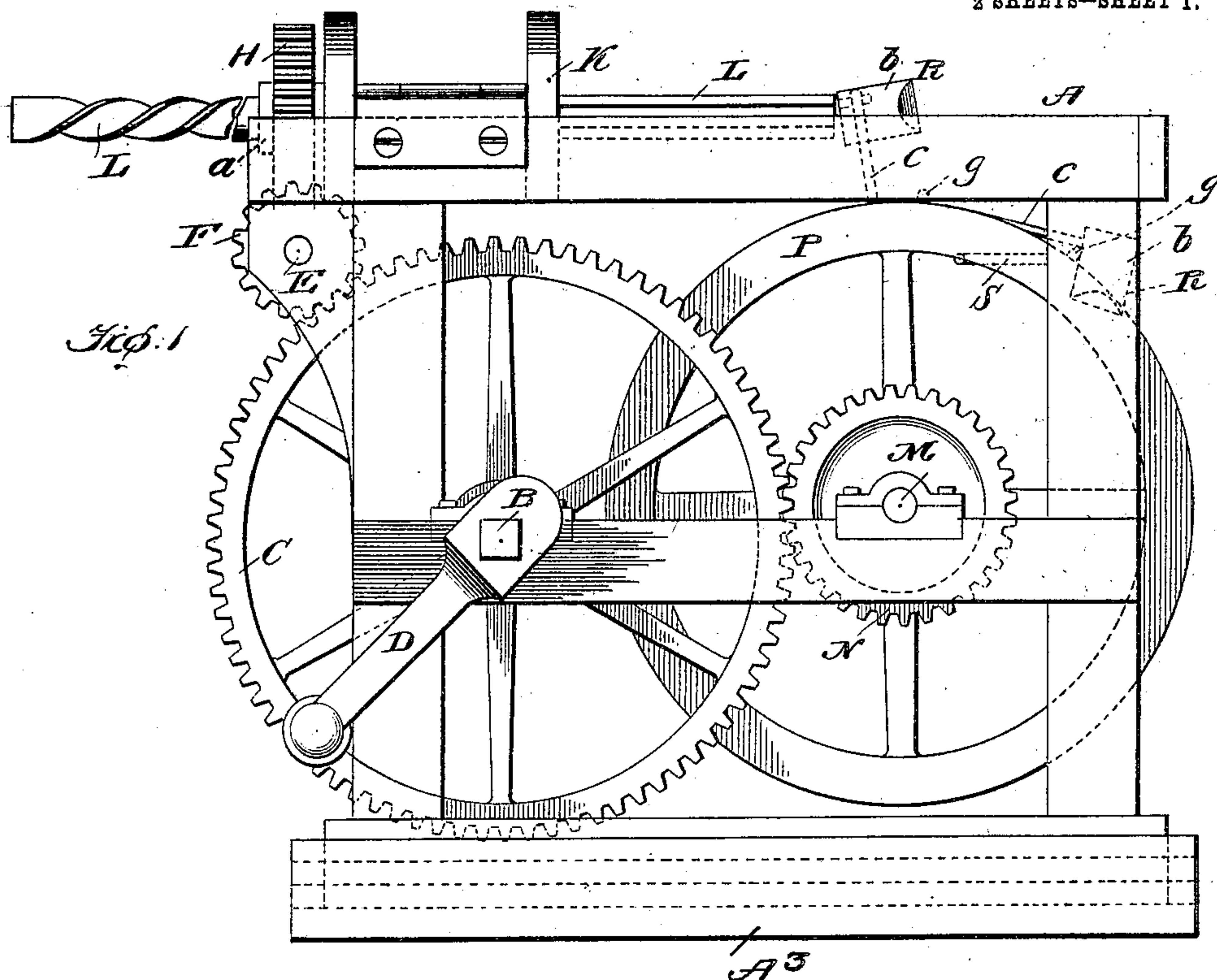
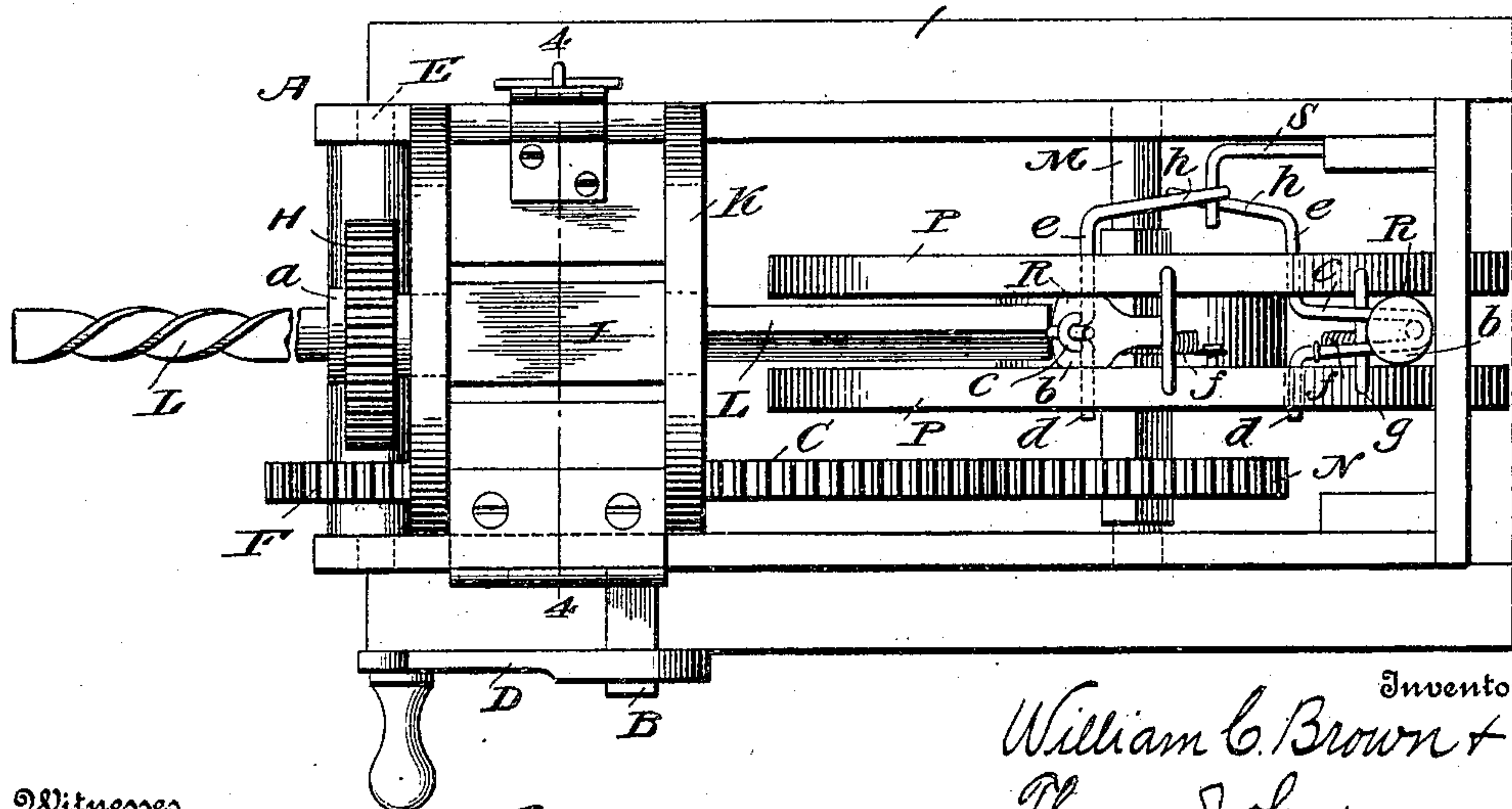


Fig. 2.



Witnesses

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Fig. 3.

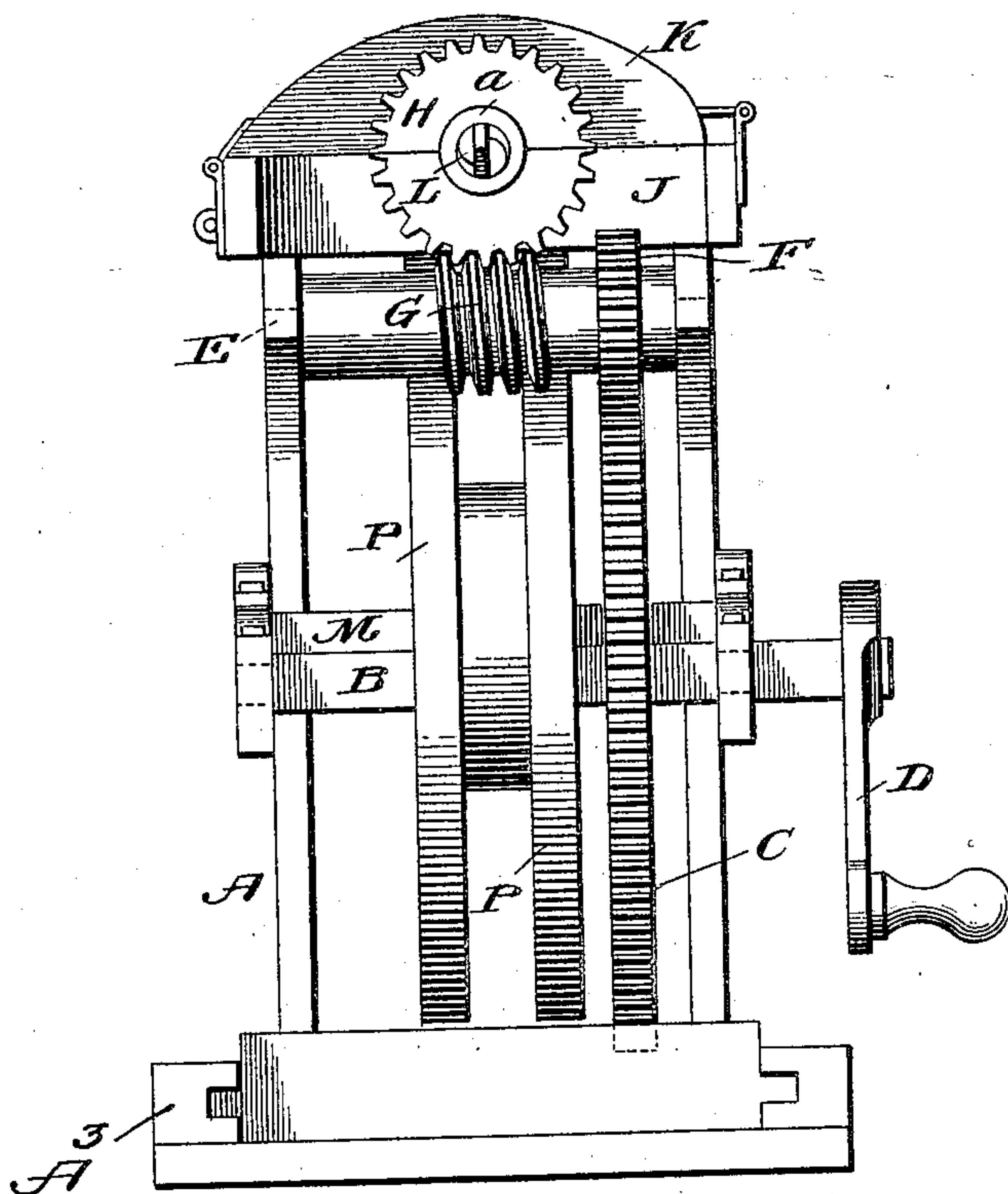
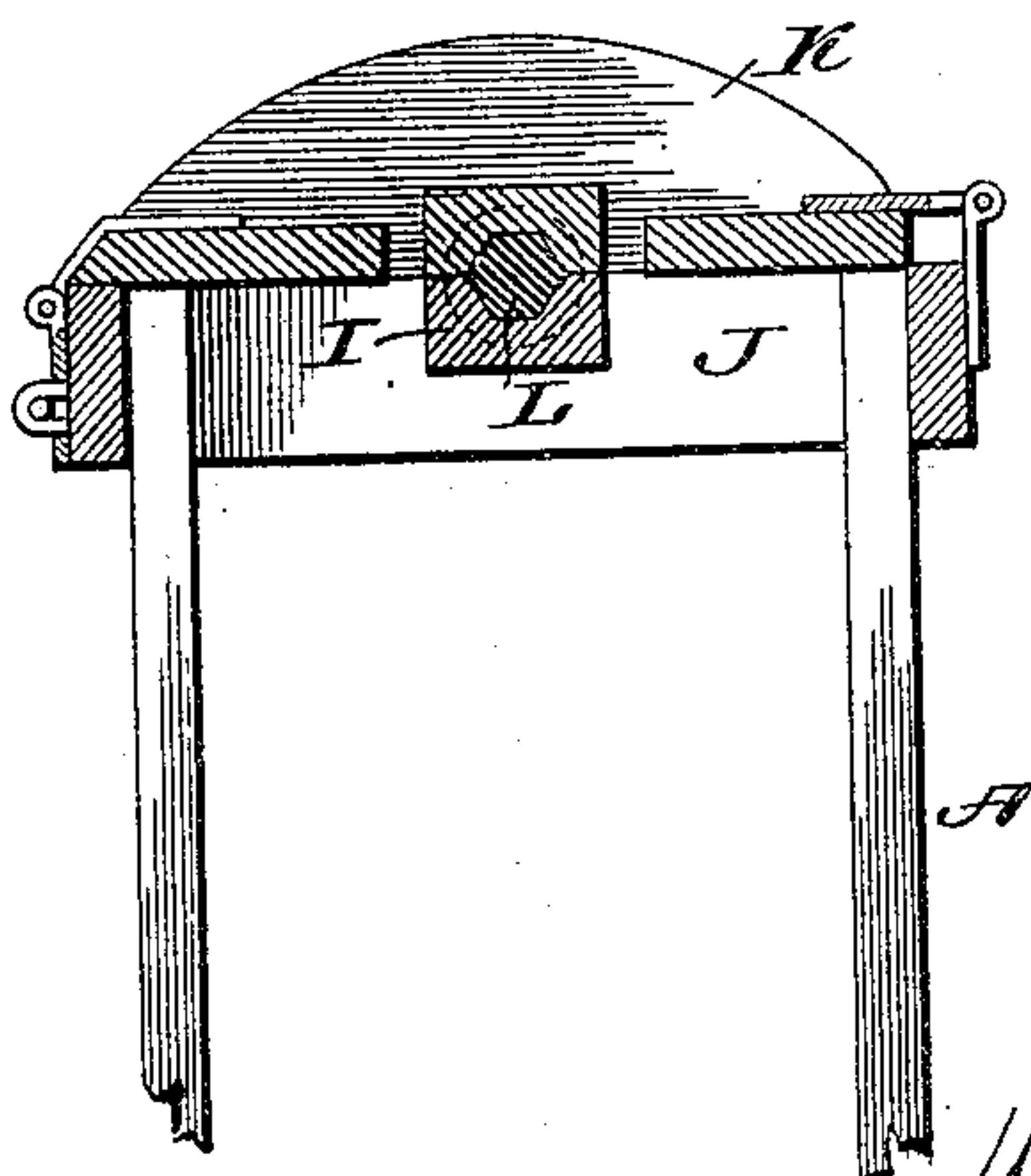


Fig. 4.



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UNITED STATES PATENT OFFICE

WILLIAM C. BROWN AND THOMAS JOHNSON, OF FONTANET, INDIANA.

DRILLING-MACHINE.

No. 914,479.

Specification of Letters Patent.

Patented March 9, 1909.

Application filed October 3, 1908. Serial No. 456,032.

To all whom it may concern:

Be it known that we, WILLIAM C. BROWN and THOMAS JOHNSON, citizens of the United States, residing at Fontanet, in the county of Vigo and State of Indiana, have invented new and useful Improvements in Drilling-Machines, of which the following is a specification.

Our invention pertains to drilling machines; and it contemplates the provision of such a machine which while simple, compact and inexpensive in construction, is possessed of high capacity.

The invention will be fully understood from the following description and claims when the same are read in connection with the drawings, accompanying and forming part of this specification, in which:

Figure 1 is an elevation of one side of the machine constituting the best practical embodiment of our invention known to us. Fig. 2 is a plan view of the machine. Fig. 3 is a front elevation of the same. Fig. 4 is a detail transverse section, taken in the plane indicated by the line 4—4 of Fig. 2.

Similar letters designate corresponding parts in all of the views of the drawings, referring to which:

A is the main frame of the machine, which may be of the construction illustrated or of any other construction consonant with the purpose of our invention, and B is a drive-shaft, journaled in suitable bearings in the main frame and equipped with a spur gear C and also with a crank D, as shown, or other suitable means through which it may be rotated.

E, Figs. 2 and 3, is a transverse shaft, journaled in the forward portion of the main frame and equipped with a spur pinion F, intermeshed with the gear C, and also equipped with a worm screw G, and H is a worm-wheel, intermeshed with and adapted to derive a comparatively slow motion from the worm-screw. The said worm-wheel is in sections which are fixed upon the forward ends of sections I comprised in a boxing, journaled in cross-bars J of the main frame and normally held together by a cap K, hinged to one side of the main frame and detachably connected to the other side thereof.

Interiorly the sections I of the boxing are of a shape to receive the angular rear portion of a drill rod L, which is preferably provided with a forward twisted portion and a collar,

indicated by *a*, the latter to limit rearward movement of the rod in the boxing. Thus it will be manifest that when the drive-shaft B is rotated, the boxing and the drill-rod L will also be rotated at a comparatively low rate of speed, and this without interfering with the drill-rod being advanced step by step through the boxing in the manner and by the means hereinafter described.

Journaled in the main frame and located in rear of the drive-shaft B is a transverse shaft M which carries a spur pinion N, intermeshed with the spur gear C, and also carries two wheels P, arranged a slight distance apart. The said wheels P have for their office to carry hammers R, and, as best shown in Figs. 1 and 2, the hammers comprise heads *b* and shanks *c*, connected, preferably in a loose manner to the heads, and each having lateral arms *d* and *e*, journaled in the wheels P adjacent to the perimeters thereof. The shanks *c* of the hammers are normally held by tractile springs *f* against cross-bars *g* fixed to the wheels P, and the arms *e* of the said shanks terminate in triggers *h*, arranged to engage a tappet S fixed to the main frame, incidental to the rotation of the wheels P.

By virtue of the gearing illustrated it will be seen that during the before described slow rotation of the boxing and the drill-rod therein the wheels P will be rotated at a comparatively high rate of speed, and incidental to such rotation and while the trigger *h* of each hammer is in engagement with the tappet S the hammer head will strike against the rear end of the drill-rod, and then, as the trigger *h* passes out of engagement with the tappet, the tractile spring complementary to the hammer will draw the same quickly back against the cross-bar in rear of the hammer shank so as to enable the hammer to clear the rear end of the drill-rod.

With the construction shown it will be manifest that upon each revolution of the wheels P two blows will be struck against the rear end of the drill-rod, but it is obvious that by increasing the number of hammers with which the wheels P are equipped the number of the blows struck against the drill-rod on each rotation of the wheels P will also be increased.

It will be gathered from the foregoing that our novel machine is adapted to force the drill-rod step by step forwardly and to slowly turn the drill-rod about its axis inci-

dental to the said step by step forward movement. It will also be gathered that because of the mounting of the main frame A in a bed A³, the machine may be moved forwardly in a slidable manner as the drill advances in the hole that is being bored.

As before stated, the construction herein illustrated and described constitutes the best practical embodiment of our invention of which we are cognizant, but it is obvious that in the future practice of the invention such changes or modifications may be made as fairly fall within the scope of the invention as defined in the claims appended.

Having described our invention, what we claim and desire to secure by Letters-Patent, is:

1. The combination in a drilling machine of a primary driver, a drill-rod means deriving motion from the primary driver for turning the drill-rod about its axis, wheels connected with and adapted to be rotated by the primary driver, a cross-bar connected with the said wheels, a hammer having a shank arranged between the wheels and provided with arms journaled in the wheels and also having a trigger on one of said arms, a spring for yieldingly holding the hammer shank against the said cross-bar and for returning the shank to said position, and a fixed tappet arranged in the path of the hammer trigger and adapted to move the hammer shank

away from the said cross-bar to strike the drill-rod incidental to the rotation of the wheels.

2. The combination in a drilling machine, of rotary means provided with a stop or abutment, a hammer carried by said means and adapted to swing thereon and having a trigger, a spring for normally holding the hammer against said stop or abutment on the rotary means, and a tappet arranged in the path of the hammer trigger, for the purpose set forth.

3. The combination in a drilling machine of a primary driver, a worm screw connected therewith, a support, a sectional boxing journaled in the support and having a bore of angular form in cross-section, a sectional worm wheel the sections of which are fixed on the sections of the boxing; said worm wheel being intermeshed with the said worm screw, and a cap arranged over the sectional boxing and detachably connected to the said support, for the purpose set forth.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

WILLIAM C. BROWN.
THOMAS JOHNSON.

Witnesses:

STANLEY JOHNSON,
OSCAR HOWARD.