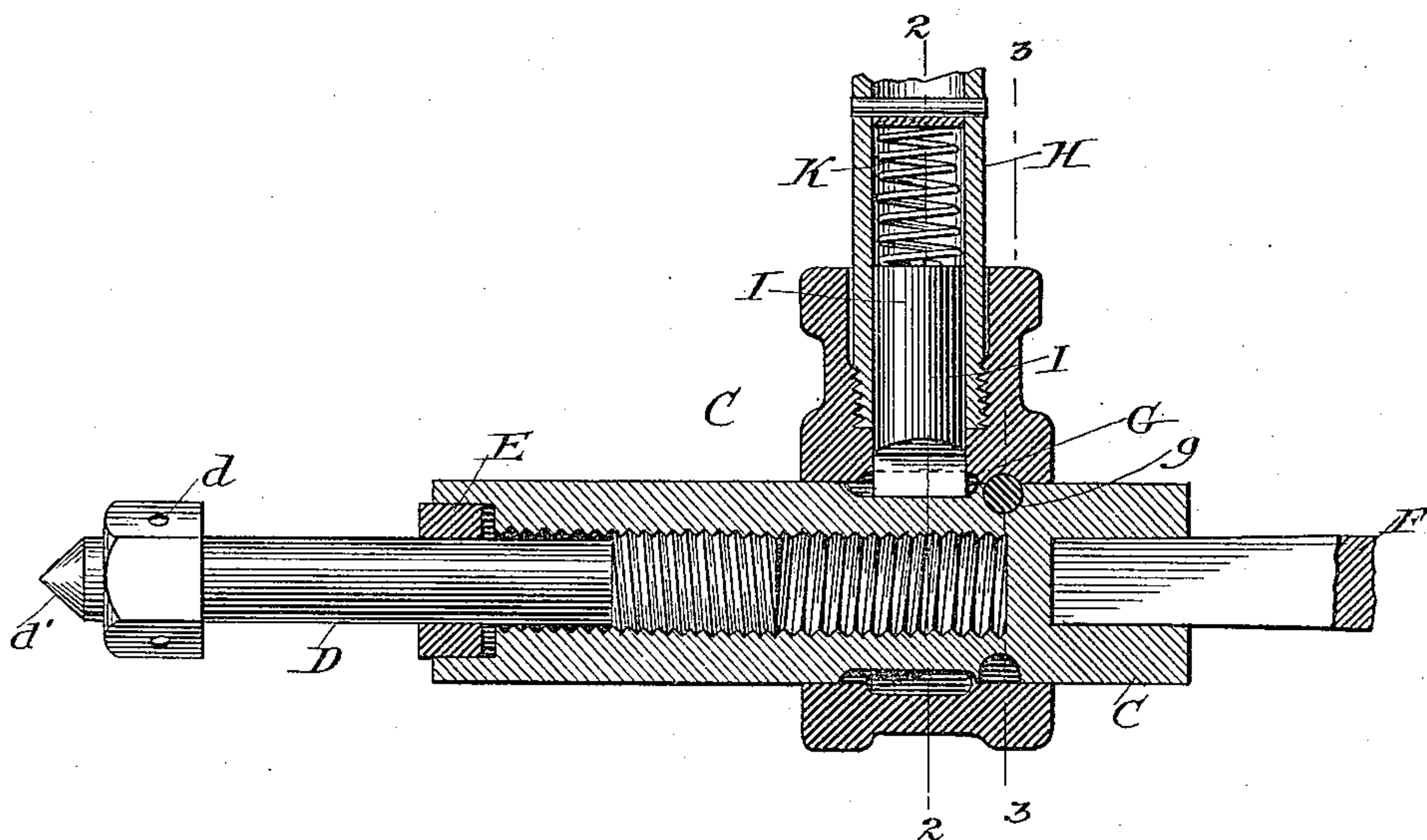


(No Model.)

A. L. STANFORD.
HAND METAL DRILL.

No. 442,647.

Patented Dec. 16, 1890.



Witnesses:
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UNITED STATES PATENT OFFICE.

ARTHUR L. STANFORD, OF EVANSTON, ILLINOIS.

HAND METAL-DRILL.

SPECIFICATION forming part of Letters Patent No. 442,647, dated December 16, 1890.

Application filed June 19, 1890. Serial No. 355,945. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR L. STANFORD, of Evanston, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Hand Metal-Drills, of which the following is a specification.

The object of my invention is to improve the construction of hand-drills for boring metal, particularly railroad-rails; and the invention consists in the features and combinations hereinafter described and claimed.

The accompanying drawing represents a longitudinal section of my improved hand-drill detached from its frame.

C is the drill-stock, and *c* ratchets thereon; D, the feed-screw, *d* a nut thereon, and *d'* the pointed end thereof; E, a collar or annular ring on the feed-screw; F, the drill-bit; G, a collar fitting over the drill-stock, and *g* a pin holding the same in place; H, the drill-handle; I, a dog or clutch engaging in the ratchets of the drill-stock, and K a spring on the clutch.

In making my improved frame for drilling railroad-rails I secure a pivot-plate on the side opposite to or parallel with the rail. This plate is provided with a series of conical depressions adapted to receive the pointed end of the feed-screw. This enables the drill to be moved along and turned at any point desired between the arms. The end of each arm is hooked or turned over so as to grasp the outer base or flange of the rail, and a sliding clamp is mounted on each arm to engage with and hold the flange of the rail from the inner side. This clamp may be brought into position to engage with the flange of the rail in any convenient way, and the pressure of the drill-bit against the rail, pushing it outward, renders the use of any additional device to hold it in place unnecessary.

Instead of mounting a separate ratchet-wheel on the drill-stock I form ratchets integral therewith at the place where the handle-collar is desired to be secured. This greatly simplifies and cheapens the construction, renders the device more compact, and provides a very desirable and efficient form of ratchet. Of course the drill-stock is bored from one end to receive the feed-screw and from the other end to receive the drill-bit.

The feed-screw, adapted to fit into the drill-stock, is externally threaded for a portion of its length, the part extending out of the stock being smooth. This threaded portion is adapted to engage with corresponding internal threads in the drill-stock. The outer end of the screw is pointed to adapt it to engage with the depressions in the bearing-plate of the frame. At or near the pointed end of the feed-screw, or at any convenient place on its outer portion, is a nut or other enlargement to which a wrench may be applied, or which may be turned by a rod or pin in its holes. In this way the feed-screw may be screwed into the drill-stock or taken out therefrom, as desired.

A collar or annular ring is mounted on the smooth portion of the feed-screw and adapted to fit snugly into the end of the drill-stock, the bore of the stock being suitably enlarged at this point. This collar, fitting tightly upon the plain portion of the feed-screw and in the end of the drill-stock, operates as a very secure protection of the threaded portion of the feed-screw against sand, dust, or other substances.

The turning or operation of the drill-stock causes the drill-bit, fitted into the stock, to bore into or through the rail or metal to be drilled. This turning is effected through a collar fitting over the ratcheted portion of the drill-stock, having an extension at one side and an operating rod or handle inserted therein, as hereinafter described. This collar is preferably held in place by a pin passing through it and the drill-stock, the hole inside being partially formed in one and partially in the other, the part in the drill-stock being a mere annular groove around the stock.

The operating-handle inserted in the extension of this collar is hollow, at least in its lower portion, and is provided with external screw-threads to engage with internal screw-threads in the collar's extended portion. In this way it is readily secured and held in place.

A dog or clutch is fitted in the lower end of the operating-handle in position to engage with the ratchets of the drill-stock, and by means of this the handle is readily locked in fixed position in one direction while remaining free to be moved in the other direction to

operate the drill. Above this clutch, but also in the hollow portion of the operating-handle, is a coil-spring adapted to press against the clutch to hold it firmly down on the ratcheted portion of the drill-stock. If the handle is in the form of a pipe, hollow throughout, this spring may be held down, so as to constantly be in contact with the clutch, by a pin passing through the pipe or in any other convenient way.

As will be readily seen, the novel and important feature of my invention consists in tightly fitting an annular ring over the smooth portion of the feed-screw and into the enlarged bore in the drill-stock for protecting the screw mechanism against sand, dust, &c. It will therefore be understood that I do not intend to limit myself to other forms or features, or to the use of this feature in the specific form shown. On the contrary, I intend to omit immaterial parts, to vary the form and construction of other parts or to use equivalents therefor, as circumstances may render expedient; and while I expect to use my improved drill primarily in the work of drilling railroad-rails, I also intend to employ it

in any other work to which it may be applicable.

I am aware of the Williams patent of May 13, 1873, and the Loehner patent of February 8, 1881; but in each of these patents an additional device, a wedge or screw, is employed to hold the clamp in place, while in my drill the clamp is held solely by the pressure of the drill-bit against the rail.

I claim—

In a hand-drill, the combination, with a hollow drill-stock provided with internal screw-threads and having its bore enlarged at its outer end, of a feed-screw having external screw-threads to engage with the threads of the stock and a smooth portion to extend out from the stock, and an annular ring on the smooth portion of the feed-screw fitting snugly into the enlarged bore of the drill-stock when in operation, substantially as described.

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