R. H. STEARNS.

ARBOR FOR SHELL REAMERS.

APPLICATION FILED JAN. 2, 1909.

939,345.

Patented Nov. 9, 1909.

Fig. 1.

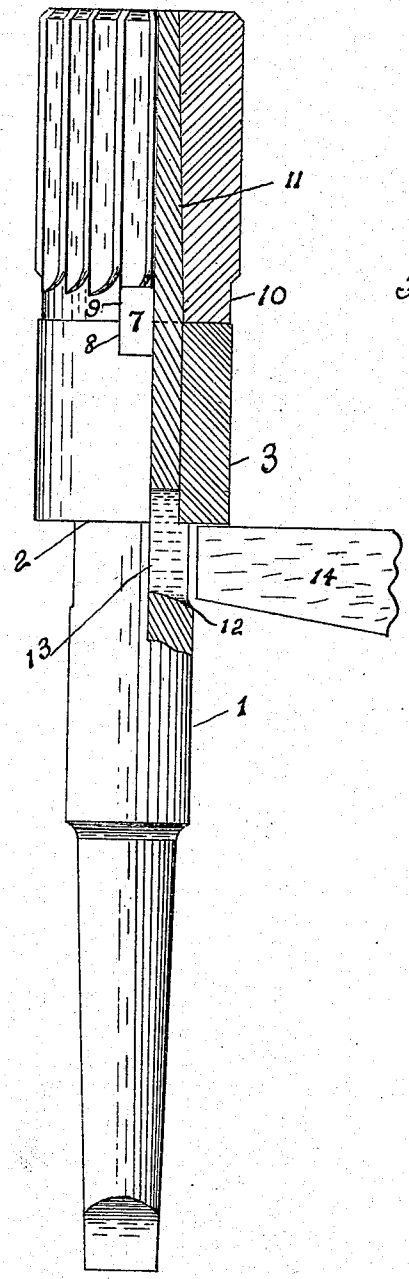
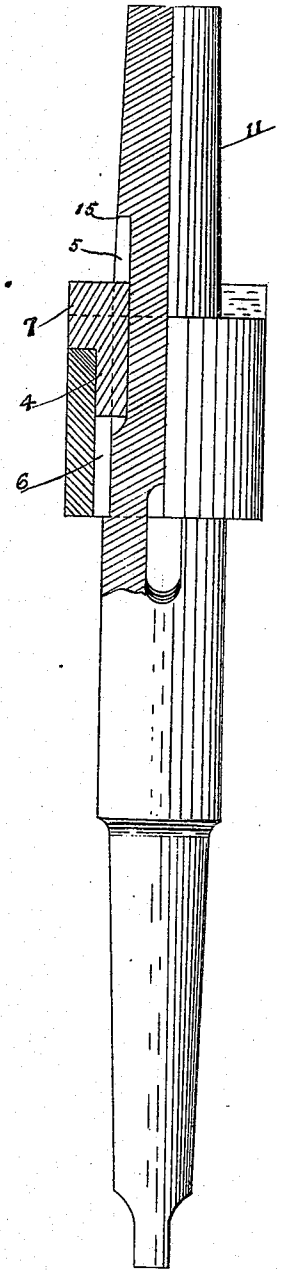


Fig. 2.



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ROSWELL H. STEARNS, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO MORSE TWIST DRILL AND MACHINE CO., OF NEW BEDFORD, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

ARBOR FOR SHELL-REAMERS.

939,345. Specification of Letters Patent. Patented Nov. 9, 1909.

Application filed January 2, 1909. Serial No. 470,286.

To all whom it may concern:

Be it known that I, ROSWELL H. STEARNS, a citizen of the United States, residing at Milwaukee, county of Milwaukee, and State of Wisconsin, have invented new and useful Improvements in Arbors for Shell-Reamers, of which the following is a specification.

My invention relates to improvements in arbors for shell reamers.

In this class of tools, the shell is fitted to a conically tapered arbor, the excessive strains to which the tool is subjected making it necessary that the shell be accurately fitted and supported by the arbor, which is therefore tapered and driven into the shell until the parts are firmly bound or wedged together. Even then the interlocking key lugs provided in ordinary shop practice for locking the shell against rotation upon the arbor, are sheared off under strain and the tool destroyed. The shells also become so firmly bound to the arbor as to make their removal difficult, and injuries to the tool and arbor while removing the shell are common.

The object of my invention, therefore, is to provide more effective means for locking the shell and arbor together, whereby the danger of breakage or injury to the parts is avoided.

A further object of my invention is to facilitate the removal of the shell without damage to either the arbor or the shell and without any considerable loss of time on the part of the operator.

In the following description, reference is had to the accompanying drawings, in which—

Figure 1 is an elevation of my invention with a portion of the arbor, shell and releasing collar broken away in longitudinal section. Fig. 2 is a similar view drawn at right angles to that of Fig. 1, with the shell removed.

Like parts are identified by the same reference characters in both views.

The arbor stem 1 is reduced at 2, forming an abrupt shoulder against which a releasing collar 3, which encircles the reduced portion of the arbor, is seated. This collar is keyed to the arbor by a key 4, which slides in a key way 5 formed in the arbor. This key extends into a channel or key way 6 in the collar, with a wider portion 7 fitting a notch 8 in the outer end of the collar and projecting beyond the end of the collar to enter a notch 9 formed in the inner end of the reamer shell 10. That portion of the key which enters the shell is therefore supported from two sides, viz.—from the side of collar engagement and from the side of arbor engagement, a shearing of the key being therefore rendered substantially impossible.

The shell 10 is fitted to the tapered portion 11 of the arbor, and is driven or forced into place in the usual manner, but with the key 4 engaging in notch 9. To provide for removing the shell, a drift slot 12 is formed in the arbor and provided with a rounded inner wall 13, as clearly shown in Fig. 1. The releasing collar overlaps this drift way sufficiently, so that by driving in a releasing wedge 14, the collar is forced outwardly, carrying the shell with it, the key way 5 in the arbor being of sufficient length to allow the collar to move sufficiently to completely loosen the shell. The key, however, prevents the collar from following the shell beyond the point where the key engages the end of the key way 5.

With the above described construction, it will be obvious that before the shell can turn on the arbor, it must either shear the key throughout its length, both as to the part directly engaged and as to the part which connects the collar with the arbor, or it must shear the key at right angles along the surface of the arbor and also along the abutting end 15 of the collar, but either of these shearing movements is regarded as impossible.

The terms and expressions used in this description and in the appended claims are used for the purpose of exact and clear description and not of limitation, as I recognize the possibility of various modifications within the scope of my generic invention, and nothing herein contained is intended as excluding from the field of the invention here disclosed any mechanical equivalent, either for the combination as a whole, or any of its parts.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a device of the described class, the combination of an arbor provided with a transverse slot and a longitudinally extend-

ing key way, a collar seated upon the arbor and adapted to partially cover said slot, said collar having a key way in its inner surface, a shell fitted to said arbor with one end abutting the collar, and a key in said key ways, connecting the collar and shell with the arbor and the collar and shell with each other.

2. In a device of the described class, the combination of an arbor provided with a transverse slot and a longitudinally extending key way, a longitudinally movable member mounted upon the arbor, to partially cover the key way and slot, and provided with an internal key way and notched end portion coincident with the key ways, a shell fitted to the arbor with its inner end abutting said movable member, and having a notch registering with the arbor key way and with the notch in said movable member, and a key fitted to said key ways and notches, said arbor key way being of sufficient length to permit a limited outward movement of the collar sufficient to loosen the shell.

3. In a device of the described class, the combination of an arbor, a shell adapted to fit one end thereof, a member mounted upon the arbor and longitudinally movable thereon, a key having a concealed portion slidingly mounted in channels in said member and in the arbor, and provided with a wider portion engaging notches in the abutting ends of said member and the shell, and means for actuating said member to push the shell longitudinally along the arbor.

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

ROSWELL H. STEARNS.

Witnesses:
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