

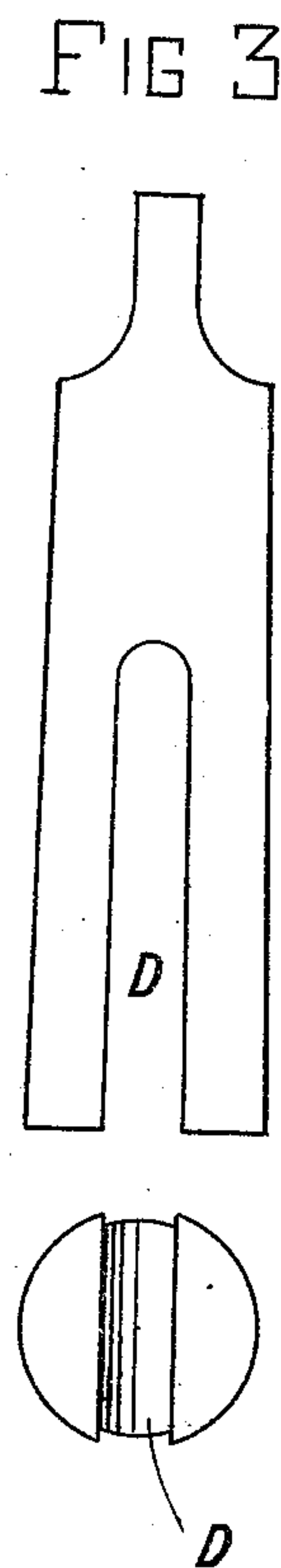
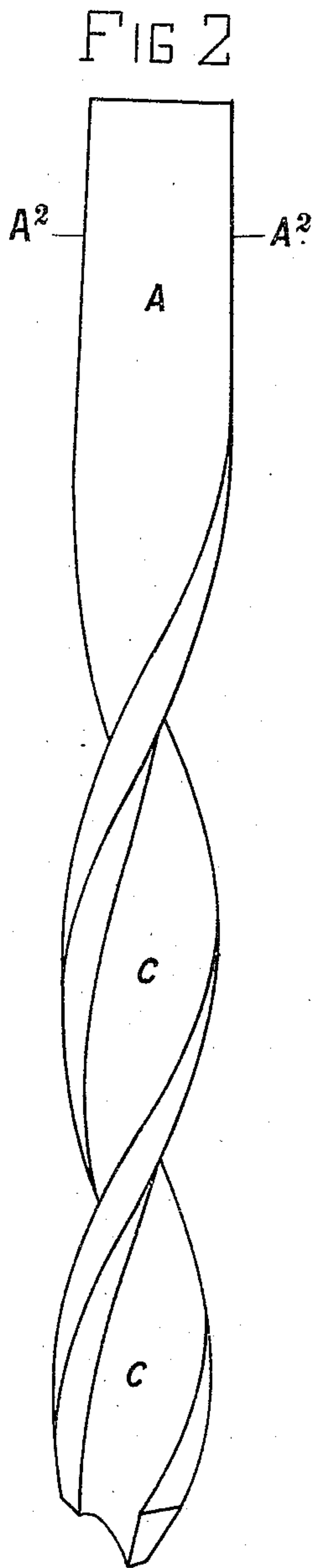
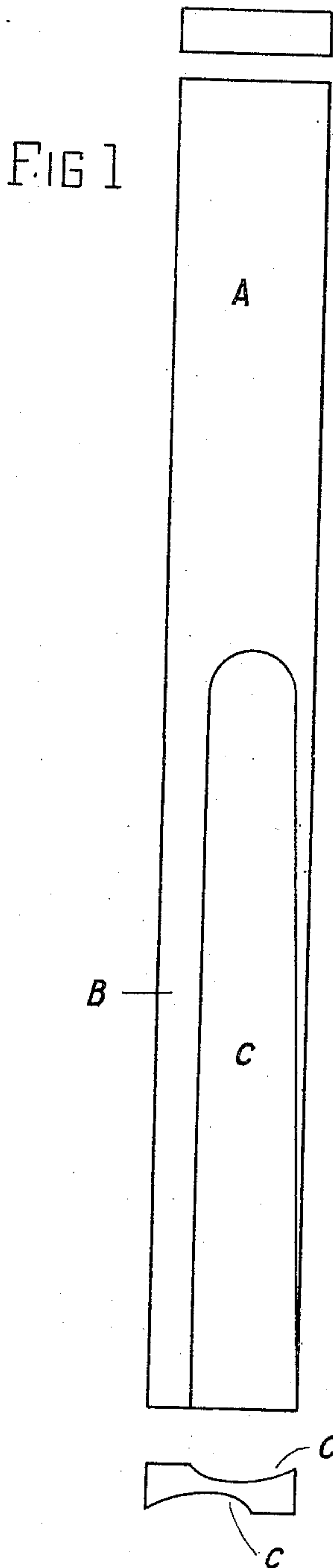
J. WING & B. O'REILLY.

TWIST DRILL.

APPLICATION FILED FEB. 9, 1909.

953,883.

Patented Apr. 5, 1910.



WITNESSES
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JAMES WING AND BERNARD O'REILLY, OF SHEFFIELD, ENGLAND.

TWIST-DRILL.

953,883.

Specification of Letters Patent.

Patented Apr. 5, 1910.

Application filed February 9, 1909. Serial No. 476,920.

To all whom it may concern:

Be it known that we, JAMES WING and BERNARD O'REILLY, subjects of the King of Great Britain and Ireland, residing at St. Mary's Works, Penistone Road, Sheffield, county of York, England, have invented certain new and useful Improvements in Twist-Drills, (for which we have applied for Letters Patent in Great Britain, No. 16143, dated July 30, 1908,) of which the following is a specification, reference being had to the accompanying drawing.

This invention relates more particularly to drills which are constructed by twisting a flat (or approximately flat) bar of steel to the required helical shape and to a separable and interchangeable shank which may be common to a number of drills.

The chief object of the invention is economy, both in the manufacture, and also in the use of twist drills; the first being obtained by twisting the helical portion of the drill from a flat or preferably grooved bar of steel, instead of cutting, grooving or milling the spiral grooves from a solid bar, or from a partially formed spiral bar; the second object namely economy in use by our improved construction, is found in the use of a separable interchangeable shank, by which in the case of broken or damaged drills the loss of a valuable shank portion is avoided, instead of it becoming scrap as in the ordinary twist drills.

The sheet of drawings accompanying this specification illustrates our invention.

Figure 1, represents a length of flat steel with a groove on each side, shown in the end view. Fig. 2, the same bar with the grooved portion twisted into helical configuration. Fig. 3, the separable shank, and end view of same.

The shank portion A, of the bar, Fig. 1, is left in its flat shape, but is made slightly tapering upon its edges A², to conform to the "Morse" or other standard taper, and we also prefer to give a slight taper to the flat sides of same to a prearranged standard gage. The part B, which is to be twisted may be flat but as the result of experience

we prepare this part before twisting with a groove C, down each of its flat sides. Such grooves are broad and shallow as shown in the end view Fig. 1, reaching from one edge of the bar (for example) to within a third of its width from the other edge, or thereabout, and becoming shallower toward the shank. These grooves may be produced by rolling, milling, or other preferred process, and when the bar is twisted by the application of force applied in any approved manner, the grooves produce a cutting edge at the desired angle and leave the maximum of strength at the back to sustain the torsional strain occurring during drilling.

The detachable shank is shown in Fig. 3; it is of tapered configuration to conform to the standard tapers of the several sockets in use, and is provided with a slightly tapered open side slot D, into which the tapering flat end of the drill will fit but leaving a vacant space between the end of the drill and the bottom of the slot D.

When placed in the socket of a drilling machine spindle, the drill is held perfectly true and secure.

We are aware that to produce the spiral part of drills by twisting the material to the desired form in contradistinction to cutting the grooves from the solid bar is not in itself novel, and we do not seek to claim such "*per se*".

Having now particularly described our said invention we declare that what we claim, is:—

A twist drill comprising a flat bar having its lower portion twisted into helical form and having its upper portion flat and slightly tapering upon its flat sides and edges, and an interchangeable shank having an open sided tapering recess to receive said upper portion.

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

JAMES WING.

BERNARD O'REILLY.

Witnesses:

ENSOR D. DRURY,

BERNARD E. DRURY.