March 12, 1929. C. S. THOMAS 1,705,038

TOOL COUPLING

Filed March 8, 1927

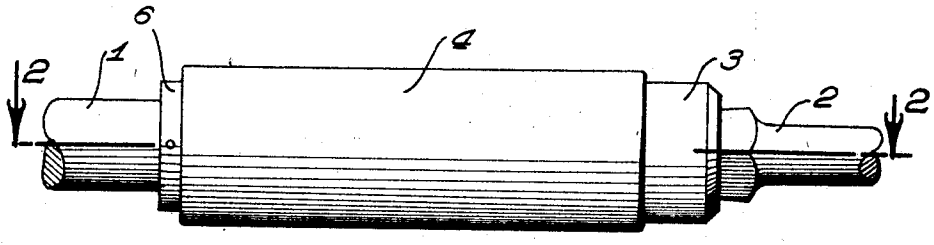


FIG. 1

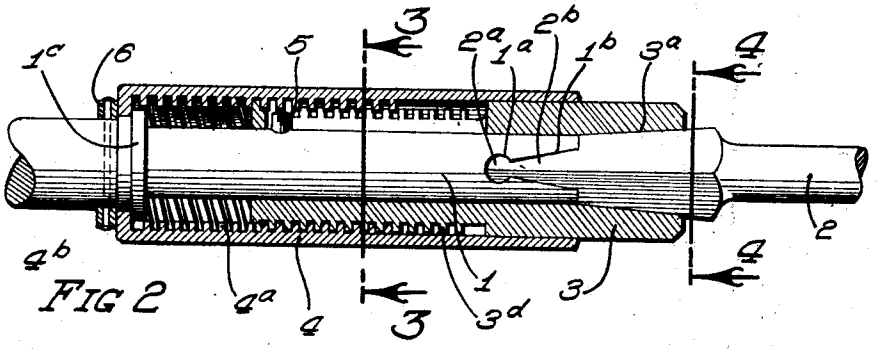


FIG 2

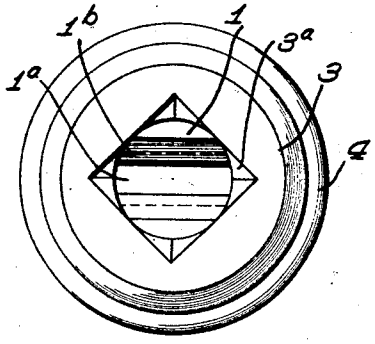


FIG. 4

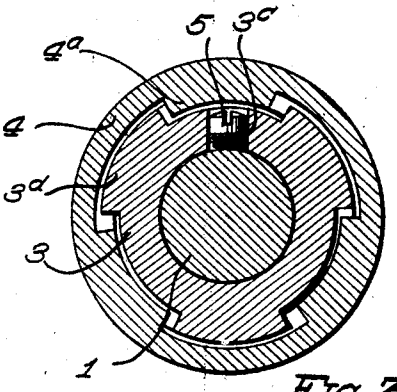


FIG. 3

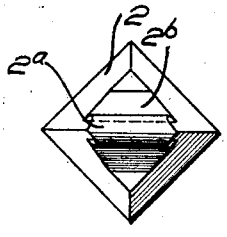


FIG. 5

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UNITED STATES PATENT OFFICE.

CHARLES S. THOMAS, OF SAN DIEGO, CALIFORNIA.

TOOL COUPLING.

Application filed March 8, 1927. Serial No. 173,630.

My invention relates to couplings, more particularly to coupling means for tools such as braces and bits or the like, and the objects of my invention are: first, to provide a device of this class in which the tool may be easily and quickly clamped by the tool coupling, and easily and quickly released thereby; second, to provide a device of this class in which there are only a few parts and yet provide a rigid structure and substantial coupling; third, to provide a device of this class in which the tool will not loosen, but will be held rigidly and in alinement with the coupling even when roughly used; fourth, to provide a device of this class which provides a positive grip on the tool and will not permit its longitudinal or torsional movement; fifth, to provide a tool coupling of this class in which the parts may be made small enough so that it can readily follow an extension drill of ordinary size; sixth, to provide a device of this class in which there is a combination of thread and taper for rigidly clamping the tool members together, and seventh, to provide a device of this class which is economical of construction, strong, durable, and which will not readily deteriorate or get out of order.

With these and other objects in view, as will appear hereinafter, my invention consists of certain novel features of construction, combination and arrangement of parts and portions, as will be hereinafter described in detail and particularly set forth in the appended claims, reference being had to the accompanying drawings and to the characters of reference thereon, which form a part of this application, in which:

Figure 1 is a side elevational view of my tool coupling means, showing the tool in the coupling and in operative position; Fig. 2 is a longitudinal sectional view thereof through 2—2 of Fig. 1, showing some of the parts and portions in elevation to facilitate the illustration; Fig. 3 is a sectional view on an enlarged scale through 3—3 of Fig. 2, with parts and portions shown in elevation to facilitate the illustration; Fig. 4 is an end view from the line 4—4 of Fig. 2, with the bit or tool removed, and Fig. 5 is a rear end view of the tool.

Similar characters of reference refer to similar parts and portions throughout the several views of the drawings.

The brace shank member 1, bit member 2, inner sleeve member 3, outer sleeve member 4, pin member 5, and collar 6, constitute the principal parts and portions of my tool coupling.

The brace shank member 1 is a solid round member and may be connected with a standard rigid brace or ratchet brace or other tool, either hand or power driven. Near the extremity of the brace member 1 is a transverse round hole 1^a with a V-shaped, cutout portion 1^b extending to the extremity of the shank member, as shown best in Figs. 2 and 4 of the drawings. The end of the bit member 2 is tapered and square. Its extremity is cut away leaving a rounded portion 2^a and a flat, V-shaped portion 2^b, which coincides with the portions 1^a and 1^b, respectively, of the brace member 1, as shown best in Fig. 2 of the drawings. The inner sleeve member 3 fits snugly over the joint between the brace member 1 and the bit member 2 and has a square, tapered aperture 3^a at its extremity, which receives the tapered portion 3^a of the bit member 2. This square portion extends into the central circular hole 3^b, which extends the rest of the length of the sleeve. This inner sleeve member 3 is also provided with a slot 3^c, which is adapted to receive the pin 5, which pin 5 is rigidly secured in the shank 1. The slots 3^c and the pin 5 prevent the sleeve 3 from turning relative to the pin member, but permit it to be shifted longitudinally thereon. This sleeve 3 is provided with external threads 3^d, which are preferably square threads extending over a portion only of the exterior of said sleeve. The outer sleeve member 4 fits over the inner sleeve member 3 and has a threaded portion 4^a at the brace end, which is adapted to fit the threads 3^d on the sleeve 3. It is provided at the brace end with an internal annular flange 4^b, which is adapted to fit between a collar 1^c on the shank 1 and another collar 6 on said shank, thus permitting the sleeve 6 to revolve, but preventing its longitudinal movement. Therefore, by turning the sleeve 4 in one direction, the sleeve member 3 is moved inwardly to a position past the portion 2^a, whereupon the tool member 2 may be positioned by pressing the male portion of the tool transversely into the female portion of the shank. Then the sleeve 4 may be turned in the opposite direction, which will slide the sleeve member 3 endwise over the tapered portion of the tool 2 until it rigidly grips the tool member, providing a combination screw and tapered means for clamp-

ing the tool members together, forming a very effective, rigid tool coupling.

Though I have shown and described a particular construction, combination and arrangement of parts and portions, I do not wish to be limited to this particular construction, combination and arrangement, but desire to include in the scope of my invention, the construction, combination and arrangement substantially as set forth in the appended claims.

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

1. In a device of the class described, a brace shank provided with a dovetail female portion at one end, a tool provided with a tapered portion and with a male portion conforming to said female portion, an inner sleeve provided with an opening in one end conforming to the tapered portion of said tool and threaded externally, and a sleeve provided with internal threads adapted to fit on said external threads on said inner sleeve.

2. In a device of the class described, a brace shank provided with a dovetail female portion at one end, a tool provided with a tapered portion and with a male portion conforming to said female portion, an inner sleeve provided with an opening in one end conforming to the tapered portion of said tool and threaded externally, a sleeve provided with internal threads adapted to fit on said external threads on said inner sleeve, and slot and pin means in connection with said shank and said inner sleeve to prevent the turning of said sleeve relative to said shank.

3. In a device of the class described, a brace shank provided with a dovetail female portion at one end, a tool provided with a tapered portion and with a male portion conforming to said female portion, an inner sleeve provided with an opening in one end conforming to the tapered portion of said tool and threaded externally, a sleeve provided with internal threads adapted to fit on said external threads on said inner sleeve, slot and pin means in connection with said shank and said inner sleeve to prevent the turning of said sleeve relative to said shank, and collar means in connection with said shank and said outer sleeve for preventing the longitudinal movement of said outer sleeve on said shank but permitting its revoluble movement thereon.

4. In a device of the class described, a brace shank provided with a dovetail female portion at one end, a tool provided with a male portion conforming to said female portion, an inner sleeve provided with an opening in one end and threaded externally, a sleeve provided with internal threads adapted to fit on said external threads on said inner sleeve, and guide means in connection with said shank and said inner sleeve to prevent the turning of said inner sleeve relative to said shank.

5. In a device of the class described, a brace shank provided with a dovetail female portion at one end, a tool provided with a male portion conforming to said female portion, an externally threaded member in shiftable but non-rotatable relation with said brace shank and a revoluble non-longitudinally shiftable internally threaded sleeve member engaging the threads of the externally threaded member whereby the joint of said brace shank and tool may be readily engaged and disengaged.

6. In a means of the class described, a shank provided with a dovetail female portion, a tool provided with a conforming male portion adapted to fit and to be retained by said female portion, a sleeve portion around said shank adapted to engage said tool, an outer sleeve revolubly mounted on said shank and non-longitudinally shiftable relatively to said shank, said outer sleeve provided with internal threads, and an externally threaded portion slidable relative to said shank adapted to move said sleeve portion and the shank of said tool relative to each other.

In testimony whereof, I have hereunto set my hand at San Diego, California, this 25th day of February, 1927.

CHARLES S. THOMAS.