Dec. 18, 1928. 1,695,564

C. S. THOMAS

TOOL COUPLING DEVICE

Filed Feb. 26, 1927

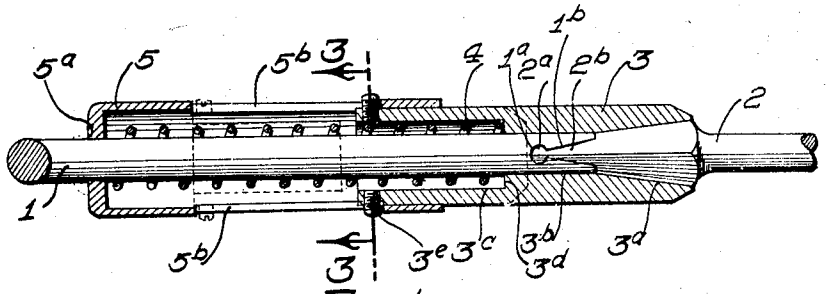


FIG. 1

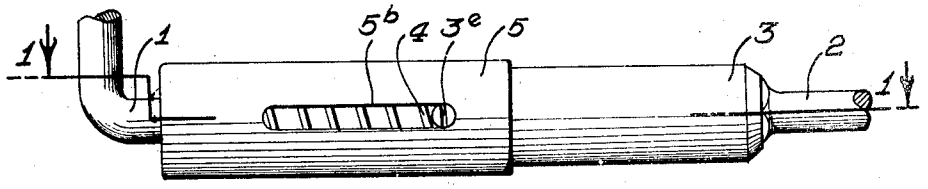


FIG. 2

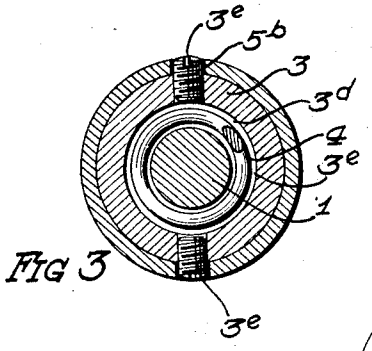


FIG 3

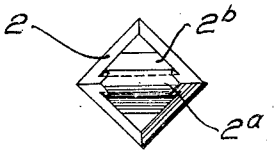


FIG. 4

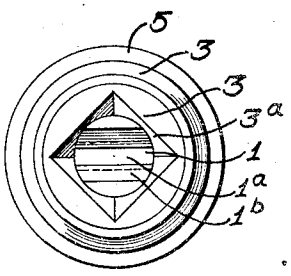


FIG. 5

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UNITED STATES PATENT OFFICE.

CHARLES S. THOMAS, OF SAN DIEGO, CALIFORNIA.

TOOL-COUPLING DEVICE.

Application filed February 26, 1927. Serial No. 171,222.

My invention relates to coupling devices, more particularly to coupling devices 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 by which a minimum of time is necessary to rigidly secure and release tool members; second, to provide a device of this class which will keep the tool rigidly secured, even when under heavy strain; third, to provide a device of this class which is compact, sturdy and economical of construction; fourth, to provide a novelly constructed coupling device, and fifth, to provide a device of this class which is durable, efficient in its action, 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, which form a part of this application, in which:

Figure 1 is a longitudinal sectional view of my tool coupling device through 1—1 of Fig. 2; Fig. 2 is an elevational view of my device at right angles to that of Fig. 1; Fig. 3 is an enlarged cross-sectional view through 3—3 of Fig. 1; Fig. 4 is a rear end view of the tool, and Fig. 5 is a front end view of my tool holding device with the tool removed.

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

The brace member 1, tool member 2, tool securing sleeve 3, spring member 4, and guide member 5, constitute the principal parts and portions of my tool coupling device.

The brace member 1 is the conventional type, except for the end portion, as best shown in Fig. 1 of the drawings, and is either power or hand driven. Near the extremity of the brace member 1 is a hole 1^a at right angles to the surface of the brace member. From this hole to the extremity of the brace member a V-shaped slot 1^b is cut out with its apex near the center of the hole, as shown best in Fig. 1 of the drawings. The end of the tool, of which only a fragment is shown, is square and tapered with portions cut out, leaving a cylindrical portion 2^a and a V-shaped portion 2^b, which fit within the apertures 1^a and 1^b, respectively. When the tool is fitted in these slots 1^a and 1^b, respectively, it is prevented from any torsional or end movement in relation to the member 1. A sleeve-shaped securing member 3 is slidably mounted on the brace 1 and secures the tool and brace shank together. This member is provided with a square aperture 3^a at its extremity, which receives the square portion of the tool. This aperture merges into a hole 3^b, which fits snugly around the brace member 1. This member 3 prevents all movement of the bit 2 in relation to the brace member 1 when it is in position, as shown by the solid lines in Fig. 1 of the drawings. The hole 3^b abruptly merges into the hole 3^c, which receives a spring 4, thereby making a shoulder 3^d. The spring 4 presses against the shoulder 3^d and the closed rear portion 5^a of the guide member 5. The tension of the spring keeps the member 3 over the joint between the brace and tool. Near the extremity of the member 3 are screws 3^e, which fit in slots 5^b of the member 5 and keep the spring from pushing the member 3 too far. It will be noted that pins or lugs, which are an integral part of the member 3, may be used in place of the screws 3^e. The lugs or screws 3^e and the slots 5^b also serve the purpose of transferring the torsional strain of the securing member and the joint between the brace and tool to the outer guide member 5. The member 5 is cylindrical in shape, covers the spring 4 and a portion of the securing member 3, and is closed at 5^a, where it is welded or otherwise secured to the brace member 1. The inner wall of the member 5 fits snugly around the outer portion of the member 3 and, because of the lugs 3^e and the slots 5^b, keeps the member 3 from turning in relation to the member 5.

When it is desired to change the tool, the member 3 is forced against the tension of the spring 4 to the position shown by the dotted lines in Fig. 1 of the drawings and held there until the old tool is slipped out of the slots 1^a and 1^b and the new tool is slipped in. The member 3 is then released and the spring forces it to assume the position shown by the solid lines in Fig. 1 of the drawings.

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. A device of the class described, including a brace shank, a tool, a cutout portion in said shank, notched portions in said tool adapted to fit in said cutout portions of said shank, and rigid and shiftable sleeve means non-rotatably mounted on said brace shank and shiftable into non-rotatable engagement with said tool for rigidly securing said shank to said tool.

2. A device of the class described, including a brace shank, a tool, a cutout portion in said shank, notched portions in said tool adapted to fit in said cutout portions of said shank, means for rigidly securing said shank to said tool, said securing means consisting of a sleeve slidably and non-rotatably mounted on said shank and adapted to fit over the joint between and engage both said shank and tool, and resilient means tending to hold said securing means in operating position.

3. A device of the class described, including a brace shank, a tool, a joint between said tool and shank locked only against torsional and end movement of the tool in relation to the shank, and a slidably non-rotatably mounted sleeve, said sleeve being adapted to slide over said joint and engage both shank and tool and prevent all movement of the tool in relation to the shank.

4. A device of the class described, including a brace shank, a tool, a joint between said tool and shank locked only against torsional and end movement of the tool in relation to the shank, a slidably mounted sleeve, said sleeve being adapted to slide over said joint and engage both shank and tool, resilient means tending to hold said sleeve over said joint, a casing and guiding means rigidly secured to said shank, and connecting means between said casing and sleeve member, said connecting means locked against torsional movement of the sleeve member in relation to the casing.

5. A device of the class described, including a brace shank, a tool, a dovetail joint between said tool and shank locked only against torsional and end movement of the tool in relation to the shank, a slidably mounted sleeve, said sleeve being adapted to slide over said joint and engage both brace shank and tool and prevent all movement of the tool in relation to the shank, and a sleeve rigidly secured to said shank in which said slidably mounted sleeve is reciprocally mounted.

6. In a device of the class described, a brace shank having a dovetail recess at its end, a tool with a conforming shank portion adapted to fit said recess, and a pair of telescopic members positioned around said shank and limited against separation, one of said members being rigidly secured to said shank and the other adapted to slide over the joint between said shank and said tool.

7. In a device of the class described, a brace shank having a dovetail recess at its end, a tool with a conforming shank portion adapted to fit said recess, a pair of telescopic members positioned around said shank and limited against separation, one of said members being rigidly secured to said shank and the other adapted to slide over the joint between said shank and said tool, and a compression spring positioned within said telescopic members adapted normally to force said one telescopic member over said joint.

In testimony whereof, I have hereunto set my hand at San Diego, California, this 17th day of February, 1927.

CHARLES S. THOMAS.