Nov. 20, 1923 1,474,404

I. A. CHURCH

TOOL HOLDER

Filed Dec. 13, 1921

Fig. 1.

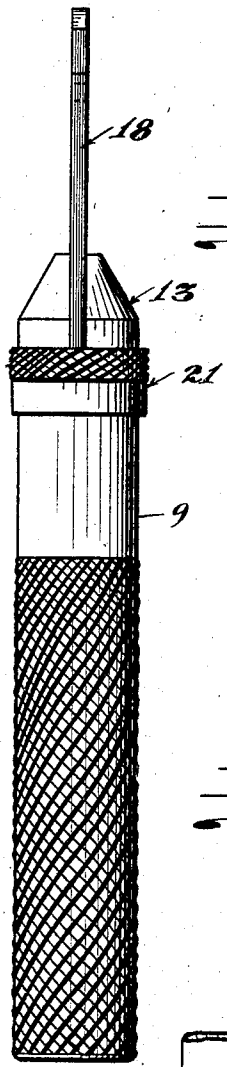


Fig. 2.

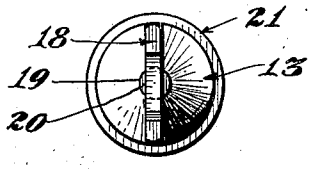


Fig. 3.

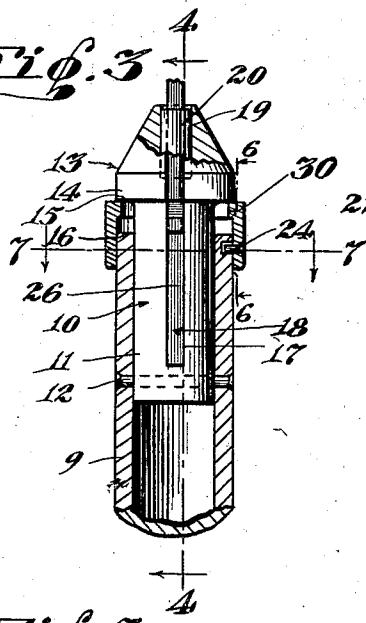


Fig. 4.

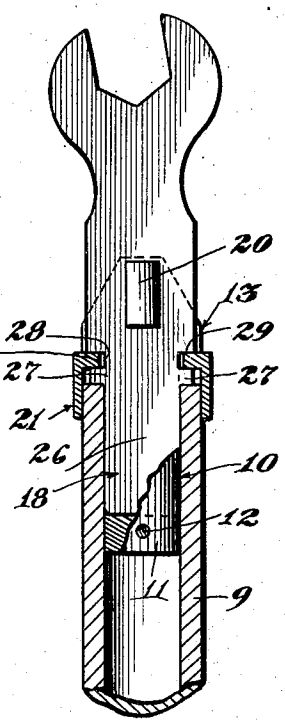


Fig. 5.

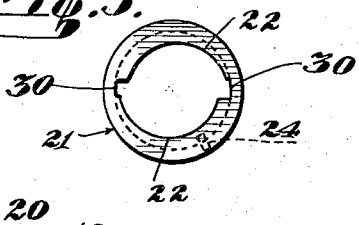


Fig. 6.

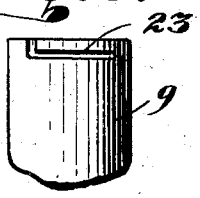


Fig. 7.

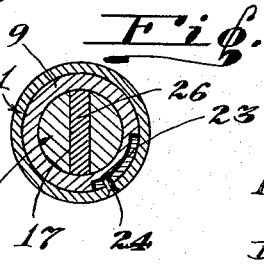
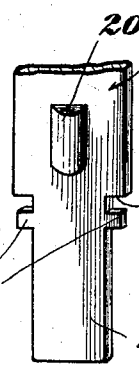


Fig. 8.



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UNITED STATES PATENT OFFICE.

IRA A. CHURCH, OF LONG BEACH, CALIFORNIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO UNIVERSAL METAL PRODUCTS COMPANY, OF LONG BEACH, CALIFORNIA, A CORPORATION OF CALIFORNIA.

TOOL HOLDER.

Application filed December 13, 1921. Serial No. 522,004.

To all whom it may concern:

Be it known that I, IRA A. CHURCH, a citizen of the United States, residing at Long Beach, in the county of Los Angeles and State of California, have invented new and useful Improvements in Tool Holders, of which the following is a specification.

This invention relates to a tool holder and particularly pertains to a means for detachably connecting a tool to a tool-handle.

An object of this invention is to provide a tool-handle with means whereby the handle may be readily attached to and removed from a tool-shank, so that a single tool-handle may serve for any one of a series or variety of tools having shanks adapted to be engaged by the tool-handle.

Another object is to provide a construction in a tool-handle of the above character, whereby a strong and substantial connection may be effected between the tool-handle and shank and the shank so engaged as to obviate any possibility of its turning in the tool-handle or being withdrawn therefrom and whereby strains imposed on the tool in any direction will have no tendency to loosen the tool relative to the shank.

With the foregoing objects in view, together with such other objects and advantages as may subsequently appear, my invention consists in the parts and in the construction and combination of parts or their equivalents, as hereinafter more fully described and claimed and set forth in the accompanying drawings, in which:

Fig. 1 is a view in side elevation of the tool-holder showing it applied to the tool-shank.

Fig. 2 is an end view of same.

Fig. 3 is a detail view in section and elevation, illustrating the socket portion of the tool-handle with a tool-shank engaged therein.

Fig. 4 is a detail in section and elevation as seen on the line 4—4 of Fig. 3.

Fig. 5 is a plan view of the locking sleeve.

Fig. 6 is a detail in elevation of the end of the tool-holder, as seen on the line 6—6 of Fig. 3 with the sleeve removed.

Fig. 7 is a horizontal section as seen on the line 7—7 of Fig. 3.

Fig. 8 is a detail in perspective, illustrating the form of the tool-shank, adapted to be employed with the tool-holder.

More specifically 9 indicates the tool-handle which is preferably tubular in form and one end of which is fitted with a socket member 10 comprising a body portion 11 which extends into the handle 9 and is rigidly secured to the latter by a pin 12 passing through the handle and body member as shown in Fig. 3 or by any other suitable fastening. The socket member projects beyond the end of the handle 9 and is formed with a head 13 having an enlargement 14 forming a shoulder 15 which is spaced from the end 16 of the tool-handle. The socket member 10 is formed with a transverse longitudinally extending slot 17 adapted to receive a flat shank 18 of a tool; the slot 17 preferably extending throughout the diameter of the socket member from a point adjacent to the inner end thereof and also extending transversely through the head portion 13. The head portion 13 is preferably tapered and is formed with a central bore 19 to receive protuberances 20 on the opposite sides of the shank 18 which serves to key the shank laterally to the socket member.

In carrying out my invention I provide a sleeve 21 which is mounted to turn on the handle 9 and is formed with an inturned flange 22 adapted to abut against the shoulder 15 on the socket member with the lower edge of the flange spaced from the shoulder 16 formed by the end of the handle 9.

Formed on the tool handle adjacent to the end 16 is a circumferential slot 23 over which the sleeve 21 extends and mounted on the sleeve is a pin 24 which projects into the slot. This pin and slot serve as a means for holding the sleeve against longitudinal movement on the handle and to maintain it in position against the shoulder 15 with the under side of the flange 22 spaced from the end 16, which flange 22 extends across the spaces on the opposite sides of the socket member formed by the slot 17. The pin and slot also serve as a means to limit turning movement of the sleeve to a partial revolution.

The tool shank 18 is formed with a flat stem portion 26 constituting the part of the shank to be inserted in the slot 17 and formed on the opposite edges of the portion 26 are opposed projections 27 which are designed to seat on the handle end shoulder

16, as shown in Fig. 4. Notches 28 are formed above the projections 27 into which the flange 22 is designed to extend; shoulders 29 forming a wall of the notches 28 being provided to bear on the flange 22 of the sleeve 21.

The flange 22 on the sleeve is formed with diametrically opposed slots 30 which may be aligned with the slot 17 so that when the shank portion 26 is inserted endwise in the slot the projections 27 may be passed to the underside of the flange 22 through the slots 30 to dispose the projections 27 in position to bear on the handle end shoulder 16. On turning the sleeve 21 the flange 22 will then move into the notches 28 and extend over the projections 27 so as to hold the shank against withdrawal.

As a means for clamping the sleeve and tool shank relative to each other the flange 22 has its arcuate inner margin formed on two eccentric arcs, extending between the slots 30, thus tapering the flange circumferentially of the sleeve, so as to provide the flange with a portion of gradually increasing width between each slot with the reduced part of each tapered flange portion terminating at one side of each slot in such manner that as the sleeve is turned to engage the flange 22 with the shank the flange will act as a wedge to grip the shank and thereby hold the sleeve against free turning on the handle when the tool shank is engaged thereby.

The slot 23 and pin 24 are so disposed that when the pin 24 abuts against one end of the slot the slots 30 in the flange 22 will be in alignment with the slot 17 of the socket member.

In the operation of the invention, to attach a tool shank to the handle the sleeve 21 is turned to dispose the slots 30 in line with the slot 17 whereupon the tool shank portion 26 is inserted longitudinally into the slot 17 from the end of the socket member to position the projections 27 against the handle end shoulder 16, whereupon the sleeve is turned a partial revolution to bring the flange 22 into engagement with the notches 28, as before described, thus securely locking the tool shank in the handle and holding it against withdrawal therefrom, the flange 22 extending over the projections 27 to hold the tool against being withdrawn, and the tapered faces of the flange effecting a wedge engagement with the shank. The shank portion 26 will then be disposed in the slot 17 with its edges abutting against the walls formed by the portion of the handle 9 extending over the spaces formed by the slot 17 in the socket member and the side faces of the shank will abut against the sides of the slot 17 thus effectively holding the shank against sideways or turning movement; the engagement of the protuberances 20 on the shank with the bore 19 serving to further secure the shank against lateral movement.

The tool shank may be formed with any desired form of tool, not necessary to be here shown, being particularly suitable for wrenches, screw-drivers, chisels and the like.

While I have shown and described a specific embodiment of my invention I do not limit myself to the exact construction set forth but may employ such changes and modifications as come within the scope of the appended claims.

I claim:

1. In a tool, a tool shank having a flat portion formed with opposed notches on its edges spaced from the end of the shank and formed with projections between the notches and the end of the shank, a socket member formed with a slot to receive the flat portion of the tool shank and formed with an external shoulder, a handle rigidy carrying said socket member, one end of said handle spaced from the shoulder on the socket member forming a shoulder on which the projections on the shank are adapted to seat, a sleeve turnable relatively to said socket member abutting against the shoulder on the latter and having an inturned flange spaced from the shoulder formed by the handle, said flange adapted to engage the notches on the tool shank when the projections on the latter are seated on the shoulder formed by the end of the handle, and means for holding the sleeve against longitudinal movement relatively to the socket member adapted to limit the turning movement of the sleeve to a partial revolution; said flange on the sleeve being formed with opposed slots arranged to align with the slot in the socket member when the sleeve is turned the limit of its movement in one direction to permit insertion of the tool in the slot of the socket member.

2. In a tool, a tubular tool handle having an end forming a shoulder, and having a circumferential slot below the shoulder, a sleeve rotatably mounted upon the handle; a pin fixed in the sleeve and extending into the circumferential slot; an inturned flange extending from the end of the sleeve and spaced from the shoulder and having diametrically opposed slots with the flange tapering circumferentially from the slots; a socket member rigidly mounted in the handle and having an enlargement forming a shoulder spaced from the shoulder formed by the end of the handle, the flange of the sleeve operating against the enlargement shoulder, said socket member being transversely longitudinally slotted; and a flat tool shank adapted to fit in the slot of the socket member and having projections to engage the shoulder on the end of the handle and having notches to receive the tapering portions of said sleeve flange.

3. In a tool, a tubular tool handle having an end forming a shoulder, a sleeve rotatably mounted upon the handle and having an inturned flange provided with diametrically opposed slots and flange portions, circumferentially tapered from the slots, means for holding the sleeve from endwise movement with the flange spaced from the shoulder, and a transversely longitudinally slotted socket member fixed in the handle and having an enlargement extending from the handle and fitting against the outer face of the flange.

IRA A. CHURCH.