Dec. 6, 1927. 1,651,362

J. R. AYOTTE

INTERCHANGEABLE WRENCH OR OTHER TOOL HOLDER

Filed Sept. 18, 1923

Fig. 2.

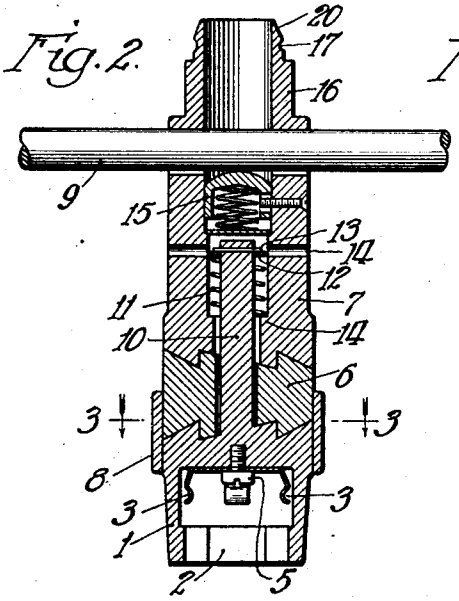


Fig. 1.

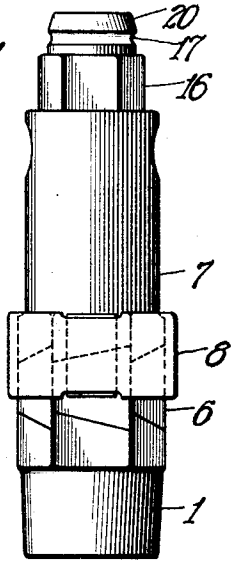


Fig. 5.

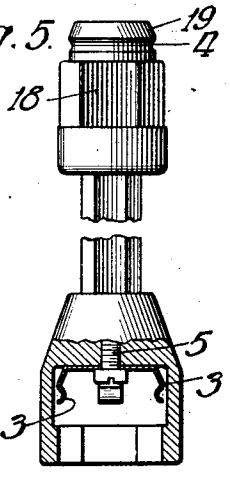


Fig. 4.

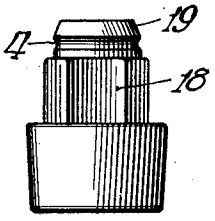


Fig. 3.

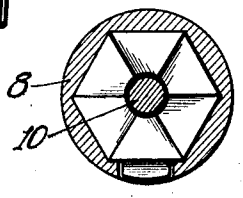


Fig. 6.

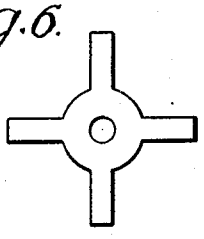


Fig. 7.

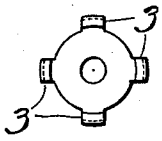
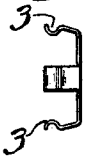


Fig. 8.



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UNITED STATES PATENT OFFICE.

JOSEPH RENÉ AYOTTE, OF CHICAGO, ILLINOIS.

INTERCHANGEABLE WRENCH OR OTHER TOOL HOLDER.

Application filed September 18, 1923. Serial No. 663,357.

This invention relates to wrenches or tool holders in general, but more particularly to those which are adapted to be extended, by the use of auxiliary socket pieces, in order to fit bolts or nuts of different sizes or for other purposes.

Generally stated, the object of the invention is to provide a novel and improved form of spring coupling by which to connect a socket piece or other tool to the tool holder, so that the wrench socket or other device may be easily detached, but whereby it will be securely held in place for use.

It is also an object to provide certain details and features of construction and combinations tending to increase the general efficiency and desirability of a wrench or other tool holder of this particular character.

To these and other useful ends the invention consists in matters hereinafter set forth and claimed and shown in the accompanying drawings in which—

Figure 1 is a side elevation of a wrench or tool holder embodying the principles of the invention.

Figure 2 is a vertical section of the tool holder, showing a portion of the transverse handle rod in place for rotation of the wrench or other tool.

Figure 3 is a transverse section on line 3—3 in Figure 2.

Figure 4 is a side elevation of a wrench socket for insertion in the lower end of the tool holder shown in Figures 1 and 2.

Figure 5 is a side elevation, partly in section, with certain portions broken away for convenience of illustration, of an extension socket for insertion in the lower end of the tool holder shown in Figures 1 and 2, thereby to in effect lengthen the tool holder for convenient operation.

Figure 6 is a plan of the sheet metal blank from which the spring shown in Figures 2 and 5 is made.

Figure 7 is a bottom view of said blank after the projections thereof have been bent into the desired shape.

Figure 8 is a side elevation of the completed spring shown in Figure 7.

As thus illustrated, the invention comprises a tool holder having a socket piece 1 the interior of which is polygonal at 2 to fit the nut or bolt head, or to fit the extension shown in Figure 4 or the extension shown in Figure 5, so that the tool holder may in effect be lengthened when necessary. The socket piece 1 has its interior provided with the spring shown in Figures 7 and 8, comprising bent end portions 3 for engagement with the circumferential groove 4 on the socket piece or extension shown in Figure 4, or the similar groove 4 shown in Figure 5 of the drawings. The spring is secured in place by a screw 5 which is inserted upwardly in the socket piece 1, so that the spring can be removed when necessary. The portions 3 are normally, of course, out of engagement with the sides of the socket piece, for clearance as shown is formed around the spring means above the polygonal portion 2, thus permitting the portions 3 to be pushed outward toward the sides of the socket. A double ratchet member 6 is interposed between the socket piece 1 and the body member 7 of the tool holder, and the shifting sleeve 8 is mounted to slide up and down thereon, it being observed that the ratchet member 6 and the portions immediately above and below are polygonal, said sleeve being made correspondingly polygonal inside to fit thereon. Consequently when the sleeve is down as shown in Figure 2 the member 6 and the socket piece 1 are locked together and the top ratchet will be operative by oscillation of the handle 9 to intermittently rotate the socket piece 1 in one direction; but when the sleeve 8 is raised, as shown in Figure 1, then the member 6 and the body portion 7 are locked together, and the lower ratchet will be operative to intermittently rotate the socket piece 1 in the opposite direction. The socket piece 1 has a stem 10 which carries a coil spring 11, and the washer 12 is held at the upper end of this stem by a pin 13, so that said spring is compressed between this washer and the shoulder 14 formed on the interior of the body portion 7 of the tool holder. However, said spring is adapted to yield when the ratchet teeth slide backward over each other,

in a manner that will be readily understood. An opening 14 is provided at each side of the tool holder for the insertion and removal of the pin 13, and a spring pressed member 15 is provided to frictionally hold the handle rod 9 in position for operation, which rod can be withdrawn when it is desired to pack the tool holder in a box. It will also be seen that the upper portion of the tool holder is provided with a polygonal end portion 16, and above this with a groove 17 like the groove 4 previously mentioned. Thus a detachable socket piece like the one shown at the bottom of Figure 5, or like the one shown in Figure 4, can be slipped over the upper end of the tool holder, above the rod 9, to connect any necessary or desired device to the upper end of the tool holder. The polygonal portions 18 shown in Figures 4 and 5 are adapted to fit the polygonal portion 2 of the tool holder socket, and the springs 3 hold the socket piece or extension in position for rotation by the ratchet; but a forcible pull on the extension or socket will easily detach it from the springs, when such is necessary or desirable. The socket pieces can have polygonal sockets of different sizes, to fit bolts or nuts of different sizes, very obviously, and the extension can be of different lengths so that the tool holder as a whole can in effect be lengthened in the desired manner. While wrench sockets are shown, it is obvious that the polygonal portions 2 and 18 and the springs 3 and the grooves 4 can be used as the coupling means for coupling any suitable tool or extension to the tool holder. The beveled edge portions 19 are formed to strike the lower ends of the springs 3 and crowd them outward, so that their lower end portions will then snap into the groove 4; and it will also be seen that a similar beveled edge portion 20 is provided for a similar purpose at the top of the tool holder.

What I claim as my invention is—

1. In a wrench or tool holder, the combination of a socket piece having inner cylindrical sides, means for rotating said socket piece, a sheet metal spring having integral and inwardly facing engaging portions radially disposed in said socket piece, spaced equidistant at more than two points on a circle struck from the axis of said socket piece, normally out of engagement with and a distance from the inner sides of the socket piece, with clearance in the socket between the inner cylindrical sides thereof and the outer sides of said engaging portions, to permit outward radial movement of said engaging portions, a tool or extension for insertion in said socket piece, means comprising a single axial screw to hold said spring portions in operative position, said tool or extension having an external groove to be engaged by said spring engaging portions, and said tool or extension and socket piece being relatively formed to prevent relative rotation between them, providing a restricted polygonal opening below said cylindrical sides, whereby rotation of the socket piece will rotate the tool or extension, said spring means being removable readily from said socket, said rotating means comprising a ratchet and a handle for the operation thereof while said spring portions are functioning to hold the tool holder in the socket.

2. In a wrench or tool holder, the combination of a socket piece having inner cylindrical sides, means for rotating said socket piece, a sheet metal spring having integral and inwardly facing engaging portions radially disposed in said socket piece, spaced equidistant at more than two points on a circle struck from the axis of said socket piece, normally out of engagement with and a distance from the inner sides of the socket piece, with clearance in the socket between the inner cylindrical sides thereof and the outer sides of said engaging portions, to permit outward radial movement of said engaging portions, a tool or extension for insertion in said socket piece, means comprising a single axial screw to hold said spring portions in operative position, said tool or extension having an external groove to be engaged by said spring engaging portions, and said tool or extension and socket piece being relatively formed to prevent relative rotation between them, providing a restricted polygonal opening below said cylindrical sides, whereby rotation of the socket piece will rotate the tool or extension, said spring means being removable readily from said socket, said tool having its outer end formed with a socket containing a spring similar to the one in said socket piece, so that another tool can be inserted in the extension thus provided.

3. In a wrench or tool holder, the combination of a socket piece having inner cylindrical sides, means for rotating said socket piece, a sheet metal spring having integral and inwardly facing engaging portions radially disposed in said socket piece, spaced equidistant at more than two points on a circle struck from the axis of said socket piece, normally out of engagement with and a distance from the inner sides of the socket piece, with clearance in the socket between the inner cylindrical sides thereof and the outer sides of said engaging portions, to permit outward radial movement of said engaging portions, a tool or extension for insertion in said socket piece, means comprising a single axial screw to hold said spring portions in operative position, said tool or extension having an external groove to be engaged by said spring engaging portions, and said tool or extension and socket

piece being relatively formed to prevent relative rotation between them, providing a restricted polygonal opening below said cylindrical sides, whereby rotation of the socket piece will rotate the tool or extension, said spring means being removable readily from said socket, said rotating means having an upper end portion which is formed like the portion of said tool which is inserted in said socket piece, whereby a similar socket piece can be applied to said upper end of the tool holder when necessary or desirable.

JOSEPH RENÉ AYOTTE.