J. H. McLAUGHLIN.

TOOL CHUCK.

APPLICATION FILED JULY 21, 1910.

992,572. Patented May 16, 1911.

Fig. 1.

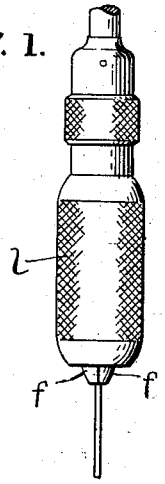


Fig. 2.

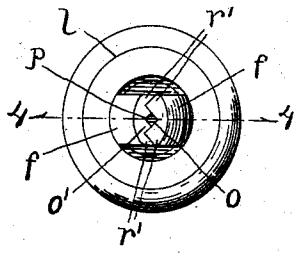


Fig. 3.

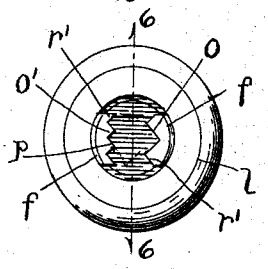


Fig. 8.

Fig. 7.

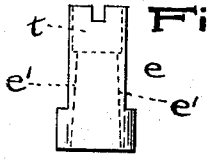


Fig. 5.

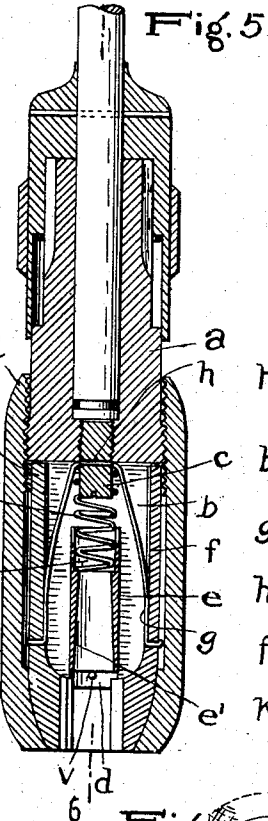


Fig. 4.

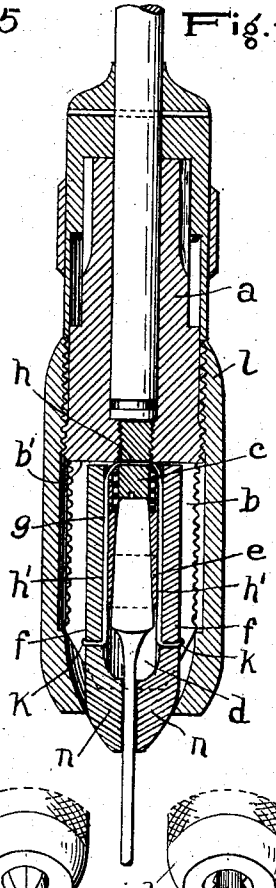


Fig. 6.

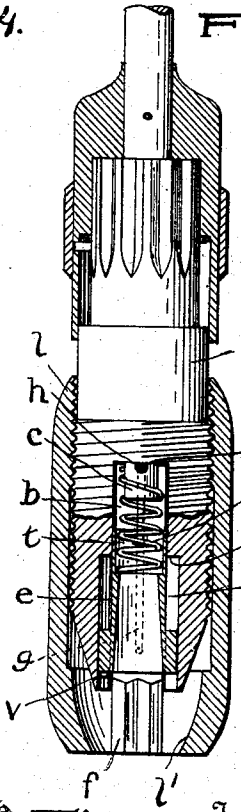


Fig. 9.

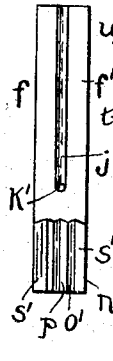


Fig. 10.

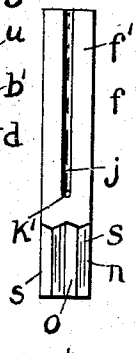


Fig. 11.

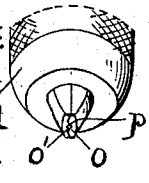
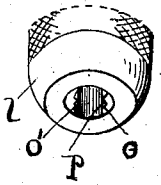


Fig. 12.



Witnesses

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UNITED STATES PATENT OFFICE.

JOSEPH H. McLAUGHLIN, OF MILLERS FALLS, MASSACHUSETTS.

TOOL-CHUCK.

992,572. Specification of Letters Patent. Patented May 16, 1911.

Application filed July 21, 1910. Serial No. 573,141.

To all whom it may concern:

Be it known that I, JOSEPH H. McLAUGHLIN, a citizen of the United States, resident of Millers Falls, in the county of Franklin and State of Massachusetts, have made a certain new and useful Invention in Tool-Chucks; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it appertains to make and use the invention, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 is a side view of my tool chuck, with the tool in place; Fig. 2 is a bottom plan view of the chuck, with the jaws adjusted to the limit of their inward movement; Fig. 3 is a similar view with the jaws adjusted to the limit of their outward movement; Fig. 4 is a central longitudinal section on the line 4—4, Fig. 2, showing the jaws gripping a tool having a small shank; Fig. 5 is a similar view showing the jaws adjusted to the limit of their outward movement; Fig. 6 is a partial section on the line 6—6, Fig. 5; Fig. 7 is a detail side view of the socket piece; Fig. 8 is a detail plan view of the same; Fig. 9 is a detail face view of one of the jaws; Fig. 10 is a similar view of the other jaw; Fig. 11 is a detail perspective view of the bottom portion of the chuck, with the jaws closed; and Fig. 12 is a similar view with the jaws open.

The invention has relation to tool chucks, being primarily designed for use with a ratchet brace such as is disclosed in my Patent 935,047, dated Sept. 28, 1909, but capable of use with any tool having a shank or stem detachably fitting in a chuck.

In the accompanying drawings, illustrating the invention, the letter *a*, designates the jaw carrying member of the chuck, in the case of a brace being the shank thereof, and formed with a central longitudinal slot *b*, a stud piece *c*, being located centrally of and having projection from the inner wall *b'*, of said slot.

The side walls of the slot *b*, are formed with opposite central grooves *d*, *d*, in which works a socket piece *e*, to be hereinafter described. Opposite jaws *f*, *f*, fit in said slot at the sides of said socket piece, said jaws having straight shank portions *f'*, *f'*, terminating at their inner free ends substantially at the inner wall *b'*, at the base of the slot and being held in separated relation to each other by means of a spring *g*. This spring has a transverse portion *g'*, located in a perforation *h*, at the base of the stud piece, and opposite branches *h'*, *h'*, located in grooves *j*, *j*, in the inner walls of the shanks of said jaws, said branches having outturned free end portions *k*, *k*, of a somewhat hooked character engaging perforations *k'*, *k'*, of said shanks and serving to hold the jaws from falling out of the slot when the rotatable head *l*, having threaded engagement with the jaw carrying member is unscrewed. This head *l*, is of the usual character, having an inward tapered or contracted throat *l'*, capable of engagement with the tapered ends of the jaws to force the jaws together. These jaws have opposite inward extensions *n*, *n*, at their outer ends, the inner faces of said extensions being formed one with a comparatively deep central angular longitudinal groove *o*, and the other with a central longitudinal rib extension *o'*, capable of fitting in said groove *o*, and having a central comparatively shallow longitudinal groove *p*, formed therein, both jaw pieces having lateral extensions *r*, *r'*, at each side of the groove *o*, and rib *o'*, respectively and are oppositely beveled to form longitudinal teeth *s*, *s*, at each side of the groove *o*, and longitudinal teeth *s'*, *s'*, at each side of the rib extension *o'*.

The formation of the jaw faces is designed to facilitate their engagement with round tool shanks of varying sizes. In the case of a small shank the jaws are forced together by rotation of the head until the rib extension *o'*, of one jaw enters the groove *o*, of the other jaw to a greater or less degree according to the size of the tool shank, whereby round tool shanks are capable of being firmly gripped without defacing or damaging the same although they may be quite small. The formation of the jaw faces with teeth *s*, *s*, and *s'*, *s'*, at each side, is designed to admit of a firm grip being taken upon square or polygonal shanks, and will be found efficient for this purpose.

The socket piece *e*, is of hollow or tubular character, having a central longitudinal seat extending therethrough and provided with inward tapering or wedge-form side walls *e'*, *e'*, for engagement with a squared wedge-form shank of a tool. At its inner end this socket piece is formed with a circular bearing recess *t*, in axial alinement with the seat

and somewhat larger in diameter than the inner end of said seat, a shoulder t', being formed at the junction of seat and recess, a coil spring u, fitting in said recess and bearing against said shoulder, said spring surrounding at its inner end portion the stud piece c, and acting to normally hold said socket piece away from the stud; the socket piece being capable of inward movement against the tension of the spring until it bears against the wall b', at the inner end of the slot, when the stud piece is received within the recess of the socket piece.

When a tool shank of squared character is inserted within the socket piece the tapering wedge-form walls of the shank will adjust themselves to the similarly formed walls of the socket piece until a close fit results, when the socket piece will be forced inward against the tension of its spring until the end of the tool shank bears against the end of the stud piece, thus preventing a tight wedging fit of the shank in its socket such as would make difficult the withdrawal of the shank. The jaws are then closed on the shank in the manner previously stated, when the tool is ready for use. The socket piece is held from escaping outward from the jaw carrying member by any suitable means, such for instance as the pin v.

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

1. A tool chuck having in combination a jaw carrying member provided with a longitudinal slot, opposite jaws located in said slot and having one a comparatively deep longitudinal groove and the other a longitudinal rib extension capable of fitting in said groove and provided with a comparatively shallow longitudinal groove, a spring device for holding the jaws in separated relation to each other, and a rotatable head having threaded engagement with the jaw carrying member and capable of forcing the jaws together.

2. A tool chuck having in combination a jaw carrying member provided with a longitudinal slot, opposite jaws located in said slot and having one a comparatively deep longitudinal groove and longitudinal teeth at the sides of said groove, and the other a longitudinal rib extension capable of fitting in said groove and provided with a comparatively shallow longitudinal groove, said other jaw having longitudinal teeth at the sides of said rib extension, a spring device for holding the jaws separated, and a rotatable head having threaded engagement with the jaw carrying member and capable of forcing the jaws together.

3. A tool chuck having in combination a jaw carrying member provided with a longitudinal slot, a stud piece located at the base of said slot and having a transverse perforation, a hollow socket piece working in said slot and having a tool shank seat extending therethrough and provided with tapered side walls, and a hollow inner extension, a coiled spring surrounding said stud piece and having a seat in said inner extension, opposite jaws located in said slot and having one a deep longitudinal groove and the other a longitudinal rib extension capable of fitting in said groove, and provided with a shallow longitudinal groove, said jaws having shanks having termination at their inner ends substantially at the base of said slot, said shanks having longitudinal grooves and perforations, and a spring having a transverse portion engaging the perforation of said stud piece and opposite branches located in the shank grooves and provided with outturned free ends engaging the shank perforations.

4. A tool chuck having in combination a jaw-carrying member provided with a longitudinal slot, a stud piece located at the base of said slot and having a transverse perforation, a hollow socket piece working in said slot and having a tool shank seat extending therethrough and provided with tapered side walls, and a hollow inner extension, a coiled spring surrounding said stud piece and having a seat in said inner extension, opposite jaws located in said slot and having shanks having termination at their inner ends substantially at the base of said slot, said shanks having longitudinal grooves and perforations, and a spring having a transverse portion engaging the perforation of said stud piece and opposite branches located in the shank grooves and provided with outturned free ends engaging the shank perforations.

In testimony whereof I affix my signature, in presence of two witnesses.

JOSEPH H. McLAUGHLIN.

Witnesses:
GERTRUDE L. WAITE,
ROBERT McLAUGHLIN.