C. H. KLEIN.

COMBINATION TOOL.

APPLICATION FILED MAY 27, 1918.

1,318,088. Patented Oct. 7, 1919.

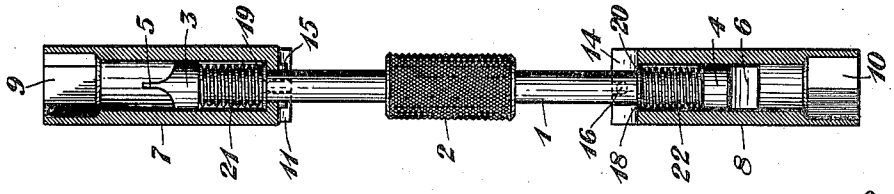


Fig. 2

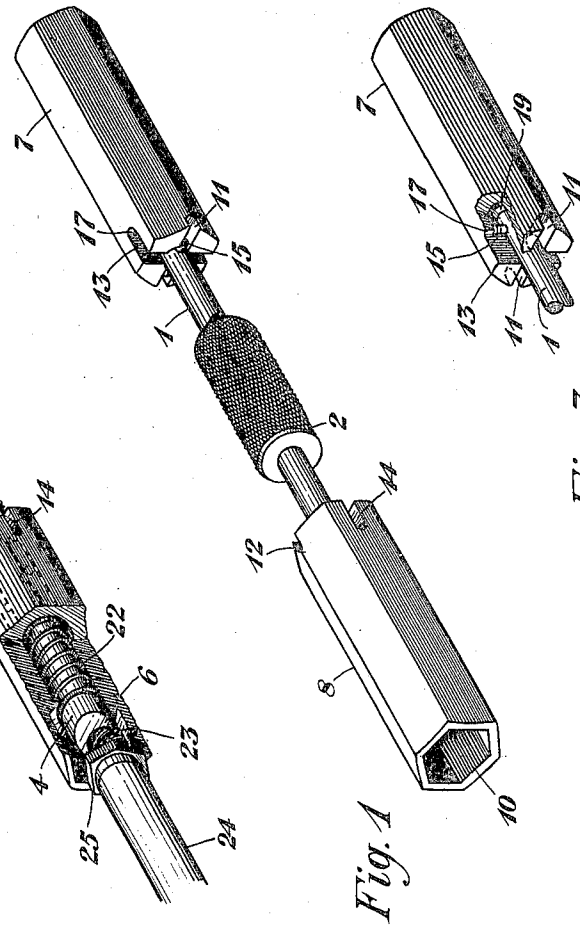


Fig. 1

Fig. 3

Fig. 4

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COMBINATION-TOOL.

1,318,088. Specification of Letters Patent. Patented Oct. 7, 1919.

Application filed May 27, 1918. Serial No. 236,884.

To all whom it may concern:

Be it known that I, CHARLES H. KLEIN, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented certain Improvements in Combination-Tools, of which the following is a specification.

This invention relates to a combination tool, and more especially to a device of this character wherein there are provided nut-engaging members and slot-engaging members.

One of the objects of this invention consists in the provision of a combination tool, which is more particularly adapted for use in connection with electrical equipment, where it is difficult to use a tool of ordinary construction owing to the close relation between the parts of the apparatus and the small size of the various nuts, bolts and screws employed.

Another object of the invention consists in the provision of a tool of this nature which carries a slot-engaging or screw-driver member on either end thereof, said members coöperating with nut-engaging or wrench-socket members which are preferably of different diameters.

A further object comprises the provision of a locking means for the slot-engaging and nut-engaging members, on either end of the tool, whereby the slot-engaging members and nut-engaging members may be operated in unison or to the exclusion of each other. Other and further objects of this invention will more fully appear hereinafter.

In the drawing forming a part of this specification, in which like characters designate like parts throughout, Figure 1 is an isometric view of the combination tool, Fig. 2 is a partly sectional elevation of said device, Fig. 3 is a detailed isometric view of one of the telescopic members showing a shoulder provided therein, and Fig. 4 is an isometric view showing the device applied to a fuse terminal.

The invention will now be more fully understood from the following description when taken in connection with the accompanying drawing in which is illustrated a preferred embodimet of this invention. In the drawing, 1 illustrates a hand portion or spindle provided with a nurled member 2 fixed to the center thereof. At the extremities of the hand portion or spindle 1 are provided enlarged members 3 and 4, having slot-engaging portions 5 and 6 to be used when the tool is employed as a screw-driver. Carried on the ends of the spindle 1 are telescopic sleeves 7 and 8. On one extremity of each of the telescopic members 7 and 8 nut-engaging members 9 and 10 are provided, and on the opposite extremities thereof depressions 11, 12 and 13, 14 are provided. The sleeves 7 and 8 are bored out to a diameter slightly larger than that of the members 3 and 4 throughout their length, except at the ends provided with the depressions 11, 12, 13 and 14, where the sleeves have shoulders 17 and 18 for the purpose hereinafter described. The depressions 13 and 14 are deeper than the depressions 11 and 12 so that they extend beyond the shoulders on the sleeves and enter the bored out portions thereof. Fixed to the spindle 1 are studs 15 and 16, which are adapted to coöperate with the depressions 11, 12, 13 and 14. Movable on the spindle 1, within the telescopic members, are collars 19 and 20 maintained in engagement with the shoulders 17 and 18 by means of springs 21 and 22, when the pins 15 and 16 are seated in the depressions 11 and 12.

As above stated the depressions 13 and 14 are of sufficient depth to extend beyond the shoulders 17 and 18 to the bored out portions of the sleeve so that when the pins 15 and 16 are turned out of the depressions 11 and 12 by pulling the sleeves 7 and 8 against the tension springs 21 and 22 and given a quarter turn, the pins will enter the depressions 13 and 14 and are then free to pass into the bored-out portions of the sleeves. In order to permit this action the pins 15 and 16 are made slightly shorter than the bored-out portions of the sleeve. In this position the sleeves may be pushed along the axis of the spindle 1 until they engage at the nurled portion 2, thereby bringing the screw or slot-engaging members 5 and 6 into such position that the device may be used as a screw-driver. When it is desired to use the device as a nut-wrench, the sleeves 7 and 8 may be turned along the spindle 1 in a direction away from the nurled portion 2 until the pins 15 and 16 emerge from the depressions

13 and 14, whereupon the sleeves may again be given a quarter turn and the pins permitted to seat themselves in the depressions 11 and 12, thus locking the sleeves upon the spindle. By grasping the nurled portion 2 the device may now be manipulated as a wrench as the sleeves 7 and 8 carrying the nut-engaging portions 9 and 10 are locked upon the spindle.

In a cable terminal box where the conductors contained in an underground cable are converted into aerial conductors, it is customary, after the conductors are fanned out from the cable, to connect them to binding posts and fuses, etc. It will be obvious that in a box of this character there is contained a large number of binding posts and fuses and that many of these are inaccessible to a tool of ordinary construction. The combination tool here set forth is particularly adaptable for work of this kind.

In the operation of this combination tool for manipulating a fuse terminal or binding post, as shown, for example, in Fig. 4, the member 8 is arranged in its unlocked position and in such position the slot-engaging member 6 is adapted to engage a slot 23 in the threaded portion of fuse 24. The threaded portion of the fuse terminal may be held by the member 6, while the wrench portion 10 of the member 8 is permitted to engage the nut 25 of the fuse 24, and the nut 25 rotated by manipulating the member 8 by hand. When it is desired to use the wrench portion 10 separately, the spindle 1 is rotated until the studs 16 fall in the depressions 14 of the telescopic member 8, and the spindle member and telescopic member are then pulled in opposite directions until the studs 16 are clear of the depressions 14. The spindle is again rotated until the studs slip into the depressions 12, where they are kept seated by the tension means 22. It will be apparent that an operation similar to the foregoing will also cause the telescopic member 7 to function similarly. When the telescopic member is thus locked the wrench portion is adapted to be used independently of the slot-engaging member. The telescopic members 7 and 8 and the wrench portions 9 and 10 are capable, because of their different diameters, of engaging nuts of different sizes; and when either of the members is selected in the manipulation of a nut, or in coöperation with its slot-engaging member is used for operating both a nut and slotted member together, the member on the opposite end of the spindle may be arranged in its locked position to function with the nurled member and spindle as a hand-engaging portion.

From the foregoing, it is thought that the construction, operation, and many advantages of the herein-described invention will be apparent to those skilled in the art, without further description; and it will be understood that various changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having now described my invention, what I desire to secure by Letters-Patent is:

1. A combination tool comprising a spindle provided with a nurled portion fixed thereto, a slot-engaging member at either end of the spindle, a rotatable telescopic member coöperating with each of the slot-engaging members, tension for each of the telescopic members, and locking means for each of said members.

2. A combination tool comprising a spindle provided with a slot-engaging member at either end thereof, a telescopic nut-engaging member coöperating with each of the slot-engaging members, tension means for each of the telescopic members, and a locking member for each of the telescopic members.

3. A combination tool comprising a spindle, a slot-engaging member on either end thereof, a telescopic member coöperating with each of the slot-engaging members, the telescopic members being provided on one end with a plurality of depressions and having on their opposite ends nut-engaging members, and locking studs fixed to the spindle to coöperate with the depressions in the telescopic members to prevent movement thereof.

4. A combination tool comprising a spindle provided with an enlarged head on either end thereof, said heads being provided with shoulders and slot-engaging members, collar members movable on the spindle, tension means coöperating with said shoulders and collar members, locking studs fixed to the spindle at either end thereof, a telescopic member coöperating with each of the enlarged heads, and a nut-engaging member formed at one end of the telescopic member.

5. A combination tool comprising a spindle provided with an enlarged head at either end thereof, said heads consisting of shoulder portions and slot-engaging portions, a nurled member fixed approximately in the center of the spindle, collar members movable on the spindle, tension means cooperating with the shoulder portions and collar members, locking studs fixed to the spindle, a telescopic member coöperating with each of the enlarged heads and being movable laterally and longitudinally on the spindle, a shoulder for each of the telescopic members whereby longitudinal movement is limited in one direction while longitudinal movement in the opposite direction is limited by the nurled member.

6. A combination tool comprising a

spindle provided with an enlarged head at either end thereof, said heads consisting of shoulder portions and slot-engaging portions, a nurled member fixed approximately in the center of the spindle, collar members movable on the spindle, tension means cooperating with the shoulder portion and collar members, locking studs fixed to the spindle, a telescopic member coöperating with each of the enlarged heads and being movable laterally and longitudinally on the spindle, depressions of different depths in said telescopic members whereby in one position the studs coöperate with certain of said depressions to lock the telescopic members to prevent movement thereof and in another position said studs coöperate with other depressions to effect the release of said telescopic members.

7. A combination tool comprising a spindle provided with an enlarged head at either end thereof, said heads consisting of shoulder portions and slot-engaging portions, a nurled member fixed approximately in the center of the spindle, collar members movable on the spindle, tension means cooperating with the shoulder portions and collar members, locking studs fixed to the spindle, a telescopic member coöperating with each of the enlarged heads and being movable laterally and longitudinally on the spindle, a nut-engaging portion for each of the telescopic members, and means whereby the nut-engaging portions are adapted to be operable individually in one position and in another position adapted to be operable in conjunction with the slot-engaging portions.

8. A combination tool comprising a spindle provided at one end with a slot-engaging member, a telescopic nut-engaging member coöperating with the slot-engaging member, and tension means for the nut-engaging member.

9. A combination tool comprising a spindle provided with a nurled portion fixed thereto, a slot-engaging member at one end of the spindle, a rotatable telescopic member coöperating with the slot-engaging member, tension means for the telescopic member, and locking means for said member.

10. A combination tool comprising a spindle, a slot-engaging member at one end thereof, a telescopic member coöperating with the slot-engaging member, the telescopic member being provided at one end with a plurality of depressions and having on its opposite end a nut-engaging member, and locking studs fixed to the spindle to cooperate with the depressions in the telescopic member to prevent movement thereof.

11. A combination tool comprising a spindle provided with a slot-engaging member at either end thereof, a telescopic nut-engaging member coöperating with each of the slot-engaging members, tension means for each of the telescopic members, and locking means for each of the telescopic members whereby either of said members when in locked position coöperates to manipulate the other telescopic member and slot-engaging member.

12. A combination tool comprising a spindle provided with an enlarged head at either end thereof, said heads consisting of shoulder portions and slot-engaging portions, a nurled member fixed approximately in the center of the spindle, collar members movable on the spindle, tension means cooperating with the shoulder portions and collar members, locking studs fixed to the spindle, a telescopic member coöperating with each of the enlarged heads and being capable of movement laterally and longitudinally on the spindle, a nut-engaging portion for each of the telescopic members, and means whereby either of the telescopic members is adapted to coöperate with the spindle and nurled members as a hand-engaging portion for the manipulation of the telescopic member and slot-engaging portion.

In testimony whereof, I have signed my name to this specification this 24th day of May 1918.

CHARLES H. KLEIN.