L. KALINA.

MULTIPLE WRENCH.

APPLICATION FILED JUNE 12, 1915.

1,185,679.

Patented June 6, 1916.

2 SHEETS—SHEET 1.

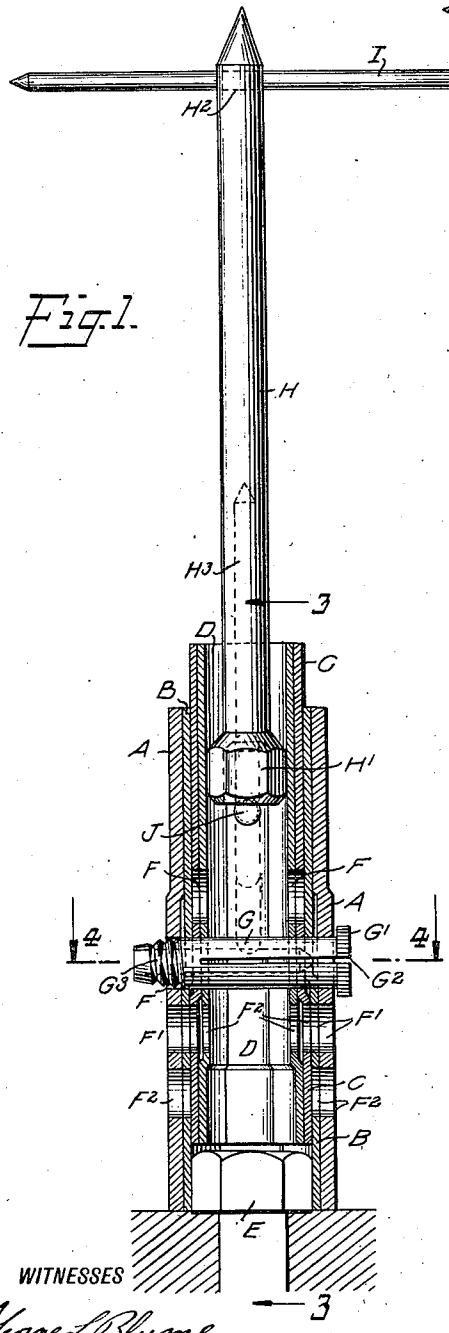



Fig. 1.

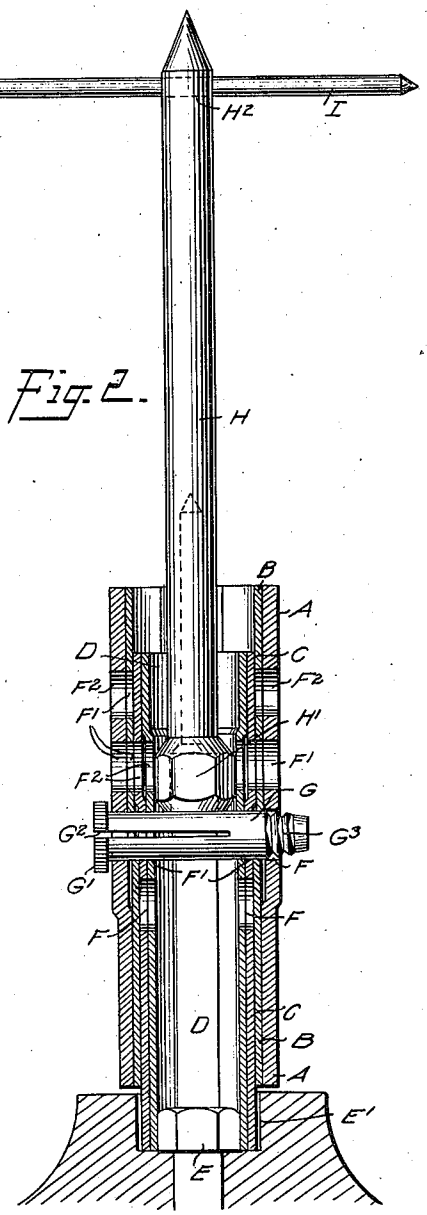



Fig. 2.

WITNESSES

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2 SHEETS—SHEET 2.

Fig. 3.

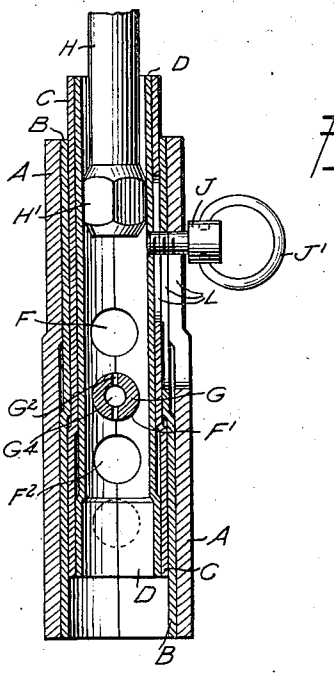



Fig. 6.

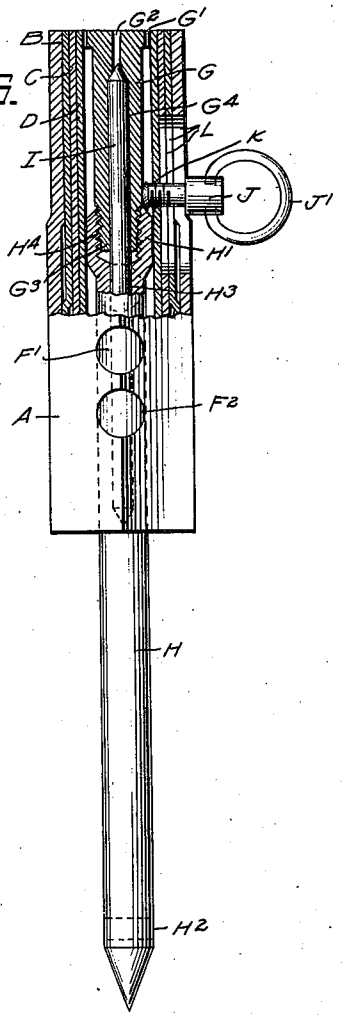



Fig. 4.

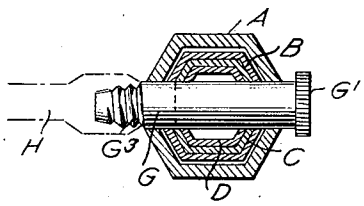
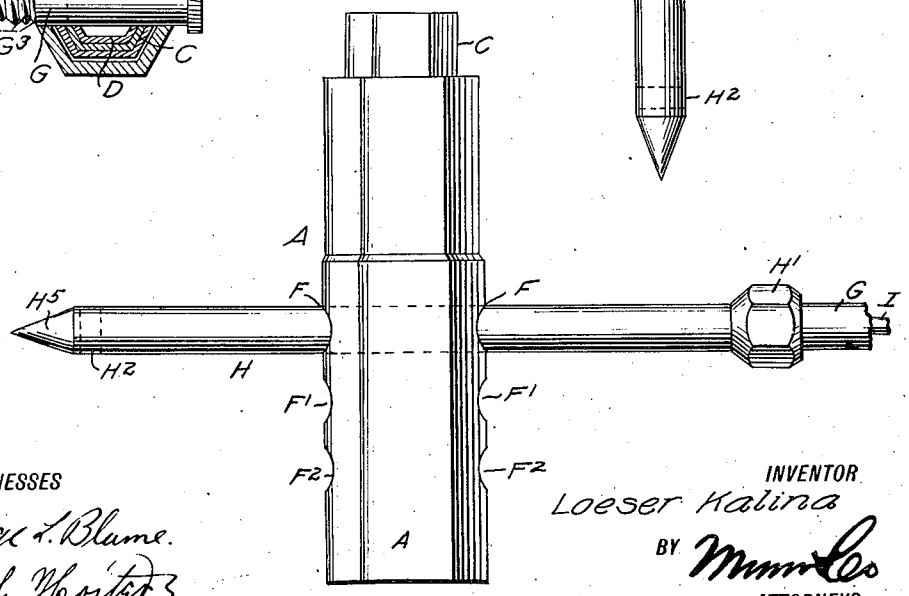



Fig. 5.




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# UNITED STATES PATENT OFFICE.

LOESER KALINA, OF NEW YORK, N. Y.

## MULTIPLE WRENCH.

1,185,679. Specification of Letters Patent. Patented June 6, 1916.

Application filed June 12, 1915. Serial No. 33,701.

*To all whom it may concern:*

Be it known that I, LOESER KALINA, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Multiple Wrench, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved multiple wrench arranged to provide a number of differently sized wrench heads, any one of which can be readily brought into position for engagement with a nut or similar article whether the same is visible or not, and to allow of folding the wrench into a comparatively small bundle when not in use thus rendering it exceedingly serviceable for the use of mechanics, drivers of automobiles and other persons.

In order to accomplish the desired result, use is made of a series of telescoping tubes polygonal in cross section, any one of which is adapted to be engaged with a nut or other article to be turned. Use is also made of a handle having a head fitting the innermost tube to allow of turning the wrench, the handle being also adapted to be inserted in registering apertures in the tubes to allow of turning the wrench.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a sectional side elevation of the wrench as applied for turning an outside nut; Fig. 2 is a similar view of the same as applied for turning a nut in a recess; Fig. 3 is a cross section of the same on the line 3—3 of Fig. 1; Fig. 4 is a sectional plan view of the same on the line 4—4 of Fig. 1; Fig. 5 is a side elevation of the wrench showing the handle inserted crosswise in the tubes; and Fig. 6 is a sectional side elevation of the wrench with the parts in elevation and with the parts in folded position.

The multiple wrench in its general construction consists of a number of telescoping tubes A, B, C and D, polygonal in cross section, preferably hexagonal, for engaging correspondingly shaped nuts E whether the latter are outside nuts as shown in Fig. 1, or nuts in a recess E′ as shown in Fig. 2. The tubes A, B, C and D are of the same length and one end is larger in diameter than the other end to provide a number of wrench heads double the number of tubes, it being understood that the difference in the size of the ends of each tube is approximately one thirty-second of an inch, and the tubes B, C and D have their walls one-sixteenth of an inch in thickness while the outermost tube A is thicker to withstand a heavy strain, especially as the ends of this tube are used singly as wrench heads while any one of the other tubes B, C and D is reinforced by its adjacent tube, as will be readily seen by reference to Figs. 1 and 2. Each of the tubes A, B, C and D is provided with three pairs of apertures F, F′ and $F^2$, the apertures of each pair being located diametrically opposite each other, and any one pair of apertures of one tube is adapted to register with any one pair of apertures in any one of the other tubes. Through a set of registering apertures is adapted to be passed a pin G to hold the tubes in adjusted position and this pin G is provided at one end with a head G′ and a lengthwise split $G^2$ while the other end is provided with a screw thread $G^3$ and a central bore $G^4$ extending inward from this end to within a short distance of the head G′ (see Fig. 6). By providing the pin G with the split $G^2$ resilient members are provided which clampingly engage the walls of the registering apertures at one side of the tubes so as to hold the pin G against accidental disengagement while using the wrench for turning the nut E or other article.

In order to permit of conveniently turning the wrench, use is made of a handle H in the form of a rod terminating at one end in a polygonal head H′ fitting into the small end of the innermost tube D, as plainly indicated in the drawings. The other end of the handle H is provided with an aperture $H^2$ into which fits removably a cross bar I adapted to be taken hold of by the operator for turning the handle H with a view to turn the tubes by the head H′ fitting into the innermost tube D. The head end of the handle H is provided with a bore $H^3$ adapted to receive a portion of the cross

bar I when the latter is disconnected from the aperture $H^2$, and the other portion of this cross bar I is adapted to fit into the bore $G^4$ of the pin G, as plainly indicated in Fig. 6. The outer end of the bore $H^3$ is enlarged and provided with screw threads $H^4$ into which screws the threaded end $G^3$ of the pin G to securely hold the cross bar I folded in the handle H. The split head G′ of the pin G fits snugly into the small end of the innermost tube D to hold the handle in place when folded in the innermost tube, as indicated in Fig. 6.

The several tubes are adapted to be locked in adjusted or folded position by the use of a clamping screw J having a ring-shaped handle J′ and screwing with its inner end in a threaded hole K formed in the innermost tube D. The shank of the clamping screw J extends through registering slots L formed lengthwise in the tubes A, B, C.

In practice, the inner terminal of the clamping screw J is preferably formed with a small head adapted to engage a countersink in the wall of the threaded aperture K of the inner tube D so as to hold the clamping screw against accidental detachment and to allow the head H′ to pass the said inner end of the screw when the latter is in completely retracted position. The outer end of the handle H is preferably provided with a point $H^5$ to permit of conveniently inserting the handle in any one of the said registering apertures F, F′, $F^2$.

From the foregoing, it will be seen that by the arrangement described the handle H can be used lengthwise, that is, axially relatively to the tubes, or the handle may be inserted crosswise through any one set of registering apertures instead of the pin G, as indicated in Fig. 5.

In using the wrench, it is only necessary to place one end of the tubes onto the nut and to press the outermost tube downward so that the tubes which are smaller than the nut slide upward while the tube fitting the nut engages the latter to allow of turning the nut on turning the tubes, as above described.

It is understood that in some positions of a nut E to be turned, the latter cannot be conveniently reached by the wrench with the handle extending crosswise, as shown in Fig. 5, and hence the handle is inserted lengthwise in the innermost tube and the several tubes are held in position by the pin G. When, however, the nut can be conveniently reached, the handle can be inserted crosswise through the registering apertures, as shown in Fig. 5. In some cases the handle H is applied to the pin G to form an extension for the same for turning the wrench (see dotted lines, Fig. 4.) The cross bar I is pointed at both ends so that when in position in the pin G it serves for readily adjusting the tubes prior to finally engaging the pin G with the tubes, after which the cross bar I is removed from the pin G and used as a cross bar in the handle H.

When the wrench is not in use, its parts can be conveniently folded, as shown in Fig. 6, so that the wrench forms a comparatively small bundle for convenient storing in a tool kit or other place.

It will be noticed that the user can readily engage a nut during the night or while it is dark and without much physical effort, especially if such nut is located in a dark place not easily accessible.

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

1. A multiple wrench comprising a series of telescoping tubes polygonal in cross section, any one of the tubes being adapted to be moved into position for engagement with the article to be turned, each tube having a set of spaced apertures, and the apertures of the several tubes being adapted to register with each other, and means consisting of a pin adapted to be inserted into the registering apertures of the tubes for holding the tubes in adjusted position, the said pin having a split spring end to provide expansible portions for clamping engagement with the walls of the apertures to hold the pin in position therein.

2. A multiple wrench, comprising a series of telescoping tubes polygonal in cross section, any one of the tubes being adapted to be moved into position for engagement with the article to be turned, each tube having a set of spaced apertures and the apertures of the several tubes being adapted to register with each other, and a pin adapted to be inserted into the registering apertures of the tubes for holding the tubes in the adjusted position, the pin being of greater length than the combined diameters of said tubes whereby to project beyond the sides of the outermost tube and form a handle for turning the wrench.

3. A multiple wrench, comprising a series of telescoping tubes polygonal in cross section, any one of the tubes being adapted to be moved into position for engagement with the article to be turned, each tube having a set of spaced apertures and the apertures of the several tubes being adapted to register with each other, a pin adapted to be inserted into the registering apertures of the tubes for holding the tubes in the adjusted position and having a threaded portion, and a handle having a polygonal head for engagement within the innermost tube provided with a threaded bore engageable with the threaded portion of said pin.

4. A multiple wrench, comprising a se-

ries of telescoping tubes polygonal in cross section, the tubes being entirely open at both ends for engagement with articles to be turned and being larger in diameter at one end than on the other end to allow of engaging each tube with two different sized articles to be turned, and means for holding the tubes in a desired adjusted position.

5. A multiple wrench, comprising a series of telescoping tubes polygonal in cross section, the tubes being entirely open at both ends for engagement with articles to be turned and being larger in diameter at one end than on the other end to allow of engaging each tube with two differently sized articles to be turned, the outermost tube having its wall thicker than those of the remaining tubes, and means for holding the tubes in a desired adjusted position.

6. A multiple wrench, comprising a plurality of telescoping tubes polygonal in cross section, any one of the tubes being adapted to be moved into operative position for engagement with the article to be turned, each tube having several pairs of apertures, the apertures in a pair being diametrically opposite each other, each pair of apertures in one tube being adapted to register with any one pair of apertures in each of the other tubes, and means extending through the registering apertures of all the tubes to hold the latter locked in operative position.

7. A multiple wrench, comprising a plurality of telescoping tubes polygonal in cross section, each tube having apertures arranged in pairs, the apertures in a pair being diametrically opposite each other, a pair of apertures in one tube being adapted to register with any one pair of apertures in each of the other tubes, a pin extending through the registering apertures of all the tubes to hold the latter locked in operative position, the pin having a split spring end to clampingly engage the adjacent apertures in one side of the tubes, a handle having a polygonal head at one end fitting into the innermost tube and provided with means engageable with said pin to form a continuation thereof, the other end of the handle having an aperture, and a cross bar removably inserted in the aperture of the handle.

8. A multiple wrench, comprising a plurality of telescoping tubes polygonal in cross section, any one of the tubes being adapted to be moved into operative position for engagement with the article to be turned, each tube having apertures arranged in pairs, the apertures in a pair being diametrically opposite each other, a pair of apertures in one tube being adapted to register with any one pair of apertures in each of the other tubes, a pin extending through the registering apertures of all the tubes to hold the latter locked in operative position, the pin having a split end to clampingly engage the adjacent apertures in one side of the tubes, a handle having a polygonal head at one end fitting into the innermost tube, the other end of the handle having an aperture, and a cross bar removably inserted in the aperture of the handle, the head end of the said handle having a bore for the reception of a portion of the said cross bar, the outer end of the bore being threaded, the said pin having a bore extending a distance inward from the non-split end of the pin for the reception of the remaining portion of the said cross bar, the said non-split end of the pin being screw-threaded to screw into the said threaded end of the handle bore.

9. A multiple wrench, comprising a plurality of telescoping tubes polygonal in cross section, any one of the tubes being adapted to be moved into operative position for engagement with the article to be turned, each tube having apertures arranged in pairs, the apertures in a pair being diametrically opposite each other, a pair of apertures in one tube being adapted to register with any one pair of apertures in each of the other tubes, the innermost tube having a threaded hole and the remaining tubes having registering lengthwise extending slots in register with the said threaded hole, a clamping screw screwing in the said threaded hole and extending through the said slots, a pin extending through the registering apertures of all the tubes to hold the latter locked in operative position, the pin having a split end to clampingly engage the adjacent apertures in one side of the tubes, a handle having a polygonal head at one end fitting into the innermost tube, the other end of the handle having an aperture, and a cross bar removably inserted in the aperture of the handle.

10. A multiple wrench, comprising a plurality of telescoping tubes polygonal in cross section, any one of the tubes being adapted to be moved into operative position for engagement with the article to be turned, each tube having apertures arranged in pairs, the apertures in a pair being diametrically opposite each other, a pair of apertures in one tube being adapted to register with any one pair of apertures in each of the other tubes, the innermost tube having a threaded hole and the remaining tubes having registering lengthwise extending slots in register with the said threaded hole, a clamping screw in the said threaded hole and extending through the said slots, a pin extending through the registering apertures of all the tubes to hold the latter locked in operative position, the pin having a split end to clampingly engage the adjacent apertures

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in one side of the tubes, a handle having a polygonal head at one end fitting into the innermost tube, the other end of the handle having an aperture, and a cross bar removably inserted in the aperture of the handle, the inner end of the clamping screw forming a stop for the said handle head.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LOESER KALINA.

Witnesses:
THEO. G. HOSTER,
PHILIP D. ROLLHAUS.