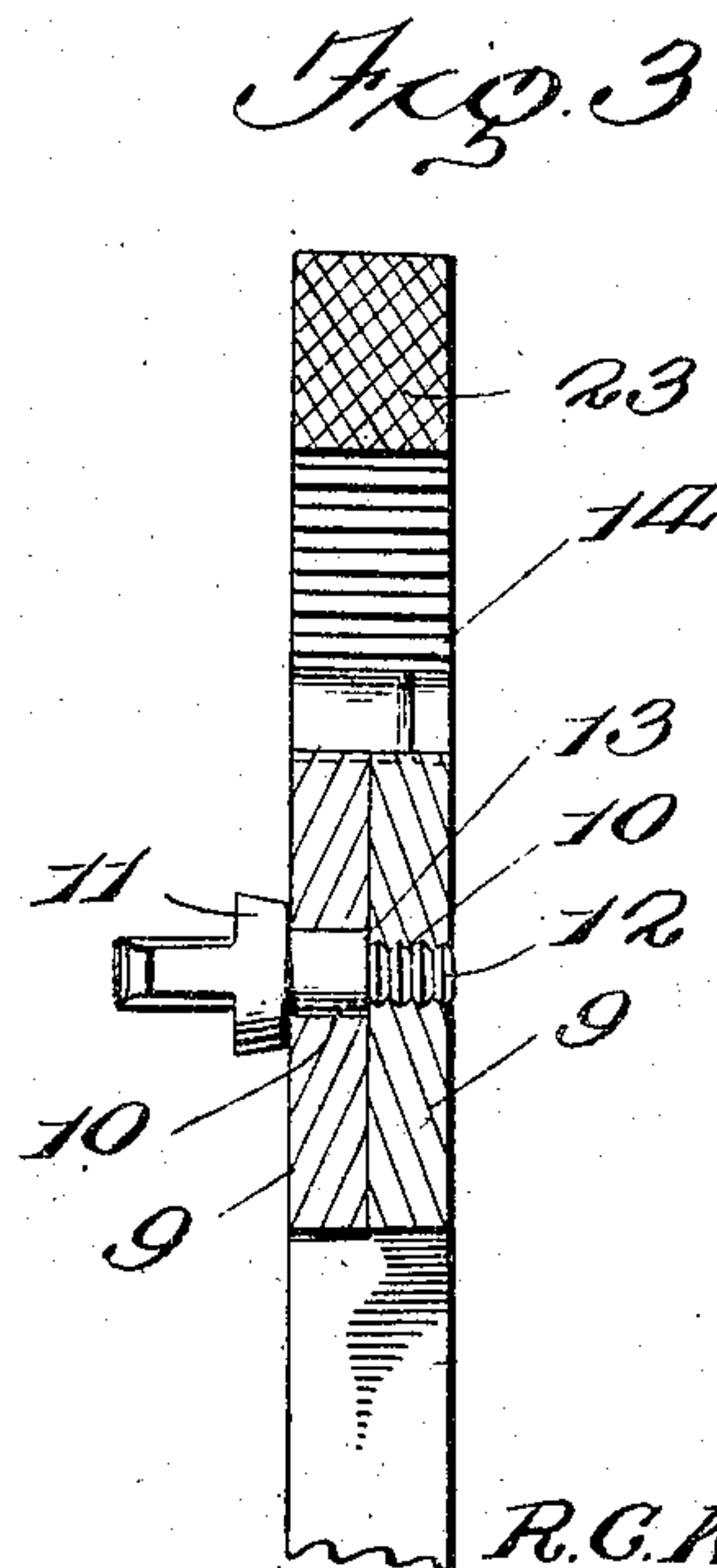
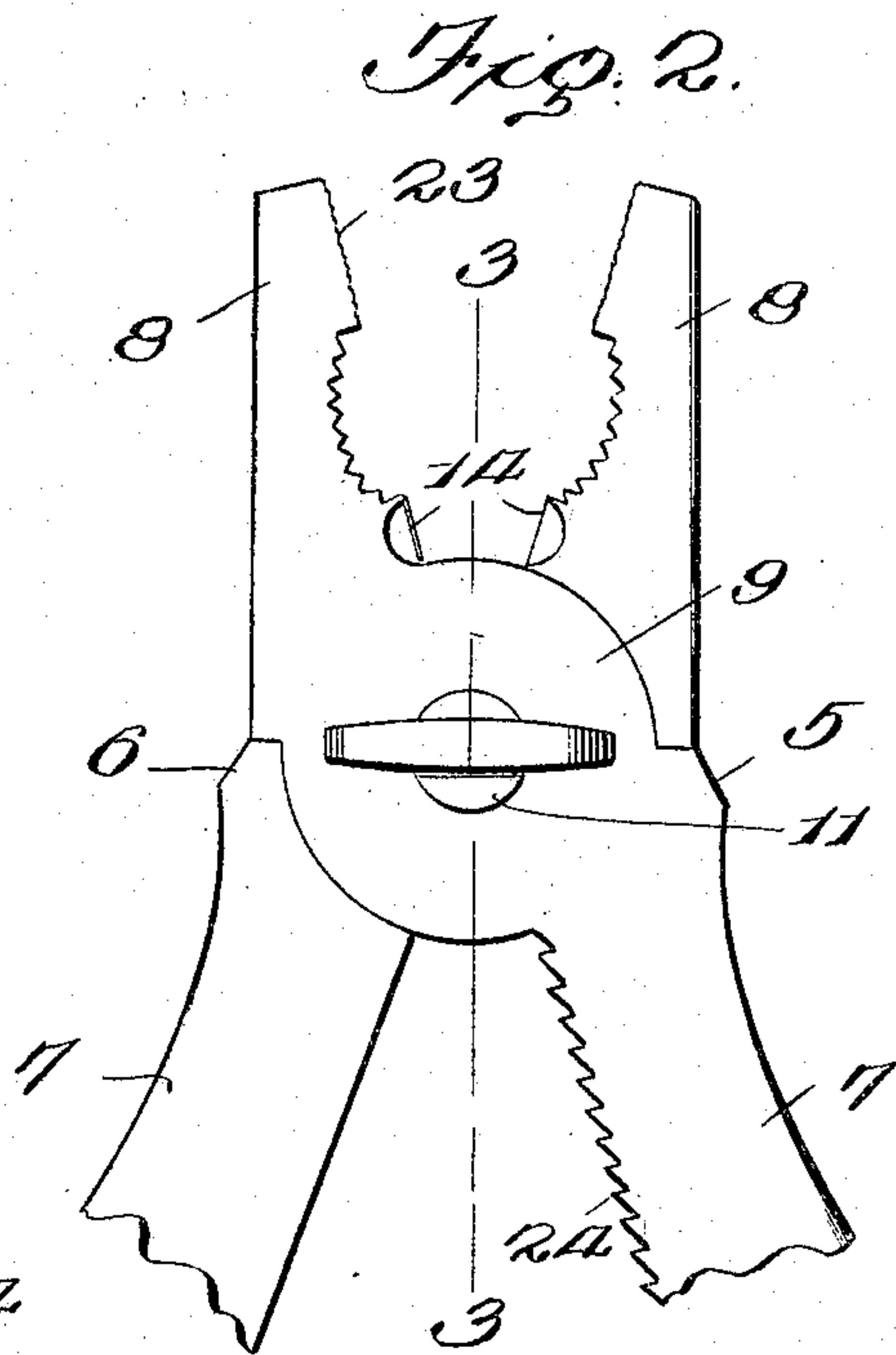
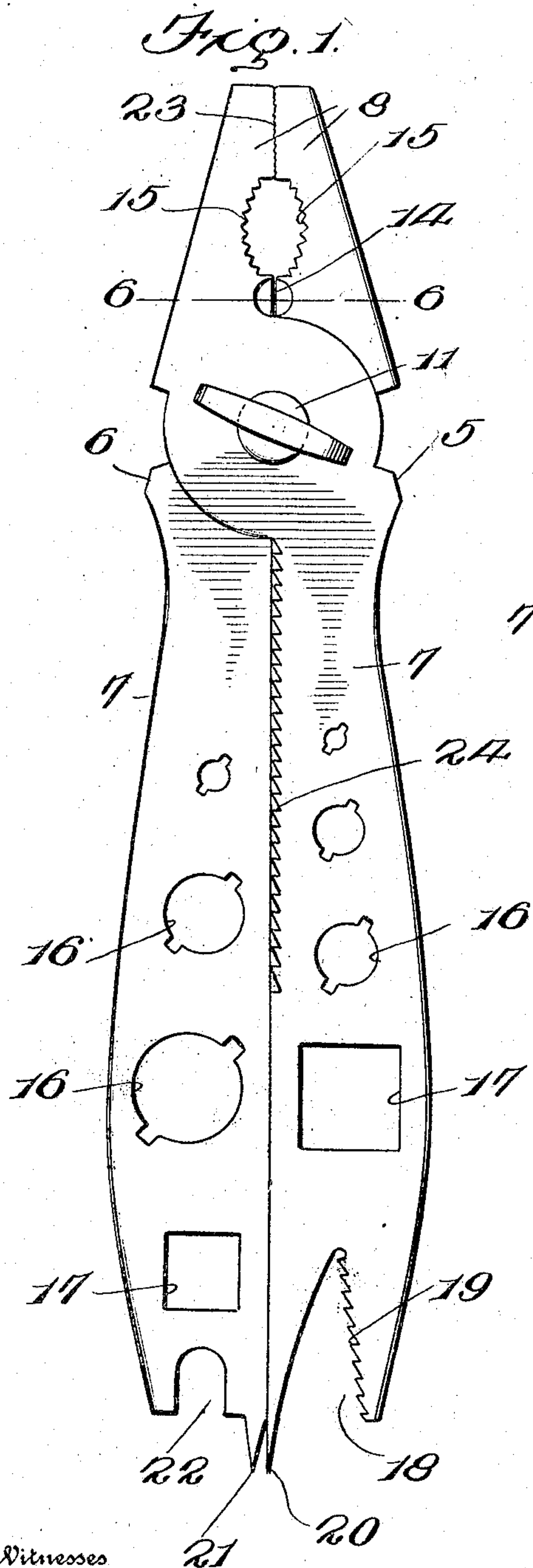


R. C. KLEFFMAN.  
COMBINATION TOOL.  
APPLICATION FILED MAR. 25, 1909.

930,973.

Patented Aug. 10, 1909.

2 SHEETS—SHEET 1.



Witnesses  
*W. H. Woodson*  
*J. M. Fallin*

By

*R. C. Kleffman*

Inventor

*R. C. Kleffman*

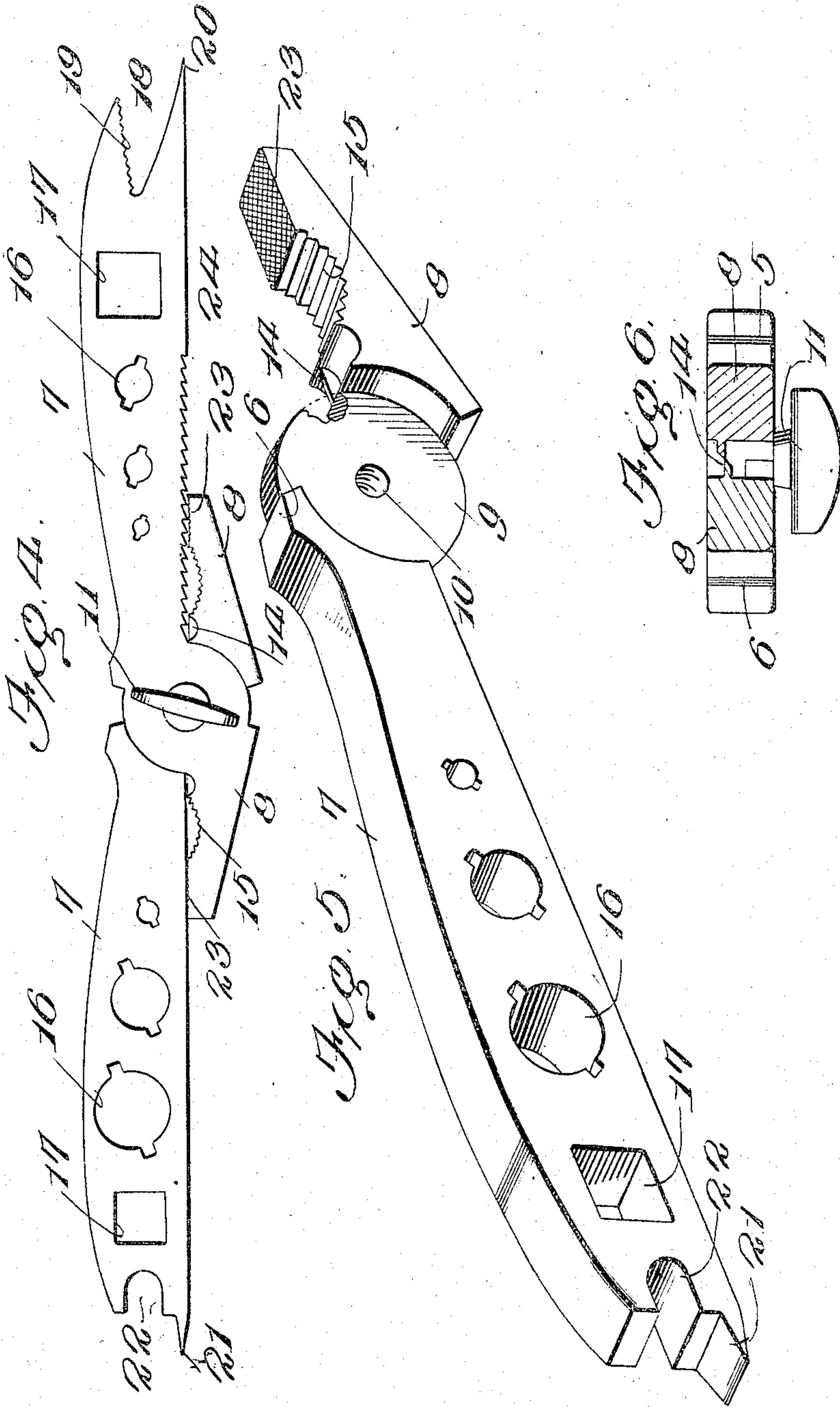
Attorneys.

R. C. KLEFFMAN.  
COMBINATION TOOL.  
APPLICATION FILED MAR. 25, 1909.

930,973.

Patented Aug. 10, 1909.

2 SHEETS—SHEET 2.



Witnesses

*W. P. Woodson*  
*J. M. Fallon*

Inventor

*R. C. Kleffman*

By

*Wm. M. Mearns* Attorneys.



# UNITED STATES PATENT OFFICE.

RAY C. KLEFFMAN, OF HIBBING, MINNESOTA.

## COMBINATION-TOOL.

No. 930,973.

Specification of Letters Patent.

Patented Aug. 10, 1909.

Application filed March 25, 1909. Serial No. 485,756.

*To all whom it may concern:*

Be it known that I, RAY C. KLEFFMAN, citizen of the United States, residing at Hibbing, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Combination-Tools, of which the following is a specification.

This invention relates to combination tools and has for its object to provide a comparatively simple and inexpensive tool of this character embodying in its structure a wrench, pliers, screw-driver, thread cutter and wire cutter.

A further object of the invention is to provide a combination tool comprising pivotally connected members, one of which forms an extension handle for the other when said members are reversed thereby to facilitate recutting of threads and also to give the operator a better leverage when the tool is used for tightening or releasing clamping nuts or the like.

A still further object of the invention is generally to improve this class of devices so as to increase their utility, durability and efficiency.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions, and minor details of construction may be resorted to within the scope of the appended claims.

For a full understanding of the invention reference is to be had to the following description and accompanying drawings, in which:—

Figure 1 is a plan view of a complete wrench constructed in accordance with my invention showing the clamping jaws in closed position. Fig. 2 is a similar view of a portion of the tool showing the clamping jaws in open position. Fig. 3 is a vertical sectional view taken on the line 3—3 of Fig. 2. Fig. 4 is a side elevation showing the clamping jaws in reversed position so that the one handle will form an extension for the other. Fig. 5 is a perspective view of one of the pivoted members detached. Fig. 6 is a transverse sectional view taken on the line 6—6 of Fig. 1.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The improved combination tool forming

the subject-matter of the present invention comprises co-acting members 5 and 6, each provided with a handle 7 and a clamping jaw 8, said members being provided with intermediate circular portions 9 having openings 10 formed therein for the reception of a clamping bolt 11. The clamping bolt 11 is provided with a threaded shank 12 adapted to engage the correspondingly threaded walls of one of the openings 10 there being a shoulder 13 formed on the clamping member 11 for engagement with the adjacent surface of one of the circular portions 9 thereby to prevent wedging action between the members 5 and 6 and thus permit the latter to be moved to open and closed positions. The inner face of each jaw 8 is cored out from the opposite sides thereof to form an intermediate web 14 which in conjunction with the web of the mating jaw forms a wire-cutter, there being a segmental recess 15 also formed in each jaw, the walls of which are serrated so as to firmly grip and clamp a pipe or other object to facilitate unscrewing the same. The handles 7 are formed with a plurality of dies 16 for recutting threads and the like, said dies being of different sizes so as to permit the recutting of the threads on screws of different cross-sectional diameters. Each handle 7 is also formed with a square socket 17 for engagement with a head of a nut when positioning the latter on or removing said nut from a clamping bolt. The handle 7 of the member 5 is provided with a terminal V-shaped recess 18, one wall of which is serrated at 19, while the other wall thereof is extended longitudinally to form a screw-driver point 20, there being a similar point 21 formed on the terminal of the mating member 6 as shown. The V-shaped recess 18 forms in effect an alligator jaw wrench while the recess 22 in the member 6 is utilized for engaging nuts or other angular bodies having a curved or rounded head.

When it is desired to obtain an increased leverage the clamping member 11 is removed and the position of the co-acting members 5 and 6 reversed as best shown in Fig. 4 of the drawings and in which position the flat face 23 of one clamping jaw 8 will bear against the inner face of one handle, while the flat face 23 of the mating member will bear against the inner longitudinal edge of the handle of the other member thereby to assist in supporting the handles in longitudinal



alignment with each other, the handles being locked in said position by adjusting the clamping screw or member 11. Thus it will be seen that when the handles are reversed, one of said handles will form an extension for the other so as to facilitate the recutting of threads and screwing and unscrewing clamping nuts and similar objects.

The inner longitudinal edge of the handle 7 is preferably formed with a series of teeth 24 by means of which a relatively large nut may be firmly gripped when manipulating the same.

It will here be noted that the flat faces 23 not only form abutments for the adjacent longitudinal edges of the handle members 7 when the parts are in reversed position, but also form flat nose pliers when the members 5 and 6 are in normal position and the handles 7 brought together in the usual manner.

From the foregoing description it will be seen that there is provided a comparatively simple and thoroughly efficient device admirably adapted for the attainment of the ends in view.

Having thus described the invention what is claimed as new is:—

1. A combination tool including reversible members having co-acting jaws each provided with a flat bearing surface, a pin forming a pivotal connection between said members and provided with a shoulder adapted to bear against one of the members, the flat bearing face of one member being adapted to bear against the longitudinal edge of a mating member when said members are reversed, the said pin serving to clamp the members in reversed position.

2. A combination tool including pivotally united members each provided with a clamping jaw and a handle, a pin forming a pivotal connection between said members and

provided with a threaded terminal arrangement to engage a correspondingly threaded opening formed in one of the pivoted members, there being a shoulder formed on the pin and arranged to bear against the adjacent face of the other member, said pin serving to clamp the pivoted members in longitudinal alignment when the members are reversed.

3. A combination tool including co-acting members each provided with a clamping jaw and a handle, there being openings formed at the intersection of said members the wall of one of which is threaded, a clamping pin having a threaded portion engaging the threaded wall of the opening in one member and provided with a shoulder adapted to bear against the outer face of the other member, one of said members forming an extension handle for the other when the jaws of said members are reversed, the pivot pin serving to lock said members in longitudinal alignment when in reversed position.

4. A combination tool including co-acting members each provided with a clamping jaw and operating handle, a pin forming a pivotal connection between said handles and provided with a terminal finger-piece, said members being reversible and each having its jaw provided with a flat face adapted to bear against the adjacent longitudinal edge of the handle of the mating member when said members are in reversed position, the pivot pin serving to lock the members in longitudinal alignment when said members are reversed.

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

RAY C. KLEFFMAN. [L. s.]

Witnesses:

J. B. CONNORS,  
J. J. COX.