July 13, 1943. J. H. MOSS 2,324,415

COMBINED WRENCH AND PLIERS

Filed Feb. 18, 1942

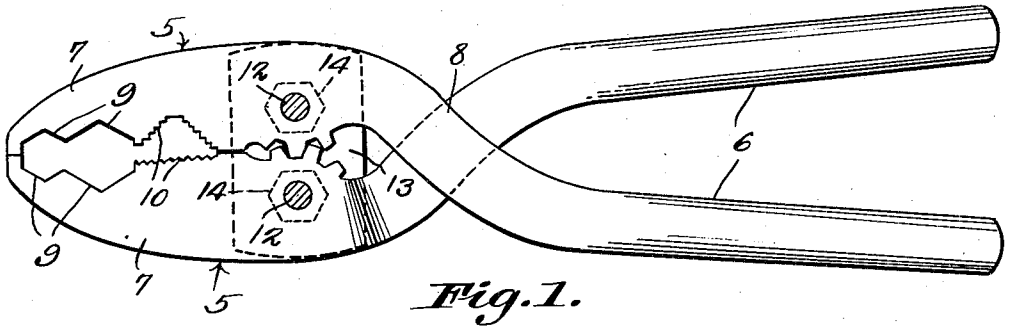


Fig. 1.

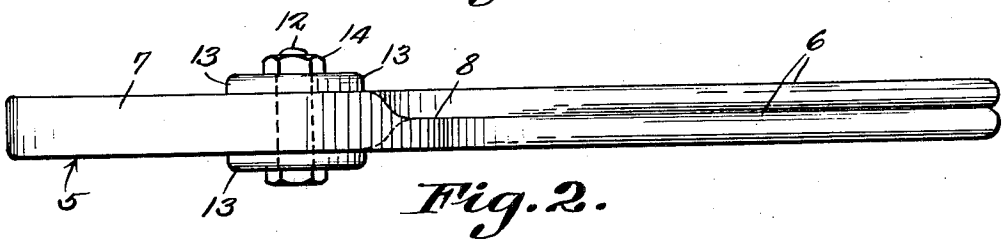


Fig. 2.

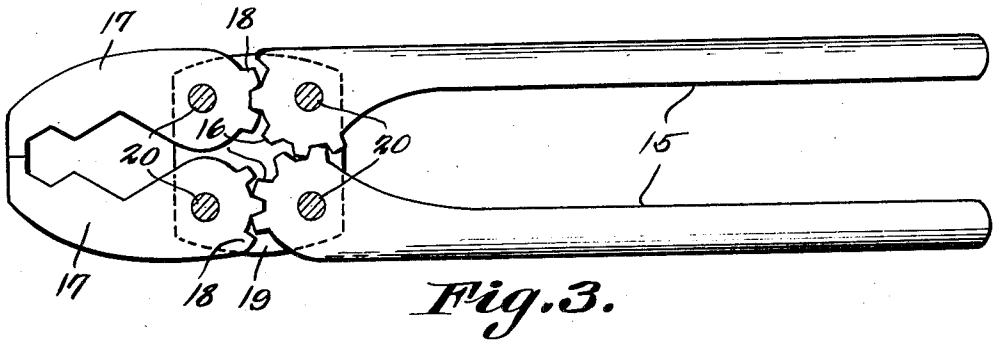


Fig. 3.

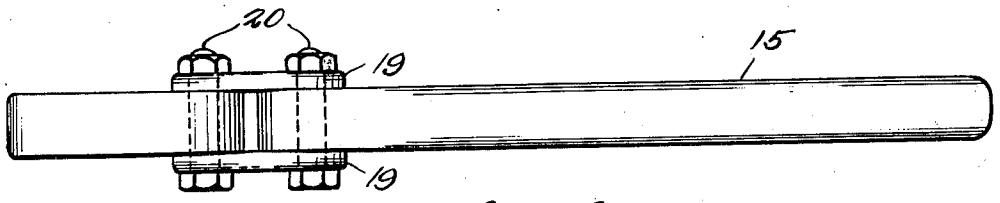


Fig. 4.

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COMBINED WRENCH AND PLIERS

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Application February 18, 1942, Serial No. 431,434

1 Claim. (Cl. 81—51)

This invention relates to tools and more particularly to tools of the cross-handle or plier type.

The primary object of the invention is to provide a tool of the plier type having means whereby the jaws will effectively grip and hold a nut or pipe, while the nut or pipe is being rotated, to position or remove the same.

Another object of the invention is to provide means whereby movement of one handle will be transmitted to the other handle, to the end that the tool may be operated in restricted places and held in position on the work, by pressure directed to one handle.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claim, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

Referring to the drawing

Figure 1 is an elevational view of a combined wrench and plier, constructed in accordance with the invention, one of the connecting plates having been removed to illustrate the cooperating teeth of the pivoted members.

Figure 2 is a plan view of the tool.

Figure 3 is an elevational view of a modified form of the invention, one of the connecting plates having been removed to illustrate the tooth construction of the tool.

Figure 4 is a plan view thereof.

Referring to the drawing in detail, the tool embodies a pair of pivoted members **5**, each of which comprises a handle **6** and a jaw **7**. The handles **6** are curved as at **8**, where they cross each other, as clearly shown by Fig. 1 of the drawing.

The jaws **7** are substantially long, and are provided with cooperating jaw faces **9**, which when brought together will grip nuts of different sizes. The cooperating jaws are also provided with teeth **10**, so arranged that they will grip a pipe or similar cylindrical element to rotate the same.

Formed on each jaw section, and arranged adjacent to the curved portion **8** of each handle, are teeth **11**, the teeth being formed in arcs or circles, so that by operating the handles **6**, the teeth, which are in mesh, act to hold the jaws against movement when only slight pressure is directed to the handles **6**.

Openings are formed in the jaws, which openings accommodate the bolts **12** that provide the pivot for the jaws. Plates **13** are formed with openings adapted to register with the openings in the jaws, for the reception of the bolts **12**. Nuts indicated at **14** are positioned on the threaded ends of the bolts **12** and act to draw the plates into close engagement with the sides of the jaws of the tool. Due to this construction, it will be seen that by providing a pair of these pivot bolts **12**, the strain which is usually directed to a single pivot bolt of the cross-handle type of pliers, is distributed between the bolts, thereby increasing the strength of the tool appreciably.

In the form of the invention as shown by Fig. 3 of the drawing, the handles are indicated by the reference character **15**, the forward ends of the handles being curved and provided with cooperating teeth **16** which transfer movement of one handle to the other handle, and at the same time restrict movement of one handle with respect to the other, preventing slipping of the tool on its work.

The pivoted jaws are indicated by the reference character **17**, the jaw faces being formed in such a way that they will securely grip a nut and hold the same, so that it may be rotated to position or remove the nut.

These jaws are formed with teeth **18** that mesh with the teeth **16**, the arrangement of teeth being such that when the handles **15** are pressed toward each other, the jaws **17** will be moved into gripping relation with the article or nut to be tightened or removed. Because of this construction it will be obvious that by a slight movement of the handles, towards and away from each other, the jaws will be opened or closed appreciable distances, thereby providing a tool which is especially adapted for work in close or restricted places.

In this form of the invention, plates **19** are provided and are arranged on opposite sides of the jaws and handles, the plates being formed with openings that register with openings in the jaws and handles, for the reception of the pivot bolts **20**, whereby the handles and jaws will be held together in the formation of a rigid tool construction.

From the foregoing it will be seen that due to the construction shown and described, there is provided a combined wrench and plier tool which when used as a wrench, will firmly grip the nut or work with which it is used, to the end that with slight pressure on the handle, the tool may be held to its work without danger of the tool slipping from its work to injure the hands of the user.

What is claimed is:

In a combined wrench and pliers, a pair of handles, said handles crossing each other, jaws formed integral with the outer ends of the handles, a pair of plates engaging opposite sides of the jaws, a pivot bolt extending through each jaw and plates, pivotally connecting the jaws and plates, teeth formed on the adjacent edges of the jaws, and said teeth adapted to cooperate to move said jaws simultaneously in gripping an article when one of said handles is operated.

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