Nov. 29, 1949 S. M. KASH 2,489,895

RELEASE MECHANISM FOR ARTICULATED LEVER WRENCHES

Filed Jan. 3, 1947

Fig. 1

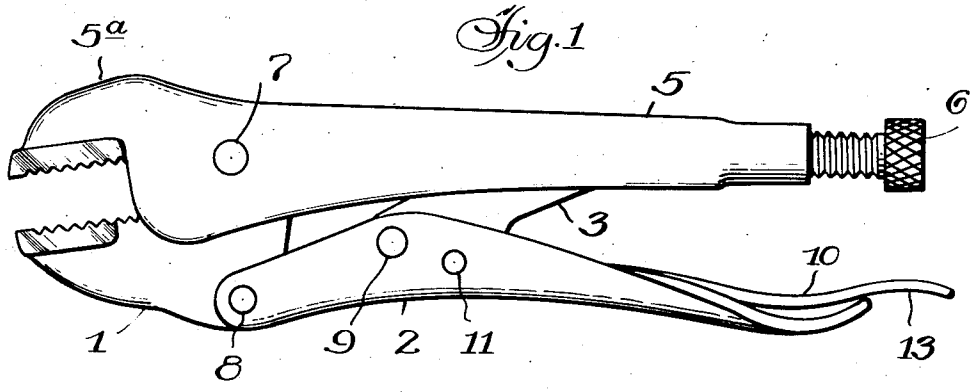


Fig. 2

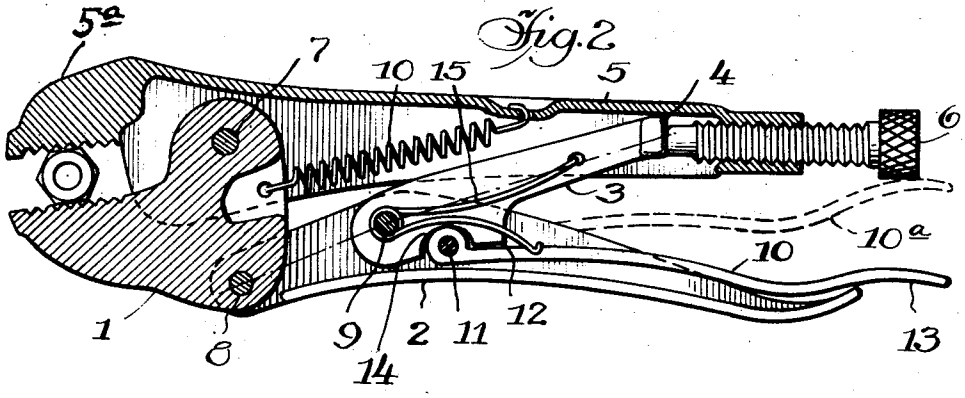
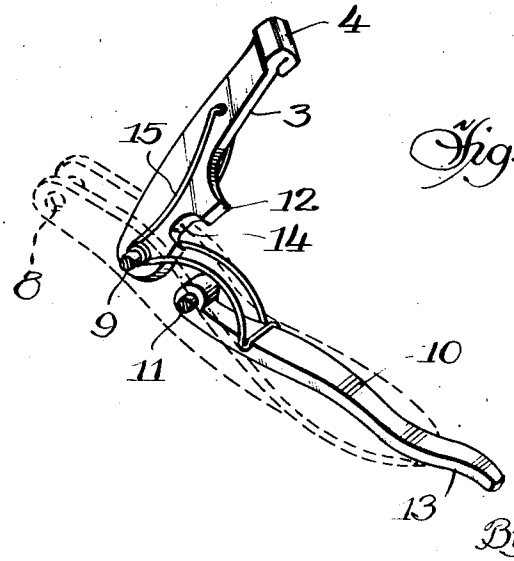


Fig. 3



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Patented Nov. 29, 1949

2,489,895

UNITED STATES PATENT OFFICE

2,489,895

RELEASE MECHANISM FOR ARTICULATED LEVER WRENCHES

Stephen M. Kash, Elkhart, Ind.

Application January 3, 1947, Serial No. 719,971

1 Claim. (Cl. 81—84)

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This invention relates to certain improvements in wrenches of the type disclosed in United States Letters Patent 1,489,458 issued to William Petersen on April 8, 1924.

It is an object of this invention to provide, in a wrench of this general type, quick acting, easily operable, and simple release means to disengage the jaws of the wrench from the work piece.

It is a further object of the invention to provide a simple lever mechanism to effect the disengagement of the jaws of the wrench from the work piece.

An additional object of the invention is the provision of a simple spring mechanism to hold the lever mechanism and the locking lever of the wrench in operative engagement with the other elements of the wrench.

The drawings illustrate a selected embodiment of the applicant's improvements in which:

Figure 1 is a view, in side elevation, illustrating a wrench constructed in accordance with a selected embodiment of applicant's improvement;

Figure 2 is a longitudinal sectional view taken through the selected embodiment illustrated in Figure 1, with certain of the parts in elevation; and

Figure 3 is a perspective view of the quick release lever mechanism and the spring mechanism used to maintain the parts in operative engagement.

In this art it is old, as appears from U. S. Letters Patents 1,489,458, 2,201,918, 2,280,005, 2,299,454 and perhaps others, to make wrenches utilizing a moveable jaw 1 which is actuated by an articulated lever or toggle 2, 3. One end of a channel shaped handle lever section 2 of the toggle 2, 3 is pivotally connected with the moveable jaw 1 as at 8 and forms one of the handles of the wrench. One end of a toggle link section 3 of the toggle 2, 3 is pivoted, as at 9, intermediate the ends and within the channel of the handle lever 2. The toggle link 3 also has a free end 4 which extends into and is moveable within the handle 5. The free end 4 of the toggle link 3 contacts one end of a screw 6, threaded into the free end of the handle 5. The end of the screw 6 forms an adjustable fulcrum for the toggle 2, 3. The fulcrum is adjustable by turning the screw 6 to vary the lengthwise position of the fulcrum for different size work pieces. A suitable pivot 7 is provided to connect the moveable jaw 1 to the handle 5. A stationary jaw member 5a is affixed to the handle 5 and cooperates with the moveable jaw 1. A spring 10 is connected to the moveable jaw 1 and the handle 5 to urge

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the jaws 1, 5a into open position. All of the foregoing structure is old as appears from the patents above mentioned and its mode of operation is well known. The jaws of the wrench are closed by moving the handles 2, 5 toward each other so that the fulcrum 9 is moved upwardly past dead center as appears in Fig. 2. The jaws of the wrench are opened by moving the handles 2, 5 apart. The distance which the jaws will be moved toward each other may be regulated by adjusting the screw 6.

The applicant's improvement is directed in part to an easily operable and simply constructed mechanism for moving the jaws 1, 5a apart. Through the lever mechanism described above a tremendous mechanical advantage is obtained and it sometimes requires considerable force to move the handles 2, 5 apart to return the fulcrum 9 through its dead center position to open the wrench. This is particularly true when the wrench is utilized in difficultly accessible places.

The applicant has devised a simple lever mechanism which gives the operator a sufficient mechanical advantage to open the wrench easily. In the selected embodiment, a toggle release lever arm 10 is pivotally mounted, as at 11, within the channel of the handle lever part 2 of the toggle 2, 3. The pivot 11 is adjacent the pivot 9 interconnecting the handle lever 2 and the toggle link 3. Space is made for the fulcrum end of the toggle release lever 10 through the provision of a cut-out 14 in the toggle link 3. It may be perceived readily from the drawings that the toggle release lever is neatly nested within the channel of the handle lever 2.

When it is desired to move the jaws 1, 5a apart, the operator urges the toggle release lever 10 toward the handle 5 to the position 10a indicated in dotted lines in Fig. 2. A portion of the toggle release lever 10 then acts upon a fulcrum 12 on the toggle link 3. The fulcrum 12 is adjacent the pivot 11 and the mechanical advantage thus obtained makes easy the opening of the wrench. For convenience a finger extension 13 is provided on the toggle lever arm 10 and extends beyond the free end of the handle lever 2. In actual operation it has been found that the force of the operator's finger on the finger extension is usually sufficient to break the jaws of the wrench open.

Means are also provided for retaining the toggle link 3 and the toggle release lever 10 in operative engagement with the rest of the wrench. The illustrated means comprises a spring 15 which urges the toggle link 3 upwardly, viewing Fig. 2, into operative engagement with the ful-

crum end of the screw 6 and retains it in that position. In addition the spring 15 urges the toggle release lever 10 toward the handle lever 2 so as to prevent interference of the toggle release lever 10 with the normal operation of the wrench.

Having thus described the manner of constructing and operating the selected embodiment of the improvement and the principle thereof, the applicant presents the following claims as his invention or discovery. It will be understood that the phrase "articulated lever wrench" as used in the claims refers to a wrench of the general characteristics of the disclosure of Letters Patent 1,489,458, 2,201,918, 2,280,005 and 2,299,454.

The applicant claims:

In a wrench, the combination of a handle provided with a stationary jaw, a movable jaw mounted on said handle, a toggle comprising a channel shaped handle lever pivotally engaged at one end with said movable jaw and a toggle link pivotally engaged at one end with said handle lever intermediate its ends and at its other end reacting against said handle, a toggle release lever pivotally secured at one end to and within said handle lever adjacent the pivotal connection between it and the toggle link and having a portion engageable with said toggle link adjacent the pivotal connection between said release lever and handle lever and between the last mentioned pivotal connection and the other end of said release lever whereby the same functions as a lever of the second class, said toggle release lever having an enlarged section at its pivot end and said toggle link having a cut-out section for accommodating said enlarged section, and a hairpin type spring fulcrumed about the first mentioned pivotal connection with one arm reacting against said toggle link and the other arm reacting against said release lever to bias them apart and prevent the latter from interfering with the normal operation of the wrench.

STEPHEN M. KASH.

REFERENCES CITED

The following references are of record in the file of this patent:

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Number	Name	Date
952,079	McIntire	Mar. 15, 1910
1,489,458	Petersen	Apr. 8, 1924
2,462,709	Ball	Feb. 22, 1949

FOREIGN PATENTS

Number	Country	Date
576,142	Great Britain	Mar. 20, 1946