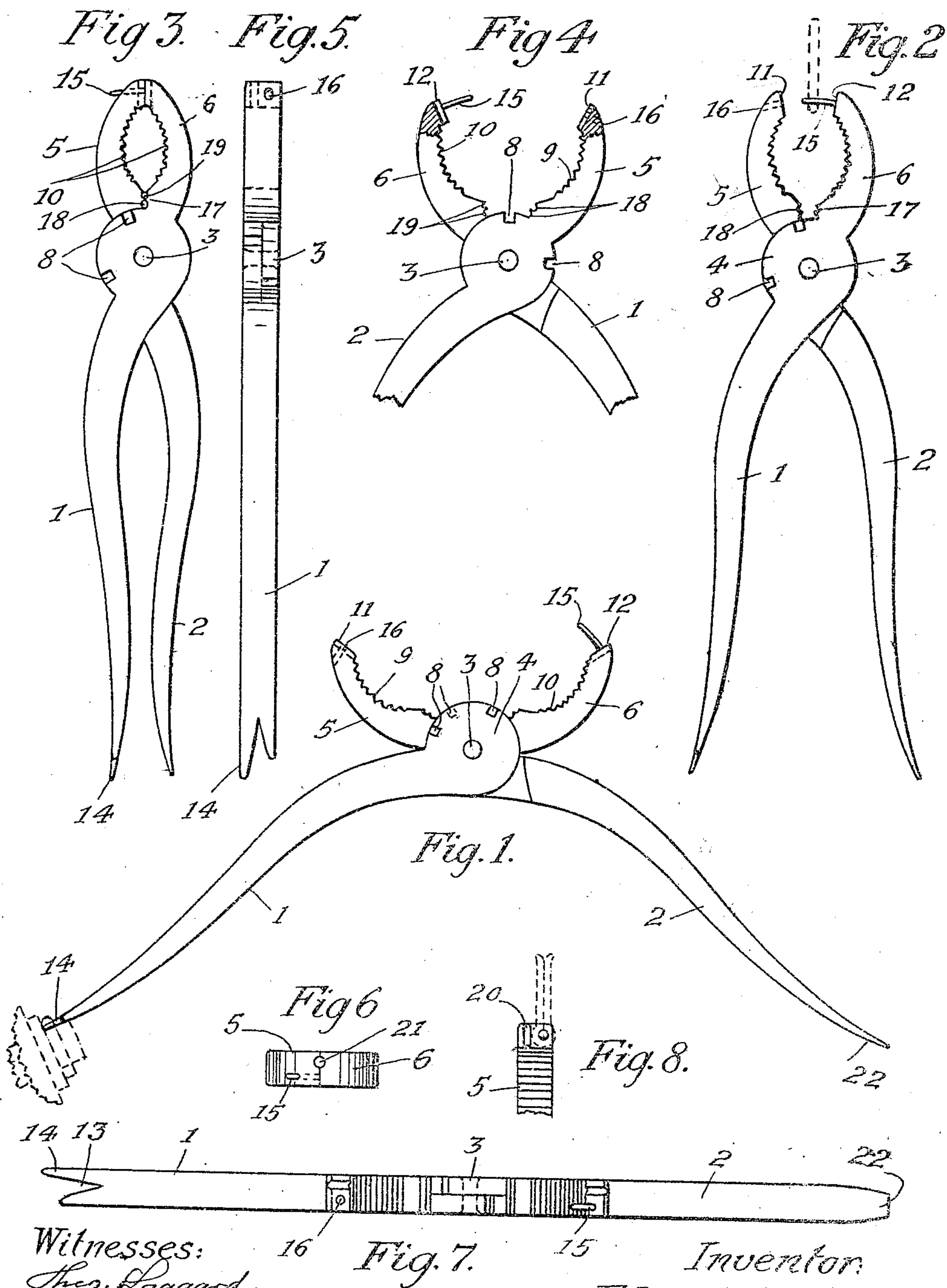


E. M. WORDEN.
 TOOL FOR OPERATING UPON COTTER PINS.
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UNITED STATES PATENT OFFICE.

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TOOL FOR OPERATING UPON COTTER-PINS.

998,939.

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To all whom it may concern:

Be it known that I, EDGAR M. WORDEN, a citizen of the United States, residing at Ladysmith, county of Rusk, and State of Wisconsin, have invented a certain new and useful Tool for Operating Upon Cotter-Pins, of which the following is a specification.

My invention relates to an implement to be used in handling cotter pins as the same are used in connection with bolts or other operative parts of machinery to key or hold said parts in proper operative position.

A primary object of my invention is to provide a device having the characteristics of ordinary pliers which shall nevertheless be especially adapted to the work of removing, straightening, and inserting cotter pins from operative parts of machines, especially automobiles.

A further object of my invention is to provide a tool having the characteristics above described which shall be simply constructed and have the parts thereof so arranged as particularly to adapt the tool to the special purpose indicated and at the same time in nowise interfere with its use as a wrench, pliers, or wire-cutter.

Other objects of my invention will appear in connection with the detailed description thereof and are particularly pointed out in the claim.

In the drawings, which represent one form of my invention—Figures 1, 2, and 3 are plan views of my tool showing the same in different operative positions relative to the cotter pin. Fig. 4 is a partial plan with the same portions in section. Fig. 5 is a side view. Fig. 6 is an end view. Fig. 7 is a view from above of the tool as shown in Fig. 1. Fig. 8 is an inside view of one of the jaws in relation to a cotter pin.

My tool comprises two members 1 and 2 pivotally secured together at 3, said members being of the form and secured together in the manner common for pliers or pincers, except that the curved portions 4 thereof are so related to the members 1 and 2 and to the jaws 5 and 6 as to permit an unusually wide spread of said jaws and the handles, as clearly shown in Fig. 1, for a purpose to be later described. Each of the circular central portions 4 of my tool is provided with notches 8 which are brought into register when the pincers are partially opened to be used as wire-cutters, as clearly

shown in Fig. 4. The jaws 5 and 6 are outwardly curved, as shown, and are provided on the interior thereof with corrugated surfaces 9 and 10, respectively, to adapt said jaws to be used as either a pipe wrench or nut wrench. The ends of the jaws are provided with pinching surfaces 11 and 12, respectively, which are formed so as to meet in parallel relation when the jaws are closed, as clearly shown in Fig. 3.

Each of the above features is or may be of substantially the character found in tools of this nature in common use.

My improvements are designed to adapt this tool, without interfering in any way with its other uses, to the special function of handling cotter pins used as keys for bolts or other operative parts of machines, particularly in connection with automobiles, in which a large number of parts are keyed into position by means of cotter pins, and where the necessity frequently arises of removing said pins for the purpose of effecting adjustment or repair of such parts. It frequently happens that when the cotter pin has been removed it will be found to be bent or injured in some way so that before it can be reinserted to key on the part from which it was removed it will be necessary for the pin to be properly straightened. It is to make more easy and practicable the removal of cotter pins, the straightening of the same so as to adapt it for re-insertion where desired, and the inserting of cotter pins into the key seats of the bolts or other operative parts in which the cotter pin is used that my improvements are especially designed.

The end of the handle 1 is drawn out thin and cleft, as shown at 13, one of the prongs 14 of said cleft being longer than the other and adapted to insert under the edge of the eye of a cotter pin to pry the same up sufficiently to be grasped by a pin 15 to be later described, or in another position the head of the cotter pin may be received within the cleft 13 and thereby pried up or lifted. To withdraw the cotter pin from its seat I provide the pin 15 which is rigidly extended from the face 12 of the jaw 6 and seats in an opening 16 in the end of the jaw 5, the pin 15 and the opening 16 extending substantially at right angles to the faces 11 and 12 but being preferably slightly curved, as shown, to more readily permit the insertion and withdrawal of the pin 15 from the hole 16. When the eye of the cotter pin is suffi-

ciently exposed or has been pried up so as to expose it by either the prong 14 or the cleft 13, the pin 15 will be inserted through said eye and closed into the hole 16, when, as will be readily understood, the cotter pin may be withdrawn from its seat, however strongly wedged therein or bent or deformed may be the condition of said cotter pin. It may be noted that the arrangement of the members 1 and 2 so as to give the wide spread to said members and the jaws, when opened, permits the ready adaptation of the prong 14 and the cleft 13 to their use for lifting or prying up the cotter pin head or eye.

The cotter pin after removal will very probably be more or less bent or deformed, and should it be desirable to re-insert it in its key seat after the adjustment or repair of the part held thereby has been effected, it will be necessary to straighten the cotter pin.

For effecting this function I provide the jaws 5 and 6 with an extended portion 17 having thereacross transverse grooves 18 and 19, respectively, said grooves lying in the faces of said extended portion 17 so that when the jaws are closed the grooves will register one above the other in parallel relation thus forming round holes or seats of slightly less diameter than that of the cotter pins usually employed. A plurality of said grooves 18 and 19, of different sizes, is preferably provided in the extended portion 17 so as to adapt this feature of my tool for operation of cotter pins of different sizes.

For holding the cotter pin properly closed to insert the same into its seat I provide in the faces 11 and 12 of the jaws 5 and 6 oppositely disposed grooves 20 extending longitudinally of said faces and forming, when the jaws are closed, the round holding or seating cavity 21, as clearly shown in Fig. 6. With this arrangement the cotter pin can be gripped between the eye and the point and the two limbs thereof

brought close together for insertion into the key seat. It will also be practicable to use the gripping seat 21 in connection with the cotter pin seat in the bolt or other operative part with which the cotter pin is used to straighten out large distortions or deformities of the cotter pin. After the cotter pin has been inserted in its seat it is often desirable to spread the limbs thereof below said seat, or it may be desirable to so spread the limbs for other purposes after the cotter pin has been removed. To accomplish this I form the member 2 with a somewhat tapered and finely beveled extremity 22, as clearly shown in Figs. 1, 2, and 7.

It will thus be seen that my tool provides for every contingency which can arise in relation to the handling of cotter pins, while still retaining its useful characteristics as a wire cutter and pliers. It is compact and strong and adapted to be carried in the pocket and can be manufactured at practically the same cost as an ordinary set of pliers.

The operation and manner of use of my device has been fully pointed out in connection with the detailed description thereof.

I claim:

A tool for operating upon cotter pins comprising a pair of pivoted jaws with handles for operating the same, said jaws having ends and faces meeting in common planes when the jaws are closed, and a pin extending substantially perpendicularly from one face near the outer end thereof and adapted to seat in a correspondingly positioned closed aperture in the other face, whereby the pin may be inserted within the eye of a cotter pin to draw the same from its seat.

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Witnesses:

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