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2,733,736

WRENCH FOR BREAKING TIE RODS

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Fig. 1.

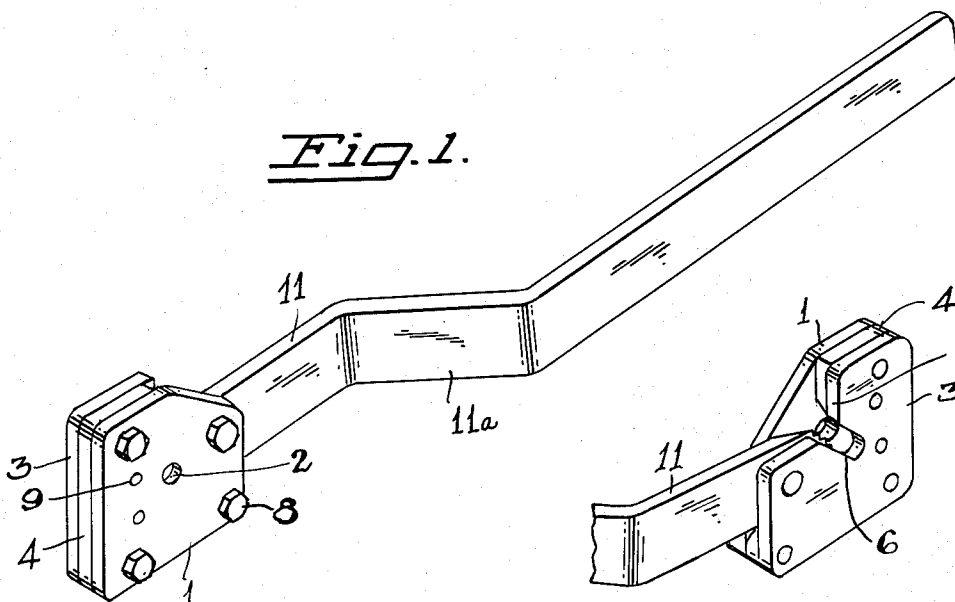


Fig. 2.

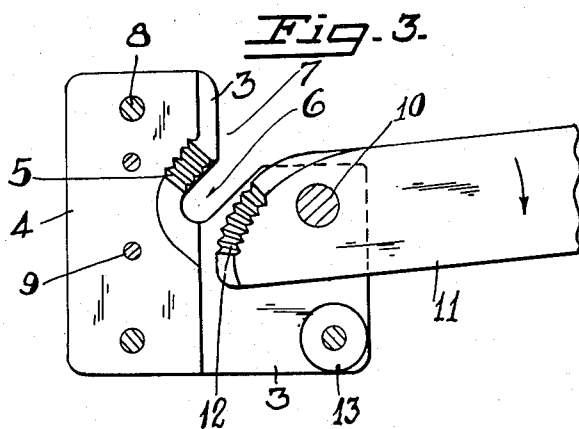
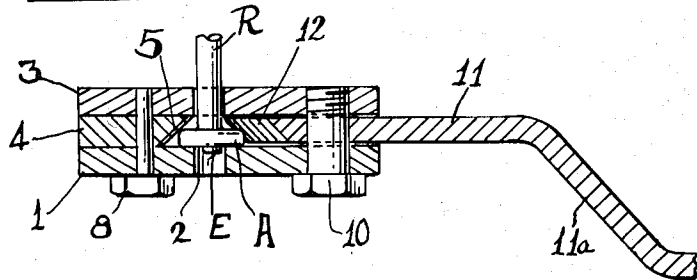


Fig. 4.



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WRENCH FOR BREAKING TIE RODS

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3 Claims. (Cl. 140—149)

The present invention relates to wrenches and more particularly to a tool for applying torque to the head portion of a snap type tie rod used with concrete forms to effect the breaking of tie rods at a point of weakness inside the concrete wall.

Snap tie rods of the kind now commonly used in holding form walls against relative displacement during the construction of a concrete wall are provided with points of weakness which make it possible to break off and remove those parts of such rods projecting from the concrete wall. The heads of the tie rods are twisted sufficiently to effect the breaking of the tie rods at points inside the concrete wall, thereby making it possible to remove the portions of such rods which project outwardly from the concrete wall. The means and methods now commonly used to effect the breaking of tie rods have been unsatisfactory and inefficient.

The present invention provides a novel wrench or tool designed for quick engagement with the head of a tie rod and having serrated gripping jaws, one being fixed and the other being carried at the end of a pivoted lever which is capable of being manually actuated to effect the firm gripping of the tie-rod head while a pressure is applied through the lever to transmit sufficient torque to said head to effect the breaking of such rod at a point of weakness inside a concrete wall.

Other and further objects of the present invention will be pointed out hereinafter, or will be indicated in the appended claims, or will be obvious to one skilled in the art upon an understanding of the present disclosure. For the purpose of this application, I have elected to show herein certain forms and details of a wrench or tool embodying my invention; it is to be understood, however, that the embodiment of my invention herein described and shown is for illustration purposes only and that therefore it is not to be regarded as exhaustive of the variations of the invention in the art.

In the accompanying drawing:

Fig. 1 is a perspective view of a wrench or tool embodying my invention;

Fig. 2 is a perspective view of the head portion of the wrench as viewed from another position;

Fig. 3 is a side elevation with the backing plate removed, showing the relative positions of the gripping jaws; and

Fig. 4 is a longitudinal sectional view taken through the gripping jaws, and showing such jaws in gripping relationship with the head of a tie rod.

Referring to the drawing, the numeral 1 designates a backing plate of suitable shape, having an opening 2 of slightly larger diameter than a tie rod, arranged approximately centrally therein. Secured between the backing plate 1 and a side plate 3 is an intermediate plate 4 which is formed with an inclined serrated fixed jaw 5 (Fig. 3). The side plate 3 is formed with an inclined slot 6 which provides a channel for receiving the shank of a tie rod R, such slot having a rounded, closed inner end which forms a seat for engaging with such tie rod when the wrench or tool is slipped upon the same. The

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serrated fixed jaw 5 on the intermediate plate 4 is disposed in an inclined plane above and adjacent the upper edge of the inclined slot 6 in the side plate 3. The inclined slot 6 widens out at its upper extremity to provide a somewhat V-shaped mouth 7 for facilitating the application of the wrench or tool to the head portion A of a tie rod. The inner end of the slot 6 is positioned in transverse alignment with the opening 2, thereby making it possible for the extension E, usually found on the tie rod R and which projects beyond the head portion A, to extend into such opening when the tie rod is lodged in the inclined slot. The opening 2 is smaller in diameter than the head A of the tie rod.

The plates 1, 3 and 4 are secured rigidly together as by bolts 8 and pins 9.

Pivotaly mounted as at 10 between the backing and side plates 1 and 3 is a lever 11 which carries a serrated movable jaw 12. The movable jaw 12 is preferably beveled and inclined oppositely to the inclination of the fixed jaw 5. The movable jaw 12 is somewhat arcuate in shape, and its gripping edge is so eccentrically positioned with respect to the pivot 10 that when the lever 11 is swung downwardly in the direction of the arrow (Fig. 3), such movable jaw is moved toward the fixed jaw, thereby causing the head A of the tie rod R (when it is positioned between the jaws) to be securely gripped and held. While the fixed jaw 5 is positioned above and to the left of the edge of the slot 6 (Fig. 3), the pivot 10 is disposed to the right of such slot and closer to the upper end of the movable jaw than to the latter's lower end. By virtue of the arrangement of pivot 10, and the eccentric relationship of the movable jaw 12 with respect thereto, a cam action is effected when the lever is actuated to bring the movable jaw into gripping relationship with the fixed jaw.

A spacing collar 13 encircling one of the corner bolts 8 limits the movement of the lever in its downward direction (Fig. 3). The lever 11 is formed with an offset as at 11a so that the head portion of the wrench may be positioned close to a form wall when such wrench is applied to the projecting head A of a tie rod R. When so positioned, the handle end of the lever is far enough from the form wall to permit a workman to manipulate the wrench conveniently.

In operation, the wrench is applied to the projecting head A of a tie rod R by first slipping the head of the wrench over such tie rod head and thereby bringing the seat at the end of the slot 6 into contacting relationship with the rod. The head A of the tie rod will then be positioned between the backing plate 1 and the side plate 3 and in engagement with the fixed jaw 5. By manually turning the handle of the lever 11 in the proper direction (depending upon whether the open end of the slot 6 is facing upwardly or downwardly), the movable jaw 12 is actuated toward and into gripping relationship with the head A. The handle of the lever upon being turned further in the same direction applies torque to the head A and that portion of the tie rod located between the weakened break off point on the rod and such head, thereby causing the rod to break and permit the removal of the outer broken-off portion.

While it is preferable to have the edges of the serrated gripping jaws 5 and 12 beveled or inclined, it is also possible to form such jaws with serrated edges which are otherwise suitably shaped.

What I claim is:

1. A wrench for the purpose described, comprising a head having a backing plate, a side plate and an intermediate plate, said side plate having an open slot adapted to receive a tie rod, a fixed gripping jaw on the intermediate plate, said fixed jaw being located at one side of the slot, a lever pivotaly mounted between the backing

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plate and the side plate and carrying a movable jaw located at the other side of the slot, such movable jaw being adapted to be actuated into gripping relationship with the fixed jaw upon the pivotal movement of the lever in a certain direction.

2. In a wrench for the purpose described, a head having a backing plate, a side plate and an intermediate plate, the side plate having an open slot adapted to receive a tie rod, said slot having an open end for the entry of a tie rod and a closed end for engaging such tie rod, a fixed gripping jaw on the intermediate plate, said fixed jaw being positioned at one side of the slot, a lever pivotally mounted between the side and backing plates on a pivot located at the other side of the slot, a movable gripping jaw carried by the lever and arranged for gripping relationship with the fixed jaw.

3. In a wrench for the purpose described, a head having a backing plate, a side plate and an intermediate plate, the intermediate plate being positioned between the side

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and backing plates, and the side and backing plates being spaced sufficiently to receive the head of a tie rod, said side plate having an open slot adapted to receive a tie rod slidably and said slot having an open end for the entry of a tie rod and a closed end for engaging with such tie rod, a fixed gripping jaw on the intermediate plate, said fixed jaw being positioned at one side of the slot, a lever pivotally mounted between the side and backing plates on a pivot at the other side of the slot, a movable gripping jaw carried on an end of the lever and arranged for gripping relationship with the fixed jaw, said movable jaw being located at the other side of the slot and having an arcuate gripping edge arranged in eccentric relationship to the pivot of the lever.

References Cited in the file of this patent

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