May 2, 1939. L. A. DAY 2,156,529

WRENCH

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Fig. 1

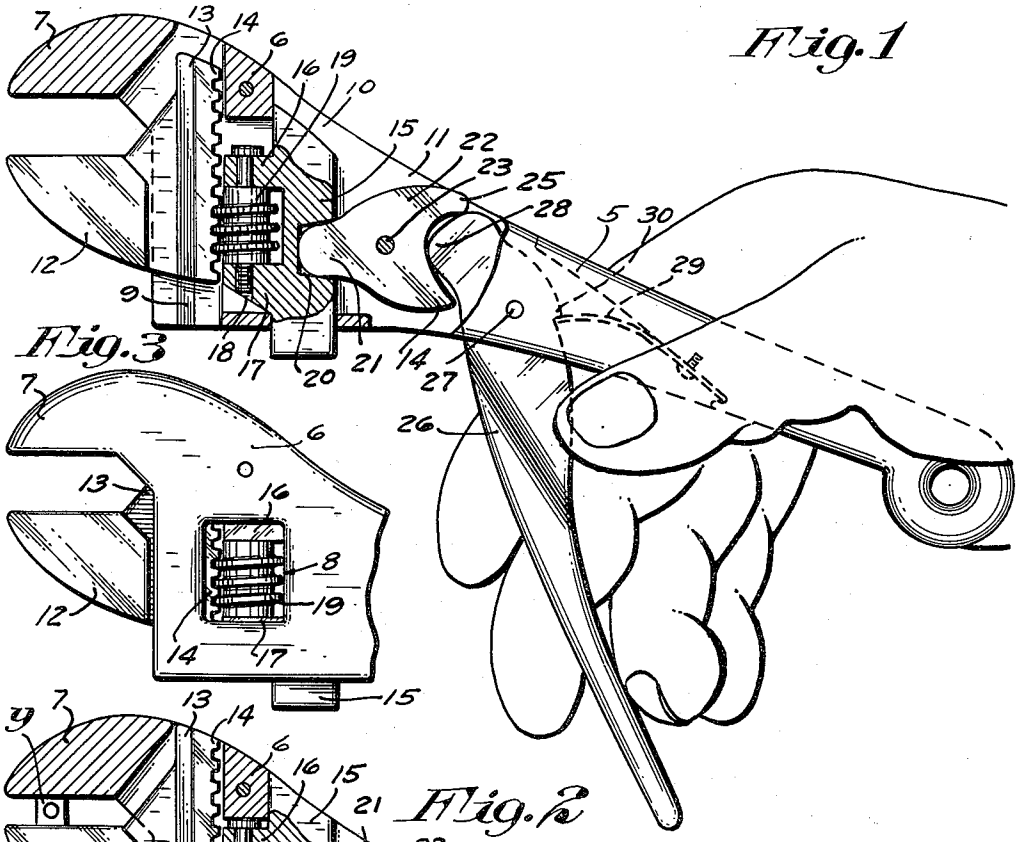


Fig. 3

Fig. 2

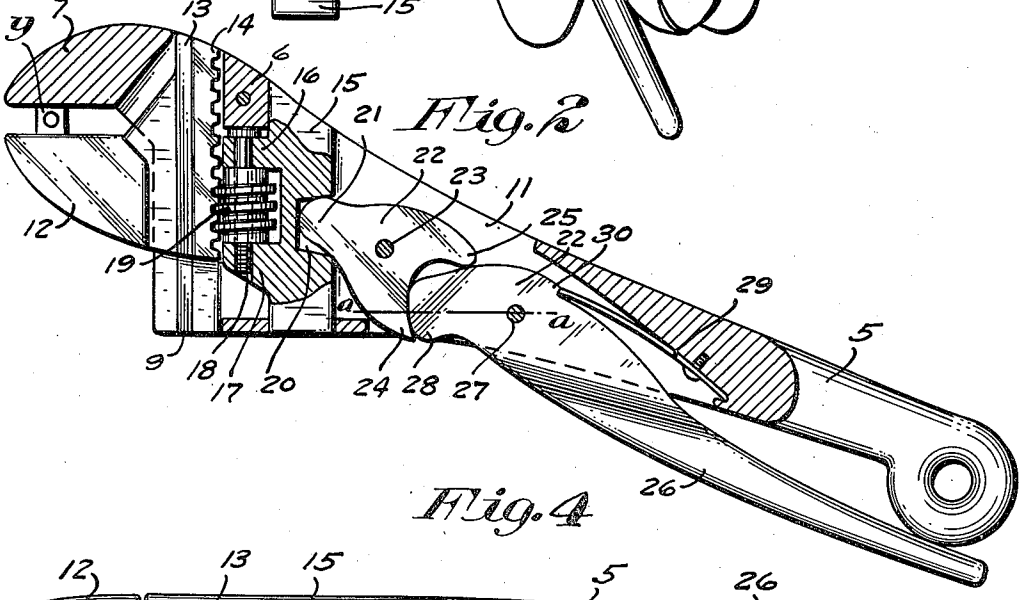
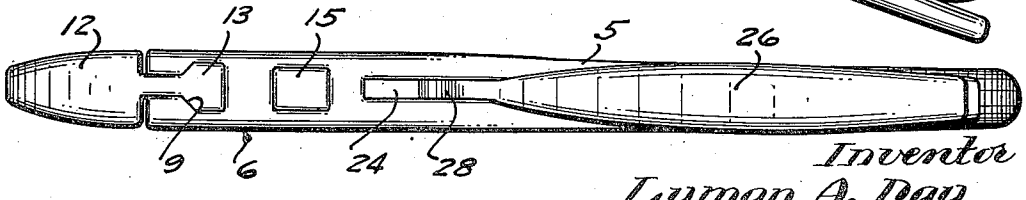


Fig. 4



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WRENCH

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2 Claims. (Cl. 81—85)

My invention provides an improved wrench and, generally stated, consists of the novel devices, combination of devices and arrangement of parts hereinafter described and defined in the claims.

The primary object of the invention is the provision of a wrench that is not only capable of general use, but is also well adapted for use as a wrench that can be set to clamp and hold a nut or any other article even when the hand is removed therefrom or from the actuating lever. In the use of a wrench of this kind a nut, for example, can be tightened with a sort of ratchet-like action and moreover any kind of an object from the dimensions of a sheet of paper to a nut or the like can be permanently held until positively released. These features and the objects of the invention will more fully appear in the description of the commercial form of the wrench illustrated in the accompanying drawing wherein like characters indicate like parts throughout the several views.

Referring to the drawing:

Fig. 1 shows the wrench in side elevation with the jaws separated and some parts being broken away and some parts being sectioned;

Fig. 2 is a view corresponding to Fig. 1, but showing the wrench set or locked to a nut, or the like;

Fig. 3 is a side elevation of the wrench with a part thereof broken away; and

Fig. 4 is an edge elevation of the wrench.

The body of the wrench is in the form of a handle or main lever **5**, preferably formed integrally with a head portion **6** and the fixed jaw **7**. The head **6** is formed with a transverse opening **8**, and with parallel guide ways **9** and **10** shown as extended completely therethrough from top to bottom thereof. Rearward of the guide ways **10** the handle or main lever **5** is formed with a long vertical longitudinal slot **11** to receive certain parts presently to be described.

The movable jaw **12** has a flange portion **13** that works in the guide ways **9** and is provided with rack teeth **14**. Slidably mounted in the guide ways **10** is an abutment block **15** that is notched to form upper and lower lugs **16** and **17** through which is passed a fixed shaft **18**. Journalled on the shaft **18** is a spirally threaded hub **19**, the threads of which engage the rack teeth **14** of the jaw **12**. This hub **19** works in the notch formed in the abutment block **15** and is confined against axial movements between the lugs **17**.

In its rear side the abutment block has a notch **20** in which works the cam acting end **21** of the rocker or intermediate lever **22** that is located in the slot **11** and is pivoted to the sides of the handle **5** at **23**. This rocker has a cam lug **24** and a retracting lug **25**.

The numeral **26** indicates a jaw actuating lever, the forward portion of which is flattened and works within the slot **11**, and is pivoted to the sides of the handle at **27**. The short end of this lever **26** is in the form of a cam lug **28** that operates on the cam lug **24** of the rocker **22** and on the retracting lug **25**. The long end of the lever **26** projects from the handle and has a leaf spring **29**, one end of which is anchored within the handle **5**, and the free end of which engages a shoulder **30** on the inner edge of the said lever.

In Fig. 2, the nut is indicated by the character *y*, and the dotted line *a* indicates the line of force produced by pressure of the lug **24** on the end of the lever **26**.

Fig. 1 shows the wrench with its jaws open or spread ready for application to a nut or any other object that is to be gripped and held. Adjustments substantially to fit the nut or object are made by rotation of the threaded hub **19** which, acting on the rock **14**, moves the jaw **12** toward or from the fixed jaw **7** according to the direction of rotation of said hub. The final gripping action is produced by movement of the lever **26** from the position shown in Fig. 1 into the position shown in Fig. 2. When the cam lug **28** of lever **26** is engaged with the cam lug **24** of the rocker **22**, as shown in Fig. 2, the direction of the pressure strain will be on line *aa* of Fig. 2 which is approximately perpendicular to the contacting surfaces of the said elements **24** and **28**; this friction between the parts will hold the lever **26** and the rocker **22** in the set positions with the jaws **12** and **7** locked on a nut or object engaged between the jaws. This self-locking action is important for many purposes. It prevents the wrench from automatically releasing its pressure on the object gripped even when the hand is removed from the lever **26**.

In the arrangement illustrated, the spring **29** tends to move the lever **26** from the position shown in Fig. 1 to the position shown in Fig. 2; but, of course, when a strong gripping pressure is desired, the lever will be hand pressed toward the handle or main lever **5**.

In the operation of progressively turning a nut, for example, the wrench can be used with a sort of ratchet-like action in which after each turning action and to produce a back movement for a new grip on the nut, lever **26** will simply be pressed away from the handle **5** and then, of course, pressed back for a new grip on the nut.

Preferably the parts of the main wrench will be drop forged or cast in steel. When the lever 26 and rocker 22 are removed from the handle or body member, the abutment block 15 can be placed in working position or removed therefrom by movement within the slot 11.

The preferred form of the wrench has been described, but it will be understood that modifications thereof may be made within the scope of the invention herein disclosed and claimed.

What I claim is:

1. In a wrench, a body member having a handle and a fixed jaw, a movable jaw slidably mounted in the head of said body and having rack teeth, an abutment block slidably mounted in said head for movement on a line parallel to the line of movement of said movable jaw, a spirally threaded hub rotatively mounted in said abutment block and engaging the threads of said movable jaw, a three-pronged rocker intermediately pivoted to said body, the forwardly projected prong of said rocker engaging a notch in said abutment block, the other two prongs of said rocker being rearwardly projected, and a lever intermediately pivoted to said body and having a cam acting end operative on the two rearwardly projected prongs of said rocker, the action thereof on one of the prongs of said rocker serving to separate the jaws and the action on the other of said rear prongs serving to close the jaws.

2. The structure defined in claim 1 in which the co-operating contacting surfaces of said lever and the jaw closing prongs of said rocker move to a dead-center when the jaws are closed on to an object, thereby rendering the wrench self-locking.

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