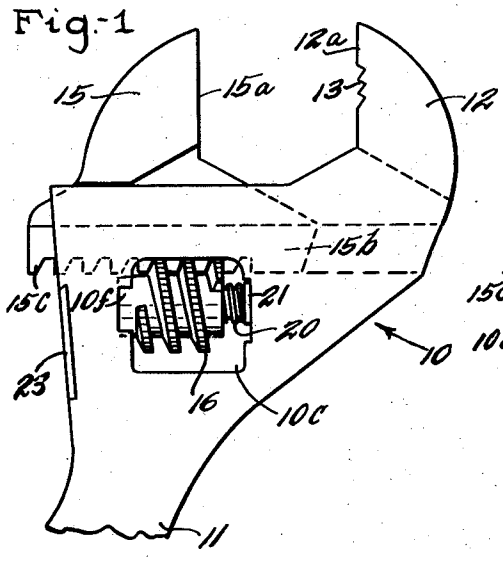
March 7, 1950 V. H. HEYN 2,499,644

QUICK ADJUSTING WRENCH

Filed Nov. 16, 1944

Fig. 1



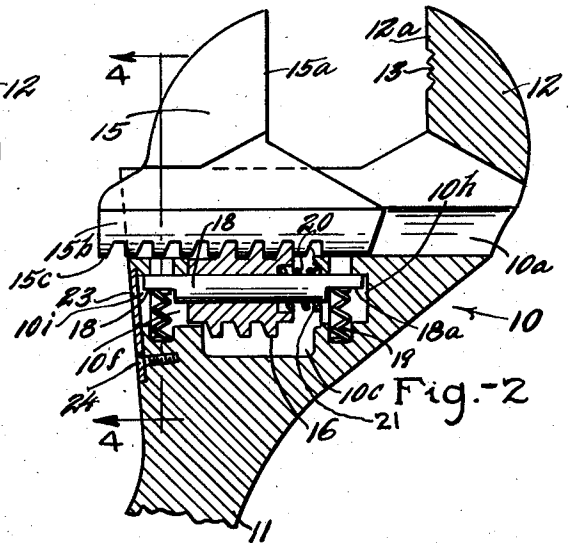




Fig. 2

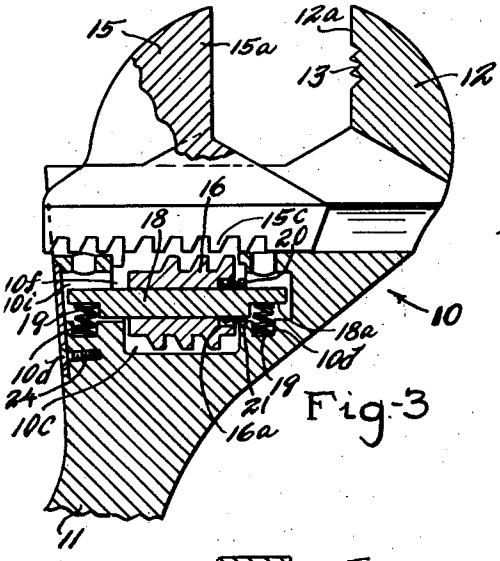



Fig. 3

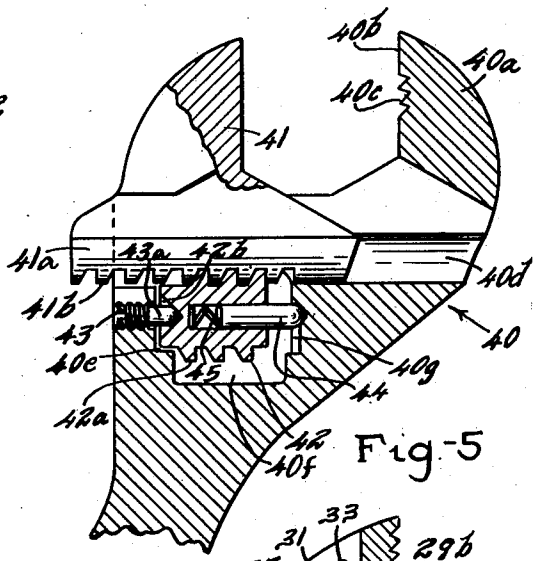



Fig. 5

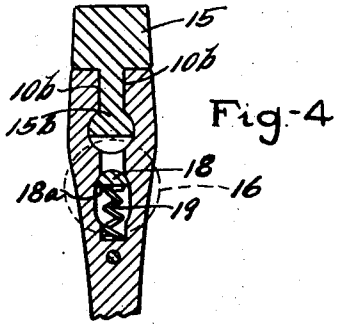



Fig. 4

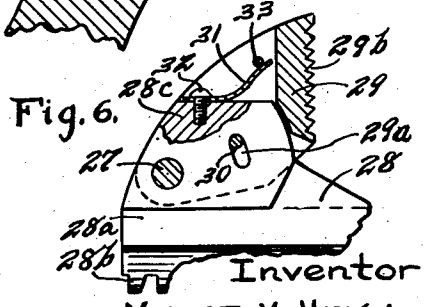



Fig. 6.

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## QUICK ADJUSTING WRENCH

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Application November 16, 1944, Serial No. 563,649

2 Claims. (Cl. 81—165)

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This invention relates to a wrench, and particularly to a wrench having a fixed jaw and a jaw movable toward and from said fixed jaw, together with means permitting ready removal of said movable jaw. While the invention is applicable to wrenches of various types in the embodiment of the invention disclosed, it is shown in connection with the well-known "Crescent" wrench.

It is an object of this invention to provide a structure of wrench having a movable jaw, in which said movable jaw is quickly and readily removable so that a different type of jaw may be substituted.

It is a further object of the invention to provide a wrench having a movable jaw, a rotatable member engaging said jaw for moving the same and novel means whereby said rotatable member may be moved out of engagement with said jaw so that said jaw may be removed.

It is more specifically an object of the invention to provide a wrench having a body with a guideway therein, a jaw having a portion disposed in said guideway and movable therein, said portion having rack teeth thereon, a rotatable member having teeth engaging said teeth for moving said jaw, said member normally being in position where it is prevented from movement away from said portion but being movable axially into position where it is movable away from said portion, together with resilient means holding said member in said first mentioned position.

These and other objects and advantages of the invention will be fully set forth in the following description made in connection with the accompanying drawings in which like reference characters refer to similar parts throughout the several views and in which—

Fig. 1 is a view in side elevation of a portion of a wrench embodying the present invention.

Fig. 2 is a view for the most part in central vertical section of said wrench.

Fig. 3 is a view similar to Fig. 2 showing the parts in different positions.

Fig. 4 is a vertical section taken on line 4—4 of Fig. 2 as indicated by the arrows.

Fig. 5 is a view similar to Fig. 2 showing a modification.

Fig. 6 is a view similar to Fig. 2 showing a wrench with a different kind of jaw therein.

Referring to the drawings, a wrench is shown having a body or head 10 at one end, and having a handle 11 at its other end. The head or body 10 has a fixed jaw 12 at one side thereof,

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said jaw having a flat gripping surface 12*a* which will preferably be provided with teeth 13 for a portion of its extent. Head 10 is also provided with a guideway 10*a*, and while this could be variously formed in the embodiments of the invention illustrated, it is shown as having parallel flat sides 10*b* at its upper portion and being substantially cylindrical at its lower portion. A movable jaw 15 is provided, the same having a gripping surface 15*a* disposed substantially parallel to surface 12*a*. Jaw 15 has a portion 15*b* disposed in guideway 10*a* and shaped to substantially fit therein. Portion 15*b* is movable or slideable in guideway 10*a* and this movement in the structure shown is rectilinear. Portion 15*b* is provided with spaced rack teeth 15*c* at its lower side. The head or body 10 is provided with a recess 10*c* below guideway 10*a* and a rotatable member 16 is provided disposed in said recess and having helical teeth thereon constructed and arranged to mesh with the teeth 15*c*. Member 16 is in the form of a worm gear. The member 16 is axially bored to receive a shaft 18, on which it is supported and on which it is journaled. Shaft 18 projects beyond the ends of member 16 and is provided with cut away portions at its ends, thus forming downwardly directed flat surfaces 18*a*. Said surfaces 18*a* rest upon and are supported by the upper ends of coiled compression springs 19. Springs 19 are disposed in cylindrical recesses 10*d* formed in head 10. The recesses 10*d* are drilled from the bottom of guideway 10*a*, and the bores 10*e* so formed are shown adjacent to said guideway. The member 10 has a recess 10*f* which is substantially cylindrical at its lower portion and extends laterally from recess 10*c* at one end thereof. The member 16 has a cylindrical end normally disposed in recess 10*f* and is normally prevented from movement away from jaw 15 by the bottom of said recess. Member 16 has a cylindrical recess 16*a* in its opposite end and a coiled compression spring 20 surrounds shaft 18 and bears at one end against the bottom of recess 16*b* and at its other end against a small washer 21 engaging a portion of head 10 and disposed in a recess 10*g* formed in said head. The ends of shaft 18 project beyond springs 19 and recesses 10*d* and are disposed in recesses 10*h* and 10*i* respectively formed in head 10. A plate 23 is secured to one side of head 10 by a screw 24 threaded into head 10 and having its head counter-sunk into said plate, said plate being fitted into a recess in head 10 so that it is flush with the outer side of said head. Plate 23 as shown in Figs. 1 to 3 is bev-

eled at its upper end so that the recess receiving it is somewhat undercut.

In Fig. 6 a jaw member **28** is shown which has a portion **28***a* shaped similarly to portion **15***b* and adapted to be movable in guideway **10***a*. Portion **28***a* has teeth **28***b* thereon similar to teeth **15***c*, and these will be engaged by member **16** as described. Member **28** has an upstanding central portion **28***c* of reduced thickness, and a jaw **29** is provided having spaced sides disposed at either side of portion **28***c* and pivotally connected thereto by a pivot rivet **27**. One side of member **29** is provided with a slot **29***a*, and a small headed screw **30** is screwed into portion **28***c* and disposed in slot **29***a*. Screw **30** limits the swinging movement of jaw member **29**. A plate or sear spring **31** is secured to the top of portion **28***c* by a small headed screw **32**. Spring **31** extends upwardly and has its free end disposed beneath a small pin **33** secured in member **29** and extending between the spaced sides thereof. Jaw **29** is preferably provided with sharpened teeth **29***b*.

The jaw **29** has high utility in gripping a pipe or other cylindrical member. A slight rocking movement of jaw **29** about pivot **30** is possible and this results in the teeth **29***b* and **13** firmly engaging and gripping the cylindrical body. When jaw **29** and its supporting member **28** are substituted for jaw **15** the wrench is converted into a pipe wrench.

In operation the jaw **15** will be moved by the operator turning member **16** with his fingers. The body **10** is of comparatively small thickness as shown in Fig. 4, and member **16** projects somewhat at the sides thereof so that it can be easily engaged by the fingers of the operator. Jaw **15** can be moved toward or from jaw **12** by reverse movements of member **16**. Member **16** is normally held with its end disposed in recess **10***f* by spring **20** so that it cannot move away from jaw **15**. It is desired at times to remove jaw **15** so that another jaw, such as shown in Fig. 6, may be substituted therefor. To so remove the jaw **15**, it is given a movement toward fixed jaw **12** or pushed toward said jaw. This movement also moves member **16** against the pressure of spring **20**. This moves the end of member **16** out of recess **10***f* and brings member **16** wholly into alignment with recess **10***c*. Member **16** is now moved downwardly into recess **10***c*, shaft **18** moving against the pressure of springs **19**. Member **16** is thus moved away from jaw **15** and the teeth of member **16** are disengaged from the teeth **15***c*. Jaw **15** can now be moved or slid out of guideway **10***a* and thus bodily removed. Another jaw having a portion **15***b* can now be moved into the guideway **10***a*. Member **16** will now be released and permitted to move into the engagement with the teeth on the substituted jaw. When member **16** so moves, the end thereof is moved into recess **10***f* by spring **20**. The wrench is now in condition for operation.

In Fig. 5 a modified structure is shown in which the head **40** has a fixed jaw **40***a* provided with a gripping surface **40***b* equipped with teeth **40***c*. Jaw **40***a* is similar in all respects to jaw **12** above described. Head **40** is provided with a guideway **40***d* which is identical in shape with guideway **10***a* above described. A movable jaw **41** has a portion **41***a* disposed in, fitting in and slidable in guideway **40***d*. Jaw **41** is similar to jaw **15** above described. Jaw **41** has spaced teeth **41***b* at the lower side of portion **41***a*, and these are engaged by the freely rotatable member **42** having the helical teeth **42***a* thereon. Member **42** has one end thereof of cylindrical form and normally disposed in a recess **40***e* formed in head **40**. The recess **40***e* extends from one end of a larger recess **40***f* formed in head **40** and largely disposed below member **42**. Member **42** has a recess **42***b* in the end thereof which is disposed in recess **40***e*, which recess **42***b* is shown as substantially conical. A pin **43** is threaded into one side of head **40** and has a reduced portion **43***a* with a rounded end disposed in recess **42***b*. Screw **43** is thus coaxial with member **42**. Member **42** at its other end is provided with an axial bore in which is disposed a pin **44**. A coiled compression spring **45** is disposed in said bore, engaging the bottom thereof at one end and engaging the inner end of pin **44** at its other end. The outer end of pin **44** is somewhat rounded and is disposed in a shallow conical recess at the upper end of a recess **40***g* formed at one end of recess **40***f*.

In the operation of the structure shown in Fig. 5, member **42** will normally be held in the position shown in Fig. 5 by pressure of spring **45**. The cylindrical end of member **42** is thus held in recess **42***e* and movement of **42** away from jaw **41** is prevented. Jaw **41** can thus be moved toward and from jaw **40***a* by reverse movements of member **42**. When it is desired to remove jaw **41** it is pushed toward jaw **40***a*, and in this movement it also moves member **42** with it, thus compressing spring **45**. Member **42** is thus brought into complete alignment with recess **40***f* and it can be moved or swung downwardly away from jaw **41** and its portion **41***a*. The recess **42***b* permits member **42** to move sufficiently to become disengaged from teeth **41***b* without being completely released from pin **43**. Member **42** is thus moved out of engagement with portion **41***a* but cannot be bodily removed from the wrench. When member **42** is thus moved downwardly out of engagement with portion **41**, jaw **41** can be moved or slid in guideway **40***d* and bodily removed from head **40**. Another jaw, such as shown in Fig. 6, can then be placed in position and member **42** moved upwardly so that its teeth engage in the teeth of the new jaw. When member **42** is moved upwardly, spring **45** again moves the cylindrical end thereof into recess **40***e* and the parts are again in normal position. It will be understood that pin **44** moves downwardly in recess **40***g* when member **42** is moved downwardly.

From the above description it will be seen that I have provided a novel, quite simple, and very efficient structure of wrench which permits bodily removal of the movable jaw. The jaw can be easily and quickly removed by very simple movements of the parts. The same or another jaw can also easily and quickly be then replaced. By having such a readily removable jaw, different types of jaws can be placed in the wrench and its utility is greatly increased. As stated, when a jaw member, such as shown in Fig. 6, is placed in the wrench, the wrench is converted into a very efficient pipe wrench. Should the regular jaw **15** be broken, it could be readily replaced with a new jaw. The size or dimensions of the wrench are not increased by the use of the novel structure disclosed herein. The parts are simple and comparatively few and are so placed that there is no danger or possibility of the same dropping out of the wrench. The wrench has been amply demonstrated in actual practice and found to be very successful and efficient.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the parts, without

departing from the scope of applicant's invention, which, generally stated, consists in a device capable of carrying out the objects above set forth, in the parts and combination of parts disclosed and defined in the appended claims.

What is claimed is:

1. A wrench having in combination, an integral body having a fixed jaw at one end and formed as a handle at its other end, said body having a guideway between said fixed jaw and handle, a movable jaw having a portion disposed in and slidable in said guideway transversely of said handle and provided with teeth at one side, a rotatable member having threads thereon engaging said teeth for moving said movable jaw toward and from said fixed jaw, said body having a recess therein extending from said guideway, said recess being of such size that said rotatable member may move therein out of engagement with said movable jaw, said body having a smaller recess at one end of said recess, said member having one end adapted to be disposed in said smaller recess for holding said member in engagement with said portion of said movable jaw, resilient means acting to hold said end of said member in said smaller recess, said member being movable axially against the pressure of said resilient means to move said end out of said smaller recess and then being movable perpendicularly to said guideway and its own axis into said first mentioned recess out of engagement with said movable jaw.



2. The structure set forth in claim 1, a shaft extending axially through and supporting said rotatable member, resilient means at each end of said rotatable member engaging said shaft and acting to move said rotatable member into engagement with said movable jaw in a direction at right angles to the axis of said shaft and rotatable member.

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