

Aug. 4, 1953

S. O. MORTENSEN
SELF-ADJUSTING WRENCH FOR NUTS
AND LIKE POLYGONAL OBJECTS

2,647,425

Filed Nov. 15, 1947

2 Sheets-Sheet 1

Fig. 1.

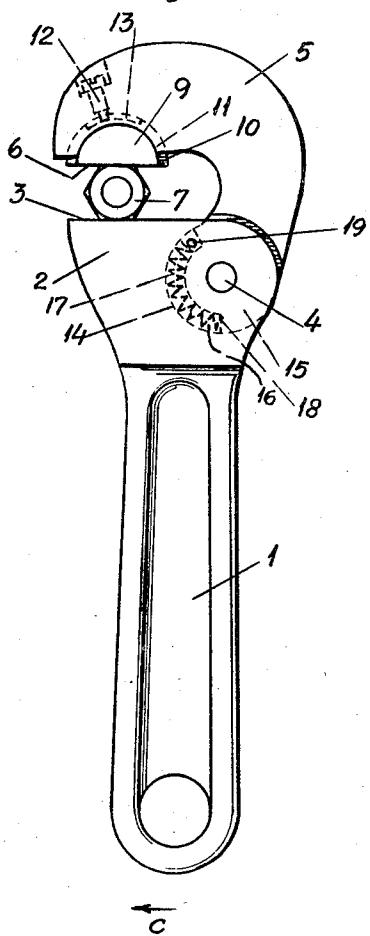
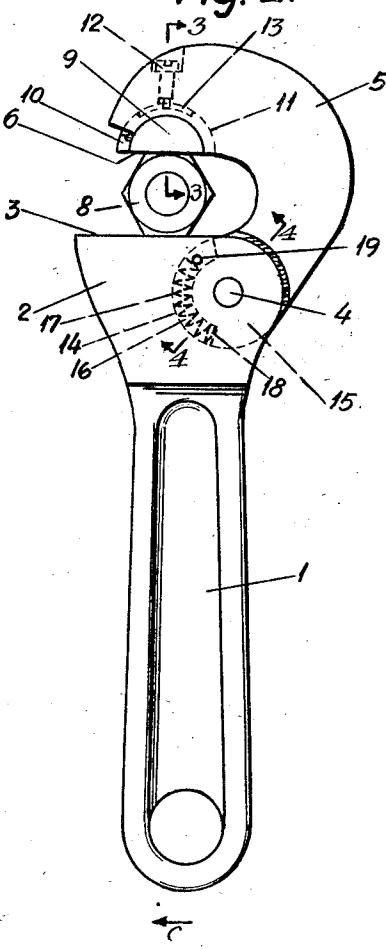


Fig. 2.



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Fig. 5.

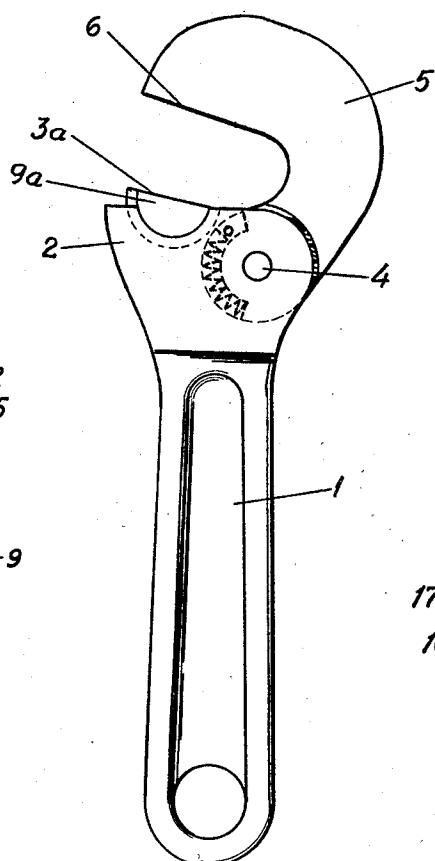


Fig. 3.

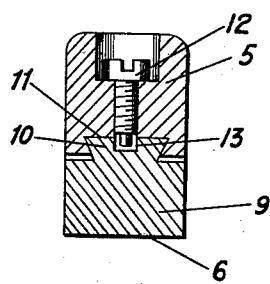
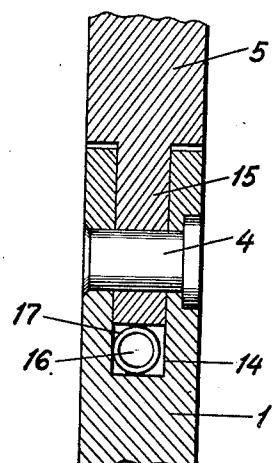


Fig. 4



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SELF-ADJUSTING WRENCH FOR NUTS AND LIKE POLYGONAL OBJECTS

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3 Claims. (Cl. 81—91)

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This invention relates to wrenches and is, more specifically, concerned with wrenches of the type having a fixed jaw associated with the handle of the wrench, and a substantially hook-shaped jaw pivotably connected with the same in such a manner that the jaws are squeezed against an object engaged between them when the handle is actuated to turn such object.

Wrenches of this type can be used for nuts or screws of different sizes without preliminary adjustment of their span. On the other hand they have the drawback that they do not always engage the faces of the nuts or screw heads, but the edges thereof, because the gripping faces of the jaws are not parallel and exactly opposite each other in any position of the pivotable jaw. Therefore, such wrenches are apt to destroy the edges of the nuts or screw heads.

It is the principal object of this invention to provide a wrench of the kind referred to which, within the limits of its span, will afford automatically a full facial engagement between the jaws of the wrench and the flat faces of a nut or like polygonal object engaged between them.

Another object is to provide a wrench of the kind referred to in which the pivotable jaw is resiliently urged towards the fixed jaw by means of a spring and such spring is effectively protected against damage and clogging by foreign matter such as earth, metal shavings, and the like.

In the drawing:

Fig. 1 is a side view of a wrench in accordance with the invention, engaging a relatively small nut.

Fig. 2 is a similar view of the wrench engaging a larger nut.

Figures 3 and 4 are enlarged sections along the lines 3—3 and 4—4, respectively, in Fig. 2, and

Fig. 5 is a side view of another embodiment.

In the drawing, 1 is the shank or handle of the wrench which is integral with a jaw 2, whose substantially straight gripping face is denoted by 3. A substantially hook-shaped jaw 5 is pivotably connected with the handle 1 by means of a pin or stud 4. The substantially straight gripping face of the jaw 5 is denoted by 6. The pivot 4 is so disposed that, when the jaws 2 and 5 of the wrench engage a nut 7 or 8 (Fig. 1 or Fig. 2, respectively) and the handle is urged in the direction indicated by arrow C, the jaws will squeeze themselves against the nut to turn the same.

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In accordance with the invention, the gripping face 6 of the pivotable jaw 5 is adjustable about an axis parallel with the axis of the pivot 4 and situated in or near the gripping face. In the example shown, this is accomplished by the gripping face 6 being formed on an approximately semi-circular member 9 whose diameter coincides exactly or approximately with the gripping face 6 and which is embedded in a likewise approximately semi-circular recess in the jaw 5, in which the member 9 is allowed to turn about its centre axis. The member 9 is positioned in the recess by means of a feather 10 formed on the circumference of the member 9 and having undercut sides engaging the walls of a similarly undercut groove 11 in the recess of the jaw 5. The member 9 can thus only be detached from the jaw 5 if it is turned so much relative to the latter that the feather 10 becomes disengaged from the groove 11. In order to limit turning movement of the member 9 during normal use of the wrench, a circumferential slot 13 in the feather 10 is engaged by a set screw 12 screwed into the jaw 5 to constitute abutment for the member 9.

Obviously, the gripping face 6 will, in any practically possible position of the jaw 5 relative to the jaw 2, be capable of adjusting itself to a position parallel with the gripping face 3, or constituting a definite angle therewith. The latter possibility is of importance in case the faces engaged by the wrench are not parallel. The gripping faces 3 and 6 are thus capable of making facial contact with a polygonal object so as to grip the same firmly without the risk of destroying the edges thereof. Adjustment of the member 9 is automatically effected when the jaws of the wrench are caused to engage the object in question.

The jaw 5 is, by means of a spring, urged towards the jaw 2 to insure an initial engagement with the nut 7 or 8 before the squeezing action of the wrench begins. This spring is, in most wrenches of the type referred to, usually so arranged that foreign material, such as earth, metallic shavings and the like, is apt to become seized therein so as to prevent operation of the spring or even impede relative movement of the jaws. In the construction shown, the handle 1 is formed with a slot or depression 14 of approximately circular shape and having its centre in the axis of the pivot 4. This slot receives a circular web 15 of the jaw 5 of approximately the same diameter and formed with a hole for the pivot 4. The web 15 thus occupies practically

the whole of the space of the slot 14 in such a manner that foreign matter is prevented from penetrating into the slot. The web has, however, reduced radius on part of its circumference situated within the slot 14 so that an arc-shaped compartment 16 is formed in which a coil spring 17 is lodged so as to abut with one end against a radial face 18 on the web 15 and with its opposite end against a pin 19 inserted into the handle 1 and extending across the compartment 16. The spring is thus well protected against dirt etc.

In the form shown in Fig. 5, the gripping face 3a of the fixed jaw 2 is adjustable, an approximately semicircular member 9a, similar to the member 9 in Figures 1 and 2, being provided in the jaw. The member 9a may be positioned in similar manner as the member 9. The gripping face 6 of the pivotable jaw 5 is, in Fig. 5, not adjustable with respect to the body of the jaw. The gripping faces may be knurled to insure a firm grip.

What I claim is:

1. A wrench comprising a handle, a fixed jaw associated with said handle, a substantially hook-shaped jaw pivotally connected with said handle and having a substantially straight gripping face opposite said fixed jaw, said fixed jaw having therein an arcuate recess, and a substantially semi-cylindrical jaw member having a substantially straight diametrical edge face and mounted for free arcuately sliding movement in said arcuate recess so as to be capable of adjusting itself with its straight edge face parallel to said gripping face of said pivotable jaw in all possible positions of the latter.

2. A wrench comprising a handle, a fixed jaw associated with said handle, and having a substantially straight gripping face, a substantially hook-shaped jaw pivotally connected with said handle, and a substantially semi-cylindrical jaw

member having a substantially straight diametrical edge face and mounted for free arcuately sliding movement in an arcuate recess in said pivotal jaw so as to be capable of adjusting itself with its straight edge face parallel to said gripping face of said fixed jaw in all possible positions of said pivotable hook-shaped jaw.

3. A wrench comprising a handle having a circular slot and a fixed jaw, a substantially hook-shaped jaw having a substantially circular web engaged in said slot, said web being of substantially equal diameter therewith so as to close the mouth thereof in any possible position of said hook-shaped jaw, a pivot extending through said handle and said web co-axially with said circular slot and said web; and a spring accommodated in an arcuate recess in the portion of the circumference of said web situated within said slot, and means associated with said handle and extending into said recess to constitute abutment for one end of said spring, the opposite end thereof engaging a substantially radial face on said web at one end of said recess to urge said pivotable jaw towards said fixed jaw.

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