Aug. 19, 1952 I. ZEISSL 2,607,250

JAW ADJUSTING MEANS FOR PLIER-TYPE WRENCHES

Filed April 22, 1950

Fig. 1

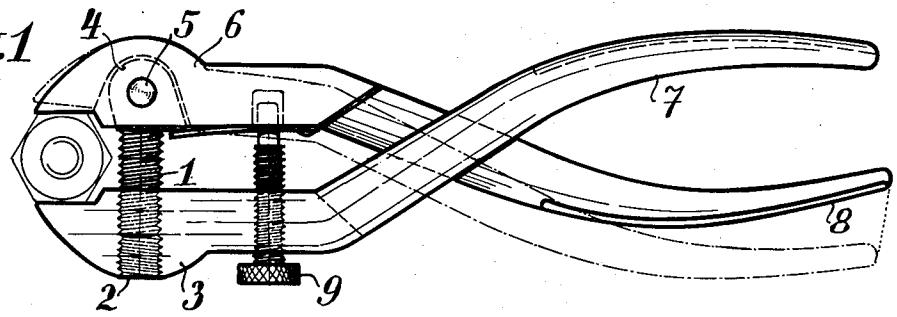


Fig. 2

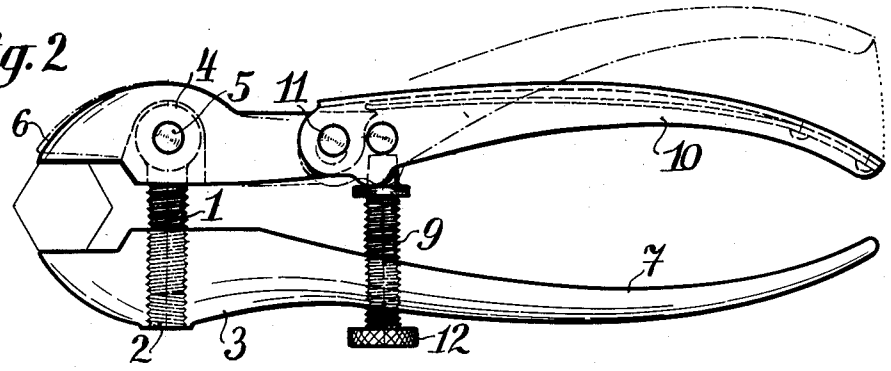


Fig. 3

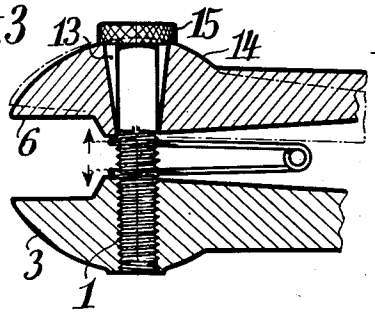
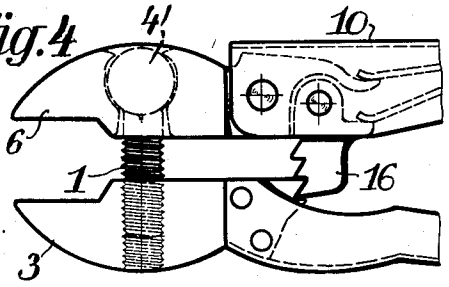


Fig. 4



INVENTOR.
Ignaz Zeissl
BY
Mudall & Hume
Atty

Patented Aug. 19, 1952 2,607,250

UNITED STATES PATENT OFFICE

2,607,250

JAW ADJUSTING MEANS FOR PLIER-TYPE WRENCHES

Ignaz Zeissl, Vienna, Austria

Application April 22, 1950, Serial No. 157,524
In Austria May 5, 1949

7 Claims. (Cl. 81—49)

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Adjustable wrenches are known, the jaws of which, similar to those of pliers, are prolonged backwardly to form handles, and which may be adjusted to different jaw distances by means of a set screw which extends at right angles to the jaws. All these types, however, have so heavy drawbacks that they have not been successful in practice. In one embodiment, e. g., the set screw, supported in a complicated frame, is stressed by eccentric pressure. In another type the set screw is under tensile stress but the closing force is transmitted through an intermediate lever and an additional nut from one jaw lever to the other.

These wrenches yield to the application of force. They are unhandy, heavy, and expensive in manufacture. Another drawback of theirs is that the set screw has a wing- or knurled nut for the adjustment of the jaw distance. This nut results in an additional expense of material, which is particularly undesirable at the head of the wrench because the wrench becomes bulky and unhandy.

According to the inventon these drawbacks are eliminated in that the transverse screw connecting the jaws has its female thread in one jaw and is connected, whether rigidly or movably, with the counter-jaw, and can be screwed into the first-mentioned jaw by turning said jaw about the screw axis. This solution eliminating the need for intermediate members, such as knurled nuts, for adjusting the set screw, the screw can be provided quite in front, near the mouth of the wrench, so that the stress on the jaws is reduced to a minimum, the wrench head becoming stronger and the wrench being suitable for use even where the working space is restricted.

The accompanying drawing shows, by way of example, several embodiments of the invention.

Fig. 1 is a partially sectional elevation showing the wrench, with an articulated counter-jaw;

Fig. 2 shows a similar type comprising a lever in the counter-jaw;

Fig. 3 is an elevation showing a wrench, the transverse screw of which is rigidly connected to the counter-jaw; and

Fig. 4 is an elevation showing the head of the wrench with a strut pawl.

In the embodiment shown in Fig. 1 the transverse screw 1 can be screwed into the female thread 2 of the jaw 3 and is mounted by means of the pin 5 in the jaw 6, so as to be pivotally movable about the eye-head 4. For turning the transverse screw 1 in the jaw 3, the handles 7 and 8, of the two gripping members crossing farther

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back, must be spread apart. The set screw 9 serves for securing the adjusted jaw distance of the wrench and, engaging with the resilient counter-jaw 6, it prevents any unintentional turning of the jaws.

In the embodiment shown in Fig. 2 the counter-jaw 6 is provided with a resilient lever 10, which is linked by means of a pin 11 to the end of the jaw and is supported by the set screw 9. The adjustment of the wrench is effected by turning the transverse screw 1 by means of the jaw 6 of the gripping member provided with lever 10 as a handle. To hold the jaws parallel the set screw 9 must be adjusted accordingly after each adjustment of the transverse screw. When, however, the wrench is held, in adjusting its jaw distance, not at the handle 7 of the jaw 3, but at the screw head 12 of the set screw 9, one screw will screw out, the other one screw in, so that if the pitch is the same both screws will be adjusted evenly and in the proper senses.

Fig. 3 shows a wrench having parallel handle portions 7 and 8. The adjusting screw 1 is fixedly mounted in the jaw 6. When jaw 6 is rotated about the axis of the adjusting screw 1, the same is screwed into or out of the threaded hole provided in jaw 3 whereby the distance between the two jaws of the wrench is adjusted. The position of jaws 3 and 6 is locked by a set screw 9 which engages with an unthreaded end portion a recess in the opposite handle. Since the set screw 9 extends parallel to the adjusting screw 1, and since the length of the portion thereof extending between the two handles is being adjusted, the two gripping members, comprising jaw portions 6, 3 and handle portions 7, 8 are locked against relative rotation about the axis of the adjusting screw. At the same time the two handle portions are blocked so that the adjusting screw is not exposed to a torque when the two handle portions are pressed together.

It is within the scope of the invention to modify, the embodiments shown, e. g., as shown on Fig. 4, by mounting the connecting screw by means of a pin-less head 4' having a round vertical central section in a suitable recess of the counter-jaw, which recess has a constriction at the bottom. The strut pawl 16 is preferably linked to the lever 10.

What I claim is:

1. Jaw adjusting means for plier type wrenches, comprising in combination, two gripping members arranged opposite each other, each gripping member including a jaw portion and a handle portion, one of said gripping members being

formed with a threaded hole located intermediate said jaw portion and said handle portion and having its axis normal to the plane of symmetry between said two gripping members; an adjusting screw having a common axis with said threaded hole in assembled position of said gripping members and mounted at one end thereof in the other of said gripping members for rotation about its axis together with said other of said gripping members, and threaded with its other end into said threaded hole so as to be screwed into and out of the same when said other gripping member is rotated about said axis whereby one full rotation causes an adjustment of the distance between said jaw portions for the pitch of said adjusting screw; and locking means mounted in one of said gripping members between said threaded hole and the handle portion thereof engaging the other of said gripping members and adapted to lock said gripping members against relative movement after the distance between said jaw portions has been adjusted by relative rotation of said two gripping members.

2. Jaw adjusting means for plier type wrenches, comprising in combination, two gripping members arranged opposite each other, each gripping member including a jaw portion and a handle portion, one of said gripping members being formed with a threaded hole located intermediate said jaw portion and said handle portion and having its axis normal to the plane of symmetry between said two gripping members; an adjusting screw having a common axis with said threaded hole in assembled position of said gripping members and fixedly mounted at one end thereof in the other of said gripping members for rotation about its axis together with said other of said gripping members, and threaded with its other end into said threaded hole so as to be screwed into and out of the same when said other gripping member is rotated about said axis whereby one full rotation causes an adjustment of the distance between said jaw portions for the pitch of said adjusting screw; and locking means mounted in one of said gripping members between said threaded hole and the handle portion thereof engaging the other of said gripping members and adapted to lock said gripping members against relative movement after the distance between said jaw portions has been adjusted by relative rotation of said two gripping members.

3. Jaw adjusting means for plier type wrenches, comprising in combination, two gripping members arranged opposite each other, each gripping member including a jaw portion and a handle portion, one of said gripping members being formed with a threaded hole located intermediate said jaw portion and said handle portion and having its axial normal to the plane of symmetry between said two gripping members; an adjusting screw having a common axis with said threaded hole in assembled position of said gripping members and mounted at one end thereof in the other of said gripping members pivotally about an axis normal to the plane defined by said axis of said adjusting screw and by said gripping members for rotation about its axis together with said other of said gripping members, and threaded with its other end into said threaded hole so as to be screwed into and out of the same when said other gripping member is rotated about said axis whereby one full rotation causes an adjustment of the distance between said jaw portions for the pitch of said adjusting screw; and locking means mounted in one of said gripping members between said threaded hole and the handle portion thereof engaging the other of said gripping members and adapted to lock said gripping members against relative movement after the distance between said jaw portions has been adjusted by relative rotation of said two gripping members.

4. Jaw adjusting means for plier type wrenches, comprising in combination, two gripping members arranged opposite each other, each gripping member including a jaw portion and a handle portion, one of said gripping members being formed with two threaded holes, one of said holes adjacent to the jaw portion, and the other spaced therefrom located in the handle portion of said gripping member, said holes having axes normal to the plane of symmetry between said two gripping members; an adjusting screw having a common axis with said threaded hole adjacent to the jaw portion in assembled position of said gripping members and mounted at one end thereof in the other of said gripping members for rotation about its axis together with said other of said gripping members, and threaded with its other end into said threaded hole adjacent to the jaw portion so as to be screwed into and out of the same when said other gripping member is rotated about said axis whereby one full rotation causes an adjustment of the distance between said jaw portions for the pitch of said adjusting screw; and a locking screw threaded through said threaded hole in said handle portion and having an unthreaded end portion engaging a recess in the handle portion of the other of said gripping members and adapted to lock said gripping members against relative movement after the distance between said jaw portions has been adjusted by relative rotation of said two gripping members.

5. Jaw adjusting means for plier type wrenches, comprising in combination, two gripping members arranged opposite each other, each gripping member including a jaw portion and a handle portion, one of said gripping members being formed with a threaded hole located intermediate said jaw portion and said handle portion and having its axis normal to the plane of symmetry between said two gripping members; an adjusting screw having a common axis with said threaded hole in assembled position of said gripping members and mounted at one end thereof in the other of said gripping members pivotally about an axis normal to the plane defined by said axis of said adjusting screw and by said gripping members for rotation about its axis together with said other of said gripping members, and threaded with its other end into said threaded hole so as to be screwed into and out of the same when said other gripping member is rotated about said axis whereby one full rotation causes an adjustment of the distance between said jaw portions for the pitch of said adjusting screw; spring-operated ratchet means pivotally mounted in the handle portion of said other of said gripping members; and a pawl fixedly mounted in said one of said gripping members engaging said ratchet means and adapted to lock said gripping members against relative movement after the distance between said jaw portions has been adjusted by relative rotation of said two gripping members.

6. Jaw adjusting means for plier type wrenches, comprising in combination, two gripping members arranged opposite each other, each gripping member including a jaw portion and a handle portion, one of said gripping members being

formed with a threaded hole located intermediate said jaw portion and said handle portion and having its axis normal to the plane of symmetry between said two gripping members, and the other of said gripping members having its handle portion mounted on said jaw portion pivotally about an axis normal to the plane defined by said axis and by said gripping members; an adjusting screw having a common axis with said threaded hole in assembled position of said gripping members and mounted at one end thereof in the other of said gripping members pivotally about an axis normal to the plane defined by said axis of said adjusting screw and by said gripping members for rotation about its axis together with said other of said gripping members, and threaded with its other end into said threaded hole so as to be screwed into and out of the same when said other gripping member is rotated about said axis whereby one full rotation causes an adjustment of the distance between said jaw portion for the pitch of said adjusting screw; a pin passing through said pivotally mounted handle portion spaced a short distance from the pivoting point of the same; and locking means mounted in said handle portion of said one of said gripping members and engaging said pin so as to permit a pivoting movement of said pivotally mounted handle portion causing a pivotal movement of said jaw portion, and further engaging a recess in said pivotally mounted handle portion of said other of said gripping members, and adapted to lock said gripping members against relative movement after the distance between said jaw portions has been adjusted by relative rotation of said two gripping members.

7. Jaw adjusting means for plier type wrenches, comprising in combination, two gripping members arranged opposite each other, each gripping member including a jaw portion and a handle portion, one of said gripping members being formed with two threaded holes, one of said holes adjacent to the jaw portion, and the other spaced therefrom located in the handle portion of said gripping member, said holes having axes normal to the plane of symmetry between said two gripping members; an adjusting screw having a common axis with said threaded hole adjacent to the

jaw portion in assembled position of said gripping members and mounted at one end thereof in the other of said gripping members for rotation about its axis together with said other of said gripping members, and threaded with its other end into said threaded hole adjacent to the jaw portion so as to be screwed into and out of the same when said other gripping member is rotated about said axis whereby one full rotation causes an adjustment of the distance between said jaw portions for the pitch of said adjusting screw; a pin passing through said pivotally mounted handle portion spaced a short distance from the pivoting point of the same; and a locking screw threaded through said threaded hole in said handle portion in said one gripping member and having an unthreaded end portion abutting against said pin so as to permit a pivoting movement of said pivotally mounted handle portion causing a pivotal movement of said jaw portion, said end portion of said locking screw also engaging a recess in said pivotally mounted handle portion of said other of said gripping members and adapted to lock said gripping members against relative movement after the distance between said jaw portions has been adjusted by relative rotation of said two gripping members.

IGNAZ ZEISSL.

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