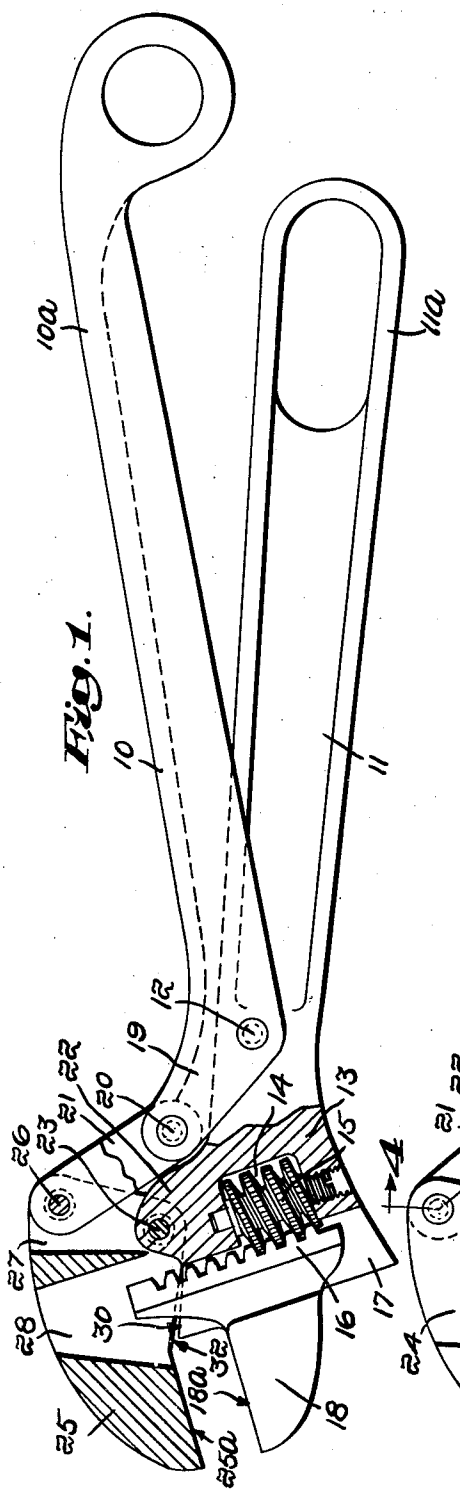
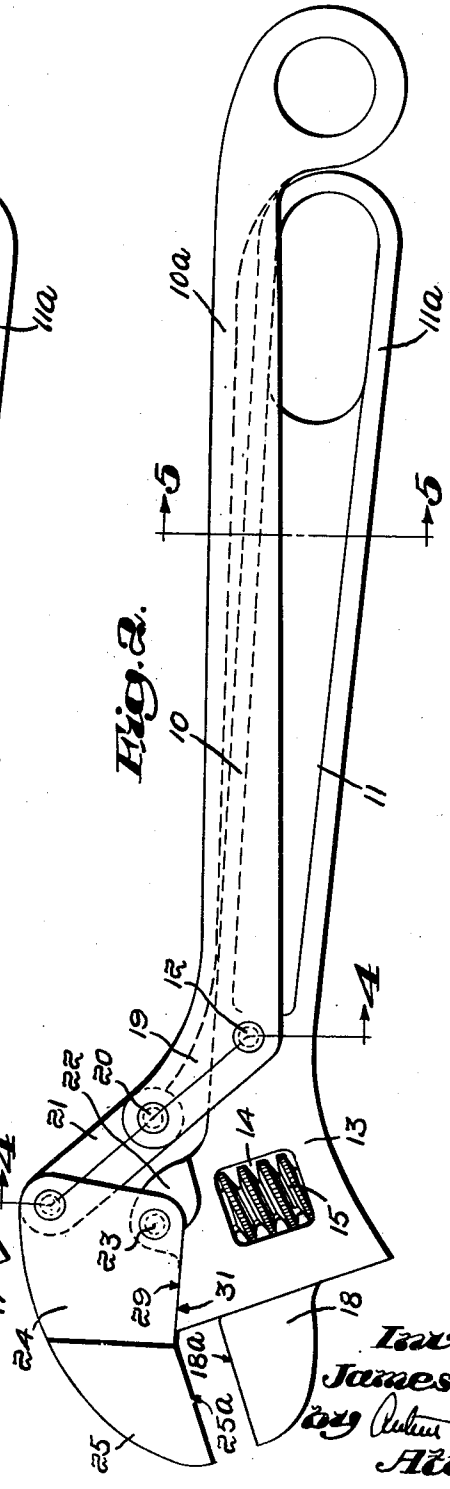
Nov. 6, 1956 J. W. HEALY 2,769,359

TOGGLE WRENCH

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Fig. 3.

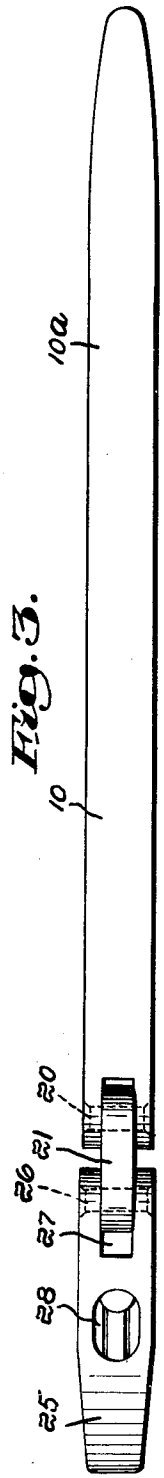


Fig. 5.

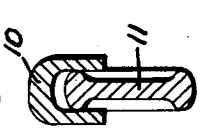
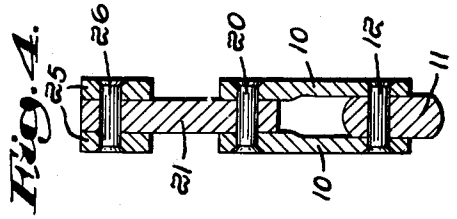


Fig. 4.



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TOGGLE WRENCH

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Application January 20, 1955, Serial No. 483,076

1 Claim. (Cl. 81—84)

This invention relates to wrenches and more particularly to the type of wrench having a slidable jaw by which the jaw opening can be adjusted to fit objects of various sizes.

The ordinary sliding jaw wrench, known as a monkey wrench, has a single handle carrying a fixed jaw, and a movable jaw mounted to slide on the handle toward and away from the fixed jaw, the position of the sliding jaw being adjusted by means of a worm and rack so that the jaw remains in any desired position. The chief advantage of this type of wrench is that the jaw faces always remain parallel and thus will grip opposite sides of a nut squarely, regardless of the size of the nut. The disadvantage is that the play in the worm drive does not allow any substantial pressure to be applied in tightening the jaws on a nut, so that the jaws tend to slip off and to deform the corners of the nut, especially on small nuts, which provide very little bearing surface.

A conventional pair of pliers consists of a pair of pivoted handles each carrying a jaw. This arrangement allows considerable pressure to be applied to the jaws, but the jaw faces are parallel only in a certain position, and thus will grip squarely on only a single size of nut. Also, the jaw portions, forward of the fulcrum, are made considerably shorter than the handles, to provide the desired mechanical advantage. Consequently, the handles must be swung wide apart for gripping large objects, and the tool is not easy to manipulate with one hand. The object of this invention is to produce a wrench which combines the advantages of a conventional monkey wrench and a pair of pliers, in that the jaws remain substantially parallel over a wide range of adjustment yet considerable pressure can be applied to hold the jaws on the nut, and which has the further advantage that only a limited travel of the handles is necessary so that the tool can be easily operated with one hand. Other advantages and novel features will be apparent from the description which follows.

The wrench consists in general of a pair of pivoted handles, one of which carries a slidable jaw and the other of which is connected by a toggle linkage to a rotatable jaw. The latter is journalled on the handle which carries the sliding jaw and has a very limited travel, the size of the jaw opening being adjusted by movement of the sliding jaw.

In the drawings illustrating the invention:

Fig. 1 is a side view, partly in cross-section, of a wrench constructed according to the invention, showing the jaws in relaxed position;

Fig. 2 is a side view of the wrench showing the jaws in tightened position;

Fig. 3 is a plan view of the wrench;

Fig. 4 is a cross-section along line 4—4 of Fig. 2; and

Fig. 5 is a cross-section along line 5—5 of Fig. 2.

The handles **10** and **11** are pivoted to swing with respect to each other on a pin **12** and provide hand grip areas **10***a* and **11***a* toward their right hand ends. Handle **10** is dished on the under side to fit down around handle

11 when the handles are pressed together, as in Fig. 2. Handle **11** is extended to form a base **13** for the sliding jaw on the left-hand side of the fulcrum pin **12**. This base has an opening **14** in which the worm **15** which drives the sliding jaw is mounted. The rack **16**, which meshes with worm **15**, slides in a slot **17** in the base and carries the jaw **18**.

Handle **10** is extended to form a short arm **19** to the left of the fulcrum pin. This arm is connected by a pin **20** to a link **21**. Mounted on a lug **22** on base **13** is a pin **23** which rotatably connects a jaw body **24** to the base. This body carries a jaw **25** which cooperates with the sliding jaw in somewhat the same manner as the usual fixed jaw on a monkey wrench. Link **21** is connected to jaw body **24** by a pin **26**. The jaw body has a central groove **27** at the rear in which link **21** rides freely, and also a slot **28** to accommodate the upper end of rack **16**.

It is clear from the construction of the wrench that, when the handles are pressed together, jaw body **24** will be rotated counterclockwise (as viewed in Figs. 1 and 2) about pin **23**, thus moving jaw face **25***a* toward jaw face **18***a*, and that, when the handles are moved apart, the jaw body will be rotated clockwise to move jaw face **25***a* away from jaw face **18***a*. The clockwise travel of the jaw body is limited by the engagement of the lower end of link **21** with the back of lug **22**. The walls of jaw base **13** to either side of slot **17** have sloping upper surfaces **29** and **30** which engage the under surfaces **31** and **32**, respectively, of jaw body **24** on either side of slot **28**, to limit the counter-clockwise travel of the jaw body. When the jaw body is in its extreme counterclockwise, or closed position, jaw faces **25***a* and **18***a* lie exactly parallel. As the total travel of the jaw body is very small, the faces are only slightly out of parallel when the jaw body is in its extreme clockwise, or open position, as shown in Fig. 1.

The tool is used in the following manner. With the handles open, jaw **18** is adjusted by means of worm **15** so that the jaw faces engage the nut or other object on which the wrench is to be used. Preferably the engagement is a little looser than would be normal for a conventional monkey wrench. On a hexagonal nut, for example, a monkey wrench is usually made as tight as possible, and it is difficult to free the jaws from one pair of parallel sides on the nut and apply them to another pair, as must frequently be done because of space limitations in turning the handle. It is usually necessary to loosen and readjust the sliding jaw, an operation which is time consuming and requires two hands. This wrench can be adjusted so that the jaws are loose enough, when the handles are apart, to allow the jaws to be shifted easily from one pair of sides to another pair on the nut. Nevertheless, when the handles are squeezed together the jaws will engage the nut tightly. This shift can be easily made with one hand as the travel of the handles is relatively small, and worm **15** need not be readjusted each time. Preferably the jaw opening should be adjusted so that the jaws engage the nut when jaw **25** is slightly out of its fully closed position. Considerable pressure can then be applied to the jaws by pressing the handles together. Because of the fact that so much pressure can be applied, the wrench can be used endwise on a nut, in the manner of pliers, as well as sidewise, in the manner of a monkey wrench, and thus lends itself to use in locations inaccessible to the latter.

What is claimed is:

A wrench comprising a first handle and a second handle connected together for relative rotation about a common fulcrum, a jaw base fixed to said first handle, a first jaw slidably mounted on said base, a second jaw connected to said base and rotatable thereon toward and away from said first jaw, the latter being slidable toward

and away from said second jaw, a stop member disposed to limit the travel of said second jaw toward the first, said jaws having opposed faces and said stop member being disposed to stop the second jaw in a position in which the jaw faces are substantially parallel, and an arm attached to said second handle, a link having a first swivel connection with said arm and a second swivel connection with said second jaw, said arm and link being disposed to rotate said second jaw toward the first when the handles are pressed together, and said swivel connections and said fulcrum lying substantially in a straight line when said jaws are parallel.

References Cited in the file of this patent

UNITED STATES PATENTS

1,418,529	Burnell	June 6, 1922
1,526,761	Robinson	Feb. 17, 1925
1,641,153	Butt	Sept. 6, 1927
2,112,192	Geddes	Mar. 22, 1938
2,524,689	Westman	Oct. 3, 1950
2,617,458	Kelly	Nov. 11, 1952
2,704,476	Lisota	Mar. 22, 1955