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WRENCH.

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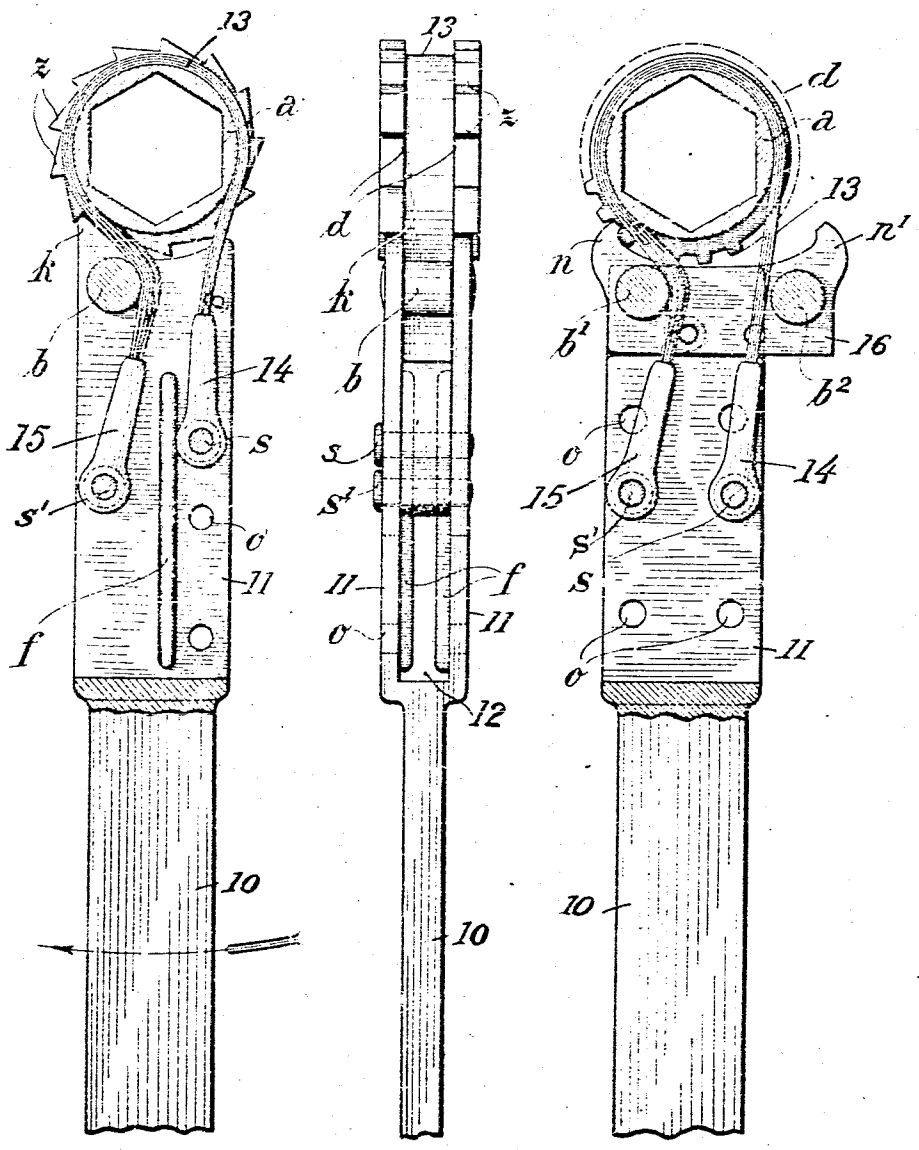
Fig. 1. Fig. 2. Fig. 3.



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UNITED STATES PATENT OFFICE.

FRITZ GARPHEIDE AND WILHELM WESTERHEIDE, OF SOLINGEN, GERMANY.

WRENCH.

964,100. Specification of Letters Patent. Patented July 12, 1910.

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To all whom it may concern:

Be it known that we, FRITZ GARPHEIDE and WILHELM WESTERHEIDE, both citizens of Germany, and both residents of Solingen, Germany, have jointly invented new and useful Improvements in Wrenches, of which the following is a specification.

This invention relates to a wrench which is of simple construction, may be readily manipulated, and is adapted to obtain a firm grip upon the nut, bolt or other article to be turned.

In the accompanying drawing: Figure 1 is a longitudinal section of our improved wrench; Fig. 2 a front view thereof, and Fig. 3 a longitudinal section of a modification.

The handle 10 of the tool is slotted at its upper end to form a pair of parallel cheeks 11. At one of their ends, these cheeks are pointed to form integral pawls *k*, and in proximity to such pawls, there extends through the cheeks, a bolt *b*, which traverses the slot 12 intermediate the cheeks. Into this slot extend the two ends of a bow-shaped flexible band 13, such ends being provided with end-pieces 14, 15, secured to cheeks 11 by pins *s*, *s'*. Band 13 encompasses a rotatable head *a*, having a hexagonal eye which is adapted to engage the nut, bolt head or other article to be turned. Head *a*, is provided with a pair of side flanges or rims *d*, which flank the band and are provided with teeth *z*, adapted to be engaged by pawls *k*. One end of band 13, is adjustably secured to cheeks 11, so that the band is adapted to engage heads *a*, of different diameters. To this effect cheeks 11 are provided with a series of spaced apertures *o*, into which pin *s*, is adapted to be inserted, a pair of rails *f*, on cheeks 11, serving as guides for properly aliuing the apertured end of end-piece 14 with any one of apertures *o*.

If the handle is turned in the direction of the arrow, Fig. 1, band 13 will be bent around pin *b*, which thus constitutes an abutment and causes the operative length of the band to be shortened, so that it will firmly grasp head *a*. At the same time, pawls *k*, will operatively engage teeth *z*, so that a tight hold of the tool, on head *a*, is obtained, and the latter will be positively rotated. If the handle is turned in the other direction, band 13 will become disengaged from abutment *b*, so that the band is slackened, while pawls *k*, will simultaneously release teeth *z*.

With the construction shown in Fig. 3, the wrench is made adjustable, so that it can be set to turn head *a*, by being swung either to the right or to the left. Here the tool is provided with a slide 16, having a pair of abutments b', b^2, and duplex pawls *n*, n', at opposite ends. The teeth on head *a*, may either be made of a shape adapted to receive pawls *n* and also pawls n', or the teeth on diametrically opposite sides of flange *d*, may be opposed to each other. By moving slide 16, either to the right or left, either abutment b' together with teeth *n*, or abutment b^2, together with teeth n', will grasp head *a*, as the tool is swung forward, as will be readily understood. As shown in Fig. 3, both ends of band 13 may be adjustably secured to cheeks 11, if desired.

We claim:

1. A wrench, comprising a handle having a fixed pawl and an abutment, a head having a toothed rim adapted to be engaged by the pawl, and a band which is secured to the handle and encompasses the head, said band being adapted to operatively engage the abutment.

2. A wrench, comprising a slotted handle having a pair of fixed pawls and an abutment traversing the handle-slot, a head having a pair of toothed rims adapted to be engaged by the pawls, and a band which is secured to the handle and encompasses the head, said band being adapted to operatively engage the abutment.

3. A wrench, comprising a handle having a fixed pawl and an abutment, a head having a toothed rim adapted to be engaged by the pawl, a band which encompasses the head and is adapted to operatively engage the abutment, means for adjustably secur-

ing the band to the handle, and means for guiding the band during such adjustment.

4. A wrench, comprising a handle, a slide engaging the same and having a pair of fixed pawls and a pair of abutments, a head having toothed rims adapted to be engaged by the pawls, and a band which is secured to the handle and encompasses the head, said band being adapted to operatively engage either one of the abutments.

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