To all whom it may concern:

Be it known that I, WALTER HERBERT COOK, a subject of the King of England, and residing at Nazing Lodge, Oak Road, New Southgate, London, England, have invented certain new and useful Improvements in Fixed-Jaw Spanners, of which the following is a specification.

This invention relates to fixed-jaw spanners for hexagonal nuts and bolts and has for object to provide a spanner, without any yielding or loose-jaw members which will not only take at the same end of nuts of two or more sizes but will allow the spanner at that end to ratchet over the corners of the nut or bolt-head.

According to the present invention, a fixed-jaw spanner comprising on one side a plurality of jaw faces arranged in echelon and parallel to an opposite rectilinear jaw face, is made to ratchet or ride over the corner of the nut engaged, when on the return or non-working stroke of the spanner. This novel result in a fixed jaw spanner is obtained by making each stepped jaw face which is parallel to the rectilinear jaw face, of a length equal to approximately one-third the face of the hexagonal nut or bolt-head for which it is intended. This one-third length of face whilst enabling the spanner to engage the nut operatively on its working stroke, allows the shorter face jaw to ride over the corner of the hexagonal face engaged, when the return or non-working stroke of the spanner takes place.

Upon the accompanying drawings, Figure 1 shows a fixed-jaw ratchetting spanner made according to the present invention. Figure 2 is a similar view indicating in dotted lines four nuts operatively engaged by the various jaws.

Figures 3, 4 and 5 on a smaller scale show the same spanner engaging nuts of three different sizes and on the working stroke.

Figures 3a, 4a and 5a show how the shorter jaw of the spanner in Figures 3, 4 and 5 moves towards the next adjacent corner of the nuts in the ratcheting movement.

The spanner may be single-ended, as shown, or double-ended as will be obvious; and is illustrated as having a handle or stem a. The rectilinear face of the jaw is shown at b. Parallel with said rectilinear face are two or more jaws here shown four in number at c, d, e, f and connected together by steps g parallel with the inner face h.

The jaws c, d, e, f are each one-third the length of the face of the hexagonal nut which they are intended to engage. The jaw face b preferably projects beyond the face f.

The ratcheting action will be understood from the figures, particularly Figures 5 and 5a. The nut i in Figure 5 is operatively engaged by the spanner through the faces b, f and g and the nut is thus turned in the direction of the arrow. In Figure 5a, the extremity of jaw-face f is travelling along the hexagonal face s of the nut and when this movement has been continued to allow the extremity f to pass beyond the corner l of the nut, the said corner or angle will become engaged by the faces f and g so as to be ready for the next working stroke of the spanner. This corner l of the nut is the one between the hexagonal face which has just been engaged and the next hexagonal face to be met by the jaw face f. From Figure 4a it will be noted that as the jaw d travels along the face of the nut, the corner s of the nut rides along the rectilinear unserrated face b. So far as I am aware this ratcheting action in a fixed jaw spanner is entirely novel and it is due entirely to the herein-described construction wherein each of the jaw faces opposite to the rectilinear jaw face b is of a length equal to one-third of the face of the hexagonal nut or bolt-head which is to be operatively engaged by that stepped jaw face.

The spanner shown in Figures 1 and 2 is intended to take four nuts of consecutive standard sizes, but I wish it to be understood that two, or more than two, stepped faces parallel to the rectilinear face b and each approximately one-third of the length of the hexagonal face of the particular nut or bolt-head, may be provided.

As regards the expression "approximately one-third" of the length I desire it to be understood that this fraction may vary very slightly according to the amount of clearance allowed between the parallel jaws and the nut which they are designed to engage.

It will be noted the jaw faces c, d, e, f are arranged in echelon and that in addition to being of increasing length from the jaw face for the smallest to the jaw face for the largest nut, they are joined by steps g which decrease in length from the jaw face c to the jaw face f. The spanner when
turned over so that the rectilinear jaw face \( b \) is on the right instead of the left will work operatively and likewise ratchet, in the opposite directions to those illustrated.

The improved spanner may be made double-ended if desired, as will be obvious, and it may be formed by stamping, drop forging or otherwise. It will be noted that it has no loose parts or yielding jaws to enable the ratcheting action to be obtained.

Having thus described my invention what I claim is:

1. A fixed jaw spanner, comprising a rectilinear jaw face, and a series of stepped jaw faces opposite to and parallel to said rectilinear jaw face, each of said stepped jaw faces being in length equal to approximately one third of the face of the hexagonal nut which is to be operatively engaged by that jaw face, and the steps of said stepped jaw faces being of such a length that they decrease from the smallest to the largest of the said jaw faces.

2. A fixed-jaw spanner, comprising a plurality of jaw faces arranged in echelon, a rectilinear, unserrated jaw face opposite to said plurality of jaw faces and parallel thereto, each of said jaw faces in echelon being of a length equal to one third of the face of the hexagonal nut which is to be engaged by that jaw face, the steps between the jaw faces in echelon decreasing in length from the smallest to the largest of the said echeloned jaw faces.

In testimony whereof I hereunto affix my signature.

WALTER HERBERT COOK.