

REF. COPY

PATENT SPECIFICATION



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PROVISIONAL SPECIFICATION.

No. 989, A.D. 1926.

Improvements in Adjustable Spanners.

I, EDWIN BOLTON, a British subject, of 186, Hearsall Lane, Coventry, Warwickshire, do hereby declare the nature of this invention to be as follows:—

This invention relates to adjustable open-ended spanners, and its object is to provide an improved construction and adjustment means which will ensure considerable rigidity of the moving jaws without being unduly thick, whilst at the same time being relatively inexpensive to manufacture. The construction is also one which is particularly suitable for the small nuts such as are used for British Association or other small threads.

According to this invention, both jaws are simultaneously adjustable by a single operating device, and have inclined outer edges adapted to engage co-operating guide surfaces, so that movement of the operating device in one direction tends to close them together and in the opposite direction to cause or allow them to open.

In one method of carrying out the invention, a tubular stem is provided with spaced end plates between which the jaws are located. The inner ends of the jaws are pivotally connected to one another and to an operating rod extending through the tubular stem. The outer edges of the jaws are inclined for a distance sufficient to provide the required range of adjustment, their acting portions projecting beyond the spaced plates. The latter may be held together by pins which form the guide surfaces for the edges of the jaws.

The end of the operating rod is

screw-threaded and provided with an adjusting nut which bears on the end of the tubular stem, and a spring opposes the inward movement of the jaws. Thus, when the adjusting nut is tightened up, the jaws are drawn in, and the engagement at their inclined edges with the pins causes them to close together as required. By making the length of the jaws from their pivotal connections of sufficient length, there is very little alteration in parallelism of the faces of the jaws throughout their working range.

If preferred, however, the jaws, instead of being hinged together, could be so guided that their acting faces were always parallel to one another.

As a further alternative, the jaws and the operating rod could be formed of one piece, the jaw being split sufficiently in the axial direction of the rod to ensure the necessary adjustment movement of its opposite parts.

Where the jaws are hinged to one another they may be normally thrust apart by a C-shaped spring located between the hinge and the acting surfaces of the jaws. Alternatively, a collar may be provided on the operating rod at the end adjacent the jaws, and between this collar and a shoulder provided at the end of the tubular stem a compression spring can be located. The jaws could then be prolonged slightly beyond their pivotal connection to provide toes against which the end of the operating rod (or the face of the collar provided upon it) would bear, tending normally to open the jaws.

The stem could be separately formed

from the end part carrying the jaws, and could be screw-threaded into it. The spaced plates would then be obtained by slitting a suitably shaped piece of metal having provided upon it a boss into which the tubular member is screw-threaded.

If desired, the end of the operating rod could be shaped to form a screw-driver, or a suitable tip could be provided for the purpose.

As will be seen, the invention pro-

vides a simple and useful type of spanner which is particularly serviceable for use with small kinds of nuts, and is relatively inexpensive to manufacture.

Dated this 12th day of January, 1926.

ERIC W. WALFORD,
Fellow of the Chartered Institute of
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PROVISIONAL SPECIFICATION.

No. 17,738, A.D. 1926.

Improvements in Adjustable Spanners.

I, EDWIN BOLTON, a British subject, of 186, Hearsall Lane, Coventry, Warwickshire, do hereby declare the nature of this invention to be as follows:—

This specification relates to the adjustable spanner described in my co-pending Application No. 989/26 and comprises certain modifications and improvements adapted not only to reduce the cost of manufacture but also to provide a neater and more compact spanner.

The principal modification consists in forming the tubular stem and the spaced plates between which the jaws are located in one piece. This is effected by enlarging progressively the diameter of one end of a tube adapted to form the stem, and thereafter flattening the enlarged end so that it resembles a fish-tail and will receive the jaws slidably between the flattened sides, whilst providing also inclined edges adapted to guide the jaws. This provides a very cheap and effective construction, and furthermore, it is more compact and also devoid of the projecting parts existing in the construction described in my prior specification.

As a modification to the foregoing, the tubular stem may also be flattened throughout its length and the operating rod may also be of flattened section to slide within it. The end of the rod remote from the jaws is reduced and screw-threaded and engaged by an adjusting nut working in an aperture provided in both sides of the flattened stem. The adjacent end of the stem may, if desired, be closed by a cap or plug, and this may carry a screwdriver tip or the latter can be formed with or fixed in the stem.

The latter arrangement may be employed in conjunction with jaws which are separately formed and guided so that their acting faces remain parallel throughout their full range of movement. The outer edges of the jaws are guided by the flared or fish-tailed end of the tubular stem, and at this position have inner sides which are parallel to their outer sides so that a pin or stop can engage therewith and hold them in sliding contact with the stem. For this purpose a single pin extending through the enlarged flattened end of the stem can be employed to engage with each of the jaws.

The inner ends of the jaws are grooved transversely, as also is the adjacent end of the operating rod, and the thickness of the ends of each of these is reduced slightly so that they will engage positively with one another without taking up added space in the direction of their thickness. This arrangement provides an operative connection with the jaws, and furthermore it permits of the side movements of the jaws during opening and closure.

It will be evident, therefore, that the above described modifications are adapted to simplify and cheapen the manufacture of the spanner, whilst at the same time giving it a more compact form, which is free from projecting parts.

Dated this 14th day of July, 1926.

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COMPLETE SPECIFICATION.

Improvements in Adjustable Spanners.

I, EDWIN BOLTON, a British subject, of 186, Hearsall Lane, Coventry, Warwickshire, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to adjustable open-ended spanners, of the kind in which a pair of jaws is pivotally or otherwise connected with one end of an adjustment rod to permit them to move towards or away from one another, the jaws being provided with inclined edges adapted to co-operate with guide surfaces on a part surrounding the jaws to effect the simultaneous adjustment of the latter.

It has previously been proposed to construct adjustable box spanners with radially movable segments controlled by a tubular stem of wedge form, and also for ratchet wrenches it has been proposed to pivot a pair of jaws to a threaded adjusting stem and to mount them in a chuck body in engagement with inclined sides therein so that they were opened or closed by movement of the adjusting rod. In another proposed ratchet wrench a stock adapted to fit the wrench socket carried a pair of laterally movable jaws having their outer sides inclined and engaged by a sleeve sliding upon the stock and carrying also a pin acting on inclined edges of the inner sides of the jaws, holding the jaws in contact with the sleeve and thus ensuring both opening and closing movement of the jaws when the sleeve is moved.

None of these constructions, however, has been suitable for operating on small nuts such as are used for British Association or other small threads, and the object of the present invention is to provide a spanner which will be suitable for such nuts and can be made much thinner than the above described tools whilst at the same time being relatively inexpensive to manufacture.

According to this invention, the jaws, which are formed of relatively thin material, are mounted between flat parallel spaced guide plates carried by a tubular stem enclosing the adjustment member and receiving directly the thrust of the adjusting nut.

In the accompanying drawings,

Figure 1 is a sectional plan of a preferred construction which is shown in sectional elevation in Figure 2.

Figure 3 is a sectional plan of a modification.

Figure 4 is a part-sectional plan of a further modification, and

Figures 5 and 6 are respectively a sectional plan and a part-sectional elevation of a still further modification.

In Figures 1 and 2, the body part 2 is formed from a flattened tube which at one end is flared as at 3. This arrangement, therefore, provides in effect spaced plates 4 integrally formed with a tubular stem portion, the jaws 5 being mounted to slide between the spaced plates, whilst in the stem is slidably mounted a sliding adjustment member 6 operatively connected to the jaws.

The jaws have inclined edges 7 adapted to be engaged and guided by the correspondingly inclined sides of the flared portion 3 of the body part and they are retained in sliding engagement therewith by a pin 8 extending between and secured to the spaced plates 4. In the inner ends of the jaws 5 are formed transverse notches 9, the thickness of the extremities being somewhat reduced as at 10. A corresponding notch 11 and reduction in thickness 12 of the sliding adjustment member 6 is also made so that the jaws can be operatively engaged with the adjustment member so as to move positively in both directions. At the same time the transverse notch permits the relative movement of the jaws towards and away from one another.

The end of the operating member 6 remote from the notched portion is reduced and screw-threaded as at 13 for engagement by an adjusting nut 14 working in an aperture 15 provided in both sides of the flattened stem 2 and bearing against the stem. The adjacent end of the stem may, if desired, be closed by a cap 16 or block, and this may carry a screw-driver tip 17 or the latter may be formed with or fixed in the end of the stem 2.

The construction just described has the advantage that the acting faces of the jaws are retained parallel with one another throughout their range of adjustment, whilst at the same time the construction is one which is simple and

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relatively inexpensive to manufacture, possessing considerable strength and being very thin at its acting part.

In the modified construction shown in Figure 3, the tubular stem 2 may be of circular cross section, one end as before being flared and flattened as at 3. This provides the spaced plates 4 and the guiding edges for the jaws at 7. The latter may be formed integrally with the operating rod 6 and a longitudinal slit 18 at the junction of the rod and the jaws provides a resilient connection such that the jaws are self-opening when the adjusting rod is slacked, and are retained in contact with the guide surfaces 7. The operating rod is reduced and screw-threaded at 13 and is provided with an adjusting nut 14 which in this case bears on the outer end of the stem 2. This forms an even cheaper construction, and the slight want of parallelism of the jaws at certain positions of their adjustment is not important.

In the further alternative constructions shown in Figures 4, 5 and 6 the inner ends of the jaws are pivotally connected to one another and to the operating rod at 19. The outer edges of the jaws are inclined for a distance sufficient to provide the required range of adjustment between the spaced plates 4. The latter may be separately formed as in Figures 5 and 6 and held together by pins 20 the outer of which form the guide surfaces for the edges of the jaws, whilst the inner connect the plates with lugs on the stem.

The pivoted jaws in Figures 5 and 6 may be normally thrust apart by a C-shaped spring 21 located between the pivot 19 and a continuation of the acting surfaces of the jaws. Alternatively, as in Figure 4, a loose collar 22 may be provided on the operating rod 6 at the end adjacent the jaws, and between this collar and a shoulder 23 provided at the end of the tubular stem a compression spring 24 can be located. The jaws could then be prolonged slightly beyond their pivotal connection at 19 to provide toes 25 against which the face of the collar 22 would bear, tending normally to open the jaws.

As shown in Figure 4, the tubular stem 2 could be formed separately from the spaced end plates between which the jaws are mounted, and could be screw-threaded into it at 26. The spaced plates 4 would then be constituted by slitting a suitably shaped piece of metal having provided upon it a boss 27 into which the tubular stem is screw-threaded.

In all of the foregoing constructions, the end of the operating rod could be shaped to form a screwdriver 17, or a suitable tip could be provided for the purpose.

As will be seen, the invention provides a simple and useful type of spanner which is particularly serviceable for use with small kinds of nuts, and is relatively inexpensive to manufacture.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A spanner of the kind referred to, in which the jaws are formed of thin material and are mounted between flat parallel spaced guide plates carried by a tubular stem enclosing the adjustment member and receiving the thrust of the adjusting nut, substantially as described.

2. An adjustable spanner, as claimed in Claim 1, in which the operating rod or like member and the jaws are connected by a joint such as 9—12, which provides for the positive operation of the jaws in both directions and for their relative movements parallel to one another, substantially as described.

3. An adjustable spanner, as claimed in Claim 1, in which the jaws are formed integrally with the adjustment member, the attachment being resilient and adapted to thrust them away from one another and against their guides, substantially as and for the purpose described.

4. An adjustable spanner, as claimed in Claim 1, in which the spaced plates are formed integrally with one another and with a boss such as 27 to which the stem is secured, substantially as described.

5. An adjustable spanner, as claimed in Claim 1, in which a spring is mounted upon the adjusting member and bears on toes such as 25 formed on a prolongation of the jaws beyond their pivotal connection to the rod, substantially as and for the purpose described.

6. The complete adjustable spanner substantially as described or as illustrated in Figures 1 and 2, or Figure 3, or Figure 4, or Figures 5 and 6 of the accompanying drawings.

Dated this 11th day of August, 1926.

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[This Drawing is a reproduction of the Original on a reduced scale.]

