

PATENT SPECIFICATION

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PROVISIONAL SPECIFICATION.

Improvements in Winding Keys.

I, FRANK HORNBY, of Meccano Limited, of Binns Road, Old Swan, Liverpool, British, do hereby declare the nature of this invention to be as follows:—

The present methods of constructing the barrel of a winding key for engaging the squared end of the winding stem of a spring or other driven motor consists in first boring a cylindrical hole down the centre of a rod the cylindrical bore being then broached into approximately square section. In such a construction the broached aperture has invariably curved recesses centrally of each side of the square, these curved parts being the remainder of the original drilled hole, the broach merely forming rectangular or corner grooves of a greater or less depth in the wall of the barrel. Consequently such a key only engages the squared winding stem at the corners. Again, owing to the exterior of the barrel of such keys being cylindrical no indication is given to the user as to the position of the square interior hole, and in consequence the key after being engaged at the end of the winding stem is turned round until its square aperture coincides with the square winding stem. This preliminary turning of the key or searching for the engagement results ultimately in considerable wear on the corners of the winding stem and key. The object of the present invention is to avoid these disadvantages.

According to this invention the barrel of the winding key is made either from a steel rod drilled out partially of its length to form a tubular end or the entire length of the barrel may be of solid drawn tube. In either case the tube is swaged or pressed on to a square section mandril thus shaping the cylindrical tube into a square section tube, the bore of which is made to correspond to the size of the winding stem to be engaged. The tube after being swaged or pressed on a mandril has a perfectly flat face on all four sides and thus obtains a better engagement with the squared end of the

winding stem than now obtains with the usual broached key as previously described. Further, the exterior of the tube being of square section corresponding to the bore, the exterior gives an indication to the user enabling him immediately to position the key in engagement on the squared winding stem without any preliminary turning or searching.

Where the key barrel is made from a steel rod partially bored to form a tube which is then swaged to a square section, the other solid end of the tube may be slotted for the insertion of a plate handle in the usual way which is secured thereto by a pin rivetted over, but where the key barrel is made throughout from solid drawn tube, one end is swaged or pressed to rectangular section as previously described while the other end of the tube is somewhat flattened leaving a slot section bore into which the end of the usual plate handle is inserted and the flattened part then consolidated on the inserted part of the handle. In such an arrangement notches may be formed in the edges of the plate handle stem into which the metal of the barrel is pressed.

A key made as described besides giving a more effective engaging grip on the winding stem than a broached key is also more durable as, owing to the more complete contact of the entire flat faces of the key barrel with those of the winding stem, play is less likely to develop than is the case with the broach key which merely engages the corners of the squared stem. A key made from a tube swaged to square section is also not so liable to open at the corners of the square hole as in a broached key due to the undue weakening of the metal, in the latter type of key, at the corners of the square hole.

Dated this 3rd day of March, 1931.

A. J. DAVIES,
Patent Agent,
24, Moorfields, Liverpool.

COMPLETE SPECIFICATION.

Improvements in Winding Keys.

I, FRANK HORNBY, of Meccano Limited, of Binns Road, Old Swan, Liverpool, British, 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:—

The present methods of constructing the barrel of a winding key for engaging the squared end of the winding stem of a spring or other driven motor consists in first boring a cylindrical hole down the centre of a rod the cylindrical bore being then broached into approximately square internal section, the outside of the tube remaining circular. In such a construction the broached aperture has invariably curved recesses centrally of each side of the square, these curved parts being the remainder of the original drilled hole, the broach merely forming rectangular or corner grooves of a greater or less depth in the wall of the barrel. Consequently such a key only engages the squared winding stem at the corners. Again, owing to the exterior of the barrel of such keys being cylindrical no indication is given to the user as to the position of the square interior hole, and in consequence the key after being engaged at the end of the winding stem is turned round until its square aperture coincides with the square winding stem. This preliminary turning of the key or searching for the engagement results ultimately in considerable wear on the corners of the winding stem and key. The object of the present invention is to avoid these disadvantages.

Winding keys of the cranked type for loose leaf ledgers, clocks, and other purposes and embodying a spring controlled yielding pawl have been constructed with barrels made of metal tube of internal and external square cross section throughout their entire length and box spanners comprising a length of tube bent at right angles have been made from circular section metal tube the engaging end only of which was shaped internally and externally to a square cross section.

According to this invention a winding key of the type comprising a barrel rigidly connected to a handle of plate form has the barrel made either from a rod drilled to form a circular section tube or from solid drawn circular section tube, the end portion of the circular section tube in either case being swaged or pressed to a square section for engaging a winding stem or the like and the other end of the barrel being slotted to engage with and being secured on the plate handle. The tube after being swaged or pressed on a mandril has perfectly flat faces on all four interior sides and thus secures a better engagement with the squared end of the winding stem than now obtains with the usual broached key. Further, the exterior of the tube being of square

section corresponding to the bore, the exterior gives an indication to the user enabling him immediately to position the key in engagement on the squared winding stem without any preliminary turning or searching. The barrel when made as described from a rod drilled out is slotted and rivetted to the usual plate handle but where the barrel is made from a length of solid drawn tube the end which is connected to the plate handle is flattened and consolidated thereon.

Keys constructed in accordance with this invention are illustrated in the accompanying drawings, Fig. 1 being an elevation of a key the barrel of which is made from solid drawn tube connected to a plate handle by being consolidated thereon. Fig. 2 is an end view and Fig. 3 an inverted plan. Fig. 4 is a plan showing the flattening of the barrel tube where it is connected to the plate handle. Fig. 5, 6 and 7 illustrate the form of key where the barrel is made from a solid rod drilled out and swaged, Fig. 5 being a fragmentary elevation, Fig. 6 an end view and Fig. 7 an inverted plan of the barrel.

Referring in the first instance to the construction shown in Figs. 1 to 4 inclusive, the barrel 1 of the key in this form is made throughout from a length of solid drawn tube of circular section, one end 2 being swaged or pressed upon a square mandril thus shaping that part of the cylindrical tube 3, Fig. 3, into a square tube, the bore 4 of which is made to correspond to the size of the winding stem to be engaged. The four interior faces of the bore 4 are in this way made perfectly flat and a better engagement with the winding stem is ensured than is possible with a key made by broaching. Again, as the exterior of this part of the key is also square the exterior gives some indication to the user for quickly positioning the key on the squared winding stem and without previous turning of the key or searching for the correct position, which is detrimental both to the key and the end of the winding stem. The other end 5 of the barrel tube is flattened, as shown in Fig. 4, leaving a bore 6 of slotted section into which the end 7 of the usual plate handle 8 is inserted, the flattened part 5 being then consolidated on the end of the handle. Notches 9 may be formed in the edges of this narrow part 7 of the handle into which the metal of the barrel is pressed as shown at 10, Fig. 1, firmly securing the barrel on the handle.

In the modification shown in Figs. 5 to 7 the barrel is made from a steel or other metal rod 11 drilled out at 12 for a part of its length to form a tubular end. The tubular end is then swaged or pressed as

previously described on to a square mandril shaping the cylindrical end into a square section tube 13, the interior faces of which are perfectly flat on all four sides. The solid end of the rod may be slotted at 14 for the insertion of the plate handle 8 and be secured by a rivet 15 in the known way.

A key made as described besides giving a more effective engaging grip on the winding stem than a broached key is also more durable as, owing to the complete contact of the entire flat interior faces of the key barrel with those of the winding stem, play is less likely to develop than with a broach key which merely engages the corners of the squared stem. A key made from a tube swaged to square section is also not so liable to open at the corners of the square hole as in a broached key due to the undue weakening of the metal, in the latter type of key, at the corners of the square hole.

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 winding key of the type comprising a barrel rigidly connected to a handle of plate form in which the barrel is made either from a rod drilled to form a circular section tube or from solid drawn circular section tube, the end portion of the

circular section tube in either case being swaged or pressed to a square section for engaging a winding stem or the like and the other end of the barrel being slotted to engage with and being secured on the plate handle.

2. A winding key as claimed in Claim 1 in which the barrel is formed from a solid rod bored partially of its length to form a circular section tube, the tubular end being then swaged or pressed into square section upon a mandril, the other end of the barrel being slotted and rivetted to the plate handle.

3. A winding key as claimed in Claim 1 in which the barrel is formed from solid drawn tube of circular section swaged or pressed at one end into rectangular tubular section and flattened at the other end and consolidated about the plate handle, with or without notches in the handle into which the metal of the tube is pressed.

4. The improved winding key constructed substantially as described and shown in Figs. 1, 2, 3 and 4 inclusive of the accompanying drawings.

5. The improved winding key constructed substantially as described and shown in Figs. 5, 6 and 7 inclusive of the accompanying drawings.

Dated this 15th day of April, 1931.

A. J. DAVIES,
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[This Drawing is a reproduction of the Original on a reduced scale.]

