

PATENT SPECIFICATION

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DRAWINGS ATTACHED

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(54) DRAWING COMPASSES

(71) We, **HELIX INTERNATIONAL LIMITED**, a British Company, of Helix Works, Engine Lane, Lye, Stourbridge, Worcestershire, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to drawing compasses of that kind (hereinafter called "the kind referred to") comprising a leg having a point at one end and pivoted at its other end to one end of a shank of an arm, said shank having at its other end an externally screw-threaded laterally-projecting stub or barrel formed with a socket hole for receiving a pencil or the like, and said stub or barrel having engaged thereover an internally screw-threaded clamping ring for clamping the pencil or the like in place in the socket hole.

According to the invention, in a pair of drawing compasses of the kind referred to, the inner or root end of the externally-threaded stub or barrel is so fashioned as to permit the clamping ring to be passed, during assembly of the compasses, from the shank of the arm over the said inner or root end of the stub or barrel into operative engagement with the external thread on said stub or barrel.

Also, according to the invention, in a method of assembling a pair of drawing compasses of the construction set forth in the last preceding paragraph, the clamping ring is passed from the shank of the arm over the inner or root end of the stub or barrel into operative engagement with the external thread on said stub or barrel, and the inner end of said external thread is then deformed or upset by a tool to prevent movement of the clamping ring back over the said shank of the arm.

Preferably, the leg and the arm are formed by die-casting. The inner or root end of the stub or barrel may be fashioned so as to have an oblique end face merging with an inside face of the shank of the arm and sloping in an outwards direction away from said inside face of the shank.

Figure 1 of the accompanying drawings shows, in side elevation, and by way of example, a pair of compasses constructed in accordance with the invention.

Figure 2 is a fragmentary view showing a portion of the arm of the compasses shown in Figure 1, but before the clamping ring is engaged with the thread on the stub or barrel of said arm.

Figures 3 and 4 are sectional views taken on the lines III—III, Figure 2, and IV—IV, Figure 2, respectively.

Figure 5 is a fragmentary longitudinal sectional view showing the arrangement at the pivot of the compasses.

Referring to the drawings, a pair of drawing compasses comprises a die-cast leg 1 having a point 2 at its lower end and pivoted at its upper end to the upper end of a shank 3 of a die-cast arm 4, said shank 3 having at its lower end a laterally-projecting stub or barrel 5 formed with a socket hole 6 for receiving a pencil or the like, said stub or barrel 5 being cast integral with the shank 3. The material of the die-cast leg 1 and arm 4 may, for example, be that known as Mazak 5. The point 2 (which may be of steel) is firmly fixed in a socket 21 in the lower end of the leg 1, and the pivotal connection between the leg 1 and the arm 4 consists of a screw 7 engaged with a nut 20. The screw 7 conveniently has pivoted thereon a U-shaped bow ear member 8 carrying a bow top 9. The pivoted-together upper ends of the leg 1 and arm 4 overlap each other and are of circular form in side view, and one of said ends has formed thereon an integral annular bearing rib 18 engaging an annular bearing recess 19 in the other of said ends as shown in Figure 5, the rib 18 and recess 19 being co-axial with the screw 7.

The stub or barrel 5 of the arm 4 is provided with an external screw-thread 10, and mounted on said stub or barrel 5, and having an internal thread operatively engaged with said external thread 10, is a clamping ring 11 for clamping the pencil or the like in place in the socket hole 6. The stub or barrel 5

is formed at diametrically opposite sides with upper and lower flats 12, 13. The shank 3 of the arm 4 is of a rectangular shape in cross-section, and merging with an inside face 14 of said shank 3 is an oblique end face 15 of the inner or root end (indicated at 5a) of the stub or barrel 5, said face 15 sloping as shown in an outwards direction away from said shank inside face 14 and merging with the innermost of the two lower flats 13 on the stub or barrel 5. The said end face 15 is flanked by two sloping side faces 16 of the inner or root end 5a of the stub or barrel, said side faces 16 merging with respective side faces 17 of the shank 3.

The fashioning of the said inner or root end 5a of the stub or barrel is such as to permit the clamping ring 11 to be passed, during assembly of the compasses, from the shank 3 over the said end 5a into operative engagement with the external thread 10 on the stub or barrel, the ring 11 being, as illustrated in Figure 2, tilted as it passes over the oblique end face 15 of the end 5a, and being brought into a position at right angles to the axis of the stub or barrel in which its internal thread can be started on the external thread 10. After the ring 11 has been operatively engaged with the said thread 10, the inner end 10a of the thread 10 is deformed or upset by a press tool so as to prevent movement of the ring 11 back over the shank 3. A plain unthreaded portion 5b of the stub or barrel 5 is left between the outer end of the thread 10 and the outer extremity of said stub or barrel 5, whereby disengagement of the ring 11 from the stub or barrel in an outwards direction is prevented.

An advantage of the construction shown, compared with compasses of conventional form, is that no head-forming or heading-over operation has to be performed on the outer end of the stub or barrel after the ring has been engaged with the external thread 10. The compasses shown are of a neat appearance, and the production of the leg and the arm by die-casting enables the cost of manufacture to be reduced. If desired, however, the leg and arm of the compasses shown may be made by any other suitable process, instead of by die-casting, and/or may be made of any other suitable material. The flats on the stub or barrel result in a saving in

material and may be regarded as enhancing the appearance of the compasses.

The stub or barrel, including its inner or root end, may be of any other suitable shape, provided that said inner or root end is such as to permit the clamping ring to be passed, during assembly of the compasses, from the shank of the arm over the said inner or root end into operative engagement with the external thread on said stub or barrel.

WHAT WE CLAIM IS:—

1. A pair of drawing compasses, of the kind referred to, wherein the inner or root end of the externally-threaded stub or barrel is so fashioned as to permit the clamping ring to be passed, during assembly of the compasses, from the shank of the arm over the said inner or root end of the stub or barrel into operative engagement with the external thread on said stub or barrel.
2. A pair of drawing compasses, as claimed in claim 1, wherein the inner or root end of the stub or barrel is fashioned so as to have an oblique end face merging with an inside face of the shank of the arm and slipping in an outwards direction away from said inside face of the shank.
3. A pair of drawing compasses, as claimed in claim 1 or 2, wherein the leg and the arm are formed by die-casting.
4. A method of assembling a pair of drawing compasses of the construction set forth in claim 1, wherein the clamping ring is passed from the shank of the arm over the inner or root end of the stub or barrel into operative engagement with the external thread on said stub or barrel, and the inner end of said external thread is then deformed or upset by a tool to prevent movement of the clamping ring back over the said shank of the arm.
5. A pair of drawing compasses substantially as herein described with reference to the accompanying drawings.
6. A method of assembling a pair of drawing compasses, substantially as described with reference to the accompanying drawings.

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The fashioning of the said inner or root end 5a of the stub or barrel is such as to permit the clamping ring 11 to be passed, during assembly of the compasses, from the shank 3 over the said end 5a into operative engagement with the external thread 10 on the stub or barrel, the ring 11 being, as illustrated in Figure 2, tilted as it passes over the oblique end face 15 of the end 5a, and being brought into a position at right angles to the axis of the stub or barrel in which its internal thread can be started on the external thread 10. After the ring 11 has been operatively engaged with the said thread 10, the inner end 10a of the thread 10 is deformed or upset by a press tool so as to prevent movement of the ring 11 back over the shank 3. A plain unthreaded portion 5b of the stub or barrel 5 is left between the outer end of the thread 10 and the outer extremity of said stub or barrel 5, whereby disengagement of the ring 11 from the stub or barrel in an outwards direction is prevented.

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material and may be regarded as enhancing the appearance of the compasses.

The stub or barrel, including its inner or root end, may be of any other suitable shape, provided that said inner or root end is such as to permit the clamping ring to be passed, during assembly of the compasses, from the shank of the arm over the said inner or root end into operative engagement with the external thread on said stub or barrel.

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2. A pair of drawing compasses, as claimed in claim 1, wherein the inner or root end of the stub or barrel is fashioned so as to have an oblique end face merging with an inside face of the shank of the arm and sloping in an outwards direction away from said inside face of the shank.
3. A pair of drawing compasses, as claimed in claim 1 or 2, wherein the leg and the arm are formed by die-casting.
4. A method of assembling a pair of drawing compasses of the construction set forth in claim 1, wherein the clamping ring is passed from the shank of the arm over the inner or root end of the stub or barrel into operative engagement with the external thread on said stub or barrel, and the inner end of said external thread is then deformed or upset by a tool to prevent movement of the clamping ring back over the said shank of the arm.
5. A pair of drawing compasses substantially as herein described with reference to the accompanying drawings.
6. A method of assembling a pair of drawing compasses, substantially as described with reference to the accompanying drawings.

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