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GB 2261287 A

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(54) Adjustable gauge or template

(57) A gauge used as a guide for bending a soft sample rod to shape, the shaped sample rod to be used as a template for bending a surgical corrective rod, has slotted gauge limbs 2 mounted on a slotted body member 1. Each gauge limb is secured to the body member by a bolt and wing nut, and the arrangement permits the gauge limbs to be adjusted longitudinally and transversely of the body member, and angularly. Thus the gauge limbs may be adjusted to denote the position and attitude of screws inserted into vertebrae, which screws are to receive the corrective rod. There may be three, four, five or six gauge limbs.

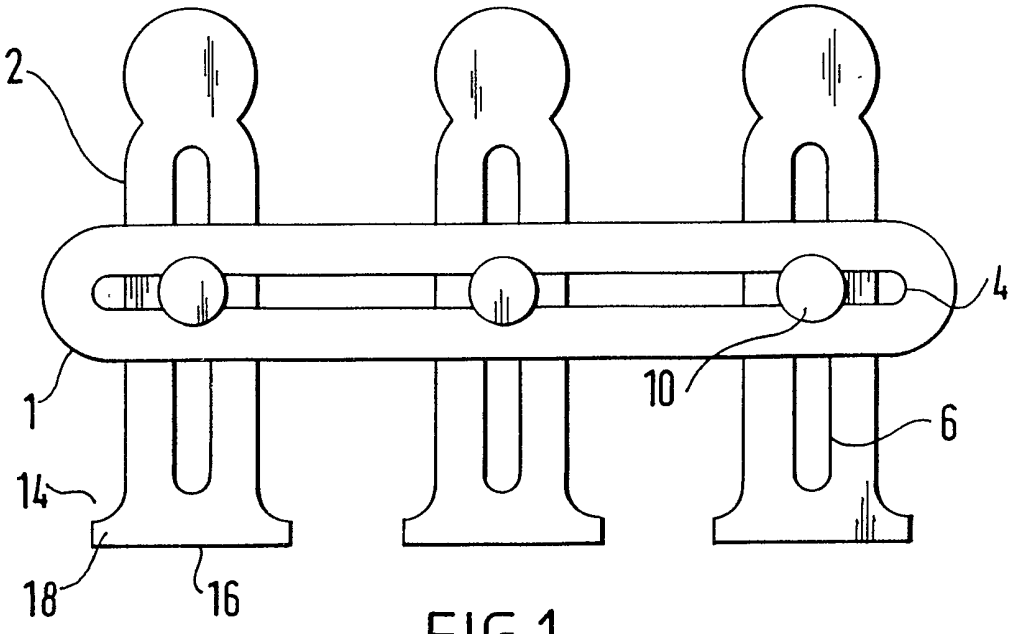

FIG.1.

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1990.

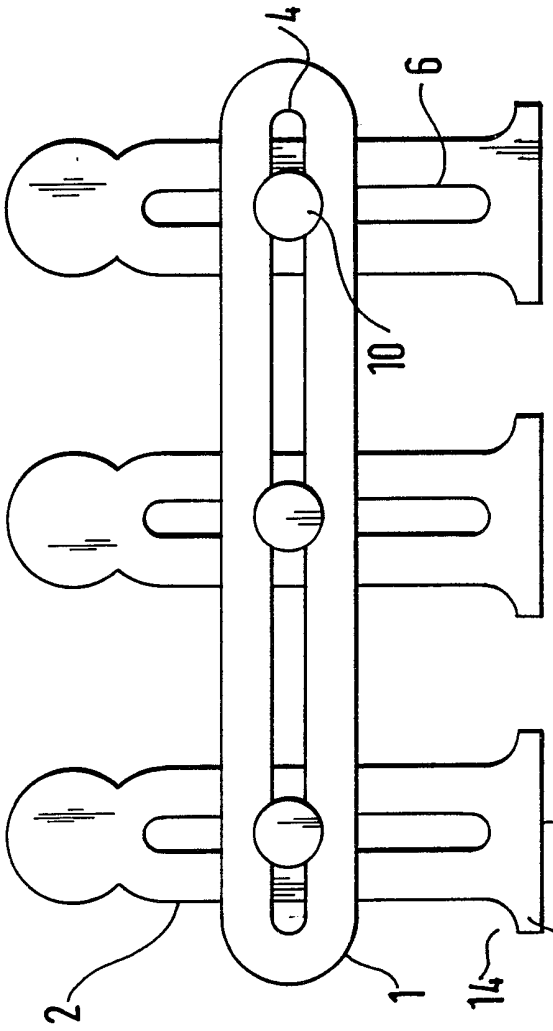

FIG.1.

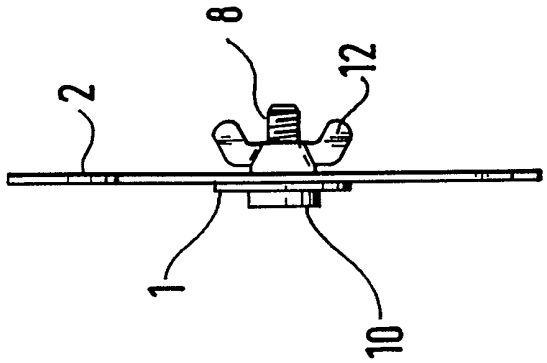

FIG.2.

GAUGE

This invention relates to a gauge which is suitable for use in surgical techniques which require the bending of a rod. Such surgical techniques may include spinal surgery to correct conditions such as scoliosis. In such techniques, screws are inserted into vertebrae. The screws have slotted heads within which are clamped a common corrective steel rod. The rod as supplied is straight and needs to be bent to the required shape. It should be borne in mind that the screws will be displaced from each other, axially and angularly.

At present, the steel rod may be bent to copy the shape of an aluminium sample rod, which itself has been bent to shape whilst located in the slots in the screws. However, this method is not very accurate.

In accordance with a first aspect of the present invention there is provided a gauge comprising a body member and a plurality of independently adjustable gauge limbs carried by the body member, each gauge limb being adjustable longitudinally of the body member, transversely of the body member and angularly with respect to the body member, means being provided to selectively permit the adjustment of the gauge limbs on the body member and to secure the gauge limbs in position on the body member, once adjusted.

During a surgical procedure, once screws are located in place, the gauge limbs may be adjusted whilst they are located within slots of the screws. Once properly located within slots of the screws, they may be secured in position on the body member. The gauge may then be used as a template for the bending of the rod. The bending of

the rod may readily be effected by use of a standard rod bender, such as that known as the AO rod bender.

Preferably, each gauge limb has a contact end for contacting the base of the slot of a screw, the contact end engaging the base of the slot such that the contact end and the base of the slot are parallel to one another. Suitably, the contact end comprises a contact edge, to rest at the base of a curved slot. Suitably, the contact end may be wider than the slot, so that lateral portions of the contact end protrude to either side of the slot. This enables a visual check to be made, that the contact end is properly resting on the base of the slot, across its entire width.

Preferably, each gauge limb has means to permit the independent adjustment of that gauge limb, and to secure that gauge limb to the body member, once adjusted.

Preferably, a single means is provided to permit the three modes of adjustment of a gauge limb with respect to the body member.

Suitably, the body member has a linear slot, and each gauge limb has a linear slot, and each gauge limb is secured to the body member by a respective bolt and wing nut, the threaded shank of the bolt passing through both slots. When the wing nut of a gauge limb is released, the gauge limb may be moved longitudinally of the body member, with the screw moving along the slot of the body member; it may be moved transversely of the body member, with the screw moving along the slot of the gauge limb; and it may be moved angularly, with the screw maintaining its location within the two slots, but with the gauge limb simply being turned.

Suitably, the gauge may have three, four, five or six gauge limbs.

The invention will now be further described, by way of example, with reference to the accompanying drawings in which:

Fig. 1 shows a gauge in side view; and
Fig. 2 shows the gauge of Fig. 1 in end view.

Fig. 1 shows a gauge made up of a generally elongate body member 1 and three generally elongate gauge limbs 2, each of which is arranged transversely to the body member. The body member has a central elongate slot 4. Each of the gauge limbs has an elongate slot 6. Each gauge limb is secured to the body member by means of a bolt 8. As seen in Fig. 2, the bolt head 10 is located to one side of the body member 1 and the respective gauge limb 2 and is too large to pass through the slots therein. The shank of the bolt passes through the slots and on the shank is engaged a wing nut 12. When the wing nut is tightened, the gauge limb is secured to the body member. When the wing nut is loosened, the gauge limb may be moved with respect to the body member, in any of three modes - longitudinally, with the bolt moving along the slot 4 of the body member; transversely, with the bolt moving along the slot 6 of the gauge limb; and angularly, with the bolt remaining in its position within both slots, but the with gauge limb simply being turned.

Each gauge limb has a contact end 14 with a contact edge 16. The edge 16 is 19 mm long. The width of a slot in a screw used in spinal surgery is approximately 13 mm wide. Thus, when the contact edge is located in a slot,

tangs 18 to each side of the contact end protrude to either side of the slot.

In use, once three screws are located in place in vertebrae, the three wing nuts on the gauge may be released, and the contact ends of the gauge limbs are placed within the slots of the respective screws, and moved until the edges 16 rest on the bases of the respective slots. They are moved until the tangs 18 protrude to either side of the slots, and with the edges 16 firmly in contact the base of the slots, across their entire width. The wing nuts are then tightened, and the gauge removed, and used as a template whilst the steel rod is bent, for example in a standard rod bender.

The body member and the gauge limbs are of spring quality stainless steel, of thickness 0.7 mm.

The reader's attention is directed to all papers and documents which are filed concurrently with or previous to this specification in connection with this application and which are open to public inspection with this specification, and the contents of all such papers and documents are incorporated herein by reference.

All of the features disclosed in this specification (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually exclusive.

Each feature disclosed in this specification (including any accompanying claims, abstract and drawings), may be replaced by alternative features serving

the same, equivalent or similar purpose, unless expressly stated otherwise. Thus, unless expressly stated otherwise, each feature disclosed is one example only of a generic series of equivalent or similar features.

The invention is not restricted to the details of the foregoing embodiment(s). The invention extends to any novel one, or any novel combination, of the features disclosed in this specification (including any accompanying claims, abstract and drawings), or to any novel one, or any novel combination, of the steps of any method or process so disclosed.

CLAIMS

1. A gauge comprising a body member and a plurality of independently adjustable gauge limbs carried by the body member, each gauge limb being adjustable longitudinally of the body member, transversely of the body member and angularly with respect to the body member, means being provided to selectively permit such adjustment of the gauge limbs on the body member and to secure the gauge limbs in position on the body member, once adjusted.

2. A gauge as claimed in Claim 1, wherein each gauge limb has a contact end for contacting the base of the slot of a screw, the contact end comprising a contact edge, to rest at the base of the slot.

3. A gauge as claimed in Claim 1 or 2, wherein each gauge limb has means to permit the independent adjustment of that gauge limb, and to secure that gauge limb to the body member, once adjusted.

4. A gauge as claimed in Claim 3, wherein a single means is provided to permit the three modes of adjustment of a gauge limb with respect to the body member.

5. A gauge as claimed in any preceding claim, wherein the body member has a linear slot, and each gauge limb has a linear slot, and each gauge limb is secured to the body member by a respective bolt and wing nut, the threaded shank of the bolt passing through both slots.

6. A gauge substantially as hereinbefore described with reference to the accompanying drawings.

Patents Act 1977
Examiner's report to the Comptroller under Section 17 (The Search Report)

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Relevant Technical fields

(i) UK Cl (Edition L) C1M - MBAA, MBDA, MDAA

(ii) Int Cl (Edition 5) C01B - 3/14, 5/20, 5/24

Search Examiner
B F BAXTER

Databases (see over)

(i) UK Patent Office

(ii) ONLINE DATABASE: WPI

Date of Search
23 AUGUST 1993

Documents considered relevant following a search in respect of claims 1-6

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X,E	GB 2261287 A (BREED) note links 1	1,3,4

Category	Identity of document and relevant passages -8-	Relevant to claim(s)

Categories of documents

X: Document indicating lack of novelty or of inventive step.

Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.

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P: Document published on or after the declared priority date but before the filing date of the present application.

E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

&: Member of the same patent family, corresponding document.

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).

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