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The title of the invention has been amended (Guidelines for Examination in the EPO, A-III, 7.3).

⑫⑤ **Clamping device.**

⑫⑦ In a clamping device comprising a base carrying two jaws, one moveable relative to the other, at least one of the jaws is provided with two claws for clamping work against the other jaw, the claws being rotatable about a vertical axis and transversely adjustable towards or away from each other along the length of the jaw, each claw may slide in a transverse slot along the jaw, the slot being provided along the edge furthest away from the other jaw with at least two concave recesses in which the claw can be positioned in the clamping operation. Both jaws may be so provided with claws or, alternatively, one jaw may be of stepped section. Both jaws are preferably of hollow section.

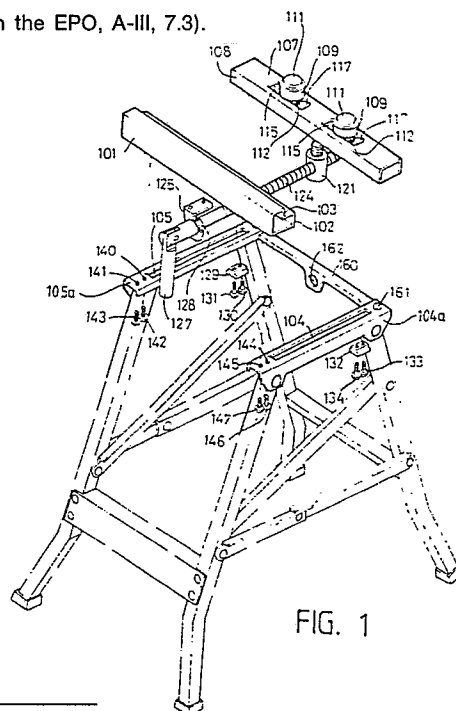


FIG. 1

Description

IMPROVED CLAMPING DEVICE

This invention relates to an improved clamping device which is a modification of a device of the type described in patent specification GB2157203.

In a clamping device of that type work is held in the device by means of claws disposed on the jaws of the device and capable of angular movement about a vertical axis so as to accommodate work of a wide variety of different shapes.

In the clamping device of the present invention two claws on one jaw are transversely adjustable towards or away from each other along the length of the jaw. By this means better and more versatile clamping can be achieved.

Both jaws may be provided with such claws but alternatively only one jaw may be so provided, the other jaw being of stepped section to provide two or more vertical step faces.

Preferably both jaws are of hollow section. This has the advantage of minimising weight and also enhances the functions.

The device of the present invention is particularly suitable for clamping thin workpieces.

Embodiments of the invention are described with reference to the accompanying drawings in which:

Figure 1 illustrates a clamping device having one jaw provided with a pair of rotatable, adjustable claws, the other jaw being of stepped section;

Figure 2 is a plan view of the device of Figure 1, also showing as an alternative for the stepped jaw, another jaw provided with a pair of rotatable, adjustable claws.

Figure 3 is an elevation view of the device of Figure 1;

Figure 4 is a section along the line shown in Figure 2;

Figure 5 is a section along the line shown in Figure 2.

The clamping device of Figure 1 has two jaws 101 and 107. Jaw 101 is fixed at both ends to a frame by means of screws 142, 143, 146 and 147 which pass through holes 140, 141, 144 and 145 respectively in frame members 104a and 105a and into the lower face of the jaw.

Jaw 107 is adjustable towards and away from jaw 101, sliding along parallel guide slots 104 and 105 in frame members 104a and 105a respectively. The jaw 107 is carried in the guide slots by T sliders 129, 132 secured to the jaw by screws 130, 131, 133 and 134.

The jaws are moved towards and away from each other by means of a long screw 124. At the end provided with handle 127 the screw is retained in position by positioning retainer 128 and guide base 125 attached to the fixed jaw 101. The other end of the screw is rotatably mounted in bearing hole 162 at the centre of a cross member 160 which is secured at its ends to frame members 104a and 105a by screws 161.

Movable jaw 107 is driven along screw 124, when rotated, by guide nut 121 with which the screw is in threaded engagement, the guide nut 121 being

secured to the jaw by nut 123 on a screw-threaded projection from guide nut 121.

Jaw 101 is a plate step jaw of hollow step section having step faces 102 and 103. Such a stepped jaw may have more steps than in the embodiment illustrated. Jaw 107 is of hollow rectangular section and is provided with two claws 109 rotatable about pivot pins 111 aligned perpendicular to the plane in which the jaws lie. The pivot pins pass through the upper face of the jaw 107, the lower end of the pivot pins being threaded for receiving a washer 112 and a nut 113 by means of which the pivot pins are retained in vertical but slideable manner in the jaw. The pivot pins each pass through the upper face of jaw 107 by way of a guide slot 115. That edge of the slot furthest away from the vertical clamp level 108 of the jaw is provided with three concave recesses 117 in any one of which the pivot pin can be located in a clamping operation. The pivot pin can be slid along the slot so that in use, the position of the claws can be adjusted according to the shape of the workpiece to be clamped. The arrangement shown can provide nine combinations of positions of the two pins. As alternatives there may be two recesses in a slot or more than three.

Preferably, the clamping face of the claws is set back from the vertical clamp level 108 of the jaw to provide a small step which, in conjunction with the step on jaw 101 supports the workpiece before the jaws are clamped on it. The whole arrangement facilitates the clamping of thin plane plate workpieces.

In another embodiment of the invention the stepped jaw 101 is replaced by another fixed jaw (shown in a box in Figure 2). This jaw is provided with two claws of a type, and which are mounted, as described with reference to jaw 107.

In a further embodiment, the stepped jaw 101 can be the movable jaw and jaw 107 the fixed jaw.

The frame may be mounted on support legs as shown in Figure 1 or may be fixed directly to a working table.

Claims

1. A clamping device comprising a base, two jaws supported on the base and means for displacing one jaw away from and towards the other jaw for clamping work therebetween, at least one jaw being provided with two claws rotatable thereon about a vertical axis for co-operating to hold the work between the two jaws, characterised in that the two claws (109) are transversely adjustable towards or away from each other along the length of the jaw (107).

2. A clamping device as claimed in claim 1, in which each claw is transversely adjustable

along the jaw (107) in a transverse slot (115), that edge of the slot furthest away from the other jaw (101) being provided with at least two concave recesses (117) by which the claw can be located for clamping.

3. A clamping device as claimed in claim 1 or claim 2, in which both jaws are provided with two claws.

4. A clamping device as claimed in claim 1 or claim 2, in which one jaw is of stepped section

to provide at least two vertical faces (102, 103).

5. A clamping device as claimed in any preceding claim, in which the clamping face of the claws is set back from a vertical face (108) of the jaw (107) opposed to the other jaw (101) to provide a step on the upper face of the jaw.

6. A clamping device as claimed in any preceding claim, in which the jaws are of hollow section.

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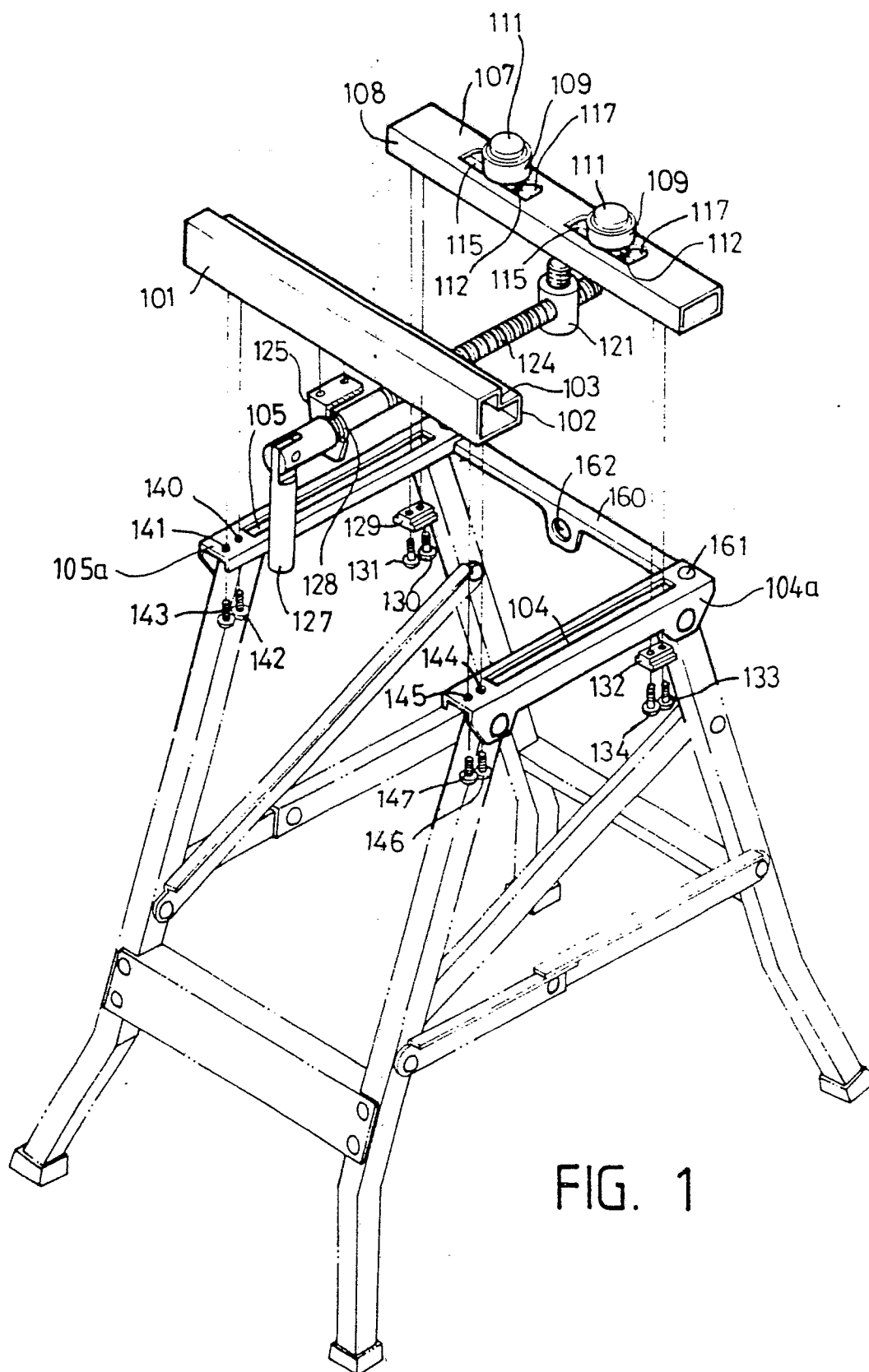
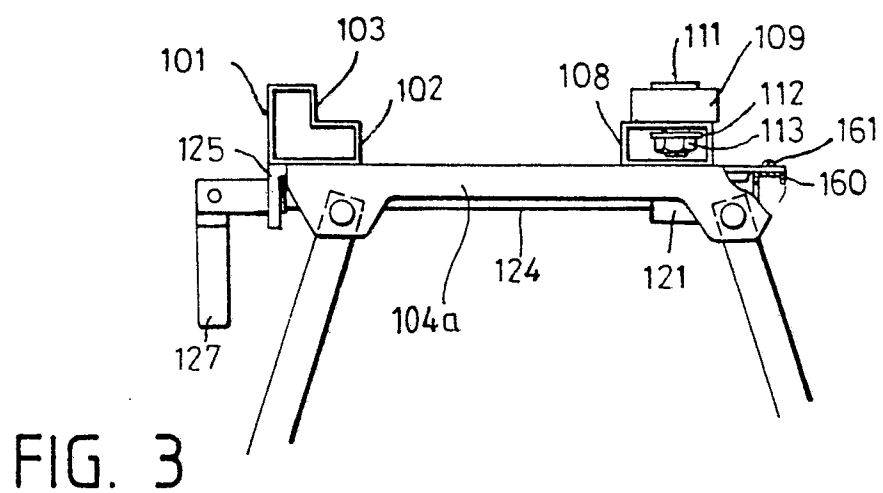
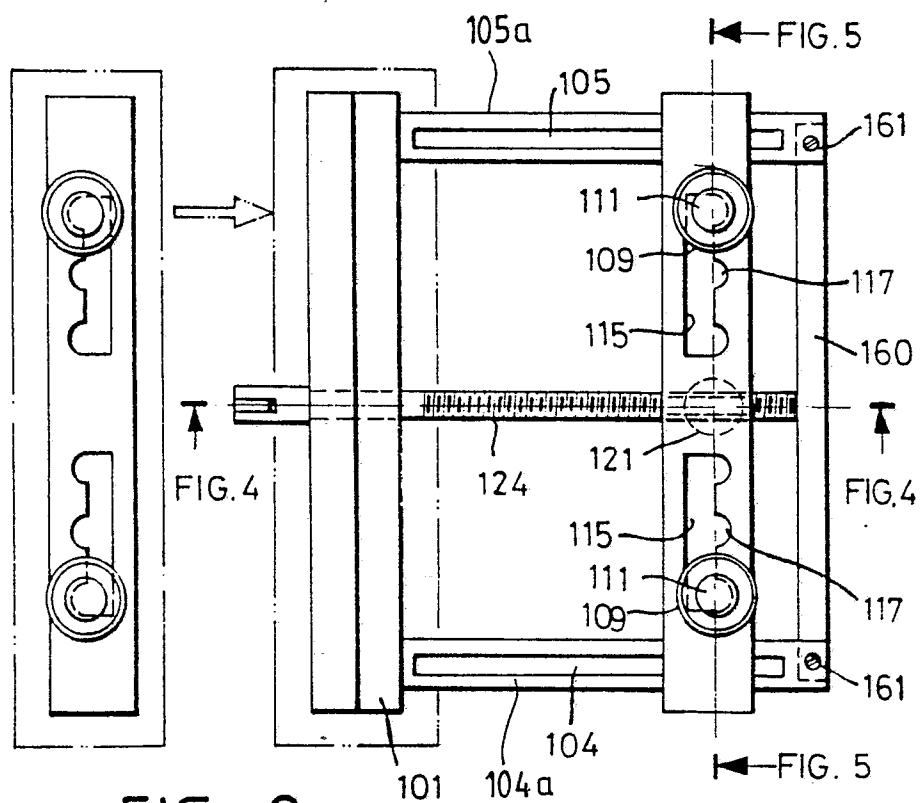


FIG. 1



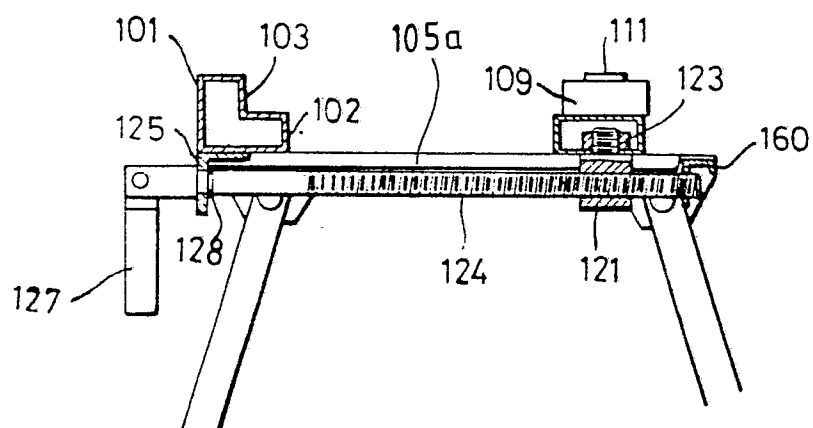


FIG. 4

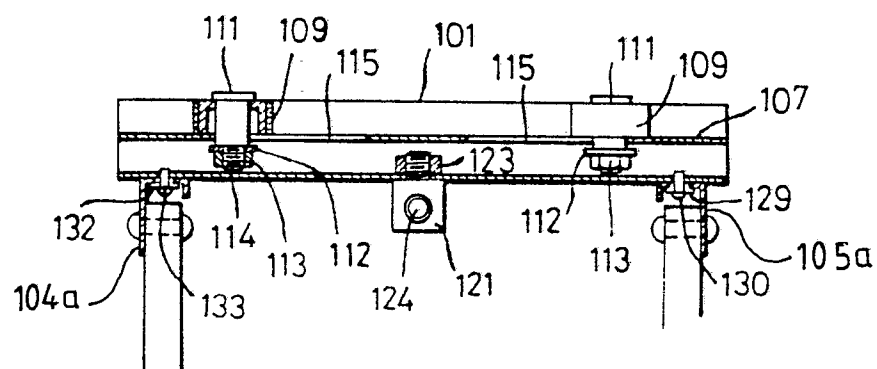


FIG. 5