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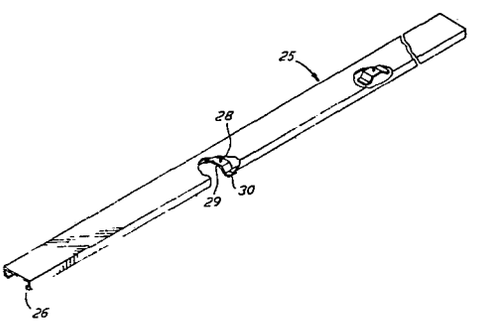
(54) Formwork support means.

(57) A longitudinal inverted channel-shaped head section suitable for mounting on a formwork beam to leave lateral mould- or panel-supporting ledges formed by the upper surface of the beam, which head section has internal rotatable adjustment members secured thereto at longitudinal intervals, the adjustment members serving in a first rotary position (but not in a second rotary position) to space the lower edges of the head section from the top of the beam so that the top of the head section may be flush with the tops of the edges of moulds or panels of different thicknesses.



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FORMWORK SUPPPORT MEANS

This invention relates to beams and head sections for use in the casting of concrete and like structures such as floors and decks. Formwork support arrangements to be used for such casting are well known in the art and generally comprises vertical props the tops of which are interconnected by beams to form a horizontal frame. This frame in turn supports moulds or panels on which the concrete or the like is cast. Various arrangements have been proposed e.g. in U.K. Patent Specifications Nos. 1 386 966 and 1 457 136 and the details of the formwork not relevant to the present will accordingly not be described in this specification.

According to one aspect of the invention, there is provided a beam for use with formwork for the casting of concrete or the like, which comprises a metal section in the form of an inverted rectangular open-topped channel, the central web of the channel having a central longitudinal indentation forming a groove on the outside of the channel and a ridge along the bottom of the inside of the channel. The preferred indentation shape is trapezoidal though arcuate and V-shaped indentations could, for example, be used.

According to another aspect of the invention, there is provided a longitudinal inverted channel-shaped head section suitable for mounting on a formwork beam to leave lateral mould- or panel-supporting ledges formed by the upper surface of the beam, the head section having internal rotatable adjustment members secured thereto at longitudinal intervals, the adjustment members serving in a first rotary position (but not in a second rotary position) to space the lower edges of the head section from the top of the beam so that the top of the head section may remain flush with the tops of the edges of the moulds or panels of differing thicknesses. In the case of a beam according to the invention, the head section will normally cover the groove.

An embodiment of the invention will now be described by way of example with reference to the accompanying drawings in which;

Fig. 1 is an isometric view of a formwork support arrangement employing beams and head sections according to the invention;

Fig. 2 is an isometric view of a main beam used in the arrangement of Fig. 1;

Fig. 3 is an isometric view of an infill beam used in the arrangement of Fig. 1;

Fig. 4 is an isometric view, partly broken away of a beam head section used in the arrangement of Fig. 1;

Fig. 5 is an isometric view of a drophead used in the arrangement of Fig. 1; and

Fig. 6 shows a head section bridgement used in the arrangement of Fig. 1.

The arrangement shown in Fig. 1 shows a scaffolding system consisting of standards 1, transoms 2 and ledgers 3 as described in our U.K. Patent No. 1 385 878. The standards 1 support the formwork proper through dropheads 4. The dropheads 4 (see Fig. 5) comprise a plate 5 to be bolted to a similar plate on the top of a standard 1, a vertical threaded tube 6 welded thereto, a top plate 7 fixed to the top of the rod and a flanged bearing plate 8 carried by a heavy duty wing nut 9. The beams are carried by the bearing plate 8 as described below, the top plate 7 serving to support the partially set concrete after the beams and the moulds or panels are removed. The standards 1 have adjustable feet 10 for determining the vertical position of the formwork. Although the formwork is described as being horizontal it could of course be sloped to an extent depending on the material to be moulded etc.

The main beams 12 (see Figs. 2 and 6) each comprise a rolled metal section 13 of inverted open-topped rectangular shape modified by a longitudinal trapezium-shaped indentation 14 which extends centrally along the central web of the section 13. This indentation has been found to permit the construction of a strong beam of relatively light and thin material. The section 13 also has a channel-shaped lip 15 on each side. Welded into each end of the section 13 is a channel-shaped bearing member 16 having cut-outs

forming a downwardly facing lug 17 on its central web 18. In a modification (not shown) the lug 17 has a further rectangular cut-out in the centre of its lower edge which engages a locating lug on the bearing plate 8. It is also desirable to weld corresponding locating lugs at intervals in the main beam channel-shaped lips 15. The beams 12 have bracing elements 21 to strengthen them in a manner well known in the art.

As shown in Fig. 1, the main beams 12 are carried at each end by the dropheads 4 and make up horizontal rectangular frames, the lugs 17 bearing on the bearing plates 8 behind the bearing plate flanges and optionally being laterally retained by the lugs referred to above.

Extending centrally along at least some of the main beams 12 is a metal beam head section 25 (see Fig. 4). The beam head section 25 is narrower than the main beam but covers the indentation 14. Ledges formed by the upper surface of the beam 12 are therefore provided on each side of the head section 25. The head section 25 is formed by an inverted rectangular open-topped channel section with inturned lips 26. T-head bolts 27 (see Fig. 2) in the indentation 14 in the beam 12 are used to secure the head section in position. At intervals along the head section, there are welded internal studs 28 on which rotatable adjuster plates 29 are captive. As will be clear from the broken away parts of the head section shown in Fig. 4 the plates 29 have end portions 30 which can be located between the lips 26 and the beam 12 to act as adjustment shims for altering the height of the top of the head section 25.

Infill beams 31 (see Fig. 3) are placed as desired to span the rectangles or squares formed by the main beams 12. The beams 31 are generally similar to the main beams 12 except that they may have no indentation 14 and may have inturned lips 15. The lugs 17 of the infill beams 31 rest in the channel-shaped lips 15 of the main beams 12.

As shown in Fig. 6, head sections 25 may be placed in main beams 12 carried by other main beams 12, with suitable bridge sections 32 being provided.

Resting on the main beams 12 and infill beams 31 (if present) are the panels or moulds. These may for example be plywood decking or glass-reinforced plastic waffle and trough moulds (usually 19 mm thick) or polypropylene moulds (usually with a flange depth of 25 mm). The head section adjuster end portions 30 are therefore conveniently 6 mm thick. The distance between the bearing plate 8 and the support plate 7 will also have to be changed when the head section adjusters 29 are rotated from one operative position to another. For this purpose the plate 8 has a pair of grooved projections one of which is shown at 41. If the plate 8 is rotated through 90° (after screwing down the nut 9) these projections will be under the hollow rectangular abutment block 42 and plate 7 will be lowered. By making the projections 6 mm high the correct adjustment can be ensured.

It will of course be appreciated that, depending on the arrangement of the panel or moulds the transverse main beams 12 need not have a head section. Furthermore, the system has added flexibility in that main beams 12, with or without a head section, can be used as infill beams (as shown at 40 in Fig. 1).

In an alternative arrangement, the drophead of Fig. 5 is modified in that there is no plate 5 and stem 6 is elongated with a non-threaded portion (say 250 mm) long at its lower end. A further wing nut, similar to wing nut 9, is mounted on the stem threads. This arrangement permits the lower end of stem 6 to be slid into the upper end of a standard hollow vertical scaffolding pole, the vertical position of the drophead being determined by the position of the second wing nut. The unthreaded portion of the stem 6 serves to ensure a minimum overlap with the scaffolding pole (consistent with safety) and also holds the wing nut captive.

CLAIMS

1. A longitudinal inverted channel-shaped head section suitable for mounting on a formwork beam to leave lateral mould- or panel-supporting ledges formed by the upper surface of the beam, which head section has internal rotatable adjustment members secured thereto at longitudinal intervals, the adjustment members serving in a first rotary position (but not in a second rotary position) to space the lower edges of the head section from the top of the beam so that the top of the head section may be flush with the tops of the edges of moulds or panels of differing thicknesses.

2. A head section according to Claim 1, wherein the adjustment members are substantially rectangular plates rotatable about vertical pins depending from the inner surface of the top of the head section.

3. A head section according to Claim 1 or 2 comprising a rectangular metal section with inturned lips.

4. An assembly comprising a head section according to Claim 1, 2 or 3 and a formwork beam, the formwork beam comprising a metal section in the form of an inverted rectangular open-topped channel, the central web of the channel having a central longitudinal indentation forming a groove on the outside of the channel and a ridge along the bottom of the inside of the channel.

5. An assembly according to Claim 4, wherein the beam has bolts extending through the indentation, the bolts having T-heads for engagement with internal flanges on the head section.

6. An assembly according to Claim 4 or 5, wherein the indentation is trapezium-shaped.

7. An assembly according to Claim 4, 5 or 6, wherein the beam has a channel-shaped lip along each side.

8. An assembly according to any one of Claims 4 to 7, comprising dropheads carrying the respective ends of the beams, each drophead comprising an upwardly flanged bearing plate for receiving downwardly facing bearing lugs on the beam ends, the bearing plate being supported by a screw-threaded member on a threaded stem passing through a central aperture in the plate and being held by the screw-threaded member against the underside of an abutment at the upper end of the stem, the spacing of the plate and the abutment being adjustable.

9. An assembly according to Claim 8, wherein the plate has upward projections which abut the abutment in a first rotary position of the plate and which clear the abutment in a second rotary position of the plate.

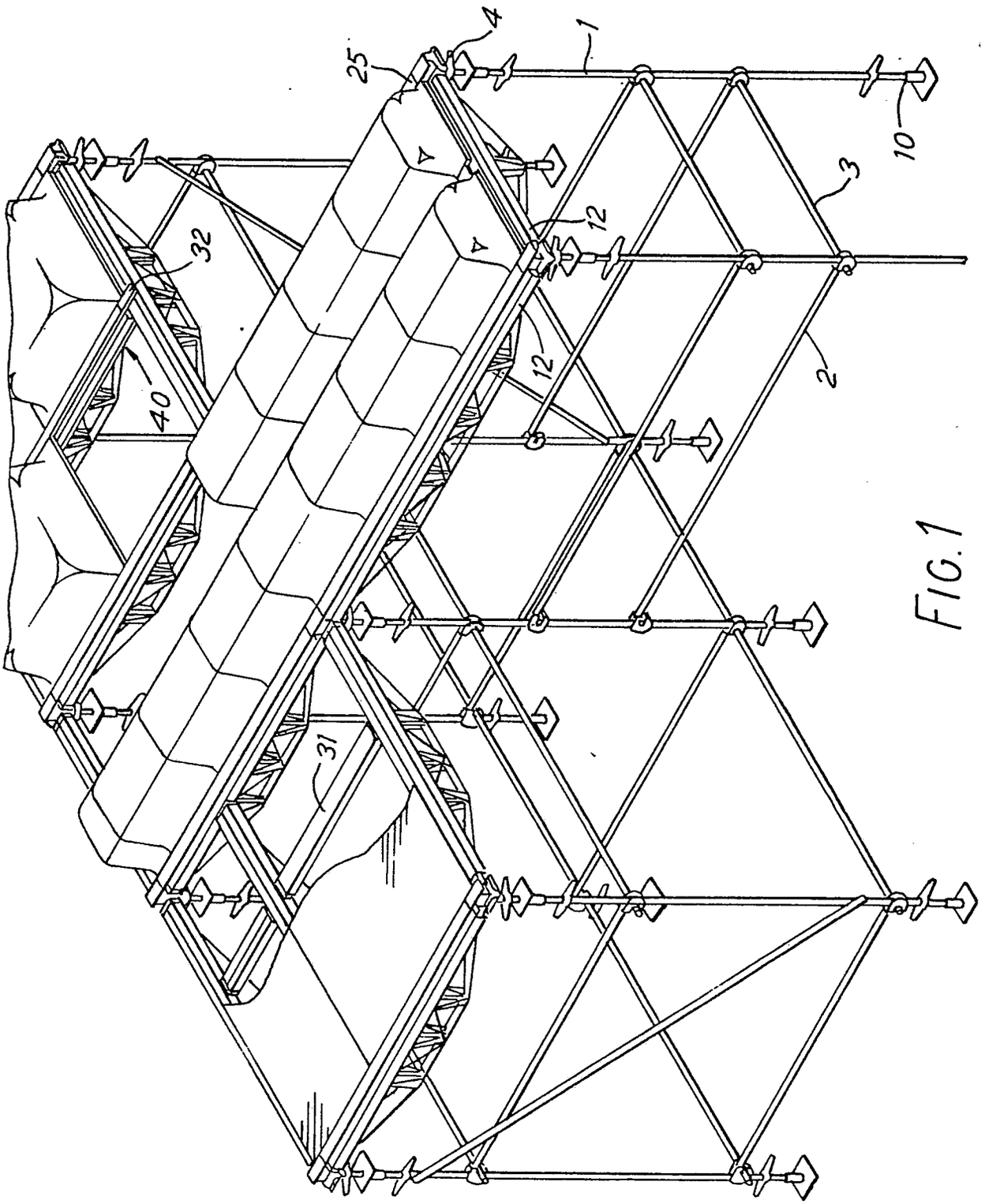
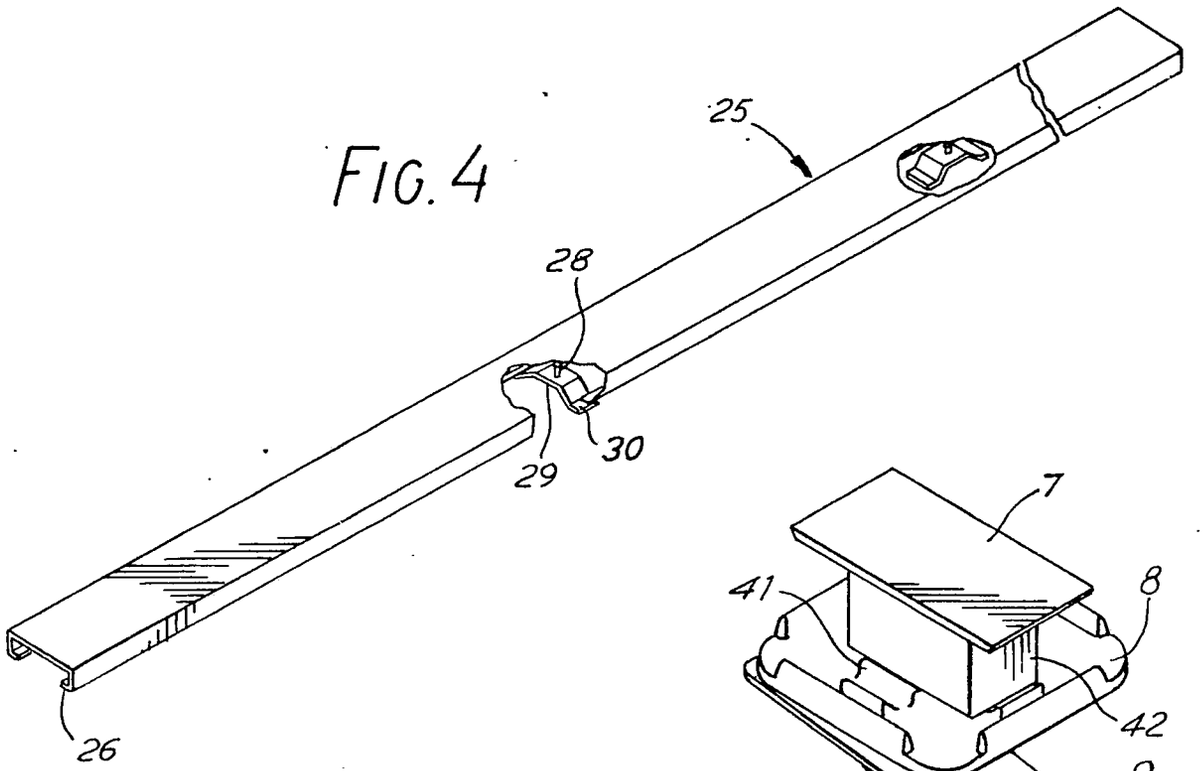


FIG.1

FIG. 4



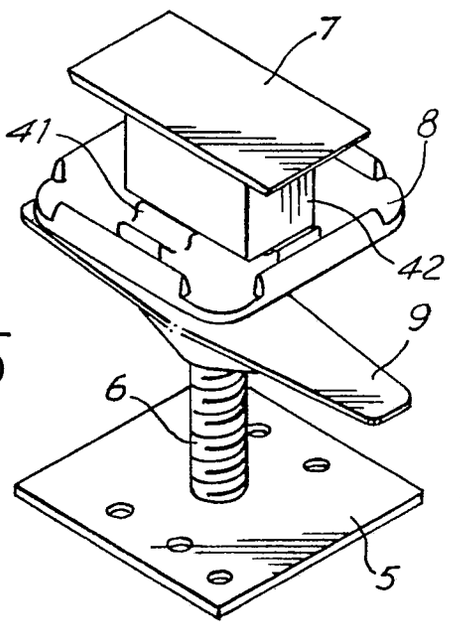


FIG. 5

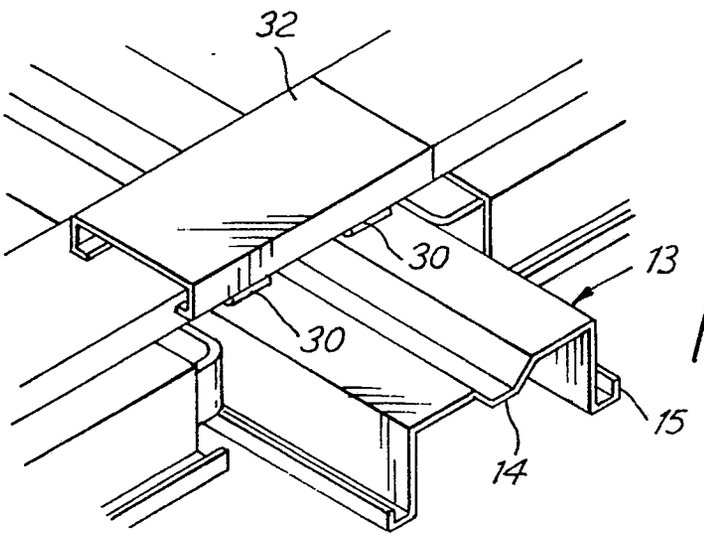


FIG. 6