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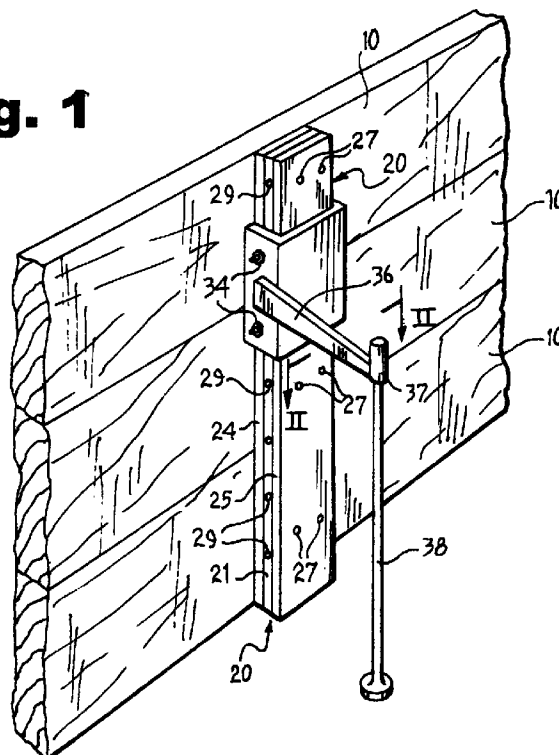
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(54) **An element for forming formworks**

(57) A composite element (20) is described for the assembly of form-work which comprises a plurality of planks (10) arranged edge to edge; the element (20) includes a rigid rectangular core (21) for fixing, by at least one side (22, 23) to at least one batten (24, 25) which has a flat surface suitable for nailing a plurality of planks (10) aligned edge to edge thereto so as to form a form-work wall for casting a concrete element.

fig. 1



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Description

[0001] The present invention relates to an element for assembling form-work, of the type constituted by a plurality of planks of wood positioned alongside each other.

[0002] Form-work of the aforementioned type is well known; since these service structures are intended to confer the desired shape on the cast concrete and to support it until it has reached a sufficient consistency, it is important that the form-work should constitute a substantially rigid, non-deformable container with an accurate geometry.

[0003] The planks which constitute the form-work are usually aligned side by side and joined together at suitable intervals by wooden battens, nailed to the planks perpendicular to the alignment thereof.

[0004] The battens must therefore be straight and sufficiently strong to give a substantially flat surface on which to nail the planks of the form-work.

[0005] In practice, the use of conventional wooden battens involves a disadvantage consisting in the fact that the carpenters are constantly obliged to seek out straight battens and to find those with sufficiently smooth surfaces in order to form flat bearing surfaces. In addition, it is well known that wood is a material which is easily deformed over time as a result of humidity and the stress to which it is subjected, so that the battens fail to maintain the required degree of geometric accuracy in long term.

[0006] The object of the present invention is to provide an element for the assembly of form-work which is able to overcome the aforesaid disadvantages; the object is, in particular, to provide an element able to ensure over time the required characteristics of straightness and flatness, which enable carpenters to assemble form-work of optimum characteristics both rapidly and accurately.

[0007] Another object of the present invention is to provide an element which can be fitted to auxiliary elements which enable it to be used, in particular but not exclusively, to construct form-work of horizontal slabs for ceilings or inclined ones, such as are used for stairs.

[0008] A further object of the invention is to provide an element which can be fitted in a stable manner to auxiliary elements for supporting blocks forming a support structure.

[0009] These and other objects and advantages, which will be better understood hereinafter, are achieved according to the present invention by providing form-work having the characteristics claimed in Claim 1.

[0010] Other important characteristics of the invention are set out in the dependent claims.

[0011] Further structural and functional characteristics and advantages of preferred embodiments of the invention will become apparent from the following detailed description, with reference to the appended drawings, provided purely by way of non-limitative example, in

which:

Figure 1 is a perspective view which illustrates the element of the present invention used to assemble vertical form-work for the construction of a concrete wall;

Figure 2 is a horizontal section taken on the line II-II of Figure 1;

Figure 3 is a sectioned view, similar to that of Figure 2, of an alternative embodiment of the element of the present invention;

Figure 4 is a vertically sectioned view which schematically illustrates the element of the invention used to assemble and support form-work for a reinforced concrete ceiling, and

Figure 5 is a sectioned view which illustrates a component for connecting two consecutive elements in a line.

[0012] With reference initially to Figure 1, planks of wood arranged with their longitudinal edges adjacent, one above the other are indicated 10, and are fixed to and supported by a composite element according to the invention, generally indicated 20.

[0013] With reference also to Figure 2, in a preferred embodiment the composite element 20 includes a rigid rectilinear core 21, preferably constituted by a metal box section with a quadrilateral cross section, with a pair of battens 24 and 25 fixed to the opposing surfaces 22 and 23 thereof, constituted by the long sides of the rectangle, the battens 24 and 25 being made of wood or other material of a consistency enabling the planks constituting the form-work to be nailed together. In this example, the battens 24, 25 are fixed to the central section 21 by self-tapping screws 27, the free ends 27a of which protrude within the central box section element 21.

[0014] The screws 27 are preferably arranged in pairs at suitable intervals along the length of the element 20, so as to hold the battens tight against the straight box section element 21. The battens 24, 25 thus have flat outer surfaces 24a, 25a respectively, one of which acts as a support and fixing surface for the planks 10 to be nailed by nails 26.

[0015] Pairs of aligned apertures 29 are formed at regular intervals along the short sides 28 of the box section element 21, which can be used advantageously for fixing auxiliary elements to the element 20, as described hereinafter.

[0016] Referring still to Figures 1 and 2, an auxiliary element such as an external bracket, with a substantially C-shaped section, is indicated 30. The bracket 30 has a central portion 31 and two lateral arms 32 perpendicular to the central portion 31, the lateral arms 32 extend so as substantially to cover the short sides 28 of the section 21, or at least the apertures 29 formed therein. Apertures 33 are formed near the end, or free portion of the arms 32 and aligned with the apertures 29 in the section 21 in order to enable a transverse connec-

tion pin 34, in this case a bolt, to be passed through.

[0017] Rigidly fixed to the bracket portion 30, preferably by welding 35 to one of the two lateral arms 32 thereof, is a transverse projecting beam-shaped portion 36 that can be used advantageously to support one or more planks (not illustrated) constituting a support structure alongside the planks 10 of the form-work. The opposite end of the beam portion 36 forms, advantageously, an upturned cup shape 37 into which the top end of a support column 38 can be fitted, in order to give the support structure greater stability (not illustrated).

[0018] In an alternative embodiment, not illustrated, the upturned cup-shape element 37 could act as housing for an upper vertical rod in which seats, consisting of vertical slots, are formed for housing and supporting one or more vertically arranged planks delimiting the scaffolding laterally and thus constituting a barrier for the safety of people climbing onto the scaffolding.

[0019] The lateral apertures 29 could also be used to anchor the form-work by means of a tie (a cable, for example) fixed to a post embedded in the ground.

[0020] With reference now to Figures 3 and 4, a particular embodiment of the composite element 20 of the invention is shown; in this example, the element 20 is arranged horizontally for connecting and supporting a series of horizontal planks 10 for the casting of a horizontal concrete slab 39.

[0021] In this particular application, as shown in Figure 3, the auxiliary element fitted to the box section element 21 is constituted by a junction element 40, which is fixed pivotally to the box section element 21 by means of a pin or bolt 34 and is operable for connection to a support beam 41 arranged perpendicular to the surface of the slab under construction. In a similar way to that described with reference to Figure 2, the auxiliary element 40 of Figure 3 has a pair of lateral arms 42 in which appropriate apertures 43 are formed which can be aligned with the apertures 29 of the box section element 21.

[0022] It will be appreciated that, thanks to the presence of the metal box section element 21, the composite element 20 is strong enough to support the weight of a concrete slab, provided a sufficient number of beams 41 are in position.

[0023] In the embodiment illustrated in Figure 3, the angular orientation of the auxiliary bracket element 40 can be adjusted with respect to the composite element 20, for the formation, for example, of an inclined slab forming part of a staircase (not shown).

[0024] With reference to Figure 4, according to a further aspect of the invention it is possible to fasten two adjacent composite elements 20 securely, using them as aligned modular elements to assemble a form-work which is longer than the length of a single element; in fact this ability is especially interesting for the casting of concrete slabs. A connection means, preferably constituted by a section 44 with a cross-section matching the opening at either end of the quadrilateral box section

elements 21, is inserted into the open ends of the quadrilateral sections; each section 44 is partially inserted into an end of each of two adjacent section elements. A substantially continuous support and connection element can thus be assembled from a succession of composite elements 20 extending for the length of the form-work.

[0025] Finally, as shown in figure 4, the end portions 27a of the self-tapping screws 27 which project into the box section elements 21 can usefully be used as a stop element for determining the longitudinal position of the junction sections 44 relative to the elements 21 into which they are inserted. To this end, the screws 27 closest to the ends of the element 20 are spaced from the said ends by just over half the length of the sections 44.

[0026] In another preferred embodiment of the invention, the battens 24 and 25 can be fixed by gluing to the surfaces 22 and 23 of the box section element 21; in this case, the screws 27 are no longer necessary. With reference to Figure 5, the junction sections 44 could have one or more central holes 45 into which would be inserted corresponding pins 46 so as to project from at least one of the two surfaces of the section. The protruding portion of the pins 46 would act as a stop element, fulfilling the same function as the end portions of the screws 27a of the screws 27 as stated earlier; in the embodiment of Figure 5, the pins 46 ensure that one half of each junction section 44 is inserted into a quadrilateral section, and the other half into the adjacent section. Junction elements which are around 20 cm long ensure that the elements 20 are stable and well aligned.

Claims

1. An element (20) for the assembly of form-work comprising a plurality of planks (10) positioned alongside each other, characterised in that it includes a rigid rectilinear core (21) for fixing, on at least one side (22, 23) to at least one corresponding batten (24, 25) having a flat surface (24a, 25a) suitable for nailing (26) a plurality of planks (10) arranged longitudinal edge to longitudinal edge to the said batten so as to form a form-work wall for casting a concrete element.
2. An element according to Claim 1, characterised in that the said at least one batten (24, 25) is of wood or other material of a consistency enabling the planks (10) to be fixed to it with nails (26).
3. An element according to Claim 1, characterised in that the rigid rectilinear core (21) has two opposite surfaces (22, 23) for fixing a pair of respective battens (24, 25) thereto.
4. An element according to Claim 1, characterised in that the said rigid rectilinear core (21) is constituted by a metal section.

5. An element according to Claim 4, characterised in that the section (21) is a box-section. (20) are spaced from the said ends by slightly more than half the length of the said connection portions (44).
6. An element according to Claim 5 characterised in that the box section element (21) is quadrilateral in cross section (22, 23, 28, 28). 5
7. An element according to Claim 6, characterised in that the cross section of the box section element is a rectangle, the sides of which define the said sides (22, 23) for fixing the battens (24, 25). 10
8. An element according to Claim 1, characterised in that the said batten (24, 25) is fixed to the rigid core (21) by adhesive. 15
9. An element according to Claim 1, characterised in that the said batten (24, 25) is fixed to the rigid core (21) by means of self-tapping screws (27). 20
10. An element according to Claim 1, characterised in that the said rigid rectilinear core (21) has lateral apertures (29), formed in planes (28) perpendicular to the said sides (22, 23) for fixing the battens (24, 25), the said apertures (29) permitting connection (34) to one or more auxiliary elements (30, 40). 25
11. An element according to Claim 10, characterised in that the said apertures (29) permit the connection of an external bracket (30) which can be fixed to a horizontal element (36) for supporting planks forming a scaffolding walkway. 30
12. An element according to Claim 10, characterised in that the said apertures (20) permit the connection of an external bracket (40) operable to be fixed to a support beam (41). 35
13. An element according to Claim 1, characterised in that the opposite ends of the rigid core (21) are shaped to permit the insertion of connection means (44) for securely connecting two adjacent elements (20). 40
14. An element according to Claim 13, characterised in that the said connection means (44) are constituted by portions of sections with a cross section matching that of the rigid core (21). 45
15. An element according to Claim 14, characterised in that the said connection means (44) have stop elements (46) acting as shoulders between two consecutive elements (20). 50
16. An element according to Claims 6, 9 and 14, characterised in that the ends (27a) of the self-tapping screws (27) project into the section (21), and in that the screws (27) nearest the ends of each element 55

fig. 1

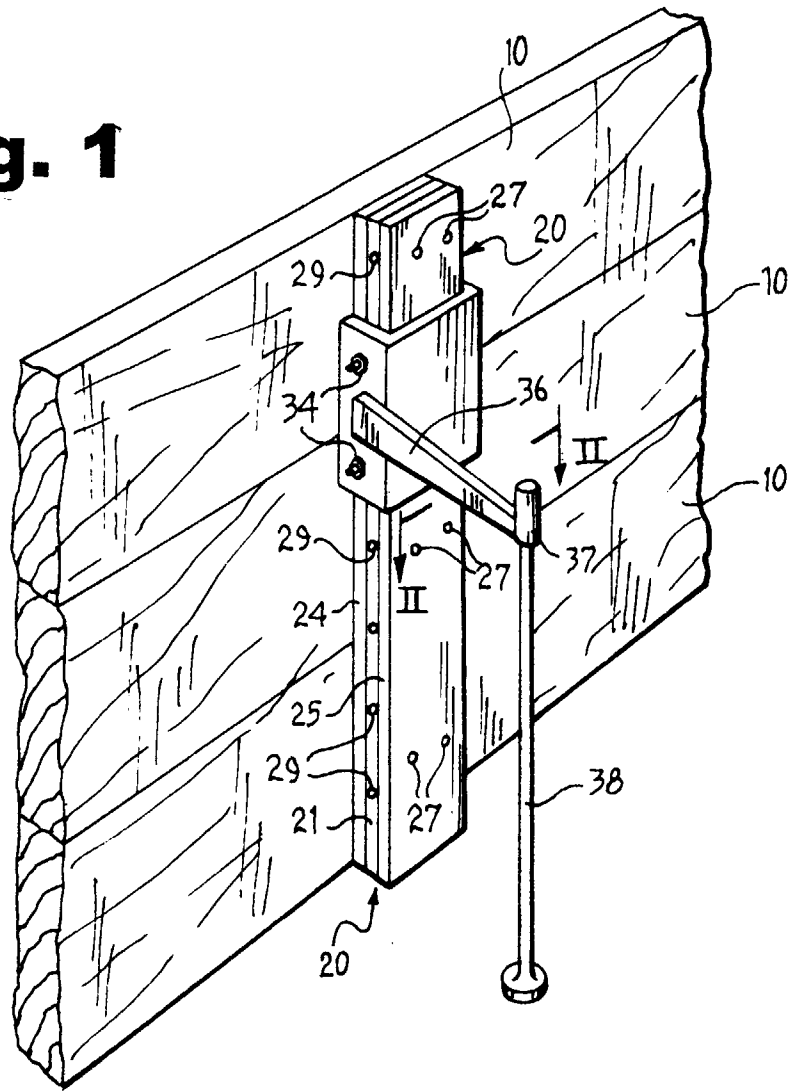


fig. 4

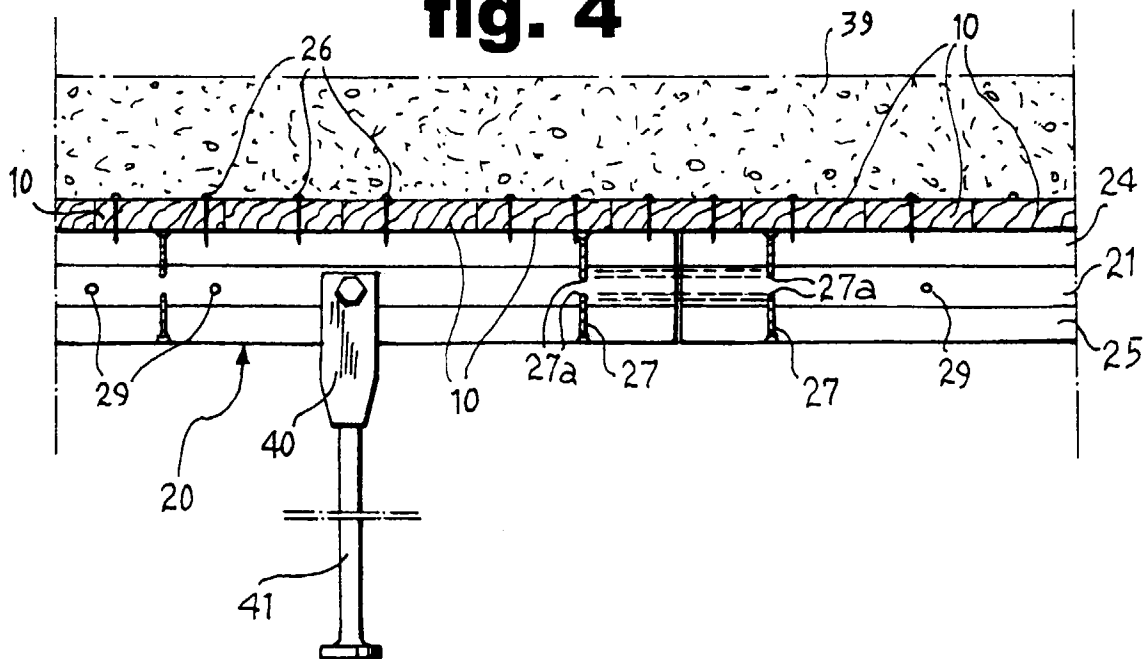


fig. 2

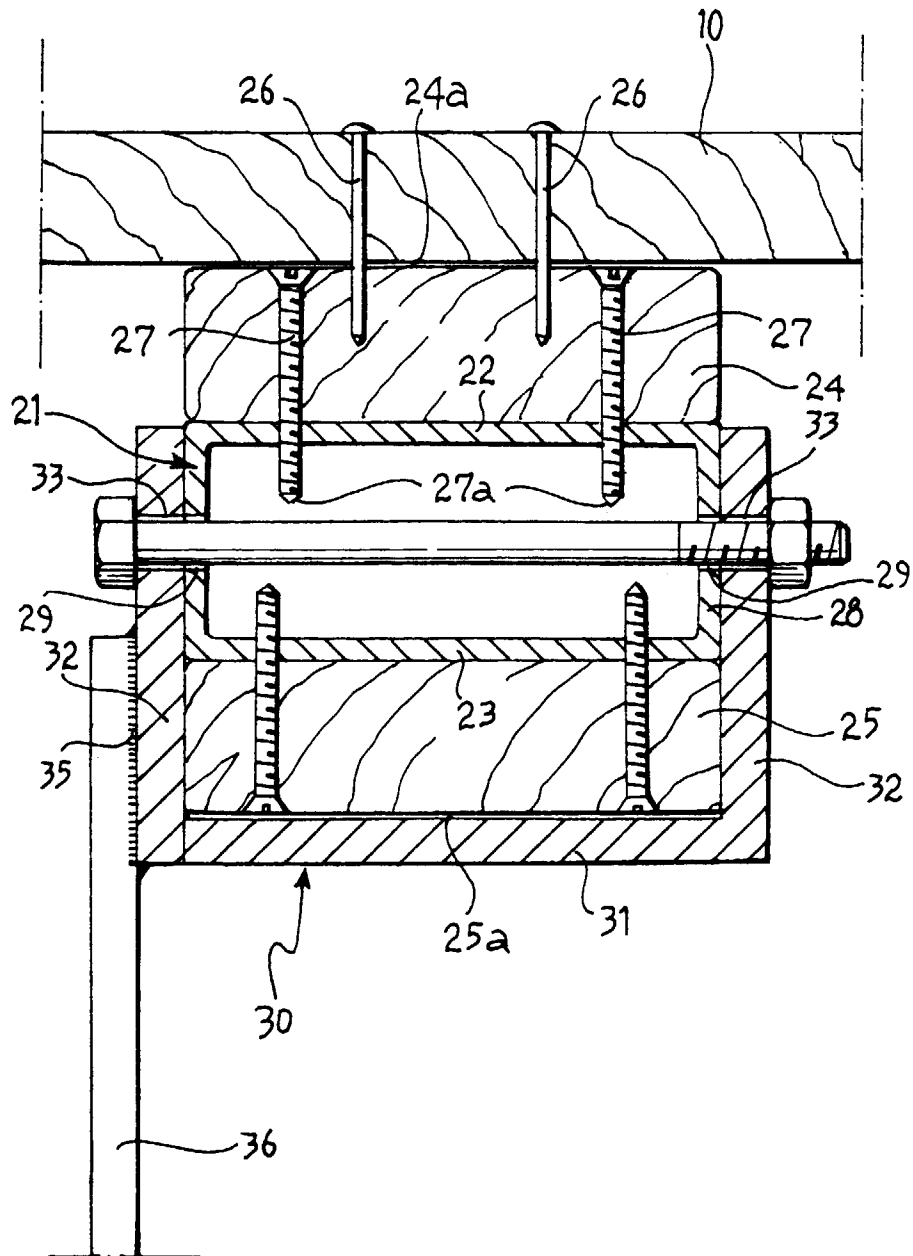


fig. 3

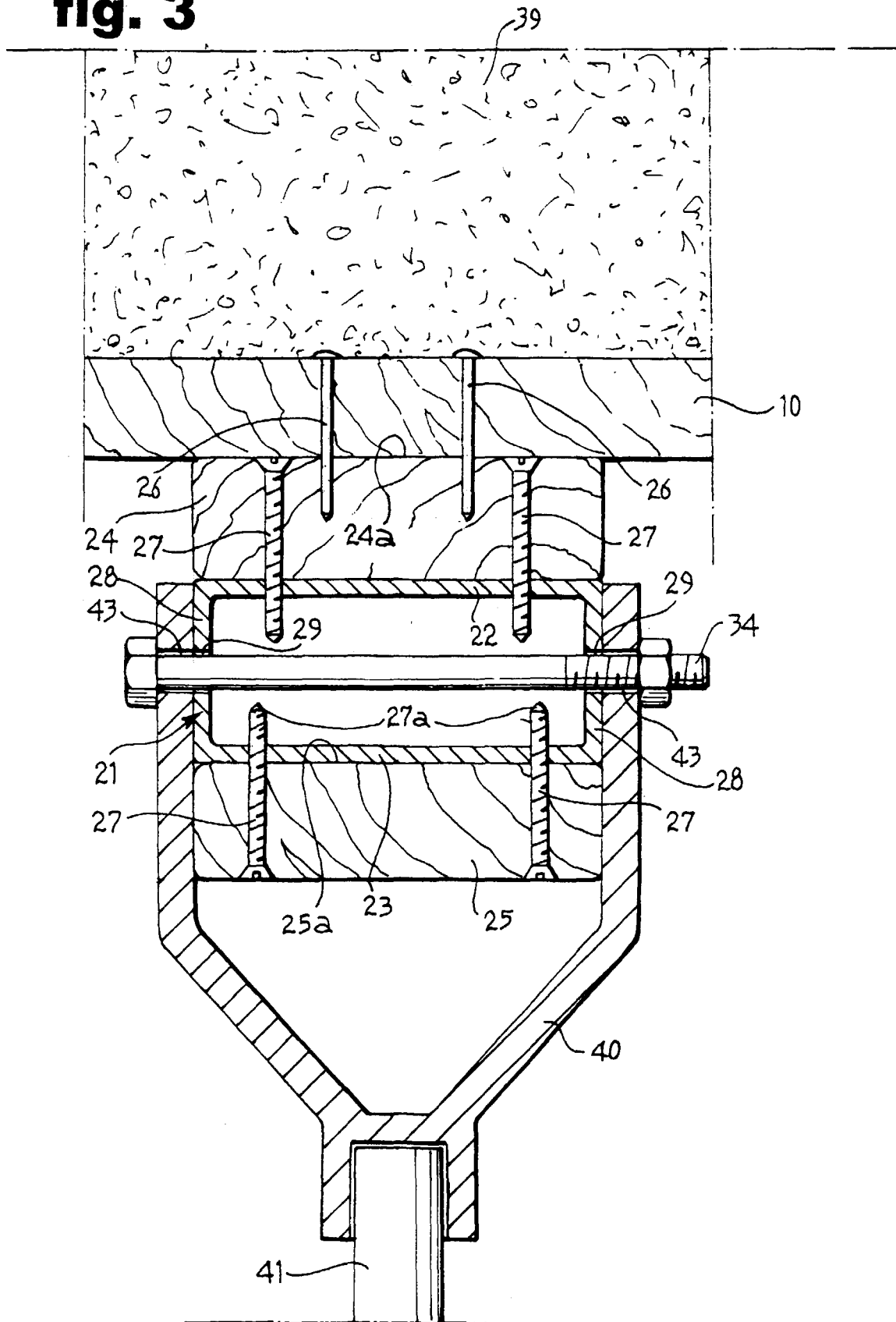
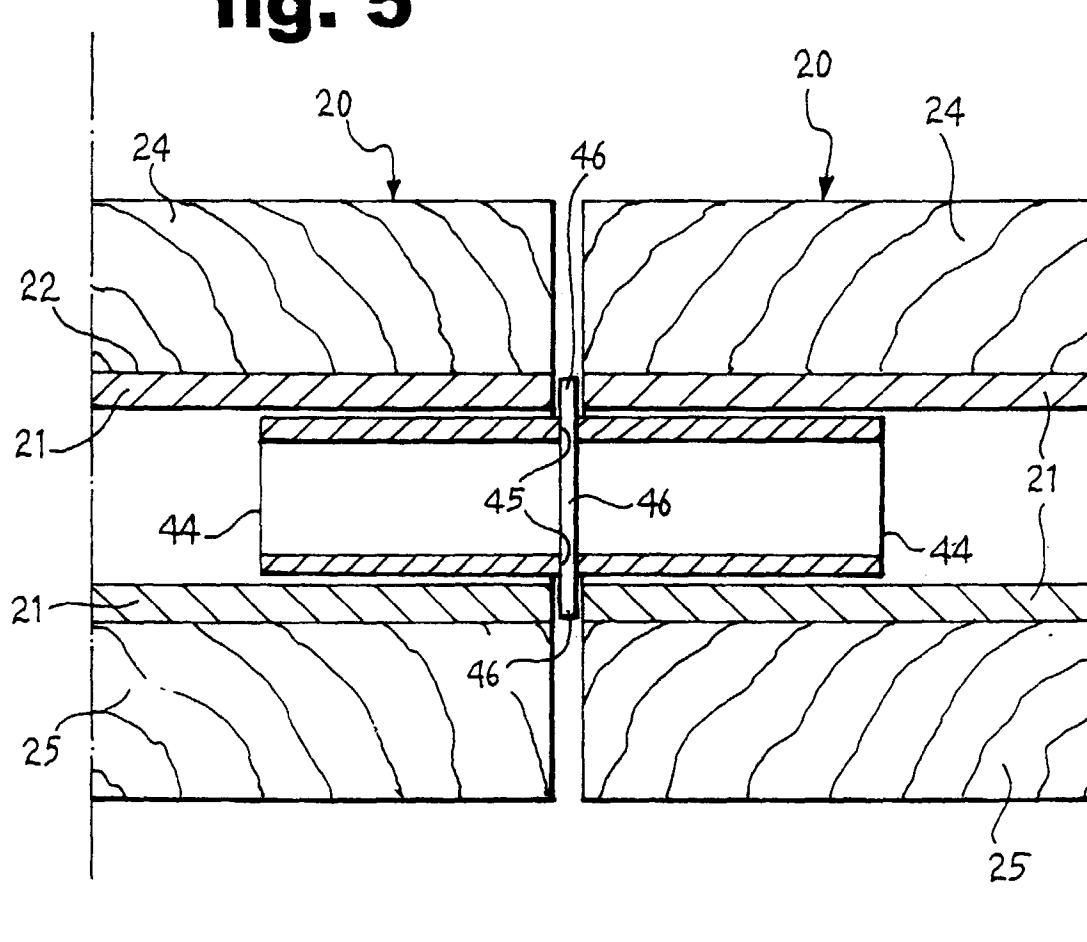


fig. 5





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Application Number
EP 99 10 9610

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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 24 August 1999	Examiner Andlauer, D
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