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(71) Applicant: **DLC S.r.L.**
Via Tiziano, 19
I-20145 Milano (IT)
Applicant: **PAOLO GERMANI S.p.A.**
Viale Mazzini, 20
I-26041 Casalmaggiore,
Cremona (IT)

(72) Inventor: **Dal Lago, Alberto**
Via Tiziano, 19
I-20145 Milano (IT)

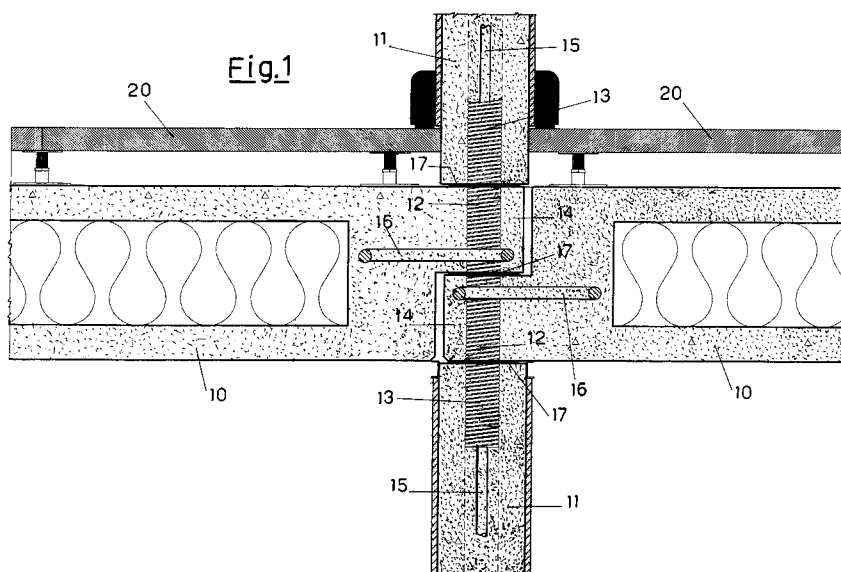
(74) Representative: **Martegani, Franco**
Via Damiano Chiesa, 56
I-20099 Sesto San Giovanni (Milano) (IT)

(54) **System for connecting together vertical and horizontal elements within a prefabricated structure.**

(57) A system for connecting together vertical elements (11) and horizontal elements (10) within a prefabricated structure, in which said elements (10, 11) comprise aligned holes through which reinforcement rods (15) embedded in a consolidation casting pass.

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Preferably, said holes are defined by sheaths (12, 13) incorporated into said elements (10, 11).

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This invention relates to a system for connecting together vertical and horizontal elements within a prefabricated structure, characterised by dry mounting of its constituent elements.

The general object of the present invention is to provide a system for connecting together vertical and horizontal elements by which a dry-mountable prefabricated structure can be obtained in which the horizontal structures consist of slabs interconnected to define a rigid platform, and the vertical structures consist of panels of load-bearing function extending in both directions and connected together vertically.

The rigid platform is obtained by connecting the slabs together by the connection system according to the invention, achieved by positioning within the supporting and supported teeth of the adjacent slabs a preferably metal sheath of suitable diameter.

It is hence possible to insert into the aligned sheaths a reinforcement rod or pin which following the subsequent injection of concrete forms a considerably effective edgewise connection providing continuity of the rigid platform.

The same type of connection is also made between the slabs and vertical support panels, to make the platform monolithic in terms of distributing horizontal forces.

In reality this connection not only joins the lower panels to the slabs but also creates reinforcement continuity between the lower panels and upper panels by means of a joint formed by injecting concrete into the sheath to set the reinforcements passing through the sheath.

In the direction of greater inertia the panels hence function as a reinforced brace which discharges compression into the concrete and traction into the reinforcement rods, whereas in the direction of lesser inertia it constitutes in practice a hinge, ie it is unable to contribute to the strength of the other braces (panels positioned perpendicular to the preceding braces).

In this manner a prefabricated structure can be formed in which the braced walls are always the perimetral walls and the walls of the stair-lift block, plus possibly other internal walls to reduce the floor span.

A free plan is therefore obtainable in which the partitions are not load-bearing and can vary in position from floor to floor with time.

A further characteristic of the connection system is that it is entirely of dry formation, ie the panels are mounted by resting each panel, in correspondence with the underlying reinforcements and sheaths, on a suitable pad of plastically deformable material (such as lead) provided with a central hole in correspondence with the sheaths.

Each panel, supported during the installation of the floor by suitable temporary props, is stabilized by injecting concrete into the vertical sheaths of the panels and into the slab connection sheaths.

By means of the connection system according to the invention a free-plan prefabricated building can be constructed having reinforcement continuity in the vertical structure and a rigid horizontal platform, with dry mounting of the structure and with particularly effective and reliable connections, such as to be able to be used in seismic regions.

The structural and functional characteristics of the connection system according to the invention will be more apparent from the description given hereinafter with reference to the accompanying schematic diagrams, which show examples of application of the system. In the drawings:

Figure 1 is a vertical section showing a system for connecting internal panels to slabs;

Figure 2 is a vertical section showing a system for connecting external panels to slabs; and

Figure 3 is a vertical section showing a system for connecting slabs to slabs.

In Figure 1 of the drawings, the reference numeral 10 indicates two adjacent floor slabs of a prefabricated structure, and 11 indicates two internal panels of the same structure which are superposed by way of the slabs 10.

The slabs 10 and panels 11 are securely interconnected by the connection system of the invention, which characteristically consists of sheaths 12, 13 embedded in the connection teeth 14 of the slabs 10 and panels 11 respectively.

Said sheaths 12, 13 are aligned, reinforcement rods 15 passing through them.

The connection system according to the invention therefore consists of positioning in the teeth 14 (supporting and supported) of the slabs 10 and in the internal panels 11 an inner sheath, preferably of knurled sheet metal construction, which contains the vertical continuity reinforcement rods 15 and connects the elements horizontally, creating the floor slab anchors to ensure a monolithic rigid platform.

The reference numeral 16 indicates interconnection rods and 17 indicates pads, for example of lead, which by plastically deforming ensure correct resting of the elements.

Hence, by positioning totally extending sheaths 12, 13 within the elements, the floor slabs 10 and the vertical panels 11 can be mounted by inserting through the sheaths the reinforcement rods 15 which emerge from the underlying element.

More specifically, the panel 11 is positioned with a safety seal at its base and braced with adjustable struts, after which a reinforcement rod 15 of length equal to the distance between floors plus the superposed length is inserted from the top

through the sheaths 12, 13, superposing it on that emerging from the underlying panel and slab.

Using a suitable injection pump, concrete is then injected into the sheath to hence create reinforcement continuity.

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The horizontal slabs 10 which rest on the vertical panels 11 are mounted so that their sheaths 12 receive the reinforcement rods 15 emerging from the underlying panel 11.

The slabs 10 hence define a perfect hinge joint with the vertical elements 11, as they comprise within their interior a reinforcement which forms a tie for the floor anchors.

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Figure 2 shows the connection system between a horizontal slab 10 and external panels 18, whereas Figure 3 shows the connection system between two adjacent slabs 10.

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In this latter case, the horizontal forces acting between the two elements 10 are transmitted with extreme reliability and ease by a steel pin 19 inserted into the coaxial sheaths 12, to hence form a rigid platform without the need for additional castings.

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The reference numeral 20 indicates a characteristic raised floor, also dry-mounted and hence eliminating any in-situ casting, the installations extending below it being easily inspectionable.

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To prevent noise transmission, mortar is used to seal the joint between the supporting tooth and the supported tooth of the floor slabs 10.

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The sheaths 12, 13 could also be dispensed with, and the connection system be implemented using simple holes and/or cavities of a different configuration formed in the prefabricated elements.

The object stated in the introduction to the description, of providing a system whereby a prefabricated structure in which the constituent elements can be dry-mounted, is hence attained.

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Claims

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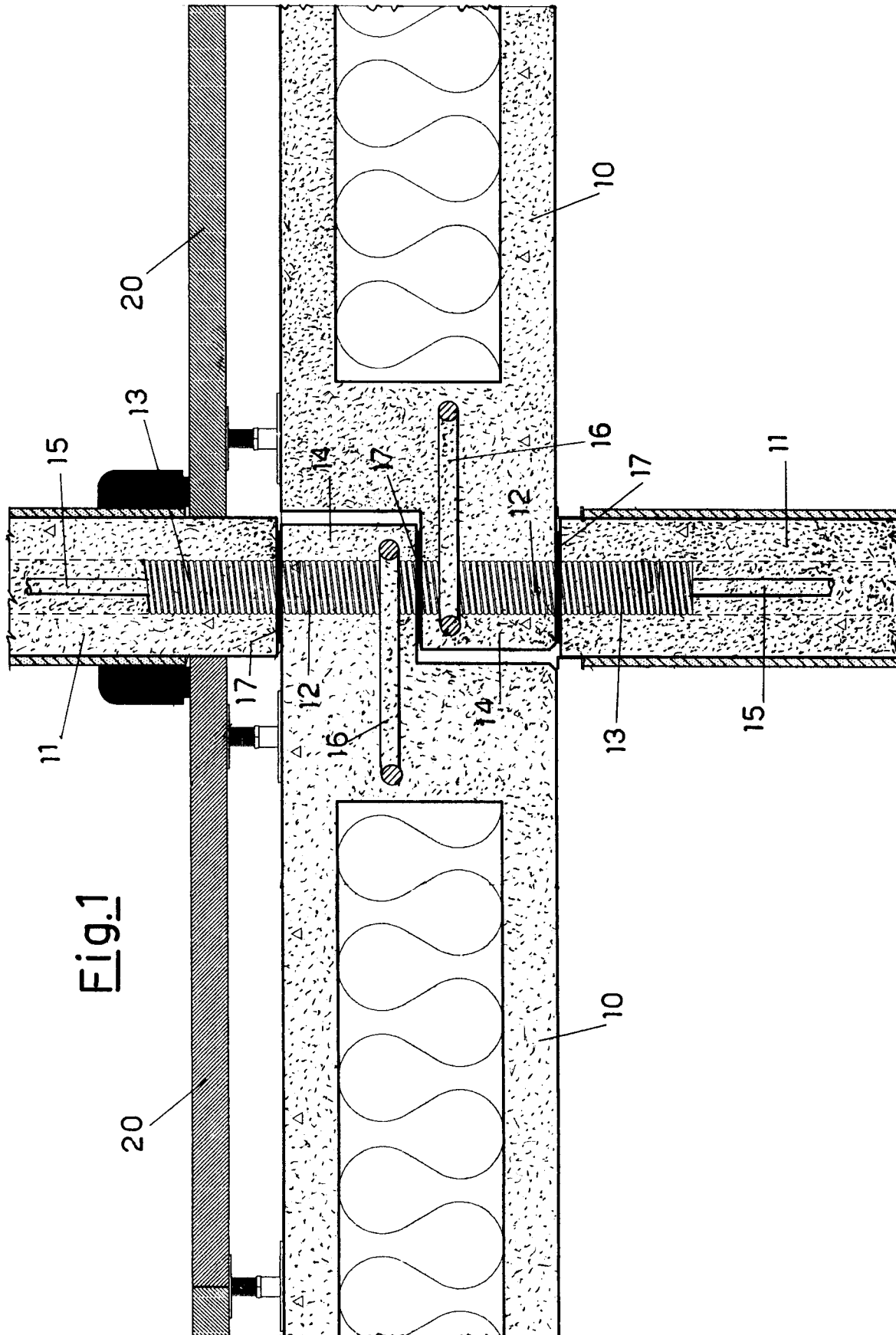
1. A system for connecting together vertical elements (11) and horizontal elements (10) within a prefabricated structure, characterised in that said elements (10, 11) comprise aligned holes through which reinforcement rods (15) embedded in a consolidation casting pass.

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2. A connection system as claimed in claim 1, characterised in that said holes are defined by sheaths (12, 13) incorporated into said elements (10, 11).

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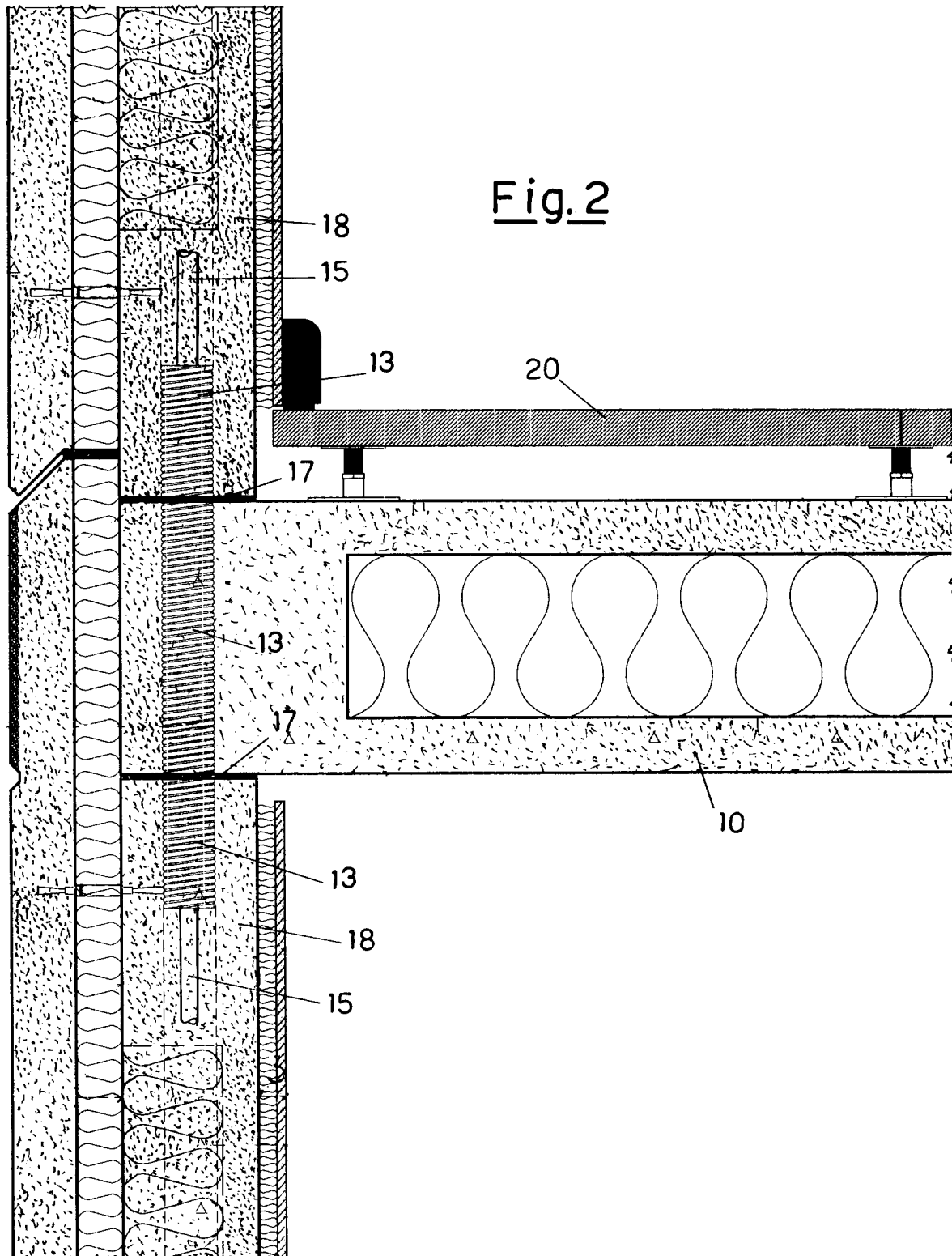


Fig. 3

