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(71) Applicant: **Leiro Paz, Valentin**
08591 Ayguafreda, Barcelona (ES)

(72) Inventor: **Leiro Paz, Valentin**
08591 Ayguafreda, Barcelona (ES)

(74) Representative:
Morgades Manonelles, Juan Antonio
Calle Valencia, 300 - entresuelo 1a
08009 Barcelona (ES)

(54) Lifting of horizontally cast on-site wall panels

(57) These improvements consist in providing such pieces having means to ease moving thereof by ancillary means such as cranes and the like in such a way that moving, which involves hanging of the pieces, will not impair their resistant structure and will not impair the corresponding standardised profiles that serve as a frame of the pieces Stiffening the structure. Said means comprise a number of hooks distributed at the vertexes of the pieces and at the middle area of their major bases. Raising up of the pieces as well as moving thereof in a comfortable and effective way are made possible by means of the corresponding pulleys and IPN profiles without impairing the pieces.

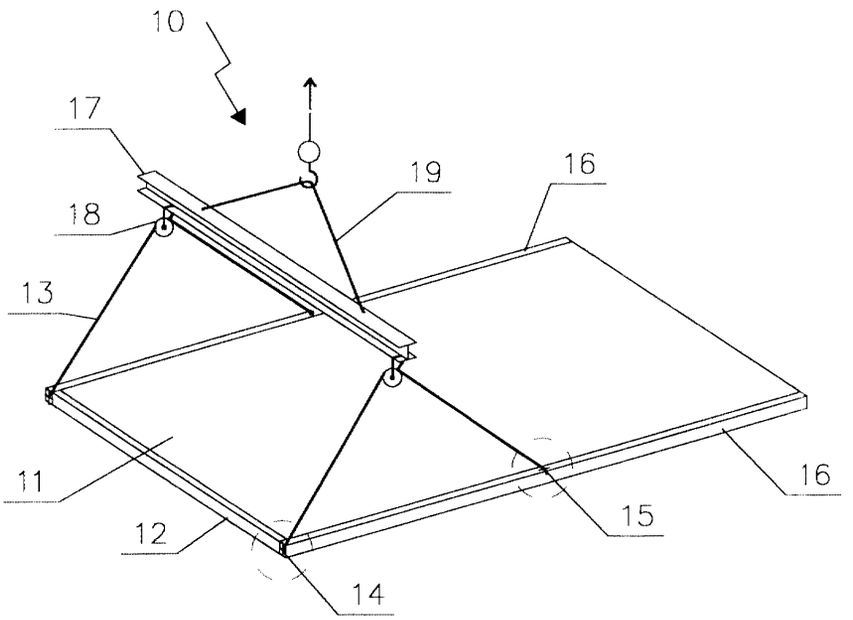

FIG. 1

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Description

[0001] The present Addition Patent application relates, as stated in its title, to "IMPROVEMENTS INTRODUCED IN THE OBJECT OF THE MAIN PATENT n° 540232 FOR BUILDING CONSTRUCTION METHOD" which novel manufacturing, conformation and design features fulfil the purpose to which it has been specifically designed, with a maximum safety and effectiveness.

[0002] More particularly, the invention refers to improvements introduced in the building construction method of the type of that being based on directly moulding on the floor or on the pavement of the building the flat pieces which are meant to form the building side walls. They are obtained by disposing the suitable reinforced concrete rod lattice as well as the openings of the corresponding masses of reinforced concrete in the space defined on such pavement by a frame formed by detachably interlinked metal rulers appropriately sized which are placed thereon. Said pieces are horizontally resting on the pavement until setting up has been completely and then they are disposed in the up-right direction that they have to assume altogether in the building. Said improvements consist in providing such pieces having means to ease moving thereof by ancillary means such as cranes and the like in such a way that moving, which involves hanging of the pieces, will not impair their resistant structure and will not impair the corresponding standardised profiles that serve as a frame of the pieces stiffening the structure. Said means comprise a number of hooks distributed at the vertexes of the pieces and at the middle area of their major bases. Raising up of the pieces as well as moving thereof in a comfortable and effective way are made possible by means of the corresponding pulleys and IPN profiles without impairing the pieces.

[0003] A further object of the present invention is to provide the frame of the above mentioned pieces with means that allow assembling of several pieces, either being aligned or angled in such a way that, once they have been placed, they can be immobilised relative to one another by simple operations such as welding or the like along with the corresponding conventional joints thus allowing to build up large longitudinal walls with a minimum time.

[0004] Even in earlier improvements such as that disclosed and claimed in the Addition Patent n° 544038(6) the inner structure of the made up piece were arranged so as to have projecting ends used to move them, the present improvements replace said technical solution with the provision of a plate having a hook and which is fixed by the suitable means to the profiles that frame the pieces or to their major bases or to their minor bases. Accordingly, manufacturing of the pieces becomes faster thus preventing said side reinforcing members (basically profiles having an U-shaped cross-section) from being machined, i.e. providing them with the corresponding bore or hole intended to exit the reinforcing inner bar ends allowing to form the hook as ancillary means for moving and raising such pieces.

[0005] In addition, another object of the present invention is to provide, by the same means, the above mentioned hooks at the ends of the reinforcing profiles which are formed in any of the piece bases. Altogether allowing for a faster and short time manufacturing of said pieces.

[0006] In short, by means of the above mentioned improvements the piece raising up is facilitated by a four point arrangement where the entrainment cables of the crane or the like can be attached to. Two of these points are located at the reinforcement profile upper corner and the other two are located at the middle height of the side profiles.

[0007] As for the additional profiles that will be disposed in order to allow attaching of the two pieces forming a wall or a corner, a desirable number of them will be placed therein to ensure the wall stiffness.

[0008] A further improvement of the present application consist in manufacturing outside walls that require an high isolation degree by means of two of the provided pieces in the building construction method disclosed in the main patent n° 540232 and in the next Addition Patents. Isolation provided in said walls is achieved in a different way by interposing them either inside one of the pieces as intended, described and claimed in the Addition Patent n° 9301707(3) in the name of the same applicant or by providing two pieces forming a sandwich with a plate of an isolating material of any suitable nature according to each condition, in such a way that at the corresponding side bases or at the upper or lower bases there is provided a wider U-shaped cross sectional profile allowing to attach the three plates: the two plates made up of the mentioned concrete plus the proper isolating plate.

[0009] Further details and features of the present invention will be apparent from the following description, which refers to the accompanying drawings that schematically represent the preferred details. These details are given by way of example, which refer to a possible case of practical embodiment, but it is not limited to the disclosed details; therefore this description must be considered from a illustrating point of view and without any type of limitations.

[0010] A detailed list of the various parts cited in the present patent application is given below: (10) flat piece, (11) mass of concrete, (12) frame, (13) cable, (14) point of anchorage, (15) point of anchorage, (16) frame, (17) profile, (18) pulley, (19) hook, (20) plate, (21) hook, (22) plate, (23) hook, (24) roofing piece, (25) insulator, (26) mortar, (27) roofing, (28) plates, (29) plates, (30) soldering points, (31) pieces to be raised up, (32) ceiling board.

[0011] Figure n° 1 is a perspective view of the moving system of the flat piece (10) with the improvements introduced in the object of the present invention.

[0012] Figure n° 2 shows a detail about the nature and

constructive form of the points of anchorage (14) by means of plates (20-22) and hooks (21-23).

[0013] Figure n° 3 is a partial cross-section elevational view showing a facade section having more than one floor and being built according to the object of the present improvements.

[0014] Figure n° 4 is one of the possible embodiments of the present improvements in building a gable-roofed floor.

[0015] Figure n° 5 is a perspective view showing the shape of the junction between two plates (10) being helped with plates (29).

[0016] Figure n° 6 is a top plan view of a ceiling board (32) provided with pieces (31) for raising it up.

[0017] In a preferred embodiment of what is the object of the present invention and as it can be seen from figure n° 1, the flat piece (10) is made up from a mass of concrete (11) duly reinforced by means of the corresponding bars, not shown in the figures, protected at the edges thereof by frames (12) and (16). Said frames could be preferably normalised profiles having a U-shaped cross-section and soaking up the mass of concrete and in turn protecting it and allowing to place said flat pieces (10) with other similar pieces.

[0018] One of the present improvements consists in providing points of anchorage at the vertexes or at the confluence points between the frames (12) and (16). Alternatively, another object of the present application is the provision of further points of anchorage in the frames (16) and in one of the profile wedges which cross-section is U-shaped.

[0019] The four points of anchorage are formed by a plate (22) welded to the frames (12) and (16) and to the profiles which are forming them, and a hook (23) welded to the plate (22) or alternatively it could be likewise linked by suitable bars to the inner structure of the piece (10).

[0020] The above described arrangement and nature of the points of anchorage allow, as it can be seen from figure n° 1, moving the piece by means of cables (13), pulleys (18) and beams (17), by means of a crane provided with a hook (19), so that stresses involved by moving of such a heavy piece are evenly spread throughout its volume with said movement entailing no deformation which could involve wasted pieces due to failure, cracking or inner damage not being appreciated with the naked eye.

[0021] A further object of the present improvements consist, as it can be seen from figures n° 3 and 4, in building a wall by means of two flat pieces (10) forming a sandwich together with an isolating piece (25). At the side up-right bases there are provided respective U-profiles, either only one profile or an additional third profile soaking up the profiles or frames of each of the pieces (10).

[0022] Still a further object of the present improvements consist in providing a plate (32) specially for ceiling having two corresponding hooks (31) and provided with an isolating layer (25) as well as a mass of mortar (26) onto which corresponding tiles, slates, uralita® and the like are to be placed, all of this being carried out without changing the construction system or its method.

[0023] Another object of the present invention offers the possibility of assembling flat pieces (10) through the soldering points (30), as it can be seen from figure n° 5, by providing a number of plates (28) and (29) properly welded to the frames or profiles (12) and (16) regardless of whether the corresponding joined pieces are placed between the minor side bases of two adjacent flat pieces being arranged to form a wall.

[0024] Once having been sufficiently described what the present patent application consists in accordance to the enclosed drawings, it is understood that any detail modification can be introduced as appropriate, provided that variations may alter the essence of the invention as summarised in the appended claims.

Claims

1.ª - "IMPROVEMENTS INTRODUCED IN THE OBJECT OF THE MAIN PATENT n° 540232 FOR BUILDING CONSTRUCTION METHOD" of the type of that after the appropriate levelling of the ground and essentially performing the corresponding ditches into the building foundations, the building pavement is been made, subsequently moulding directly on this pavement the flat pieces intended to form the side walls of the building, and said pieces having the overall height of these walls, this being obtained by placing the appropriate lattice bars already reinforced and pouring the corresponding mass of concrete into the space formed on said pavement by a frame comprising metal rulers properly sized that are placed on and suitably between said frame in a detachably way, such pieces resting horizontally on the pavement until setting up has been completely reached and then being disposed in the up-right direction that they have to assume altogether in the building where they are locked and fixed, characterised in that moving and placing of the flat pieces (10) are ensured by providing each piece with four points of anchorage, two at the upper corner and two in the frames or side bases (16) by the provision of plates (20) at the ends of said frames (16) to which hook (21) has been welded, said hook (21) being able to be welded only to the plate (20) or fixed through suitable means to the resistant structure of the mass of concrete, the other two points of anchorage being welded directly inside wedges of the profile (16).

2.ª - "IMPROVEMENTS INTRODUCED IN THE OBJECT OF THE MAIN PATENT n°540232 FOR BUILDING CONSTRUCTION METHOD" as claimed in claim 1ª characterised in that forming of

longitudinal or angled walls by flat pieces (10) are achieved by means of plates (28-29) welded to the frames (12) or (16) of said flat pieces (10), said plates (28-29) being joined through soldering points (30).

3. ª - "IMPROVEMENTS INTRODUCED IN THE OBJECT OF THE MAIN PATENT n°540232 FOR BUILDING CONSTRUCTION METHOD" as claimed in the precedent claims characterised in that the facades of the buildings constructed by the method will be made from a sandwich of two flat pieces (10) where an insulator (25) of polyurethane or similar material is fitted therebetween.

4. ª - "IMPROVEMENTS INTRODUCED IN THE OBJECT OF THE MAIN PATENT n°540232 FOR BUILDING CONSTRUCTION METHOD" as claimed in the precedent claims characterised in that ceiling boards or pieces (32) formed by the corresponding mass of concrete (11) are used to form the roofings according to the present method, where a insulating plate (25) and another mass of mortar (26) are included onto which the corresponding tiles, slates or any other roofing material are to be disposed.

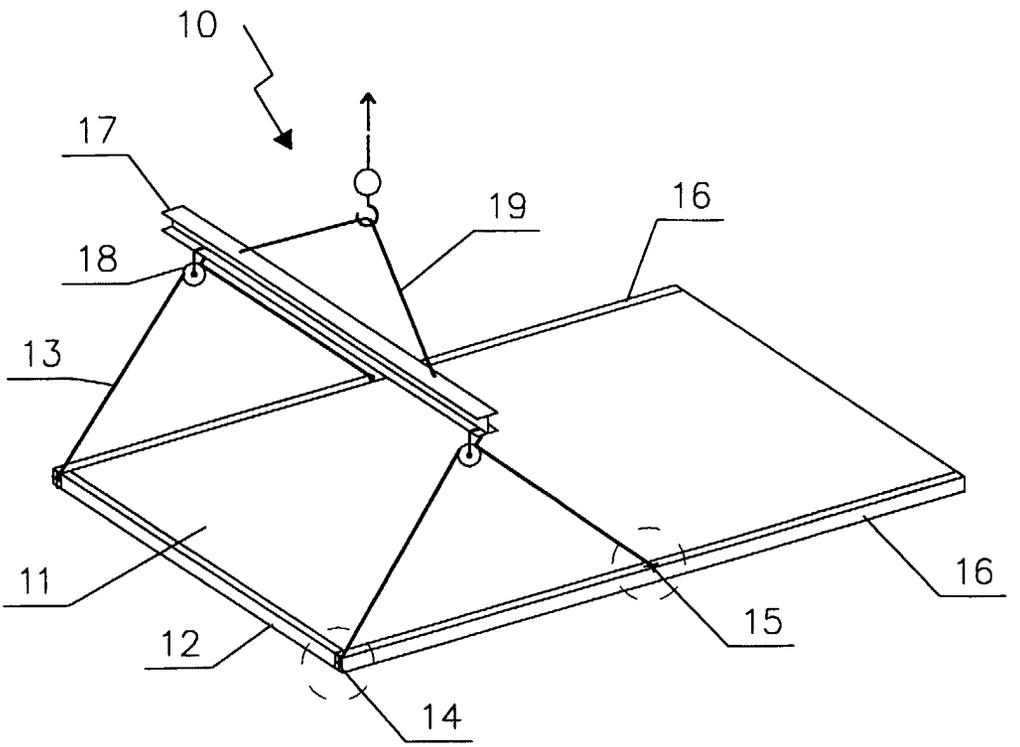

FIG. 1

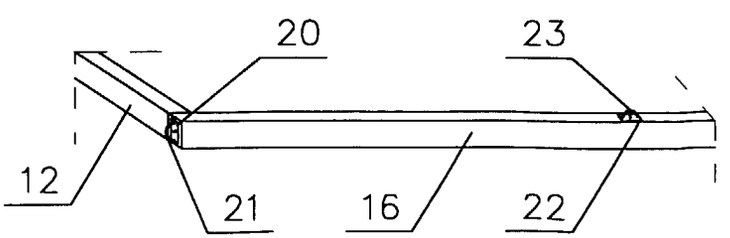

FIG. 2

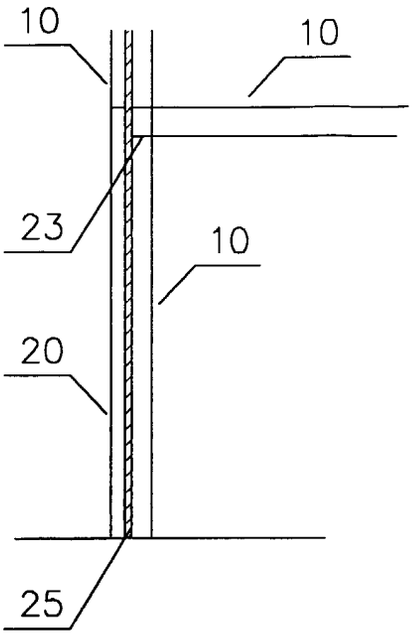

FIG. 3

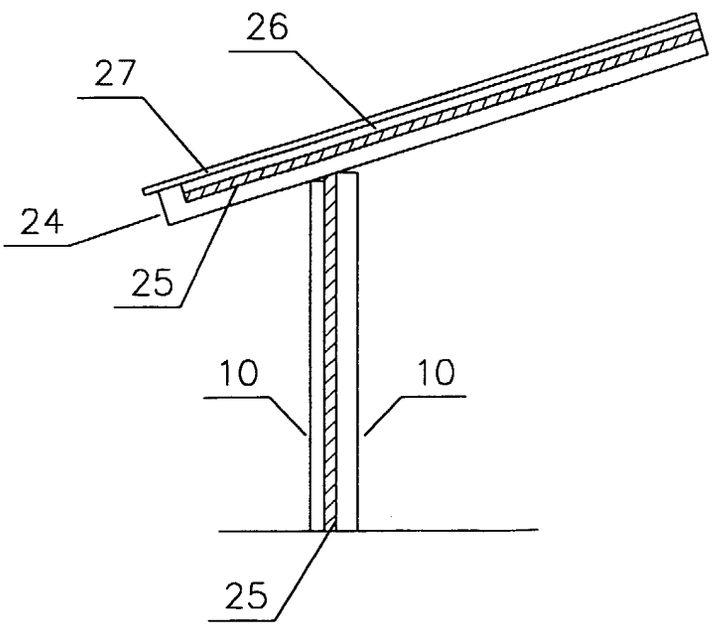

FIG. 4

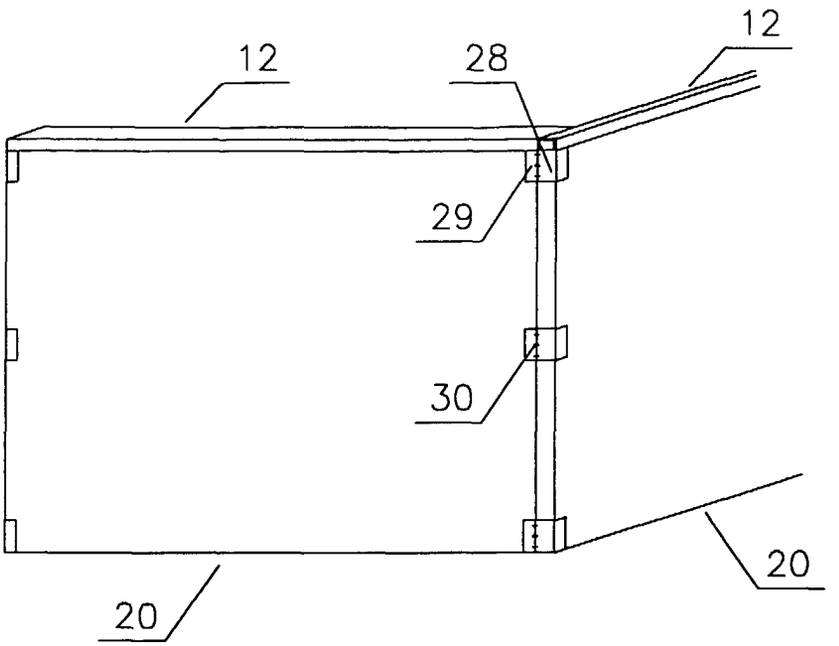

FIG. 5

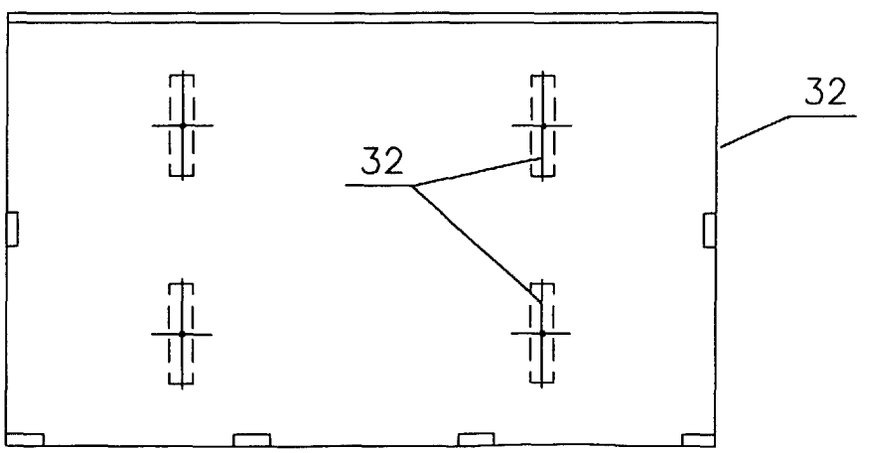

FIG. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 99 50 0255

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	DE 24 04 025 A (MAIER ROLF DIPL ING) 31 July 1975 (1975-07-31) * page 7, line 18 - page 8, line 21 * * page 12, line 19 - page 13, line 22; figures 1,2,13,14 *	1	E04B1/35 B66C1/12

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

E04B
B66C
E04G

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	22 March 2001	Porwoll, H

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22-03-2001

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 2404025 A	31-07-1975	NONE	

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