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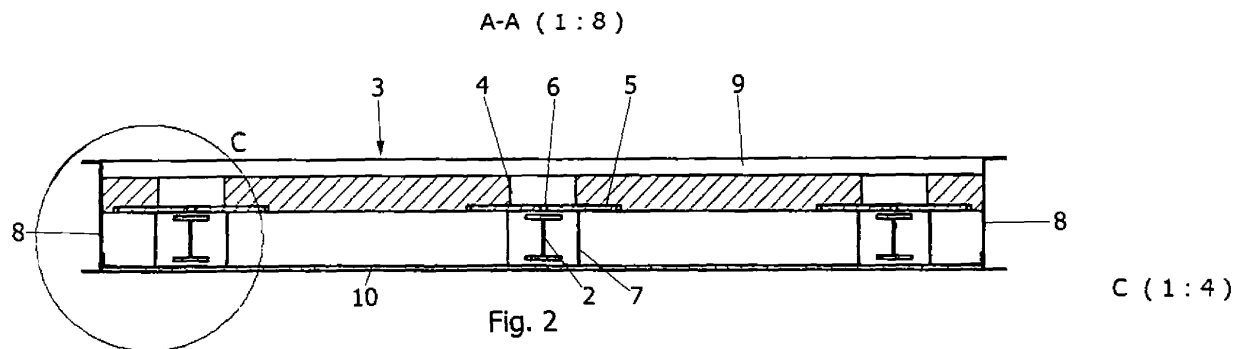
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(54) **Constructing an overhang**

(57) The invention relates to a method for constructing a concrete overhang to be supported upon wall-mounted cantilevered beams (2) In the method, a concrete slab (3), whose bottom surface is provided with

enclosures in alignment with the beams, is placed upon the beams for support and secured thereto, most preferably by pouring concrete into the enclosures.



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Description

Technical field

[0001] The invention deals with construction engineering and relates to constructing an overhang on the wall of a building. The invention is particularly applicable to the construction of balconies.

Technical background

[0002] Concrete slab overhangs have been constructed earlier in such a way that to the wall are attached protruding I-beams, around the beams is fabricated a casting mold, followed by pouring concrete therein for producing a slab. After the slab has dried, the mold is removed and handrail posts and other accessories are secured to the slab. Currently, a commonly applied technique of renovating such balconies is to chisel away the old slab while leaving the beams in place, followed by casting a new slab on site. Even the beams are sometimes cut off, followed by constructing columns upon which is mounted an entirely new balcony.

[0003] In use today are also various reinforcement mold structures or elements, which are provided with thermal breaks, whereby these are installed in place and cantilever slabs are stabilized and molded and cast to the attachment with the building as early as concurrently with frame casting.

[0004] Publication JP 10-331250 A discloses a method for the construction of a balcony, said method comprising laying concrete boards to rest on top of wall cantilever I-beams. The boards have threaded holes in a bottom surface and the beams are provided with holes in the top flange in alignment therewith. The board is attached to the beams by screwing bolts through the holes into the holes of the board.

General description of the invention

[0005] Now, according to the independent claims, what has been invented is a method for the construction of an overhang, and also invented is a concrete slab. The dependent claims present a few preferred embodiments of the invention.

[0006] According to the invention, upon wall cantilever beams is placed a completed concrete slab, having its bottom surface provided with an enclosure in alignment with each beam for accommodating the beam therein. Thus, the slab is pushed to its position supported on the beams, such that the beams become pushed into the enclosures. When successfully placed in its position, the slab is secured to the beams. The method is particularly suitable for constructing balconies. The method does not require on-site assembling and dismantling a casting mold, which reduces labor and facilitates construction. From the standpoint of technology and economy, the concrete slab is most beneficially fabricated at a precast

concrete plant.

[0007] The best way of securing the slab to the beams is by pouring concrete into the enclosures. At the same time, concrete works as a protection material against fire and corrosion. Alternatively, however, the slab can be secured also in another way. In this case, the slab is provided with a suitable fastening element for securing the slab to the beams, for example by welding. Even in this case, in practice, the enclosure must be filled with a fire protection material. This is most preferably done beforehand during the slab fabrication process. Another option is to fill the enclosures after placing the slab in its position.

[0008] Most favorably, the slab has openings in line with the enclosure for bringing concrete or some other filler inside the enclosure. Finally, the openings can also be filled with concrete or some other filler mass.

[0009] A rear end of the enclosure is sealed against the wall for a casting operation. If necessary, a separate sealing block can also be used.

[0010] The method is particularly beneficial in renovation. In this case, the replaceable slab is just chiseled off, the beams are left in place, and a new slab is mounted thereupon.

[0011] The distance of a slab from each beam is preferably adjustable. Thereby, the slabs can be set precisely at a desired height, even if the top surfaces of the slabs had a slight mutual height discrepancy. This also enables the use of a rougher dimensional tolerance in the installation process of slabs. For adjustment, the slab may have openings in line with the beam, and those openings can be provided with a plate which is parallel to the slab plane and includes a threaded hole. Into the hole can be screwed a bolt for adjusting thereby the slab to an exactly flat position and correct height. Accordingly, prior to the setting of concrete, the slab can be carried by bolts responding to the top flange of a beam. This type of adjustment is easy and quick to perform in the installation process.

[0012] Alongside the slab can be provided downward extending plates. To these can be attached a bottom plate for providing an enclosed structure.

Drawings

[0013] The accompanying drawings constitute a part of the written specification of the invention and are relevant to the subsequently presented detailed description of a few embodiments of the invention. In the drawings, fig. 1 shows one slab of the invention placed to be supported by wall-mounted beams, fig. 2 shows a section of fig. 1 in enlargement, and fig. 3 shows a partial enlargement.

Detailed description of a few embodiments of the invention

[0014] In fig. 1, on a wall 1 have been mounted per-

pendicularly cantilevered I-beams 2. To rest upon these has been placed a concrete slab 3.

[0015] The concrete slab 3 is preferably made of fiber-reinforced concrete. It can be for example about 50-100 mm in thickness and about 1200-2500 × 3000-5000 mm in external dimensions. In order to provide a drain slope, the top surface of a slab can be appropriately declining.

[0016] In line with each beam 2, the slab 3 has two openings 4, one close to the rear edge and the other close to the front edge. In the cross-direction of a beam, each opening is wider than the beam's top flange. At the bottom surface of a slab, each opening is provided with a cross-beam extending steel flat bar 5 with a threaded hole 6 in the middle of it. The steel flat bar has a width which is less than the opening's diameter lengthwise of the beam. The holes have been made and the steel flat bars have been attached in conjunction with the casting operation. The holes are adapted to receive bolts by screwing for thereby setting the slab by means of the bolts to be supported by the beams in a precisely straight position.

[0017] Fixed to a bottom surface of the slab 3 in line with each beam 2 is a steel enclosure 7, within which the beam settles as the slab is pushed to its position to be supported by the beams. Along lateral edges of the slab are mounted side plates 8 of steel and a front edge is provided with a front plate 9, whereby to both of these plates is fixed a bottom plate 10 of appropriate material.

[0018] The slab 3 is hoisted up and pushed to be supported on top of the beams 2 all the way to a panel or insulation present on a wall surface. If necessary, bolts are screwed into the holes 6 and the slab is adjusted to a flat position. Thereafter, the enclosures 7 are filled up with concrete by pouring it in through the openings 4. If necessary, the rear end of the enclosures can be closed by means of a separate plate for the duration of a casting operation. The holes 4 can also be filled with concrete. However, these can also be filled with some other appropriate mass. If desirable, the mass can even be in a different color than the slab surface.

[0019] The side plates 8 and 9 can be fitted beforehand also with balcony handrails and other possible accessories, or these can be installed in a slab which has already been stabilized in its position.

Claims

1. A method for constructing a concrete overhang on the wall of a building, said method comprising arranging the overhang to be supported upon wall-mounted cantilever beams (2), **characterized in that**

- a concrete slab (3) is cast and its bottom surface is formed with an enclosure (7), which is in line with each beam (2) and within which the beam settles as the slab is placed to be support-

ed upon the beams,

- the slab is placed upon the beams for support, and

- the slab is secured to the beams.

2. A method as set forth in claim 1, **characterized in that** the enclosures (7) are filled with a fire protection material.

3. A method as set forth in claim 1 or 2, **characterized in that** the slab (3) has openings (4), by way of which the enclosures (7) are filled with a material after the slab has been placed upon the beams (2) for support.

4. A method as set forth in claim 2 or 3, **characterized in that**, when the slab (3) has been placed upon the beams (2) for support, the enclosures are filled by pouring concrete therein.

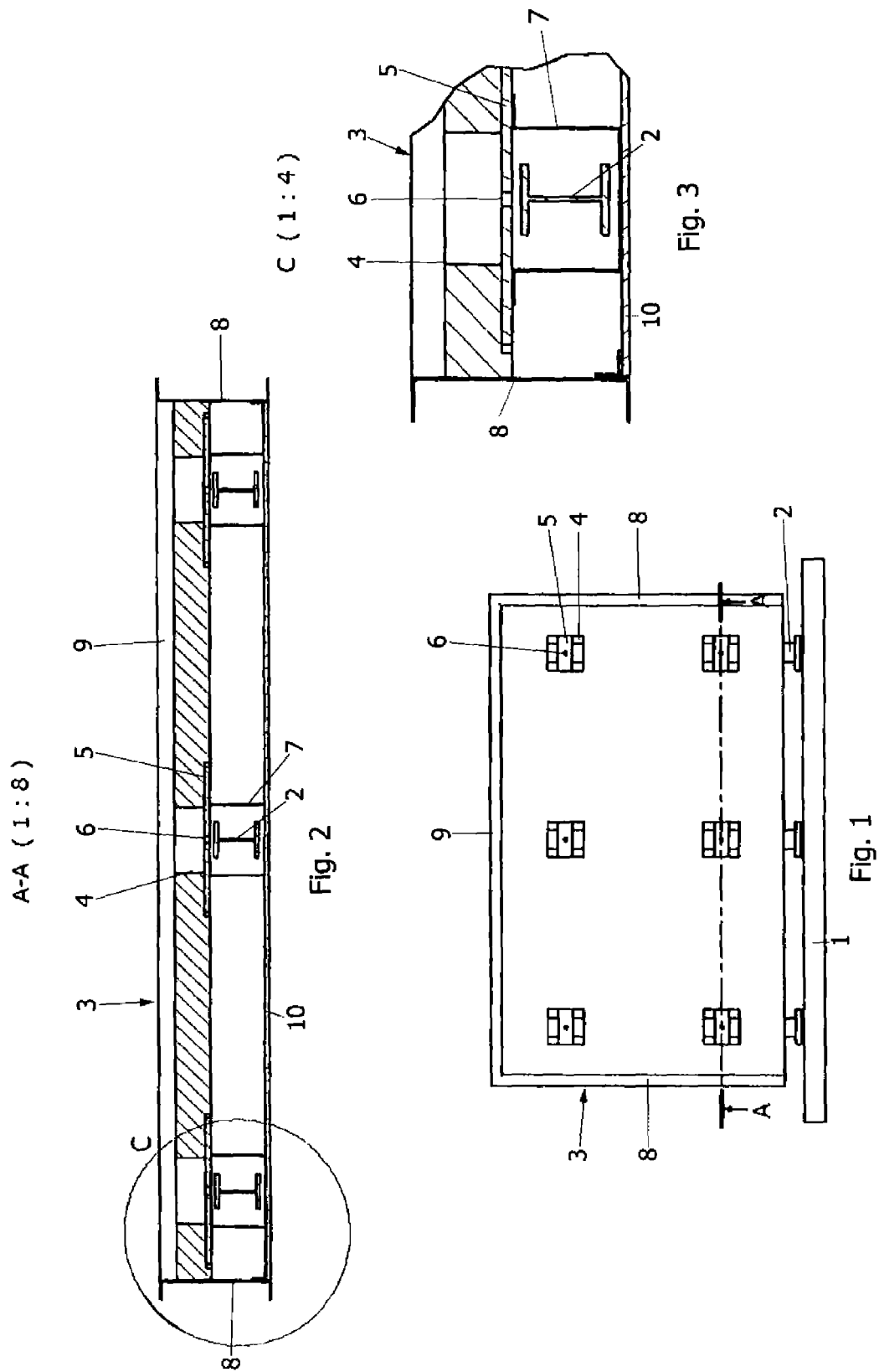
5. A method as set forth in any of claims 1-4, **characterized in that** the distance of the slab (3) from the beam (2) is adjusted before the slab is secured, such that the slab settles exactly at a desired height.

6. A method as set forth in claim 5, **characterized in that** the slab has openings (4), which are in alignment with the beams and which include a plate (5) provided with a threaded hole (6), and **in that** the distance of the slab, which has been placed upon the beams for support, is adjusted by means of bolts to be screwed into the holes.

7. A concrete slab, which is mountable for support on cantilevered beams present on a wall, **characterized in that** a slab (3) has an enclosure (7) in alignment with each beam, such that, when the slab is placed upon the beams for support, the beams settle within the enclosures.

8. A slab as set forth in claim 7, **characterized in that** the slab (3) has openings (4) in alignment with each beam.

9. A slab as set forth in claim 8, **characterized in that** the opening includes a plate (5) which is provided with a threaded hole (6).



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 10331250 A [0004]