United States Patent [19]

Selvaag

[11] **3,863,411**

[45] **Feb. 4, 1975**

[54] **ARRANGEMENT AT AN EXPANSION JOINT**

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[22] Filed: **July 20, 1973**

[21] Appl. No.: **381,002**

Related U.S. Application Data

[63] Continuation of Ser. No. 179,435, Sept. 10, 1971, abandoned.

[30] **Foreign Application Priority Data**

Sept. 18, 1970 Norway 3562/70

[52] **U.S. Cl.** **52/251,** 52/573, 52/712

[51] **Int. Cl.** **E04b 1/60,** E04b 1/68

[58] **Field of Search** 52/442, 251, 712, 573

[56] **References Cited**

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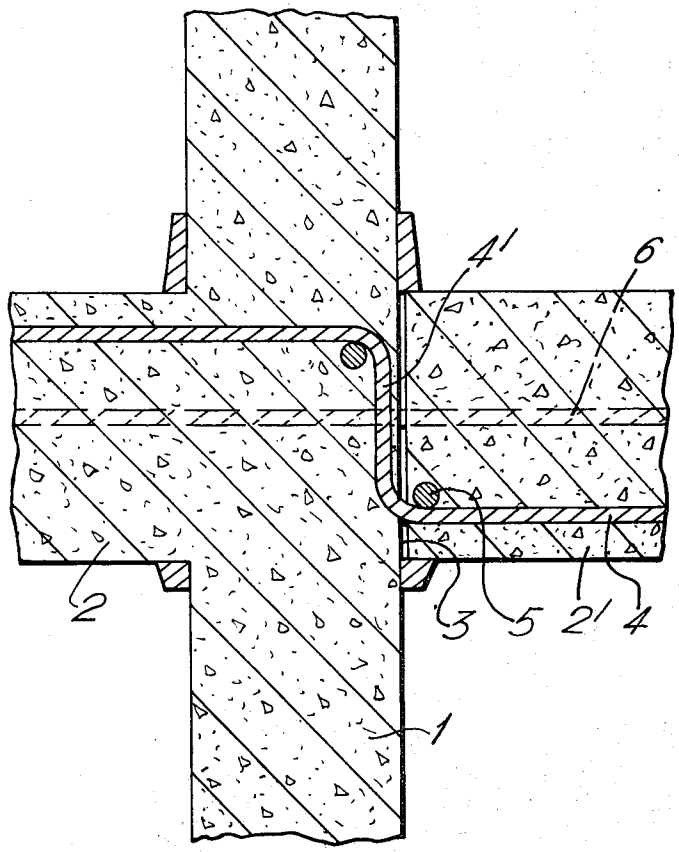
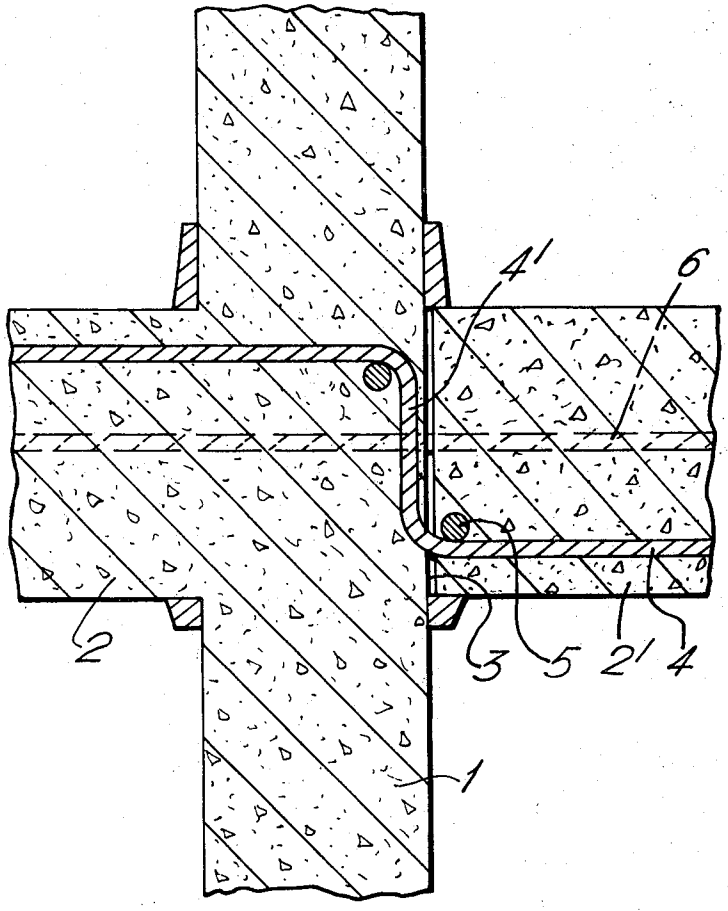
[57] **ABSTRACT**

An arrangement at an expansion joint which separates a building along planes running across the direction of dilatation. The building sections situated on either side of the expansion joint are connected by connecting means, such as carrier straps, which in the region of the expansion joint extend in an essentially vertical direction to absorb vertical forces between the sections. The sections are also mutually connected by means of elements which extend in a substantially horizontal direction and which are formed of such a material and of such dimensions that they float or yield at a certain tension level as a result of expansion or contraction of the building.

4 Claims, 1 Drawing Figure




4'
6
2
3
5
2'
4
1

ARRANGEMENT AT AN EXPANSION JOINT

This is a continuation, of application Ser. No. 179,435 filed Sept. 10, 1971, now abandoned.

The invention relates to an arrangement at an expansion or dilatation joint which separates a building along certain planes running across the direction of expansion in question. The building sections situated on each separate side of each joint are connected by supporting members or carrier straps, which — in the area of the expansion joint — extend substantially vertically to absorb vertical forces between the respective sections.

To provide expansion joints in buildings it has so far been usual to divide the building into self-supporting sections, whereby one often has been forced to provide additional supporting structures. One has in this way arranged e.g., a supporting wall on each side of the expansion joint. This involves time consuming and costly precautions which would be desirable to eliminate.

The object of the invention is thus to provide an arrangement where the expansion joint by a self-optimally adapted supporting structure also includes the necessary means to permit large contraction or expansion.

According to the invention this is achieved by an arrangement of the kind mentioned in the introduction and is characterized by these sections being mutually connected, substantially with horizontally extending elements of such a material and such dimensions that they "float" or yield when exceeding a certain tension level, as a result of expansion or contraction of the building.

In accordance with a preferred embodiment of the invention a connecting and support arrangement is provided for an expansion joint between a supporting wall and an adjacent floor section of a building, which joint separates the building along planes which extend across the direction of expansion, the arrangement comprising at least one supporting member which includes first and second substantially horizontal portions respectively incorporated in the supporting wall and the adjacent floor section and which connects the wall and floor section together. The supporting member also includes a further substantially vertical portion which connects the horizontal portions together and is disposed adjacent to the expansion joint and extends therealong a substantial distance, parallel to the plane thereof and which absorbs vertical forces between the wall and floor section. The arrangement also includes at least one further, horizontally extending mild steel reinforcement member, incorporated in the wall and floor section of the building which connects the wall and floor section together, and yields when the tension forces thereon, resulting from expansion or contraction of the building, exceed a predetermined level.

A particularly simple distribution of a building of sections with interjacent expansion joints is thus achieved. One avoids the demand for subsupporting structures on each side of the expansion joint, as one section may be suspended from the other. To avoid a concentration of movement at certain joints, the horizontally extending elements are particularly advantageous, since, by suitable arrangement and dimensioning of these, one may achieve a controlled guidance of the relative directions of movements at the various joints. In order to avoid unwanted movements in the plane parallel to the joint, said carrier straps as well as horizontally extending elements may be arranged in a vertical plane making an angle of approximately 60° – 30°, with the respective plane of the joint. Components of force, which otherwise could lead to mutual side dislocation of the building sections, are thus absorbed.

The invention will be further described below by means of a construction example with reference to the drawing, showing a cut through a section of a building in the area around an expansion joint.

Numeral **1** denotes a supporting wall which carries floor separators **2'**. An expansion joint **3** makes separation between the floor separator **2'** and the supporting wall **1**, since these are connected by means of a supporting member or carrier strap in the form of a steel reinforcement member **4**, with a vertically extending part in the area of the joint. Numeral **5** denotes a supporting iron which serves to distribute the forces exerted in the steel reinforcement member **4**. Numeral **6** denotes a horizontally extending steel reinforcement member made of e.g., mild steel, which "floats" or yields at a certain tension level. The vertical part **4'** of the steel reinforcement member **4** is embedded in the supporting wall **1**, such that between the joint **3** and that part there is a concrete layer with a thickness chosen in such a way that the layer will break up when exceeding a predetermined level for those forces that arise from contraction of the building. Furthermore the steel reinforcements may be corrosion-resistant, at least in the area of the dilatation joint **3**, e.g., by plastic coating, by galvanizing etc.

Even though the above construction example relates to a reinforced concrete structure, is is evident that the invention is not limited to this embodiment, since the invention may be used for a series of different types of supporting structures.

I claim:

1. A connecting and support arrangement for an expansion joint between a supporting wall and an adjacent floor section of a building, which joint separates the building along planes which extend across the direction of expansion, said arrangement comprising at least one supporting member which includes first and second substantially horizontal portions respectively incorporated in the supporting wall and the adjacent floor section and which connects the wall and floor section together, said supporting member also including a further substantially vertical portion which connects said horizontal portions together and is disposed adjacent to the expansion joint and extends therealong a substantial distance, parallel to the plane thereof and which absorbs vertical forces between the wall and floor section; and at least one further, horizontally extending mild steel reinforcement member incorporated in the wall and floor section of the building which connects the wall and floor section together and which yields when the tension forces thereon, resulting from expansion or contraction of the building, exceed a predetermined level.

2. An arrangement as claimed in claim **1** wherein said supporting member forms an angle of between 60° and 30° with the plane of the expansion joint.

3. An arrangement as claimed in claim **1** wherein the said support sections of the building are constructed of reinforced concrete.

4. An arrangement as claimed in claim **3** wherein said supporting member comprises a steel reinforcement member and the vertical portion thereof is embedded in a section of the building on one side of the expansion joint so that a thin concrete layer exists between said vertical portion and the expansion joint, the thickness of said layer being such that the layer will be broken when the forces generated by expansion of the building exceed a predetermined level.

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