Feb. 21, 1933. J. A. MELVIN 1,898,736

BUILDING CONSTRUCTION

Filed Feb. 26, 1930

Fig. 1.

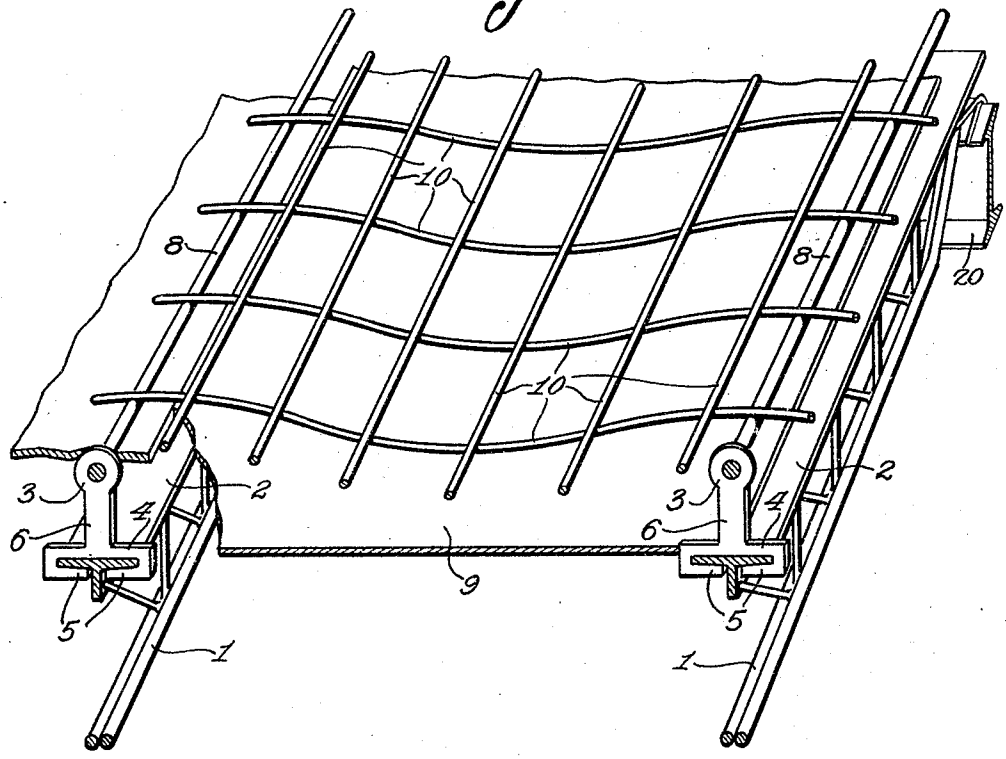


Fig. 2

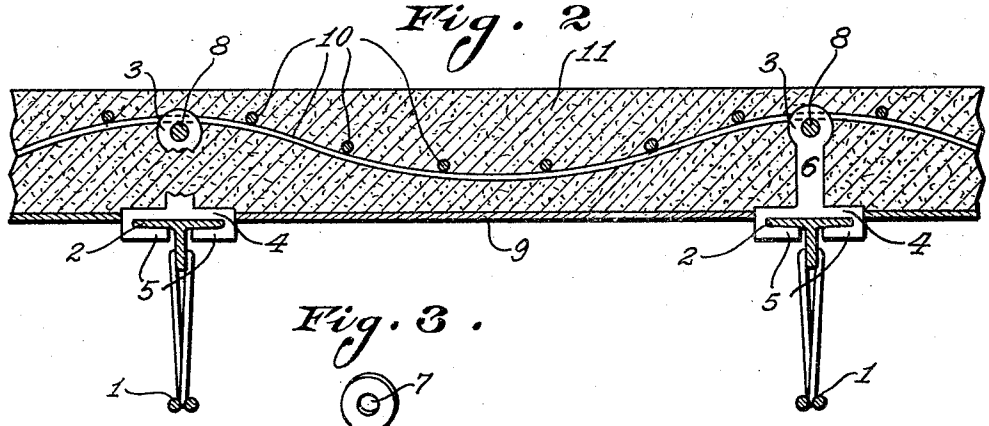
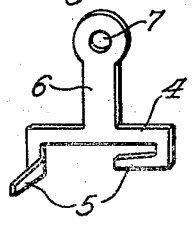


Fig. 3.



Inventor:
JOHN A. MELVIN,
By John N. Brumaga
His Attorney.

Patented Feb. 21, 1933

1,898,736

UNITED STATES PATENT OFFICE

JOHN A. MELVIN, OF ST. LOUIS, MISSOURI

BUILDING CONSTRUCTION

Application filed February 26, 1930. Serial No. 431,353.

This invention pertains to building construction and more particularly to floor or roof construction.

One of the objects of this invention is to provide a floor or roof construction of reenforced concrete type in which the reenforcing material is applied in such a way as to interfere as little as possible with the continuity of the concrete slab.

Another object is to provide such a construction which may be applied in a simple and expeditious manner to a structure of steel joists or girders or similar supporting members.

Another object is to provide such a construction which is economical of material and simple to apply.

Further objects will appear from the following description taken in connection with the accompanying drawing, in which:—

Figure 1 is a perspective view showing the arrangement of reenforcing material and the supports therefor together with the forms for the concrete slab;

Figure 2 is a vertical cross-section of a complete floor slab; and

Figure 3 is a perspective view slightly enlarged showing one of the brackets bent laterally to permit engagement with its support.

Referring to the drawing, 1 designates a joist which may be any suitable type of metallic joist, preferably provided with an upper chord having a well defined flange 2. In the ordinary construction a series of such joists is arranged with the joists in parallel relation and spaced at uniform intervals throughout the extent of the floor. Such joists are ordinarily supported on main girders 20 which form the main framework of the building. In accordance with this invention, an upstanding bracket or clip 3 is provided which is attachable to the joists 1. In the embodiment of the invention illustrated in the drawing, the bracket 3 is formed of sheet metal or similar material and has a laterally extended base 4. The lower part of the base 4 is provided with inwardly extending locking elements 5 arranged to embrace the flange 2 of the joist. The elements 5 may be made so as to be bendable so that one or more of them may be bent laterally as indicated in Figure 3 to permit engagement thereof, with the flange 2. After engagement, the bent element 5 is returned to its normal position as shown in Figure 1. In this position it locks the bracket securely on the joist.

Rising from the base 4 is an upstanding shank 6 provided at its upper end with a head having a perforation 7 adapted to receive a supporting bar 8 as shown in Figure 1.

In applying this construction, a number of brackets 3 are assembled on each joist at spaced points therealong. The supporting bars 8 are then assembled in the perforations 7 so as to extend in parallel relation with the joists 1. Forms in the shape of sheets or slabs 9 of plaster board or the like are placed upon the joists. The joists may be spaced from one another a distance equal to the standard width of the sheets 9 and the sheets may be laid upon the joists lengthwise thereof and with their side edges abutting on top of the joist as shown in Figure 1. Reenforcing material in the form of metallic bars or meshed reenforcing fabric 10 is then placed upon the supporting bars 8. This reenforcing material is preferably so arranged as to be positioned adjacent the lower face of the finished slab at points between the supporting bars 8. In other words, the fabric curves or dips downwardly between said supporting bars as clearly indicated in Figures 1 and 2. This arrangement puts the reenforcing material in the best position to withstand tensile stresses set up in the finished slab.

The various elements having been assembled as described above and the forms 9 suitably reenforced against the weight of the concrete, the material is then poured upon the forms and so as to surround the bars 8 and the reenforcing materials 10. The concrete material is indicated at 11 in Figure 2. In order to make the construction as light as possible such material as gypsum may be used for the slab 11. This material is light, it sets quickly and when properly reenforced is sufficiently strong.

It will be noted that the brackets 3 are spaced at intervals along the joists and that the bars 8 are supported thereby above the

joists and with a space therebetween. Consequently when the slab is poured, the concrete material will flow freely through all the spaces so as to form a continuous slab over the whole floor. The brackets 3 being relatively small occupy little space and do not interrupt the continuity of the slab which has just as great a cross-sectional area at the joists as it has at any other point.

When the concrete material has set, the forms 9 are left in place to provide a finish for the ceiling below.

It will be seen, therefore, that this invention provides a floor or roof construction which is simple to install and which provides a strong yet light floor or roof. Furthermore, the slab is continuous even at the joists. The brackets 3 are simple in form and structure and can be made very cheaply by punching from sheet metal. Accordingly, this floor can be very cheaply constructed since the materials required to be erected are easily manipulated and require only a short time for the installation.

It will be noted also that the bar 8 is embedded in the slab at the upper portion thereof while the clips 3 provide for anchoring said bar to the joist. This construction, therefore, provides a secure anchorage for roofs against being blown off by a high wind.

An important effect of this construction is that the concrete slab provides a practically continuous sheet of high insulating quality unbroken by any considerable volume of metal imbedded therein. The advantage of this is found in the complete absence of moisture condensation on the inside surface of a roof, for instance, such as is often found in constructions having a substantial volume of metal, such as the web of a beam or joist, extending through the slab so as to provide heat conduction therethrough.

It will also be noted that this invention is particularly applicable to a simple girder-and-joist construction and, with the sheets 9 laid between the joists no specially built forms are required.

While this invention has been described as a complete structure it will be understood, of course, that certain individual features or sub-combinations thereof may be useful of themselves without reference to other features. It is understood, therefore, that such individual features or sub-combinations are contemplated by this invention and are within the scope of the appended claims.

It is obvious that various changes may be made in details of construction, within the scope of the appended claims, without departing from the spirit of this invention. It is, therefore, to be understood, that this invention is not to be limited to the specific construction shown and/or described.

Having thus described the invention, what is claimed is:

1. In a floor or roof construction having main girders, a plurality of joists spaced along and spanning the space between said girders, a series of individual supports upstanding from each of said joists and secured to the upper chord thereof at intervals therealong, supporting rods extending along said joists but spaced thereabove and resting on said supports, re-enforcing material resting on and extending between said rods, and a monolithic concrete slab carried by said joists and in which said supports, rods and re-enforcing material are embedded whereby an insulating layer of concrete is provided between the upper surface of said slab and said joists.

2. In a floor or roof construction having main girders, a plurality of joists spaced along and spanning the space between said girders, a supporting sheet resting on and extending between said joists, a series of individual supports upstanding from each of said joists and secured to the upper chord thereof at intervals therealong, supporting rods extending along said joists but spaced thereabove and resting on said supports, re-enforcing material resting on and extending between said rods, and a monolithic concrete slab formed on said sheet and in which said supports, rods and re-enforcing material are embedded whereby an insulating layer of concrete is provided between the upper surface of said slab and said joists.

3. In the art of floor or roof construction, the method comprising, placing a plurality of joists in spaced relation to support the floor or roof, mounting on the upper chord of said joists at intervals therealong upstanding supports, mounting supporting rods in said supports spaced above said joists, placing re-enforcing material on said rods so as to sag between said joists, placing suitable concrete forms between said joists, and pouring a monolithic concrete slab on said forms so as to embed said supports, rods and re-enforcing material in order to provide a continuous insulating layer of concrete over said joists.

4. In the art of floor or roof construction, the method comprising, placing a plurality of joists in spaced relation to support the floor or roof, placing form sheets on said joists to span the spaces therebetween, mounting on the upper chord of said joists at intervals therealong upstanding supports, mounting supporting rods in said supports spaced above said joists, placing re-enforcing material on said rods so as to sag between said joists, placing suitable supports for said form sheets, and pouring a monolithic concrete slab on said sheets so as to embed said supports, rods and reenforcing material.

5. In a floor or roof construction of the character described, a sheet metal bracket having a base provided with a transverse slot

forming a portion bendable to permanently lock said bracket to the upper chord of a metallic joist, an upright shank on said base, and an eye on said shank adapted to receive and hold a rod.

6. In a floor or roof construction having main girders and a plurality of joists spanning the space between said girders, supporting rods extending along the tops of the joists, means spaced along said joists for supporting said rods at a distance above said joists; re-enforcing material supported by and extending between said rods, and a monolithic concrete slab carried by said joists in which said rods and re-enforcing material are imbedded and providing an insulating layer of concrete between the upper surface of said slab and said joists.

7. In a floor or roof construction having main girders and a plurality of joists spanning the space between said girders, supporting rods extending along the tops of the joists, means spaced along said joists for supporting said rods at a distance above said joists; re-enforcing material supported by and extending between said rods, form sheets carried by said joists, and a monolithic concrete slab on said form sheets carried by said joists in which said rods and re-enforcing material are imbedded and providing an insulating layer of concrete between the upper surface of said slab and said joists.

In testimony whereof I affix my signature this 20 day of February, 1930.

JOHN A. MELVIN.