

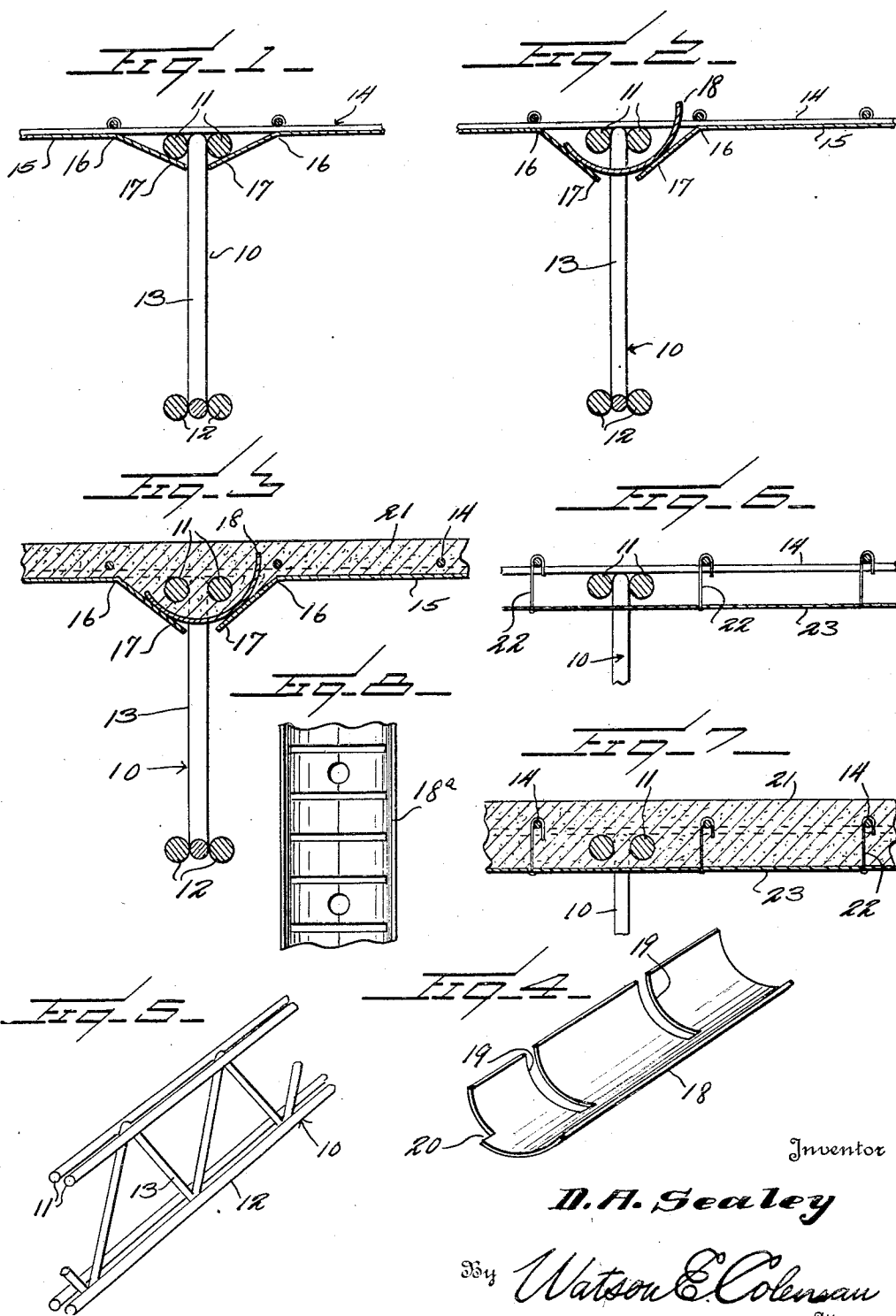
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METHOD OF MAKING CONCRETE FLOORS OR ROOFS

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METHOD OF MAKING CONCRETE FLOORS OR ROOFS

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This invention relates to methods of making concrete floors or roofs, and particularly to making concrete floors or roofs where a wire mesh fabric is disposed upon structural steel joists and the concrete poured so as to embed the wire mesh in the concrete.

In the making of floors and roofs of this character today, different forms of structural steel joists are used, such as the "Massillon" joist, the "Truscon" joist, the "Havemeyer" joist, and many others, all of which include upper and lower chordal members and intermediate web members extending between the upper and lower chords. Over such joists as this it is the common practice to dispose an expanded metal lath, having a very small mesh or openings, this expanded metal lath resting upon the upper chords of the joists and being attached thereto, and then concrete is poured so as to form a slab within which the expanded metal lath is embedded as reinforcement, the metal lath acting also as a form. In all cases this slab rests upon the top of the joists entirely, not embedding the top members of the joists in the concrete slab. In order to embed the top members of the joists, which is a desirable feature, relatively expensive form work is required.

The general object of the present invention is to provide a method of forming concrete floors or roofs which is simple, effective and which is relatively cheap to carry out, and in which the reinforcement will be embedded in the concrete slab and in which the concrete slab so formed will also surround and embed the upper chords of the said joists so that the concrete itself will form a lateral bracing for the floor joists, that is, brace the floor joists against any lateral pressure or strain and thus do away with the necessity of using ties or braces between these floor joists.

My invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a sectional view through a floor joist and the wire mesh supporting fabric and form supported thereon and before the concrete is poured;

Figure 2 is a like view to Figure 1 but

showing the manner in which a trough-shaped form is introduced beneath the upper chord of the joist;

Figure 3 is a like view to Figure 2 but showing the concrete poured;

Figure 4 is a perspective view of the form to be used beneath the upper chords of the joist;

Figure 5 is a perspective view of the joist;

Figure 6 is a sectional view showing another manner of supporting the forms;

Figure 7 is a like view to Figure 6 but showing the concrete after it is poured;

Figure 8 is a fragmentary top plan view of a modification of the form 18.

Referring to these drawings, and particularly to Figures 1 and 5, 10 designates a floor joist of structural material, known as the "Massillon" floor joist and quite commonly used in structures of this character. This particular floor joist, of course, has nothing to do with my invention but is purely illustrative of a floor joist in general.

This floor joist is formed to provide the two parallel top chordal members 11, two lower or bottom chordal members 12, and the intermediate braces 13 which are disposed at angles to each other and which are equivalent to an intermediate web between the upper and lower chords of the joist.

In carrying out my method, after the floor joists have been put in place, I dispose upon the floor joists the textile fabric 14 consisting of longitudinal and transverse wires welded at their intersections. Supported by the wires are sheets of thin material constituting a form, and these sheets are supported relatively close to the plane of the wire so that when the concrete is poured or spread over the wire, the sheets will initially support the concrete and permit the wires to be embedded in the lower portion of the concrete slab. Of course, the sheets 14 abut against the braces or webs 13.

It is desirable that the concrete slab or floor shall extend downward so as to embed in the slab the upper chordal members 11. To this end, I crease the sheets 15 on longitudinal lines 16 which parallel the joist and bend down the adjacent margins of the sheet,

as at 17, so that these margins extend downward and inward beneath the chordal members 11.

This leaves a gap between the edges of the portions 17, and a trough-shaped form 18 is provided which is transversely slotted at 19 so as to receive those wires of the fabric 14 which extend at right angles to the joist. This trough-shaped member 18 is also formed with notches 20 to accommodate the braces 13 so that these trough-shaped members may be inserted downward beneath the chordal members 11 and extend upward and thus the trough be disposed beneath the chordal members 11. The slab 21 of concrete may then be poured. The concrete in being poured or spread will be supported by the form and at the intersections with a joist will extend downward onto the form 18 so as to embed the chordal elements 11.

It will be understood that I have illustrated a particular form of joist having a particular form of chordal elements, but that other forms of joist might be used and that the same or analogous means might be used for the purpose of molding the concrete so as to extend down around the top chord. Thus, for instance as in Figure 8, the trough 18a might be formed in two sections which would abut against the web of the joist. Of course, the two-section form 18a would have each section slotted to permit the passage of the transverse wires of the wire fabric 14. Obviously, therefore, the trough member 18 or 18a would be constructed with particular reference to the particular joist member which was used and its details of construction, but it will be seen that these form elements 18 or 18a may be readily inserted around the chordal elements of the joists so that when the concrete 21 is eventually hardened the wire mesh will be embedded in the concrete.

The concrete will thus extend downward around the upper chordal elements of each truss, thus bracing the trusses against lateral or tipping strain, tying the concrete to the joists, and strengthening the concrete slab by reason of the chordal elements being embedded therein.

In Figure 6, I show a variation of this method of forming these concrete floors, in which the wire mesh 14 supports from it by hangers 22 forms 23 which may be of thin metal or relatively heavy pasteboard, these forms being preferably permanently linked to the wire mesh by the hangers or links 22 and these forms 23, when the wire fabric is put in place, swinging downward and abutting against or intersecting the web of the joist. Where, of course, the joist is formed with angular braces 13, the adjacent edges of the form 23 will be notched to accommodate these braces or webs 13.

The use of this form will produce a slab or floor of concrete in which the chordal mem-

bers 11 will be embedded in the concrete and the same advantages will be secured as with the method previously described. It will be seen that I have provided a method of casting a concrete slab across the tops of joists which is thoroughly practical and which causes the top bars or chordal members of the joists to be embedded in the concrete. This has heretofore been done, in some cases, by wooden forms which support the concrete, these forms being supported by the joists, but this method is relatively costly. It is old also to put wire mesh or metallic laths upon the top of the joists and pour the concrete slab on top of the metal lath.

It is also old to simply embed the wire fabric in the concrete slab below the neutral axis thereof, but by my methods I secure the tying of the concrete slab to the joist and the bracing of the joists from each other by a method and means which is very cheap to carry out and which is effective in practice.

It will be understood that there is already on the market and in use a wire fabric having a paper form attached to the under face thereof, this wire fabric and paper form being intended to be disposed flat upon and rest on the tops of the joists, and that in the use of this fabric the concrete is poured onto the paper fabric so that the wire fabric is embedded within the lower portion of the concrete slab thus formed, but this concrete slab does not extend down below the top chords and embed the top chords of the joist in the concrete slab. In using this form of fabric which, as before remarked, is already on the market, it is only necessary to slit the pasteboard form which is attached to the fabric wherever a joist comes, bend down the lateral margins of the pasteboard, as shown in Figure 2 at 17, and then insert the trough-shaped form elements 18 to close the gap between the bent down portions of the pasteboard fabric and provide a form which will extend beneath the top chords of the joists. Then the concrete is poured in the manner stated with relation to Figure 3. Thus it is possible by my method to use this combined wire mesh fabric and pasteboard form and yet secure a slab which will entirely enclose the top chordal members of the joists and secure the advantages stated.

I do not wish to be limited to the use of this process of method with the particular form of joists shown, as it may be used with many other different forms of joists. Neither do I wish to be limited to the exact form of the wire mesh fabric nor any particular material for the form 15 or for the trough-shaped form elements 18.

While I have heretofore referred to the joists 10 as being floor joists, it is to be distinctly understood that these joists might be roof joists and the method described for form-

ing floors is equally applicable and is intended to cover the forming of roofs.

I claim:—

1. A method of forming concrete floors supported upon structural metal floor joists consisting in laying wire mesh fabric on the top of the joist, the fabric having a form of thin sheet material attached thereto beneath the same, the sheet being longitudinally slit at each joist, bending down the material at the margin of each slit to a level below the upper chords of the joists, disposing a trough-shaped form below the upper chord of each joist and between the margins of the sheet material, and disposing concrete on the said forms to thereby embed the wire fabric and the upper chords of the joists in the concrete.

2. A method of forming concrete floors supported upon structural metal floor joists consisting in placing wire mesh fabric on the tops of the joists, the fabric having a form of thin sheet material attached thereto and supported thereby below the same, the sheet being longitudinally slit at each joist, sliding transversely slitted trough-shaped form elements downward through the wires of the fabric to a position below the upper chords of the joists, and disposing concrete on said sheet forms and the trough-shaped forms to thus embed the wire fabric and the upper chords of the joists in said concrete.

3. A method of forming concrete floors supported upon structural metal floor joists consisting in placing upon the tops of the floor joists a reticulated fabric having thin sheet material attached thereto and supported therefrom below the fabric, the sheet being longitudinally slit at each joint, bending the material of the sheet at the margins of said slits downward to a level below the upper chords of the joists, disposing form elements below the upper chords of the joists and bridging the gaps between the turned down margins of the sheet material, and disposing concrete on said sheet forms and on the form elements, the concrete extending above the fabric and the upper chords of the joists to thereby form a floor slab in which the upper chords of the joists and the fabric are embedded in the concrete.

In testimony whereof I hereunto affix my signature.

DAVID A. SEALEY.