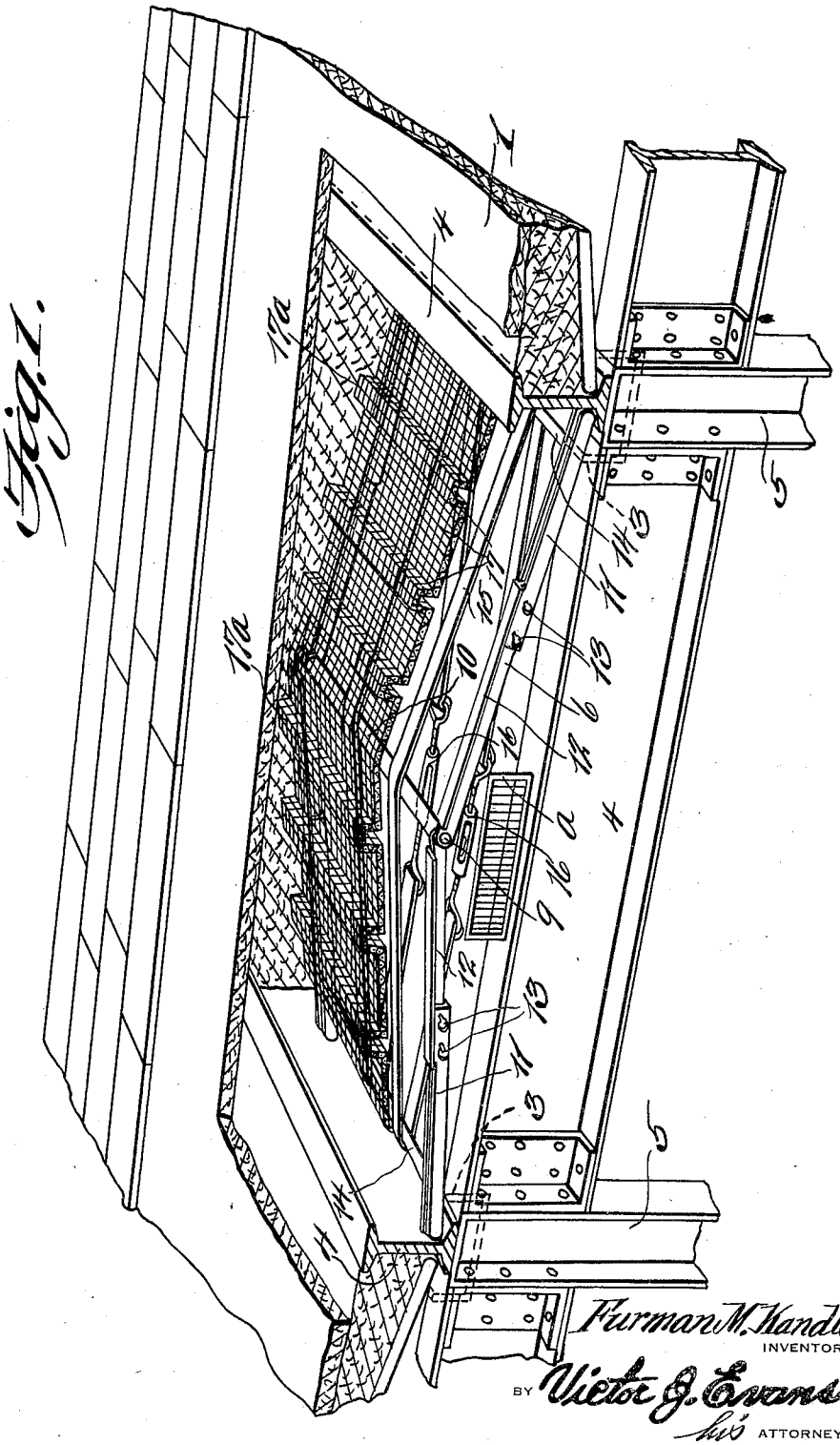
Nov. 3, 1931. F. M. KANDLE 1,830,606

COLLAPSIBLE FORM FOR CEILING AND FLOOR CONSTRUCTION

Filed March 1, 1929 2 Sheets-Sheet 1

Fig. 1.



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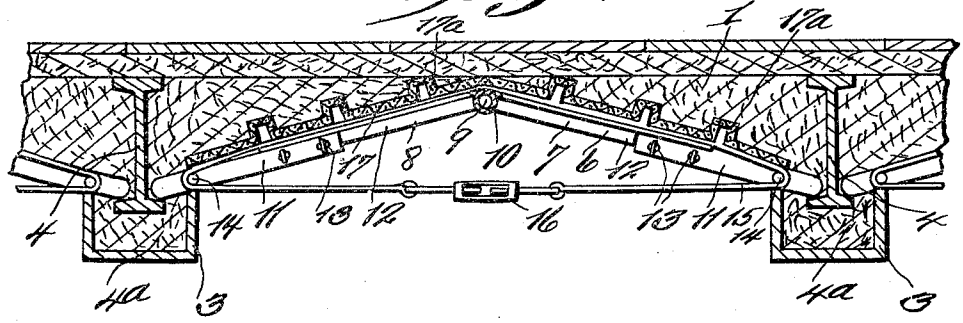
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Filed March 1, 1929 2 Sheets-Sheet 2

Fig. 2.



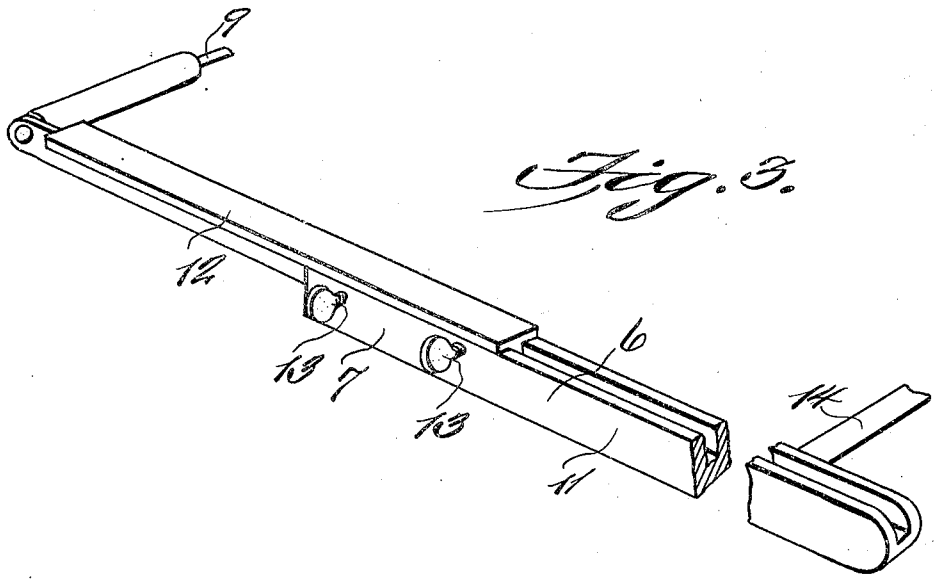


Fig. 3.

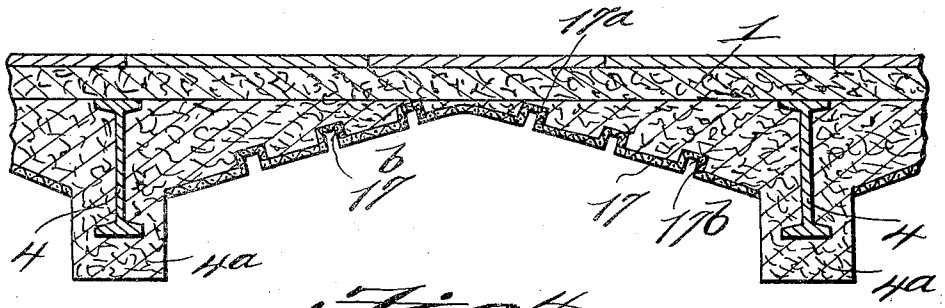


Fig. 4.

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Patented Nov. 3, 1931 1,830,606

UNITED STATES PATENT OFFICE

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COLLAPSIBLE FORM FOR CEILING AND FLOOR CONSTRUCTION

Application filed March 1, 1929. Serial No. 343,786.

The present invention relates to an improved collapsible form for ceiling and floor constructions, and though it has features similar to some extent to those of a permanent ceiling and floor construction involved in a copending application, filed 25th day of February, 1930, Serial No. 342,502. This form in addition to being collapsible is removable, thereby constructing a cement floor section spanning between opposed floor I-beams entirely devoid of any reinforcement, excepting a wire fabric or expanded metal or metal open work on the under surface of the cement floor section, said cement flooor section including wood channel beams immediately under the floor I-beams, each cement floor section being interlocked with an adjacent floor section at a point within the wood channel beam.

Another feature of the invention comprises the various stress supporting frames, and after the cementitious material has thoroughly seasoned and hardened at least sufficiently to retain the floor section in position, the stress supporting frames are collapsible, hence easily removed.

Still another feature consists in positioning the expended or wire fabric or metal open work at right angles to the arrangement of similar material in said co-pending application, in order to leave the wire fabric or expanded metal or metal open work adjacent the under surface of the floor, so that when the flooring is thoroughly set the under surface of the floor (which is really the ceiling of the room below) may be supplied with additional cementitious material in order to give the ceiling the proper finished appearance.

A further feature of the invention comprises the idea of telescopically or slidably adjoining the side bars of the stress supporting sections so that the sections may be easily removed.

It is to be understood that the particulars herein given are in no way limitative, and that while still keeping within the scope of the invention, any desired modification of details and proportions may be made in the construction of the appliance according to circumstances.

The invention comprises further features and combination of parts to be hereinafter set forth, shown in the drawings and claimed.

In the drawings:

Figure 1 is a view in perspective of a portion of a floor and ceiling, showing the collapsible form in position and part of the flooring constructed.

Figure 2 is a sectional view with the stress supporting frames in place, showing the features of construction by which the slide bars may be collapsed and moved slidably to permit them to be removed from under the flooring, after the latter has set.

Figure 3 is an enlarged view of a portion of the stress supporting frames.

Figure 4 is a sectional view of a flooring showing the stress supporting sections removed, illustrating the fact that the flooring spans the space between opposed floor I-beams unsupported, insofar as reinforcement is concerned excepting to mention that the under surface of the flooring (which is really the ceiling) is of expanded metal, wire fabric or metal open work surface, in order to provide means for adhering additional cement to the ceiling.

Referring to the drawings, 1 identifies a flooring and ceiling construction comprising the wood forms 3 (which may be temporarily supported by in any convenient, well known manner such as studding not shown) and the floor I-beams 4, the floor channel beams being between the studding 5.

In constructing or forming the floor and ceiling of cementitious material stress supporting frames 6 are provided. These frames consist of sections 7 and 8, which are pivotally united on a pin or bolt 9, there being a spacing sleeve or tube 10 between the pivoted ends of the sections.

The side bars of the section 7 each consist of two parts 11 and 12, the former being U-shaped and the latter being T-shaped and slidably or telescopically connected to the part 11 with transverse bolts or pins 13 and in order to hold the two parts of the section rigidly in alignment.

The section 8 of the stress supporting frame is similarly constructed, therefore the reference characters correspond with those of the section 7.

Each of the sections of the stress supporting frames have transverse bars 14, and in placing the form in position for constructing a floor and ceiling, the side bars of the sections 7 and 8 engage on the edges of the adjacent flanges of the wood floor channel beams, while the remote ends of the side bars of the sections 7 and 8 engage with the basis of the floor I-beams, in the corners where the basis of the I-beams join with the webs thereof.

In constructing a cement floor these stress supporting frames for temporary use are disposed side by side, that is edgewise, with the remote ends of the side bars of the sections resting on the basis of the I-beams of the sections with the transverse bars or rods immediately adjacent and resting upon the edges of the opposed flanges of the floor channel beams.

Metal pliable twisted straps or bands or like members 15 engage about the stress supporting frames as shown, and each including a turn buckle 16, so that by turning up on the buckles the bands can be tightened, and thereby support pieces of expanded metal, wire fabric or metal open work, extending the full length of the form, in a direction just at right angles to the positioning of similar material in the co-pending application. This expanded metal or wire fabric or metal open work 17 is temporarily supported by the bands or straps, that is until the stress supporting frames are removed, after which it adheres to the under surface of the spanning cement flooring, between opposed parallel floor I-beams.

After the stress supporting frames are in position and the bands or straps are applied and tightened and expanded metal positioned the cement is applied and is allowed to mix with similar material in the wood forms 3, so that when the stress supporting frames are removed the cement floor sections are continuous under the floor I-beams and integrally connects with an adjacent floor section.

After the cementitious flooring thoroughly sets and seasons, the transverse bolts of the side bars of the two parts of the sections 7 and 8 are removed, and then by telescoping or sliding one part of each section within the other or either sliding one part into the adjoining part of one section the stress supporting frames may be removed from between the I-beams. In other words an operation of this kind permits the remote ends of the side bars of the stress supporting frames to be detached from engagement with the basis of the I-beams.

Obviously when the frames are so removed the expanded metal or wire fabric or metal open work remains adhering to the under surface of the floor, providing a means by which the under surface of the floor may be further supplied with cementitious material to construct the ceiling of the room below, said ceiling having a finished appearance as in Figure 4.

It is customary in the construction of steel frame work for various buildings to dispose the front, rear and side wall I-beams on a level with the floor I-beams, but in this particular form for constructing cement flooring it is the purpose, and very essential to lower the front, rear and side wall I-beams just immediately below the floor I-beams, so that it is possible to construct as air space between the floor area of one floor of the building and the ceiling area of the floor below, in a manner similar to that in the co-pending application herein previously identified.

It may be that this application does not show how the ceiling area is formed, but it is possible to span the V-shaped countersink in the under area of the floor between the floor I-beams in any manner, for instance by the use of expanded metal or metal open work, and then apply cement plaster to the expanded metal, and then give a finishing plaster, which may be receptive of wall paper or other cover. In this manner air spaces are provided between the various floor I-beams, and the opposite ends of each air space may or may not have louver vents *a*, which will allow the escape of foul air from rooms or lavatories, which may not open to the atmosphere at the side, front or rear of the building.

The wood channel beams are merely for temporary use, that is for the purpose of constructing cement beams under the floor I-beams, the cement beams 4*a*, not only reinforce the floor I-beams but integrally connect the cement floor sections between the I-beams, and act to reinforce, therefore it is obvious that when the cement forming the floor sections between the floor I-beams has thoroughly set and seasoned, not only the form is removed but also the wood forms are removed.

The expanded metal or wire fabric or metal open work 17 is formed with up-standing ribs 17*a*, which imbed in the cement of the floor, which ribs act to reinforce the flooring, and in addition to provide corrugations 17*b*, which will provide means to retain the finishing cement on the under surface of the floor, provided no air spaces between the floor surface and the ceiling surface are formed.

The invention having been set forth, what is claimed is:

1. A collapsible form for floor and ceiling, comprising temporarily supported forms which mold concrete beams, I-beams embedded in and supported by said concrete beams, temporary stress supporting frames

consisting of sections united at their adjacent ends, the remote ends of the sections adapted to engage with the lower portions of the I-beams, each section of the stress supporting frame comprising slidably united parts including means for holding them rigidly in alignment, means lying over and carried by said stress supporting frames for temporarily supporting cementitious material to form a floor.

2. A collapsible form for floor and ceiling comprising temporarily supported forms which mold concrete beams, I-beams embedded in and supported by said concrete beams, temporary stress supporting frames consisting of sections united at their adjacent ends, the remote ends of the sections adapted to engage with the lower portions of the I-beams, each section of the stress supporting frame comprising slidably united parts including means for holding them rigidly in alignment, means lying over and carried by said stress supporting frames, metal open work on the frames and supported by said last mentioned means, said metal open work adapted to adhere to and support cementitious material to form a floor, and means for adjusting the means carried by the frames, for regulating the positions of said frames, according to the space between the I-beams.

3. In a collapsible form for floors and ceilings, the combination with temporarily supported forms for molding cement beams having I-beams with their lower parts embedded, of a pair of temporary stress supporting frames with their adjacent ends united, their remote ends adapted to engage with the lower parts of said I-beams, said frames diverging toward the I-beams, means lying over said frames and spanning the distance from one remote end to the remote end of the other frame, and including a device for adjusting its tension, whereby the positions of both frames may be regulated according to the distance between the I-beams, metal open work supported by said means lying over said diverging frames, said metal open work in turn adhering to and supporting a cementitious material forming a floor or ceiling, the cementitious material encasing the I-beams.

In testimony whereof he affixes his signature.

FURMAN M. KANDLE.