United States Patent

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Continuation-in-part of application Ser. No. 778,037, Nov. 22, 1968, now abandoned.

[54] **SECURING MEANS FOR FLOORING**
5 Claims, 5 Drawing Figs.

[52] **U.S. Cl.** **52/368,** 52/374, 52/376, 52/480
[51] **Int. Cl.** **E04c 3/292**
[50] **Field of Search** 52/364-375, 480, 376, 377, 573

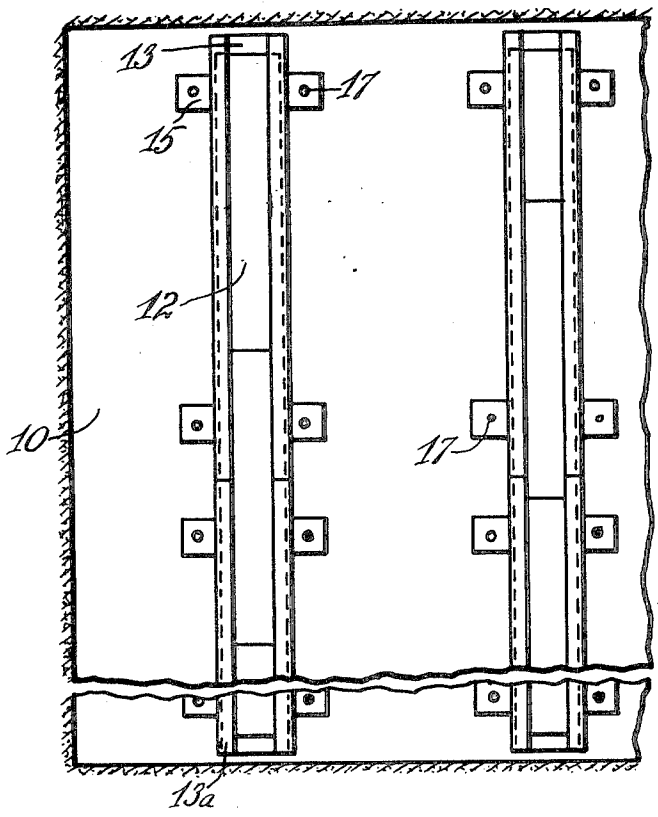
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ABSTRACT: The invention comprises securing means for flooring laid over a concrete base between opposite walls of rooms or halls. A set of metal channel casings is secured on the base in spaced relation with ends facing the walls. The casings have inturned top flanges and are overlaid crosswise by the floor boards. The casings each have a series of slidable sleeper sections on the inside in endwise succession. The ends of such series are spaced from the walls opposite them. The usual nails are driven slantwise through the floorboards into the sleeper sections to a point where the nails meet the metal bottom of the casings and are deflected to form endhooks under the sleeper sections, serving to retain the flooring to the same. The sleeper sections slide endwise when the floorboards expand laterally from damp weather, preventing the buckling of the floor.



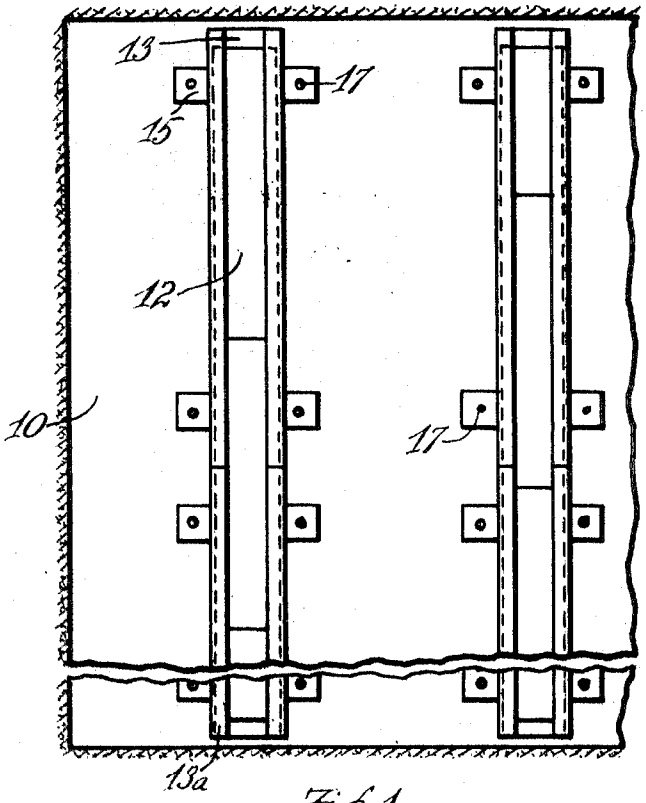


Fig. 1.

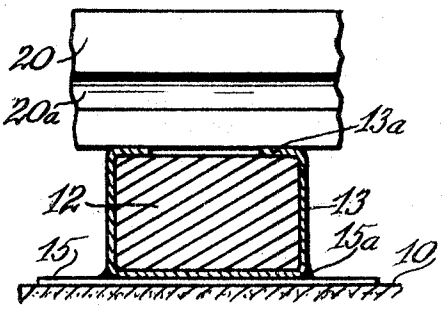


Fig. 3.

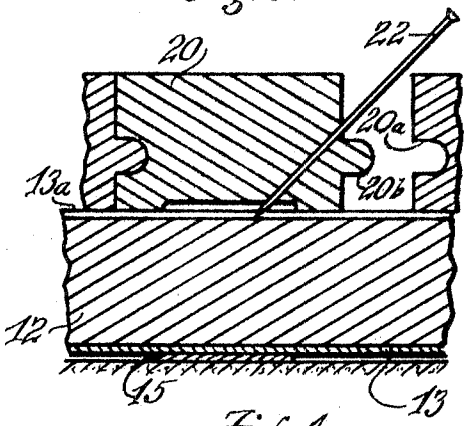


Fig. 4.

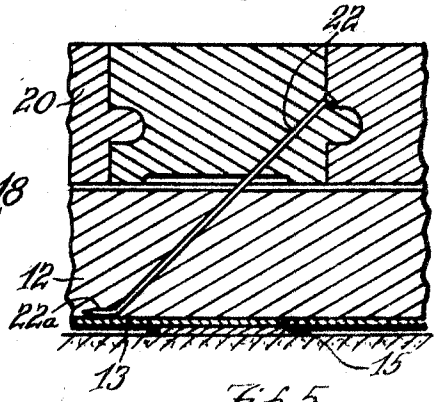


Fig. 5.

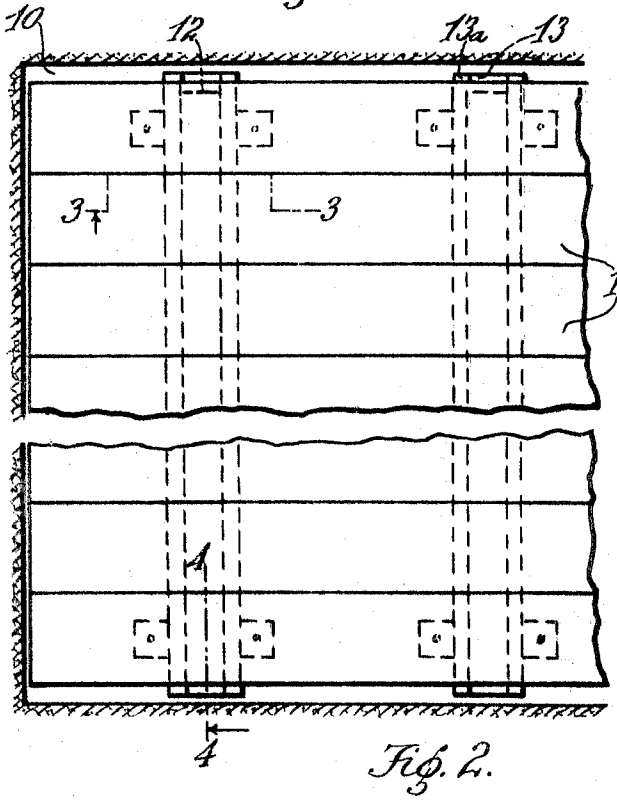


Fig. 2.

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SECURING MEANS FOR FLOORING

This is a continuation-in-part of my application filed on Nov. 22, 1968 under Ser. No. 778,037 and now abandoned, and relates to flooring laid on a concrete base, and more particularly to means for securing the flooring.

Usually, flooring over a concrete base is laid across wooden sleepers spaced about 1 foot apart, after the sleepers have been secured to the concrete base by nails driven into holes made in the concrete. The flooring is then nailed to the sleepers in the usual manner. This fixes the flooring on the immovable sleepers, and is satisfactory at the outset, or while the weather is dry. However, dampness and moisture tend to expand the floorboards laterally, and their cumulative expansion is often so great in such event—as much as 1 to 2 inches—that the flooring will buckle, develop cracks between floor boards, and even come apart in places; and it may also pull the sleepers out of line and loosen them from the concrete base. Therefore, flooring so laid is unstable during damp or rainy weather.

In view of the above situation, it is the primary object of the present invention to provide a sleeper construction under the flooring which holds it down while allowing it to expand in lateral direction as first stated.

A further object is to provide a sleeper construction having long metal retainers which cannot become deformed or thrown out of line, such retainers keeping the sleepers in parallelism and holding them down at all times.

A still further object is to design the retainers just mentioned in the form of channel-shaped casings in which the sleeper sections—to which the flooring is secured—are contained in endwise succession and slidable with the lateral expansion of the flooring while holding the same down.

Another object is to provide the sleeper casings with integral baseplates at spaced points, the baseplates being perforated to receive nails driven into holes made in the concrete base for securing the casings to the same.

An additional object is to use the bottoms of the metal casings for deflecting the nails driven into the sleepers to create hooks which clamp the flooring to the sleepers.

A better understanding of the invention may be gained by reference to the accompanying drawing, in which:

FIG. 1 is a fragmental plan view of the sleeper installation;

FIG. 2 is a view similar to FIG. 1, showing flooring laid on the improved sleepers;

FIG. 3 is an enlarged cross section on the line 3–3 of FIG. 2;

FIG. 4 is a section on the line 4–4 of FIG. 2, showing the first step in nailing a floorboard to a sleeper; and

FIG. 5 is a similar view, showing the final step in that operation.

Referring specifically to the drawing, 10 denotes a fragment of the concrete base on which the improved flooring construction is laid. As mentioned, long sleepers are usually laid on the base about 1 foot apart for the support of the flooring. In the present case, however, the sleepers need not be of full length but in sections or pieces 12 laid in endwise succession and slidable in long metal casings 13. These are of channel form with inward top bends 13*a* overlapping the sleeper sections in part to form retainers for them. They are thus exposed on top to a considerable width, as seen in FIG. 2; and the sleeper sections in one casing are staggered in relation to those in the next casing.

The long metal casings are amply strong to resist deforming tendencies; and they have cross plates 15 welded to them on the underside, as indicated at 15*a* in FIG. 3. The outer portions of the plates have apertures for the application of nails 17 which are driven into holes previously made in the concrete base 10, whereby to securely fasten the casings to the same. The plates 15 are staggered from one casing to the next in order to distribute the fastening locations of the casings.

When a set of sleepers have been secured as just described, the flooring is laid across them as shown at 18 in FIG. 2. FIG. 4 shows that conventional floorboards 20 have a groove 20*a* in one edge and a bead 20*b* extending from the opposite edge. Usually, each floorboard is secured to a sleeper or subfloor by driving a nail 22 over the bead to pass through the board with an inward slant—as shown in FIG. 4—and continue into the sleeper or subfloor. In the present case each line of nails occurs over the exposed surfaces of the sleeper sections, as indicated in FIG. 4. However, when a nail driven through a floorboard passes through the sleeper section underneath, the nail meets the bottom of the sleeper casing at a sharp angle, and therefrom becomes deflected to lodge under the sleeper section with a hook 22*a*, as seen in FIG. 5. The bottom plates 15 lift the casing from the concrete base in order to clear high spots on the surface of the base; and shims may be inserted under the plates where the surface of the concrete base is depressed.

When each casing 13 is filled with a series of sleeper sections 12, the ends of the series are spaced a short distance—an inch or more — from the wall opposite them, as seen in FIG. 1. The flooring is similarly spaced at its sides from the related walls, as shown in FIG. 2. The casings 13 come in lengths or sections easy to handle, such as 1 or 2 feet long; and each section has at least two pairs of cross plates 15. Casing sections of full length are shown in the upper part of FIG. 1. When a floor in an ordinary room is to be laid, casing sections are filled with sleeper sections and laid on the base 10, preferably with ends terminating close to the related walls, as indicated in FIG. 1. After the casings are secured to the base 10, the flooring 18 is laid as previously mentioned and illustrated in FIG. 2. Where flooring is laid in a large hall, the practice is to start in the center and work toward the sides until the last boards are laid spacedly from the related walls, as shown in FIG. 2. It will be understood that this condition may require one or both last boards to be cut narrower.

It may now be pointed out that the spacing of the flooring from the sidewalls is to allow for the lateral expansion of the flooring during inclement or damp weather. Also, because the floorboards are nailed to the sleeper sections, the lateral expansion of the flooring will bear on the sleeper sections in one or the other longitudinal direction. Therefore, each series of sleeper sections is also spaced endwise from the related walls to allow for longitudinal extension. It may be mentioned that the longitudinal expansion of flooring is very slight; and a small space has been indicated in the left-hand portion of FIG. 2 in anticipation of such expansion.

It will now be apparent that the novel flooring securing means has a number of advantageous features. First, the medium of support for the flooring over the concrete base is no longer of wood alone, but of long metal casings extending across the width of the flooring. Lateral expansion of the flooring from dampness or inclement weather is transmitted in one or the other direction to the sleeper sections 12 which impinge on each other accordingly to slide in the casings and relieve the flooring from pressure and tendency to buckle or form surface cracks. Also, such tendency is resisted by the positive hold of the side bends 13*a* of the casings on the sleepers inside them. Further, each floorboard is additionally retained to the sleepers along its course by the terminal hook formations 22*a* of the nails. Finally, it is no longer necessary—when the present securing means is employed—to purchase full-length sleeper lumber from the mills, as the sleepers in the casings 13 are made up of short sections or odd remnants which are more readily available. A securing construction for flooring is thus had which is simple, stable and economical.

I claim:

1. A sleeper construction for use in a wooden floor installation comprising in combination: a rigid base, a series of spaced, generally parallel elongated combination sleepers secured on said rigid base, a plurality of floorboards disposed transversely on said sleepers in substantially abutting relation and defining a flooring spaced above said rigid base, nails extending through said floorboards and having lower terminal bends anchoring said floorboards to said sleepers, said combination sleepers comprising elongated, channel-shaped rigid

guide elements opening upward toward the undersurface of said transverse floorboards, and a plurality of relatively short-length, nail-penetrable elements supported by and received in said guide elements for free longitudinal reciprocation therein with a series of said floorboards anchored thereto by said nails whereby expansion and contraction of the floorboards transversely of said rigid guide elements is permitted by free reciprocation of said nail-penetrable elements without buckling of the floor, said rigid guide elements including means overlying said nail-penetrable elements for restraining them in the free longitudinal reciprocation.

2. The structure of claim 1, in which said means overlying said nail-penetrable elements comprises inwardly directed flange portions extending inwardly above said nail-penetrable elements for retaining the latter in a path of linear reciprocation in said guide elements.

3. The structure of claim 1, in which said means overlying said nail-penetrable elements comprises inwardly directed flange portions extending inwardly above said nail-penetrable elements for retaining the latter in a path of linear reciprocation in said guide elements, and said flange portions comprising continuous flanges extending along the entire length of opposite, upper edges of said guide elements.

4. The structure of claim 1, in which said rigid guide elements include integral, lateral plates extending from the lower surface thereof, such plates receiving fastening means for anchoring said guide elements to the rigid base.

5. The structure of claim 1, said nail-penetrable elements being in endwise engagement for longitudinal impinging influence in the direction of said expansion and contraction.