

March 2, 1971

H. E. COKE ET AL

3,566,569

FLOORING STRUCTURE

Filed April 4, 1969

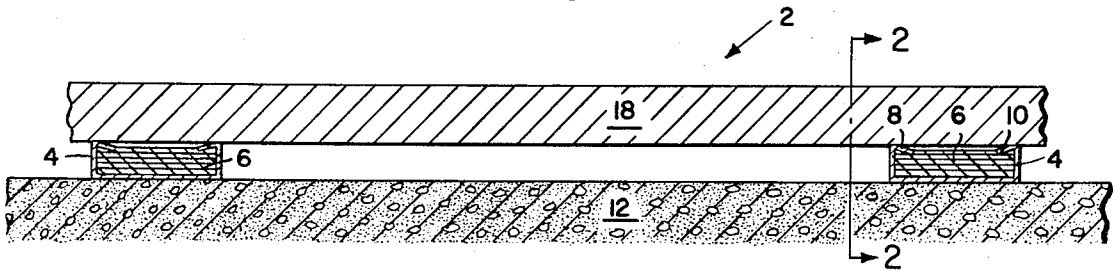


FIG. 1.

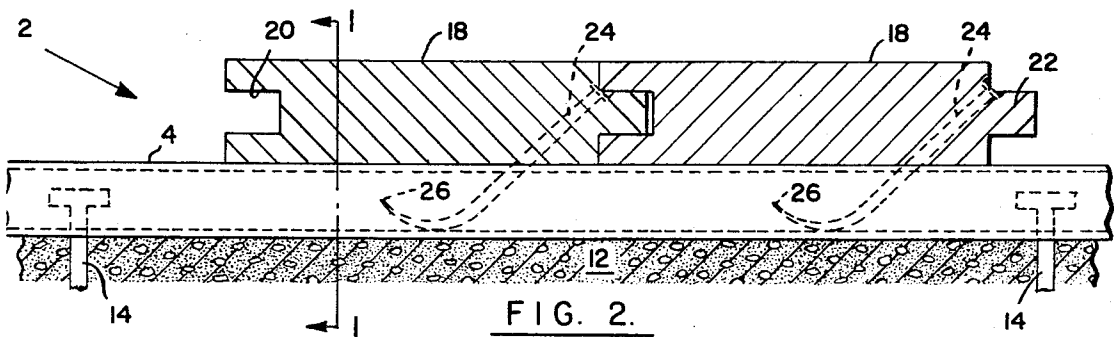


FIG. 2.

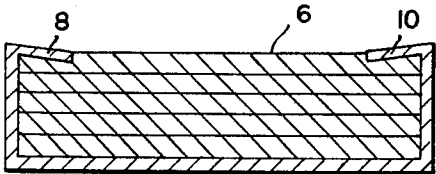


FIG. 3.

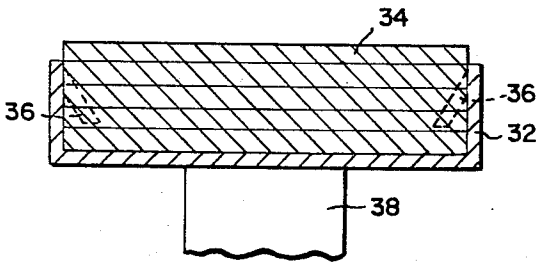


FIG. 4.

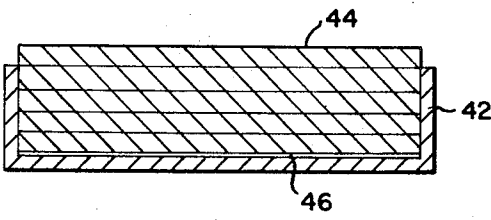


FIG. 5.

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3,566,569

FLOORING STRUCTURE

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Filed Apr. 4, 1969, Ser. No. 813,483

Int. Cl. E04b 5/00

U.S. Cl. 52—376

6 Claims

ABSTRACT OF THE DISCLOSURE

A flooring structure has a plurality of spaced parallel metal channels in each of which is secured a nailing strip. Floorboards are supported on the strip-channel assemblies and secured thereto by nails which pass through the floorboards and nailing strips and are clinched to the bottoms of the nailing strips. The strip-channel assemblies are secured to a foundation.

BACKGROUND OF THE INVENTION

Flooring structures in which floor boards are secured to metal channels which in turn are secured to a foundation are well-known in the art as seen, for example, in Urbane et al. Patent 2,129,976 dated Sept. 13, 1938. The prior art channel floor systems employ clips to secure the floor boards to the channels. The installation of the clips which must be made by hand is a relatively slow operation and greatly reduces the area of flooring which can be laid per man day as compared to a floor which is nailed using a nailing machine. This invention solves that problem.

SUMMARY OF THE INVENTION

A flooring structure has a plurality of spaced parallel metal channels preferably of steel of from about 16 to 24 gauge, in each of which is secured a nailing strip, advantageously of plywood. Three, or more, ply plywood of a wood species having a density of greater than 38 pounds per cubic foot (at 12% moisture content), for example, maple, oak or hickory is preferred. A plurality of floor boards are supported on the strip-channel assemblies and are secured thereto by nails passing through the tongue of the floor boards and the nailing strips and clinched into the bottom of the nailing strips. Means, advantageously power pins, are provided to secure the strip-channel assemblies to a foundation such as a concrete foundation.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a vertical section, partially broken away, through a flooring structure in accordance with the invention;

FIG. 2 is a vertical section, partially broken away, taken on the plane indicated by the line 2—2 in FIG. 1;

FIG. 3 is an enlarged vertical cross section through a strip-channel assembly of the structure of FIG. 1;

FIG. 4 is a vertical cross-section through a modified strip-channel assembly; and

FIG. 5 is a vertical cross-section through a modified strip-channel assembly.

PREFERRED EMBODIMENT

Referring first to FIG. 1, a flooring structure 2 in accordance with the invention has a plurality of spaced metal channels 4 each containing a nailing strip 6 of five ply plywood. The channel 4 is wrapped around the strip

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6 with channel flanges 8 and 10 being forced downwardly to impinge into strip 6.

By way of example, it has been found to be satisfactory to employ a nailing strip about 1½ inch wide by about ⅝ inch thick and of a length of about 8 feet with 8 foot channels.

Channels 4 are supported by a concrete slab 12 and are secured thereto by headed pins 14 which are driven in explosively as in a conventional channel floor. Generally, the pins 14 pass only part way through nailing strip 6 as illustrated in FIG. 2. Should a pin 14 be driven entirely through strip 6 due to an unusual variation in the concrete or the explosive charge, the downward movement of pin 14 would be arrested by channel 4 to still provide an excellent holddown.

Floor boards 18 of any desired wood such as oak or maple are supported by the assemblies of channels 4 and strips 6. Each floor board 18 has a conventional groove 20 for the reception of a conventional tongue 22. Each floor board is secured to the assemblies of channels 4 and strips 6 by conventional flooring nails 24 which are driven in just above tongue 22, preferably at an angle of 45° to 60°. Each nail 24 has a pointed end 26 which passes through the adjacent nailing strip 6 to be deflected by channel 4 upwardly so as to reenter the bottom of strip 6 and clinch the nail 24 thereto as best seen in FIG. 2. The nails 24 can be driven in by conventional nailing machines used heretofore to nail wood flooring. This permits a very rapid securing of floor boards 18 to the channel-strip assemblies as contrasted to the attachment of floor boards to channels by the use of the heretofore used metal clips.

The floor boards 18 are laid successively, after the first board is installed by means of surface nails or other manner, with the groove of each floor board being engaged with the tongue of the preceding floor board, followed by nailing through the tongue 22 with nails 24 into the nailing strip 6.

ALTERNATIVE EMBODIMENTS

It will be evident that the nailing strip of the invention can be secured to a channel in a variety of different ways. By way of further illustration, there is shown in FIG. 4 a U-shaped channel 32 containing a five ply plywood nailing strip 34 which is secured to channel 32 by struck-in portions 36 of channel 32. Channel 32 has a tongue portion 38 employed to secure channel 32 by being embedded in a concrete slab as is known to the art.

Alternatively a U-shaped channel 42 containing a five ply plywood nailing strip 44 secured to channel 42 by an adhesive 46 may be employed.

It will be understood that the above described embodiments are by way of illustration and are not intended to be limiting.

We claim:

1. A flooring structure comprising:

a plurality of spaced parallel metal channels, a plywood nailing strip secured in each channel to form a strip-channel assembly, said nailing strip having at least three plies and a density greater than 38 pounds per cubic foot at 12% moisture content, a plurality of floor boards resting on the strip-channel assemblies, nails passing through the floor boards and the nailing strips to secure the floor boards to the strip-channel assemblies, and said nails being clinched into the bottom of the associated nailing strips.

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2. A flooring structure in accordance with claim 1 in which the nailing strip is about $\frac{3}{8}$ " thick.

3. A flooring structure in accordance with claim 1 in which each channel has opposed upper flanges overlying the nailing strip.

4. A flooring structure in accordance with claim 1 in which the plywood is oak.

5. A flooring structure in accordance with claim 1 in which the plywood is hickory.

6. A flooring structure in accordance with claim 1 in which the plywood is maple.

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U.S. Cl. X.R.

52—480